

# **Weight stigma experiences and internalization among boys and girls accessing obesity care in Berlin, Germany**

**vorgelegt von**

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### DECLARATION OF ORIGINAL WORK

*This thesis is the result of independent research. Due acknowledgements were made where my work is indebted to the work of others.*

*I declare that the present study has not already been submitted or accepted, nor is it currently being submitted for any other degree.*

**Date**

**Signature**

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## List of Abbreviations

- AGA: Arbeitsgemeinschaft Adipositas im Kindes- und Jugendalter (Child and Adolescent Obesity Work Group)
- Aus-Ex: The external physical appearance locus of control subscale of the body-related locus of control (KLC) instrument
- Aus-In: The internal physical appearance locus of control subscale of the body-related locus of control (KLC) instrument
- BIA: Bioimpedance Analysis
- BMI: Body Mass Index
- BMI-SDS: Body Mass Index Standard Deviation Score
- CBT: Cognitive Behaviour Therapy
- CI: 95% Confidence Interval
- DAG: Deutsche Adipositas Gesellschaft (German Obesity Society)
- DEXA: Dual-Energy X-ray Absorptiometry
- ECOG: European Childhood Obesity Group
- EvAKuJ: Evaluation von Therapieangeboten für adipöse Kinder und Jugendliche (Evaluation of therapy approaches for obese children and adolescents)
- FAS: Family Affluence Scale
- FKS: Family climate scales
- Ges-Ex: The external health-related locus of control subscale of the body-related locus of control (KLC) instrument
- Ges-In: The internal health-related locus of control subscale of the body-related locus of control (KLC) instrument
- GSE: General Self-Efficacy Scale
- HBSC: Health Behaviour in School-Aged Children
- HDL-Cholesterol: High-density lipoprotein cholesterol
- HRQoL: Health-related Quality of Life
- ICD-10: International Classification of Diseases, 10<sup>th</sup> revision
- IDF: International Diabetes Federation
- IOTF: International Obesity Task Force
- KiGGS: German Health Interview and Examination Study for Children and Adolescents
- KLC: Body-related locus of control (Körperbezogene Kontrollüberzeugungen)

KLC-EX: The external locus of control subscale of the body-related locus of control (KLC) instrument

KLC-IN: The internal locus of control subscale of the body-related locus of control (KLC) instrument

Klf-Ex: The external physical performance locus of control subscale of the body-related locus of control (KLC) instrument

Klf-In: The internal physical performance locus of control subscale of the body-related locus of control (KLC) instrument

LDL-Cholesterol: Low-density lipoprotein cholesterol

MRI: Magnetic Resonance Imaging

NAFLD: Non-alcoholic fatty liver disease

NHANES: National Health and Nutrition Examination Survey

NHLBI: American National Heart, Lung and Blood Institute

OR: Odds Ratio

¶: Paragraph (in the description of qualitative results)

QoL: Quality of Life

RSE: Rosenberg Self-Esteem Scale

SD: Standard Deviation

SES: Socioeconomic Status

UK: United Kingdom

US/USA: United States/ United States of America

WBI: weight bias internalization

WBIS: Weight Bias Internalization Scale

WHO: World Health Organization

y.o.: years old

## Abstract

**Background:** With the worldwide rise in obesity prevalence, weight-based stigmatization has become a prevailing phenomenon, with negative attitudes towards overweight (weight-bias) developing as early as preschool age. Since overweight is generally associated with negative stereotypical features (e.g. laziness, lack of discipline and self-control), overweight children and adolescents are often the target of teasing and bullying. Overweight and obese youth also display lower quality of life scores compared to their normal-weight peers. As 15% of children and adolescents in Germany are overweight, the proposed research aimed at identifying the extent to which overweight adolescents accessing obesity care at a specialized clinic experience and internalize weight stigma, and how this affects their quality of life. An additional aim was to adapt and validate the Weight Bias Internalization Scale (WBIS) developed by Durso & Latner (2008) for use with German adolescents aged 13 or older.

**Methods:** A mixed-method study design was chosen, comprising a survey (N=191) followed by qualitative interviews (N=10) with patients from the paediatric obesity outpatient clinic of the Charité - Universitätsmedizin Berlin. The survey was used to obtain an overview of adolescents' psychosocial characteristics (quality of life, self-esteem, body-related locus of control), individual resources (self-efficacy, social support, family climate), experience with weight stigmatization and extent of weight bias internalization. Additionally, patients' ethnicity, age, and BMI-SDS were obtained from their files, with the aid of their attending physicians. Subsequently, ten adolescents with extremely low and extremely high weight bias internalization scores were interviewed in order to gain deeper insight into their experiences with weight-based discrimination, coping mechanisms and views on the Weight Bias Internalization Scale. The quantitative data were statistically analysed using the software IBM SPSS Statistics 22, while the interview material was subjected to an inductive, qualitative content analysis. The study design was approved by the Data Protection Office and Ethics Committee of the Charité - Universitätsmedizin Berlin.

**Results:** Survey participants had an average age of 15.06 (SD=1.49) years, 51% were female and 46.6% were German. Almost half of the respondents were extremely obese (49.7%) and had a middle socio-economic status (49.7%), respectively. Most participants experienced weight based stigmatization from schoolmates (59.2%), strangers (32.5%) and male siblings (28.8%). In the healthcare context, most adolescents felt stigmatized by doctors (19.4%) and dietitians (11.5%). The mean weight bias internalization score was 3.78 (SD=1.18). Regression analyses revealed that female gender and having made the experience of weight stigmatization increased adolescents'

degree of weight bias internalization ( $p=0.002$  and  $p<0.001$ , respectively), while higher self-efficacy was associated with lower weight bias internalization ( $p=0.007$ ). In turn, weight bias internalization was a significant predictor of decreases in adolescents' both generic and obesity-related quality of life ( $p<0.001$ ).

Interviewees typically reported being teased by peers at school, in the context of physical activity, when using public transportation, going out with friends, eating or shopping for clothing. Although interviewees mainly used passive strategies (ignoring, avoiding or walking away from stigmatizing situations) to cope with direct stigmatization, some also reverted to more aggressive strategies (verbal retaliation or physical violence threats). In contrast, coping with overweight as a stigmatized identity covered compensation mechanisms, attempting to eliminate one's stigmata by losing weight, identity negation, as well as stigma internalization.

The Weight Bias Internalization Scale displayed high internal consistency (Cronbach's  $\alpha=0.874$ ), as well as good concurrent and construct validity. Overall, interviewees found the Weight Bias Internalization Scale to be accessible and acceptable for adolescents aged 13 or older.

**Discussion:** The present study is the first to provide a comprehensive description of weight stigmatization among overweight adolescents in Germany and propose a valid and reliable instrument for the assessment of weight stigma internalization in this group. Since both study components showed that most overweight youth experienced weight stigmatization at school and peers were the main stigma perpetrators, interventions addressing weight stigmatization in schools are needed. Although most overweight adolescents displayed an average weight bias internalization, its negative associations with self-esteem and quality of life suggest the necessity of integrating this aspect in obesity therapy concepts. Moreover, a shift in focus from individual responsibility for overweight towards its multiple determination in public health communication is deemed necessary in order to reduce weight bias at a societal level.

## Chapter 1. Introduction

### *1.1. Adolescence – the challenge of growing*

After infancy, adolescence is the developmental stage at which the individual experiences the most dramatic biological, psychological and social transitions (Williams, Holmbeck, & Greenley, 2002). Hormonal changes and physical growth are accompanied not only by significant changes in how individuals perceive and experience themselves, but also in the perceptions and expectations they elicit from significant others in their social environment. These new social expectations relate to the new roles that children now have to grow into and are embedded in all settings in which adolescents live and act.

For instance, at the family level, parents begin to progressively shift from an educational strategy based on prohibitions to one relying mainly on providing information which can be used by the adolescent himself or herself in making independent decisions (BMFSFJ, 2009). Also, as part of the deep physiological changes experienced during adolescence, core brain structures are reshaped to make new learning processes possible (Wietasch, 2007). Accordingly, school curricula and didactic methods shift in focus, as adolescents begin to work with more abstract concepts (BMFSFJ, 2009). Expectations towards adolescents differ from those towards children also from a normative viewpoint. As such, adolescents are assigned a different legal status in areas such as accountability for crime, child protection or ability to take on employment. This shift in status relies on the premise that during adolescence, individuals reach a level in their emotional and cognitive development at which they can anticipate and evaluate the consequences of their actions and plan accordingly. Adolescence is also marked by significant changes in the resources individuals employ in coping with events in everyday life. Based on the experiences they gather through their newly acquired freedom of action, adolescents gain a personal understanding of the forces that govern and influence events in their lives and learn to expect a specific degree of success from their actions. The foundation for stable locus of control beliefs and self-efficacy expectations are thus laid (Egle & Hoffmann, 2000; Schwarzer, 1994; Werner, 2007).

Psychological growth, however, occurs in close connection to factors pertaining to the social environment. As such, intimate processes such as identity development, learning to live within one's body or learning to deal with sexuality take place against the background of changes in the structure of one's social network, as adolescents become more independent from their family of origin and assign an increasing significance to their relationships with peers and the opposite sex (Fend, 2001; Simmons, Rosenberg, & Rosenberg, 1973). Moreover, the long-term implications of education become apparent, as adolescents take their first steps towards choosing a profession (Fend, 2001).

From the viewpoint of health and health behaviour, the developmental tasks of identity development, testing limits and body experiences are of particular importance for adolescents' well-being and will be briefly addressed below (BMFSFJ, 2009).

### **1.1.1. Identity development**

The central task of individuals during adolescence is that of developing a personal sense of identity by providing an answer to questions of “who one is” on the different levels of available social roles, in close connection with accessible material, cultural, social, and symbolic resources. In this process, the meaning of life itself and life events is sought through the exploration of religion and spirituality as well as through the confrontation with basic emotions like fear, despair, threat, hope and optimism. The general expectation is that adolescents develop a coherent identity, understood in this context as a constant process in which individuals strive to attain an agreement between their self-perception and their personal moral and behavioural standards (Keupp, 1999). The resulting identity thus encompasses values and perceptions of who one is and what one can do. Central to the identity development process, however, is the ultimate, implicit goal of attaining and constantly renegotiating a positive self-esteem, as the premise for all action directed towards a functional management of daily life and the basis for achieving and preserving good health (Höfer, 2000).

### **1.1.2. Limit testing**

Deriving from external and internal changes, but also from the larger liberty of action granted to them, adolescents often challenge the flexibility of social norms. Given the imperative of finding their own path and position in the social system against a background of diffuse norms, freedom of choice and tolerance for alternative lifestyles, adolescents are compelled to seek and test their own and societal limits in order to grow. However, this often results in young people engaging in unhealthy behaviours ranging from smoking, practicing extreme sports, maintaining deleterious eating behaviours to petty crime or more severe forms of legal deviance (Raithel, 2001). At the end of this process, adolescents will have reached an understanding of valid social rules and will have learnt to make use of their complexity to their advantage (BMFSFJ, 2009).

### **1.1.3. Body experiences**

The onset of adolescence is intimately linked to physiological and physical changes, such as growth spurts, the development of secondary sexual characteristics and the attainment of sexual maturity. These events compel former children to reevaluate their perception of their bodies, which now become the object of close internal as well as external scrutiny. Both at a physical and psychosocial level, adolescence is marked by first attempts at immersing into the socially prescribed gender roles,



in close connection with sexual initiation. In this context, adolescents become increasingly interested in their own bodies as creative platforms, as tools of self-presentation that allow for experimenting and developing specific facets of their individual identity. The body thus alternately becomes a reason for both well-being and discomfort in the quest for self-discovery (BMFSFJ, 2009). Against this background, social norms and ideals regarding physical attractiveness play a major role in how adolescents learn to relate to their own bodies (Misoch, 2007) and deviance of any sort (e.g. disability) can become a significant source of distress.

Given the wide acceptance and positive valuation of a thin, athletic body figure in most contemporary Western societies, overweight and obesity have also become a form of directly observable, negative deviation from social beauty norms not only in adults, but also in children and adolescents (Puhl & Heuer, 2010; Puhl & Latner, 2007). Beyond the negative effects of obesity on adolescents' physical well-being, it can be argued that the incompatibility between their body shape and social ideals of physical attractiveness gives overweight and obese adolescents a sense of social inadequacy leading to significant levels of psychological and emotional distress, particularly at this sensitive stage of personality and identity development. Accordingly, the perception that one's body does not conform to societal beauty ideals was seen to elicit significant levels of psychological impairment such as stress, psycho-somatic ailments (e.g. headaches) and even depression among adolescents (Lo et al., 2009). For a better understanding of how excess weight impacts on young people's well-being, a short overview of paediatric obesity is given below and will be elaborated upon in more detail in Chapter 2 of the thesis.

### ***1.2. Obesity in children and adolescents – an overview***

The high availability of food rich in fat and sugar, along with changes in eating habits have paired with increasingly sedentary lifestyle patterns to generate a worldwide epidemic rise in the prevalence of paediatric overweight and obesity starting with the 1980s (Huybrechts, De Bourdeaudhuij, & De Henauw, 2010). Whereas mostly Western, developed countries were initially affected, overweight and obesity have rapidly spread to also become a problem in developing countries undergoing a nutritional and epidemiological transition from under- to overnutrition and from a high burden of communicable diseases to increasing rates of non-communicable conditions, respectively (Esquivel & Gonzalez, 2010; Mushtaq et al., 2011). In 2010, an estimated 43 million children were overweight or obese worldwide; among these, 35 million were living in developing countries (Wang & Lim, 2012).

Essentially, obesity is defined as a chronic condition characterized by a pathological excess of body fat resulting from an imbalance between energy intake and energy output (Kohn et al., 2006; World

Health Organization, 2014b). As behaviours developed in early life track into adulthood (Craigie, Lake, Kelly, Adamson, & Mathers, 2011), childhood obesity poses a serious threat to the health and well-being of young people both on the short and on the long term. Consistently, research shows that the chances of reversing childhood obesity in adolescence or adulthood are slim (Anzman, Rollins, & Birch, 2010; Skouteris et al., 2011).

Overall, associated health impairments have led to obesity being viewed as the 'new childhood disability' (Tsiros, Coates, Howe, Grimshaw, & Buckley, 2011). On a somatic level, paediatric obesity is accompanied by an increased risk of developing cardiovascular, metabolic and orthopaedic conditions (Daniels, 2009). Moreover, overweight and obese youth report significant limitations in their psychosocial well-being (quality of life, self-esteem, stigmatization) and mental health (increased risk of depression, anxiety and eating disorders) (Russell-Mayhew, McVey, Bardick, & Ireland, 2012).

The significant influence of genetic factors and social status variables on shaping paediatric obesity risk has been increasingly acknowledged in recent years (Gerards, Sleddens, Dagnelie, de Vries, & Kremers, 2011; Kleiser, Schaffrath Rosario, Mensink, Prinz-Langenohl, & Kurth, 2009; Kurth & Schaffrath Rosario, 2010; Tounian, 2011). However, much effort is still being invested in addressing modifiable risk factors such as young people's eating and physical activity patterns. Accordingly, most paediatric obesity therapy approaches focus on supporting children and their families to adopt healthier lifestyles, in order to achieve sustainable weight loss or weight maintenance, allowing children and adolescents to 'grow out' of their overweight (National Health and Medical Research Council, 2013; Oude Luttikhuis et al., 2009; Wabitsch & Kunze, 2013).

### ***1.3. Overweight, ethnicity and poverty among young people living in Berlin, Germany***

In Germany, 15% of all children are overweight, out of which 6.3% are obese (Kurth, 2007), with higher prevalence rates being reported for adolescents (aged 11 to 17 years), as well as young people with a low socio-economic status and migration background (Kurth & Schaffrath Rosario, 2010). German adolescents (15 to 18 years old) (23.9%), as well as young people belonging to an ethnic minority group (30.1%) also appear to be particularly susceptible to poverty (BMFSFJ, 2008). The German Health Behaviour in School-Aged Children (HBSC) study further revealed that children with a low socio-economic position are more often bullying victims compared to their peers (Erhart et al., 2008). Implicitly, these results point to an increased risk for structurally disadvantaged children to become both obese and peer discrimination victims.

Apart from increasing obesity risk, low socio-economic position and migration background pair with overweight status in decreasing the overall well-being of female students (10 to 15 year-old) in

Berlin (Bau, Sannemann, Ernert, & Babitsch, 2011). Moreover, children and adolescents living in the German capital tend to report lower quality of life levels compared to national reference values, as indicated by the HBSC study results (Bettge et al., 2008).

This might not come as a surprise considering the fact that, similarly to the situation in most East-German federal states, poverty rates among children and adolescents in Berlin and Brandenburg tend to be higher than the federal average, reaching levels of 19% and 25%, respectively in 2008 (BMFSFJ, 2008). In 2011, 17.8% of children and adolescents living in Berlin were at risk of poverty, with particularly higher odds being reported for children who were raised by single parents or had more than one sibling, as well as for adolescents living alone (Senatsverwaltung für Gesundheit und Soziales, 2014). Also, of all German federal states, Berlin reported the highest percentage of children under 15 years old who relied on social welfare (33.1%) at the end of 2013 (Bremer Institut für Arbeitsmarktforschung und Jugendberufshilfe, 2014). At the same time, the results of the Social Atlas published by the Berlin Senate in 2014 pointed to a sharpening of the wealth gap between rich and poor regions in the German capital. This poses a significant threat to the health of vulnerable populations such as children and adolescents, who made up 14.8% of the population of Berlin in 2011 (Senatsverwaltung für Gesundheit und Soziales, 2014).

According to recent reports, every fourth inhabitant of Berlin had a migration background in 2011, compared to every 20<sup>th</sup> inhabitant in the surrounding federal state of Brandenburg (Amt für Statistik Berlin-Brandenburg, 2012). Official registration data from 2007 showed that more than 40% of children and adolescents younger than 15 years old and 37.1% of 15 to 17-year-olds living in Berlin had a migration background (Bömermann, Rehkämper, & Rockmann, 2008). Similarly, 39.2% of the first graders who participated in the 2012 Berlin School Entry Examination had a migration background compared to 37.2% in 2011 (Senatsverwaltung für Gesundheit und Soziales, 2013). The 2012 School Entry Examination also revealed higher rates of overweight and obesity among children with a migration background. The prevalence of overweight and obesity was particularly high among Turkish (20.8%) and Arab (16.7%) children both when compared to German children (6.8%) and the global cohort (9.9%) (Senatsverwaltung für Gesundheit und Soziales, 2013). Previous reports had shown that children with migration background were more often extremely obese and older by the time they accessed obesity care in a specialized setting compared to their German peers (Senatsverwaltung für Gesundheit, 2007).

Based on their vulnerability to both poverty and overweight, adolescents living in Berlin and its surrounding areas appear to be particularly suitable for research on the psychosocial correlates of overweight in this population. Moreover, the great ethnicity mix of people living in the Berlin-

Brandenburg metropolitan region warrant the ethnic diversity of adolescent samples drawn from this area.

#### **1.4. Study rationale**

Of all inter-individual differences, variation in physical appearance is arguably among the most conspicuous and readily identifiable. As a result, physical differences have traditionally formed the basis of stigmatization and discriminatory behaviour. The clearest examples of biologically based stigmatization can be found in racial and sex relationships in most societies worldwide (David, Johnson, & Martinez, 2001).

Against the background of the contemporary obesity epidemic, weight and body size are becoming a pervasive ground for discrimination (Puhl & Heuer, 2010). Weight status also appears to pair with other types of stigma (e.g. race, gender, SES) in making overweight and obese youth disproportionately more vulnerable to all forms of victimization compared to their leaner peers (Bucchianeri, Eisenberg, & Neumark-Sztainer, 2013). In Germany, evidence even suggests that overweight children are the population most likely to be subjected to weight stigmatization (Sikorski, Luppá, Brahler, König, & Riedel-Heller, 2012).

Negative stereotyping of overweight individuals has been identified in a variety of life circumstances such as education, healthcare and research settings, as well as one's working environment and family (Puhl & Latner, 2007; Richmond, Austin, Walls, & Subramanian, 2012; Swift, Hanlon, El-Redy, Puhl, & Glazebrook, 2013). Accordingly, not only the general public, but also obesity health specialists describe overweight individuals in terms of socially undesirable features such as unattractiveness, laziness, lack of motivation, self-discipline and control, lower intellectual abilities and competence levels (Friedman et al., 2005; Schwartz, Chambliss, Brownell, & al, 2003). Discrimination usually follows.

Negative attitudes toward overweight tend to develop and become manifest as early as preschool age (Puhl & Brownell, 2006). In this respect, negative weight-related prejudice can be observed even among 3-year-olds, whereas a general weight bias develops by age 8 (Puhl & Brownell, 2001). As such, children tend to develop negative feelings and associations with regard to their obese peers from a very young age (Koroni, Garagouni-Areou, Roussi-Vergou, Zafiropoulou, & Piperakis, 2009; Latner & Stunkard, 2003). Moreover, the extent of social status loss experienced by obese children among their peers appears to have increased over the past four decades (Latner & Stunkard, 2003). Regarding manifest stigma, overweight children have a higher risk for peer victimization, irrespective of their social status, race, gender and ethnicity (Lumeng et al., 2010). More precisely, Lumeng and his colleagues showed that the probability of being bullied compared to their peers

was 13% and 63% higher for overweight and obese children, respectively. Analyses stratified by gender showed that being overweight increased the risk of being bullied by 75% in boys and 89% in girls, whereas the risk almost doubled in obese boys and increased by 174% in obese girls (Brixval, Rayce, Rasmussen, Holstein, & Due, 2012).

However, there is evidence of girls and boys being affected by such phenomena to a different extent. Since being overweight does not present them with any relative advantage over their peers, obese girls were shown to have up to a four-fold higher risk of being teased and discriminated against compared to normal-weight girls or obese boys (Griffiths, Wolke, Page, & Horwood, 2006; Wiegand, 2007). This can be partly explained by gender differences in cultural body ideals in Western societies, subjecting women to a culture of thinness and men to a culture of muscularity (Agliata & Tantleff-Dunn, 2004). In this context, the thin beauty ideal not only explains obese girls' increased risk of being bullied, but also increases the negative psychosocial consequences of bullying at an individual level (Wiegand, 2005).

Their loss of social status coupled with physical functioning limitations associated with excess weight leads to impairments in overweight and obese children and adolescents' health-related quality of life, as compared to their normal-weight peers (Poeta, Duarte Mde, & Giuliano Ide, 2010; Tsiros et al., 2009; Varni, Limbers, & Burwinkle, 2007a). Quality of life impairments among obese children and adolescents were recorded on both physical and psychosocial levels (Swallen, Reither, Haas, & Meier, 2005; Wille et al., 2010).

Even the mere self-perception as being overweight leads to a significant reduction in children and adolescents' quality of life (Kurth & Ellert, 2008). In this context, repeated weight-based teasing and criticism have lasting negative psychological effects on the development of preadolescents' perception of their bodies. These deleterious consequences range from eating disorders to an increased tendency towards internalization, decreased self-esteem, increased dissatisfaction with personal appearance and even suicidal ideation (Nelson, Jensen, & Steele, 2010).

Against this background, the high global prevalence of overweight and obesity in children and adolescents points to the need to assess the effects of weight stigma and discrimination in this population. It is argued that once the magnitude of the problem is established, its deleterious consequences can be targeted and addressed more efficiently and at a younger age, thus enabling individuals to develop healthy coping mechanisms and prevent long-term self-perception damage. Yet weight-bias and its effects remain under-researched in most areas of the world.

The present study therefore aims at identifying the extent to which overweight adolescents presenting for therapy at a specialized outpatient clinic in Berlin, Germany experience and

internalize weight-based stigma and how this affects their quality of life. Given the existing differences in social expectations for boys and girls to be thin (Rees, Oliver, Woodman, & Thomas, 2011; Turnbull, Heaslip, & McLeod, 2000), gender differences in participants' experience and internalization of weight-based stigma will be looked into. The proposed study also aims to establish the extent to which the Weight Bias Internalization Scale (WBIS) developed by Durso and Latner (2008) for adult populations can be adapted and used as a specific measure in German adolescents. As such, the validity and reliability of this scale will be assessed in the study population.

Formally, the present study seeks to provide answers to the following research questions:

- To what extent do overweight adolescent boys and girls accessing therapy at an obesity clinic in Berlin, Germany experience and internalize weight stigma and how does this affect their quality of life?
- Can an adapted form of the Weight Bias Internalization Scale (WBIS) be used as a valid and reliable measure of weight bias internalization among German adolescents?

### **1.5. Thesis structure**

The following chapter (Chapter 2. Literature review) begins with a detailed overview of the definition, epidemiology (prevalence and risk factors), consequences and therapy of paediatric obesity among German children and adolescents. Subsequently, given their particular relevance for the study topic, the concepts of health-related quality of life, self-esteem, body image and locus of control, as well as potential resources (self-efficacy, social support and family climate) are defined and current evidence on their particular relevance in the context of child and adolescent overweight and obesity is reviewed. Next, theories and current findings on the key dimension of weight-based stigmatization are described in a separate section of Chapter 2. Based on the presented evidence, the chapter concludes with a detailed overview of the research aims and hypotheses guiding the proposed study.

Further, Chapter 3. Methodology provides information on the mixed-method study design that was chosen in order to address the research question, aims and hypotheses. Since both quantitative and qualitative methods were used, quality criteria, as well as sampling strategies, research instruments, data collection and analysis procedures specific to each method are described separately, followed by the description of how both data sources were triangulated. Information is also given with respect to the ethical principles guiding the data collection and analysis. Moreover, study limitations deriving from the presented methodological choices are acknowledged.

Chapter 4. Results begins with the presentation of the statistical validation procedures for the adapted German version of the Weight Bias Internalization Scale (WBIS). The quantitative data are

then presented at a descriptive level, followed by bivariate and regression analyses required for testing the study hypotheses. In the next section, the qualitative study results are presented along the main categories and sub-categories identified in the data analysis. The chapter concludes with the presentation of results from the triangulation of qualitative and quantitative data.

An interpretation of the study findings is then provided in Chapter 5. Discussion. The previously described results are compared and contrasted with the reviewed literature and a critical assessment of data support for the proposed hypotheses is presented.

Chapter 6. Conclusions and Recommendations summarizes the main results, underlining the strengths and weaknesses of the present study. Moreover, specific recommendations for further research and practice are presented in light of the study findings.

## Chapter 2. Literature review

In order to provide a comprehensive overview of all relevant aspects surrounding the research topic, the present literature review starts at a general level, focusing on the main epidemiological features of paediatric obesity in Germany, i.e. its definition, prevalence, risk factors, health implications and therapy. Subsequently, literature on relevant psychosocial factors in the context of childhood overweight and obesity (i.e. health-related quality of life, self-esteem, body image, locus of control, self-efficacy, social support and family climate) is summarized. The third section provides an extensive overview of weight stigma dimensions, theories, contexts, agents and management strategies with a particular focus on children and adolescents. The chapter concludes with the indication of the knowledge gap targeted by the present study, along with the study aims and hypotheses.

### ***2.1. Overweight and obesity among German children and adolescents***

#### **2.1.1. Definition**

The World Health Organization defines obesity as a pathological increase in the proportion of body fat (World Health Organization, 2014b). Accordingly, obesity has been classified under endocrine, nutritional and metabolic diseases (E66) in the 10<sup>th</sup> revision of the International Classification of Diseases (ICD-10) catalogue (World Health Organization, 2014a). Based on its etiology, another definition equates obesity with an imbalance between energy intake and energy expenditure (Kohn et al., 2006).

The percentage of body fat can only be accurately assessed with the aid of complex and costly methods such as dual energy X-ray absorptiometry (DEXA), densitometry and magnetic resonance imaging (MRI). However, several simpler methods for determining body fat mass such as ultrasound examinations, bioelectrical impedance analysis (BIA), measuring skinfold thickness or calculating the body mass index (BMI) are also available (Wabitsch & Kunze, 2013). Although less sensitive than other measurements, the body mass index ( $BMI = \text{weight} / \text{height}^2$ ) has been recognized as a valid obesity indicator and has become the standard in assessing weight status and its development in both adults and paediatric populations (Cole, Bellizzi, Flegal, & Dietz, 2000). The main reason for this is that BMI assessments are minimally invasive, easy, inexpensive and hence suitable for routine medical practice, as well as for epidemiological and clinical research. Moreover, the BMI displays strong associations with body fat and related health risks (Wang, 2004).

In Germany, the Child and Adolescent Obesity Work Group (AGA) of the German Obesity Society (DAG) recommends using the BMI for overweight and obesity screening among children and



adolescents. For establishing individual risk, the assessment of additional criteria is necessary (Wabitsch & Kunze, 2013). Consequently, in clinical and research practice, weight status in paediatric populations is primarily assessed based on the German national age and gender specific BMI reference values developed by Kromeyer-Hauschild and colleagues (Kromeyer-Hauschild et al., 2001). Based on this definition, children and adolescents whose BMI exceeds the 90<sup>th</sup> or the 97<sup>th</sup> percentile of their respective age and gender specific growth curve are considered overweight or obese, respectively. Severe obesity is defined as having a BMI value that is higher than the 99.5<sup>th</sup> percentile of children and adolescents' age and gender specific growth curves (Kromeyer-Hauschild et al., 2001).

Although a reference system for assessing BMI levels developed based on data from the German Health Interview and Examination Study for Children and Adolescents (KiGGS) might prove useful for establishing longitudinal trends and for baseline result comparison in future epidemiological studies, the maintenance of the Kromeyer-Hauschild original reference system for the definition of overweight and obesity has been recommended, in order to avoid an artificial underestimation of prevalence rates (Kurth & Schaffrath Rosario, 2010).

### **2.1.2. Prevalence**

At a global level, the World Health Organization (WHO) reports the highest childhood overweight prevalence rates of up to 30-40% in the American and Eastern Mediterranean regions (Wang & Lim, 2012). Among European children and adolescents, approximately 20 to 30% are overweight or obese, with higher rates being reported for young people living in Southern Europe and the British Isles (Lien, Henriksen, Nymoen, Wind, & Klepp, 2010; Wang & Lim, 2012). While recent evidence suggests that paediatric obesity rates have reached a plateau level in many Western countries (Lien et al., 2010; Olds et al., 2011), the absolute figures of the obesity epidemic are still alarming and continue to rise in other parts of the world (Armstrong, Lambert, & Lambert, 2011; Gupta et al., 2011; Kowal, Kryst, Sobiecki, & Woronkiewicz, 2013).

In Germany, the main sources of information on the prevalence of overweight and obesity children and adolescents are regular school entry examinations (for children aged 5,5-7 years), the Health Behaviour in School-Aged Children study (HBSC) and the KiGGS study (Kurth & Schaffrath Rosario, 2010). However, the most reliable data set appears to be that of the KiGGS study, since it is based on a nationally representative sample and objective weight and height measurements. According to the KiGGS data, approximately 15% of 2 to 17-year-olds in Germany are overweight, of which 6,3% are obese (Kurth, 2007).

School entry examination further illustrate regional variations in the prevalence of overweight and obesity, most obvious in a North-South divide, with higher paediatric overweight rates in Northern Germany (Moss, Wabitsch, Kromeyer-Hauschild, Reinehr, & Kurth, 2007; Schaffrath Rosario & Kurth, 2009). These differences, however, should be viewed with caution, since key methodological factors (e.g. development of age groups and their association with specific reference values, time and regional variation in the age distribution of considered samples) can generate result artefacts, leading to prevalence under- and overestimation (Schaffrath Rosario & Kurth, 2009).

Consistent with a general trend in Western Europe (Lien et al., 2010), school entry examinations provide evidence that overweight and obesity rates in German children and adolescents have stagnated over the past years (Moss et al., 2007). Notwithstanding this positive development, the high current percentage of overweight youth, along with a trend toward rising prevalence rates among adolescents (Moss et al., 2007) are still a reason for concern and call for sustained preventive and therapeutic efforts.

### **2.1.3. Risk factors**

As research on childhood obesity evolved over time, associated risk and protective factors have been identified at the level of children's early life experiences and exposures, their behaviours and lifestyle, as well as in their social circumstances (Kleiser et al., 2009). The first category includes a broad range of risk factors, such as children's genetic make-up, maternal weight status prior to or during pregnancy, maternal smoking and high weight gain during pregnancy, gestational diabetes, as well as the child's rapid weight gain during the first year of life, associated with infant feeding practices and a subsequent early adiposity rebound (the second rise in child BMI, occurring around the age of 6) (Brisbois, Farmer, & McCargar, 2012; Reinehr & Wabitsch, 2011; Robinson, Yardy, & Carter, 2012; Tounian, 2011; Weng, Redsell, Swift, Yang, & Glazebrook, 2012). On the other hand, high calorie intake along with low physical activity levels, high media use and insufficient sleep are the most widely recognized lifestyle factors shaping overweight risk among children and adolescents (Beyerlein, Toschke, Schaffrath Rosario, & von Kries, 2011; Liu, Zhang, & Li, 2012). From a structural perspective, paediatric obesity was found to be influenced by children's socio-economic situation, ethnic minority status and implicitly their home environment, including parental attitudes, perceptions and child rearing practices (Skouteris et al., 2011; Strauss & Pollack, 2001; Wang & Lim, 2012).

Despite having lower prevalence levels, Germany seconds the USA in displaying the highest absolute and relative social inequalities in overweight prevalence rates (i.e. highest difference and high-

est ratio between overweight prevalence among HBSC participants with the highest vs. lowest family affluence levels) (Due et al., 2009). Based on school entry examinations data at a national level, but also on analyses at the individual therapy setting level, socio-economic position and migration background appear to be strong determinants of paediatric obesity and associated comorbidities in Germany (Dannemann, Ernert, Rucker, Babitsch, & Wiegand, 2011; Moss et al., 2007).

It is therefore not surprising that of all potential risk and protective factors, the main predictors of overweight in the nationally representative sample of the KiGGS study were parental overweight and low SES (Kleiser et al., 2009). Other risk factors for obesity were also more prevalent among less affluent youth. Having a migration background was only a risk factor for children between the ages of 3 and 13, while longer sleep duration was protective against overweight only for children younger than 10 years old. Early life factors such as maternal smoking and high weight gain during pregnancy in normal weight mothers, as well as high birthweight also played a significant role in predicting overweight in later childhood and adolescence. The only behavioural indicator with a significant impact on weight status was media use. Other factors such as breastfeeding, high levels of physical activity and low intake of high caloric foods had a protective effect in relation to paediatric overweight in independent analyses, but lost in significance when other factors were considered (Kleiser et al., 2009).

Adding more detail to the analyses of Kleiser and colleagues (2009), Beyerlein and colleagues (2011) found that maternal overweight and smoking during pregnancy as proxy lifestyle indicators for both mother and child played a significant role in the development of overweight in children aged 3 to 10 years old. On the other hand, parental SES appears to have a stronger impact on the onset of overweight among adolescents. It was suggested that, compared to their better-off peers, teenagers with low SES lack the necessary motivation and resources to effectively tackle their weight gain. Moreover, given their already marginalized social position, low SES adolescents might not adhere to the thin body ideal as opposed to their peers from more affluent social strata. Overall, larger effects of obesity risk factors with increasing BMI were identified among 3 to 17-year-old participants in the nationally representative KiGGS survey (Beyerlein et al., 2011).

A negative association between family affluence and obesity risk ( $OR=0.53$  for high vs. low,  $CI: 0.38-0.75$ ) and a positive association of sedentary behaviour levels with obesity risk ( $OR=1.37$  for high vs. low,  $CI: 1.06-1.77$ ) were also reported by Mikolajczyk & Richter (2008) based on the results of the German 2001/2002 HBSC study. Moreover, the odds of being obese were higher for girls who had been bullied at school when compared to their male counterparts and female peers who had not experienced bullying in school ( $OR=4.5$  and  $OR=10.5$ , respectively) (Mikolajczyk & Richter, 2008).

As far as protective factors are concerned, female gender, younger age, higher educational attainment and higher SES were associated with a higher probability to lead a healthy lifestyle (Kuntz & Lampert, 2013). Also, when controlling for age, type of schooling (e.g. vocational or general secondary schools) and SES, migrant teenagers were more likely to have a healthy lifestyle compared to their German peers. This association was mostly driven by lower consumption of tobacco and alcohol, whereas electronic media use was more frequent in migrant boys, and migrant girls had lower levels of physical activity (Kuntz & Lampert, 2013). An indicator of physical activity, time spent outdoors was found to be higher among German 3 to 14-year-olds living in a one or two-family house, as well as among youth with lower SES and non-migrant ethnic background (Conrad et al., 2013). However, the surprising negative association between time spent outdoors as an indicator of physical activity and low SES as an obesity risk factor was not explicitly discussed.

#### **2.1.4. Consequences for young people's health and well-being**

Given its high prevalence and negative impact on children and adolescents' health status, paediatric overweight ranks high on the agenda of health care practice and policy-making in Germany. Its consequences have already been observed at the health system level, as overweight youth generate higher costs for physician visits compared to their leaner peers. Although no significant association between overweight and higher total healthcare costs was identified, no nationally representative data are currently available on the use of rehabilitation services, a potentially significant cost factor in the case of obese children (Wenig, 2012).

Beyond financial aspects, however, current evidence consistently illustrates obesity-related physical and psychosocial health impairments among German children and adolescents. A nationally representative analysis of data collected from children and adolescents accessing obesity care (Evaluation of therapy approaches for obese children and adolescents - EvAKuJ study) found that more than half (51%) suffered from obesity-related comorbidities (Hoffmeister, Molz, et al., 2011).

##### **2.1.4.1. Physical health impairments**

Whereas orthopaedic functional limitations such as decreased mobility and lower extremities malalignment are more conspicuous consequences of paediatric obesity, being obese also fosters an increased risk for severe metabolic and cardiovascular conditions (Daniels, 2009). In this respect, data from the KiGGS study illustrate a consistent association between cardiovascular risk factors (e.g. elevated blood pressure, low HDL-cholesterol, high LDL-cholesterol) and overweight status among German boys and girls in the general population (Kleiser et al., 2011; Neuhauser, Rosario, Thamm, & Ellert, 2009). This association is even stronger when comparing the distribution of

cardiovascular risk factors among children and adolescents accessing obesity care to the risk profiles of their normal-weight peers in the general population (Flechtner-Mors et al., 2011; Flechtner-Mors et al., 2012). For instance, high blood pressure was 5.8 times more frequent in obesity patients aged 1 to 18 years than in normal-weight youth in the general population (Flechtner-Mors et al., 2012). When looking at the group of older children and adolescents (age range 8-17 years), the frequency of elevated blood pressure values was 7 times higher in youth accessing obesity care compared to their lean peers in the general population (Flechtner-Mors et al., 2011). However, evidence suggests that appropriate treatment can decrease levels of hypertension in overweight and obese children and adolescents, while other cardiovascular risk factors (e.g. serum lipid levels) appear to be more stable over time, despite therapeutic intervention (Reinehr et al., 2013).

A strong association has been observed between cardiovascular conditions and non-alcoholic fatty liver disease (NAFLD) in the paediatric population in Germany. Among German overweight and obese youth, up to 30% display symptoms of NAFLD, ranging from liver fat infiltration to inflammation, which in turn can lead to fibrosis and cirrhosis on the long term (Denzer, 2013). In general, the development of NAFLD in children and adolescents is shaped by factors such as age, gender, insulin resistance, sex steroids and ethnicity (Denzer, 2013). Studies on clinical patient cohorts found an overall NAFLD prevalence of 11%, with higher risk being reported among German boys and extremely obese youth (Wiegand et al., 2010).

BMI levels also strongly correlate with insulin resistance and fasting insulin levels among German overweight and obese youth, irrespective of age and gender (Bluher et al., 2013). Pathological levels of glucose intolerance were observed in 25% of overweight and obese children and adolescents, whereas a type 2 diabetes mellitus prevalence of nearly 5% was reported in this population (Boehm et al., 2009). In the course of therapy, fasting glucose and glucose tolerance impairments appear to be relatively stable on the middle term (median follow-up of 1.2 years) (Reinehr et al., 2013).

Overall, low prevalence rates of the metabolic syndrome of 1.6% and 2.3% were reported in the general population of German children and adolescents, respectively (Haas, Liepold, & Schwandt, 2012). However, a metabolic syndrome prevalence of up to 32.3% was found in children and adolescents accessing obesity therapy (Dannemann, Ernert, Rucker, Bau, et al., 2011). Higher risk for developing the metabolic syndrome was associated with increasing age and degree of obesity, as well as Turkish ethnicity (Dannemann, Ernert, Rucker, Babitsch, et al., 2011; Dannemann, Ernert, Rucker, Bau, et al., 2011; Rank et al., 2013).

#### 2.1.4.2. Psychosocial health impairments

Paediatric obesity has also been associated with poor mental health and emotional well-being, as

overweight and obese youth report lower quality of life, lower self-esteem, higher rates of depression and anxiety symptoms, eating disorders, as well as being bullied or marginalized more often compared to their normal-weight peers (Russell-Mayhew et al., 2012). Moreover, multiple psychosocial symptoms tend to cluster among overweight and obese youth (Gibson et al., 2008). Consistently, an analysis of data from the nationally representative KiGGS study revealed that 9,9% of German, obese children and adolescents reported pathological levels of emotional, behavioural, hyperactivity and peer problems. This percentage increased to 20,9%, if further comorbidities were present (Erhart, Weimann, Bullinger, Schulte-Markwort, & Ravens-Sieberer, 2011).

Data from the KiGGS study also suggest that overweight and obesity are associated with lower quality of life among children and adolescents. Compared to their normal-weight peers, obese children and adolescents in the community reported problems in terms of their physical and emotional well-being, self-worth, peer relationships and school performance (Holling, Schlack, Dippelhofer, & Kurth, 2008). Moreover, gender differences with regard to quality of life among overweight and obese youth were observed. Whereas only obese boys reported lower quality of life compared to their normal-weight peers, this was the case for both overweight and obese girls. Furthermore, girls' quality of life seems to be affected by overweight and obesity irrespective of their SES or educational achievement. In boys, low SES appears to moderate the relationship between overweight and health-related quality of life, while high SES was found to influence the relationship between health-related quality of life and obesity (Krause, Ellert, Kroll, & Lampert, 2014). More detailed analyses by gender showed that, as opposed to boys, girls' emotional well-being is not impaired compared to their non-obese peers in the general population (Holling et al., 2008).

However, compared to youth in the general German population, children and adolescents accessing obesity care in Germany display even higher quality of life impairments and psychological distress. Accordingly, one third of the paediatric obesity patient cohort assessed in the multi-center, national EvAKuJ study reported increased levels of psychosocial problems. Regarding their quality of life, obese youth in the considered clinical sample had lower values than the population norm, particularly in terms of their physical well-being and self-perception, but also with regard to their psychological well-being, autonomy and relationship with their parents, social support and peer relationships (Hoffmeister, Bullinger, et al., 2011).

In dealing with their condition, overweight and obese children and adolescents report significantly lower personal, familiar and social resources compared to their healthy peers (Holling et al., 2008). When considering both genders separately, KiGGS data reveal that obese girls do not differ from

their non-obese peers in terms of their personal resources. Obese boys, on the other hand, reported lower availability of all personal, familiar and social resources recorded in the KiGGS study compared to non-obese boys in the general population (Holling et al., 2008).

### **2.1.5. Therapy**

The current golden standard in the therapy of paediatric obesity is multilevel behavioural intervention, targeting dietary and physical activity/sedentary lifestyle patterns (Oude Luttikhuis et al., 2009). Whenever expected benefits outweigh associated risks, further therapeutic options such as pharmacotherapy or bariatric surgery are available for young people whose severe co-morbidities persist despite lifestyle change or who have failed to complete a formal behavioural therapy program (Oude Luttikhuis et al., 2009; Zwintscher, Azarow, Horton, Newton, & Martin, 2013). Although obesity care is mainly provided in outpatient settings, immersion or inpatient therapy has started gaining momentum, as a means of attaining significant short-term physical and mental health improvements (Kelly & Kirschenbaum, 2009).

In line with international standards, the AGA recommends that the therapy of paediatric obesity should be a long-term, goal-oriented process, whose ultimate aim is to elicit a sustainable change in the nutrition and physical activity patterns of both patients and their immediate social contacts. Combined, multidisciplinary therapy programs with parental support should be preferred over other therapy forms and should be available to all 6 to 17-year old obese youth affected by comorbidities. Inpatient therapy is only indicated for the treatment of severe comorbidities, for increasing individual therapy motivation, or if patients require more intensive counselling than would be feasible in an outpatient setting (Wabitsch & Kunze, 2013).

Medication can be prescribed for obese paediatric patients with severe comorbidities, in case regular therapy does not prove successful over 9 to 12 months. Bariatric surgery can be considered as the last resort for extremely obese adolescents (girls older than 13 years and boys older than 15 years old) suffering from severe comorbidities. Bariatric surgery must be performed in specialized clinics and patients should receive continuous, long-term multidisciplinary care after undergoing the surgical procedure (Wabitsch & Kunze, 2013).

#### **2.1.5.1. Characteristics of paediatric obesity clinical samples in Germany**

In general, the composition of clinical samples varies by degree of overweight, age and gender. However, the majority of children and adolescents accessing obesity care are obese or extremely obese, with overweight children and adolescents representing a relatively less numerous patient category (Dannemann, Ernert, Rucker, Bau, et al., 2011; Reinehr et al., 2013; Wiegand et al., 2010).

Regarding the distribution of therapy approaches in Germany, the nation-wide observational EvAKuJ study showed that 55% of patients in the study cohort had received care in an outpatient centre, whereas 45% had accessed therapy in an inpatient setting. On average, patients included in the study had accessed care in the selected therapy settings for 6 months. On therapy beginning, patients were aged 12.6 years on average, had a mean BMI-SDS of 2.43 and the majority were female (57%). A total of 13.8% of the study cohort had a migration background, defined as at least two family members (mother, father or the patient himself/herself) having been born abroad. In terms of weight status, 85% of patients were obese, out of which 37% were extremely obese (Hoffmeister, Molz, et al., 2011).

Similar results were obtained in the longitudinal analysis of data from 21784 patients attending care in 129 obesity centres in Germany, Austria and Switzerland. At baseline, 86% of all patients were obese (out of which 42% extremely obese) and had a mean age of 12.6 years (Reinehr et al., 2009). In another large patient cohort (N=16,390), with a mean age of 12.4 years and a majority of boys (58%), 46% of all patients were obese and 35% were extremely obese (Wiegand et al., 2010). Moreover, data from the obesity unit of the Interdisciplinary Socio-paediatric Care Centre at the Charité - Universitätsmedizin Berlin consistently show that the majority of patients accessing care in this setting are extremely obese (>40%), followed by obese and overweight youth (Dannemann, Ernert, Rucker, Bau, et al., 2011; Senatsverwaltung für Gesundheit, 2007).

Regarding socio-demographic variables, families included in the nationally representative patient cohort of the EvAKuJ study had a lower SES compared to the national average. The low percentage of children with migration background in the study cohort compared to the high obesity prevalence rates reported for this group in the general population points to their underrepresentation in therapeutic settings (Hoffmeister, Molz, et al., 2011).



## ***2.2. Psychosocial correlates of overweight and obesity in children and adolescents***

Given their key role in the present study, the main psychosocial correlates of paediatric overweight and obesity will be addressed in more detail in the following sections. To this end, a theory-driven overview of the current evidence on health-related quality of life, self-esteem, body image, locus of control in their association with paediatric overweight will be provided. Moreover, relevant literature on self-efficacy, social support and family climate as potential resources for overweight children and adolescents will also be reviewed.

### **2.2.1. Health-related quality of life (HRQoL)**

#### **2.2.1.1. Theoretical background**

As the WHO definition of health expanded beyond physical and somatic functionality to also include components of mental and emotional well-being, HRQoL emerged as a salient indicator in evaluating health status (Ingerski et al., 2010). Due to significant advances in reducing child mortality, HRQoL has also been increasingly used in describing the health of chronically-ill children (Varni et al., 2007a).

HRQoL is a multidimensional construct of subjective health perception. As such, HRQoL can be defined as individuals' subjective evaluation of their physical, emotional, mental, social and behavioural well-being and function. Typically, measures of HRQoL comprise a physical, a psychological-emotional and a social component. In the context of chronic conditions, HRQoL is a measure of adjustment, developed on the basis of two scientific perspectives: the psychological concept of well-being and function research from the rehabilitation sciences (Holling et al., 2008). In research on paediatric populations, it is recommended that HRQoL be measured through self-report instruments (Erhart, Ellert, Kurth, & Ravens-Sieberer, 2009; Varni, Limbers, & Burwinkle, 2007b). However, some argue in favour of using both children self-report and parental proxy assessments, since this allows for the collection of a comprehensive evaluation of the child's HRQoL at a given point in time, based on his/her own perceptions and on parents' external appraisal of their child's well-being (Tsiros et al., 2009). Although moderate agreement between child and parent reports has been observed, parents of chronically-ill children tend to report lower HRQoL values than children themselves (Erhart, Ellert, et al., 2009; Hughes, Farewell, Harris, & Reilly, 2007; Pinhas-Hamiel et al., 2006; Tsiros et al., 2009).

#### **2.2.1.2. Overweight children and adolescents' quality of life and its correlates**

Generally, when compared to normal-weight youth, overweight/obese children report lower HRQoL scores (Poeta et al., 2010; Tsiros et al., 2009; Varni et al., 2007a). There is also evidence that obese

children display a reduced HRQoL also compared to other chronically-ill children (Ingerski et al., 2010; Warschburger, 2005). A study of Australian adolescents even found that overweight and obese youth were willing to trade off 2.3% and 6.8% of their lives, respectively, for the better HRQoL associated with healthy weight (Keating, Moodie, Richardson, & Swinburn, 2011). Although the domains of highest obesity-related impairment remain subject to debate, studies illustrate a decrease in HRQoL on both its physical and psychosocial dimensions among overweight children (Swallen et al., 2005; Tsiros et al., 2009; Wille et al., 2010). Often, overweight and obese youth report relatively lower HRQoL values with regard to their physical well-being and self-perception (Ottova, Erhart, Rajmil, Dettenborn-Betz, & Ravens-Sieberer, 2012).

In trying to establish whether the impact of obesity on HRQoL follows a linear gradient, research results are controversial. Whereas some studies only demonstrated a deleterious effect of obesity on young people's HRQoL (Lee, Cheah, Chang, & Siti Raudzah, 2012), others also pointed to a negative impact of being overweight on how children and adolescents perceive their HRQoL (Friedlander, Larkin, Rosen, Palermo, & Redline, 2003). However, HRQoL differences were noted between overweight, obese and severely obese youth. For instance, lower global, physical and psychosocial HRQoL values were found in obese children compared to their overweight peers (Shoup, Gattshall, Dandamudi, & Estabrooks, 2008). In a clinical sample, severely obese youth reported lower HRQoL on the anger, mobility and fatigue dimensions, whereas their HRQoL impairments related to anxiety, peer relationships and upper extremity were not different than those of their overweight and obese peers (Selewski et al., 2013). Moreover, in the case of severely obese children, HRQoL impairment levels were found to be similar to those of paediatric cancer patients undergoing chemotherapy (Schwimmer, Burwinkle, & Varni, 2003). Consistent with these findings, 30% of a sample of severely obese children/adolescents presenting for bariatric surgery reported clinically significant signs of depression (Zeller, Roehrig, Modi, Daniels, & Inge, 2006).

Some of the well-being impairments immediately related to obesity refer to decreased mobility and increased risk for developing chronic conditions such as Type II Diabetes, cardiovascular diseases and osteoarthritis. It is also suggested that the presence of concurrent health problems such as pain, symptoms of impaired breathing during sleep or liver disease leads to a further HRQoL decline among obese youth (Buttitta, Iliescu, Rousseau, & Guerrien, 2014; Carno et al., 2008; Hainsworth, Davies, Khan, & Weisman, 2009; Kistler et al., 2010; Nadeau et al., 2011).

Beyond and linked to these physical aspects, obese children's HRQoL is also reduced by psychosocial factors such as bullying, social exclusion, negative self-image, mental health disorders or parenting stress (Buttitta et al., 2014; Guilfoyle, Zeller, & Modi, 2010; Holling et al., 2008; Janicke et al., 2007;

Warschburger, 2005). For instance, the association between high BMI and low generic parent-reported HRQoL was mediated by symptoms of psychopathology in a Norwegian clinical paediatric obesity sample (Steinsbekk, Jozefiak, Odegard, & Wichstrom, 2009). Similarly, the association of BMI with self-reported psychosocial HRQoL was mediated by global self-concept and body dissatisfaction in a community sample of American preadolescents (Wallander et al., 2009).

Regarding behavioural factors, a general positive association between HRQoL and physical activity was identified in American paediatric overweight samples (Selewski et al., 2013; Shoup et al., 2008). Similarly, in a study conducted on an exclusively female sample of 10 to 15 year-old Berlin students, HRQoL significantly decreased with overweight or obese status, as well as with both low physical activity levels and unfavourable eating behaviour (Bau et al., 2011).

Higher age, low socio-economic position and two-sided migration background were also associated with decreased HRQoL values in this cohort of female students (Bau et al., 2011). Consequently, as previously suggested in adult studies, the impact of obesity on the HRQoL of children has to be placed in a cultural context, since different, (sub-)culture-specific views of ideal body types, in general, and of obesity, in particular, can influence individual health perceptions (Fallon et al., 2005; Nadeau et al., 2011).

Nevertheless, obesity was shown to affect children's HRQoL irrespective of cultural milieu (Zeller & Modi, 2006). Moreover, in the general German child and adolescent population, perceived overweight status was shown to elicit higher HRQoL impairments than objectively measured overweight status (Kurth & Ellert, 2008). This finding was supported by a study comparing youth accessing obesity care to a community sample (Finne, Reinehr, Schaefer, Winkel, & Kolip, 2013).

In a German sample of obese children and adolescents (mean age=12 years) undergoing inpatient rehabilitation, HRQoL was lower in adolescents and girls and was mainly driven by high levels of stress, coping and low social support (Ravens-Sieberer, Redegeld, & Bullinger, 2001). Girls also reported a lower HRQoL than boys in a community sample of American adolescents, despite having lower average BMI levels than their male counterparts (Nadeau et al., 2011).

Overall, evidence points to better quality of life and self-esteem values among obese children and adolescents in the general population compared to those who access obesity care (Buttitta et al., 2014; Flodmark, 2005). Compared to obese young people in the community, obesity patients appear to be characterized by lower well-being levels on the social HRQoL dimension, which is arguably the reason which led them to accessing care (Finne et al., 2013). Consistent with this finding, another study could only identify impaired HRQoL levels on the friends dimension among overweight youth willing to access outpatient obesity care when compared to a community sample (Wille, Erhart,

Petersen, & Ravens-Sieberer, 2008). In this respect, better psychosocial well-being and social support may be major resources for obese children and adolescents in dealing with their condition without professional help (Flodmark, 2005).

#### 2.2.1.3. Therapy benefits

Evidence suggests that addressing psychosocial impairment in overweight and obese youth before the onset of weight management programs might have a beneficial effect on therapy outcomes (Yackobovitch-Gavan, Nagelberg, Demol, Phillip, & Shalitin, 2008). Generally, adequate weight management interventions proved successful in improving overweight/obese children and adolescents' both generic and obesity-specific HRQoL (Bullinger & Ravens-Sieberer, 2006; Knopfli et al., 2008; Yackobovitch-Gavan et al., 2008; Yackobovitch-Gavan et al., 2009). Reported improvements in the HRQoL of overweight and obese youth were achieved not only in outpatient, but also in inpatient care such as weight loss camps or rehabilitation settings (Knopfli et al., 2008; Patrick et al., 2011). However, it is important to note that post-intervention HRQoL improvements in overweight youth were not necessarily associated with weight reduction (Wille et al., 2008).

### **2.2.2. Self-esteem**

#### 2.2.2.1. Theoretical background

Self-esteem is defined as a global positive or negative orientation towards one's own worth (Rosenberg & Pearlin, 1978). Self-esteem is thus the evaluative component of one's self-concept (Hewitt, 2002), which according to Rosenberg also includes dispositions like optimism and morality, as well as social identity cues such as age, sex, race and social status (Rosenberg & Pearlin, 1978). Generally, people tend to preserve a positive self-evaluation by engaging in actions in which they are likely to be successful, as well as by taking credit for accomplishments and attributing failure to external factors (Hewitt, 2002).

In an attempt to clarify the way in which social status has a higher impact on adults' self-esteem compared to children, Rosenberg and Pearlin conceptualized self-esteem in terms of three key theoretical approaches and the principle of psychological centrality (Rosenberg & Pearlin, 1978). First, Leon Festinger's theory of social comparison is mentioned, which states that against the background of an innate human drive to evaluate personal opinions and abilities, and in the absence of objective, non-social evaluation standards, people compare themselves to others in their social environment (Festinger, 1954, as cited in Rosenberg & Pearlin, 1978). Secondly, according to the theory of reflected appraisals, people tend to think of themselves in terms of how they perceive to be viewed by (significant) others (Sullivan, 1953, as cited in Rosenberg & Pearlin, 1978). The third

theory which contributes to understanding the development of self-esteem is Darryl Bem's radical behaviouristic theory on self-perception, stating that individuals observe and evaluate themselves based on their actual behaviour and its outcomes (Bem, 1965, 1967, as cited in Rosenberg & Pearlin, 1978). Lastly, the psychological centrality principle posits that different features of one's self-concept are assigned different degrees of significance by the individual and, accordingly, play different roles in one's global self-worth evaluation (Rosenberg & Pearlin, 1978). According to these theoretical perspectives, Rosenberg and Pearlin (1978) used relevant evidence of the time to demonstrate that children were less aware of the notion of social class and due to the nature of their social environment, less exposed to the deleterious effects of low social position on self-esteem. During adolescence, however, negative effects of social class on self-esteem become apparent (Rosenberg & Pearlin, 1978).

Self-esteem develops throughout the lifespan, beginning with the unconditional acceptance and integration of children in their immediate social environment, irrespective of their particular performance levels. Later on, self-evaluations are performed with regard to the norms and values of both in-groups and reference groups, based on the human need of social acceptance and group affiliation. Against this normative background, self-esteem is also constructed through comparisons with significant others, as well as through personal comparison to an ideal standard or through effective action (Hewitt, 2002).

Hewitt (2002) also argues that in Western societies such as the US, where great emphasis is put on individual actions, people are exposed to dissonant messages of high performance expectations vs. an entitlement to feelings of self-worth and self-acceptance implied by social equality (Hewitt, 2002). Obese individuals appear to be particularly subject to this type of dissonance, given that body size and shape are often believed to be under personal control and thus a result of one's own behaviour (Ebner & Latner, 2013; Martin, Rhea, Greenleaf, Judd, & Chambliss, 2011; Meers, Koball, Oehlhof, Laurene, & Musher-Eizenman, 2011; Puhl & Brownell, 2003a; Rees, Caird, Dickson, Vigurs, & Thomas, 2013; Rees et al., 2011).

#### 2.2.2.2. Self esteem among overweight youth

Accordingly, relevant research showed that being obese negatively impacts on young people's self-esteem, particularly with regard to athletic competence and physical appearance (Griffiths, Parsons, & Hill, 2010). This finding was confirmed by the recent study of a large Danish community sample of 10 to 13-year-old, overweight children among whom low self-esteem values concerning physical appearance, social acceptance, as well as athletic and school performance were associated with reports of bullying and eating disturbances (Danielsen et al., 2012).

Further studies consistently show that low self-esteem among overweight children and adolescents is accompanied by symptoms of psychological distress. For instance, low self-esteem, as well as increased feelings of sadness, loneliness and nervousness and higher engagement in health risk behaviours were observed among obese American youth (Strauss, 2000). Low self-esteem was also shown to cluster with disordered eating (Gibson et al., 2008), body dissatisfaction (Ozmen et al., 2007) and depression (Martyn-Nemeth & Penckofer, 2012) in overweight preadolescent and adolescent samples in Australia, Turkey and the US.

From a longitudinal perspective, low self-esteem in preadolescent youth (10-11 years old) was associated with an increased risk of becoming obese at 15 (Sweeting, Wright, & Minnis, 2005), as well as with higher BMI values at age 30, when controlling for childhood BMI, parental BMI, social class and gender (Ternouth, Collier, & Maughan, 2009). Moreover, lower self-esteem, higher levels of victimization, and fewer friends in early adolescence were identified among male young adults who recalled having had weight-related concerns as teens (Smith, Sweeting, & Wright, 2013).

Younger age, female gender, impaired control over eating, high BMI values and parental evaluation of their child as being overweight were shown to increase the risk of low self-esteem and self-concept among overweight youth (Cornette, 2008; Danielsen et al., 2012; Sweeting, West, & Young, 2008; Sweeting et al., 2005). However, in a clinical German sample of obese children and adolescents, relative impairments in self-esteem were observed in girls and adolescents, not younger children (Ravens-Sieberer et al., 2001). Moreover, previous research could not identify any differences between obese 9 and 10-year-old children and their lean counterparts regarding their global and scholastic self-esteem, yet by the age of 13-14 years, significant differences between obese boys, as well as obese white and Hispanic girls and their non-obese peers became apparent (Strauss, 2000).

Despite concerns in this respect, lifestyle intervention does not appear to have a negative impact on self-esteem and body satisfaction among overweight adolescents, irrespective of whether they lose weight or not (Huang, Norman, Zabinski, Calfas, & Patrick, 2007). Moreover, evidence of post-intervention self-esteem improvements among overweight and obese children and adolescents was found in association with weight reduction, but also when no significant changes in weight status were recorded (Griffiths et al., 2010). This may be partly due to the fact that self-esteem is generally associated with perceived, not actual overweight status (Ali, Fang, & Rizzo, 2010; Ozmen et al., 2007).

### **2.2.3. Body image and body image dissatisfaction**

#### **2.2.3.1. Theoretical background**

Body image is generally viewed as an individual's mental representation of his or her body, comprising both a cognitive and an affective dimension (Kim & Lennon, 2007). The foundation of body perceptions and evaluations underlying self-esteem and body image is laid during mid-childhood (Lee, 2009) and their development is marked by social and cultural factors. Particularly relevant in this context is the principle of social comparison, according to which, individuals evaluate their appearance by comparing themselves to others (Festinger, 1954, as cited in Van Vonderen & Kinnally, 2012). In this respect, self-evaluations based on comparisons with similar others might weigh more than comparisons with individuals who are different on relevant dimensions. Moreover, apart from self-evaluation, comparisons can be used for self-improvement and self-enhancement. Self-improvement comparisons can be detrimental when the comparison term is an unattainable ideal. On the other hand, self-enhancement comparisons are particularly important for preserving a positive self perception in situations of stress and uncertainty. Key mechanisms of self-enhancement comparisons are the dismissal of distressing information as not being relevant for oneself and identifying attributes on which one is subjectively superior to others (Kramer, Ingledew, & Iphofen, 2008).

#### **2.2.3.2. Body ideals and their role in the development of body image and body image dissatisfaction**

In the development of body image, societal norms prescribing which body sizes and shapes are culturally desirable play a crucial role, as a global reference framework against which individuals evaluate their appearance. Children and adolescents internalize these norms through repeated exposure to specific gendered societal ideals of beauty and attractiveness approved by significant others. In most contemporary Western(ized) societies, mass media in general and specific genres in particular (e.g. popular magazines, soap operas and music videos) are perhaps the most prominent promoters of cultural body ideals (Agliata & Tantleff-Dunn, 2004; Stice, Spangler, & Agras, 2001; Tiggemann, 2006). However, recent research points to young adolescents' ability to reflect upon media-portrayed body ideals and put them into perspective, for instance, as attributes required by a particular job (e.g. model) (Kramer et al., 2008). Also mass media were viewed as sources of information for actions used to compensate for an undesirable body shape (e.g. styling) (Kramer et al., 2008).

Apart from attractiveness models promoted by the media, parental and peer appearance also contribute to setting the reference lens through which children and adolescents make judgements about their bodies (Maximova et al., 2008; McCabe & Ricciardelli, 2003; Rodgers, Paxton, & Chabrol,

2009). For instance, American overweight children and adolescents attending schools with high age and gender-specific BMI levels tended to underestimate their weight status (Brown, Evans, Mirchandani, Kelder, & Hoelscher, 2010). Moreover, comparisons to peers play a significant part in how adolescents make sense of messages promoted by mass media (Kraye et al., 2008).

Given its deviance from current beauty standards, overweight is generally associated with greater body dissatisfaction, defined as a discrepancy between one's ideal and actual body image. In this respect, higher BMI indicated interest in losing weight irrespective of age and gender in an American adolescent community sample (Thunfors, Collins, & Hanlon, 2009). Similarly, in an Italian adolescent sample, slightly underweight participants of both genders were not dissatisfied with their body size, whereas average-weight and overweight respondents would have preferred a thinner body size (Cortese et al., 2010). Overweight status was also associated with body dissatisfaction in the global sample of the American HBSC study (Caccavale, Farhat, & Iannotti, 2012).

#### 2.2.3.3. Gender differences in body ideals, body image and body image dissatisfaction

Given the different social expectations for men and women regarding physical appearance, much research on body image has focused on adolescent girls, given their specific vulnerability to body image disturbance, triggered by perceived deviation from societal body ideals {Agliata, 2004 #464}. In most Western societies, girls are socialized to believe that physical attractiveness, success and happiness equate to being thin (Van Vonderen & Kinnally, 2012; Vogt Yuan, 2010). Moreover, physical appearance is a paramount criterion guiding the way in which girls and women evaluate themselves and are evaluated by others (Stice, Hayward, Cameron, Killen, & Taylor, 2000). This becomes problematic against the fact that starting with the late 1950s, societal female beauty standards have constantly shifted toward a thinness ideal which is currently unattainable for most girls and women by healthy means (Clay, Vignoles, & Dittmar, 2005; Tiggemann, 2006). In this respect, adolescence is a particularly sensitive time for girls, since natural growth processes (e.g. increasing fat deposits on hips and thighs) prevent them from fitting into societal beauty standards (Maltby, Giles, Barber, & McCutcheon, 2005).

However, body ideals and dissatisfaction among obese females vary with ethnicity (Sweeting, 2008). For instance, African-American girls tend to prefer larger body builds and as such, display lower body dissatisfaction rates if overweight (Yates, Edman, & Aruguete, 2004). On the other hand, higher levels of body image and eating disturbance identified among Caucasian women and adolescent girls (Sorbara & Geliebter, 2002; Wildes, Emery, & Simons, 2001) suggest a higher exposure to thinness as a cultural norm in this group (Schooler, Ward, Merriweather, & Caruthers, 2004; Sorbara & Geliebter, 2002). Accordingly, greater acculturation was found to expose



overweight American Hispanic and Asian girls to body dissatisfaction and depressive symptoms (Xie et al., 2010).

In contrast, the current body ideal in men is that of a large, muscular body (Sweeting, 2008). Boys are generally introduced to this norm starting with an early age, through specific toys such as action figures, which have become increasingly muscular (Agliata & Tantleff-Dunn, 2004). Also, boys appear to have a broader spectrum of weight-related goals and ideals compared to girls (Yates et al., 2004). It was also suggested that adolescent boys feel uncomfortable talking about body image, dismissing it as a female topic. On the other hand, approaching the body topic from the perspective of physical performance (e.g. height, speed, strength) was more acceptable among young male adolescents (Kraye et al., 2008).

Against this background, much research on determinants of body dissatisfaction consistently reports gender differences. For instance, in a Spanish adolescent community sample, boys had lower levels of body dissatisfaction and higher ideal BMIs compared to girls. Moreover, body dissatisfaction levels among boys remained stable throughout adolescence, while in girls, they increased with age and reached a plateau level, after peaking around age 15-16 (Bully & Elosua, 2011). Along the same line, Italian adolescent girls reported body size satisfaction at a lower weight status than boys and hence endorsed thinner body ideals. More precisely, whereas average-weight boys were satisfied with their body size, this was true for girls who were moderately underweight (Cortese et al., 2010). However, better social integration (e.g. social engagement) appears to act as a protective factor against the negative effect of BMI on body dissatisfaction among adolescent girls, but not boys. As such, overweight girls with higher levels of social engagement had lower body dissatisfaction than their less socially engaged, overweight peers (Caccavale et al., 2012).

#### 2.2.3.4. Consequences of body dissatisfaction on young people's mental health

Under the influence of societal pressure to conform to beauty ideals, large differences between ideal and perceived body image can result in pathological body image disturbances, with a negative impact on overall psychological functioning and disordered eating, particularly among women (Espinoza, Penelo, & Raich, 2010; Yanover & Thompson, 2008). Also, thin-ideal internalization, i.e. the extent to which individuals adopt the culturally approved thin body ideal and take action to meet this standard, has been proposed as a key mechanism through which societal pressure to be thin translates into body image dissatisfaction and eating disorders among girls (Thompson & Stice, 2001; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999).

Given the fact that boys are exposed to a muscular, yet not necessarily thin body ideal, underweight was associated with depressive symptoms in male adolescents (Frisco, Houle, & Martin, 2009;

Schiefelbein et al., 2012), whereas overweight did not necessarily lead to body dissatisfaction in boys, if they perceived extra weight as a substitute for muscular mass (Chaiton et al., 2009). On the other hand, girls appear to be put under more pressure to be thin in their social environment and experience more depressive symptoms compared to boys (Chaiton et al., 2009). Consistently, studies report that psychosocial factors such as pressure to be thin and body dissatisfaction mediate the relationship between overweight and depressive symptoms among children and adolescents, particularly among girls (Chaiton et al., 2009; Stice et al., 2000; Xie et al., 2010). As a consequence, girls' body dissatisfaction associated with their self-perception as being obese was seen to increase their suicidal ideation by 6.1%, suicidal attempts by 3.6% and serious suicide attempts by 0.5% (Dave & Rashad, 2009). In the same study, no significant associations were found between suicide and body dissatisfaction among boys or between suicide and actual weight status in the global sample. In general, a consistent association between perceived weight status and mental health status has been observed (Ali et al., 2010; Jansen, van de Looij-Jansen, de Wilde, & Brug, 2008; Kurth & Ellert, 2008; Schiefelbein et al., 2012). On the other hand, mental health indicators rarely displayed significant associations with actual weight parameters (Wardle & Cooke, 2005).

Also, much research has pointed to differences between children and adolescents' weight perceptions and their actual weight status (Abbott, Lee, Stubbs, & Davies, 2010; Edwards, Pettingell, & Borowsky, 2010), with adolescent girls having a tendency to overestimate and boys to underestimate their weight (Abbott et al., 2010; Frisco, Houle, & Martin, 2010; Galante-Gottschalk & Erb, 2007; Park, 2011; Vogt Yuan, 2010). In contrast, in the nationally representative KiGGS study, both German male and female 11 to 17-year-olds tended to underestimate their weight status when self-reporting their height and weight (Brettschneider, Rosario, & Ellert, 2011).

Other studies point to a positive and strong correlation between actual and perceived weight status, despite some misperception (Park, 2011). In a nationally representative sample of American adolescents, Frisco and colleagues (2010) found that the highest level of convergence between perceived and actual weight occurred in overweight adolescent girls (81%). Based on the health congruency theory, the authors argue that weight pessimism (higher perceived than actual weight status) helps explain the higher risk for negative mental health outcomes among overweight adolescent girls (Frisco et al., 2010). Along the same line, obese adolescents with an accurate weight perception were shown to report more victimization, weight loss efforts and suicide attempts compared to their peers who did not perceive themselves as overweight (Lenhart, Daly, & Eichen, 2011). Accurate weight status perception was also associated with older age and greater HRQoL impairments in a clinical sample of obese children (Zeller, Ingerski, Wilson, & Modi, 2010).

#### **2.2.4. Locus of control**

##### 2.2.4.1. Theoretical background

The concept of locus of control derives from Julian Rotter's work in the context of social learning (or social cognitive) theory, which posits that personality develops through individuals' interaction with their social environment (Rotter, 1955, 1966, 1972, 1982, as cited in Krampen, 1989). Moreover, the social learning theory considers that behaviour is goal-oriented and can accordingly be described and explained through personality traits (Krampen, 1989). Against this background, Rotter claimed that one's belief or expectancy that a particular behaviour will generate a desired outcome influences the probability that the individual will actually engage in that respective behaviour. Accordingly, in his later work, he showed that differences in how people act in similar situations can be explained through their generalized tendency to assign control over their behaviour outcomes either to themselves (internal locus of control) or to external factors, such as fate or other people (external locus of control) (Rotter, 1966, as cited in Kunkel, Hummert, & Dennis, 2006).

Originally thought of as an important predictor of engagement in health-related behaviour and implicitly health outcomes, empirical evidence pointed to a weak ability of locus of control to predict health behaviour and health status (Wallston, 1992). Therefore, Wallston and his colleagues (1992) claimed that health-related locus of control was only part of a greater, more general concept of „control over one's health“. Moreover, Wallston theorizes that in order to engage in health-promoting behaviour, individuals need to place high value on health, believe that they can control their health status through their actions, but also believe that they possess the necessary competence to carry out the actions required for being healthy. This implies that perceived competence or self-efficacy is crucial for individuals' engagement in health-promoting behaviours, with locus of control being a necessary, but not sufficient condition in this sense (Wallston, 1992). Accordingly, in a sample of 6 to 18 year-old Australian youth, dietary self-efficacy, but not dietary knowledge or locus of control was associated with weight status (O'Dea & Wilson, 2006).

Nevertheless, more recent research found locus of control to be partly associated with engagement in certain health behaviours (e.g. physical activity, breakfast habits and dietary intake of fruit, fat, salt and fibre) in a sample of university students from 18 European countries (Steptoe & Wardle, 2001). In this respect, internal locus of control appears to increase the odds of engaging in health-promoting behaviours, whereas chance attributions were associated with decreased odds of engaging in health-promoting behaviours. Attributing control to powerful others did not display a consistent association trend with health behaviours (Steptoe & Wardle, 2001), supporting the observation made by Wallston in 1992 that powerful others locus of control hardly predicts health

behaviour in healthy individuals (Wallston, 1992).

#### 2.2.4.2. Body-related locus of control and its correlates

Based on Rotter's assertion of their better ability to predict behaviour in situations in which individuals have made previous experiences, situation specific measures are recommended for the assessment of locus of control in health-related contexts (Rotter, 1975, as cited in Wallston, 1992). With an increased interest in the human body at a societal level starting with the late 80s, body fitness became not only a symbol of physical performance, but also of physical attractiveness and health. Given the fact that body fitness is generally seen as a process which is more subject to agency rather than chance, being fit became an important identity facet, through which one could demonstrate both self-consciousness and control over his or her own body. Against this background, an instrument for the assessment of body-related locus of control (KLC) was proposed by Joachim Mrazek in 1989, with a three-dimensional focus on physical performance, physical appearance and health (Mrazek, 1989). By using the KLC scale in adolescent samples, both Mrazek and subsequent studies found that girls mainly have an external body-related locus of control, while boys tend to have an internal locus of control orientation (Mrazek, 1989; Roth, 1999). Roth (1999) also reported an interaction between age and gender with regard to internal KLC scores, as the difference between girls and boys became more pronounced with age. A tendency towards external locus of control was also noted among adolescents with a low social position compared to their middle and higher class peers, both at a global level and on the physical performance and health dimensions (Mrazek, 1989). From a psychological point of view, internal locus of control orientation was positively associated with body-related self-evaluations and body awareness. On the other hand, external locus of control displayed positive correlations with body-related anxiety and body-related alienation (Mrazek, 1989).

No significant associations were observed between KLC and actual health indicators or measures of body size and weight among adolescents. However, the strength of adult women's external body-related locus of control orientation increased with their degree of overweight (Mrazek, 1989). Similarly, lower internal locus of control scores were found among overweight compared to normal-weight Swedish women (aged 18 to 34 years old) (Ali & Lindstrom, 2006).

#### 2.2.4.3. Locus of control among overweight youth

In the context of paediatric obesity, research on locus of control is generally scarce and outdated. However, results from the 1970 British Cohort Study showed that an external locus of control orientation at age 10 was significantly associated with higher BMI values at age 30, when childhood

BMI, parental BMI, social class and gender were controlled for. External locus of control had a particularly stronger predictive power in women (Ternouth et al., 2009). Conversely, in the same cohort, internal childhood locus of control acted as a protective factor both against overweight and negative health outcomes such as psychological distress (in the global cohort) and blood pressure (in women) (Gale, Batty, & Deary, 2008).

Internal locus of control at baseline was further associated with higher chances to complete a weight loss program, as well as higher chances of achieving initial weight loss goals when combined with a high value placed on health and physical appearance (Saltzer, 1982). However, compared to obese adults, obese adolescents undergoing weight loss intervention tended to have a higher external locus of control orientation (Mills, 1991).

Regarding the stability of locus of control throughout weight management interventions, results are not consistent. For instance, in a sample of 18 adolescent boys attending a weight loss summer camp, internal locus of control orientation increased after losing weight (Speaker, Schultz, Grinker, & Stern, 1983). On the other hand, in a sample of overweight Australian young women (mean age (SD)=28 (0.3) years), no changes in weight-related locus of control were observed over the course of a 12-week lifestyle intervention (Lim, Norman, Clifton, & Noakes, 2009).

#### **2.2.5. Personal, social and familial resources**

Resources at an individual, familiar and broader social level are crucial in shaping children and adolescents' coping abilities and psychological adjustment to health impairments (Holling et al., 2008). Particularly relevant in the context of this research are the notions of self-efficacy, family climate and social support, which were chosen to assess the resources available to adolescents accessing obesity care. A definition embedded in relevant theoretical frameworks together with an overview of related current scientific knowledge is provided below for each of the specified resource categories.

Young people's resources were addressed in a holistic manner, since evidence also points to synergies between different resources in eliciting effects on children and adolescents' ability to positively cope with overweight and obesity. Accordingly, a strong interconnection between self-efficacy and social support was reported in predicting specific health behaviours such as physical activity (Bergh et al., 2011; Callaghan, 2006; Losekam, Goetzky, Kraeling, Rief, & Hilbert, 2010). Moreover, family support and role modelling appear to play an important role in stimulating adolescents' engagement in health-promoting behaviours (Losekam et al., 2010; Peterson, Lawman, Fairchild, Wilson, & van Horn, 2013).

### 2.2.5.1. Self-efficacy

#### *2.2.5.1.1. Theoretical background*

Self-efficacy designates the individual belief about possessing the necessary competence to approach and manage new or difficult tasks and situations (Luszczynska, Gutiérrez-Dona, & Schwarzer, 2005). Although it is related to other concepts such as self-esteem and locus of control, the cognitive, prospective and goal-oriented nature of self-efficacy makes it a unique construct. In contrast, self-esteem has a strong affective connotation, while locus of control assigns outcome responsibility either to the self as a social agent or to external factors (Luszczynska et al., 2005).

Self-efficacy is a key predictor of intention and behaviour and was therefore integrated in most theories of health behaviour (Schwarzer & Luszczynska, 2007). A core concept in Bandura's social cognitive theory, self-efficacy implies a sense of agency and a stable internal attribution of personal control over one's environment and behaviour (Bandura, 1997, as cited in Luszczynska et al., 2005; Schwarzer & Luszczynska, 2007). Self-efficacy was shown to have an impact on the initiation of behaviour change, as well as on efforts to set and maintain specific goals in the face of adversity. As such, high self-efficacy was associated with the uptake of and adherence to more challenging goals and a higher effort investment in maintaining initial goals if confronted with obstacles (Schwarzer & Luszczynska, 2007). On the other hand, low self-efficacy was associated with depression, anxiety and feelings of helplessness (Scholz, Gutiérrez-Dona, Sud, & Schwarzer, 2002).

Consistent with Bandura's social cognitive theory, in his Health Action Process Approach, Schwarzer posits that self-efficacy plays an important role in the planning, initiation and maintenance of behaviour change, as well as in managing relapses (Schwarzer & Luszczynska, 2007). In other theoretical frameworks such as the transtheoretical model of health behaviour, it is argued that self-efficacy increases as the individual progresses through the various stages of behaviour change from pre-contemplation and contemplation to preparation, action and maintenance (Prochaska & Velicer, 1997; Schwarzer & Luszczynska, 2007). The final stage is that of termination, describing the point at which the individual does not have any intention to revert to his/her previous behaviour patterns. Together with decisional balance and temptations, self-efficacy is viewed as a key mechanism influencing progress in the process of behaviour change (Prochaska & Velicer, 1997).

Although self-efficacy is generally conceptualized as being specific to a particular task or life domain, a general self-efficacy concept was developed to describe a global sense of confidence in one's competence to deal with novel, challenging or stressful situations (Scholz et al., 2002). Against this background, general self-efficacy should be considered when aiming to assess a broad and relatively stable expectancy of successful action in unspecific situations (Luszczynska et al., 2005).

#### *2.2.5.1.2. Correlates of self-efficacy among children and adolescents*

Concerning its socio-demographic correlates, research among adolescents in Turkey, Poland and the United States revealed no association between general self-efficacy and age (Luszczynska, Gibbons, Piko, & Tekozel, 2004). In a cohort of healthy Polish 13-year-olds, significant differences were noted in terms of self-efficacy between children whose mothers' education level increased since the child's birth compared to their peers whose maternal educational achievement remained the same. Increases in maternal educational achievement were associated with higher family affluence and showed stronger effects on the self-efficacy of girls compared to boys (Mazur, Malkowska-Szkutnik, & Tabak, 2014). This comes in support of previously identified associations between self-efficacy for healthy behaviours and social support, gender, income and living conditions in a sample of US adolescents (Callaghan, 2006). On the other hand, in a community sample of German preadolescents aged 9 to 13 years old, neither social status, nor gender predicted self-efficacy levels (Schmidt et al., 2010).

#### *2.2.5.1.3. Self-efficacy among overweight youth*

In the context of paediatric obesity, self-efficacy is studied mostly in association with modifiable risk factors such as eating behaviour and physical activity. Research also points to a strong association between self-efficacy for physical activity and self-efficacy for healthy eating, illustrating the coherence of healthy lifestyle components (Steele, Daratha, Bindler, & Power, 2011). There is also evidence that adolescents in the general population endorse relatively high levels of self-efficacy in healthy eating, physical activity and maintaining a healthy weight, as illustrated in an American adolescent community sample with average BMI levels indicating a tendency towards overweight (Thunfors et al., 2009). Moreover, although general self-efficacy expectancies developed during adolescence are relatively stable, it was shown that domain specific self-efficacy (e.g. in making healthy food choices, cooking, eating control) is susceptible to change through multicomponent lifestyle or behavioural intervention during childhood and adolescence (Cunningham-Sabo & Lohse, 2013; Mockus et al., 2011; Walpole, Dettmer, Morrongiello, McCrindle, & Hamilton, 2013; Wright, Norris, Newman Giger, & Suro, 2012).

Overall, self-efficacy has a positive effect on children and adolescents' obesity-related behaviours. For instance, high self-efficacy values were shown to predict healthy eating patterns in Australian adolescent girls from low-income communities (Lubans et al., 2012). Furthermore, positive associations between both general and domain specific self-efficacy and physical activity levels have been identified for both children and adolescents in a variety of settings (Bergh et al., 2011; Davidson, Simen-Kapeu, & Veugelers, 2010; Kitzman-Ulrich, Wilson, Van Horn, & Lawman, 2010;

Losekam et al., 2010; Rutkowski & Connelly, 2012; Smith, Annesi, Walsh, Lennon, & Bell, 2010).

However, self-efficacy for physical activity seems to have a better predictive value for the long term physical activity levels of adolescent boys in the general population, whereas barriers to being physically active better predict levels of activity in girls (Hearst, Patnode, Sirard, Farbakhsh, & Lytle, 2012). Another study found a significant association between physical activity and self-efficacy in male adolescents, whereas in adolescent girls, this association was only marginal (Peterson et al., 2013). Nevertheless, low self-efficacy was related to higher increases in sedentary behaviour over a 2-year observation period in both genders in a Norwegian preadolescent community cohort (Gebremariam et al., 2012).

Self-efficacy for physical activity appears to be influenced by both social and physical environmental factors such as children's socio-economic position, place of residence, parental neighbourhood satisfaction, as well as sidewalks and parks availability in the neighbourhood (Davidson et al., 2010). From a social network perspective, overweight children report more frequent weight teasing, which is, in turn, associated with lower levels of self-efficacy for physical activity (Losekam et al., 2010). As opposed to physical activity levels, weight status and adiposity measures display a negative association with self-efficacy for health-promoting behaviours among children and adolescents (Davidson et al., 2010; Steele et al., 2011). As such, overweight and obese preadolescent children were found to have lower self-efficacy for physical activity compared to their normal weight peers (Davidson et al., 2010). On the other hand, BMI levels among youth with higher healthy eating and physical activity self-efficacy were closer to their ideal BMI based on age and gender-specific reference values (Steele et al., 2011). Dietary self-efficacy was also shown to predict BMI levels in children and adolescents aged 6 to 18 years old (O'Dea & Wilson, 2006). However, despite the general negative association between weight status and self-efficacy, Mockus et al. (2011) found that self-efficacy and social support for behavioural change prior to lifestyle intervention were not predictive of post-intervention dietary monitoring levels and overweight reduction in a sample of overweight preadolescent children (Mockus et al., 2011).

#### 2.2.5.2. Social support

##### *2.2.5.2.1. Theoretical background*

Social support consists of both verbal and non-verbal forms of communication, which aid the recipient in managing uncertainty regarding a specific situation, a relationship, the self or significant others, by promoting an individual sense of control over one's life (Albrecht & Goldsmith, 2003). Different pathways in which social support benefits individual health have been proposed by different theoretical approaches. The *social-cognitive theory* suggests that negative thinking



(particularly negative self-evaluations) and negative emotions are mutually reinforcing in triggering mental health impairments. Social support breaks this vicious circle, as positive social interaction reduces both negative thoughts and emotions by promoting positive feelings and cognitive evaluations. On the other hand, stemming from the symbolic interactionist perspective, the *social control theory* posits that social support and social integration contribute to regulating individuals' health behaviour either directly or indirectly, through a personal sense of responsibility towards significant others (Lakey, 2007).

However, the main theoretical approach explaining the influence of social support on health is the *stress and coping theory*. This perspective suggests that social support has a buffer function, which protects individuals from experiencing adverse effects as a result of stress (Lakey, 2007). Stress or stressors have been defined in this context as environmental, social or inner demands, which require an adaptive effort from the individual. When dealing with stressors, social or personal characteristics which facilitate positive situational adjustment can be activated, also known as coping resources. In turn, coping strategies refer to the behavioural and cognitive efforts which are invested by the individual in managing situations perceived as stressful (Thoits, 1995). However, according to the *optimal matching hypothesis*, social support can only buffer the negative effects of stress if it matches the specific demands of the stressor (Lakey, 2007).

Lakey identifies three major types of social support: perceived support, enacted support and social integration (Lakey, 2007). Whereas the former two categories cover the functional dimension of social support, social integration is its structural facet and refers to the number of social relationships an individual has, as well as their quality (e.g. intensity, density) (Lakey, 2007; Thoits, 1995). Perceived support can be emotional, instrumental or informational, and is defined as an individual's subjective judgement that assistance would be available to him or her, if needed. On the other hand, enacted support consists of the actual supportive actions provided to individuals by members of their social network (Lakey, 2007; Thoits, 1995). Although surprising, perceived and enacted support are independent constructs, displaying poor mutual associations in empirical research (Lakey, 2007). However, it was suggested that high perceived support is more beneficial to individuals' mental health status than actual receipt of social support (Thoits, 1995).

#### 2.2.5.2.2. Social support in the context of paediatric obesity

The importance of social support for the psychological adjustment of chronically ill children in general, and of obese children in particular, has already been documented in research conducted at the end of the 1980s (Wallander & Varni, 1989). In this respect, Wallander and Varni (1989) showed that chronically ill children who received low social support from family and peers had higher rates

of behavioural problems. Additionally, peer support was negatively associated with both externalizing (e.g. ADHD) and internalizing disorders (e.g. depression and anxiety) (Wallander & Varni, 1989). More recently, it was shown that perceived peer isolation significantly mediated the positive association between BMI and depression among Chinese adolescent girls with low perceived social support. In boys, although less frequent, high levels of perceived peer isolation aggravated depression symptoms (Xie et al., 2005). Lower caretaker and family support not only was associated with higher rates of externalizing disorders (Wallander & Varni, 1989), but also predicted obesity risk in young children (aged 2.5-5 years old) (Gerald, Anderson, Johnson, Hoff, & Trimm, 1994).

Overweight American children and adolescents (mean age  $10.9 \pm 1.7$  years) attending obesity care reported close friends and parents as their most frequent and most important sources of social support. On the other hand, the least important and least frequent sources of support in this clinical sample were classmates and schools. Although informational support from teachers was rated as important by overweight youth, reports showed that teacher support decreased with increasing BMI z-scores (Herzer, Zeller, Rausch, & Modi, 2011).

Moreover, lower classmate support consistently predicts higher impairments with regard to both total and specific dimensions of HRQoL among overweight youth in clinical samples (Herzer et al., 2011; Zeller & Modi, 2006). In a Spanish sample of 8 to 11-year-old schoolchildren, relative impairments on the social support and peer dimensions of HRQoL were observed among overweight and obese boys, but not among girls (Morales et al., 2013).

The results of a 14-year Swedish longitudinal study on the impact of behavioural, social and psychosocial factors on adult obesity risk revealed that indicators of social support and social integration in adolescence significantly explained the higher obesity risk observed with lower educational achievement for both genders at age 30 (Novak, Ahlgren, & Hammarstrom, 2006). In this respect, reports of having low educational support from one's parents as adolescents and not being popular in school were significantly more frequent among overweight men and women with low educational attainment, respectively.

Regarding ethnicity, variations in social support levels and significance in predicting obesity risk were observed. In the study of Herzer and colleagues (2011), US overweight minority children and adolescents reported higher levels of social support compared to their peers in the majority ethnic group. However, data from the community sample interviewed for the 2007 US National Survey of Children's Health revealed that social support was a significant predictor of overweight risk only among English-speaking Hispanic fathers, whose two-fold risk of having an overweight child

decreased by 80% when social support was provided (Watt, Martinez-Ramos, & Majumdar, 2012). Social support is also significant in predicting obesity-related behaviours such as physical activity. In a cohort of American adolescent girls participating in a school obesity prevention program, peer, parental and teacher support for physical activity were among the strongest predictors of change in physical activity levels (Neumark-Sztainer, Story, Hannan, Tharp, & Rex, 2003). In Norwegian children, social support from friends was predictive of high rates of moderate-to-vigorous physical activity (Bergh et al., 2011). Also, along with self-efficacy, peer network integration predicted physical activity for both genders in a German children and adolescent community sample (Losekam et al., 2010).

On the other hand, peer support and peer group integration have an important buffering effect against the negative effects of media exposure to cultural body ideals on children and adolescents' body image. In this respect, young adolescents aged 12 to 14 years considered weight and shape to be irrelevant in a close friendship, emphasizing the value of mutual reassurance regarding appearance, as well as the importance of personality traits such as sense of humour among friends (Kramer et al., 2008). However, given that friends are often similar in many respects, comparing oneself to one's friends with regard to body size or shape may trigger frustrations particularly if the comparison attribute is hardly modifiable (e.g. wanting to be taller) (Kramer et al., 2008).

Overall, interventions focusing on weight loss and increasing social support among adolescents can positively impact on their weight-related quality of life (Kolotkin et al., 2006). Moreover, there is evidence of increases in social support for overweight youth following classroom interventions for childhood overweight prevention (Williamson et al., 2012).

### 2.2.5.3. Family characteristics

#### *2.2.5.3.1. Theoretical background*

Given that parents are children's primary socializing agents, parenting styles and practices have received a substantial amount of attention in the area of paediatric obesity (Patrick, Hennessy, McSpadden, & Oh, 2013). Based on the classification proposed by Baumrind (1971) and expanded by Maccoby and Martin (1983), four parenting styles can be described in relation to two key parenting characteristics: demandingness/control and responsiveness/nurturance, as illustrated in Table 1 (Patrick et al., 2013). *Neglectful/uninvolved* parents are not committed to their parenting role and are usually indifferent to their children's needs. Poor parent-child interaction is reflected in the outcomes of this parenting style, with children lacking frustration tolerance, emotional control, interest in education and long-term goals. During adolescence, neglectful parents' offspring have higher risk of engaging in antisocial behaviour (Regber, Berg-Kelly, & Marild, 2007). At the other end

of the spectrum, *authoritative* parents are not only engaged and warm, but also consistent in setting and reinforcing age-appropriate rules, which are developed through parent-child negotiation. Authoritative parenting was shown to produce independent, self-conscious and responsible individuals (Regber et al., 2007). Also fostering high levels of rules reinforcement and sanctioning, the *authoritarian* parenting style is characterized by inflexibility and unresponsiveness to children's needs, leading to potential impairments of their self-esteem (Regber et al., 2007). On the other hand, *permissive* parents are highly tolerant to their children's needs, but lack firmness and consistency in rules reinforcement, allowing their offspring to regulate their own behaviour. Permissive parenting was shown to result in aggressiveness, impulsivity, as well as lack of independence and social responsibility among children and adolescents (Regber et al., 2007).

Table 1. Parenting styles typology according to Baumrind (1971) and Maccoby and Martin (1983) (H. Patrick et al., 2013)

		Demandingness/control	
		High	Low
Responsiveness/ nurturance	High	Authoritative	Permissive
	Low	Authoritarian	Uninvolved

2.2.5.3.2. Parental influences on paediatric obesity

Regarding the impact of parenting style and practices on behaviours related to paediatric obesity, most research focused on parents' influence on children's dietary behaviour. In this respect, parenting styles fostering poor structure (i.e. permissive and uninvolved) were associated with the worst dietary and weight outcomes. On the other hand, more permissive parenting was associated with better physical activity patterns. Responsive/nurturing practices such as communicating the reasons for particular food choices elicited positive outcomes (e.g. increased fruit and vegetable intake), whereas dietary monitoring and restrictions were associated with poor outcomes, as children ate in the absence of hunger or ate in excess when not directly supervised. In terms of media use, structure and guidance in setting clear screen time limits and not placing media devices in children's rooms were seen to generate positive effects (Patrick et al., 2013). Overall, authoritative parenting generally plays a protective role against overweight and obesity in children and adolescents (Gerards et al., 2011; Sleddens, Gerards, Thijs, de Vries, & Kremers, 2011).

Apart from parenting styles, research on family influences on childhood obesity risk has considered both structural (e.g. family composition) and interaction indicators (e.g. family cohesion, communication, etc.). Several studies attempted to identify connections between parental

characteristics and child overweight by comparing clinical samples of overweight youth with normal-weight peers in the community. In such a study including Australian children aged 6 to 13 years, only maternal BMI and living with a single parent significantly predicted obesity risk (Gibson et al., 2007). In a different study comparing a clinical sample of obese American children and adolescents (8-16 years old) to a normal-weight community sample, obesity risk was predicted by maternal rating of her child's temperament as difficult, low maternal control of her child's behaviour and by the interaction between low maternal warmth and difficult child temperament (Zeller, Boles, & Reiter-Purtill, 2008). However, in a prospective study of obese youth attending lifestyle intervention, having non-overweight and Caucasian parents influenced children's success in losing weight, whereas indicators of family structure and functioning did not (de Niet et al., 2011).

The impact of parenting on obesity-related risk and behaviours is also subject to gender differences. For instance, parents seem to have a greater influence on their daughters' eating behaviour and physical activity patterns, while parental expectations for boys to lose weight might be lower compared to girls (Sweeting, 2008). Moreover, it is particularly mothers who appear to play a greater role in shaping their offspring's overweight risk, given their increased interaction time with children across various situations in the family setting (Durand, Logan, & Carruth, 2007; Kral & Rauh, 2010; Scaglioni, Salvioni, & Galimberti, 2008).

Generally, mothers' psychological functioning has been associated with their offspring's obesity risk and psychosocial well-being. In a Belgian sample of overweight children and adolescents (aged 10 to 16 years old), maternal psychopathology correlated significantly with child behavioural problems, but its effects were partly mediated by inconsistent discipline use in parenting (Decaluwe, Braet, Moens, & Van Vlierberghe, 2006). A connection between maternal ante- and postnatal depression and child obesity has also been documented in both cross-sectional and longitudinal research; however, the associated evidence quality was low (Milgrom, Skouteris, Worotniuk, Henwood, & Bruce, 2012).

Role modelling is another pathway through which parents influence their children's body composition and eating behaviour, with research showing that obesity tends to cluster at a family level (Nazario Rodriguez, Figueroa, Rosado, & Parrilla Idel, 2008). Accordingly, a negative effect of both parental restrained and disinhibited eating on children's body fat levels was observed over the 6-year observation period of a prospective study (Hood et al., 2000). Compared to merely setting and reinforcing rules regarding healthy eating, parents acting upon their own rules was seen to decrease children's dietary fat intake (Eisenberg et al., 2012). Parental role modelling of relevant health behaviours was also associated with better dietary choices among children of overweight

mothers with no college education (Ostbye et al., 2013). Overall, parents' ambivalence towards acting as eating behaviour role models for their children has been proposed as a key factor in the persistence of high paediatric obesity rates, together with children's active resistance against healthy eating and parental choice of social over nutritional goals in meal contexts (e.g. strengthening family cohesion vs. eating vegetables) (Brewis & Gartin, 2006).

### **2.3. *The stigma of child and adolescent obesity***

The core concepts of weight stigma and its internalization are addressed in detail in the following sections, with a particular focus on their definition, related theories, as well as current scientific evidence on types of weight stigma, its extent and consequences among overweight youth. Moreover, a detailed review of the available literature on strategies used in coping with weight stigma is provided.

#### **2.3.1. The concepts of weight stigma, weight bias and weight bias internalization**

The concept of stigma emerged from Erving Goffman's work on identity and was originally defined as a relationship between a personal attribute (stigmata) and a socially constructed stereotype (Goffman, 1963). Goffman viewed stigma as "an attribute that is deeply discrediting" and deviates from societal norms and expectations of an acceptable identity for a particular person. The deviance associated with stigma is supported and justified by existing ideologies which describe those with a stigmatized identity as being inferior and posing a threat to the normative status quo as opposed to "normals" (individuals who do not deviate from their expected status stereotype) (Goffman, 1963). Whereas changing ideologies legitimize the attachment of stigma to different attributes over time, stigmatization emerges as a general and stable process of social classification (Rehaag, 2010).

In their work, Link and Phelan (2001) develop Goffman's relational definition of stigma, emphasizing the social nature of stigmatization, as opposed to previous trends of viewing stigma rather as an individual characteristic. Link and Phelan hence describe stigma as the interplay of labelling, stereotyping, social exclusion, loss of social status and discrimination, occurring against the background of power imbalance between social groups. All components need to manifest, the presence of power being in itself a necessary condition for stigma to occur in a social context (Link & Phelan, 2001).

Stigma thus encompasses not only direct, manifest components (discrimination and social exclusion) but also latent dimensions, pertaining to the domain of values, beliefs and attitudes. However, all stigma dimensions have a significant impact on social functioning at both individual and collective levels. This mainly occurs through the association of a group with stereotypical features and the reduction of the individual identity to being a member of a stigmatised group (Link & Phelan, 2001).

Goffmann distinguished between three categories of stigmata pertaining to one's physical appearance ("abominations of the body"), character ("blemishes of individual character") or phylogenetic heritage ("tribal stigma" such as race, religion, social class) (Goffman, 1963). Among these, physical stigmata are particularly prominent, given their visibility and the central role of the

body as a reference for identification processes (Rehaag, 2010). As opposed to other types of stigmata that may be less conspicuous and render an individual's identity merely discreditable, physical stigmata such as obesity project a discredited social identity upon its bearers (Goffman, 1963).

Despite its not being a pervasive stigmatized attribute at the time when Goffman developed his theory, overweight has progressively turned into an unacceptable body size, as norms of self-responsibility established the slender (thin), well-toned and styled body as the new ideal. The significance of physical appearance and fitness thus changed from being essentially determined by chance to being the result of individual actions. Accordingly, the body became an asset pertaining to one's social capital (Mrazek, 1989; Rehaag, 2010).

Currently, weight stigma is so pervasive that it has become the norm in Western industrialized countries (Hilbert, 2010). For instance, in Germany only 21.5% of a nationally representative, adult sample did not endorse stigmatizing attitudes toward obesity, with less education, higher age and attribution of obesity development to personal behaviour predicting higher weight stigmatization (Hilbert, Rief, & Braehler, 2008).

As a synonym for weight stigma, weight bias has been defined as a tendency to make negative judgements about or to negatively discriminate an individual because of his or her overweight (Li & Rukavina, 2009). According to this definition, bias against overweight can be either explicit or implicit. Whereas explicit bias refers to the voluntary discrimination of overweight individuals (e.g. teasing or bullying), implicit weight bias is often unconscious, and becomes active under the influence of environmental cues (Li & Rukavina, 2009). Other authors, however, make a distinction between weight bias and weight stigma, defining weight bias as "the inclination to form unreasonable judgments based on a person's weight" (Washington, 2011). In line with this definition, weight bias is used in the present study to designate the latent dimension of weight stigma, including negative stereotypes and attitudes toward overweight individuals.

Based on Link and Phelan's (2001) theoretical framework, weight bias can be conceptualized as a chain of steps in the development of stigmatization as a process, in which certain operational components precede and trigger the next. As such, the existence of weight stigma implies the *a priori* identification of body size differences between individuals, their association with negative stereotypical features, and, based on the nature of these labels, their assignment of a specific position in social hierarchy systems. Such weight bias, in turn, is translated into weight-based discrimination such as social marginalization and bullying, whose negative consequences are enhanced by auto-identification processes through which overweight individuals internalize



external weight bias.

Against this background, Joannis and Synnott (1999) define weight bias internalization as the agreement with negative societal stereotypes about overweight, along with viewing weight as the source of one's problems and continually attempting to lose weight as a means of eliminating cognitive dissonance (Joannis & Synnott, 1999; Puhl & Brownell, 2003b). This tends to create a vicious circle, as individuals who internalize weight bias come to endorse stereotypical thinking and act according to the prescriptions of these stereotypes, exposing themselves to even more stigmatization.

Given its widespread societal approval, overweight and obese individuals experience stigmatization in work, educational and healthcare settings, as well as in their close social relationships (Puhl & Heuer, 2010). Among children and adolescents, the most common types of manifest weight stigma are verbal teasing, physical bullying and relational victimization such as exclusion or rejection (Puhl & Latner, 2007; Rees et al., 2013; van den Berg, Neumark-Sztainer, Eisenberg, & Haines, 2008).

Against this background, current research illustrates a wide range of negative consequences of weight bias, including direct effects on targets' physical and psychosocial health status and reduced motivation for participating in weight loss interventions (Puhl & Heuer, 2010). Moreover, weight bias in healthcare settings cultivates inequalities in health care delivery and health care utilization. At the same time, implicitly placing the blame for excess weight at an individual level leads to a general disregard of the genetic and environmental causes of obesity, thus further reinforcing social inequalities and lowering the success chances of obesity prevention efforts. Viewed together, all its negative implications frame weight bias as a significant public health problem, above and beyond obesity itself (Puhl & Heuer, 2010).

### **2.3.2. Theories on the origin of weight stigma**

Puhl and Brownell (2003) describe six theories on potential reasons why overweight has come to be a prevailing stigmata in many Western societies: internal attribution of overweight, realistic conflict between social groups, downward social comparison as a means of preserving a positive social identity, perceiving overweight as a threat to social norms and values or to the survival or evolution of a group, and ultimately adherence to social consensus. All these explanatory approaches have emerged as parallel applications of classical psychosocial theories from the second half of the 20<sup>th</sup> century, as well as of newer, evolutionary perspectives on the issue of weight stigma.

Relying on an extensive body of both observational and experimental research, the most prominent explanatory framework for the development of weight stigma is the *psychological attribution theory*. According to this perspective, the stigma associated with being overweight stems from the

traditional values of self-determination and individualism in Western industrialized societies, which in turn have their origin in the Protestant work ethic of self-discipline, hard work, determination and internal control. Additionally, the ideology of a just world in which everyone receives what they deserve places responsibility for one's life situation with the individual. Against this background, weight stigma can be understood as a natural consequence of an ideological rationalization of overweight as being controllable by the individual, despite a large body of evidence indicating the role of the social environment and genetic predisposition in shaping obesity risk, as well as the modest long-term success of weight loss intervention (Puhl & Brownell, 2003a).

Internal attributions of overweight and stereotypes of overweight people being lazy and lacking self-discipline have been documented in research conducted with both young people (Martin et al., 2011; Meers et al., 2011; Rees et al., 2013; Rees et al., 2011) and adults (Ebner & Latner, 2013). For instance, in a sample of predominantly normal-weight American 11 to 16-year-olds, the vast majority (72.8%) considered weight to be an attribute over which people have complete or a lot of control (Martin et al., 2011). Consequently, on average, they associated their peers' obesity with lifestyle choices and personal characteristics such as having an inadequate diet, being lazy and lacking self-control. Students endorsing high weight controllability beliefs associated overweight with less enjoyment of physical activity and less physical coordination. Also, overweight individuals were thought of as having fewer friends, poorer academic results and a more unsatisfactory relationship with their parents and teachers, as well as being less satisfied with their looks and less self-confident than their thinner counterparts (Martin et al., 2011). Even preschool children found overweight to be unacceptable, associated it with negative personality and behavioural characteristics such as being lazy, and were less inclined to choose overweight children as potential friends (Meers et al., 2011). Through the mechanism of weight bias internalization, even overweight youth thought of themselves in negatively stereotyped ways and blamed themselves for their weight status (Rees et al., 2013).

Weight stigma can also be explained from a *social consensus* perspective. In this sense, the pervasiveness of stigma towards overweight appears to be a function of individuals' perception of significant others' stigmatizing attitudes. Since shared beliefs is a common means of expressing or achieving membership in a reference group, individuals 'buy into' negative attitudes towards overweight out of their desire of belonging to the majority, dominant opinion group within society (Puhl & Brownell, 2003a). While it was suggested that manipulating social consensus beliefs can contribute to reducing bias against overweight (Puhl & Brownell, 2003a), other studies showed that increasing cognitive dissonance is a more effective approach to weight stigma reduction (Ciao &

Latner, 2011). In this sense, suggesting individuals that their level of weight stigma is in conflict with their self-perception as a tolerant, kind person led to a decrease in their weight bias, while making them believe that their weight stigma levels differed from those of their peers did not.

*Social identity theory* explains prejudice as arising from individuals' attempt to maintain a positive identity by negatively stereotyping out-group members as being inferior on attributes which are valued in one's in-group. The psychological mechanisms preceding bias are therefore self-categorization as belonging to a particular group and downward social comparison to those who are not members of the reference group (Puhl & Brownell, 2003a). Apart from explaining why thin or average-weight individuals develop negative attitudes against the overweight, the social identity theory also helps clarify the reasons why weight bias tends to decrease with increasing weight both in adults and children (Holub, 2008; Schwartz, Vartanian, Nosek, & Brownell, 2006). Also, the social identity theory explains why boys are more negative than girls in their evaluations of female overweight peers, whereas girls endorse more negative evaluations of male overweight peers compared to boys (Latner, Simmonds, Rosewall, & Stunkard, 2007).

In the context of social identity construction, *the looking glass self theory* proposed by Charles Horton Cooley (1956) is also useful for understanding weight stigma, as overweight individuals who are aware of negative societal stereotypes regarding overweight internalize these negative stereotypes, leading to impairments of their self-concept (Cooley, 1956; Puhl & Brownell, 2003b). On the other hand, the looking glass self theory also presents opportunities for stigma reduction, through the manipulation of the "looking glass", i.e. the social consensus on obesity stereotypes and attributions (Balogh-Robinson, 2011).

Another theoretical model proposed for understanding weight stigma is that of the *realistic conflict theory*. This model places the origin of weight prejudice and stigma in the conflict of interests between groups in their effort to maintain control over power and other resources. Similarly, in light of the *integrated threat theory*, weight bias can be understood as a reaction of the average-weight group to a symbolic threat posed by the overweight to dominant values of self-discipline and thinness (Puhl & Brownell, 2003a).

From an *evolutionary theory* viewpoint, stigmatization and exclusion occur when certain individuals are perceived to threaten group functioning, resources or even survival. In this sense, excess weight as an obvious marker of potentially life-shortening disease affecting collective health care resources may lead to stigma and social exclusion (Puhl & Brownell, 2003a). Along the same line of thought, Klaczynski (2008) suggested that the early development of weight stigma among children can be explained with the aid of a contagion theory based on the following argumentation:

1. Obese individuals display signs and symptoms similar to other illnesses (e.g. shortness of breath, orthopaedic problems, increased sweating, difficulties in performing vigorous physical activities, miss more days of school and work, etc.).
2. Even from an early age, children develop theories and explanations for causes and consequences of illness, which are often incomplete and usually generalized beyond their legitimate application scope (Inagaki & Hatano, 2006; Kalish, 1996, as cited in Klaczynski, 2008).
3. By age 6, children associate ingestion with being healthy or sick and know that having close contact with an ill person can also make them sick (Inagaki & Hatano, 2006; Kalish, 1996, as cited in Klaczynski, 2008).
4. There is evidence that when confronted with a novel disease, children tend to infer that it is contagious (Kalish, 1996, as cited in Klaczynski, 2008).
5. Associating obesity with illness based on its physical manifestations, children tend to avoid overweight peers as well as objects they have come in contact with, as a self-protection mechanism, in order to avoid hypothesized contagion (Klaczynski, 2008).

### **2.3.3. Negative stereotypes about overweight among children and adolescents**

A general consensus has been observed among children in considering overweight youth as being less popular and less accepted among their peers, as well as more likely to be victims of teasing (Nabors et al., 2011). In educational settings, obese children were seldom described as popular or prosocial by their peers and teachers. Instead, they were more likely to be viewed as socially isolated and as displaying disruptive and aggressive behaviour (Mata & Munsch, 2011; Zeller, Reiter-Purtill, & Ramey, 2008). A study among German 10 to 15-year-olds found that obese youth in general and obese boys in particular were viewed as lazier, less intelligent and less attractive than their normal-weight peers (Thiel, Alizadeh, Giel, & Zipfel, 2008).

This coincides with the general tendency of mass media to promote ideals of thin female and muscular male bodies, with a severe overrepresentation of underweight women and an underrepresentation of overweight and obese individuals, irrespective of their gender. By doing so, the media contribute to a great extent to defining what society views as an acceptable body weight and shape. Moreover, weight bias is cultivated from a very early age through the promotion of negative representations of overweight individuals in child-specific media. Therefore, it is not surprising that weight-stereotyping attitudes in children increase with media use, with a particular tendency for overweight female characters to be viewed as unattractive (Ata & Thompson, 2010). In this sense, children's books were found to generally assign more positive traits to thin characters,

whereas obese characters tended to be portrayed in terms of negative traits (Ata & Thompson, 2010). However, visual media play a much greater role in promoting negative overweight stereotyping in children's movies, cartoons and situation comedies. For instance, overweight cartoon characters were three times more likely to be presented as unattractive compared to underweight and normal-weight characters. Unattractiveness was in turn associated with less desirable attributes (lower intelligence, lower prosocial behaviour and higher aggressiveness), negative emotions (unhappiness, anger) and negative life circumstances (unemployment, poorer physical health) (Ata & Thompson, 2010). As in the case of cartoons, children's situation comedies also deliver an image of overweight characters as being less attractive and having fewer friends than their peers (Robinson, Callister, & Jankoski, 2008). Although compared to other media types children sit-coms seem to deliver a more positive and balanced portrayal of overweight, most featured characters were underweight and normal-weight (Robinson et al., 2008).

Media targeting adolescents and adults, such as situation comedies and movies, weight loss shows and advertising, reality television, YouTube and even the news promote similar negative images of overweight individuals (Ata & Thompson, 2010). A recent content analysis of overweight representations in the visual media found overweight adolescents at an increased risk of being portrayed in a negative, stigmatizing manner compared to their average-weight peers (Puhl, Peterson, DePierre, & Luedicke, 2013). Accordingly, the former were more often presented in an impersonal manner from the neck down, with an unflattering focus on body parts marked by excess weight or eating unhealthy foods.

From a gender perspective, male children, as well as adults, were found to be more likely to perpetrate overweight-related stereotypes and discrimination in the media, the main targets' gender depending on context and media type (e.g. females in adult sit-coms, males in YouTube videos) (Ata & Thompson, 2010). On the other hand, girls appear to be generally more exposed to negative weight-based stereotypes of being less attractive, less intelligent or slow runners. Girls are also more often perceived as being excluded from social activities. Further, parents are more inclined to label their daughters as overweight compared to their sons (Tang-Peronard & Heitmann, 2008).

#### **2.3.4. Weight stigmatization agents and contexts**

##### **2.3.4.1. Stigmatization agents**

In a review of the literature on weight stigma among children and adolescents, Puhl and Latner (2007) found that peers were the main perpetrators of weight stigma in this population. In this sense, recent research shows that 92% of adolescents accessing obesity care had experienced

weight victimization from their peers, whereas 70% reported that perpetrators were their friends (Puhl, Peterson, & Luedicke, 2013b).

However, young people were also seen to experience weight teasing from their parents and also parental discrimination in financing their college education or the purchase of a vehicle (Crandall, 1991; Kraha & Boals, 2011; Puhl & Latner, 2007). Overweight daughters appeared to be more disadvantaged in this respect (Crandall, 1995). Moreover, among obese adolescents accessing therapy, 37% reported having been stigmatized by their parents due to their weight status (Puhl, Peterson, et al., 2013b).

Stereotypes about weight are also endorsed at a family level, so that children are socialized against this normative background (Puhl & Latner, 2007). For instance, German girls of Turkish ethnicity reported being stigmatized by male family members such as their fathers and brothers (Rehaag, 2010). A study based on parent interviews also found family members such as fathers, but also grandmothers to be important weight stigmatization agents (Edmunds, 2008).

In terms of gender, a literature review showed that, whereas overweight boys were stigmatized exclusively by peers, overweight girls were victims of stigmatization coming from both peers and family members (Tang-Peronard & Heitmann, 2008). However, other studies also documented family weight teasing among boys (Eisenberg, Neumark-Sztainer, & Story, 2003; Goldfield et al., 2010; Neumark-Sztainer et al., 2002). Female adolescents with higher BMI levels also appear to be subject to weight stigmatization and to be labelled as unattractive by interviewers in epidemiological research; among adolescent boys, similar, yet statistically nonsignificant trends in this sense could also be illustrated (Richmond et al., 2012).

On the other hand, discriminatory and stigmatizing behaviour against overweight students has also been reported among educators such as teachers or college selection committees (Puhl & Latner, 2007).

#### 2.3.4.2. Stigmatization contexts

Schools are a particularly important discrimination setting with potentially far-reaching consequences extending to children's future employment chances, as they expose overweight children not only to peer bullying, but also to lower academic expectation levels from teachers. Accordingly, overweight children develop avoiding behaviours (miss more school days, do not participate in physical education), which ultimately contribute to reducing their academic achievement and physical health (Washington, 2011). Schools were consistently reported as the setting in which children and adolescents in clinical and community samples experienced weight stigmatization to the highest extent and in multiple contexts (Curtis, 2008; Edmunds, 2008; Puhl,

Peterson, et al., 2013b). In the study of Puhl and colleagues (2013), 42% of participating adolescents had been stigmatized by sports coaches/physical education teachers and 27% had experienced stigmatization from other teachers (Puhl, Peterson, et al., 2013b). Moreover, in two community samples of mostly non-overweight adolescents (83% and 73%, respectively), overweight was acknowledged as the main reason for peer victimization in school settings (Puhl, Luedicke, & Heuer, 2011). Most adolescents had witnessed overweight and obese peers being socially marginalized, physically harassed or teased during physical activities and in the cafeteria (Puhl et al., 2011).

German overweight adolescents (11 to 16 years old) participating in focus groups reported physical activity settings as the main context in which they were confronted with weight stigma. Due to the high body and stigmata exposure it implies, swimming was seen as particularly problematic. Similarly, stigmatization of overweight youth also occurred when they were seen eating in public (school cafeteria or fast food restaurants) (Rehaag, 2010).

A literature review focusing on views of overweight among British youth found that schools and particularly physical activities were important contexts of weight stigmatization (Rees et al., 2013). Similar results were also reported in focus groups conducted in the United Kingdom (Curtis, 2008). Overweight participants in this study also mentioned physical activity and eating contexts as endorsing the highest weight stigmatization potential, by placing them, their body and their physical performance under other people's close scrutiny. Accordingly, young people reported being teased as not being able to run or 'causing an earthquake' when running. Also, eating healthy foods associated with dieting might be interpreted by peers as a confirmation of overweight youth's need to control their weight, thus further reinforcing weight stigma (Curtis, 2008). Therefore, some studies argue that school-based public health interventions to reduce obesity might have the unintended effect of increasing the negative social exposure and exclusion of overweight youth (Curtis, 2008; Edmunds, 2008).

Consistent with the high levels of stigmatization experienced by young people from peers and in the school setting, when asked about their preferred interventions for weight stigma reduction, most overweight adolescents attending weight loss camps wished for support from friends (66%) and peers (58%), followed by teachers (55%). Less than half of participating adolescents preferred physical education teachers or coaches (44%) and parents (43%) as intervention agents (Puhl, Peterson, & Luedicke, 2013a). In a different study, 12 to 18-year old adolescents from the United Kingdom (UK) expressed their wish for health care professionals to be less judgemental of their overweight patients (Rees et al., 2013).

Lastly, shopping with friends was reported to have a high stigmatizing potential by adolescents, since

finding and wearing fitting, fashionable clothes was a challenge for larger youth (Rees et al., 2013). Difficulties to fit into the image of a “normal” child or adolescent were also reported by parents of overweight youth in relation to clothing (Edmunds, 2008). In this respect, parents saw their children in the position of being unable to find fitting, age-appropriate and fashionable clothes, as their large body shape only allowed them to wear clothing that was designed for youth who were 2 to 3 years older. Along the same line, some parents also reported that their children used baggy clothes to mask their overweight (Edmunds, 2008).

### **2.3.5. The extent of weight discrimination among children and adolescents**

As in the case of children suffering from other chronic conditions, overweight youth report higher levels of victimization compared to their healthy peers (Sentenac et al., 2012). Generally, weight stigmatization increases in both frequency and intensity with higher BMI levels (Brixval et al., 2012; Goldfield et al., 2010; McCormack et al., 2011; Neumark-Sztainer et al., 2002; Puhl & Latner, 2007; van den Berg et al., 2008). Weight bias levels also tend to increase with the belief that obesity is under personal control (Puhl & Latner, 2007). Consequently, highschool students with negative attitudes towards overweight were less likely to help overweight and obese peers if they noticed the latter to be victimized at school because of their weight (Puhl et al., 2011).

Weight based discrimination among young people in Western societies has become so pervasive that, along with race, weight status was found to be one of the main reasons for stigmatization among US adolescents (Bucchianeri et al., 2013). The most frequently reported stigmatization experiences in a sample of American adolescents accessing obesity care were verbal teasing (up to 88%), relational victimization (up to 82%), cyberbullying (up to 61%) and physical aggression (up to 61%), with 36% of participating youth having endured victimization for up to 5 years (Puhl, Peterson, et al., 2013b). Similarly, weight based discrimination experiences along the entire spectrum from social exclusion to victimization were also reported by German adolescents (Rehaag, 2010).

Overweight young people are also more likely to be bothered by weight teasing than normal-weight youth (McCormack et al., 2011; Neumark-Sztainer et al., 2002). Girls also tend to be more bothered by family and peer weight teasing than boys (Neumark-Sztainer et al., 2002). Further, ethnic/cultural differences pair with gender to suggest that white, ethnic majority girls are bothered by weight teasing coming from peers or family members to a higher degree, despite experiencing less stigmatization compared to girls belonging to other ethnic groups (van den Berg et al., 2008).

In relation to SES, a tendency towards greater stigmatization of overweight girls in more affluent social strata was illustrated. In middle and low class youth, most studies could not identify gender differences in the extent of weight based stigmatization (Tang-Peronard & Heitmann, 2008). Current



results on the prevalence of weight teasing among children and adolescents are summarized in Table 2 below.

*Table 2. Weight-based teasing prevalence by weight status and gender*

Study authors	Sample	Teasing prevalence
(Neumark-Sztainer et al., 2002)	4746 adolescents from 31 public middle schools and high schools from urban and suburban school districts in St Paul, Minnesota	<p>Gender: 25.5% girls vs. 22.2% boys</p> <p>Normal weight: 18.7% girls vs. 13.0% boys 21.2% girls vs. 13.7% boys by peers 23.6% girls vs. 11.0% boys by family</p> <p>Overweight: 28.5% girls vs 22.3% boys 31.4% girls vs. 26.3% boys by peers 33.7% girls vs. 16.5% boys by family</p> <p>Obese: 45.3% girls vs. 50.2% boys 63.2% girls vs. 58.3% boys by peers 47.2% girls vs. 34% boys by family</p>
(Eisenberg et al., 2003)	4746 adolescents from 31 public middle schools and high schools from urban and suburban school districts in St Paul, Minnesota.	<p>Gender (not stratified by weight status): 30% girls vs. 24.7% boys by peers 28.7% girls vs. 16.1% boys by family 14.6% girls vs. 9.6% boys by both peers and family</p>
(Janssen, Craig, Boyce, & Pickett, 2004)	5749 male and female participants (11–16 years old) in the 2001/2002 Canadian HBSC study	<p>Normal weight: 10.7% overall 10.1% girls vs. 11.4% boys</p> <p>Overweight: 14.4% overall 14.9% girls vs. 14.0% boys</p> <p>Obese: 18.5% overall 23.1% girls vs. 15.3% boys</p> <p>ORs [CI] (<math>p &lt; 0.05</math>): 1.37 [0.93-2.00] overweight vs. normal weight boys 1.44 [0.87-2.39] obese vs. normal weight boys 1.26 [0.83-1.88] overweight vs. normal weight girls 1.91 [1.07-3.38] obese vs. normal weight girls</p>
(Rosenberger, Henderson, Bell, & Grilo, 2007)	174 adult bariatric surgery candidates	50.6% reported a childhood history of weight teasing

Study authors	Sample	Teasing prevalence
(Krukowski et al., 2008)	1042 adolescent students at public schools in Arkansas (2004-2006)	Weight teasing prevalence 11.9% (2004); 9.3% (2005); 5.9% (2006) ORs [CI]: 0.67 [0.34-1.35] boys vs. girls 0.92 [0.37-2.31] overweight vs. normal weight adolescents 3.33 [1.51-7.33] obese vs. normal weight adolescents
(Libbey, Story, Neumark-Sztainer, & Boutelle, 2008)	130 overweight and obese adolescents (12-20 years old)	33% by either peers or family 48% by both peers and family
(van den Berg et al., 2008)	4,746 adolescent boys and girls participating in the first wave of the Project EAT (Eating Among Teens)	Gender: 42.9% girls vs. 35.3% boys 29.9% girls vs. 24.4% boys by peers 28.8% girls vs. 16% boys by family  Normal weight: 35.2% girls vs. 24.8% boys 21.1% girls vs. 13.5% boys by peers 23.6% girls vs. 10.9% boys by family  Overweight: 47.6% girls vs. 37.7% boys 31.4% girls vs. 26.3% boys by peers 33.8% girls vs. 16.4% boys by family  Obese: 65.7% girls vs. 64.4% boys 62.4% girls vs. 57.8% boys by peers 47.3% girls vs. 34.1% boys by family
(Goldfield et al., 2010)	1491 adolescents from public and private middle and high schools	Gender (overall): 33.0% girls vs. 18.0% boys ( $p<0.001$ ) 25.0% girls vs. 15.0% boys by parents ( $p<0.01$ )  Overweight and obese: 52.0% girls vs. 30.0% boys among overweight and obese ( $p<0.001$ ) 30.0% girls vs. 22.0% boys among overweight and obese by parents ( $p<0.001$ )  Overweight and obese vs. normal weight: 45.0% overweight and obese vs. 22% normal weight ( $p<0.001$ ) 25% overweight and obese youth vs. 18% normal weight youth by adults ( $p<0.01$ )
(Neumark-Sztainer et al., 2010)	356 adolescent girls from 12 high schools (mean age=15.8 years)	Overall: 58% girls by family members 45% girls encouraged to diet by mothers  Positive association between family weight teasing and girls' BMI
(McCormack et al., 2011)	148 children (11-12 years old) in four public schools in low-income	Gender: 57.4% girls vs. 42.6% boys by family ( $p=0.15$ )

Study authors	Sample	Teasing prevalence
	communities in St. Paul (MN)	47.5% girls vs. 52.5% boys by peers ( $p=0.36$ )  Overweight and obese vs. normal weight: 54.7% overweight and obese vs. 45.3% normal weight by family ( $p<0.05$ ) 60.3% overweight and obese vs. 39.7% normal weight by peers ( $p<0.01$ )
(Haines, Hannan, van den Berg, Eisenberg, & Neumark-Sztainer, 2013)	2,287 adolescent participants in the Project Eating Among Teens-I (EAT-I)	1999 Gender: 29.0% early adolescent girls 23.0% middle adolescent girls ~18.0% both early and middle adolescent boys  1999 Overweight and obese: 40.0% girls vs. 37.0% boys among early adolescents 28.2% girls vs. 29.0% boys among middle adolescents
(Olvera, Dempsey, Gonzalez, & Abrahamson, 2013)	141 overweight Hispanic and African American preadolescent girls (mean age (SD)=11.1 (1.5) years)	59% girls by peers 42% girls by parents

Gender further emerges as a salient category in understanding weight stigma and victimization in young people. In this sense, girls appear to be more vulnerable to general weight-based victimization (Tang-Peronard & Heitmann, 2008), including weight teasing (Rojo-Moreno et al., 2013) and physical aggression (Janssen et al., 2004). Moreover, research findings suggest that boys are victims of overt discrimination at higher BMI levels compared to girls. The latter are also more prone to being victims of relational victimization by being ignored or having lies or rumours spread about them (Tang-Peronard & Heitmann, 2008).

Generally, stigmatizing attitudes increase with age during childhood and tend to become more moderate during adolescence and early adulthood (Puhl & Latner, 2007). However, a recent study found no differences in the extent of weight teasing in girls transitioning from adolescence to young adulthood and in boys transitioning from middle adolescence to middle young adulthood (Haines et al., 2013). Instead, a statistically significant increase in weight teasing was noted among boys, as they transitioned from early adolescence to early young adulthood (Haines et al., 2013).

Although most studies report no gender differences in children under 10 years old, those which do illustrate a higher stigmatization in girls. In contrast, gender differences in weight based stigmatization are more frequent among adolescents, with a clearer tendency for girls to be targeted by discriminatory behaviour (Tang-Peronard & Heitmann, 2008). Another adolescent study reported similar degrees of stigmatization of boys and girls, however in different areas (Pearce, Boergers, & Prinstein, 2002). In this sense, overt victimization was more frequent in boys, while girls were more

often victims of relational victimization.

A recent analysis of secular trends revealed a decreasing trend for the occurrence of weight teasing among both male and female American adolescents between 1999 and 2010. The frequency of weight teasing experienced by overweight youth of both genders also decreased during this time frame (Haines et al., 2013).

However, apart from being victimized by their peers, it is important to note that overweight youth also endorse and perpetrate stigmatizing attitudes towards other overweight and normal-weight peers (Janssen et al., 2004; Kukaswadia, Craig, Janssen, & Pickett, 2011; Schwartz et al., 2006). In this respect, bullying behaviour was found to increase with higher weight status among 15-16-year-olds in a sample of Canadian schoolchildren, with type of perpetrated discriminatory behaviour varying by gender (Janssen et al., 2004). In this respect, overweight adolescent boys were more likely to subject other young people to verbal and relational bullying, while overweight adolescent girls were more likely to be perpetrators of physical bullying compared to normal-weight peers (Janssen et al., 2004). Another study found a threefold risk for obese girls to engage in relational bullying compared to normal-weight girls (Kukaswadia et al., 2011).

### **2.3.6. The impact of weight stigma on children and adolescents' well-being**

Weight stigmatization among young people is pervasive and was suggested to play a mediating role in the relationship between overweight and negative health consequences (Puhl & Latner, 2007; Russell-Mayhew et al., 2012). Accordingly, the influence of weight stigma on young people's well-being is manifold and manifests at the level of interpersonal relationships (with peers, parents, educators, healthcare providers), behaviours (eating and physical activity) and psychological processes (e.g. self-esteem, body satisfaction, pathology) (Puhl & King, 2013; Puhl & Latner, 2007). Moreover, experiencing stigmatization from more than one source (e.g. both family and peers) increases its adverse effects on children and adolescents' emotional well-being (Eisenberg et al., 2003). On the long term, childhood weight teasing can lead to lower self esteem, depression, weight and shape concerns and body dissatisfaction, as reported by American adults undergoing bariatric surgery (Rosenberger et al., 2007).

In terms of psychosocial functioning, there is also evidence that weight teasing mediates the negative association between weight status and academic achievement, independent of gender, school level, socio-economic position and race (Krukowski et al., 2009), thus limiting young people's professional and socio-economic opportunities as adults. Further, weight stigmatization has also been associated with lower healthcare utilization (Puhl & King, 2013), as well as high blood pressure levels among adolescents, even when controlling for BMI and typical blood pressure determinants

(Matthews, Salomon, Kenyon, & Zhou, 2005).

Regarding social relationships, it is apparent that overweight children and adolescents are not only frequently victimized, but also commonly disliked and rejected by their peers compared to average-weight youth (Puhl & Latner, 2007; Rees et al., 2011). Studies show that children systematically express dislike towards images depicting obese peers and/or are less willing to associate with the latter for leisure or work purposes (Edmunds, 2008; Koroni et al., 2009; Latner & Stunkard, 2003; Meers et al., 2011; Solbes & Enesco, 2010; Thiel et al., 2008). Obese children also rank lowest in comparison with peers affected by other physical stigmata (e.g. facially disfigured, missing a limb, sitting in a wheelchair, etc.) (Koroni et al., 2009; Latner & Stunkard, 2003; Thiel et al., 2008), with differences between most liked and most disliked categories having increased since the 1960s (Latner & Stunkard, 2003). As an indicator of internalized weight stigma, some overweight youth believe that their peer problems are a consequence of their weight, and that these can be resolved by slimming down (Puhl & Latner, 2007).

Conversely, solid peer group integration was seen to have a protective effect against peer bullying among overweight youth (Curtis, 2008). However, obese adolescents tend to have fewer friends and to be less socially integrated than their lean counterparts, with white female adolescents being more affected by this phenomenon than their male and ethnic minority peers (Ali, Amialchuk, & Rizzo, 2012). Such peer rejection and relative social isolation also reduce adolescents' chances of finding an intimate relationship partner. Data from a nationally representative study conducted in the US show that sexual initiation occurs later among overweight youth compared to their peers, the former also having an increased risk of entering adulthood without any intimate relationship experience (Cheng & Landale, 2010). Overweight girls appear to be more affected by social marginalization both in friendship and in romantic relationships and have a higher risk of being single on the long term (Sweeting, 2008; Tang-Peronard & Heitmann, 2008). Moreover, overweight girls seem to be more likely to have overweight dating partners compared to boys (Tang-Peronard & Heitmann, 2008).

Beyond social isolation, active victimization such as weight teasing was associated with higher weight and shape concerns among overweight preadolescents in a clinical sample (Sinton et al., 2012). Moreover, significant associations have been found between weight teasing and decreases in young people's self-esteem and body satisfaction (Puhl & Latner, 2007). In this sense, lower self-esteem was associated with both manifest and internalized weight stigma among overweight youth (Eisenberg et al., 2003; Wardle & Cooke, 2005). Furthermore, although some studies found independent associations between weight stigmatization and body dissatisfaction (controlling for

BMI, gender and race), the former can also act as a mediator of the relationship between increased BMI and body dissatisfaction among overweight children and adolescents (Puhl & Latner, 2007). From a different perspective, it was shown that self-esteem, body dissatisfaction and body image mediate the relationship between weight and peer victimization (Brixval et al., 2012; Fox & Farrow, 2009; Giletta, Scholte, Engels, & Larsen, 2010). Accordingly, body dissatisfaction, low self-esteem, or even high perceived weight status can make overweight youth more vulnerable to experiencing or reporting peer bullying (Fox & Farrow, 2009; Giletta et al., 2010; Wilson, Viswanathan, Rousson, & Bovet, 2013). Generally, irrespective of causal pathways, there is evidence of lingering adverse effects of stigma and its internalization on self-esteem. Accordingly, formerly obese girls who had reached a normal weight status still endorsed lower self-esteem and higher body dissatisfaction levels compared to both girls who were always normal-weight or who were always obese (Mustillo, Hendrix, & Schafer, 2012).

Weight stigma and teasing also makes young people more vulnerable to depression and anxiety (Goldfield et al., 2010; Libbey et al., 2008; Puhl & Latner, 2007). Consequently, children and adolescents who experience weight teasing are more prone to suicidal ideation compared to those who are not teased based on their weight (Eisenberg et al., 2003). In obese girls, peer victimization at age 12 or 13 predicted levels of depressive symptoms four years later, the association being mediated by girls' self-concept (Adams & Bukowski, 2008). However, it was shown that depression can also mediate the relationship between overweight status and peer victimization, with increased depression symptomatology making overweight youth more prone to report being bullied by peers (Giletta et al., 2010). The negative impact of weight teasing on adolescents' self-esteem and anxiety levels, as well as the impact of the thin ideal on their self-evaluations increased with the extent to which they felt bothered by their peers and parents' negative weight comments (Libbey et al., 2008). Negative effects of weight teasing on obesity-related behaviours have also been documented. For instance, overweight children and adolescents who are victimized by their peers are less inclined to engage in physical activity (Bauer, Yang, & Austin, 2004; Storch et al., 2007). Moreover, increased levels of weight teasing were associated with a decrease in physical activity among boys, independent of weight status (Losekam et al., 2010).

On the other hand, adolescents attending weight loss camps were reported to cope with the stress caused by weight based victimization by engaging in unhealthy eating behaviours, which in turn decreased their willingness to use more adaptive coping strategies (King, Puhl, Luedicke, & Peterson, 2013). Moreover, adolescent girls reporting peer weight teasing had higher rates of emotional eating (Olvera et al., 2013), while weight teasing and encouragement to diet in the family setting

were associated with body dissatisfaction, unhealthy weight control practices and disordered eating among adolescent girls (Neumark-Sztainer et al., 2010; Olvera et al., 2013; Unikel Santoncini, Martin Martin, Juarez Garcia, Gonzalez-Forteza, & Nuno Gutierrez, 2013).

Frequent weight teasing further increased the extent to which overweight youth engaged in binge eating and unhealthy weight control practices (e.g. dieting, vomiting), irrespective of their age, ethnicity and socioeconomic status (Haines, Neumark-Sztainer, Eisenberg, & Hannan, 2006). Further research even suggests that weight teasing is associated with disordered eating irrespective of weight status (Goldfield et al., 2010; Neumark-Sztainer et al., 2002). One of the mechanisms through which weight based teasing may lead to binge eating is by increasing negative affect (Suisman, Slane, Burt, & Klump, 2008). The risk of engaging in more severe binge eating was also found to increase with the degree to which adolescents were bothered by negative weight comments coming from their parents or peers (Libbey et al., 2008).

However, a recent study found that although weight teasing was associated with disordered eating in Spanish adolescent girls, its predictive value was low (Rojo-Moreno et al., 2013). Moreover, reports of having a childhood history of weight teasing were not associated with lifetime incidence of psychiatric diagnoses (including eating disorders) in adults undergoing bariatric surgery (Rosenberger et al., 2007).

Beyond all other negative effects of weight stigmatization, the fact that peer weight victimization influences adolescent weight trajectories is particularly relevant in the area of paediatric overweight. For instance, it was shown that obese Canadian girls who were victimized by their peers at the age of 12 or 13 were more likely to have higher BMI values four years later. On the other hand, BMI levels at 4-year follow-up were lower in obese Canadian boys who had been victimized by their peers when they were 12 or 13 years old (Adams & Bukowski, 2008). In an Australian sample, however, both adolescent girls and boys who experienced bullying at age 14 had a higher risk of being obese at 21, with relative ORs of 2.54 for boys and 2.18 for girls (Mamun, O'Callaghan, Williams, & Najman, 2013). As a potential explanation, it was suggested that stigmatization contributes to the long term maintenance of obese status by promoting emotional eating and thus creating a vicious circle (Rees et al., 2013).

In conclusion, extensive evidence points to the negative effects of weight stigmatization on young people's well-being and on their life chances. Although most relevant research consists of observational, cross-sectional studies, longitudinal data point to the connection between weight stigmatization and subsequent depression and negative weight trajectories. Arguably due to ethical reasons, no experimental data are available to clearly indicate causal associations between weight

stigmatization and negative health outcomes among overweight youth.

### **2.3.7. Coping with weight stigma**

#### **2.3.7.1. General strategies of coping with weight stigma**

In the context of overweight and obesity, coping with weight stigma refers to measures taken by individuals in order to manage and adapt to the distress of being either implicitly or explicitly stigmatized and/or discriminated against due to their weight. To this end, overweight individuals can make use of two main coping strategies by focusing either on the cognitive appraisal of the stressor and available coping resources (problem-focused) or on the regulation of affective responses to the stressor (emotional-focused) (Lazarus & Folkman, 1984).

Puhl and Brownell (2003) suggest that the uptake of specific coping strategies is influenced by factors such as gender, age, identification with the stigmatized group, personality traits, self-esteem, perceived personal control over weight and problem-solving ability, contemporary ideologies (e.g. meritocracy) and beliefs in individual ability to alleviate negative moods (Puhl & Brownell, 2003b). Overall, they identified 10 types of coping mechanisms that can be employed when managing the stress of weight based stigmatization: confirmation and self-acceptance of stereotypes, self-protection, compensation, personal attribution, identity negotiation, confrontation, social activism, avoidance and psychological disengagement, as well as communal coping and losing weight (Puhl & Brownell, 2003b). A brief description of these psychological mechanisms in their relation to the strategies proposed by Goffman (1963) in his classic stigma management framework is provided below.

*Confirmation and self-acceptance of stereotypes* implies that overweight individuals cope with being stigmatized and discriminated against by confirming and internalizing the negative way in which they are perceived by others (Goffman, 1963; Puhl & Brownell, 2003b). Consistently, Goffman suggested that internalizing the stigmatized identity may lead to the development of negative feelings such as shame, self-hate and self-derogation (Goffman, 1963).

On the other hand, *self-protection* strategies may serve as a buffer against the negative effects of stigma and discrimination, thus potentially explaining why some overweight individuals do not experience decreases in their self-esteem. Such strategies comprise external attributions for negative experiences and comparisons to others who are in a similar position (Puhl & Brownell, 2003b). Generally, downward or self-enhancing comparisons (i.e. comparisons to those who are 'worse off', as theorized by Leon Festinger; see section 2.2.3. Body image and body image dissatisfaction), tend to have a protective effect on one's self-esteem (Van Vonderen & Kinnally, 2012). Another self-protective strategy relies on the principle of psychological centrality (see section



2.2.2. Self-esteem), by means of which individuals minimize the significance of deviant trait(s) for their self-concept, while emphasizing other personal features or competences in which they excel. However, it is suggested that self-protective coping mechanisms are effective only if the overweight individual identifies with the stigmatized group (Puhl & Brownell, 2003b).

*Compensation* is another coping strategy used by stigmatized individuals and refers to them developing skills in areas in which they can achieve social acknowledgment. In order to atone for their stigmatized weight status, overweight individuals can use either primary or secondary compensation strategies. Whereas primary compensation is employed to prevent prejudice and discrimination (e.g. by being assertive, helpful or having a positive attitude), secondary compensation occurs after having experienced discriminatory behaviour. If the latter is the case, compensatory skill development can also play an adaptive role in response to increasing stigma (Puhl & Brownell, 2003b). Compensatory coping strategies appear to be particularly common among individuals who have been obese since childhood, as it is assumed that these individuals have a higher internalization of weight bias and have been subjected to more pressure to excel in other life domains, in order to gain social acceptance and recognition (Degher & Hughes, 1999).

A particular type of compensation is what Goffman (1963) described as measures of indirect stigma correction, by means of which stigmatized individuals devote much effort to mastering skills which are considered incompatible with their stigmata. In the case of overweight individuals, such indirect stigma correction might refer to engaging in high performance physical activity or developing high levels of general or specific intellectual expertise.

Another possible way of coping with weight stigma is through *identity negotiation*, i.e. by adjusting one's self-image to specific circumstances. In doing so, the individual can either negate or enhance his or her identity, viewed here as the affiliation to a particular category or group, along with the associated characteristics (Deaux & Ethier, 1998). As eliminating one's stigmatized identity is not a readily available option for overweight individuals without losing weight, these can only deny their identity by not relating to stereotypical descriptions (e.g. considering oneself as being energetic as opposed to lazy). Similarly, Goffman suggested that some individuals bearing a social stigma reject the identity that society projects upon them and present themselves as normal individuals, who deserve "a fair chance and a fair break" (Goffman, 1963). On the other hand, overweight people can enhance and reaffirm their identity by celebrating their weight, participating in events aimed at increasing the social acceptance of obesity or intensifying their contact with similar others. Alternatively, the relevance of one's overweight identity can be minimized in selected social contexts (e.g. when being around non-overweight friends) and reaffirmed in others (e.g. with other

overweight family members). (Puhl & Brownell, 2003b).

As an active coping strategy, confronting stigmatization agents can make overweight individuals feel empowered and potentially end discriminatory behaviour (Goffman, 1963; Puhl & Brownell, 2003b). *Confrontation* can be achieved both through verbal assertion (e.g. making witty remarks or complaining to direct supervisors) and physical aggression, although the former strategy is more common (Puhl & Brownell, 2003b).

Overweight and obese individuals can also cope with weight stigma by engaging in advocacy groups or by educating others with regard to the stigma associated with excess weight. While advocacy groups may find some resonance at the policy-making level, *social activism* is thought to mainly elicit benefits in individuals' immediate social environment and is usually a coping strategy employed in the case of stigmatized characteristics that cannot be changed. Although weight loss is possible, the limited success of obesity therapy makes social activism a viable coping solution for overweight individuals (Puhl & Brownell, 2003b).

Another associative strategy, *communal coping* occurs when several individuals consider weight stigma to be a common problem for which they seek to find a solution by sharing individual resources. The components of communal coping are the perceived utility of cooperation with others, shared communication about the stressor and the collective development of coping strategies (Lyons, Mickelson, Sullivan, & Coyne, 1998; Puhl & Brownell, 2003b).

On the other hand, if stigmatized individuals perceive the risks of engaging in potentially threatening social interaction as being too high for their ability to cope, they might choose to avoid or withdraw from such interaction situations, a strategy coined by Goffman as *defensive cowering* (Goffman, 1963). Alternatively they may discredit stigmatization agents by emphasizing their bias or place lower value on stigmatizing life areas (e.g. physical activity) and not evaluate themselves based on outcomes therein. However, *avoidance* as a coping strategy was associated with higher distress among overweight adults (Myers & Rosen, 1999), as it can result in social isolation, poor social skills and low social support. Also, avoidance may lead to poor motivation to perform well in activities fostering high stigma potential (Puhl & Brownell, 2003b).

Coping with weight stigma is also achieved by *providing socially acceptable explanations* for one's overweight, as opposed to the stereotypical *personal attribution* of obesity. On the one hand, individuals may use external attribution mechanisms to explain why they have become overweight or obese and assign fault to other people or uncontrollable factors (e.g. family pressure to eat, medication side effects or genetics). On the other hand, individuals may recognize their share of responsibility for remaining overweight, but give socially tolerated or approved reasons for engaging

in obesogenic behaviours (e.g. eating to cope with personal loss or as a form of punishment for being overweight). Accordingly, overweight individuals take on a victim status in an attempt to deflect blame for their stigmatized trait, implying that they should not be subjected to social sanction (Puhl & Brownell, 2003b). Similarly, Goffmann suggests that the stigmatized can also rationalize their stigma as a source of “*secondary gains*” by attributing all personal failure to their stigmatized attribute, attaining otherwise unaccessible learning effects, or becoming sensitive to the limitations of “normals” (Goffman, 1963).

On the other hand, those who endorse internal control attributions may choose to cope with weight stigma through measures of direct stigma correction or elimination of the objective reason for one’s social marginalization (Goffman, 1963), such as attempting to *lose weight* (Puhl & Brownell, 2003b). However, believing that they are able to lose weight can make overweight people more inclined to blame themselves for weight loss failures and can also prevent them from using other coping strategies. Moreover, losing weight as a coping strategy implies some extent of weight bias internalization. Accordingly, individuals may strive to lose weight based on their own desire to eliminate their stigmatized identity or may engage in weight loss attempts due to external pressure, without feeling particularly motivated (Puhl & Brownell, 2003b).

As weight loss might not be (readily) attainable, overweight individuals may try to cover their stigmata (e.g. by wearing loose clothing), in order to make it less visible to others and consequently reduce tension in social interactions (Goffman, 1963). Moreover, even if individuals succeed in losing weight, their stigma correction only transforms them from discredited into discreditable individuals, as they will forever have a record of past stigmata. In and beyond the context of weight loss, (former) overweight people can accept their stigmata as a part of their life course, integrate it into their biography and practice information control strategies in order to avoid future stigmatization (Goffman, 1963).

However, Goffman (1963) underlines the fact that both stigmatized people and “normals” face tension in mutual interaction situations. As a means of alleviating this tension, “normals” also employ specific strategies of coping with stigma. Accordingly, apart from perpetrating implicit or manifest stigma, “normals” may also tend to avoid contact with the stigmatized or have sympathetic attitudes and advocate for their cause, to the extent that sympathy itself can be perceived as obtrusive and stigmatizing by its targets (Goffman, 1963).

#### 2.3.7.2. Weight stigma coping strategies among overweight youth and their parents

In a study of coping mechanisms employed by German adolescents when managing weight stigma, Rehaag (2010) found that most often overweight young people cope with weight bias by trying to

negotiate and present a “normal” identity. Moreover, personal experiences of stigma were often described as belonging to a past life stage such as childhood or primary school (Rehaag, 2010). An overview of all coping strategies identified by Rehaag (2010) is presented in Table 3.

*Table 3. Stigma management strategies employed by socially disadvantaged German youth as identified by Rehaag (2010) based on Goffman’s theoretical framework*

Coping mechanism	Coping strategies
Stigma correction	Direct correction
	Indirect correction
Presentation as a normal person	Relativization through emphasis of underlying, more prominent stigmata
	Relativization through generalization
	Relativization through trivialization
	Display of self-confidence
	Integration
	Emphasis on entitlement to fair and equal chances
Defensive cowering	Social withdrawal
	Ignoring stigmatizing agents and situations
Active approach	Presentation of being overweight as an advantage
	Discrediting perpetrators by emphasizing their flaws
	Hostile bravado
Covering	Masking one’s stigmata
Secondary gains	Personal development
	Focus on inner values and emotional growth
Biographical integration of stigma	Description of stigma as pertaining to one’s past experiences
	Description of stigma as critical life event
	Becoming used to stigma
Strategies employed by “normals” in their interaction with the stigmatized	Self control
	Victimization
	Exclusion/Marginalization
	Support and advocacy

Although theoretically possible, a direct correction of the stigmatized characteristic by losing weight did not appear to be a viable coping strategy in German adolescents’ daily life, as young people acknowledged the long-term and not always successful nature of weight management attempts. On the other hand, strategies of presenting oneself as a “normal” person acted as methods of indirect stigma correction by reducing the exclusion potential of excess weight, while emphasizing similarities to the “normal” group (Rehaag, 2010).

A central strategy of reducing the stigma of being overweight was by putting it into perspective through generalization. Accordingly, adolescents described excess weight as one of many socially undesirable attributes, suggesting that nobody was without flaw and that everyone carried a stigma of some sort. Another relativization strategy used by German adolescents was viewing stigma and discrimination as not being primarily triggered by overweight, but by other underlying social stigmata (e.g. being dull, malicious or unloyal). Moreover, particularly girls and boys of Turkish ethnicity described bullying and name-calling among peers as a trivial, fun form of interaction which did not foster any marginalization potential and consequently did not negatively affect its targets (Rehaag, 2010).

In presenting themselves as being “normal”, German overweight adolescents also emphasized their participation in peer group activities, even though these might expose them to weight stigmatization (e.g. going swimming with friends). Beyond active peer group engagement, personality traits such as being open-minded were also viewed as promoting social integration in spite of overweight stigma. Moreover, displaying self-confidence was perceived as a strategy of resistance to and discouragement of negative social interactions (Rehaag, 2010).

At a more general level, overweight youth referred to moral claims of fairness, equality and intercultural tolerance to justify their entitlement to being treated as “normal” peers and invited to more empathy in social interaction. However, in doing so, German adolescents revealed an underlying internalization of societal stereotypes about overweight and applied these in their interactions with individuals who were even more stigmatized (Rehaag, 2010).

Another study found that general acceptance of oneself, attempting to ignore negative experiences but also confrontation and verbal aggression were mechanisms used to cope with weight stigma among Caucasian and African-American adolescent girls (Li & Rukavina, 2009; Neumark-Sztainer, Story, & Faibisch, 1998). Moreover, overweight and obese youth reported avoiding social activities and peer interactions as a means of coping with stigma in general (Rees et al., 2013) and in physical education settings (Bauer et al., 2004). The same was reported in another study, in which overweight adolescents excluded themselves from physical education and social eating settings in order to escape peer stigmatization (Curtis, 2008). Another stigma management mechanism reported by students in the study of Curtis (2008) was reciprocating aggressive or threatening behaviour, a coping strategy which was deemed more acceptable for boys.

In terms of strategies employed by normal ‘others’, Puhl and colleagues (2011) found that approximately 60% of adolescents in a mainly non-overweight community sample would feel comfortable helping their overweight peers if they were victimized. However, when witnessing such

incidents, about 50% did not usually take any action (Puhl et al., 2011).

On the other hand, a British study reported on a variety of ways in which parents attempted to help their children deal with weight stigmatization experiences (Edmunds, 2008). For instance, given that parents viewed schools and particularly physical education as the main stigmatization contexts for overweight youth, some transferred their offspring to private schools or schools with smaller classes and implicitly closer behavioural control. Also, in order to offer their children a break from negative experiences, some parents took them out of their usual environment on holiday and some even relocated. Parents who could afford to do so chose holiday destinations where childhood overweight was as common as in the UK (e.g. Greece or the USA). Moreover, parents tried to support their children by buying them fashionable clothing from these holiday destinations or by sewing them clothes themselves.

### **2.3.8. Weight stigma internalization among adolescents**

Being a relatively new field of research, the internalization of weight bias, stereotypes and attitudes has been mostly studied among adults. However, the few studies of weight bias internalization among children and adolescents show that adopting negative stereotypes about overweight and applying them in their self-evaluations has a negative impact on young people's psychosocial well-being (Davison, Schmalz, Young, & Birch, 2008; Roberto et al., 2011). Although the endorsement of weight-related stereotypes was shown to decrease among American Caucasian girls between 9 and 11 years, stratified analyses revealed that weight bias internalization only changed among normal-weight girls, while remaining stable among overweight girls (Davison et al., 2008). In the only adolescent study applying the Weight Bias Internalization Scale, an instrument originally designed for use with adults, weight bias internalization was positively associated with depression ( $r=0.19$ ), anxiety ( $r=0.465$ ), social and behavioural problems ( $r=0.364$ ), as well as eating, shape and weight concerns ( $r=0.579$ ,  $r=0.815$  and  $r=0.545$ , respectively), when controlling for BMI. Moreover, high weight bias internalization was associated with decreased quality of life among severely obese adolescents accessing bariatric surgery ( $r=-0.480$ ), independent of objectively assessed BMI. However, weight bias internalization did not predict past or present psychiatric diagnoses or suicidal ideation (Roberto et al., 2011).

#### **2.4. Summary, research aims and hypotheses**

The review of current evidence in the field of overweight and associated stigma among adolescents illustrates a relatively solid understanding of risk factors for overweight and its consequences for the health and well-being of paediatric populations. Moreover, there seems to be broad consensus within the scientific community on favouring long-term weight reduction strategies based on lifestyle change, once obesity is clinically diagnosed.

In contrast, research on the stigmatization of overweight individuals is underrepresented and focuses mainly on adult populations. Among paediatric populations, aspects of stigmatization such as contexts and perpetrators of discriminatory behaviour, as well as prevailing stereotypes about overweight youth have received more attention than more latent stigma dimensions. Accordingly, little is known about the extent to which overweight children and adolescents internalize weight stigma and causal pathways linking stigmatization and negative health outcomes are still unclear. However, despite the scarcity of targeted research among young people, current literature points to negative effects of weight stigma internalization on both overweight individuals' coping strategies and their general psychosocial well-being, as illustrated above.

Based on the synthesis of the reviewed literature, the theoretical framework of the present study is presented in Figure 1. The model depicted below is by no means an exhaustive illustration of all possible associations between overweight, stigmatization and its outcomes, but a simplified, useful framework for the way in which the relationships between these central constructs were conceptualized in the present study.

In Germany, only two previous studies on stigma stereotyping, experiences and relevant coping mechanisms among overweight children and adolescents could be identified to date (Rehaag, 2010; Thiel et al., 2008). Against this background, the present research aims to contribute to filling the research gap on stigma experiences and internalization among German youth by addressing the following objectives:

1. To examine whether an adapted form of the Weight Bias Internalization Scale (WBIS) can be used as a valid and reliable measure of weight bias internalization among German adolescents.
2. To establish the extent to which overweight adolescent boys and girls accessing obesity care in a specialized outpatient setting in Berlin, Germany experience and internalize weight stigma.
3. To examine whether weight stigma internalization has an impact on adolescents' general well-being.

In order to allow for their empirical examination, the study aims were then translated into the following *general hypotheses*:

1. The validity and reliability of the Weight Bias Internalization Scale were not affected by its translation and adaptation for use with German overweight and obese adolescents.
2. The extent of weight bias internalization among German overweight adolescents varies with individual characteristics such as weight status, gender, ethnicity and socio-economic status.
3. Weight bias internalization impacts negatively on overweight adolescents' quality of life.
4. Personal, social and familiar resources reduce the negative impact of weight bias internalization on overweight adolescents' quality of life.

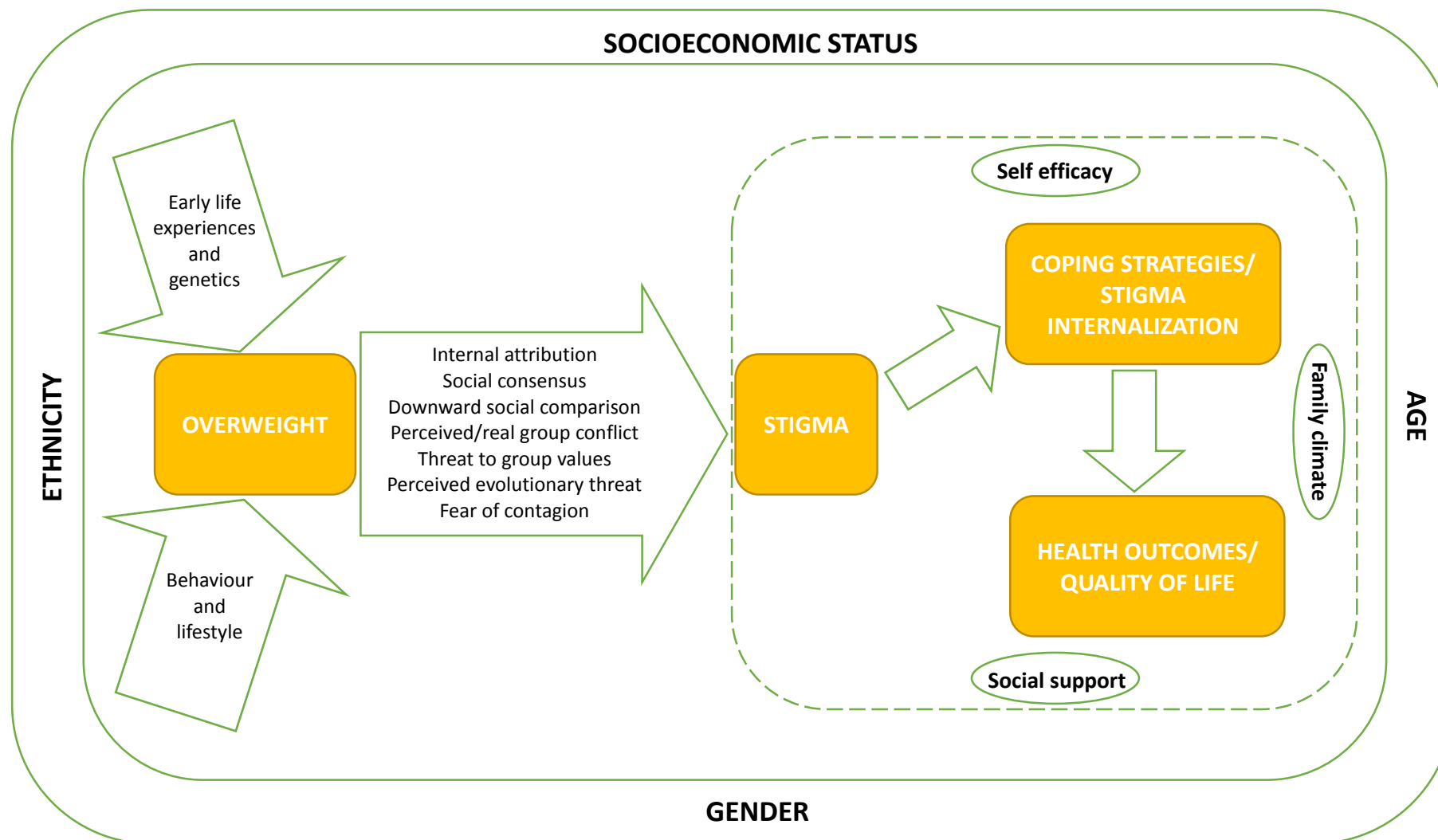
In turn, the proposed general hypotheses were translated into a set of six directly measurable, *operational hypotheses*, listed below:

- 1.1. Overweight adolescents with higher weight bias internalization scores have lower self-esteem scores.
- 1.2. Overweight adolescents with higher weight bias internalization scores have a higher tendency towards an internal body-related locus of control.
- 2.1. Extremely obese adolescents have higher weight bias internalization scores compared to overweight and obese adolescents.
- 2.2. Female gender, affiliation to an ethnic minority group and low socio-economic status are associated with higher weight bias internalization scores.
- 3.1. Overweight adolescents with higher weight bias internalization scores have lower scores on both generic and obesity specific quality of life measures compared to their peers.
- 4.1. Higher general self-efficacy, social support and a supportive family climate act as protective factors against the negative impact of weight bias internalization on overweight adolescents' quality of life.

A detailed presentation of the materials and methods selected and used to answer the research question, attain the study aims and test the proposed hypotheses is provided in Chapter 3.



Figure 1. Theoretical framework



## Chapter 3. Materials and methods

### 3.1. Study design

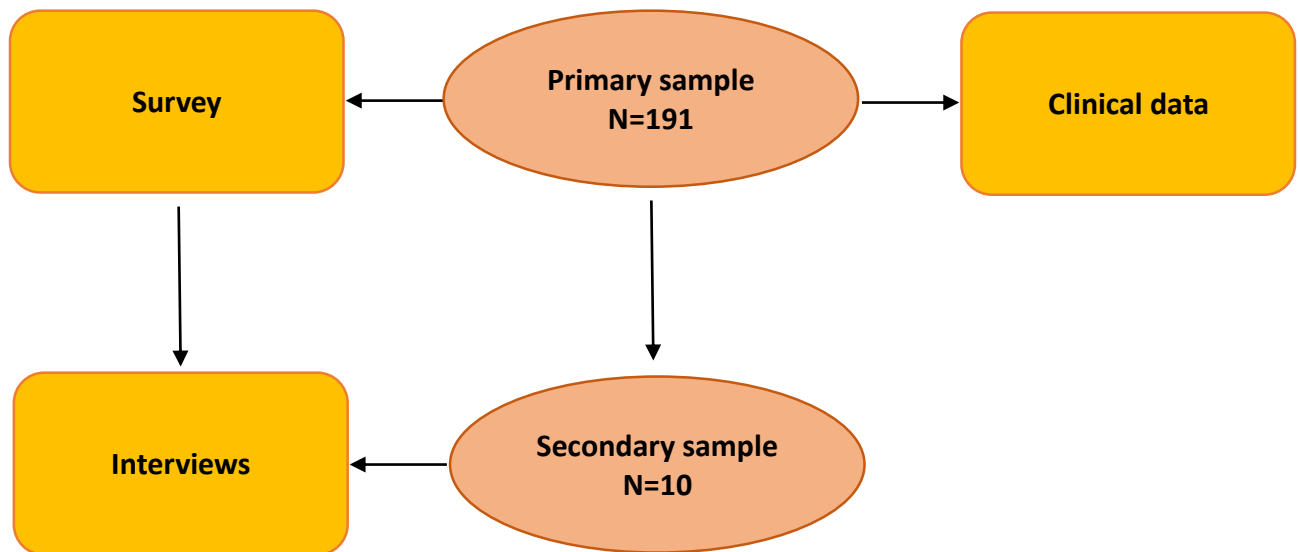
The present study set off to establish the extent to which adolescents accessing obesity care are subject to weight-based stigma in their social environment and, if so, how their negative experiences impact on their general and emotional well-being. As a prerequisite for establishing the relationship between weight-based stigma and adolescents' well-being, the research process also focused on the validation of a German version of the Weight Bias Internalization Scale (Durso & Latner, 2008), as a measure of internalized weight stigma. Although the Weight Bias Internalization Scale was developed to assess the extent to which adults believe that negative stereotypical attributes associated with overweight apply to themselves, it has also been successfully used in a sample of extremely obese adolescents (Roberto et al., 2011). However, before using it in research with German adolescents, the scale needed to be translated, adapted to the particular life circumstances and level of understanding of young people aged between 13 and 18 years and subsequently analysed in terms of its validity and indication for use with overweight and obese teenagers.

Both the need to partially validate the research instrument and to provide a global overview of adolescents' experiences with manifest stigma (discrimination) and their internalization of negative stereotypes about overweight called for the use of a quantitative research method. Nevertheless, since stigma perception and internalization are utmost intimate psychological phenomena, it can be argued that applying only quantitative research methods in their exploration would be insufficient and would only offer an over-simplified image of stigma experiences. Therefore, the research topic also indicated the need for a qualitative research component, as a means of gaining insight not only into the context in which discrimination occurs, adolescents' perception of the general stigma of being overweight and their coping mechanisms, but also into their perception and views of the Weight Bias Internalization Scale, as an additional validation tool.

Against this background, a sequential mixed-method study design consisting of a quantitative survey followed by qualitative, semi-structured interviews was considered to be the most appropriate methodological approach for the selected research topic (see Figure 2 below). Additionally, since the population under study consisted of adolescents accessing care for excessive weight and associated comorbidities, socio-demographic data, as well as weight status information and duration of therapy were obtained from participants' patient records. The use of clinical data had a twofold purpose. On the one hand, socio-demographic information such as age and gender were of central importance during the recruitment process. On the other hand, data on participants' socio-demographic

characteristics, weight status and treatment duration were used to complement the quantitative information obtained through the survey.

*Figure 2. Study design*



The mixed-method paradigm has been established and is currently being widely used in health research, particularly in areas such as community health (Andrew & Halcomb, 2006), primary health (Creswell, Fetters, & Ivankova, 2004) and health services research (Johnstone, 2004). The popularity of mixed-method research designs relies mainly on their added-value in investigating complex phenomena by drawing upon a pluralism of perspectives, information sources and methodologies and thus generating a richer description and explanation of the study object than would have been possible if a single method had been employed (Ostlund, Kidd, Wengstrom, & Rowa-Dewar, 2011). The combination of quantitative and qualitative methods is therefore thought to elicit synergistic effects, by enhancing the individual strengths of each methodology, while simultaneously minimizing their respective limitations (Creswell, Klassen, Plano Clark, & Smith, 2011).

In the development of the mixed-method research design, the following evaluation criteria described in the literature (Andrew & Halcomb, 2006; Creswell et al., 2004) were observed:

1. Rationale;
2. Data collection and analysis;
3. Priority;
4. Implementation;
5. Integration;
6. Theoretical background.

A clear case for using a mixed-method approach in the present study was made in the beginning of

this section. The way in which the five remaining criteria were integrated in the research design is described below.

The present mixed-method study was developed within the scope of systematic triangulation, a *methodological framework* in which different perspectives are employed in order to address a phenomenon of interest (Flick, Garms-Homolova, Herrmann, Kuck, & Röhnsch, 2012). A strong program of triangulation was used, which views triangulation neither as a quality criterion for qualitative research, nor as a validation strategy, nor as a pragmatic combination of methods, but as a way of gaining additional knowledge of the research topic. Accordingly, between-method triangulation (mixing qualitative and quantitative methods within the study design) allowed for and implied a triangulation of data sets and of various theories both on weight stigma and on the different methodological approaches used (i.e. survey, qualitative interviewing). In this respect, the present research acknowledges the distinct character of the quantitative and qualitative paradigms, yet views their combination as an opportunity for obtaining not competing, but complementary results (Adamson, 2005). Consequently, findings from the two research components were triangulated as complementary perspectives on the phenomena under study - weight stigma, its internalization among overweight adolescents and its impact on their quality of life, as well as the validity and reliability of the WBIS.

For the present study, *data was collected through a questionnaire-based survey and semi-structured interviews*, which were *implemented sequentially*, with chronological precedence being given to the quantitative method. The acquisition of clinical data took place before, during and after the collection of empirical data specific to the present study. Information obtained from participants' medical records were merged with the data collected through the survey to form a single data set that was used for the statistical analyses pertaining to the quantitative research component. Qualitative information generated through the semi-structured interviews was analysed separately using specific data processing and analysis tools. In this sense, the research design relied on a *parallel data analysis strategy* (Onwuegbuzie & Teddlie, 2003).

Given their different aims and complementary character within the present study, *both research components were given equal priority* within the global study design. The sampling strategy for the qualitative component was informed by selected survey results, as well as socio-demographic data (see section 3.1.5 below), suggesting an *integration procedure in which data from the two research components were connected* (Creswell & Plano Clark, 2011). Nevertheless, quantitative data were only partially used in identifying key informants for interviews, so that the data integration potential was not exhausted. Consequently, *central findings from both research components were brought*

*together at the result description and interpretation level*, the qualitative dimension providing a rich descriptive framework for better understanding associations identified at a quantitative level.

In addition to observing the above-mentioned criteria for planning and conducting a mixed-method study, a catalogue of specific quantitative and qualitative research evaluation criteria was used to guide the research process. These quality criteria are described separately for each study component in the following paragraphs.

### **3.1.1. Quality criteria for the quantitative component**

The principles of validity and reliability guided the choice of data collection tools and data analysis procedures for the quantitative research component. The use of previously validated and well-established measurement scales not only ensured that the concepts of interest were adequately operationalized in the study questionnaire (*internal validity*), but also provided a certain degree of confidence that a replication of the measurement procedure would retrieve similar results (*reliability*). Also, as part of the study aims, specific procedures were developed and implemented to assess the validity and reliability of new or adapted measurement scales.

Externally valid (*generalizable*) results were pursued by using an exhaustive recruitment strategy in order to obtain the study sample. As such, all eligible adolescents who accessed obesity care in the study setting during the time frame dedicated to the quantitative data collection were informed about the study aims and procedures and invited to participate. Since the survey fieldwork span over 6 months, this recruitment strategy led to a study sample which is fairly representative of the general patient population in the study setting. Given the great diversity of patients accessing care at the selected clinic, the resulting sample is also arguably representative of the population of adolescents who access obesity care in the Berlin-Brandenburg region.

Surveying the extent to which the stigma of overweight becomes manifest and is internalized by overweight adolescents also had the pragmatic goal of providing *applicable* results that inform decision makers and healthcare professionals about the need for intervention in this area. Consequently, the impact of manifest and internalized stigma on overweight adolescents' quality of life was explored in order to help healthcare professionals identify ways to improve their patients' self-perception and well-being. Moreover, the research findings will be reported back not only to healthcare providers in the study setting, but also to the wider scientific community, as impulses for the development of appropriate interventions against the stigmatization of overweight individuals and its deleterious effects in a variety of settings.

### 3.1.2. Quality criteria for the qualitative component

As suggested by Steinke (2004), the present study draws on the premises that qualitative research needs specific evaluation criteria and that quality criteria applied in quantitative research are not suitable for the assessment of qualitative research. In order to cater to this requirement, Steinke (2004) proposed a broad set of quality criteria, which need to be observed and defined based on the specific features of the study design they are applied to (Hsieh & Shannon, 2005; Steinke, 2004).

The first of these criteria is *inter-subject comprehensibility*, which can be achieved through clear and detailed documentation of the research process, peer de-briefing and use of codified procedures in collecting and analysing data. In the present study, a thorough documentation of all undertaken research steps and elements (researcher's prior understanding of the study topics, data collection method and context, transcription rules, the actual data, methods of analysis, information sources, decisions and problems, quality criteria) was pursued. Accordingly, a significant amount of space in the thesis was allotted to the description of the study design, the research instruments, the data collection and analysis procedures as well as limitations and bias inherent to the selected methods. Moreover, in order to ensure that the research process is understandable and coherent for other researchers, peer de-briefing was practised throughout all study phases, yet more intensively in the initial planning phase, as well as in the interpretation of the study findings. During the data analysis, the resulting category system was peer-reviewed for comprehensibility. Also, data was collected and analysed using well-established codified procedures, relying thus on shared methodological knowledge within the scientific community, which arguably enhanced the transparency of the research process. The technique chosen for the collecting data was semi-structured interviewing. The resulting interview material was analysed through a conventional qualitative content analysis (Hsieh & Shannon, 2005) based on the inductive procedure described by Mayring (Mayring, 2000). The second, and perhaps the most important quality criterion adhered to in the present study was that of methodological *indication*, defined as the appropriateness of choices made with regard to the catalogue of methods and tools used to explore the phenomena of interest. Firstly, the question of how weight-based stigma impacts on overweight adolescents' well-being and self-perception would only be answered at a superficial level if only quantitative methods were used. Hence, a qualitative approach was called for in order to obtain a more detailed description of psychosocial factors (e.g. perception of general social stigma of overweight, social network and body image) associated with weight-based stigma. As such, the method of choice needed to be sufficiently structured to cover all aspects of interest, but flexible enough to give respondents the freedom they require in order to provide an authentic account of their experiences, thoughts and feelings. To this

end, semi-structured individual interviews were preferred over narrative interviews or focus groups. Consistent with the data collection method, qualitative content analysis, a widely established, standardized analysis technique was used to analyse the interview material. Prior to being analysed, the interviews were transcribed using simple, standardized conventions, which also included recording meta-elements such as pauses or laughter. However, the interview transcription focused mainly on the verbal content, which was the main object of the data analysis. In identifying potential interviewees, the sampling strategy aimed at maximizing the variety of reported experiences by choosing male and female adolescents of different ages, ethnic backgrounds, as well as different levels of weight bias internalization, a core dimension in the present study. Overall, the study was designed and conducted in accordance with specific criteria for the evaluation of qualitative research.

All findings presented and discussed in the current study have an *empirical foundation*, i.e. all proposed interpretations of the studied phenomena were developed based on analytic induction and are supported by evidence (e.g. quotes). Given that in the present study adolescents were only interviewed once, a major tool for grounding research findings in participants' actual experiences and views, communicative validation, could not be applied.

Moreover, particular attention was paid to the *limitations* of the main explanatory trends by consistently describing extreme cases in the presentation of qualitative results. This also served as a means of exploring different meanings of weight-based stigmatization in the specific psychosocial context in which it occurs. In line with the *coherence* criterion, contradictions and questions that remained unsolved after analysing the data were addressed in the discussion of the study findings. The *relevance* principle requires that qualitative research contributes to generate new, comprehensible interpretations and explanations for the studied phenomena or supports the identification of solutions to the problems that triggered the research. In the present study, the context(s) in which stigma becomes manifest, adolescents' views on the social stigma of overweight, as well as potential resources which might reduce the negative impact of stigma (e.g. social network) were looked into with the aim of providing useful cues which would enable healthcare providers to adequately address the issue of overweight stigma in practice.

Concerning the *reflected subjectivity* principle, the researcher carefully considered her impact at every stage of the research process and accordingly tried to limit researcher bias whenever possible. The researcher's methodological preference for structured research procedures were acknowledged and integrated in the selected qualitative data collection and analysis methods. The relatively low perceived age difference and consequently the relative power balance between the researcher and

the interviewees allowed for the establishment of an adequate trust relationship, in which a significant amount of authority was invested in study participants as key informants on the topic of weight bias. Although the researcher was familiar with the healthcare delivery activities at the obesity clinic, collecting primary data in a clinical setting posed specific challenges (e.g. limited privacy in the waiting room when approaching potential study participants, simultaneous appointments of potential research participants etc.), which were reflected upon, as a means to discern potential bias sources and address them accordingly.

### **3.1.3. Study setting**

The present study was conducted at the paediatric obesity outpatient clinic affiliated to the Interdisciplinary Socio-paediatric Care Centre of the Charité - Universitätsmedizin Berlin. In Germany, socio-paediatric care is the institution catering to the needs of children whose disease characteristics, severity and duration exceed the scope of general ambulatory paediatric care, thus requiring a complex therapeutic setting (Borusiak, 2008). The Charité paediatric obesity outpatient clinic provides healthcare services to overweight and obese children and adolescents living in the Berlin metropolitan area. The obesity clinic provides care to approximately 300 children per year quarter, most of whom visit the clinic on a monthly basis. Apart from the obesity department, the Charité Interdisciplinary Socio-paediatric Care Centre also provides health services to paediatric patients in the field of rheumatology, endocrinology, gastroenterology, cardiology, haematology, oncology, as well as metabolic conditions and diabetes.

### **3.1.4. Study population**

The study population was initially defined based on the following criteria:

- Inclusion criteria
  - Age 13 years or older
  - BMI higher than the 90<sup>th</sup> percentile for age and gender
  - Male and female gender
  - Enrolment in the therapy program of an obesity clinic
- Exclusion criteria
  - Unwillingness to participate in the study
  - Failure to return parental consent form.

During the recruitment process, potential participants belonging to the following patient categories were also excluded:

- Patients who were attended by professionals of the obesity clinic, despite not being overweight



- Patients with psychological or developmental impairments, which would prevent their accurate understanding of the study instruments and procedures.

These a priori unforeseeable exclusion criteria were derived out of the researcher's first-hand experience of the complex, interdisciplinary practice within the obesity clinic, a healthcare unit which is embedded into a broader health centre providing care to children with special healthcare needs that exceed the scope of medical care alone (see definition of socio-paediatric care in section 3.1.3. above). As a result of the interdisciplinary nature of healthcare provision both at the obesity clinic and within the broader Interdisciplinary Socio-paediatric Care Centre, patients of the associated paediatric rheumatology or endocrinology departments can receive psychotherapeutic care from professionals employed by the obesity clinic without being overweight.

Moreover, as recommended by clinic staff, some patients suffering from severe mental health and developmental impairments were excluded, as their conditions would have prevented them from accurately understanding and providing appropriate answers to the questionnaire and interview items. The issues of agency and informed consent for participation in the study in this specific patient group raised additional challenges, which also pointed to an ethical ground for their exclusion from the present research.

### **3.1.5. Sampling strategy**

Consistent with the sequential implementation of the two research components in the proposed project, a two-stage sampling procedure was chosen. An initial sample size calculation for the survey was performed based on the adolescent average WBIS score and standard deviation identified by Roberto and colleagues (2011). In the absence of relevant reference values as to what a clinically significant inter-group difference in terms of weight bias internalization might be, a value between 0.5 and 1 units of the mean was deemed to be sufficient for an exploratory approach. The sample size calculation indicated that 101 participants per group would allow for the identification of a 0.6-unit difference between the WBIS scores of extremely obese and overweight to obese participants, at an  $\alpha$ -level of 0.05 and a  $\beta$ -level of 0.2. As such, a total sample size of 202 participants was deemed appropriate and sufficient for the identification of a relevant difference between the two study groups.

The selected survey sample subsequently served as the basis for the selection of interview participants. Based on the frequency analysis of the WBIS scores distribution, particular attention was paid to study participants with extreme weight bias internalization scores (extremely high vs. extremely low). Interview participants were then purposively selected from each of the two categories, in order to obtain insight into the experiences and coping strategies of these groups,

given their likelihood to pose specific challenges to therapeutic efforts.

After conducting the survey, a distribution analysis of the weight bias internalization scores was performed and the 10<sup>th</sup> and 90<sup>th</sup> percentiles were computed. After identifying the respective cut-off values for extreme weight bias internalization, survey participants with scores below the 10<sup>th</sup> percentile and above the 90<sup>th</sup> percentile were identified and separately listed. Of these two groups of approximately 20 potential interviewees, 4 adolescents with extremely low and 6 adolescents with extremely high weight bias internalization were selected, as youth with higher WBI scores were expected to provide richer and more informative accounts of stigmatization experiences. In the selection process, variation on the following variables was pursued:

- intra-group magnitude of weight bias internalization;
- gender;
- age;
- ethnicity.

The interviews aimed at gaining more detailed insight into adolescents' experiences with weight-based stigmatization. Therefore, a necessary condition for inclusion in the interview sample was that adolescents had actually been discriminated against because of their weight status. In order to ensure an appropriate participant selection, adolescents' survey reports of discrimination experiences were used. As such, survey participants with extreme weight bias internalization scores who had not reported any actual experience with weight-based discrimination were not contacted for interviews. As expected, this was rather the case of adolescents with extremely low weight bias internalization scores.

### **3.1.6. Data protection and ethics considerations**

The data collection, storage and analysis in the proposed study was conducted in accordance with the Helsinki Declaration. As such, all collected data were handled confidentially and were reported in an aggregated form, leaving no possibility for any third parties to trace back the identity of individual respondents.

In order to protect their identity, each participant was assigned an alphanumeric code consisting of the following elements:

1. The last letter of the participant's last name
2. The last letter of the participant's first name
3. A set of three digits corresponding to the participant's order of inclusion in the study sample

For instance, a participant named Anne Müller, included as the 25<sup>th</sup> participant in the study would

have been assigned the code RE025.

The list of recruited participants' names, contact details and study codes was stored separately from the completed questionnaires throughout the entire study duration. During the data collection process (mailing of information about the study, questionnaire distribution at the obesity clinic) the name/code/contact details list was stored at the Berlin School of Public Health, in a locked drawer in the researcher's office. On completion of the research process, the list of names, contact details and study codes was deposited at the obesity clinic, where it will be stored for additional 2 years at the end of which they will be destroyed.

Participation in the proposed study was voluntary. As such, all participants were given the option to discontinue their participation at any time in the data collection process. Since most study participants were still minors, parental informed consent was sought. In this sense, a written informed consent form (including the description of the study aims and procedures) for both participants and their parents was mailed to eligible patients prior to the distribution of the study questionnaire (see Annexes A1-A4).

The survey data were entered into a database specifically created for the current study. The completed questionnaires were stored in a locked drawer in the main researcher's office for three months after completion of the data collection process, after which they were destroyed. The interview audio recordings were assigned the same participant code as in the survey and were transcribed verbatim in a digital format. After being transcribed, the original audio recordings were stored for three months on a USB Stick in a locked drawer in the researcher's office, after which they were permanently deleted. The study database, as well as the interview transcripts will be stored on two back-up CDs at the obesity clinic for at least two years after completion of the research project. The above-mentioned data collection procedure has been approved by the Data Protection Officer and the Ethics Committee of the Charité - Universitätsmedizin Berlin (Reference no. EA2/004/12).

### ***3.2. Description of the Weight Bias Internalization Scale***

Positing that weight bias internalization and negative attitudes towards overweight differ at a conceptual level, Durso & Latner (2008) developed an instrument for measuring the extent to which overweight individuals think of themselves in terms of prevalent negative stereotypes about overweight and overweight individuals. In the development of the Weight Bias Internalization Scale (WBIS), the authors used existing measures of negative attitudes towards overweight and homonegativity as a starting point. The initial scale version included 19 negative self-statements relying on common overweight stereotypes, with which respondents could express their level of agreement on a 7-point Likert scale ranging from "strongly disagree" to "strongly agree". The scale was then

distributed to a random Internet sample of 198 adults who self-identified as being overweight or obese. After analysing the psychometric properties of the scale, the authors removed all items with item-total correlations below 0.40 and factor loadings below 0.50 and retained 11 items in the final scale version. The final WBIS had high internal consistency (Cronbach's  $\alpha=0.90$ ) and correlated significantly in the expected direction with measures of overweight dislike ( $r=0.31$ ), drive for thinness ( $r=0.47$ ), self-esteem ( $r=-0.68$ ), as well as with binge eating frequency in the previous 3 and 6 months ( $r=0.25$  and  $r=0.32$ , respectively) and dysfunctional mood states ( $r=0.51$ ). A main component factor analysis generated a two-factor solution; however, since the authors hypothesized weight bias internalization to be a single concept covering multiple domains, a confirmatory factor analysis was used to verify the validity of a one-factor solution. The latter analysis supported the hypothesized unidimensional scale structure (Durso & Latner, 2008).

In its final version, the WBIS included the following statements:

1. As an overweight person, I feel that I am just as competent as anyone.
2. I am less attractive than most other people because of my weight.
3. I feel anxious about being overweight because of what people might think of me.
4. I wish I could drastically change my weight.
5. Whenever I think a lot about being overweight, I feel depressed.
6. I hate myself for being overweight.
7. My weight is a major way that I judge my value as a person.
8. I don't feel that I deserve to have a really fulfilling social life, as long as I'm overweight.
9. I am OK being the weight that I am.
10. Because I'm overweight, I don't feel like my true self.
11. Because of my weight, I don't understand how anyone attractive would want to date me.

(Durso & Latner, 2008)

A summary weight bias internalization score can be computed by averaging across all scale items. In order to obtain a consistent internalization indicator, positively phrased scale items (see items 1 and 9 above) were reverse coded, so that a higher score on the WBIS indicates a higher degree of weight bias internalization.

Up to the present study, only one study used the WBIS in a sample of extremely obese adolescents (Roberto et al., 2011). After removal of one item ("As an overweight person, I feel that I am just as competent as anyone.") due to its low factor loading in a principal factors extraction analysis, the WBIS displayed excellent psychometric properties. It had high internal consistency (Cronbach's  $\alpha=0.92$ ) and correlated significantly with adolescents' levels of anxiety ( $r=0.465$ ), depression

( $r=0.19$ ), quality of life ( $r=-0.480$ ), social and behavioural problems ( $r=0.364$ ), as well as eating ( $r=0.579$ ), shape ( $r=0.815$ ) and weight concerns ( $r=0.545$ ).

### 3.2.1. Translation and validation of the Weight Bias Internalization Scale

After being evaluated in terms of its appropriateness and benefit for use in the population of overweight adolescents, the Weight Bias Internalization Scale was first translated from its original English version into German by the main researcher. Although Roberto et al. (2011) only retained 10 of the 11 original scale items in their study with adolescents, the starting point for the German translation was the 11-item WBIS, as it was developed by Durso & Latner (2008). The scale items were translated in such a way as to maintain their original meanings. In this sense, whenever possible from a semantic point of view, the literal translation of the original phrasing was used. At the same time, throughout the translation procedure particular attention was paid to ensuring that the scale contents remain accessible and suitable for the cognitive and linguistic skill levels specific to the target population.

The first scale translation draft was then presented to and discussed with fellow public health professionals proficient in both English and German, with and without experience in paediatric obesity research, in order to receive their input on the semantic equivalence of the original scale and the translated version. Suggested changes were then critically discussed and, after consensus was reached, they were integrated into a second draft of the scale translation. The resulting German version of the Weight Bias Internalization Scale was then reviewed by a social worker employed at the paediatric obesity outpatient clinic affiliated to the Charité - Universitätsmedizin Berlin with regard to its accessibility for adolescents accessing obesity care. After addressing the changes recommended by the consulted health care provider, the new version of the German scale translation was back-translated into English by a native speaker of both languages, who was neither familiar with the research topic, nor a public health professional. The back-translated English scale was then compared to the original Weight Bias Internalization Scale by a native English speaking public health professional, who found the back-translated items to be semantically equivalent to the original scale items. As such, the back-translated German scale was selected as the final translation version and maintained for further use in the present study.

For the German adolescent version of the WBIS, a nearly literal translation with minor changes in phrasing was possible for items 1, 2, 4, 5, 6, 9 and 11 of the original scale by Durso & Latner (2008). More complex phrasing changes were undertaken for items 3, 7, 8 and 10, in order to obtain a translation as close in meaning to the original items as possible and to reduce comprehension

difficulties in the target group. Moreover, since adolescents as young as 13 years old were included in the study sample, having many friendships was used as a more accessible indicator of having a fulfilling social life in item 8. The adapted items can be literally back-translated as:

3. Because of my overweight, I am concerned about what others think of me.
7. My weight is very important for my self-esteem.
8. I don't think I deserve to have many friendships, as long as I am overweight.
10. Because of my overweight, I feel that I am not myself.

Table 4 below illustrates the German version of the WBIS, as it was distributed to the participants in the present study.

*Table 4. German translation of the Weight Bias Internalization Scale*

		Trifft gar nicht zu	Trifft nicht zu	Trifft eher nicht zu	Weder noch	Trifft eher zu	Trifft zu	Trifft voll und ganz zu
1.	Als Übergewichtige/-r, fühle ich mich genauso fähig wie jeder andere.	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
2.	Ich bin weniger attraktiv als andere wegen meines Gewichtes.	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
3.	Wegen meines Übergewichtes, mache ich mir Sorgen darüber, was die anderen von mir denken.	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
4.	Ich wünsche mir, ich könnte mein Gewicht radikal verändern.	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
5.	Wenn ich viel an mein Übergewicht denke, fühle ich mich bedrückt.	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
6.	Ich hasse mich, weil ich übergewichtig bin.	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
7.	Mein Gewicht ist mir sehr wichtig für mein Selbstwertgefühl.	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
8.	Ich glaube nicht, dass ich es verdient habe, viele Freundschaften zu haben, solange ich übergewichtig bin.	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
9.	Ich bin zufrieden mit meinem Gewicht.	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>

		Trifft gar nicht zu	Trifft nicht zu	Trifft eher nicht zu	Weder noch	Trifft eher zu	Trifft zu	Trifft voll und ganz zu
10.	Wegen meines Übergewichtes, habe ich das Gefühl, nicht ich selbst zu sein.	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
11.	Wegen meines Gewichtes, verstehe ich nicht, wie jemand, der/die gut aussieht, sich mit mir verabreden würde.	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>

### 3.3. Research instruments

#### 3.3.1. Questionnaire

A comprehensive questionnaire was developed for the present research, with the aim of gaining information on weight stigma as the central phenomenon under study, as well as on participants' health-related quality of life, self-esteem, locus of control and individual resources (see Annex B1). Given the relevance of weight stigma in the current study, the survey needed to capture both its latent and manifest dimensions. To this end, the extent of internalized weight bias, as well as the frequency and perpetrators of stigmatization experiences were assessed through the self-administered questionnaire. Other stigma-related concepts such as locus of control and self-esteem were also included in the questionnaire, as expected covariates required for the validation of the Weight Bias Internalization Scale.

Another major focus of the present research lay on adolescents' quality of life, as a subjective indicator of their health and general well-being. Accordingly, participants were asked to report on their generic health-related quality of life as well as on their obesity-related quality of life, in an attempt to obtain a global overview of potential impairments associated with being overweight and being exposed to weight stigmatization.

Further, it was assumed that participants' individual resources have the potential of buffering the negative effects of weight-based discrimination or self-directed stigma on their quality of life. In this sense, information on participants' self-efficacy, family climate and social support was collected, as indicators of their personal, familiar and social resources, respectively.

Since gender, age, ethnicity and weight status information for the survey participants was obtained from the obesity clinic, these variables were not included in the questionnaire. First-hand information on patients' socio-economic status was collected through the survey.

Regarding its structure, the questionnaire began with general questions on adolescents' generic

quality of life and then moved to the more specific obesity-related quality of life. Subsequently, questions on stigmatization agents and frequency were asked. The central part of the questionnaire consisted of more delicate or cognitively demanding questions on self-esteem, weight bias internalization and body-related locus of control. The questionnaire concludes with easier questions on participants' social, personal and familiar resources and their family affluence.

For the assessment of the selected phenomena, standardized scales were used. Prior to their inclusion in the study instrument, relevant scales were evaluated against a set of specific criteria. More precisely, they needed to be brief, easy to understand by children and adolescents and available in a German version validated for use with adolescents aged 13 and older. Authors' permission to use the scales that had not been officially published was sought. An overview of the thematic structure of the questionnaire and the respective scales is given in Table 5 below.

*Table 5. Thematic structure of the study questionnaire and associated measurement scales*

<b>Dimensions</b>	<b>Scale</b>
Internalised stigma	<i>Weight Bias Internalization Scale (Durso &amp; Latner, 2008)</i>
Discrimination experiences	<i>Interpersonal Sources of Weight Stigma (Puhl &amp; Brownell, 2006)</i>
General health-related quality of life	<i>KIDSCREEN-10 Index (The KIDSCREEN Group Europe, 2006)</i>
Obesity-related quality of life	<i>KINDL® Obesity Module (Ravens-Sieberer, 2004)</i>
Self-esteem	<i>Rosenberg Self-Esteem Scale (von Collani &amp; Herzberg, 2003)</i>
Locus of control	<i>Body-related locus of control scale (KLC) (Mrazek, 1989)</i>
Self-efficacy	<i>General self-efficacy scale (Schwarzer &amp; Jerusalem, 1999)</i>
Social support	<i>Social support scale (Donald &amp; Ware, 1984)- short version based on the German Health Survey for Children and Adolescents (KiGGS)</i>
Family situation	<i>Family climate scale (Schneewind, Beckmann, &amp; Hecht-Jackl, 1985) – short version based on the German Health Survey for Children and Adolescents (KiGGS)</i>
Socio-economic status	<i>Family Affluence Scale II (Currie et al., 2008)</i>

Before being distributed to the target population, the questionnaire was pre-tested with two overweight adolescents attending the paediatric obesity clinic affiliated to the Charité - Universitätsmedizin Berlin. The patients were selected from the participants in another study conducted at the paediatric obesity clinic without recording any of their personal information (e.g. names or contact data). Consequently, the pre-test procedure was anonymous and focused on



identifying potential difficulties in understanding and completing the questionnaire. Particular attention was paid to ensuring a purposive distribution of participants' demographic characteristics such as gender (a boy and a girl) and migration background (both with migration background). Although we acknowledge that variation on the social status dimension would have been useful in identifying potential questionnaire shortcomings, it was not possible to consider this variable due to the anonymous selection procedure. After the two selected adolescents described the questionnaire as comprehensive and easy to fill in, no further participants were recruited for the pre-test procedure and the data collection process could be initiated.

The following paragraphs provide a description of all scales included in the study questionnaire except for the Weight Bias Internalization Scale, which has been described in section 3.2 above.

#### 3.3.1.1. Interpersonal Sources of Weight Stigma

In the attempt of researching the ways in which obese adults are confronted with weight-based stigma and their coping mechanisms, Puhl & Brownell (2006) developed a list of 22 potential social discrimination agents and asked study participants to report on how often they were subject to negative remarks or treatment from each of the listed category of people because of their weight status. The list also included the open category „Others“, in order to address potential omissions in the enumeration of people with which obese adults interact on a regular basis. Respondents could rate discrimination frequency on a 4-point Likert scale ranging from 0 (never) to 3 (multiple times). The authors reported a high internal consistency for the scale among adults (Cronbach's  $\alpha=0.90$ ).

For the purpose of the current study, the Interpersonal Sources of Discrimination scale was chosen for its brevity and accessible language in assessing the manifest dimension of weight stigma. In view of its use with German speaking adolescents, the scale was translated from English into German. Given that the target group in the present study was different from the one in the original research in which the scale was developed and used, the list of potential discrimination agents was critically reviewed in view of identifying and retaining the main potential social contacts of obese adolescents. Since some of the social agents listed in the adult scale version were not commonly part of the social network of adolescents (e.g. spouse, sons, daughters, employers, co-workers), these were excluded from the list presented to participants in the present study. This was also the case for social agents with whom adolescents are less likely to interact compared to adults (e.g. authority figures such as policemen or waiters in restaurants). Moreover, due to the different tasks of professionals such as psychologists and social workers in the German health care system, the category „Mental health professionals“ was divided into two separate categories. Since a literal translation of the category „General community members“ was deemed difficult to grasp for 13 to 18-year-olds, the translated

category was adapted to „People on the street/ Strangers“. Additionally, respondents were given the opportunity to address the non-exhaustive character of the list by naming further social contacts under the answer category „Others“. For more precise results, this option was also available to study participants for the category „Other family members“.

The 4-point Likert scale used to rate discrimination frequency was maintained with slightly modified categories. The first two categories 0 (never) and 1 (once in your life) were kept unaltered. Given their relatively low semantic discriminatory power when translated into German, the two original higher frequency ratings 2 (more than once in your life) and 3 (multiple times) were transformed into 2 (multiple times) and 3 (on a regular basis). Although changes to the phrasing of the answer categories made previous scale validity and reliability assessments inapplicable to the present study, they were deemed necessary for a valid assessment of the frequency and agents of stigmatization in the study sample.

In order to quantify the discrimination experiences of participants in the present study, a global score was computed as the sum of all individual category ratings. In a second step, a dichotomous variable was created based on the summary score, reporting on whether study participants had ever experienced weight stigmatization (had a total sum score higher than 0) or not (had a total sum score of 0). Given that the original scale was adapted to meet the specific characteristics of adolescents, the internal consistency of the scale was assessed. As Cronbach's alpha analyses indicated that the scale had low reliability (see section 4.2.5.), only the dichotomous variable on stigmatization experience was used for further descriptive and inferential analyses. Accordingly, the impact of the adapted phrasings for the higher frequency ratings on the final results was substantially reduced.

### 3.3.1.2. KIDSCREEN-10 Index

#### *3.3.1.2.1. General description*

Within the scope of the 3-year project "Screening and Promotion for Health-related Quality of Life in Children and Adolescents - A European Public Health Perspective" (2001-2004), three generic quality of life measures for children aged 8 to 18 years were developed. The three questionnaires cover aspects of physical, psychological and psychosocial well-being and differ in terms of their complexity level. All measures were developed through the collaborative efforts of scientists in 13 European countries and were validated both at a general and country-specific level (through correlations with e.g. participants' health status data and their reports on country-specific quality of life tools) (The KIDSCREEN Group Europe, 2006).

The most comprehensive measure is the KIDSCREEN-52 consisting of 52 items divided into 10 scales (Physical Well-being, Psychological Well-being, Moods and Emotions, Self-Perception, Autonomy,

Parent Relations and Home Life, Social Support and Peers, School Environment, Social Acceptance/Bullying, and Financial Resources). The KIDSCREEN-27 is a shorter version of the KIDSCREEN-52, containing only 27 items divided into 5 scales (Physical Well-Being, Psychological Well-Being, Autonomy & Parents, Peers & Social Support and School Environment) (The KIDSCREEN Group Europe, 2006).

The KIDSCREEN-10 was developed as an index measure for the quick assessment of quality of life among children and adolescents in public health and epidemiological studies. The index comprises 10 items covering elements of affective and cognitive well-being, as well as physical and psychosocial functioning (Erhart, Ottova, et al., 2009; Ravens-Sieberer et al., 2010). The 10 items function as a unidimensional scale and were extracted from the broader KIDSCREEN-27 instrument through a Rasch analysis (The KIDSCREEN Group Europe, 2006). For all KIDSCREEN instruments, items can be rated on a 5-point Likert scale ranging from “never” to “always” or “not at all” to “extremely” (The KIDSCREEN Group Europe, 2006). For all positively phrased items, answer categories are reversed before computing the composite score, so that a high KIDSCREEN-10 score implies a high quality of life.

In the KIDSCREEN study, the 10-item index measure proved to be a valid and reliable quality of life measure, with good discriminatory power, internal consistency (Cronbach's  $\alpha=0.82$ ) and test-retest reliability ( $r=0.73$ / ICC=0.72) (The KIDSCREEN Group Europe, 2006). When used as an independent instrument in the Health Behaviour in School Children study, the KIDSCREEN-10 displayed similar internal consistency values, ranging between 0.75 (Macedonia) and 0.83 (Austria/Luxemburg) (Erhart, Ottova, et al., 2009). In a recent analysis of the validation data for the KIDSCREEN-52 and KIDSCREEN-27, Ravens-Sieberer et al. (2010) reconfirmed the good psychometric properties, as well as the criterion and convergent validity of the KIDSCREEN-10 (Cronbach's  $\alpha=0.82$ ; ICC=0.70). However, the authors warn that the KIDSCREEN-10 Index does not provide a good representation of all KIDSCREEN-52 dimensions (e.g. Financial Resources and Being bullied) and its test-retest reliability was below the expected threshold (Ravens-Sieberer et al., 2010).

For the present study, the KIDSCREEN-10 Index was preferred over other generic, longer health-related quality of life instruments due to its brevity, cross-cultural validity and good psychometric properties, which allow parametric testing (Erhart, Ottova, et al., 2009). According to the data analysis instructions (The KIDSCREEN Group Europe, 2006), the answers provided by the study participants to the scale items were summed up and the sums were associated specific Rasch person parameters. The Rasch person parameters were then transformed on a standard distribution with an average score of 50 and a standard deviation of 10 units.

### 3.3.1.2.2. *Reference values*

The first KiGGS study follow-up showed that the average KIDSCREEN-10 Index score was of 54.3 among 11 to 13-year-olds and 52.2 among 14 to 17-year-olds in the general German population. At this level, QoL showed significant socio-economic differences among 11 to 13-year-olds (51.9, 54.7, 55.5 for low, middle and high SES), while gender had a significant impact on older adolescents' QoL (53.9 for boys vs. 50.4 for girls) (Ellert, Brettschneider, Ravens-Sieberer, & Ki, 2014). Insight into gender aspects was also provided by another German study, in which obese adolescents reported lower average QoL scores on the KIDSCREEN-10 Index compared to the population norm (Wille et al., 2010). More precisely, boys reported an average score of 49, whereas adolescent girls had an average QoL score of 46.7, compared to the norm values of 51.8 and 49.8, respectively.

### 3.3.1.3. KINDL® – Obesity module

#### 3.3.1.3.1. *General description*

The KINDL® obesity module was developed as a condition-specific tool for measuring the health-related quality of life of overweight children and adolescents aged between 8 and 16. The module is a sub-scale of the generic health-related quality of life instrument KINDL® (Ravens-Sieberer & Bullinger, 1998) and covers aspects concerning overweight children and adolescents' physical and psychological well-being, as well as their self-esteem and functioning within their social environment (family, school, peers). A good scale internal consistency of  $\alpha=0.77$  has been reported (Wille et al., 2010). The KINDL® obesity module consists of 12 statements describing typical overweight-related situations and emotions and 3 questions on specific impairments, their severity and their impact on subjective well-being. Respondents are asked to rate these 15 items on a five-point Likert scale based on their frequency or intensity from low to high (i.e. from never to always). All but one scale statement are phrased negatively, so that after the positively formulated item has been accordingly recoded, a higher score equates with a high level of subjective well-being. The answers are then summed up to generate a composite score, expressed either as a sum, as a mean or transformed on a 0 to 100 scale (Ravens-Sieberer & Bullinger, 2004). In the present study a mean summary score was computed and subsequently transformed on a scale from 0 to 100 using the following formula:

$$x_t = \frac{x-1}{5-1} * 100 = \frac{x-1}{4} * 100,$$

where  $x$  is the raw average score and  $x_t$  is the transformed average score on a scale from 0 to 100.

The obesity module of the KINDL® was included in the study questionnaire due to its specificity for both participants' condition and age group. The present study made use of the obesity module as an independent scale for the measurement of disease-specific quality of life, and not as part of the

broader KINDL® generic instrument, which was deemed to be too comprehensive for the study aims. Instead, the short general quality of life tool KIDSCREEN-10 was used (see section 3.3.1.2 above).

#### 3.3.1.3.2. *Reference values*

Based on the obesity module of the KINDL® instrument, German female adolescents report significantly lower obesity-related QoL compared to their male peers (mean (SD) of 61.5 (17.8) vs. 67.3 (16.5)) (Wille et al., 2010).

#### 3.3.1.4. Rosenberg self-esteem scale

##### 3.3.1.4.1. *General description*

The Rosenberg self-esteem scale was first published in 1965 and has since been translated in 28 languages, becoming thus one of the most widely used self-esteem measures in social sciences research. Its 10 items allow a brief and linguistically uncomplicated appraisal of how individuals perceive their own value or worth as social agents (Schmitt & Allik, 2005). Rosenberg's scale is suitable for use in adolescent populations, the original sample that led to the development of the scale consisting of over 5000 students at 10 randomly selected highschools in the state of New York (Blascovich & Tomaka, 1993; Dobson, Powers, Keith, & Goudy, 1979). Although originally designed as a Guttman scale, its use as a Likert scale has gained widespread acceptance in the scientific community (Blascovich & Tomaka, 1993; Dobson et al., 1979).

The scale was first translated into German by Ferring & Fillip (1996) with good psychometric properties for all items except item 4 - "I am able to do things as well as most other people" (Ferring & Filipp, 1996). This shortcoming was identified and addressed by von Collani & Herzberg (2003), who revised the original German translation for item 4. Although the internal consistency of the new scale was comparable to that of the original German version (Cronbach's  $\alpha \geq 0.80$ ), the item-total correlation values for item 4 were substantially improved, arguably achieving a higher degree of comparability with the original English instrument (von Collani & Yorck Herzberg, 2003). The revised version of von Collani & Herzberg was also used in a study on the self-esteem of adolescents with ADHD by Dittmann et al. (2008), who reported good internal consistency and test-retest reliability values (Dittmann, Wehmeier, Schacht, Lehmann, & Lehmkuhl, 2009).

The present study used the German version of Rosenberg's self-esteem scale as revised by von Collani & Herzberg (2003). Although previous factor analyses have identified two self-esteem dimensions (self-competence and self-liking) in Rosenberg's scale (Schmitt & Allik, 2005; Tafariodi & Milne, 2002; Tafariodi & Swann, 1995), the scale was used as a one-dimensional measure of global self-esteem in the present study. Each item was rated by the study participants on a four-point Likert

scale ranging from 0 (strongly disagree) to 3 (strongly agree). Negatively phrased items (2, 5, 6, 8 and 9) were recoded and a summary score was computed by summing up all item values. The summary score therefore ranges between 0 and 30 units, with higher scores indicating higher self-esteem. Summary scores were only computed for participants with no missing values.

#### *3.3.1.4.2. Reference values*

Despite its being one of the most widely used scales for the assessment of self-esteem (Marsh, Scalas, & Nagengast, 2010; Schmitt & Allik, 2005), no German norm values for adolescent self-esteem measured with the Rosenberg Self-Esteem Scale are available to date (Giel et al., 2013). However, in a sample of 41 overweight adolescents, Giel and colleagues (2013) reported a mean Rosenberg Self-Esteem Scale score of  $2.6 \pm 0.5$ . This indicates a high average self-esteem among overweight youth, as possible values range from 0 to 3.

#### 3.3.1.5. Body-related locus of control scale

##### *3.3.1.5.1. General description*

Designed as a specific locus of control measure, the body-related locus of control scale was developed in 1989 and consists of 18 items describing both internal and external attributions with respect to physical appearance, health and performance (Mrazek, 1989). Each of these three dimensions was operationalized through three indicators which were then assigned two scale items (an internal and an external attribution, respectively). All items are phrased in a general, impersonal manner, e.g. “One cannot do much for one's health” vs. “If one looks after oneself, one stays healthy”. Each item can be rated on a 5-point Likert scale ranging from disagreement to strong agreement with the described attribution.

Mrazek (1989) postulated a two-dimensional scale structure (internal vs. external attributions), which was also confirmed by a more recent study (Albani et al., 2007). Based on the specificity of body-related attributions, the scale views external orientation as being a one-dimensional construct expressing a fatalistic (hazard/fate) explanation for physical attributes.

The internal consistency levels reported by the author for the internal and external sub-scales ranged between 0.76 and 0.79 (Mrazek, 1989). Albani et al. (2007) found an internal consistency level of 0.82 for the internal sub-scale and 0.83 for the external sub-scale. Respondents' attributions with regard to the three thematic sub-scales (physical appearance, health and performance) can also be independently analysed along their internal/external dimensions.

Although the original research included participants as young as 12 years old, the author subsequently recommended that the scale should be used only with subjects aged 14 or older

(Mrazek, 1989). Nevertheless, a more recent study successfully applied the body-related locus of control scale to adolescent respondents starting from age 12 and clearly confirmed the two-dimensionality of body-related attributions in this age group (Roth, 1999). In his research with healthy teenagers and adolescents suffering from asthma bronchiale, Roth (1999) found acceptable internal consistency levels of up to 0.76 for the internal attribution scale (asthma sample) and 0.70 for the external attribution scale (healthy sample).

The body-related locus of control scale was included in the present study questionnaire based on its conceptual proximity to the research topic and its easily comprehensible items from the perspective of teenage study participants. Summary scores for the global internal vs. external scales (KLC-IN vs. KLC-EX), as well as for the internal and external thematic sub-scales were computed by summing up the answers provided for the respective dimension (internal/external) throughout the entire scale or at a sub-scale level (Mrazek, 1989). Summary scores were only computed for participants with no missing values.

#### *3.3.1.5.2. Reference values*

In a study conducted on a nationally representative German sample, Albani and colleagues (2007) proposed norm values for the KLC instrument. More precisely, in young people aged under 24 years old, female participants had a median internal KLC score of 29 and an external KLC median score of 26. Male participants aged below 24 years reported an internal median KLC score of 30 and a median external KLC score of 27 (Albani et al., 2007). In his original research, Mrazek found a mean score of 20.93 for external KLC and 27.07 for internal KLC among adolescents aged 12 to 16 years old (Mrazek, 1989).

#### 3.3.1.6. General self-efficacy scale

##### *3.3.1.6.1. General description*

Self-efficacy designates the belief that one is able to successfully complete new or difficult tasks or cope with hardship (Luszczynska et al., 2005). In 1981 Schwarzer and Jerusalem have operationalized this concept in a 20-item scale, which were reduced to 10 items in subsequent versions (Schwarzer & Jerusalem, 1999). Each item consists of a statement expressing a person's subjective expectation of being successful in various situations by relying on personal resources. Hence, the concept of self-efficacy has a strong internal orientation, as it is grounded in the assumption that individuals attribute their success or failure experiences to themselves and their competence levels. The latest revision of the 10-item German scale was performed by the authors in 1999 (Schwarzer & Jerusalem, 1999).

Given its brevity and clear language as well as unidimensional structure and predictive value, the general self-efficacy scale has been translated and validated for use in 30 languages (Luszczynska et al., 2005; Schwarzer, 2011). An additional advantage of Schwarzer & Jerusalem's general self-efficacy scale is the broad age spectrum of potential respondents (from 12 years onwards) (Schwarzer, 2011). In a recent study, the internal consistency of the self-efficacy scale varied between 0.79 and 0.90 (Luszczynska et al., 2005).

The German version of the scale was used in the present study. The original scoring instructions suggested calculating a summary score by adding up the values reported by study participants on each of the scale items. Since each item can be rated on a 4-point Likert scale, the total test score could range between 10 and 40 points, with most studies reporting an average score of 29. As recommended by the author, an alternative summary score can be computed by averaging across the values on all scale items, provided that at least 7 out of the 10 items had been answered (Schwarzer, 2011). In the present study, mean summary scores were preferred for their stability in case of missing values, yet sum scores were also computed for participants without missing values in order to enable comparisons with relevant norm values. In order to allow for a consistent reporting of participants' resources, the mean scores were transformed on a scale from 0 to 100 using the following formula:

$$x_t = \frac{x-1}{4-1} * 100 = \frac{x-1}{3} * 100,$$

where  $x$  is the raw average score and  $x_t$  is the transformed average score on a scale from 0 to 100.

#### 3.3.1.6.2. *Reference values*

Age and gender specific norm values for the General Self-Efficacy Scale have been developed based on a nationally representative German sample of individuals aged 14 to 95 (Schumacher, Klaiberg, & Brähler, 2001). Among these, young males aged 14 to 30 years old reported a mean (SD) value of 31.15 (5.66), while young women in the same age group had a mean (SD) value of 29.65 (4.89).

#### 3.3.1.7. Social Support Scale

##### 3.3.1.7.1. *General description*

As part of the Medical Outcome Study, conducted by the American RAND Corporation, a new measure of functional social support was developed in light of the increasing awareness of its impact on health and well-being (Donald & Ware, 1984). Based on a comprehensive literature review, an initial set of 50 items were developed to cover the tangible, emotional, informational, affectionate and positive social interaction dimensions of social support. After eliminating items that were difficult to categorize in the given dimensions and those that were not internally consistent with their



expected sub-scale, 19 items were included in a more extensive questionnaire, together with measures of structural support, as well as physical and mental health status. After collapsing the emotional and informational support dimensions into one category, the resulting tool consisted of 4 sub-scales and allowed the calculation of a global social support index (Donald Sherbourne & Stewart, 1991).

Both the sub-scales and the overall global scale displayed good validity and psychometric properties, with Cronbach's alpha internal consistency levels ranging from 0.91 to 0.96 for the sub-scales and 0.97 for the global index. Summary scores can be calculated by averaging across sub-scale items or by computing the overall mean for a global index. Raw scores are then transformed on a scale from 0 to 100, with higher values indicating a higher availability of functional social support (Donald Sherbourne & Stewart, 1991).

Although the original instrument was developed using an adult sample (age range 18-98,  $m=55$  y.o.) (Donald Sherbourne & Stewart, 1991), a short version of the social support scale designed by Donald & Ware (1984) was used in the German Health Interview and Examination Study for Children and Adolescents (KiGGS). The new scale comprised 8 items of the original social support scale, as follows: 3 positive interaction, 3 affectionate support and 2 emotional/informational support items. The 8-item social support scale had an internal consistency of  $\alpha=0.87$  (Erhart, Holling, Bettge, Ravens-Sieberer, & Schlack, 2007).

The utility and appropriateness of using the short social support scale in research involving German adolescents was proven in the KiGGS study. Therefore, in order to reduce the burden on participating adolescents, the short version of the social support scale was used in the present study. Consistent with authors' indications, composite scores were computed by summing up the answers to all scale items and raw scores were transformed on a scale from 0 to 100 (Erhart et al., 2007). To this end, the following formula was used:

$$x_t = \frac{x-0}{32-0} * 100 = \frac{x*100}{32},$$

where  $x$  is the raw sum score and  $x_t$  is the transformed sum score on a scale from 0 to 100. Summary scores were only computed for participants with no missing values.

#### 3.3.1.7.2. Reference values

In the nationally representative German child health study (KiGGS), perceived social support was measured with the Social Support Scale of Donald & Ware (1984). The overall sample of youth aged 11 to 17 reported a mean social support score of 75.32 ( $SD=19.78$ ). When looking at the distribution of social support by gender, a mean score of 71.10 ( $SD=19.95$ ) was observed among boys, whereas

the average social support score among girls was 79.43 (SD=18.76) (Holling et al., 2008).

### 3.3.1.8. Family Climate Scale

#### *3.3.1.8.1. General description*

The Family Environment Scale (Moos, 1974) was adapted for use in the German-speaking scientific community by researchers at the Institute for Psychology of the Munich University in the second half of the 1970s (Schneewind, Beckmann, & Hecht-Jackl, 1985). The resulting instrument was referred to as the Family Climate Scales and covered 10 dimensions: Cohesion (A), Openness (B), Conflict Tendency (C), Independence (D), Performance Orientation (E), Cultural Orientation (F), Active Leisure Time Organisation (G), Religious Orientation (H), Organisation (I) and Control (J). In a subsequent factor analysis, these sub-scales were combined into 3 secondary factors, delineating three family climate types: positive-emotional, normative-authoritative and stimulating (Schneewind et al., 1985).

Different scale versions were developed to assess how both parents and children perceive their family life. During the validation procedures, the child scales displayed satisfactory psychometric characteristics and correlated significantly in the expected direction with specific child personality traits, although the correlation coefficients were rather low ( $r=0.13-0.39$ ). Internal consistency levels were determined with the aid of the Kuder-Richardson formula for dichotomous items and ranged between 0.46 for scale D and 0.81 for scale H (Schneewind et al., 1985).

Based on the current evidence base, in order to assess the familiar resources available to German children and adolescents in the nationally representative community sample of the KiGGS study, 9 relevant items were selected from the Family Climate Scales developed by Schneewind and colleagues (1985) to reflect family cohesion, family communication and parent role modelling, but also rules reinforcement and discipline (Holling et al., 2008). The items included in the KiGGS familiar resources scale pertained to the following dimensions of the original Family Climate Scales: Cohesion (3), Conflict Tendency (2), Independence (1), Active Leisure Time Organisation (3) and Control (3). The resulting scale had an acceptable internal consistency level, with a Cronbach's  $\alpha$  value of 0.76. In contrast to the dichotomous response structure of the Family Climate Scales, the items in the KiGGS study could be rated on a 4-point Likert scale ranging from total disagreement to total agreement. A summary score was computed by summing up the answers to all scale items and raw scores were then transformed on a scale from 0 to 100, higher values equating with a family climate dominated by the characteristics of an authoritative parenting style (Regber et al., 2007) and consequently better familiar resources (Erhart et al., 2007).

Given that the original Family Climate Scales consisted of 99 items, the present study used the short version developed for the KiGGS study, in order to reduce the time and cognitive effort that filling in the study questionnaire required from the participants. Summary sum scores were computed by summing up the values on all scale items and transformed on a 0 to 100 scale based on the KiGGS analysis protocol (Erhart et al., 2007). In order to give all items a consistent, positive orientation, scale items number 2, 3, 11 and 12 were reverse coded before computing the summary scores. Accordingly, high scores indicate a positive family climate. The 4-point Likert rating scale used in the study questionnaire ranged from 1 to 4. Therefore, the linear transformation of the raw summary scores was performed using the following formula:

$$x_t = \frac{x-12}{48-12} * 100 = \frac{x-12}{36} * 100,$$

where  $x$  is the raw score and  $x_t$  is the transformed score on a scale from 0 to 100. Summary scores were only computed for participants with no missing values.

#### 3.3.1.8.2. Reference values

Based on the use of the short tool for the assessment of family climate in the KiGGS study, an average familiar resources score of 56.68 (SD=17.62) was identified in the global sample of youth aged 11 to 17 years. Analyses stratified by gender revealed mean family climate scores of 55.55 (SD=17.90) among girls and 57.82 (SD=17.29) among boys.

#### 3.3.1.9. Family Affluence Scale

The Family Affluence Scale was designed as a child-friendly tool aiming to increase the validity and accuracy of socio-economic status measurements in youth samples. This was a response to the fact that traditional adult wealth indicators (income or occupation) were difficult to report by children and adolescents and consequently proved to be inadequate in illustrating known correlations between health and socio-economic status in this population (Boyce, Torsheim, Currie, & Zambon, 2006; Currie, Molcho, et al., 2008).

The family affluence scale (FAS) was first developed in 1990 within the scope of the Scottish Health Behaviour in School Children (HBSC) study (Currie, Molcho, et al., 2008), a cross-cultural survey on adolescent health and well-being currently conducted under the patronage of the World Health Organization in 43 European and North American countries (Currie et al., 2012). The initial scale (FAS I) consisted of three family expenditure and consumption items which were known to vary among the various social strata in Scotland around 1990 (household telephone and car ownership and frequency of family holiday travels). With its later adoption by other countries involved in the HBSC study, the scale was revised to include four items assessing objective aspects of children's material

living situation that were less sensitive to cultural variation and more appropriate to recent changes in consumption patterns (Currie, Molcho, et al., 2008).

Several studies have shown that the FAS II is a valid and useful tool in the assessment of adolescent socio-economic status (Boudreau & Poulin, 2009; Boyce et al., 2006). Therefore, the present study used this second version of the FAS which included the following items:

1. number of family-owned cars (from 0 – none to 2 – two or more)
2. bedroom occupancy (0 – participant does not have a private bedroom; 1 – participant has a private bedroom)
3. frequency of family holiday travels (from 0 – not at all to 3 – more than twice)
4. number of family-owned computers (from 0 – none to 3 – more than two).

As suggested in the research protocol of the 2005/2006 HBSC survey (Currie, Gabhainn, et al., 2008), the two highest answer categories in items 3 and 4 were collapsed into a single category which was assigned a value of 2. A summary score was then calculated by summing up the values associated to the answers given by each participant to these four items. Summary scores were only computed for participants with no missing values. For ease of analysis, the summary scores were grouped into three family affluence categories: low (summary score  $\leq 3$ ); medium (scores 4 and 5) and high (scores 6 and 7).

### **3.3.2. Clinical data**

Given the extensive nature of the survey instrument, it was decided that study participants' socio-demographic and anthropometric data would be retrieved from the paediatric obesity clinic where the patient recruitment took place. Approval to collect patients' personal and clinical data was sought from the clinic management, as well as from the Data Protection Office and Ethics Committee of the Charité - Universitätsmedizin Berlin, and permission was granted before the onset of data collection.

Socio-demographic patient data such as gender and date of birth were obtained from the obesity clinic during the participant recruitment process, since age was a key variable used in the selection of eligible adolescents. The variable age was computed in Apache Open Office Spreadsheets by subtracting participants' date of birth from the date which marked the end of the survey fieldwork (01.08.2012). The subtraction was performed using the YEARS function and the output variable retrieved study participants' age in full years (mode was set to 0) ("YEARS Function," n.d.). The resulting continuous age variable was used as such in regression analyses. For descriptive purposes, two age categories were considered, corresponding to early adolescence (13-15 years old) and late adolescence (16-18 years old).

In order to establish patients' ethnic heritage, information on both adolescent and parents' country of birth, citizenship, and mother tongue was obtained from the records of the obesity clinic. In determining ethnicity, the operational definition developed by the German Federal Statistical Office for migration background was used. This definition assigns a migration background to any German resident whose citizenship is not German or who has immigrated to Germany after 1949. Naturalized residents who were born in Germany and those born in Germany, who have at least one parent who was not born in Germany, was naturalized or is not a German citizen, also fall in the category of people with migration background (Statistisches Bundesamt, 2014).

Additionally, patients and parents' mother tongue was used in order to avoid misclassifications due to possible situations in which patients were third generation migrants, in which case indicators such as country of birth and nationality alone could falsely indicate a German ethnic background. Accordingly, all study participants fulfilling the following conditions were defined as belonging to an ethnic minority group:

- they are not German citizens and at least one of their parents was not born in Germany, is not a German citizen or his/her mother tongue is not German;
- they are German citizens born in Germany, but at least one of their parents was not born in Germany, is not a German citizen or his/her mother tongue is not German;
- they were not born in Germany and their mother tongue was not German.

Given that the main ethnic groups who access obesity care at the Interdisciplinary Socio-paediatric Care Centre of the Charité - Universitätsmedizin Berlin are German and Turkish, these two categories were recorded separately, whereas all other ethnic groups were collapsed into a single category („Other“). Whenever data for only one parent were available, these were used to establish participants' ethnicity. Since Turkish ethnicity was recorded separately, if a participant had a two-sided migration background, with one parent being Turkish and the other of a different ethnic minority affiliation, the participant's ethnicity was recorded as Turkish. If insufficient data were available for establishing participants' ethnicity based on the above mentioned criteria, ethnical affiliation was recorded as missing.

A central indicator used in the present study was patients' weight status, which was determined based on adolescents' Body Mass Index ( $BMI = \text{weight}/\text{height}^2$ ) as recommended by the AGA (see section 2.1.1). In this respect, a more specific indicator, BMI-SDS (BMI Standard Deviation Score) was used, given its particular sensitivity when looking into intergroup differences and weight status evolution among extremely obese children and adolescents. This score expresses the number of standard deviations an individual BMI is higher or lower than the age and gender specific BMI median

value. The cut-off points for overweight and obesity (90<sup>th</sup> and 97<sup>th</sup> percentiles) roughly correspond to 1 and 2 standard deviations (84<sup>th</sup> and 97.7<sup>th</sup> percentiles) from the median BMI of the age and gender specific reference group, respectively (Wabitsch & Kunze, 2013). At the obesity clinic affiliated to the Interdisciplinary Socio-paediatric Care Centre of the Charité - Universitätsmedizin Berlin, extreme obesity is defined as having a BMI-SDS equal to or above 2.5 (Senatsverwaltung für Gesundheit, 2007) (Senatsverwaltung für Gesundheit, Umwelt und Verbraucherschutz, 2007).

Since most patients visiting the obesity clinic are obese, with a relatively high proportion of extremely obese children and adolescents (40.43% as reported in Senatsverwaltung für Gesundheit, Umwelt und Verbraucherschutz, 2007), BMI-SDS was used to assess weight status in the present study, due to its better discriminatory power at the extreme higher end of the weight spectrum. For descriptive statistical analyses and intergroup testing, study participants were grouped by their BMI-SDS in three categories: overweight (BMI-SDS < 2), obese (2 < BMI-SDS < 2.5) and extremely obese (BMI-SDS > 2.5). For regression analyses, BMI-SDS was used as a continuous variable.

Patients' weight and height are measured on a regular basis as part of their visits at the obesity clinic. As a result, several data sets were available for most study participants. Given the biographical character of weight bias internalization, the first measurement recorded during the observation period (20.02.2012-01.08.2012) was used, as an indicator of the weight status based on which participants made the experiences that led to their current degree of weight bias internalization. Along the same line of thought, the last measurement recorded before the 20<sup>th</sup> of February 2012 was used for all study participants for whom no weight and height records were available during the observation period (N=25).

The date of study participants' first visit at the obesity clinic was also obtained from their attending physicians. This served to compute the amount of time during which the study participants had been receiving obesity care in the study setting prior to the onset of data collection by subtracting the date of their first visit from the date when the data collection began with the aid of the MONTHS function of the Apache Open Office Spreadsheets software. The resulting continuous variable retrieved the number of full months between the two respective dates (mode was set to 0) ("MONTHS Function," n.d.). Since some study participants had not been attending the obesity clinic prior to the study onset, their values on this variable were negative. Therefore, the percentage of new patients included in the survey and the mean therapy duration for already registered patients were reported in the sample description (see Section 4.2.1). Therapy duration was not used in inferential data analyses, since there is evidence that therapy intensity, not duration, significantly contributes to the achievement of long term improvements in weight status (Reinehr, 2011). In this

sense, therapy duration was not deemed to be an appropriate proxy for the quality and added value of the therapeutic process.

### 3.3.3. Interview guide

In order to ensure a comparable interview situation for all participants during the second stage of the study, an interview guide was developed as a list of 31 mostly open-ended questions covering five main topics: weight-based discrimination experiences, perception of social attitudes towards overweight, social network(s), body image and evaluation of the weight bias internalization scale (WBIS), as illustrated in Table 6 below.

*Table 6. Interview guide themes*

Concept	Dimensions
Weight-based discrimination	Actual weight-based discrimination experiences
	Discrimination agents
	Reaction to discrimination
	Social support when being discriminated against
	Attempts to rationalize discrimination
Social attitudes towards overweight	Social perception of overweight
	Disadvantages of being overweight
	Advantages of being overweight
Social network(s)	Main social contacts
	Peer group structure
	Peer group activities
	Personal integration within peer group
	Significance of overweight in friend selection
	Overweight perception within peer group
Body image	Personal body perception
	Ideal body perception
	Participant's attitude towards his/her body
	Beauty perceptions
	Pathways of attaining physical attractiveness
Attitude towards the weight bias internalization scale	Overall evaluation
	Emotional impact
	Comprehension
	Acceptance
	Optimization

Since the interview situation and questions called for a significant cognitive effort from the study participants, the interview guide was designed to elicit a conversation of 30 minutes at the most, so that interviewees can stay focused throughout the entire duration of the interview. To this end, the interview guide was also structured in such a way as to support participants' ability to concentrate on the study questions. In this sense, the interview was designed to begin with a set of questions based on participants' experiences with weight-based discrimination. Although delicate, these questions were deemed easy to answer since they were anchored in participants' biography and first-hand experiences. The next questions referred to participants' perception of how being overweight is viewed by society and were considered to be the most challenging for the interviewees due to their abstraction level. The following question sets on participants' social network, their body image and their views of the Weight Bias Internalization Scale gradually lowered the intensity of the cognitive effort required in order to remain engaged in the interview situation. For two items of the last two question clusters, interviewees were asked to fill in paper-and-pencil scales for the assessment of body figure rating (and implicitly body dissatisfaction) and weight bias internalization. Through these visual props, a further attempt was made to reduce participants' cognitive effort. Accordingly, the last question set was entirely based on getting participants' feedback on the Weight Bias Internalization Scale immediately after they had filled it in.

Adolescents' body image was assessed with the aid of the body figure scale proposed by Childress et al. (1993), which consists of 8 gender-specific silhouette drawings ranging from very slim to obese child and adolescent body shapes, as illustrated in Figures 3 and 4 below (Childress, Brewerton, Hodges, & Jarrell, 1993). Interviewees were asked to select a drawing representing their current body figure and the body figure they deemed ideal for someone their age. Based on their choices, adolescents' degree of dissatisfaction with their body image was computed by subtracting the value associated with their ideal body figure from the one associated with their current body figure (Adami et al., 2012).



Figure 3. Body figure rating scale for boys as proposed by Childress et al. (2013)

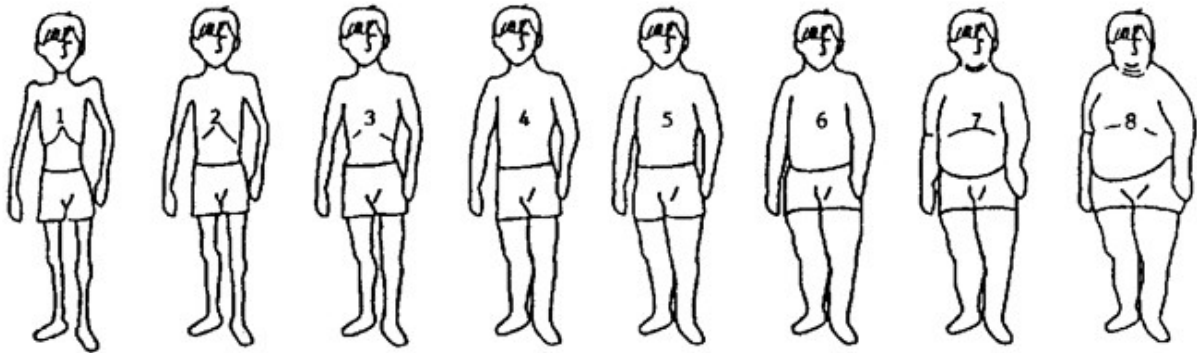
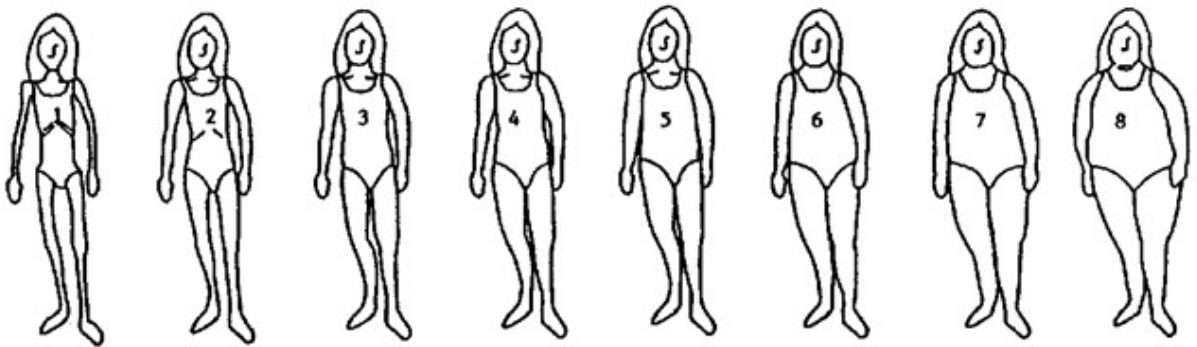


Figure 4. Body figure rating scale for girls as proposed by Childress et al. (2013)



In order to address the omission of potentially significant information, at the end of the interview participants were also given the opportunity to add further thoughts and ideas, if they felt that important issues were not mentioned during the interview.

In the development of the interview guide, feedback from both senior researchers and peers was sought and integrated in the final qualitative data collection instrument. As such, a step was taken towards increasing the comprehensiveness and relevance of the question catalogue, as well as towards reducing researcher bias in the assessment of phenomena under study.

### 3.4. Data collection

#### 3.4.1. Empirical data collection

Data for the present study was collected in two stages over a span of approximately 9 months, between the 20<sup>th</sup> of February and the 29<sup>th</sup> of November 2012. The survey was carried out from the 20<sup>th</sup> of February to the 1<sup>st</sup> of August, while the interviews were conducted from the 8<sup>th</sup> of October until the 29<sup>th</sup> of November.

For the recruitment process, the clinic staff provided the researcher on a regular basis with the

names and contact information of patients who met the inclusion criteria and had an appointment at the obesity clinic in the following weeks. All patients meeting these criteria were sent an information package via regular mail, containing detailed study information, as well as informed consent forms both for the adolescents themselves and their parents. In case they were interested in participating in the study, patients were asked in the information letter to bring along the informed consent forms on their next appointment at the clinic or return them by mail, for which purpose they were provided with a stamped envelope addressed to the researcher. The researcher's institutional contact data were also included in the information letter, should patients and their families be interested in participating, but require more details about the research project. Potential participants were contacted at least 2 weeks prior to their appointment at the obesity clinic, in order to allow for sufficient time for them to receive the information letter and consider their participation without any time, contextual or social pressure.

On the day of their appointment at the clinic, patients who had already filled in and submitted the informed consent forms were greeted by the researcher and provided with the study questionnaire. The other patients who had previously been contacted by mail were also approached by the researcher and asked whether they consented to take part in the study. In case of a positive answer, they were given the opportunity to sign the informed consent forms on site and then handed the study questionnaire. All patients were provided with further information, assistance or explanations (e.g. concept clarifications) when filling in the questionnaire, if necessary. Most questionnaires were filled in by the participants in the waiting room or in a consultation room before attending their appointment, whereas some patients completed the questionnaire after they had had their appointment.

In some cases, when the researcher could not be present at the clinic, patients were approached by clinic staff members (such as nurses, doctors, dietitians), invited to participate in the research project and handed the questionnaire. Other times, patients who expressed interest in participating by returning the informed consent forms did not have the time to fill in the questionnaire at the clinic, or did not attend their initial appointment and had no other appointment in the near future. These patients were allowed to take along the study questionnaire and fill it in at home or were sent the study questionnaire and returned it via mail.

After the survey was completed, participants selected for the interviews based on the strategy described in section 3.1.5 were sent an invitation letter for a personal interview with the researcher. Moreover, they were informed that they will be contacted by telephone in approximately a week after having received the letter, in order to confirm or decline the invitation and set an interview

appointment. Of 13 contacted adolescents, two girls (both with a migration background) refused to participate and 10 were ultimately interviewed. Several participants required multiple reminders and some appointments needed to be rescheduled (in some cases multiple times) before the interviews were eventually conducted.

Most interviews were conducted at the Interdisciplinary Socio-paediatric Care Centre in a quiet room used for patient education classes. Only two interviews were conducted in a consultation room, before or after the patient's appointment. Only one participant was interviewed at home, since she did not have any appointment at the obesity clinic during the data collection time frame.

All interviews were recorded with a digital voice recorder (OLYMPUS WS-210S) and followed the same interaction pattern. In the beginning, the researcher briefed the interviewee on the interview situation as well as on the aspects that were going to be covered in the interview. The participant was then asked whether he/she was ready to begin with the interview and the voice recorder was turned on. The conversation then followed the standard thematic structure and question sequence indicated in the interview guide. Exceptions were made whenever it became clear that some questions were not relevant for individual participants and whenever the researcher considered that a given answer provided insufficient information. In the former situation, for instance when participants claimed not to have ever been discriminated based on their weight status, or that their weight status was never an issue in their peer group, additional questions that would have built upon a positive answer were omitted. Whenever the researcher wanted participants to elaborate on their answers, probing questions were asked. To this end, the researcher based probes mostly on examples which had been previously mentioned by other interviewees, as a measure of peer cross-validation of the qualitative data. For questions that required written answers (i.e. figure rating scale and weight bias internalization scale), the paper and pencil method was used. The two scales were printed out before the interview and the participants were given time during the interview to fill them in. Before ending the conversation, participants were asked if they wanted to add anything on the study topic, which had not been mentioned up to that point in the interview. After that, the participants were informed that the interview had come to an end and the digital voice recorder was turned off.

In compensation for the time they allotted to participating in the study, patients who agreed to participate and filled in the study questionnaire on site received a €5,- voucher for a book store on submission of the completed questionnaire. Participants who filled in the questionnaire at home and returned it by mail were sent their voucher once the questionnaire reached the researcher. Additionally, at the end of each interview, the respective participant received a €20,- cinema voucher.

### **3.4.2. Clinical data acquisition**

Clinical data for the study participants were obtained from the obesity clinic in digital form after completion of the survey fieldwork. The data acquisition process took place in three steps, as patient information needed to be compiled from different sources. The main data set was extracted from the patient documentation database (APV - Adipositas-Patienten-Verlaufdokumentation) and was made available for the present research in November 2012. This data set contained the basic information on ethnic heritage for all study participants and weight status data for roughly half of the adolescents included in the study sample. The reasons for the missing weight status data were twofold. On the one hand, the general patient documentation database does not contain all the information on specific patient groups such as participants in research projects. On the other hand, due to the high number of patients visiting the paediatric obesity clinic, significant delays between patient visits and the entry of the respective anthropometric measurements in the documentation database may occur.

In September 2013, a second data set was obtained, containing weight status information for participants in a longitudinal study on the sustainability of rehabilitation benefits for obese children and adolescents, who were also included in the sample used in the present study. After compiling the newly acquired data set and the already available data, weight status information was still missing for 26 participants.

In order to account for the missing data, a third data set drawn from the documentation database was obtained in March 2014. This was used to retrieve weight status information for 23 participants with missing data and update the weight status information for 13 patients for whom data on weight and height had only been available beyond the time frame relevant for the present study. For the remaining 3 study participants no weight and height data could be found in either electronic or paper records of the obesity clinic.

## **3.5. Data analysis**

### **3.5.1. Quantitative analysis**

The analysis of the quantitative data was performed with the aid of the statistics software IBM SPSS Version 22. Throughout the data collection process, the questionnaire data have been continuously entered into a SPSS database created specifically for the present study. In order to proof the database for potential typing errors, 20 questionnaires were selected at random and the accuracy of the database entries was verified. As an additional data cleansing and reliability testing measure, a preliminary frequency analysis with minimum and maximum values was performed.

Patients' socio-demographic, anthropometric and clinical data was obtained from the obesity clinic

in several datasets, which were compiled into a single Apache Open Office Spreadsheets document. As previously described in section 3.3.2., patients' age and therapy duration were computed based on their birth date and the date of their first visit at the obesity clinic, respectively. For the assessment of patients' ethnicity, both patients and their parents' nationality, country of birth and mother tongue were used. After computing all variables needed for the statistical analysis, the Apache Open Office Spreadsheets document was converted into Microsoft Excel format (.xls) so that the data set could be imported into IBM SPSS. After saving the data set as an IBM SPSS database (.sav), it was merged with the IBM SPSS database containing the questionnaire data, using the participant identification code as a key variable. The resulting merged database was used for all statistical analyses performed for the purpose of the present research.

Before proceeding with further analyses, composite scores were calculated for all scales included in the questionnaire, based on their authors' indications described in section 3.3.1. After computing the composite scale scores, these were used to calculate descriptive statistics (mean, median, minimum, maximum, range, standard deviation) and to perform frequency analyses. In a next step, ANOVA analyses of variance and Tukey's Test (for more than two groups) were performed in order to establish whether groups defined by socio-demographic and anthropometric characteristics (age, gender, ethnicity, socio-economic position and weight status) differed on the psychosocial dimensions assessed through the study questionnaire.

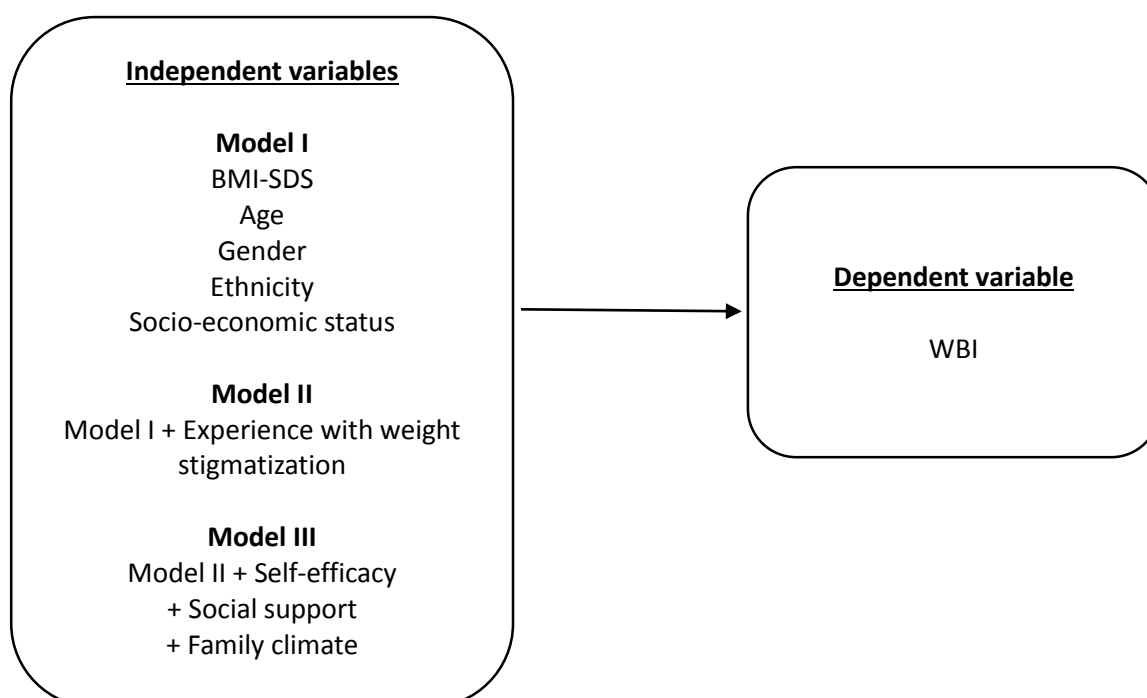
Several analyses were conducted in order to assess the validity and reliability of the weight bias internalization scale, which was a key objective of the present study. In order to determine the reliability of the scale, a Cronbach's Alpha internal consistency analysis was performed. Moreover, for the 10 interview participants who filled in the WBIS twice, Pearson's correlation coefficient was calculated for the values reported in the survey and those reported during the interview.

For the assessment of the scale criterion validity, weight bias internalization was hypothesized to negatively correlate with self-esteem, based on the results of Roberto and colleagues (2012). As a further measure of concurrent validity, it was hypothesized that study participants with high weight bias internalization will display a strong tendency towards an internal body-related locus of control. To this end, the direction, strength and significance of associations between participants' weight bias internalization scores and their body-related locus of control, as well as self-esteem scores were assessed based on Pearson's correlation analyses.

The construct validity of the WBIS has been established in previous studies with both adult and adolescent populations in the USA (Durso & Latner, 2008; Roberto et al., 2011). However, given that the scale was translated into German and some items were adapted for use with younger

adolescents, a replication of the construct validity assessment was deemed necessary in the present study. Accordingly, the scale construct validity was evaluated by means of factor analyses, similar to the validation procedures used by Durso & Latner (2008) for the construction of the final WBIS version. As an initial step, an exploratory main component analysis was performed, in order to look into the dimensionality of the scale. As opposed to Durso & Latner (2008), an oblimin direct rotation was chosen over a varimax rotation, as it was expected that, if multiple factors were identified, they would be related from a theoretical viewpoint (Field, 2005). This procedure was similar to that used by Roberto and colleagues (2012) in their validation of the WBIS in an adolescent sample. Accordingly, a factor loading threshold of 0.4 was used, as suggested by Roberto and colleagues (2012), instead of the more conservative 0.5 threshold used by Durso & Latner (2008). Furthermore, as a means of testing the validity of a unidimensional scale structure, the number of factors to extract was limited to one in a second step of the analysis. The Maximum Likelihood extraction method was used and the fit of the one-factor solution was assessed based on the associated Chi-square test. The association between participants' weight status (BMI-SDS) and the degree to which they internalize external weight bias was assessed through an ANOVA analysis. In order to test the hypothesis that extremely obese adolescents have higher weight bias internalization scores compared to overweight and obese adolescents, a Mann-Whitney Test for independent samples was performed. Moreover, hierarchical multiple linear regression was used to assess the impact of weight status on weight bias internalization, while also considering study participants' socio-demographic characteristics and available resources (see Figure 5).

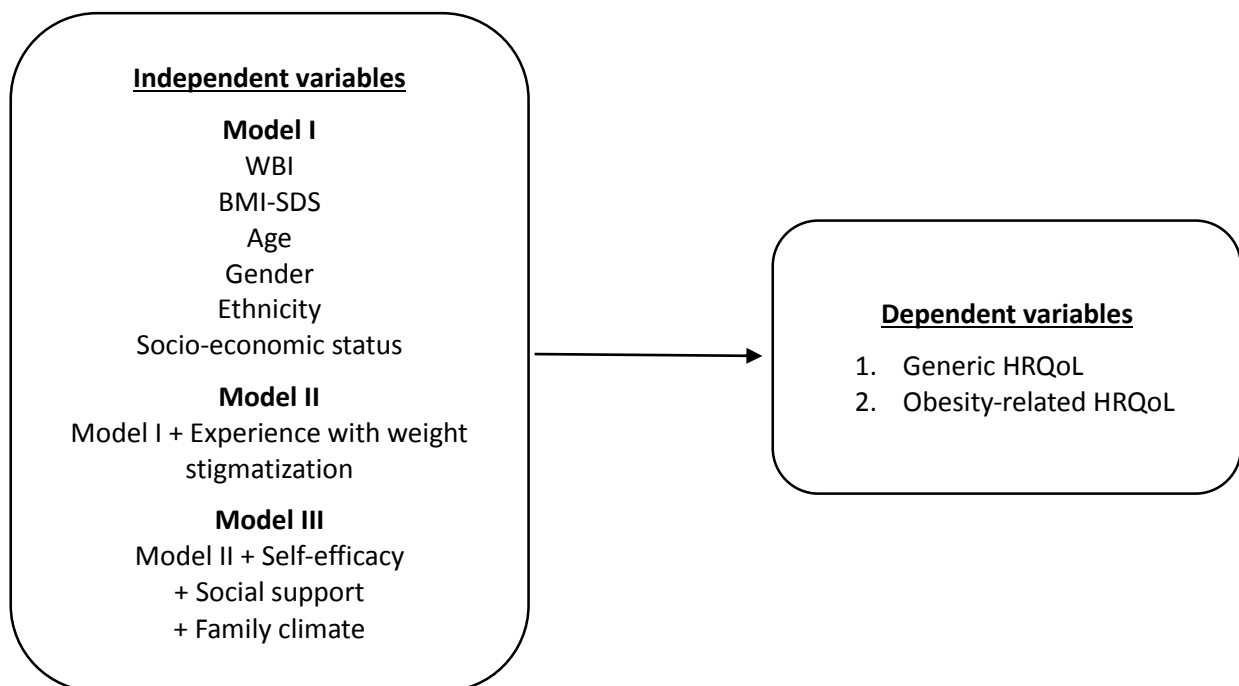
*Figure 5. Regression models used to test the effects of weight status on weight bias internalization*



The first model included weight status (BMI-SDS) as the independent variable (controlling for age, gender, ethnicity and socio-economic status) and weight bias internalization scores as the dependent variable. In the second model, participants' experience with weight-based discrimination was also controlled for. In the third step, participants' personal, social and familial resources were included in the original model as independent variables, in order to explore whether and how they affected previously identified associations.

Hierarchical multiple regression was also used to examine the influence of weight bias internalization on generic and obesity-specific health-related quality of life (see Figure 6). At first, a linear regression model with weight bias internalization score as an independent variable (controlling for BMI-SDS, age, gender, ethnicity and socio-economic status) and KIDSCREEN-10 Index score as the dependent variable was computed. In the next block, the impact of participants' experience with weight-based discrimination was controlled for. In the third model, participants' personal, social and familial resources were included in the analysis as independent variables, in order to explore whether and how they affected previously identified associations. The same procedure was applied to identify the impact of weight bias internalization on obesity-specific quality of life.

*Figure 6. Regression models used to test the effects of weight bias internalization on quality of life*



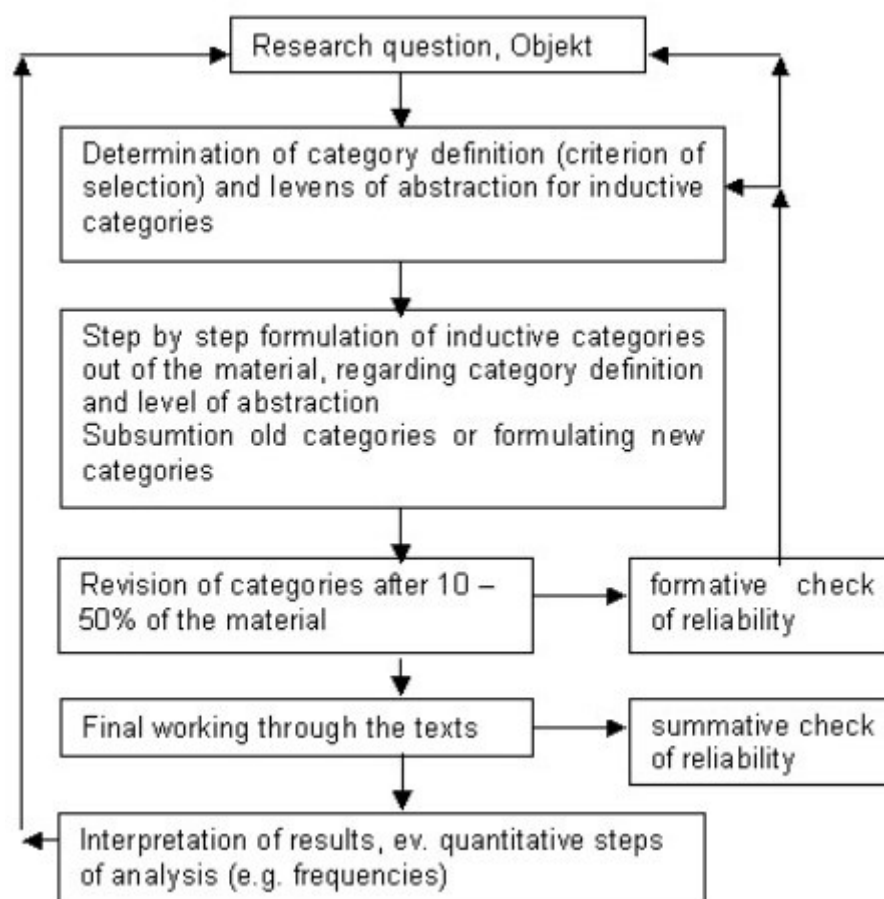
### 3.5.2. Qualitative analysis

The purpose of the qualitative analysis of the interview data collected in the present study was that of describing the context in which discrimination and weight bias manifest and the techniques that study participants develop to cope with their weight status and associated stigma. On a

superordinate level, this contextual description would facilitate a better understanding of the survey results on participants' reports of weight discrimination experiences and their internalization of weight bias. Moreover, a more detailed insight into participants' experiences was expected to generate a richer explanatory framework for the associations identified in the quantitative data analysis between participants' weight bias internalization and their socio-demographic variables, quality of life, self-esteem, body-related locus of control, and resources.

The use of an interview guide had a strong structuring effect on the researcher-interviewee communication and consequently on the interview material and the resulting category system. However, in pursuit of a rich and comprehensive description, an inductive qualitative content analysis was preferred, due to its flexibility in deriving new themes directly from the collected material. Given its exploratory nature, the analysis process was based on the principles of conventional content analyses described by Hsieh & Shannon (2005) and followed the steps suggested by Mayring (2000) in his framework for inductive category development (see Figure 7 below).

Figure 7. Phillip Mayring's model for inductive qualitative content analysis (2000)





At first, the researcher immersed in the interview material during the process of data transcription, as interviews were listened to multiple times and transcribed verbatim with the aid of the software f4. In the transcription process, standard simple transcription conventions were used (see Table 7). The automatic speaker change option was used to alternate between interviewer and interviewee statements. Interviewer questions and statements were preceded by the researcher's initials (CCCP), whereas their respective study identification code was used for interviewees. Although pauses and other meta-elements were recorded in the interview transcripts, the data analysis was restricted to the actual verbal content of the interviews.

*Table 7. Standard simple conventions used in the transcription of the interview recordings based on (Dresing & Pehl, 2012)*

Convention	Description
(.)	Pause – approximately 1 second
(..)	Pause – approximately 2 seconds
(...)	Pause – approximately 3 to 5 seconds
(unverständlich)	Incomprehensible/unclear sequence
(lacht)	Interviewee laughs
(lachend)	Interviewee makes statement while laughing
//	Overlapping of interviewer and interviewee statements

Whenever unclear passages were identified, the material was read and listened to repeatedly, in order to ensure an accurate interview transcription. The transcripts were then checked for accuracy by a peer researcher with experience in both qualitative research and research with obese children. This measure was taken as a reliability check as well as with the aim of increasing the validity of the transcription process.

After the interview transcription was finalized, the transcribed material was read again, in order to obtain a deeper understanding of the text and implicitly of participants' experiences with weight-based discrimination and their peers, as well as their perception of weight bias in their social environment, their body image and their evaluation of the Weight Bias Internalization Scale (WBIS). The inductive coding of the interview material was performed with the aid of the software f4analyse. As a first analysis step, the abstraction level at which the initial categories will be created was established based on the interview guide used for collecting the data (see Annex B2). The first interview was then inductively coded, i.e. the text was read line by line and codes were developed based on homogeneous units of meaning (sentences or paragraphs, respectively). Given the structuring effect of the interview guide, the resulting codes corresponded to a great extent to the

chronological order in which the interview questions were answered by the study participants. When necessary, new codes were created to cover aspects identified in the text that did not fit in the pre-defined framework of the interview guide. In the next step, a second interview was coded based on the codes derived from the first interview. Whenever appropriate, codes were rephrased to reflect the shared content of two similar units of meaning, as a first step in the development of broader categories. The same procedure was followed for two further interviews, after which the main category system was obtained, roughly after 40% of the interview material had been coded. Most contents of the remaining interviews could be coded along this category scheme, with new codes being created for aspects that had not been identified in previous interviews. Whenever the frequency with which information on aspects mentioned in previous interviews and coded under a broader category suggested a relevant clustering of meaning, a new, specific code was developed and previously coded material was accordingly reviewed and recoded. However, this procedure only had a significant impact on the code structure, the category system proving to be relatively stable throughout the coding process.

After all interviews had been coded, a homogeneity check was performed for all codes as a summative reliability check, in order to identify potential misclassifications and create more homogeneous subcodes, whenever this seemed appropriate and useful for the overall clarity of the general data structure. The resulting category system together with the respective quotes was submitted for consistency and validity review to a peer researcher with experience in qualitative as well as paediatric obesity research. Following peer validation of the categories, a final operational definition system was developed for the individual codes in order to increase the transparency of the coding process and emphasize the specificity of each code as an independent cluster of meaning. These operational definitions were used in the description of the interview material in Chapter 4.3.

### **3.5.3. Data triangulation**

In order to obtain a detailed overview of potential associations between overweight adolescents' weight stigma internalization and their obesity-related quality of life, interviewees' response patterns to the individual items of the WBIS and the KINDL® obesity module were contrasted with relevant quotes from the interview data. To this end, the qualitative categories containing information related to each individual scale item were searched and identified in the interview material based on a systematic, deductive analysis approach.

More precisely, areas in which interviewees reported weight stigma internalization were at first juxtaposed with quantitative data illustrating differences and similarities in the way adolescents responded to the WBIS as part of the survey and in the interview. Secondly, interviewees' reports on

their obesity-related quality of life were contrasted to their response pattern to the KINDL® obesity module, stratified by level of weight bias internalization.

### **3.6. Potential sources of bias**

#### **3.6.1. Measurement bias**

Due to brevity considerations, only a 10-item index was used for the assessment of generic health-related quality of life. The instrument of choice was KIDSCREEN Index 10, the shortest form of a series of tools assessing the health-related quality of life among children and adolescents. As described in section 3.3.1.2, the long version of the KIDSCREEN instrument consists of 52 items, divided into 10 scales. Using all or selected subscales of the KIDSCREEN-52 instrument (e.g. Psychological Well-being, Moods and Emotions, Self-Perception, Social Support and Peers, and Social Acceptance/Bullying) would have provided more detailed information and would have allowed for more in-depth analyses of how weight bias internalization impacts on adolescents' quality of life.

For the Interpersonal Sources of Weight Stigma scale, study participants were asked to choose the frequency with which they have ever experienced discriminatory behaviour from a list of social actors in settings such as family, peer group, school and public space. Although the social actors categories included in the list were developed in such a way as to correspond to the main social contacts of adolescents, still not all categories applied to all study participants. However, no explicit instructions on how to deal with non-applicable questions or items (e.g. if participants had no siblings or had contact with only one parent) were included in the questionnaire. Therefore, there was no possibility of post-hoc differentiation between social agents who did not belong to adolescents' social network and those who never displayed discriminating behaviour towards study participants. This shortcoming was accordingly acknowledged and addressed both in the descriptive analysis and in reporting the data by collapsing both missing values and the value 0 (corresponding to the answer category "Never been stigmatized") into a single analysis category. However, not being able to differentiate between whether a certain category of people did not belong to participants' social network or had never displayed weight-based discriminatory behaviour did not impact on the calculation of the scale summary score. This is due to the fact that never having been discriminated against by a particular category of people was scored as 0 and was hence equivalent to missing values in terms of calculating a sum or average score.

#### **3.6.2. Selection bias**

The study setting was purposively selected based on ease of access to the study population and data from only one obesity clinic was collected. However, given the great social and cultural diversity of

the patients attending the chosen study setting, the results of the study are expected to be fairly representative of the population of adolescents accessing obesity care in the Berlin-Brandenburg region.

Although an exhaustive sampling procedure was pursued for the survey component of the present study, not all adolescents who were invited to participate in the study accepted to do so. This may take its toll on the validity of the study results by introducing a selection bias, since participants may significantly differ from non-participants along relevant study outcomes (WBI, HRQoL, etc.). To look into this possibility, participants and non-participants were compared based on their age and gender, which were recorded for all participants during the recruitment phase. Further comparisons between adolescents who accepted to participate in the study and those who declined were not possible due to the lack of data on other relevant dimensions (e.g. socio-economic status, migration background, weight status).

The lack of data on weight status during the recruitment phase impacted on the sampling procedure beyond the ability to make comparisons between participants and non-participants. Since the main hypothesis of the study claims that there is a significant difference in the extent to which extremely obese adolescents internalize weight bias compared to their obese and overweight peers, the sample size was calculated based on the magnitude of the expected difference between the aforementioned groups. As such, the sample should ideally contain 101 extremely obese and 101 obese and overweight adolescents. However, this condition could not be observed in the participant recruitment process, given that weight status data could only be obtained for adolescents who agreed to participate, after they and their parents had consented to this procedure.

Since in the present study gender was a significant category that could also be controlled for in terms of the sample composition (as opposed to e.g. socio-economic status), a balance between the number of male and female participants was sought in the recruitment process. Accordingly, in the last stage of the data collection process, more emphasis was put on recruiting male participants.

The recruitment process for the qualitative study component was facilitated by the fact that it relied on drawing a convenience sub-sample out of the larger patient collective who took part in the survey. In this case the sampling procedure focused on retrieving a rich mix of experiences with being overweight and dealing with weight-based discrimination by selecting participants who were different in terms of their weight bias internalization, age, gender and ethnicity. Nevertheless, as opposed to the quantitative data collection, the two survey participants who declined the invitation for an interview were both female and belonged to an ethnic minority group. Although this might have been a coincidence and other female participants with the same age and ethnicity

characteristics could be recruited for interviews, it is uncertain if this had an influence on the study findings, given the subjective and individual nature of discrimination experiences.

### **3.6.3. Researcher bias**

Before entering the field, the main researcher had been engaged in studying the psychosocial aspects and consequences of paediatric obesity for three years. Throughout her activity in this area, the researcher had worked very closely with the team of health care professionals providing care to obese children and adolescents in the study setting, which facilitated her access to the study population. As a result, the researcher was familiar with the study setting and also possessed substantial background information of the impairments brought about by overweight and obesity, as well as prevalent discrimination agents and contexts (e.g. peer bullying at school, in the context of physical activity such as swimming, etc.). In spite of this, the researcher adopted a naïve attitude in her interaction with the study participants during the data collection process. It is, however, unclear to what extent the researcher's personal characteristics (young, female, migrant, pregnant) might have influenced participants' decision to take part in the study, their attitude towards the research and ultimately their answers to the study questions.

During the quantitative data collection, the researcher was often present and seated close to the respondents, in order to provide support and clarifications in case these were needed. Although this was a useful measure for increasing the response accuracy, the anticipation that the researcher might read the answers after collecting the completed questionnaire might have influenced participants when filling in the questionnaire.

The potential for researcher bias was higher in the qualitative research component, given the specific communicative situation of the interviewing process. Non-verbal communication elements such as gestures, mimics, intonation and body language, but also personal sympathy might have influenced the interaction between interviewer and interviewees and consequently the study results. However, as the possibility of bias at this level was clear from the beginning of the fieldwork as inherent to the study design and particularly to qualitative data collection, the researcher made a constant effort to overcome bias by practicing self-reflection throughout the entire research process. Also the researcher strived to maintain a good balance between creating a standardized interview situation and remaining flexible enough to give participants the discourse space they needed, in order for them to provide the information that was needed for meeting the study objectives.

### 3.6.4. Recall bias

As previously mentioned, research on stigma and discrimination has a highly biographical character. Therefore, recall bias might have occurred in participants' accounts of past discrimination experiences, which might lead to a general underreporting of manifest stigma. Analogously, this might also apply to all items requiring a memory effort from the study participants. Furthermore, some respondents might have not spontaneously remembered certain discrimination episodes when asked to elaborate on this aspect during the interview. Since selected adolescents have only been interviewed once, there was no possibility to atone for recall bias in the present research.

### 3.6.5. Reporting bias

In the introductory address of both the questionnaire and the interview guide, adolescents recruited for the study were informed of the fact that there were no right or wrong answers to the study questions and that their honesty in describing their true experiences and feelings was called for. However, given the highly sensitive nature of the study topic, it cannot be excluded that participants' answers to the survey or interview questions were biased in their attempt of eliminating cognitive dissonance emerging from the conflict between acknowledging general prejudice and stereotypes against overweight individuals and applying the associated negative characteristics to oneself. Also socially desirable answers might have been provided by some study participants to questions or items for which a positively valued dimension could be anticipated, as an image management strategy.

Given the fact that some patients had consented to participate in the study but did not attend their appointments at the obesity clinic, they were asked to fill in the study questionnaire at home and return it to the research team by mail. This was also the case for patients who did not have enough time to fill in the questionnaire at the obesity clinic and preferred to continue filling in the questionnaire at home and return it by mail. This might have introduced a reporting bias into the data collection process, as participants who filled in the questionnaire at home had more time to consider their answers to the study questions and hence had an advantage over participants who filled in the questionnaire in the waiting room or in a consultation room at the obesity clinic. The same applies for the qualitative data collection, since, despite efforts to create a comparable interview setting for the study participants, both interviews conducted in a consultation room were shortly disrupted by clinic staff members, who wanted to perform examinations or ask for information. Thus, it can be assumed that it was more difficult for participants who were interviewed in a consultation room to focus on the interview situation compared to those who were interviewed in a patient education room or at home.

## Chapter 4. Results

### 4.1. WBIS reliability and validity

Testing the first hypothesis of the present study required the assessment of the validity and reliability of the Weight Bias Internalization Scale, as a prerequisite for its use in further analyses. To this end, correlation, factor and reliability analyses were conducted, the results of which are presented below.

#### 4.1.1. Reliability

In order to assess the reliability of the Weight Bias Internalization Scale, an analysis of internal consistency was performed using the data of 181 adolescents without missing scale values. The global scale Cronbach's alpha value was 0.874, while the mean sum of participants' values for all scale items was 41.60, with a standard deviation of 13.20.

All scale items displayed satisfying item-total correlations, ranging between 0.384 for item 8 ("I don't think I deserve to have many friendships, as long as I am overweight.") and 0.749 for item 5 ("Whenever I think a lot about being overweight, I feel depressed."). The Cronbach's alpha statistic on deletion of individual items was lower than or equal to the overall Cronbach's alpha scale statistic for all scale items and ranged between 0.850 for item 5 and 0.874 for item 8. A detailed overview of the WBIS item-scale statistics is presented in Table 8.

*Table 8. WBIS scale statistics*

Item	Item mean	Item standard deviation	Scale mean if item deleted	Item-total correlation	Alpha, if item deleted
1. Als Übergewichtige/-r, fühle ich mich genauso fähig wie jeder andere.	2.8729	1.69980	38.7293	0.571	0.864
2. Ich bin weniger attraktiv als andere wegen meines Gewichtes.	4.0110	1.88264	37.5912	0.543	0.866
3. Wegen meines Übergewichtes, mache ich mir Sorgen darüber, was die anderen von mir denken.	4.2265	2.03540	37.3757	0.719	0.853
4. Ich wünsche mir, ich könnte mein Gewicht radikal verändern.	6.0718	1.38658	35.5304	0.477	0.870
5. Wenn ich viel an mein Übergewicht denke, fühle ich mich bedrückt.	4.0884	2.02290	37.5138	0.749	0.850

Item	Item mean	Item standard deviation	Scale mean if item deleted	Item-total correlation	Alpha, if item deleted
6. Ich hasse mich, weil ich übergewichtig bin.	2.8343	1.99587	38.7680	0.736	0.851
7. Mein Gewicht ist mir sehr wichtig für mein Selbstwertgefühl.	4.3315	1.91211	37.2707	0.468	0.871
8. Ich glaube nicht, dass ich es verdient habe, viele Freundschaften zu haben, solange ich übergewichtig bin.	1.7348	1.43618	39.8674	0.384	0.874
9. Ich bin zufrieden mit meinem Gewicht.	5.5967	1.55556	36.0055	0.456	0.871
10. Wegen meines Übergewichtes, habe ich das Gefühl, nicht ich selbst zu sein.	2.9558	1.84939	38.6464	0.660	0.857
11. Wegen meines Gewichtes, verstehe ich nicht, wie jemand, der/die gut aussieht, sich mit mir verabreden würde.	2.8785	1.91388	38.7238	0.569	0.864

Further, a Pearson's correlation analysis was performed in order to assess the degree of association between the WBIS scores reported by the 10 interview participants at the time of the survey and during the interview. The analysis retrieved a strong correlation coefficient of 0.877, significant at the level of 0.01 ( $p=0.001$ ).

#### 4.1.2. Concurrent validity

As a means of testing the concurrent validity of the WBIS, further Pearson's correlation analyses were performed, in order to assess the association between participants' weight bias internalization and their self-esteem and body-related locus of control, respectively. Accordingly, it was hypothesized that weight bias internalization will be negatively correlated with self-esteem and positively correlated with internal locus of control scores. The results of the correlation analyses are presented in Table 9.



Table 9. Correlation analyses of the WBIS with the RSE and the KLC subscales<sup>1</sup>

	Number of cases in analysis	Pearson's correlation coefficient	P-value
RSE	182	-0.698	< 0.001
KLC-IN	183	-0.008	0.915
KLC-EX	177	0.277	< 0.001
Aus-In	188	0.012	0.865
Aus-Ex	187	0.325	< 0.001
Ges-In	188	-0.026	0.727
Ges-Ex	183	0.130	0.079
Klf-In	187	-0.017	0.815
Klf-Ex	186	0.160	0.029

As expected, the WBIS displayed a strong significant negative correlation with the Rosenberg Self-Esteem Scale, with an  $r=-0.698$  and a  $p$ -value lower than 0.001. However, the WBIS did not significantly correlate with any of the internal body-related locus of control scales. In turn, highly significant correlations ( $p<0.001$ ) of moderately low magnitude were observed between the WBIS and the global external locus of control scale, as well as between the WBIS and the external physical appearance-related locus of control subscale ( $r=0.277$  and  $r=0.325$ , respectively). Another low, significant correlation ( $p=0.029$ ) was observed between the WBIS and the external physical performance-related locus of control subscale ( $r=0.160$ ).

#### 4.1.3. Construct validity

In order to verify the construct validity of the WBIS, 2 factor analyses were performed as follows: an exploratory main component analysis with an oblimin rotation and a confirmatory main component analysis in which the number of factors to be extracted was limited to 1.

<sup>1</sup> Abbreviations: RSE (Rosenberg Self-Esteem Scale), KLC-IN (Internal body-related locus of control), KLC-EX (External body-related locus of control), Aus-In (Internal physical appearance locus of control), Aus-Ex (External physical appearance locus of control), Ges-In (Internal health-related locus of control), Ges-Ex (External health-related locus of control), Klf-In (Internal physical performance locus of control), Klf-Ex (External physical performance locus of control)

Overall, low to moderately high, significant inter-item correlations were identified in the WBIS data, ranging from 0.122 (between items 4 and 8) and 0.656 (between items 3 and 5), as illustrated in Table 10. Only the correlation between items 9 and 8 was lower than 0.1 ( $r=0.094$ ); however it was not statistically significant ( $p=0.098$ ). The determinant of the inter-item matrix was 0.014 ( $>0.00001$ ), thus excluding multicollinearity or singularity within the scale items.

*Table 10. Inter-item correlation matrix with correlation coefficients illustrated in the upper part of the table and significance levels illustrated in the lower part of the table*

Correlation coefficients P-values	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11
I1		0.298	0.382	0.194	0.515	0.534	0.323	0.316	0.284	0.471	0.351
I2	0.000		0.571	0.353	0.426	0.358	0.160	0.230	0.299	0.305	0.334
I3	0.000	0.000		0.403	0.656	0.581	0.378	0.207	0.328	0.494	0.452
I4	0.004	0.000	0.000		0.427	0.328	0.268	0.122	0.501	0.269	0.279
I5	0.000	0.000	0.000	0.000		0.647	0.434	0.206	0.405	0.588	0.398
I6	0.000	0.000	0.000	0.000	0.000		0.378	0.367	0.373	0.624	0.489
I7	0.000	0.014	0.000	0.000	0.000	0.000		0.238	0.197	0.405	0.289
I8	0.000	0.001	0.002	0.048	0.002	0.000	0.001		0.094	0.364	0.434
I9	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.098		0.218	0.231
I10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001		0.460
I11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	

The Kaiser-Meyer-Olkin Test of sample adequacy for factor analysis and the Bartlett test of sphericity suggested that the WBIS data collected from the study sample were suitable for factor analyses. The tests retrieved a very good value of 0.881 ( $>0.5$ ) for the Kaiser-Meyer-Olkin measure and Bartlett's test was highly significant ( $p<0.001$ ), suggesting that the correlation matrix was not an identity matrix (i.e. the inter-item correlations were significantly different from 1).

The exploratory factor analysis with main component extraction and direct oblimin rotation retrieved a two-factor solution (see Table 11). The appropriateness of using an oblique rotation method was indicated by a correlation coefficient of 0.382 between the two extracted factors.

Table 11. Factor loadings of WBIS items

Item	Exploratory two-factor solution				Confirmatory one-factor solution
	Non-rotated solution		Oblimin rotation		
	Factor 1	Factor 2	Factor 1	Factor 2	
1. Als Übergewichtige/-r, fühle ich mich genauso fähig wie jeder andere.	0.655	-0.221	0.657	0.079	0.613
2. Ich bin weniger attraktiv als andere wegen meines Gewichtes.	0.597	0.254	0.237	0.520	0.578
3. Wegen meines Übergewichtes, mache ich mir Sorgen darüber, was die anderen von mir denken.	0.779	0.156	0.448	0.506	0.776
4. Ich wünsche mir, ich könnte mein Gewicht radikal verändern.	0.556	0.556	-0.033	0.798	0.492
5. Wenn ich viel an mein Übergewicht denke, fühle ich mich bedrückt.	0.817	0.114	0.510	0.483	0.821
6. Ich hasse mich, weil ich übergewichtig bin.	0.811	-0.133	0.701	0.237	0.800
7. Mein Gewicht ist mir sehr wichtig für mein Selbstwertgefühl.	0.556	-0.139	0.519	0.115	0.504
8. Ich glaube nicht, dass ich es verdient habe, viele Freundschaften zu haben, solange ich übergewichtig bin.	0.466	-0.544	0.775	-0.323	0.386
9. Ich bin zufrieden mit meinem Gewicht.	0.525	0.553	-0.054	0.782	0.492
10. Wegen meines Übergewichtes, habe ich das Gefühl, nicht ich selbst zu sein.	0.741	-0.284	0.771	0.057	0.714
11. Wegen meines Gewichtes, verstehe ich nicht, wie jemand, der/die gut aussieht, sich mit mir verabreden würde.	0.653	-0.264	0.690	0.036	0.588

In this exploratory analysis, most scale items displayed higher loadings on the first factor (i.e. items 1, 5, 6, 7, 8, 10 and 11). Items 4, 9, 2 and 3 had the highest loadings on the second factor in the rotated two-factor solution, while items 2 and 3 had higher loadings on the first factor in the non-rotated solution. The two factors had eigenvalues of 4.804 and 1.249 and accounted for 43.68% and 11.35% of the total variance, respectively.

When restricting the factors to be extracted to one (with Maximum Likelihood extraction), all items had loadings higher than 0.4, with the exception of item 8, whose loading on the single factor solution was 0.386. The chi-square test assessing the goodness of fit of the data to the one-factor solution was highly significant, with a p-value below the 0.001 level. The extracted factor had an eigenvalue of 4.371, accounting for 39.73% of the total variance.

Since the results of the exploratory main component analysis suggested a theoretical two-dimensional scale structure with one factor illustrating self-stigmatization (items 1, 2, 3, 5, 6, 7, 8, 10 and 11), while the other focused primarily on satisfaction with personal weight (items 4 and 9), an additional main component analysis was performed, excluding items 4 and 9. This analysis retrieved a one-factor solution, in which all retained items had loadings above 0.5 (see Annex C1). The single factor had an eigenvalue of 4.348 and accounted for 48.31% of the total variance. Cronbach's alpha for this 9-item subscale was 0.868 and all item-total correlations were above 0.4.

#### **4.2. Quantitative results**

After the data obtained from the survey was merged with the clinical data obtained from the obesity clinic into a single database, statistical analyses were performed with the aim of describing the study sample with regard to their socio-demographic, anthropometric and psychosocial characteristics, as well as of verifying the study hypotheses. As such, regression analyses were performed as a means of exploring the impact of adolescents' weight status on their degree of weight bias internalization, controlling for socio-demographic characteristics, their experience with weight stigma and their personal, familiar and social resources. Further regression analyses aimed at establishing the influence of weight bias internalization on adolescents' generic and obesity-related quality of life, again adjusting for socio-demographic characteristics, experience with weight stigma, as well as personal, familiar and social resources.

Since for some of the measurements included in the survey instrument only gender-specific reference values were provided in the literature, selected results of the present study are additionally stratified by gender for comparison purposes. Moreover, given that age and gender data were available for all adolescents who were contacted for participation in the present study, chi-

square tests were used to verify whether participants differed from non-participants along these two variables.

#### 4.2.1. Sample description

A total of 363 eligible adolescents had at least one appointment at the obesity clinic of the Interdisciplinary Socio-paediatric Care Center of the Charité - Universitätsmedizin Berlin during the data collection period (20.02.2012-01.08.2012) and were accordingly invited to participate in the survey component of the present study. Out of these, 100 adolescents either did not present for their appointment or were not seen in the clinic by the main researcher. The remaining 263 adolescents, who returned the completed informed consent forms by mail or presented for their appointment, were approached by the main researcher and asked whether they wanted to participate in the survey. A total of 205 young people agreed to participate in the survey. However, since 14 adolescents failed to return their parental informed consent form, they were excluded from the final survey sample, which consisted of 191 adolescents. Accordingly, the participation rate was 73%, when calculated as the number of patients who accepted to participate in the survey divided by all patients who were approached by the main researcher in the clinic and either refused or accepted to participate in the study. If all eligible participants who were informed about the study are considered to be the reference group, the participation rate decreases to 53%. An overview of the gender and age distribution of adolescents who participated and those who did not participate is presented in Table 12 below.

*Table 12. Distribution of participants and non-participants by gender and age group*

		Participation		Total	Chi-square (p-value)
		Participated	Did not participate		
<b>Gender</b>	<b>Female</b>	98	86	184	0.062 (p=0.803)
	<b>Male</b>	93	86	179	
	<b>Total</b>	191	172	363	
<b>Age group</b>	<b>13-15</b>	120	102	222	0.473 (p=0.491)
	<b>16-18</b>	71	70	141	
	<b>Total</b>	191	172	363	

Regarding gender, an equal number of eligible male and female patients at the obesity clinic either refused to participate or were not seen in the clinic by the main researcher, while among survey

participants, girls outnumbered boys by a difference of 5. Pearson's chi-square statistic equalled 0.062, with a p-value of 0.803, thus indicating that participants did not differ from non-participants with regard to their gender.

In terms of age, a relatively equal number of older adolescents either refused or accepted to participate in the survey, while more younger adolescents chose to participate, rather than not. Further analyses revealed a Pearson's chi-square statistic of 0.473 at a p-value of 0.491, implying that there were no differences between participants and non-participants with respect to their age group.

#### **4.2.2. Participants' socio-demographic and clinical characteristics**

A total of 191 adolescents participated in the present study. In the global sample 51.3% of all participants were female and the mean age was 15.06 (SD=1.49) years (see Table 13). Most participants were of German ethnicity (46.6%), followed by Turkish youth (28.3%) and adolescents of other ethnic backgrounds (21.5%). The majority belonged to families of middle socio-economic status (SES) (49.7%), while 25.7% of all participants had a high SES and only 23.6% had a low SES, as measured with the aid of the Family Affluence Scale (FAS). Male and female participants did not differ by ethnicity, weight status and socio-economic status. However, girls who took part in the survey were significantly older than their male counterparts (means of 15.42 (SD=1.49) vs. 14.69 (SD=1.40)  $p=0.001$ ).

Adolescents' therapy duration ranged from being new patients to having accessed therapy in the study setting for approximately 10 years. Roughly 16% of the surveyed adolescents had their first visit at the paediatric obesity clinic during the 6 months in which the survey was conducted. The remaining study participants had accessed obesity care in the study setting for 24.16 (SD=19.7) months on average at the onset of the data collection process. In terms of weight status, a total of 83.2% of all participants were obese and extremely obese, whereas only 15.7% of participating adolescents were overweight. The mean BMI-SDS value was 2.53 (SD=0.66).

Table 13. Socio-demographic and weight status characteristics of the study sample

Variable (N)	Category	Percentage	Male	Female
<b>Age (N=191)</b>	13	14.1	19.4	9.2
	14	29.3	35.5	23.5
	15	19.4	19.4	19.4
	16	18.8	15.1	22.4
	17	10.5	4.3	16.3
	18	7.3	6.5	8.2
	19	0.5	-	1
<b>Gender (N=191)</b>	Female	51.3	-	100
	Male	48.7	100	-
<b>Ethnicity (N=184)</b>	German	46.6	47.3	45.9
	Turkish	28.3	30.1	26.5
	Other	21.5	19.4	23.5
<b>Weight status (N=189)</b>	Overweight	15.7	15.1	16.3
	Obese	33.5	36.6	30.6
	Extremely obese	49.7	46.2	53.1
<b>Family affluence (N=189)</b>	High	25.7	29	22.4
	Middle	49.7	47.3	52
	Low	23.6	22.6	24.5

#### 4.2.3. Participants' psychosocial characteristics

In order to characterize the study sample from a psychosocial viewpoint, descriptive statistics were computed for all psychosocial scales included in the survey instrument. Additionally, one-way ANOVA analyses and, whenever necessary, Tukey's tests were computed in order to explore potential differences in terms of participants' psychosocial well-being by gender, age group, ethnicity, weight status and family affluence. An overview of the internal consistency (Cronbach's  $\alpha$ ), central tendency measures, standard deviance, minimum and maximum summary score values for all psychosocial scales included in the survey instrument is provided in Table 14 below.

Table 14. Psychosocial characteristics of the study sample<sup>1</sup>

Scale (N)	Scale $\alpha$	Mean (SD)	Median	Mode	Minimum	Maximum
KIDSCREEN-10 Index (N=182)	0.808	48.99 (8.83)	48.29	48.29	27.82	83.81
KINDL®-Obesity (N=191)	0.859	68.14 (17.02)	70	80	21.67	100
RSE (N=182)	0.842	21.63 (5.23)	22	22	3	30
KLC-IN (N=183)	0.718	29.38 (5.61)	29	31	14	45
KLC-EX (N=177)	0.738	19.05 (5.76)	18	16	9	38
Ges-In (N=188)	0.504	9.86 (2.41)	10	10	3	15
Ges-Ex (N=183)	0.660	6.26 (2.60)	6	7	3	15
Aus-In (N=188)	0.540	9.24 (2.44)	9	8	3	15
Aus-Ex (N=187)	0.483	6.75 (2.52)	7	6	3	15
Klf-In (N=187)	0.520	10.14 (2.41)	10	9	3	15
Klf-Ex (N=186)	0.630	6.06 (2.38)	6	3	3	14
GSE (N=191)	0.850	64.87 (15.17)	66.67	70	23.33	100
Social support (N=190)	0.870	84.23 (16.21)	87.5	100	18.75	100
FKS (N=181)	0.692	55.60 (13.85)	55.56	50	19.44	83.33

<sup>1</sup>Abbreviations: RSE (Rosenberg Self-Esteem Scale), KLC-IN (Internal body-related locus of control), KLC-EX (External body-related locus of control), Aus-In (Internal physical appearance locus of control), Aus-Ex (External physical appearance locus of control), Ges-In (Internal health-related locus of control), Ges-Ex (External health-related locus of control), Klf-In (Internal physical performance locus of control), Klf-Ex (External physical performance locus of control), GSE (General Self-Efficacy Scale), FKS (Family Climate Scale)



Participants' generic health-related quality of life (HRQoL) was assessed with the aid of the KIDSCREEN-10 Index, whose internal consistency was  $\alpha=0.808$  in the study sample. Overall, participants in the present study reported an average HRQoL value of 48.99 (SD=8.83), while gender specific values were 48.08 (SD=9.30) for girls and 49.93 (SD=8.26) for boys. The median and mode values were roughly equal to the mean, indicating a relatively normal HRQoL distribution in the study sample. Given that the KIDSCREEN-10 Index scores followed a standard distribution with a mean value of 50 (SD=10), the scores reported by adolescents in the present study can be qualified as average. ANOVA analyses revealed statistically significant differences in HRQoL by age group and borderline significant differences by ethnic group ( $p=0.061$ ). In this respect, younger participants had a significantly higher HRQoL than their older counterparts ( $p=0.032$ ). With regard to ethnicity, German youth had a higher average HRQoL than Turkish peers, yet Tukey's post-hoc group comparison retrieved a high p-value of 0.070. No statistically significant HRQoL differences were identified based on participants' gender, weight status and socio-economic status (p-values of 0.159, 0.125 and 0.385, respectively). The results of the ANOVA analyses and Tukey's post-hoc tests are illustrated in Table 15 below.

*Table 15. Summary of one-way ANOVA analysis of generic quality of life by selected socio-demographic variables*

Variable	Category (N)	Mean (SD)	ANOVA	Tukey's post-hoc group comparisons	Tukey's post hoc test p-value
<b>Age (N=182)</b>	13-15 y.o. (113)	50.08 (8.01)	F=4.694 p=0.032	-	-
	16-18 y.o. (69)	47.19 (9.84)			
<b>Gender (N=182)</b>	Female (93)	48.08 (9.30)	F=1.997 p=0.159	-	-
	Male (89)	49.93 (8.26)			
<b>Ethnicity (N=177)</b>	German (87)	50.69 (9.50)	F=2.838 p=0.061	German-Turkish	0.070
	Turkish (50)	47.22 (8.66)		German-Other	0.269
	Other (40)	48.08 (7.08)		Turkish-Other	0.888
<b>Weight status (N=180)</b>	Overweight (28)	48.69 (8.96)	F=2.106 p=0.125	Overweight-Obese	0.518
	Obese (62)	50.89 (8.91)		Overweight-Extremely obese	0.915
	Extremely obese (90)	47.93 (8.66)		Obese-Extremely obese	0.106
<b>SES (Family affluence) (N=180)</b>	Low (40)	47.33 (10.23)	F=0.961 p=0.385	Low-Middle	0.373
	Middle (93)	49.58 (9.08)		Low-High	0.518
	High (47)	49.41 (6.87)		Middle-High	0.994

Overweight adolescents' obesity-related quality of life (QoL) was assessed with the obesity module of the KINDL® instrument ( $\alpha=0.859$  in the study sample). Overall, study participants reported moderately high scores, with a mean of 68.14 (SD=17.02), while the median and modal values were 70 and 80, respectively (scores range 0-100). When stratifying the results by gender, the mean values (SD) were of 65.38 (17.44) for girls and 71.03 (16.15) for boys. Statistically significant differences in obesity-related QoL scores were identified only based on gender, with male youth reporting higher values compared to their female counterparts ( $p=0.021$ ), as shown in Table 16 below. No statistically significant age, ethnicity, socio-economic status and weight status differences among study participants could be identified in terms of their obesity-related QoL ( $p$ -values of 0.073, 0.087, 0.083 and 0.077), although a significance trend in favour of obese adolescents compared to their extremely obese peers was observed ( $p=0.068$ ).

*Table 16. Summary of one-way ANOVA analysis of obesity-related quality of life by selected socio-demographic variables*

Variable	Category (N)	Mean (SD)	ANOVA	Tukey's post-hoc group comparisons	Tukey's post hoc test p-value
<b>Age (N=191)</b>	13-15 y.o. (120)	69.83 (16.09)	F=3.241 $p=0.073$	-	-
	16-18 y.o. (71)	65.27 (18.25)			
<b>Gender (N=191)</b>	Female (98)	65.38 (17.44)	F=5.381 $p=0.021$	-	-
	Male (93)	71.03 (16.15)			
<b>Ethnicity (N=184)</b>	German (89)	71.01 (15.99)	F=2.475 $p=0.087$	German-Turkish	0.073
	Turkish (54)	64.58 (18.37)		German-Other	0.558
	Other (41)	67.72 (16.80)		Turkish-Other	0.642
<b>Weight status (N=189)</b>	Overweight (30)	69.60 (16.64)	F=2.598 $p=0.077$	Overweight-Obese	0.836
	Obese (64)	71.72 (15.22)		Overweight-Extremely obese	0.502
	Extremely obese (95)	65.64 (17.87)		Obese-Extremely obese	0.068
<b>SES (Family affluence) (N=189)</b>	Low (45)	65.51 (17.19)	F=2.517 $p=0.083$	Low-Middle	0.876
	Middle (95)	67.02 (17.17)		Low-High	0.103
	High (49)	72.70 (16.38)		Middle-High	0.140

Participants' self-esteem assessed through Rosenberg's Self-Esteem Scale (RSE) followed a relatively normal distribution, with an average sum score of 21.63 (SD=5.23) and equal median and mode values of 22. When computing the summary score as a mean, study participants reported an average value of 2.16 (SD=0.52). Both sum and mean summary scores indicate a relatively high self-esteem among study participants, as possible sum values ranged between 0 and 30, while possible mean

values ranged between 0 and 3. In the study sample, the internal consistency of the RSE was  $\alpha=0.842$ . As illustrated in Table 17 below, gender was the only category based on which a strong statistically significant difference between participant groups was noted, while no significant differences were identified based on age, ethnicity, weight and socio-economic status (p-values of 0.556, 0.230, 0.079 and 0.142, respectively). Regarding gender, adolescent boys had a significantly higher self-esteem compared to girls ( $p=0.002$ ).

*Table 17. Summary of one-way ANOVA analysis of self-esteem by selected socio-demographic variables*

Variable	Category (N)	Mean (SD)	ANOVA	Tukey's post-hoc group comparisons	Tukey's post hoc test p-value
<b>Age (N=182)</b>	13-15 y.o. (113)	21.81 (5.20)	F=0.348 p=0.556	-	-
	16-18 y.o. (69)	21.33 (5.30)			
<b>Gender (N=182)</b>	Female (91)	20.44 (5.56)	F=9.830 p=0.002	-	-
	Male (91)	22.81 (4.61)			
<b>Ethnicity (N=175)</b>	German (89)	22.22 (5.07)	F=1.481 p=0.230	German-Turkish	0.204
	Turkish (47)	20.62 (5.63)		German-Other	0.924
	Other (39)	21.85 (5.01)		Turkish-Other	0.522
<b>Weight status (N=180)</b>	Overweight (26)	20.69 (6.10)	F=2.581 p=0.079	Overweight-Obese	0.171
	Obese (61)	22.89 (4.74)		Overweight-Extremely obese	0.913
	Extremely obese (93)	21.16 (5.20)		Obese-Extremely obese	0.111
<b>SES (Family affluence) (N=182)</b>	Low (43)	20.30 (6.01)	F=1.970 p=0.142	Low-Middle	0.120
	Middle (92)	22.21 (5.06)		Low-High	0.411
	High (47)	21.70 (4.67)		Middle-High	0.851

In general, overweight adolescents included in the present study appeared to have a strong belief of personal control over their bodies, as their responses illustrated a trend for above average internal locus of control and below average external locus of control (possible score ranges of 9 to 45 for the global external/internal scales and 3 to 15 for the domain-specific subscales). Accordingly, study participants consistently reported higher mean values on both the internal global and domain-specific subscales compared to the respective external subscales, i.e. 29.38 (SD=5.61) vs. 19.05 (SD=5.76) for the global body-related locus of control scales, 9.86 (SD=2.41) vs. 6.26 (SD=2.60) for the health-related locus of control subscale, 9.24 (SD=2.44) vs. 6.75 (SD=2.52) for the physical appearance locus of control subscale and 10.14 (SD=2.41) vs. 6.06 (SD=2.38) for the physical performance locus of control subscale. Girls reported median scores of 29 on the internal and 18 on

the external body-related locus of control scale, while boys had median scores of 30 and 18.5 on the respective scales. Cronbach's  $\alpha$  reliability analyses revealed good internal consistency values for the global internal and external body-related locus of control scales ( $\alpha=0.718$  and  $\alpha=0.738$ , respectively), while the internal consistency was lower than 0.70 for all domain specific subscales (see Table 14). Further ANOVA analyses revealed no statistically significant differences between study participants' body-related locus of control by socio-economic status, weight status and age. This was the case for both global scales (internal and external) and the six domain-specific scales (both internal and external health, physical appearance and physical performance locus of control). Regarding gender, boys were found to have statistically significantly higher scores on the internal health-related locus of control scale than girls ( $p=0.044$ ). Otherwise no statistically significant differences were observed in the locus of control data based on participants' gender. Based on their ethnicity, study participants reported borderline significant differences in terms of their external physical appearance locus of control ( $p=0.064$ ). Tukey's post-hoc group comparisons revealed that Turkish youth reported higher scores on the external physical appearance locus of control subscale than German adolescents. However, the p-value for this comparison did not reach the statistical significance level ( $p=0.086$ ). Moreover, although the p-value for the general ANOVA analysis for internal physical performance locus of control was as high as 0.086, a trend showing that German youth had higher internal physical performance locus of control values compared to non-Turkish youth of other ethnicities ( $p=0.062$ ) was observed. No other statistically significant differences were identified in terms of participants' locus of control based on their ethnicity. The results of ANOVA analyses for the internal and external KLC scales by each of the considered socio-demographic variables are presented in Table 18 below. Results for the domain-specific subscales are reported in Annex C2.

*Table 18. Summary of one-way ANOVA analysis of body-related locus of control by selected socio-demographic variables*

Variable	Category (N)	Mean (SD)	ANOVA	Tukey's post-hoc group comparisons	Tukey's post hoc test p-value
<b>Internal body-related locus of control</b>					
<b>Age (N=187)</b>	13-15 y.o. (118)	10.27 (2.47)	F=0.439 p=0.508	-	-
	16-18 y.o. (69)	9.91 (2.31)			
<b>Gender (N=183)</b>	Female (93)	28.84 (5.75)	F=1.749 p=0.188	-	-
	Male (90)	29.93 (5.43)			
<b>Ethnicity (N=178)</b>	German (86)	29.67 (5.38)	F=0.462 p=0.631	German-Turkish	0.987
	Turkish (52)	29.52 (5.72)		German-Other	0.614
	Other (40)	28.65 (6.21)		Turkish-Other	0.747

Variable	Category (N)	Mean (SD)	ANOVA	Tukey's post-hoc group comparisons	Tukey's post hoc test p-value
Weight status (N=181)	Overweight (28)	29.79 (5.88)	F=0.087 p=0.917	Overweight-Obese	0.937
	Obese (64)	29.34 (5.88)		Overweight-Extremely obese	0.911
	Extremely obese (89)	29.28 (5.44)		Obese-Extremely obese	0.997
SES (Family affluence) (N=181)	Low (42)	29.33 (5.21)	F=0.031 p=0.970	Low-Middle	0.999
	Middle (92)	29.28 (5.79)		Low-High	0.985
	High (47)	29.53 (5.73)		Middle-High	0.967
External body-related locus of control					
Age (N=177)	13-15 y.o. (109)	18.72 (5.60)	F=0.876 p=0.350	-	-
	16-18 y.o. (68)	19.56 (6.02)			
Gender (N=177)	Female (89)	19.26 (5.36)	F=0.244 p=0.622	-	-
	Male (88)	18.83 (6.17)			
Ethnicity (N=172)	German (85)	18.44 (5.37)	F=1.180 p=0.310	German-Turkish	0.295
	Turkish (49)	19.98 (6.47)		German-Other	0.983
	Other (38)	18.63 (5.61)		Turkish-Other	0.525
Weight status (N=175)	Overweight (28)	18.18 (4.89)	F=0.625 p=0.536	Overweight-Obese	0.903
	Obese (60)	18.75 (6.17)		Overweight-Extremely obese	0.561
	Extremely obese (87)	19.47 (5.78)		Obese-Extremely obese	0.739
SES (Family affluence) (N=175)	Low (39)	18.62 (6.08)	F=0.089 p=0.915	Low-Middle	0.907
	Middle (90)	19.08 (5.82)		Low-High	0.964
	High (46)	18.93 (5.17)		Middle-High	0.990

Participants' average self-efficacy score (SD), as measured with the General Self-Efficacy Scale developed by Schwarzer and Jerusalem (1999), was 64.87 (15.17), while the median and modal values were 66.67 and 70, respectively. This reflects a general tendency for study participants to report moderately high self-efficacy scores, as transformed raw mean values ranged from 0 to 100. The gender specific mean (SD) raw sum scores were 29.22 (4.96) for adolescent girls and 29.81 (4.09) for adolescent boys, with possible values ranging between 10 and 40. The internal consistency of the General Self-Efficacy Scale was  $\alpha=0.850$  in the study sample. While no differences in participants' self-efficacy expectancies could be identified based on their age ( $p=0.276$ ), gender ( $p=0.343$ ) and ethnicity ( $p=0.734$ ), weight status and socio-economic status were found to trigger statistically significant differences in adolescents' self-efficacy ( $p$ -values of 0.009 and 0.018, respectively). Regarding weight status, obese adolescents reported the highest average self-efficacy score, with overweight and extremely obese youth having relatively lower self-efficacy values compared to the

obese (p-values of 0.018 and 0.036, respectively). In terms of socio-economic status, youth from families of middle affluence had the highest average self-efficacy score, which was statistically significantly higher than that of adolescents with a low family affluence ( $p=0.014$ ). A detailed overview of the ANOVA analyses results is presented in Table 19.

*Table 19. Summary of one-way ANOVA analysis of self-efficacy by selected socio-demographic variables*

Variable	Category (N)	Mean (SD)	ANOVA	Tukey's post-hoc group comparisons	Tukey's post hoc test p-value
<b>Age (N=191)</b>	13-15 y.o. (120)	65.79 (15.47)	F=1.195 p=0.276	-	-
	16-18 y.o. (71)	63.31 (14.63)			
<b>Gender (N=191)</b>	Female (98)	63.85 (16.43)	F=0.902 p=0.343	-	-
	Male (93)	65.94 (13.73)			
<b>Ethnicity (N=184)</b>	German (89)	64.94 (13.33)	F=0.310 p=0.734	German-Turkish	0.960
	Turkish (54)	64.23 (15.52)		German-Other	0.821
	Other (41)	66.64 (17.89)		Turkish-Other	0.720
<b>Weight status (N=189)</b>	Overweight (30)	60.22 (15.85)	F=4.806 p=0.009	Overweight-Obese	0.018
	Obese (64)	69.32 (15.83)		Overweight-Extremely obese	0.589
	Extremely obese (95)	63.30 (14.03)		Obese-Extremely obese	0.036
<b>SES (Family affluence) (N=189)</b>	Low (45)	59.41 (14.08)	F=4.107 p=0.018	Low-Middle	0.014
	Middle (95)	66.99 (15.19)		Low-High	0.122
	High (49)	65.41 (14.42)		Middle-High	0.815

The extent to which participants perceive to have access to support in their social environment was assessed with the aid of a short version of the Social Support Scale developed by Donald and Ware (1984), whose internal consistency in the study sample was  $\alpha=0.870$ . Study participants reported high social support values, with a mean score (SD) of 84.23 (16.21), a median of 87.5 and a mode of 100 (the absolute maximum value). When looking at study participants' perceived access to social support by gender, a mean score of 82.59 (SD=17.30) was observed among boys, whereas the average social support score among girls was 85.79 (SD=15.01). Moreover, ANOVA analyses did not identify any statistically significant differences in participants' social support based on any of the considered socio-demographic and anthropometric variables (see Table 20 for detailed results). In this sense, the p-values for age, gender, ethnicity, weight and socio-economic status were 0.570, 0.175, 0.608, 0.215 and 0.226, respectively.

Table 20. Summary of one-way ANOVA analysis of social support by selected socio-demographic variables

Variable	Category (N)	Mean (SD)	ANOVA	Tukey's post-hoc group comparisons	Tukey's post hoc test p-value
<b>Age (N=190)</b>	13-15 y.o. (120)	84.74 (15.22)	F=0.324 p=0.570	-	-
	16-18 y.o. (70)	83.35 (17.87)			
<b>Gender (N=190)</b>	Female (97)	85.79 (15.01)	F=1.856 p=0.175	-	-
	Male (93)	82.59 (17.30)			
<b>Ethnicity (N=183)</b>	German (89)	85.39 (14.94)	F=0.498 p=0.608	German-Turkish	0.582
	Turkish (54)	82.58 (19.32)		German-Other	0.966
	Other (40)	84.61 (15.20)		Turkish-Other	0.824
<b>Weight status (N=188)</b>	Overweight (30)	80.94 (18.04)	F=1.549 p=0.215	Overweight-Obese	0.205
	Obese (64)	86.96 (15.77)		Overweight-Extremely obese	0.623
	Extremely obese (94)	84.04 (15.37)		Obese-Extremely obese	0.497
<b>SES (Family affluence) (N=188)</b>	Low (44)	81.18 (15.74)	F=1.499 p=0.226	Low-Middle	0.216
	Middle (95)	86.12 (15.45)		Low-High	0.782
	High (49)	83.42 (17.73)		Middle-High	0.609

The Family Climate Scales developed by Schneewind and colleagues (1985) were used in their short version employed in the KiGGS study in order to illustrate the extent to which study participants' families were cohesive, supportive, yet normatively functional social units. The internal consistency of the short scale version in the present study sample was  $\alpha=0.692$ . However, more detailed analyses revealed that the internal consistency could be increased to an acceptable level of  $\alpha=0.754$ , provided that the last scale item "Bei uns ist man eher großzügig, wenn bestimmte Dinge nicht so hundertprozentig gemacht werden" ("In our family, one is rather generous if certain things are not fully done") were removed.

Given that possible values ranged between 0 and 100, adolescents in the present study reported moderate scores, with a mean (SD) of 55.60 (13.85), a median of 55.56 and a modal value of 50 units. Stratified by gender, girls were found to have a mean family climate score (SD) of 54.46 (14.36), while boys' mean score (SD) was 56.76 (13.29). Socio-demographic and anthropometric characteristics such as age ( $p=0.216$ ), gender ( $p=0.264$ ), socio-economic status ( $p=0.341$ ) and weight status ( $p=0.141$ ) were not associated with statistically significant differences in adolescents' family climate scores (see Table 21 for detailed results). Borderline significant differences in participants' family

climate scores were identified based on their ethnicity ( $p=0.063$ ), yet group specific tests retrieved higher  $p$ -values of 0.091 and 0.079 for comparisons between non-Turkish youth of other ethnicities and German and Turkish youth, respectively. Overall, non-Turkish youth of other ethnicities reported the highest average family climate score, followed by German and Turkish adolescents.

*Table 21. Summary of one-way ANOVA analysis of family climate by selected socio-demographic variables*

Variable	Category (N)	Mean (SD)	ANOVA	Tukey's post-hoc group comparisons	Tukey's post hoc test p-value
<b>Age (N=181)</b>	13-15 y.o. (114)	56.58 (14.02)	F=1.539 p=0.216	-	-
	16-18 y.o. (67)	53.94 (13.49)			
<b>Gender (N=181)</b>	Female (91)	54.46 (14.36)	F=1.253 p=0.264	-	-
	Male (90)	56.76 (13.29)			
<b>Ethnicity (N=175)</b>	German (86)	54.46 (13.91)	F=2.815 p=0.063	German-Turkish	0.948
	Turkish (51)	53.70 (14.71)		German-Other	0.091
	Other (38)	60.09 (11.69)		Turkish-Other	0.079
<b>Weight status (N=179)</b>	Overweight (30)	53.24 (14.52)	F=1.978 p=0.141	Overweight-Obese	0.229
	Obese (59)	58.33 (14.56)		Overweight-Extremely obese	0.927
	Extremely obese (90)	54.32 (13.00)		Obese-Extremely obese	0.194
<b>SES (Family affluence) (N=180)</b>	Low (42)	52.91 (13.21)	F=1.083 p=0.341	Low-Middle	0.475
	Middle (90)	55.93 (14.10)		Low-High	0.333
	High (48)	57.06 (13.88)		Middle-High	0.891

#### 4.2.4. Body image perception among interview participants

In order to obtain information on their body image and body image satisfaction, interview participants were presented with a visual body figure rating scale (see Figures 3 and 4 in section 3.3.3.) and were asked to first select the silhouette which best fit their current physical appearance and then the silhouette which illustrated the ideal body size for a boy or a girl of their age, respectively.

As shown in Table 22 below, all interviewees rated their current body figure as being above average, with over half of participants of both genders having chosen body figures 7 and 8, corresponding to an obese weight status. In contrast, most participants chose an average sized body figure as the ideal silhouette for a young person of their respective age and gender. This was the case for all male and 3 female interviewees, while two girls chose a slightly overweight and a slightly underweight ideal body figure, respectively.

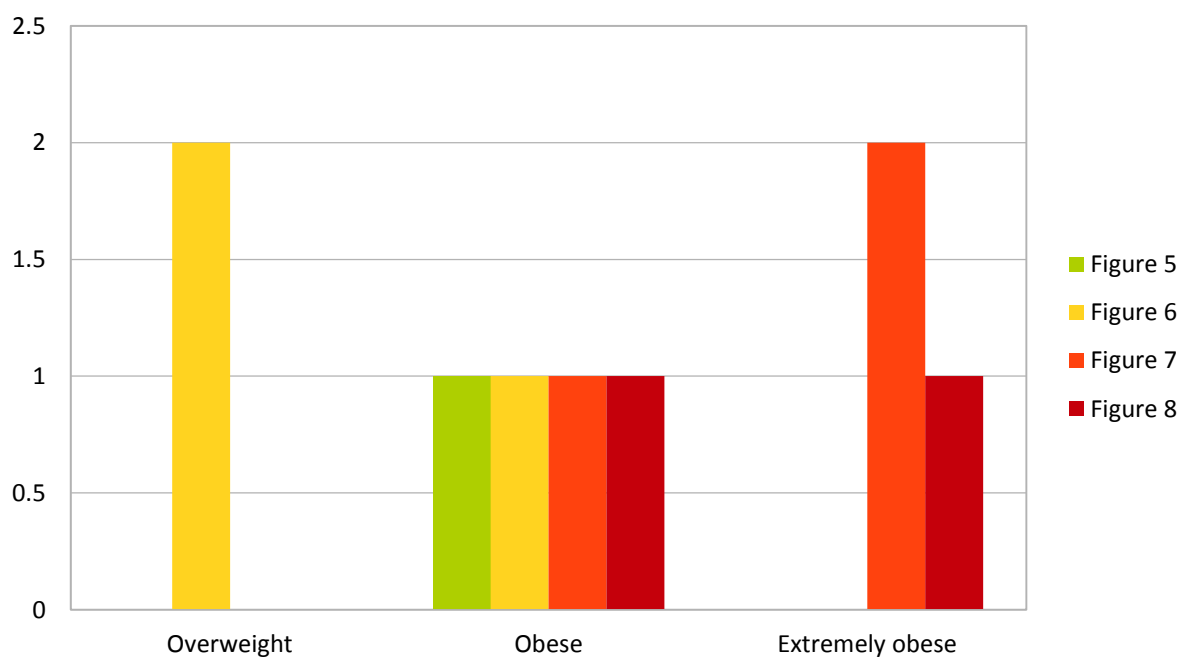


Table 22. Frequency distribution of body image ratings among interviewed adolescents (N=10)

Body figure no.	Personal body figure			Ideal body figure		
	Total	Male	Female	Total	Male	Female
3				1	0	1
4				8	5	3
5	1	0	1	1	0	1
6	3	2	1			
7	4	2	2			
8	2	1	1			

As illustrated in Figure 8 below, obese interviewees displayed a high degree of heterogeneity in their personal body figure selection, two of them even choosing a slightly overweight or extremely obese silhouette. Moreover, both overweight interviewees selected a rather obese body silhouette, whereas all three extremely obese adolescents chose the extreme figures 7 and 8 as best describing their body size.

Figure 8. Frequency distribution of selected personal body figure by actual weight status (N=10)



Interviewed adolescents in the present study reported a relatively high degree of body image dissatisfaction, with a median difference of 3 units between selected representations of personal and ideal body figure (see Table 23). Accordingly, over half of both male and female interviewees

had a high body dissatisfaction score of 3 or 4 units.

*Table 23. Frequency distribution of body image dissatisfaction (difference between selected personal and ideal body figures) (N=10)*

Difference between personal and ideal body figure	Personal body figure		
	Total	Male	Female
<b>1</b>	1	0	1
<b>2</b>	3	2	1
<b>3</b>	4	2	2
<b>4</b>	2	1	1

#### 4.2.5. Weight stigma experiences and internalization

The Interpersonal Sources of Stigma Scale asked participants to rate the frequency with which they have been stigmatized based on their weight by a list of social agents pertaining to their family, school, peer group and extended immediate social environment. Since reliability analyses revealed a relatively low Cronbach's alpha statistic for the adapted Interpersonal Sources of Stigma Scale ( $\alpha=0.69 < 0.70$ ), only a dichotomous variable indicating whether participants had ever experienced weight stigmatization was used for both descriptive and inferential statistical analyses. This showed that only 21.5% of the surveyed sample had never been stigmatized based on their weight, while the remaining 78.5% had experienced weight stigma to some extent.

Table 24 below offers a detailed overview of the degree to which adolescents in the study sample had experienced stigmatization from each of the listed social agents by the time the survey was conducted. The main stigmatization agents reported by participants in the present study were schoolmates (59.2%), unknown people in public spaces (32.5%), male siblings (28.8%) and friends (26.2%). In terms of stigmatization intensity, study participants mentioned being stigmatized on a regular basis by schoolmates (7.3%), their fathers (3.7%), male siblings and friends (2.6%, respectively), as well as their mothers (2.1%) and doctors (2.1%). Among the listed social agents, study participants experienced the least stigmatization from psychologists (3.1%), shop assistants (4.2%), social workers (4.7%) and nurses (5.8%).

In case certain stigmatization agents were not included in the list, participants were also given the opportunity to name further family members or others who have displayed stigmatizing attitudes towards them. Accordingly, 12% (23) of participating adolescents mentioned family members such

as aunts (8), uncles (7) and grandparents (5), particularly grandmothers (4). Cousins and stepparents were mentioned three times, respectively. Only one mention of other stigmatization agents who were not part of young people's family was made, indicating an unknown student attending the same school as the participant.

*Table 24. Frequency of stigma experiences by stigmatization agents (N=191)*

Stigma agent	Never stigmatized (%)	Stigmatized once (%)	Stigmatized more than once (%)	Stigmatized on a regular basis (%)
<b>Mother</b>	77.0	14.1	6.8	2.1
<b>Father</b>	77.0	12.0	7.3	3.7
<b>Sister</b>	82.7	11.0	5.8	0.5
<b>Brother</b>	71.2	15.2	11.0	2.6
<b>Other family members</b>	88.0	5.8	5.8	0.5
<b>Doctors</b>	80.6	12.6	4.7	2.1
<b>Nurses</b>	94.2	3.1	2.1	0.5
<b>Dietitians</b>	88.5	7.9	3.1	0.5
<b>Psychologists</b>	96.9	1.6	1.6	-
<b>Social workers</b>	95.3	4.2	0.5	-
<b>Teachers</b>	83.2	12.6	4.2	-
<b>Schoolmates</b>	40.8	25.7	26.2	7.3
<b>Friends</b>	73.8	17.8	5.8	2.6
<b>Shop assistants</b>	95.8	2.6	1.0	0.5
<b>Unknown people in public spaces</b>	67.5	18.8	12.0	1.6
<b>Others</b>	99.0	0.5	-	0.5

In order to assess study participants' level of weight stigma internalization, the Weight Bias Internalization Scale (WBIS) was applied twice, both during the survey and as part of the interview. Survey respondents had a broader WBIS score range from 1.18 to the absolute maximum of 7 compared to the minimum score of 1.82 and a maximum of 5.91 reported by interview participants (see Table 25).

*Table 25. Weight stigma internalization assessed through the WBIS*

Study component (N)	Mean (SD)	Median	Mode	Minimum	Maximum
Survey (N=191)	3.78 (1.18)	3.82	4.18	1.18	7
Interview (N=10)	4.15 (1.38)	4.41	4.73	1.82	5.91

The 191 survey participants had a mean weight bias internalization score of 3.78 (SD=1.18), with a median of 3.82. Since mean WBIS scores could take on values between 1 and 7, these results are close to, but slightly lower than the absolute average value of 4. ANOVA analyses revealed statistically significant differences in the extent to which adolescents internalize weight stigma based on their gender. In this sense, girls had higher weight bias internalization values compared to boys ( $p=0.005$ ). No significant differences in weight bias internalization were observed based on adolescents' age, ethnicity, weight status and socio-economic status ( $p$ -values of 0.304, 0.080, 0.208 and 0.307, respectively).

In order to test the hypothesis that extremely obese adolescents internalize weight bias to a greater extent compared to their overweight and obese peers, an additional non-parametric Mann-Whitney-Test was computed. This analysis used a dichotomous weight status classification of participants in an extremely obese and an overweight/obese group. Based on the obtained  $p$ -value of 0.121, the null hypothesis that the distribution of weight bias internalization was identical in the two considered groups could not be rejected.

Only 10 adolescents were interviewed, out of which 6 had a high weight bias internalization score. Interview participants had an average WBIS score of 4.15 (SD=1.38) and a median of 4.41. This suggests that interviewees had a slightly higher WBIS mean score than the absolute average value of 4. When the WBIS was applied during the interview, statistically significant differences in weight bias internalization were identified based on participant's socio-economic status ( $p=0.014$ ), while no significant differences were observed based on all the other socio-demographic variables ( $p=0.303$  for age group,  $p=0.864$  for gender,  $p=0.240$  for ethnicity and  $p=0.412$  for weight status). Regarding socio-economic status, interview participants with high family affluence displayed statistically significantly lower weight bias internalization compared to both their peers with middle ( $p=0.024$ ) and low family affluence ( $p=0.022$ ). A detailed overview of the ANOVA analyses results is provided in Table 26 below.

Table 26. Summary of one-way ANOVA analysis of weight bias internalization by selected socio-demographic variables

Variable (N)	Category (N)	Mean (SD)	ANOVA	Tukey's post-hoc group comparisons	Tukey's post hoc test p-value
WBIS application in the survey					
Age (N=191)	13-15 y.o. (120)	3.72 (1.17)	F=1.061 p=0.304	-	-
	16-18 y.o. (71)	3.90 (1.20)			
Gender (N=191)	Female (98)	4.01 (1.21)	F=7.982 p=0.005	-	-
	Male (93)	3.54 (1.11)			
Ethnicity (N=184)	German (89)	3.72 (1.17)	F=2.564 p=0.080	German-Turkish	0.236
	Turkish (54)	4.05 (1.24)		German-Other	0.632
	Other (41)	3.52 (1.13)		Turkish-Other	0.076
Weight status (N=189)	Overweight (30)	3.78 (1.39)	F=1.584 p=0.208	Overweight-Obese	0.700
	Obese (64)	3.57 (1.05)		Overweight-Extremely obese	0.860
	Extremely obese (95)	3.91 (1.19)		Obese-Extremely obese	0.179
SES (Family affluence) (N=189)	Low (45)	4.02 (1.24)	F=1.190 p=0.307	Low-Middle	0.317
	Middle (95)	3.71 (1.13)		Low-High	0.407
	High (49)	3.70 (1.24)		Middle-High	1.00
WBIS application in the interviews					
Age (N=10)	13-15 y.o. (7)	3.84 (1.39)	F=1.213 p=0.303	-	-
	16-18 y.o. (3)	4.89 (1.27)			
Gender (N=10)	Female (5)	4.23 (1.63)	F=0.031 p=0.864	-	-
	Male (5)	4.07 (1.27)			
Ethnicity (N=10)	German (5)	3.40 (1.29)	F=1.764 p=0.240	German-Turkish	0.324
	Turkish (3)	4.85 (1.24)		German-Other	0.347
	Other (2)	5.00 (1.29)		Turkish-Other	0.991
Weight status (N=9)	Overweight (2)	3.73 (1.41)	F=1.031 p=0.412	Overweight-Obese	0.988
	Obese (4)	3.55 (1.72)		Overweight-Extremely obese	0.595
	Extremely obese (3)	5.06 (0.88)		Obese-Extremely obese	0.409
SES (Family affluence) (N=10)	Low (2)	5.27 (0.77)	F=8.280 p=0.014	Low-Middle	0.705
	Middle (5)	4.69 (0.96)		Low-High	0.022
	High (3)	2.52 (0.62)		Middle-High	0.024

Further, a descriptive analysis for each of the WBIS Items was performed, in order to identify more detailed patterns in how adolescents internalize weight stigma. Median values are presented in an aggregate form for the entire sample, as well as stratified by gender, weight status and age group in Table 27 below.

In general, 69.6%, 53.4%, 51.3% and 53.4% of survey respondents tended to agree with statements 1 (“As an overweight person, I feel that I am just as competent as anyone.”), 3 (“Because of my overweight, I am concerned about what others think of me.”), 5 (“Whenever I think a lot about being overweight, I feel depressed.”) and 7 (“My weight is very important for my self-esteem.”), respectively. On the other hand, 68.1%, 75.4%, 63.4% and 62.8% of overweight youth included in the present study reported various degrees of disagreement with items 6 (“I hate myself for being overweight.”), 9 (“I am OK being the weight that I am.”), 10 (“Because of my overweight, I feel that I am not myself.”) and 11 (“Because of my weight, I don't understand how anyone attractive would want to date me.”), respectively. Strong tendencies of agreement with item 4 (“I wish I could drastically change my weight.”) and disagreement with item 8 (“I don't think I deserve to have many friendships, as long as I am overweight.”) were reported by 90.1% and 87.4% of study participants, respectively. Answers were rather balanced in the case of item 2, although more adolescents agreed (48.2%) rather than disagreed (38.2%) with the fact that being overweight has a negative impact on their physical attractiveness. Overall, the relatively balanced picture of adolescents’ positive and negative self-evaluations with regard to their overweight reinforces the finding that the majority of study participants displayed average levels of weight stigma internalization.

When stratifying the data by gender, a clear trend emerged showing that girls tend to internalize weight stigma more than boys on all but two dimensions (items 7 and 8), for which median values were equal for boys and girls. Statistically significant differences indicate that more girls tend to worry about what others think about them ( $p=0.001$ ), wish they could radically change their weight ( $p=0.035$ ), are depressed when they think about their overweight ( $p<0.001$ ), experience negative self-directed emotions ( $p=0.001$ ), and are dissatisfied with their weight ( $p=0.003$ ) compared to boys. Stratified analyses by weight status indicate a lower trend of internalizing weight stigma by obese adolescents when compared to overweight and extremely obese youth, with the latter category experiencing weight stigma internalization to the greatest extent. Median values were equal across weight status groups for items 8, 9 and 11. On the other hand, a statistically significant difference in favour of obese adolescents was noted in the extent to which young people felt that their competence was not impaired by their weight ( $p=0.016$ ). Study participants also differed significantly in terms of the importance they attached to their weight in developing their sense of self-worth

( $p=0.025$ ), with overweight youth placing the highest importance on their weight, followed by obese and extremely obese adolescents, respectively.

With regard to age group, younger and older adolescents displayed equal median values for most WBIS items (1, 2, 3, 7, 8, 9, 11). Statistically significant age differences suggest that older adolescents are depressed when they think about their overweight ( $p=0.030$ ) and experience negative self-directed emotions ( $p=0.009$ ) to a greater extent than younger adolescents.

Table 27. Median values for individual WBIS items in the survey sample, stratified by gender, weight status and age group<sup>1</sup>

WBIS Item	Median values										
	Overall (N=191)	Gender		p-value	Weight status			p-value	Age group		p-value
		Girls (N=98)	Boys (N=93)		Overweight (N=30)	Obese (N=64)	Extremely obese (N=95)		13-15 y. o. (N=120)	16-18 y.o. (N=71)	
1. Als Übergewichtige/-r, fühle ich mich genauso fähig wie jeder andere.	5	5	6	0.088	5	6	5	0.016	5	5	0.696
2. Ich bin weniger attraktiv als andere wegen meines Gewichtes.	4	5	4	0.518	4	4	5	0.849	4	4	0.882
3. Wegen meines Übergewichtes, mache ich mir Sorgen darüber, was die anderen von mir denken.	5	5	4	0.001	4.5	4	5	0.149	5	5	0.556
4. Ich wünsche mir, ich könnte mein Gewicht radikal verändern.	7	7	6	0.035	6.5	7	7	0.652	7	6	0.352
5. Wenn ich viel an mein Übergewicht denke, fühle ich mich bedrückt.	5	5	4	<0.001	5	4	5	0.233	4	5	0.030
6. Ich hasse mich, weil ich übergewichtig bin.	2	3	1	0.001	2	2	3	0.076	2	3	0.009
7. Mein Gewicht ist mir sehr wichtig für mein Selbstwertgefühl.	5	5	5	0.719	6	5	4.5	0.025	5	5	0.859

<sup>1</sup> Notes: 1) Answer categories: 1=I completely disagree; 2=I disagree; 3=I rather disagree; 4=I neither agree, nor disagree; 5=I rather agree; 6=I agree; 7=I completely agree; 2) p-values are provided for Mann-Whitney-U-Test for gender and age group, and for Kruskal-Wallis-Test for weight status



WBIS Item	Median values										
	Overall (N=191)	Gender		p-value	Weight status			p-value	Age group		p-value
		Girls (N=98)	Boys (N=93)		Overweight (N=30)	Obese (N=64)	Extremely obese (N=95)		13-15 y. o. (N=120)	16-18 y.o. (N=71)	
8. Ich glaube nicht, dass ich es verdient habe, viele Freundschaften zu haben, solange ich übergewichtig bin.	1	1	1	0.244	1	1	1	0.263	1	1	0.842
9. Ich bin zufrieden mit meinem Gewicht.	2	1.5	2	0.003	2	2	2	0.876	2	2	0.530
10. Wegen meines Übergewichtes, habe ich das Gefühl, nicht ich selbst zu sein.	3	3	2	0.080	3	2	3	0.142	2	3	0.167
11. Wegen meines Gewichtes, verstehe ich nicht, wie jemand, der/die gut aussieht, sich mit mir verabreden würde.	2	3	2	0.094	2	2	2	0.423	2	2	0.582

#### 4.2.6. Regression analyses

As part of the hypothesis testing procedure, three hierarchical multiple linear regression analyses have been conducted. All analyses controlled for socio-demographic variables such as age, gender, migration background and socio-economic status (assessed as family affluence). For this purpose, dichotomous dummy variables were constructed for all socio-demographic categories with the exception of age. For the dummy variables, female gender, having a migration background (i.e. not having German ethnicity) and having low family affluence were assigned the value 1, while the respective opposite categories received the value 0.

##### 4.2.6.1. Dependent variable: WBIS

The first hierarchical regression analysis focused on exploring the impact of study participants' weight status on their degree of weight bias internalization, while controlling for socio-demographic characteristics, experience with weight stigmatization and individual resources. Independent variables were progressively included in the regression model as illustrated in Table 28 below. In the first block, adolescents' weight bias internalization was significantly predicted by their weight status ( $p=0.022$ ) and their gender ( $p=0.006$ ). These initial results suggested that an increase of one unit in participants' BMI-SDS would increase their weight bias internalization score by 0.322 units. Also being a girl increased participants' weight bias internalization score by 0.509 units. However, this model explained only 8.3% of the variance of participants' weight bias internalization scores ( $R^2=0.083$ ).

In the second block, adolescents' experience with weight stigmatization was introduced in the model, leading to an increase of 0.117 units in the  $R^2$  statistic. Consequently, weight status lost its significance as an explanatory factor ( $p=0.180$ ), as only gender ( $p=0.003$ ) and experience with stigmatization ( $p<0.001$ ) were significant predictors of adolescents' weight bias internalization scores in the second model. In this respect, having made the experience of weight stigmatization increased participants' weight bias internalization score by 1.015 units, while being female increased the WBIS score by 0.510 units.

After including adolescents' personal, familiar and social resources into the regression model, a total of 31.2% of the total variance in weight bias internalization scores could be accounted for. In the final model, significant predictors of weight bias internalization were gender ( $p=0.002$ ), experience with weight stigmatization ( $p<0.001$ ), and also self-efficacy ( $p=0.007$ ). Accordingly, being female and having made the experience of weight stigmatization increased participants' weight bias internalization score by 0.496 and 0.758 units, respectively. In turn, an increase of one unit in

adolescents' self-efficacy score decreased their weight bias internalization score by 0.016 units.

Each variable block introduced into the regression analysis led to a significant change in the F statistic ( $p=0.0012$ ,  $p<0.001$  and  $p<0.001$ , respectively). This suggests that adding each block of variables to the regression model significantly improved the amount of explained total variance in the weight bias internalization score.

Collinearity statistics revealed no problematic degree of multicollinearity, with the lowest tolerance levels of 0.747, 0.749 and 0.750 being observed in the final model for participants' familiar, social and personal resources, respectively. In the previous models, the lowest tolerance level was as high as 0.892.

*Table 28. Summary of multiple regression analysis of the impact of weight status on weight bias internalization, controlling for socio-demographic factors, experience with weight stigmatization and individual resources*

Dependent variable	Block	R <sup>2</sup>	F	Independent variables	$\beta$	P-value
WBIS score	1	0.083	3.028*	Constant	3.273	0.001
				BMI-SDS	0.322*	0.022
				Age	-0.043	0.494
				Low family affluence	0.162	0.455
				Female gender	0.509**	0.006
				Migration background	0.048	0.785
	2	0.200	6.913**	Constant	2.054	0.026
				BMI-SDS	0.180	0.180
				Age	0.005	0.934
				Low family affluence	0.261	0.201
				Female gender	0.510**	0.003
				Migration background	0.138	0.409
				Experience with weight stigmatization	1.015**	<0.001
	3	0.312	8.210**	Constant	5.315	<0.001
				BMI-SDS	0.203	0.107

Dependent variable	Block	R <sup>2</sup>	F	Independent variables	$\beta$	P-value
				Age	-0.036	0.524
				Low family affluence	0.074	0.702
				Female gender	0.496**	0.002
				Migration background	0.160	0.309
				Experience with weight stigmatization	0.792**	<0.001
				Self-efficacy	-0.016*	0.007
				Social support	-0.010	0.097
				Family climate	-0.011	0.103

#### 4.2.6.2. Dependent variable: KIDSCREEN-10 Index

The second regression analysis sought to establish the extent to which adolescents' generic health-related quality of life can be predicted by their level of weight bias internalization, while controlling for socio-demographic factors, weight status, experience with weight stigmatization and individual resources. A summary of the regression models is presented in Table 29 below.

The results of the first model showed that participants' weight bias internalization and migration background significantly predicted their generic HRQoL. Accordingly, an increase of one unit in participants' weight bias internalization score led to a decrease of 3.445 units in their generic HRQoL ( $p < 0.001$ ). Moreover, having a migration background decreased participants' HRQoL by 2.758 units ( $p = 0.023$ ). The predictors included in the first block explained 27% of the total variance in adolescents' generic HRQoL scores ( $R^2 = 0.270$ ).

Adding adolescents' experience with weight stigmatization to the model did not result in a significant increase in the amount of explained total HRQoL variance, as it did not significantly predict the outcome variable ( $p = 0.094$ ). However, weight bias internalization and migration background remained statistically significant predictors of participants' generic HRQoL ( $p < 0.001$  and  $p = 0.014$ , respectively), with some changes in their regression coefficients ( $\beta = -3.104$  and  $\beta = -2.990$ ), i.e. in their impact on the outcome variable.

Further adding participants' resources to the regression model in the third step led to a statistically significant increase in the total generic HRQoL variance explained (change in F statistic significant with  $p < 0.001$ ), from 28.3% to 42.4%. In this last model, adolescents' weight bias internalization,

migration background, social support and family climate significantly predicted their generic HRQoL. Compared to the first model, adding one unit to the weight bias internalization score led to a decrease of only 2.051 units in the generic HRQoL score ( $p<0.001$ ). Having a migration background decreased adolescents' generic HRQoL score by 3.141 units ( $p=0.005$ ). In contrast, increasing participants' score on the social support and family climate measures by one unit led to an increase of 0.156 and 0.118 units in their generic HRQoL score ( $p<0.001$  and  $p=0.009$ ), respectively. Collinearity analyses revealed no problematic multicollinearity level in the three regression models. The lowest tolerance values of 0.697 and 0.689 were observed for weight bias internalization and self-efficacy in the third model.

*Table 29. Summary of multiple regression analysis of the impact of weight bias internalization on generic HRQoL, controlling for socio-demographic factors, experience with weight stigmatization and individual resources*

Dependent variable	Block	R <sup>2</sup>	F	Independent variables	$\beta$	P-value
Generic HRQoL (KIDSCREEN-10 Index)	1	0.270	9.881**	Constant	72.539	<0.001
				WBIS	-3.445**	<0.001
				BMI-SDS	-0.852	0.371
				Age	-0.468	0.282
				Low family affluence	-0.296	0.843
				Female gender	0.243	0.847
				Migration background	-2.758*	0.023
	2	0.283	8.973	Constant	74.756	<0.001
				WBIS	-3.104**	<0.001
				BMI-SDS	-0.592	0.537
				Age	-0.586	0.181
				Low family affluence	-0.543	0.715
				Female gender	0.098	0.938
				Migration background	-2.990*	0.014
				Experience with weight stigmatization	-2.715	0.094

Dependent variable	Block	R <sup>2</sup>	F	Independent variables	$\beta$	P-value
	3	0.424	11.466**	Constant	46.661	<0.001
				WBIS	-2.051**	<0.001
				BMI-SDS	-0.822	0.348
				Age	-0.327	0.418
				Low family affluence	0.274	0.841
				Female gender	-0.764	0.506
				Migration background	-3.141**	0.005
				Experience with weight stigmatization	-2.149	0.148
				Self-efficacy	0.013	0.767
				Social support	0.156**	<0.001
				Family climate	0.118*	0.009

#### 4.2.6.3. Dependent variable: KINDL® Obesity Module

The third and last of the regression analyses focused on the impact of weight bias internalization on obesity-related quality of life, while adjusting for socio-demographic factors, weight status, experience with weight stigmatization and individual resources. A summary of the regression models is presented in Table 30 below.

Including only participants' weight bias internalization score, socio-demographic information and BMI-SDS, the first model explained 61.3% of the total variance in their obesity-related QoL. Of all independent variables included in the analysis, weight bias internalization and migration background significantly predicted obesity-related QoL, while participants' actual weight status approached statistical significance ( $p=0.062$ ). Accordingly, an increase of one unit in adolescents' weight bias internalization score decreased their obesity-related QoL by 10.444 units ( $p<0.001$ ). Moreover, having a migration background decreased participants' obesity-related QoL by 3.339 units ( $p=0.039$ ). Adding participants' experience with weight stigmatization in the second step did not lead to a significant increase in the amount of explained total variance in obesity-related QoL, as this was not a significant predictor of the outcome variable ( $p=0.057$ ). As such, only weight bias internalization score and migration background significantly predicted obesity-related QoL in the second model, with relatively modified regression coefficients ( $\beta=-9.935$  and  $\beta=-3.722$ , respectively) and p-values

( $p < 0.001$  and  $p = 0.022$ , respectively).

The last model also failed to reveal any further statistically significant predictors of obesity-related QoL, as the change in the F statistic was not significant ( $p = 0.967$ ). Accordingly, weight bias internalization score and migration background remained the only statistically significant predictors of obesity-related QoL in the final model. In this respect, adding a unit to participants' weight bias internalization score decreased their obesity-related QoL by 10.060 units ( $p < 0.001$ ), while having a migration background decreased obesity-related QoL by 3.705 units ( $p = 0.025$ ).

In the first and best model, collinearity analyses did not reveal any problematic multicollinearity, with the lowest tolerance level of 0.904 being observed for female gender. In the final model the lowest tolerance level dropped to 0.688 for weight bias internalization.

*Table 30. Summary of multiple regression analysis of the impact of weight bias internalization on obesity-related QoL, controlling for socio-demographic factors, experience with weight stigmatization and individual resources*

Dependent variable	Block	R <sup>2</sup>	F	Independent variables	Standardized $\beta$	P-value
<b>Obesity-related QoL (KINDL® Obesity Module)</b>	1	0.613	43.91**	Constant	108.710	<0.001
				WBIS	-10.444**	<0.001
				BMI-SDS	-2.410	0.062
				Age	0.491	0.392
				Low family affluence	-0.102	0.959
				Female gender	-0.243	0.886
				Migration background	-3.339*	0.039
	2	0.622	38.76	Constant	111.915	<0.001
				WBIS	-9.935**	<0.001
				BMI-SDS	-2.006	0.122
				Age	0.320	0.578
				Low family affluence	-0.581	0.767
				Female gender	-0.507	0.763
				Migration background	-3.722*	0.022
				Experience with weight stigmatization	-4.056	0.057

Dependent variable	Block	R <sup>2</sup>	F	Independent variables	Standardized $\beta$	P-value
	3	0.622	26.71	Constant	114.972	<0.001
				WBIS	-10.060**	<0.001
				BMI-SDS	-1.948	0.138
				Age	0.287	0.625
				Low family affluence	-0.720	0.721
				Female gender	-0.464	0.786
				Migration background	-3.705*	0.025
				Experience with weight stigmatization	-4.155	0.056
				Self-efficacy	-0.027	0.671
				Social support	-0.010	0.869
				Family climate	0.008	0.907



### 4.3. Qualitative results

A total of 10 semi-structured interviews with an average duration of 23 minutes were conducted with the purpose of gaining deeper insight into adolescents' experiences with overweight and weight based discrimination. To this end, a convenience sample was drawn from the primary sample of participants in the survey component of the present study based on key criteria such as extent of weight bias internalization (WBI), gender, ethnicity and age (for more details see section 3.1.5. Sampling strategy).

Interviewees were selected among adolescents with extreme WBI scores (see Annex C3 for socio-demographic features of eligible youth). In this group, twice as many girls as boys had high WBI scores (13 vs. 6), while slightly more boys than girls had lower WBI values (10 vs. 8). Ethnicity was fairly equally distributed across extreme WBI groups: 9 non-German vs. 9 German youth in the low WBI category, and 10 non-German vs. 8 German adolescents in the high WBI category. Twice as many younger as older adolescents had extremely high WBI scores (12 vs. 6), whereas the age distribution in the extremely high WBI category was more balanced (11 younger vs. 8 older adolescents). The main socio-demographic characteristics of the interviewed adolescents are presented in Table 31 below.

*Table 31. Interview sample characteristics*

Study ID	Gender	Age	Ethnicity	Interview length	Weight bias internalization
KL346	f	16	Turkish	16:12:00	high
LE223	f	16	Turkish	19:11:00	low
LH054	f	14	German	21:03:00	high
NE322	m	13	German	31:51:00	low
NN277	f	18	German	20:53:00	high
RA204	f	14	German	18:15:00	low
RN101	m	14	German	18:36:00	low
TL191	m	13	German	29:58:00	high
TN325	m	13	Other (Dominican Republic)	36:51:00	high
ZR003	m	14	Turkish	17:54:00	high

The resulting interview material was rich and informative, illustrating a variety of perspectives on the study topic. After transcribing the audio recordings, the text data were subjected to a qualitative content analysis approach, the results of which are presented below along the main categories identified in the analytic process (see Table 32). Interview excerpts were used to illustrate each category and subcategory. In order to warrant the transparency of the results description, study participants' identification code, gender, age and their degree of weight bias internalization (WBI), as well as the paragraph (§) where the respective information can be found in the interview were reported for each quote. In order to emphasize their focus, some quotes were abridged by removing discourse elements (e.g. “euhm”, “also”, “ja”) or overlaps between interviewee and interviewer. Missing phrases were replaced with the symbol “[...]”.

*Table 32. Qualitative content analysis categories*

Main theme	Category	Subcategory
Perceived societal attitudes towards overweight	Attitudes towards overweight individuals in a broader societal context	-
		-
	Reactions to adolescents' weight in their immediate social environment	Positive reactions to participants' overweight
		Overweight as a peer group conversation topic
	Advantages of being overweight	-
	General disadvantages of being overweight	-
	Social weight stigmatization	Social weight stigmatization as a disadvantage
		Overweight stereotypes
	Personal stigmatization experiences	No stigma
		Stigma as something that happens to others
		Frequency of stigmatization experiences
		Stigma as a demotivating factor for weight loss attempts
		Stigmatization agents

Main theme	Category	Subcategory
Weight stigma management	Coping with direct weight stigmatization	Advocacy
		Rationalization
		Emotional impact
		Personal reactions in stigmatizing situations (passive vs. aggressive)
		Seeking social support
	Coping with overweight as a stigmatized identity	Stigma internalization
		Compensation
		Agency/losing weight
		Identity negation
Social network	Main social contacts	-
	Peer group	Gender structure
		Overweight peers
		Personal integration
		Common activities
Body image	Adolescents' evaluation of their own bodies	Features adolescents would like to change
		Features adolescents would not like to change
	Ideal body image	Ideal body characteristics
		Physical appearance role models
	Physical appearance locus of control beliefs	-
WBIS validation	Accessibility	-
	Acceptability	-
	General evaluation	-

#### 4.3.1. Societal attitudes toward overweight

The first theme emerging from the interview material referred to adolescents' perceptions of societal attitudes toward overweight, which also included their first-hand experiences and observations in their immediate social environment. Specifically, this broader category covered aspects such as adolescents' perceptions of attitudes towards overweight individuals in a broader societal context, reactions to adolescents' weight in their immediate social environment, perceived advantages and disadvantages of being overweight, as well as adolescents' perception of weight stigmatization, including overweight stereotypes and personal stigmatization experiences.

#### 4.3.1.1. Perceived attitudes towards overweight in the broader society

Interviewees in our study were asked to report on their perceptions of how generalized others view overweight individuals. Although some participants were not sure about how overweight individuals are generally perceived by other people or described a broad spectrum of attitudes toward overweight individuals, others clearly pointed to the visibility and undesirability of overweight in public spaces.

*“Also manche kommen damit nicht klar, manche ekeln sich, manche finden das ok, (..) manche stehen drauf, (lacht) ja...” (KL346, f, 16, high WBI, ¶42)”*

*“[...] weil manche sa... sind ja der Meinung, dass Leute, die nicht schlank sind, dass die auch gar nichts zu suchen haben auf irgendetwelchen öffentlichen Plätzen, dass sie sich am besten einschliessen und nicht rauskommen und ich finde, das stimmt gar nicht, ” (RA204, f, 14, low WBI, ¶131)*

*Q: Wenn die Leute zum Beispiel in der U-Bahn eine dickere Person sehen. Was... was denken die? Was würden sie über diese Person sagen?*

*„Hoffentlich setzt sie sich nicht neben mich.“ (lacht)” (TN325, m, 13, high WBI, ¶32)*

When asked whether they could think of a reason for negative attitudes towards overweight individuals, three participants could not identify any, two of them additionally arguing that other people should not be bothered by overweight, since it was not their body and hence not their problem.

*“Keene Ahnung. Also ist ja nicht ihr Körper. Eigentlich sollte denen dabei nix stören. \*hustet\* Also, weil, wenn das nicht ihr Körper ist, denn können die nicht sagen "Oh, das sieht ja Scheisse aus!" und so. Also, können sie schon, ist ihre Meinung aber (..) Eigentlich müsste es oder sollte es die egal sein so.” (RN101, m, 14, low WBI, ¶34)*

However, most interviewees could point to the deviance of overweight as the main reason why it bothers other people. In their examples, participants reported other people's unfamiliarity with a large body size, as well as overweight individuals' inability to keep up with peers in physical activities or drawing an advantage from their size as more concrete reasons for negative attitudes towards overweight. In terms of what others could perceive as an advantage for the overweight or a disadvantage for themselves, taking up too much space in public transportation was named twice.

*“Jaa... vielleicht, dass sie aus der Reihe tanzen, so gesehen. Weil jeder ist, nach ihrer Meinung eh/Meinungen gleich und wenn man halt da anders aussieht, viel dicker oder euhm... ein paar Speckrollen oder so, wie man auch so das nennt, euhm... dann... ja... dann sind die es (...) tanzen sie halt aus der Reihe, nach der Meinung von denen.” (LE223, f, 16, low WBI, ¶20)*

*Q: Warum meinst du das, dass es so Leute gibt, die... die sich ekeln oder denen es nicht gefällt?*

*"Das weiss ich nicht, aber ich denke weil sie es nicht gewohnt sind." (KL346, f, 16, high WBI, ¶43 – 44)*

*"[...] vielleicht es nervt die Sportlehrer (lacht). Ich weiss es nicht, wenn die so lange warten müssen, bis die gerannt sind oder jedesmal, weiss ich nicht was machen müssen aber sonst..." (TN325, m, 13, high WBI, ¶44)*

*"Also vielleicht bei anderen ist es zum Beispiel vielleicht in der U-Bahn, wenn da halt jemand anstatt einen Sitzplatz dann zwei verbraucht, dass das vielleicht stören könnte oder manche halt die Sicht in der... irgendwo... ja" (LH054, f, 14, high WBI, ¶40)*

*"Naja, ich denke mal euhm... dass den meisten Leuten das stört, weil die halt sagen, es nim... meh... es nimmt mehr Platz ein, also sie sind euhm... naja sonderberechtigt, weil... naja, sie sind halt anders. Euhm (..) Ja." (TL191, m, 13, high WBI, ¶22)*

*"Ja. Wenn sie sich in den Vordergrund schieben wollen, egal wie. Euhm (..) dicker heisst nicht stärker," (NE322, m, 13, low WBI, ¶36)*

#### 4.3.1.2. Reactions to adolescents' weight in their immediate social environment

Beyond general attitudes toward overweight within the broader society, interviewed adolescents also reported on how significant others responded to their being overweight. This overarching category included accounts of positive reactions to participants' overweight from members of their immediate social network, as well as contexts and ways in which adolescents' overweight was addressed in their conversations with peers.

##### *4.3.1.2.1. Positive reactions to participants' overweight in their immediate social environment*

Adolescents interviewed in the present study often reported experiencing supportive and positive reactions to their overweight from peers and adults. For instance, two girls reported on measures taken by their parents to support them in losing weight. Although both of them perceived these measures as coercive or discriminatory at the time, they rationalized them as having a positive purpose.

*"Wie das mit meinen Eltern ist zum Beispiel. Ob die mich (..)... ob die mich zu sehr damit (...) bedrücken. Dass ich übergewichtig bin, dass sie mich zwingen, oder vielleicht, dass sie sich gestört fühlen, weil du übergewichtig bist. Aber sie wollen ja im Prinzip dein Gutes, also wenn ich mal von mir jetzt mal reden soll. [...] Aber halt (..) sie wollen nicht, dass man traurig ist, deshalb möchten sie auch, dass man voran kommt, in dem man abnimmt und auf sich aufpasst. Und es ist auch für die Gesundheit sehr wichtig ist, ne?" (LE223, f, 16, low WBI, ¶139 - 141)*

*Q: Und wer hat dir so Grenzen gesetzt beim Essen?*

*"Euhm... meine Mutter, auf jeden Fall [...] Aber dafür bin ich ihr auch ein bisschen dankbar, dass sie da drauf geachtet hat" (LH054, f, 14, high WBI, ¶54 - 56)*

On the other hand, physical education teachers and sports coaches encouraged adolescents to lose weight and perform better with symbolic rewards such as complimenting them on improved performances or presenting them with the prospect of higher skill acknowledgment if they lost weight.

*"Und all die Trainer sagen immer zu mir "Nimm ab! Dann kommst du sofort in die beste Mannschaft, die wir haben." (TN325, m, 13, high WBI, ¶58)*

*"Also... s... sie macht das so eher nett. Also wenn ich mich mehr anstrenge, dann sie... lobt sie mich auch und so." (ZR003, m, 14, high WBI, ¶27)*

In terms of their peer relationships, adolescents reported being accepted, morally supported and protected by their friends.

*"[...] bei mir ist es so, die sagen zu mir zum Beispiel, die finden mich nicht fett, weil die gucken... die sagen "ich guck' mal, wir gucken mal auf dein Gesicht, jetzt nicht auf deinen Körper", weil die meinen, die lieben mich so wie ich bin" (KL346, f, 16, high WBI, ¶26)*

*"Euhm... also meine beste Freundin nimmt mich immer vor ihrem Freund in Schutz, weil der sagt immer, dass ich nicht schlank bin und dafür nimmt sie mich dann total in Schutz oder eigentlich machen's alle meine Freunde." (RA204, f, 14, low WBI, ¶83)*

#### 4.3.1.2.2. Overweight as a peer group conversation topic

When asked about it, all interviewees mentioned cases in which their overweight was addressed in their peer or friends group. However, most claimed that this was not a frequent conversation topic among friends and that it came up only in specific situations such as doing sports or shopping together, if the interviewee herself brought it up or if everyone else was talking about their weight. However, three participants emphasized the fact that they do not feel comfortable being overweight and talking about it with peers.

*"Also wenn man zum... zum Beispiel shoppen geht, dann euhm... ist es halt auch so, wenn manche Sachen nicht passen oder so, dann man will es aber unbedingt haben dann sagt jemand ja schon... ja, okay, dann muss ich halt noch 5 Kilo (lachend) abnehmen oder so und das ist halt dann die Frage, ob man das schafft und ja... Dann muss man aber dann auch konsequent sein." (LH054, f, 14, high WBI, ¶98)*

*"Doch. Wir haben manchmal das Thema, wenn wir irgendwie zusammen Sport machen oder joggen gehen oder sowas, einfach um für irgendwas in der Schule so zu üben. Dann so... Oder*

*wenn wir inna... im Sportunterricht irgendjemand was sagt von... ” (RA204, f, 14, low WBI, ¶81)*

*“Euhm... ja, wir sagen uns auch gegenseitig wie viel wir wiegen oder weiss ich was. Das sage ich auch sehr offen, also da schäme ich mich nicht dabei. ” (LE223, f, 16, low WBI, ¶74)*

*“Nee, also wenn ich... ausser wenn ich es mal anspreche, oder so... Aber es gab noch nie irgendwie, dass wir darüber jetzt... über mein Übergewicht speziell jetzt gesprochen hätten. Das gab's noch nie und das machen sie ja auch selber ja nicht. [...] Die wissen halt, dass ich mich meist nicht selber 'mit wohlfühle oder dass ich... aber es war nie ein Thema, nee. Nie (lacht) ” (NN277, f, 18, high WBI, ¶64)*

*“Also das wird nur, wenn euhm... thematisiert bei euhm... halt auch bei meinen übergewichtigen Freunden und wenn die halt darüber reden, dann euhm... reden wir meistens darüber, dass sie sich euhm... selber, also ich jetzt auch von mir, dass ich das nicht toll finde, weil vor allem dass es euhm [...] Naja, ich mag's eigentlich nicht, ja? Also, euhm... weil ich will... ich will darüber eigentlich gar nicht reden, weil ich ja... ich will nicht... ich mach's ja privat für mich und euhm... andere Personen sollten das eigentlich sozusagen, nicht... nicht so mitkriegen, dass euhm... was ich jetzt... euhm... so mit m... meinem Gewicht mache. ” (TL191, m, 13, high WBI, ¶68-72)*

Moreover, two boys suggested that the peer group was not an adequate setting to discuss their overweight, since the conversation focus lies mainly on common activities and if someone is teased, this is due to other, underlying personality traits, not to their overweight. On the other hand, a female participant believed that her overweight might have been brought up more often by her peers, if she had weighed more or had a different body shape.

*“Ist mir nicht vorgekommen. Das ist wenn... Wenn Freundschaft ist, dann jeht's nicht um, dass derjenige dick ist, sondern dass derjenige die Fresse nicht halten kann, nervt oder weiss ich auch immer was... die ganze Zeit lang irgendwo hin will... Das wär' irgendwie Hauptthema. Um Dickheit geht's schon gar nicht mehr. Es geht einfach bloss um die anderen Probleme, dass man genervt wird von demjenigen und sagt, dass er die Fresse halten soll oder sich verpissen soll. Es geht gar nicht mehr um... (lachend) Dicke. ” (NE322, m, 13, low WBI, ¶87)*

*“Naja, eigentlich euhm... ich mach's ja eigentlich auch so, dass ich da jetzt nicht viel rüber rede mi... Ich möchte eigentlich bei meinen Freunden, wenn wir was unternehmen eigentlich nicht gerade über mein Gewicht reden, weil es geht ja eigentlich um was ganz anderes zum euhm... (unverständlich) wohin fahren oder so, deswegen find' ich, dass also man kann ja in dem Moment ja gar nichts daran ändern und... und ich selber mach' ja privat viel euhm... gegen mein Gewicht sozusagen. ” (TL191, m, 13, high WBI, ¶70)*

*“Also vielleicht wenn ich jetzt irgendwie kleiner wäre und dann, das anders aussieht mit der Form*

*her oder... Dann... dann würde ich vielleicht ein bisschen mich gestört fühlen oder die würden was sagen, aber sonst wurde ich noch nie so angesprochen.*” (LE223, f, 16, low WBI, ¶174)

Interviewees reported that overweight was mainly addressed in their peer group in a “normal” to positive way, a boy further mentioning feeling good when his friends noticed that he had lost weight. At this level, another male participant also makes a gender distinction by claiming that if his overweight was brought up, this was mainly done by male peers.

*“Hmm... Naja, meine Freundinnen, also dann eher dann nichts. Ihnen ist es egal. Euhm... Meine Freunde sagen da manchmal etwas und... Aber sie reden da so... Wir reden da immer so... euhm... so normal darüber aber mehr nicht.*” (ZR003, m, 14, high WBI, ¶165)

Overall, study participants described their friends as accepting them as they are and being supportive of their efforts to lose weight for various reasons such as better health, fitting into certain types of clothing or being more attractive to the opposite sex.

*“[...] die sagen "warum sagst du sowas?" oder wenn wir einkaufen gehen, dann sage ich, ich muss mal die... über die Übergrößen-Abteilung gehen, dann sagen sie "He... das stimmt doch gar nicht" und so "rede nicht so". Also die wollen mich mal schon aufmuntern. Die sagen "du bist so hübsch und du brauchst... (...) also du kannst, also du musst abnehmen, wegen deiner Gesundheit", aber die machen mich jetzt nicht so runter oder so.”* (KL346, f, 16, high WBI, ¶196)

*“Naja, meine Freunde sagen immer zu mir, dass ich abnehmen soll. Da... dann... dass wir dann die grössten Playboys werden (lacht). [...] Öfters hör' ich ebend von den Freunden einfach, dass sie mir wünschen, dass ich jetzt abnehmen kann, dass wir dann irgendwie auch (..) keine Ahnung... Aber sie akzeptieren mich so. Also... wenn's thematisiert wird... ja, manchmal fragen die nach meinem Gewicht oder so, aber das... (...) sag' ich ja manchmal mal nicht... mal sehen.”* (TN325, m, 13, high WBI, ¶192 - 96)

#### 4.3.1.3. Advantages of being overweight

Most interviewed adolescents (eight out of ten) initially dismissed the idea that being overweight had any advantages. Some of them did not believe that overweight could have any advantages at all and justified their view based on a general and personal preference for a thin body size.

*“Nein. (lacht) Also Vorteile...[...] finde ich nicht, dass es das hat, aber ich mein', jeder möchte dünn sein und schlank und 'ne angenehme Figur haben, daher kann ich da mir das nicht drunter vorstellen, dass es auch Vorteile haben könnte.”* (LH054, f, 14, high WBI, ¶158 - 60)

*“Nein, ich war immer... Ich war... Also ich war immer gerne lieber dünner, aber ich... \*4 Sekunden Pause\* ich weiss nicht. Nee... also Vorteile sehe ich auf jeden Fall nicht darin.”* (TN325, m, 13, high WBI, ¶168)



However, half of the interviewed adolescents could identify social advantages of having a higher weight. Two participants experienced social advantages of weighing more when practicing certain physical activities such as jumping on a trampoline or playing games (e.g. mat sliding<sup>1</sup>) at the gym.

*"[...] da war ich ungefähr 8 Jahre alt oder so und zum Beispiel auf dem Trampolin fanden die meisten es ist dann immer cool, dass ich immer so hoch springen konnte, weil ich immer tiefer eingesackt bin, weil... (unverständlich) das fanden die meisten halt cool und wollten dann immer mit mir in dem Trampolin sein." (TL191, m, 13, high WBI, ¶40)*

*"Eigentlich manchmal im Sportunterricht, euhm... da haben wir so Mattenrutschen gespielt und da wurde ich dann immer als erstes gewählt, weil wenn... die Schwersten dann können die Matte weiter schieben. Also daher... daher war's vielleicht auch zum Vorteil und ja..." (LH054, f, 14, high WBI, ¶62)*

An additional participant even reported positive discrimination of overweight youth in the context of physical education classes.

*"Unser neuer Sportlehrer hat uns irgendwann gesagt, als wir ihn bekommen haben "Welche, die nicht so sportlich aussehen, müssen natürlich auch nicht so viel machen." (RA204, f, 14, low WBI, ¶81)*

A larger body size due to excess weight was also seen as projecting an endearing aura on overweight youth.

*"Man kuschelt gerne mit mir (lacht). [...] Oder mich umarmt gern, weil ich weich bin." (TN325, m, 13, high WBI, ¶64 - 66)*

Another participant thought that overweight young people have an advantage in finding friends, since others may perceive them as being more fun and easygoing.

*"Sie sind meistens nicht so zickig." (RA204, f, 14, low WBI, ¶26)*

*"Weiss ich nicht. (...) Vielleicht beim Freunde Finden. Für m... welche, die damit kein Problem haben, weil [...] Nein, vielleicht weil man denkt, dass man denen mehr erzählen kann, weil sie nicht so viele Freunde haben, aber das stimmt n... gar nicht." (RA204, f, 14, low WBI, ¶43 - 45)*

*"[...] weil mit den meisten Leuten, die nicht schlank sind, oder so der Meinung sind, dass sie die hübschesten sind, mit denen kann man viel mehr Spaß haben und alles machen, was andere nicht machen." (RA204, f, 14, low WBI, ¶131)*

Another participant reported that being overweight made him feel stronger. Moreover, he suggested

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<sup>1</sup> Mattenrutschen: An indoor physical activity game in which two teams compete against each other. A gym mat is laid on the floor smooth side down and alternately, two children from each team jump on the mat, trying to make it slide as far as possible. The first team to reach the finish line wins. (Sportzentrum der Universität Passau, N.A.)

that overweight youth are generally perceived by others as being strong and as such, can take on a leading role in their peer group. However, this advantage was believed to be dependent on age or developmental stage.

*“Euhm... Joa... man wird eher als stark angesehen, als robust gebaut. Diejenigen haben Respekt vor einem euhm... was ich aber nicht ausgenutzt hab', noch nie... wollt' ich auch nicht. Das heisst, was ich damit ausgenutzt hab' war das Gruppentier, aber euhm... also Mannschaftstier, als Anführer von allen. Ist jetzt in der Schule aber auch nicht mehr so. Jetzt (..) ist anders. Grössere Leute ist was anderes. Von erste bis sechste konnte man dann immer noch was machen.”*  
(NE322, m, 13, low WBI, ¶159)

*“Und hast du mal die Erfahrung gemacht, dass übergewichtig zu sein von Vorteil ist?*

*NE322: Ja, ich hab mich stärker gefühlt.”* (NE322, m, 13, low WBI, ¶160 - 61)

#### 4.3.1.4. Disadvantages of being overweight

All study participants were able to name disadvantages associated with being overweight. At this level, a coding distinction was made between general disadvantages which arise from excess weight and the negative stigmatization of overweight individuals by other people in their social environment. While seven out of ten participants reported general overweight disadvantages, all but one adolescent described situations in which overweight individuals (including themselves) experienced social stigmatization due to their weight.

##### *General disadvantages of being overweight*

Most general overweight disadvantages referred to reduced endurance for physical activity, difficulties in finding fitting, fashionable and age-appropriate clothing, as well as difficulties in using public facilities designed for lower weight and smaller body sizes.

Decreased endurance for physical activity was mentioned by half of the interviewees, particularly when running, which had a negative effect on their performance in team sports. Adolescents describe not being able to run as fast or as well as their peers, which in some cases triggered additional disadvantages such as receiving a bad grade in physical education or not being able to play in the best team of a sports club.

*“Zum Beispiel beim Sport. Also so geht mir ganz oft die Ausdauer aus, kann nicht mehr so viel mitmachen wie die anderen. [...] Hm... Meistens ist einer [ein Nachteil] beim Sport oder wenn wir Fußball spielen, dann will ich zwar meistens mitspielen, aber ich kann nicht so wie all die anderen mitspielen, so gut. Und...[...] eigentlich will ich mitspielen, aber wegen mein Gewicht oder so... ich kann ja nicht so gut mitspielen. Mir geht schnell die Ausdauer aus und ich kann*

*nicht so gut euhm... rennen.” (ZR003, m, 14, high WBI, ¶29 – 31)*

*“Das einzige, dass ich im Sport 'ne 6<sup>1</sup> hatte sozusagen, wenn... zum Beispiel jetzt, dass wenn ich nicht recht schneller rennen kann, weil ich eben mehr Masse hab'. (...) So meine ich det. Jetzt... jetzt ... war nur ein Beispiel, weil... bringt ja nüscht wenn ich renne, aber trotzdem nicht schneller werde” (NE322, m, 13, low WBI, ¶56)*

*“Auf jeden Fall, zum Beispiel... euhm... naja, ebend die Ausdauer (lacht) ist benachteiligt [...] Im sportlichen [...] Bereich beim weg Rennen oder so. Also wenn man rennt. [...] ich hab'... in meinem Basketball hab' ich Nachteile wegen der Ausdauer, weil ich... ich mach' Sport selber. Und ich weiss, ob das, wenn ich dünner wär', ich da viel besser wär'. Und all die Trainer sagen immer zu mir "Nimm ab! Dann kommst du sofort in die beste Mannschaft, die wir haben." Aber jetzt kann ich ebend wegen dem Übergewicht nicht, weil ich kann eigentlich passen und werfen und so, aber ich muss ebend schneller sein und meine Ausdauer halten können... Ja... Daran hab' ich auf jeden Fall Nachteile. Das stört mich.” (TN325, m, 13, high WBI, ¶54 - 58)*

Finding fitting clothing was described as a challenge by three girls and one boy. Whereas the focus among female participants lay mainly on not being able to find fashionable clothes, the male participant raised the issue that overweight youth needed to wear larger clothes than would be appropriate for their age.

*“Oder halt, wenn sie shoppen gehen, dass dann sowas... so... so 'ne Sache kommt. So bei Tally Weijl, weil man da nicht in die Sachen passt (lacht).” (RA204, f, 14, low WBI, ¶24)*

*“[...] oder ich konnte zum Beispiel auch keine Klamotten euhm... schicke Klamotten für mich haben, sondern ich musste dann mit anderen Sachen rumlaufen und das... da fand ich mich auch schon ein bisschen benachteiligt.” (LH054, f, 14, high WBI, ¶52)*

*“Also, dass man sich auch nicht euhm... \*räuspert sich\* als euhm... ziemlich junger Mensch euhm... grossere Klamotten holen muss oder sowas. Ich bin auch... zum Beispiel, wenn man mit anderen Leuten rumhängt, die im selben Alter s... sind, dass man auch... auch dieselbe Klamottengröße oder sowas tragen kann.” (TL191, m, 13, high WBI, ¶86)*

Two participants also reported an incompatibility between an overweight body size and use of public facilities. For instance, a boy found it difficult for two overweight individuals to sit comfortably next to each other on the train, while a girl mentioned that an upper weight limit is given for the use of certain leisure facilities (e.g. trampolines), thus limiting access for overweight youth.

*“[...] zum Beispiel wenn... wenn i... meine Mutter ist ja auch dick und wenn ich irgendwo*

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<sup>1</sup> The German grading system ranges from 1 to 6, with 1 being the highest and 6 being the lowest grade.

*(lachend) sitze und sie denn auch noch da sitzt, dann ist es schon ganz schon eng. Also jedenfalls im Bus oder so [...]” (TN325, m, 13, high WBI, ¶154)*

*“[...] ja. Eigentlich schon. Also es gibt ja, also es gibt ja nicht immer für alle was... eine Ordnung ist. Also es gibt ja auch Sachen zum Beispiel also... früher gab's mal so'n Trampolin-Spring-Dings... [...] und da steht ja auch immer drauf bis welches Gewicht man das machen kann und das ist für die, die euhm... dann drüber sind, natürlich auch schade, weil die dann das halt nicht machen können und da denke ich auch schon, dass sie ein bisschen benachteiligt sind. [...] Oder euhm... wo das halt eng ist oder halt also...” (LH054, f, 14, high WBI, ¶42 - 50)*

Additionally, a boy reported musculoskeletal pain as a disadvantage associated with excess weight.

*“Ja, vielleicht die Knochen, dass denen alles weh tut.” (NE322, m, 13, low WBI, ¶44)*

#### 4.3.1.5. Social weight stigmatization

##### *4.3.1.5.1. Social weight stigmatization as a disadvantage for overweight individuals*

In the present study, adolescents provided examples of perceived disadvantages along the entire spectrum of social stigmatization from stereotypization to victimization such as teasing and bullying. Stereotypes concerning overweight emerged mainly in association with social marginalization, exclusion or rejection by peers. Generally, study participants describe a perceived general reluctance to associate with overweight individuals.

*“Ich glaub' manche Leute haben einfach nicht gern mit Übergewichtigen zu tun. Aber ich weiss es nicht.” (TN325, m, 13, high WBI, ¶44)*

*“Oder halt manche Leute wollen auch dann nicht mit jemandem rausgehen” (LH054, f, 14, high WBI, ¶52)*

*“Die wollen euhm... sich halt mit den Leuten nicht abgeben, weil sie halt euhm... die meisten Leute denk... euhm... meiner Meinung nach auch denken, "Der ist total out" nur weil er dick ist.” (TL191, m, 13, high WBI, ¶30)*

Interviewees also report that overweight youth are disadvantaged in that they are often bullied, teased or discriminated against. For instance, adolescents report weight teasing in the context of eating and shopping.

*“Ja, also ich wurde auch euhm... so benachteiligt nach... mit dem Essen halt. Also die durften das essen und ich durfte es nicht essen zum Beispiel, weil euhm... andere dann gesagt haben, ja... "Dann wirst du noch dicker" oder so...” (LH054, f, 14, high WBI, ¶52)*

*“[...] manchmal, wenn man irgendwas zum Beispiel kaufen will (..) oder wenn Kommentare von irgendwelchen anderen Leuten dann kommen, wenn man irgendwas haben möchte oder so...”*

*dass die ja nicht zu einem passt und sowas.” (RA204, f, 14, low WBI, ¶134)*

Moreover, study participants believe that overweight individuals are disadvantaged and discriminated against in professional settings, during physical education classes, as well as in public spaces. In this respect, participants report difficulties for overweight youth in finding jobs for which appearance and physical activity matter.

*“Also im Beruf bestimmt, wenn man irgendwas... euhm... hat so mit'm Aussehen zu tun. Also, (lacht) jetzt ist übertrieben aber zum Beispiel Model oder so [...]” (RN101, m, 14, low WBI, ¶140)*  
*“Ja, glaub' ich schon. Also zum Beispiel... naja Jobsuche oder so... Ist so... mir geht's ja selber so, wenn ich in... Ich will mir jetzt so... Ich wollte mir schon öfter mal ein Minijob suchen, aber i... ich trau' mich selber halt nicht zu... richtig zu fragen, weil ich da auch schon öfter gehört hab, also in bestimmten Branchen anzufangen, zum Beispiel in jetzt Mode-Boutiquen oder so, weil, wie gesagt, dann... denn öfter hab' ich schon gehört so, dass sie denn gleich sagen "Nee...". Jetzt die irgend'nen Grund nennen, aber ich glaub' schon da, wie gesagt, in solchen Mode-Geschäfte so spielt der das Au... Schön... Aussehen schon 'ne große Rolle und es heisst ja nicht, dass ich mich nicht modisch kleiden kann, so dann einfach Leute... Ich hab' schon das Gefühl, also auch in vielen... auch Erwachsene, nicht nur unbedingt nur Jugendliche, aber auch Erwachsene, glaub' ich schon, dass sie öfter mal in ihrer Jobsuche benachteiligt werden halt einfach aufgrund ihres Übergewichts oder weil die Leute halt denken ja... wenn es jetzt um (ein) bisschen körperliche Arbeit geht, dass sie vielleicht denken, ja... die schaffen halt nicht so viel, weil sie halt übergewichtig sind oder ja... wie gesagt, in Mode-Geschäften, dass sie ja denken "Ja, die passen nicht in unserem Konzept" oder so halt, ja. Ich glaub' schon, dass es nicht unbedingt mit den Jobs, also generell... Ich glaub' schon, dass da Dickere öfter mal benachteiligt werden, ja. (lacht)” (NN277, f, 18, high WBI, ¶130)*

Regarding physical activity classes, two interviewees see a disadvantage in having the same performance standards applied to them as in the case of their (more slender) peers.

*“Euhm... im Sportunterricht zum Beispiel, wenn man über einen Kasten oder so soll und dann das genauso machen muss wie die anderen, damit aufrocken, was nicht so ganz leicht ist [...]” (RA204, f, 14, low WBI, ¶134)*

*“Dass es zum Beispiel... ich beim Sport-Unt... Unterricht, da... da ist meine Lehrerin auch so und... ja... Also sind schon manchmal andere Regeln. Aber manchmal werde ich auch gerecht behandelt, manchmal anders. Ist immer unterschiedlich.” (ZR003, m, 14, high WBI, ¶125)*

Another participant not only describes the way in which overweight individuals are subjected to

negative comments and bashing in public places as a disadvantage, but also points to a general tendency for obese individuals to be the target of disapproving scrutiny from others.

*“Naja, also... ein paar dumme Spruch... Sprüche einfach muss man sich auf jeden Fall mehr, wenn man dick ist. [...] Also einen Nachteil ist es vielleicht, dass die Leute nicht... dass... weil ich hab' auch schon erlebt zum Beispiel, dass jetzt sag' ich mal, die peniblen Omas nenn' ich die mal, die so ein bisschen ebenf fein angezogen sind so... hab' ich auch schon erlebt, die saßen hinten in der U-Bahn, kam ein Dicker, der hat sich dann da irgendwie so halb hingequetscht und dann ist sie sofort aufgegangen und meinte "Es geht ja gar nicht!"... hat sich dann woanders hingesetzt.”* (TN325, m, 13, high WBI, ¶154)

*“Aber die f... bei dicken Menschen (..) hmmm... wenn sie richtig dick sind, dann (..) guckt man ebenf komisch. Also ich weiss nicht so genau was...”* (TN325, m, 13, high WBI, ¶136)

#### 4.3.1.5.2. Overweight stereotypes

Interviewees mentioned common overweight stereotypes when asked about characteristics which they think other people usually associate with overweight, as well as spontaneously in the course of the interview. In this respect, adolescents in the present study mostly named attributes such as fat, unattractive, lazy, undisciplined and slow.

*“[...] euhm... vielleicht weiss ich nicht, undiszipliniert, euhm... (..) Ja... Die meisten finden's ja auch hässlich, sag' ich mal. Also, weiss ich nicht... unattraktiv, sowa... solche Eigenschaften. Ja... träge (lacht). So...”* (NN277, f, 18, high WBI, ¶126)

Two participants also reported that they felt they were automatically considered to be worse persons only because they were overweight.

*“Die denken einfach "Oh, die ist fett" oder dick oder "Die ist halt doch gleichzeitig dadurch ein schlechterer Mensch". Also denk' ich schon, dass viele das denken”* (NN277, f, 18, high WBI, ¶122)

Furthermore, in their examples, participants suggested that overweight individuals are often addressed in terms of unflattering comparisons to animals (e.g. “walrus”, “hamster cheeks”, “stupid cow”). In terms of physical appearance, two female participants believed that other people focus on certain body parts such as legs, arms or abdomen when characterizing an overweight individual, emphasizing the diversity of overweight body shapes.

*“Also man kann ja zum Beispiel sagen ja... "Der hat voll die Hamsterbacken" oder so. Ich weiss nicht. Oder Oberarme sind's dick oder der hat vielleicht keinen euhm... Bauch oder so, so aber die Beine sind halt total euhm... dick, oder... es gibt ja unterschiedliche... Var...”* (LH054, f, 14, high WBI, ¶124)

Study participants also mentioned behaviours which are typically associated with being overweight, such as excessive, uncontrolled eating, no or little physical activity, or performing poorly when physically active.

*“Dass sie sich nicht richtig bewegen können oder halt einfach ja... nicht aufhören können zu essen, ja...” (LH054, f, 14, high WBI, ¶38)*

*“Naa... die denken eh bestimmt schon gleich man isst viel und so und treibt kein Sport, sitzt den ganzen Tag nur zuhause und so.” (RN101, m, 14, low WBI, ¶22)*

*“Nee, ich denke, es hängt damit zusammen... also gerade auch wegen Übergewichtigen, dass sie halt auch denken, dass man halt zu schlecht ist, dass man das gar nicht kann. Also man ist zu langsam oder man, weiss ich... kann man keinen Basketball oder Fußball spielen h... halt, weil man so schlecht ist. Also das ist halt 'nen Vorurteil, dadurch dass man nur dick ist. Also... ich finde, es stimmt auch überhaupt nicht.” (TL191, m, 13, high WBI, ¶26)*

Moreover, one participant mentioned conflicting stereotypes about the socio-economic status of overweight individuals. On the one hand, a stereotype might be that they are rich, since they could afford to eat more and eat often at well-known fast food restaurants. However, the same participant also made the observation that overweight adults are often believed to rely on social welfare.

*“Naja, also was i... was ich auch schon gehört habe, dass... zum Beispiel auch bei Eltern, die dicker sind, dass sie zu ihnen sagen, dass sie faul sind, dass sie eigen... m... zum grössten Teil Hartz IV Empfänger oder so sind. Euhm... und ja, dass sie ja faul sind und nicht viel tun. Ja...” (TL191, m, 13, high WBI, ¶14)*

*“Naja, ich bin mir jetzt nicht sicher. Also die sind halt... euhm... dickere Leute haben halt natürlich meistens mehr gegessen und dadurch ist auch euhm... was ich meistens gehört habe... euhm... ist zum Beispiel, welche bei McDonald's oder so sitzen "Boah... die... müssen die ja viel Geld haben, weil die... die jeden Tag zu McDonald's oder so gehen". Also ich... ich b... bin mir nicht sicher, ob das stimmt, also zumindest nicht in meiner Umgebung...” (TL191, m, 13, high WBI, ¶34)*

Generally, participating adolescents were aware of and emphasized the categorial thinking of stereotype perpetrators and their negation of overweight individual's own personality characteristics. Against this background, they also provided both general and personal counter-examples to common stereotypes, particularly concerning physical activity and intellectual ability.

*“[...] die meisten, glaub' ich, sehen nicht den Hintergrund dahinter oder so sehen den Charakter in dem Moment nicht. [...] wenn sie dann auch was sagen, gar nicht wissen eigentlich, wie weh*

*sie den Leuten damit tun, weil wir tun den anderen ja auch nichts.” (NN277, f, 18, high WBI, ¶122)*

*“Naja, ich glaub', dass ich nicht ein... klassischer Dicke bin, wie man denkt, wie ein Dicker ist. Zum Beispiel, die zuhause sitzen und Computer spielen.” (TN325, m, 13, high WBI, ¶170)*

*“aber euhm... wenn man jetzt dick ist, kann man sich eigentlich auch au... also man kann sich wie jeder andere Mensch auch auf Schule und andere Sachen natürlich konzentrieren und ich finde, wenn man jetzt nicht euhm... extrem übergewichtig ist, dann kann man halt auch euhm... einigen Sachen nachgehen, auch Hobbies oder so. Man kann auch Fußball spielen - das ist auch nicht schwierig. Aber euhm... man kann... man kann ja auch Sport machen an sich, auch zum Beispiel in 'nem Center oder halt euhm... Rehabilitationssport oder sowas. Also ich find' nicht, dass wir euhm... benachteiligt sind im Allgemeinen.” (TL191, m, 13, high WBI, ¶132)*

However, the same type of categorial thinking was applied by a participant to an overweight teacher who claimed he was vegetarian.

*“Ich kann auch euhm... einem Lehrer von mir nicht glauben, dass er Vegetarier ist und ist... ziemlich dick ist. Also i... das kann ich zum Beispiel auch nicht glauben.” (TL191, m, 13, high WBI, ¶160)*

#### 4.3.1.6. Adolescents' experiences of manifest stigmatization

In the course of the interviews, adolescents were asked to report on their personal experiences of direct stigmatization. In this context, interviewees described situations in which they had been discriminated against (including discrimination agents and settings). Moreover, some adolescents put discrimination into perspective by dismissing it as something that does not happen to them, reflecting on its frequency and emphasizing its negative impact on weight loss attempts.

##### *4.3.1.6.1. Not being stigmatized or stigmatization as something that happens to others*

Only one of the ten interviewed adolescents claimed that she had never been subjected to manifest stigmatization, while two others framed stigmatization as something that happens to others.

*“Also bis jetzt ist sowas gar nicht vorgekommen bei mir” (LE223, f, 16, low WBI, ¶12)*

*“sie haben sie immer gehä... also mich nicht, ich verstehe auch nicht warum, weil ich bin ja auch dick.” (KL346, f, 16, high WBI, ¶156)*

*“Aber ich kann mir sehr gut vorstellen, ja. Also ich hab's auch schon von... öfter von anderen gehört oder mitbekommen oder man hört ja sowas öfter. Also kann ich mir sehr gut vorstellen, ja.” (NN277, f, 18, high WBI, ¶12)*



#### 4.3.1.6.2. Frequency of stigmatization experiences

Most other participants reported occasional teasing, while two male participants suggested experiencing or having experienced frequent stigmatization. While some participants frame stigmatization rather as a past experience, others describe it as a continuous process.

*"[...] Beleidigungen waren immer da, egal ob dünn oder dick, allgemein aufs Äussere." (NE322, m, 13, low WBI, ¶10)*

*"Ja, ich kann's mir vorstellen, da ich's auch schon selber oft erlebt habe." (TN325, m, 13, high WBI, ¶4)*

*"Naja, also ich kann mir's auf jeden Fall vor... vorstellen. Also mir persönlich ist es jetzt noch nicht in großem Ausmass passiert. Klar, dass ab und zu mal Sachen kommen, aber ich hatte so das Glück, dass ich noch nie euhm... jetzt im grossen Ausmasse gemobbt wurde oder so." (NN277, f, 18, high WBI, ¶2)*

*"Nja... Also... das war anfangs auch so aber jetzt geht das." (RN101, m, 14, low WBI, ¶2)*

#### 4.3.1.6.3. Stigmatization as a demotivating factor for weight loss

A female participant pointed to the negative, demotivating impact of weight stigmatization on weight loss attempts.

*"Ich fänd... würd's halt nur schön finden, wenn andere Leute einen einfach so akzeptieren, wie man ist und nicht... weiss ich nicht. Ich find's unnötig, wenn man, sag' ich mal, als Übergewichtige beleidigt wird oder benachteiligt wird oder so. Also ich find'... würd's gut finden, wenn einen wär'... einfach so akzeptiert euhm... wird, wie man ist und euhm... ja... Weil es hilft uns Übergewichtigen ja auch nicht, weil auch selbst wenn wir am Abnehmen sind, das wissen die anderen, sag' ich ja immer, nicht, aber dann hilft es ja auch nicht unbedingt, wenn jemand zum Beispiel, wenn jetzt, sag' ich mal, 'ne 100 Kilo Frau jetzt 2 Kilo abnimmt, das ist für sie vielleicht ein großer Erfolg, aber die anderen sehen's halt nicht und wenn dann... sowas ist mir auch schon öfter passiert, ich mein' dann, da ist man gerade', sag' ich mal, in so 'ner guten Phase, man denkt... "Oh, ja! Ich hab' 2 Kilo abgenommen" und dann kommt irgendwie eine Beleidigung, dann fühlt man sich wieder total zurück geworfen, denkt so "Wozu mach' ich das eigentlich?" Also einfach in Ruhe zu lassen, wie wir sind und ja..." (NN277, f, 18, high WBI, ¶150)*

#### 4.3.1.6.4. Stigmatization agents

In terms of stigmatizing agents, only one participant suggested that he had been stigmatized by close relatives, but not by members of his nuclear family. Moreover, the same participant claimed to have never received any negative weight-related comments from strangers, while the opposite was the

case for another boy in the study.

*“Also wenn, denn ist es nur bei euhm... engeren Verwandten. [...] und halt wenn, denn überhaupt noch zuhause, aber zuhause isset noch nicht vorgekommen. Also jetzte, wenn es jetzt fremde Personen wären, dann... Also von fremden Personen hab' ich noch nie was Schlimmes gehört.”* (TL191, m, 13, high WBI, ¶4)

*“Also, zum Beispiel wie auf der Kur, wenn die, also da am großen Ausgang und so, wenn wir immer nach Beelitz gefahren sind [...] also wussten die halt woher wir kommen und dann haben die halt immer irgendwas gesagt... und... naa... die meinten dann immer... euhm... naja, schnell wieder ein Döner oder so.”* (RN101, m, 14, low WBI, ¶22)

On the other hand, most interviewees reported experiencing weight stigma from their peers in a variety of settings. The examples provided by study participants in this respect are described in detail below.

#### *Peer stigmatization*

At the peer group level, participants mainly report experiences of weight teasing such as being called names or being provoked by others. However, a participant claimed that weight was a reason for discrimination only when someone was new to a group.

*“Wenn... das einzige, was ich denke, wenn ich... wenn... was mich sauer macht, wenn man dann extra noch seine Stulle vor einem isst und sagt euhm... "Na... schmeckt's denn?" oder so. Naja dann würde ick ooch platzen (lacht)... (lachend) Vor allem weil ich so denke, der hat mich euhm... verarscht oder so. Nee, aber sonst nee...”* (NE322, m, 13, low WBI, ¶36)

*“Das einzige warum so man gemobbt wird ist wenn man neu ist und... Aber wirklich nur, wenn man neu in der Truppe ist. Da wird man nur noch mit dick bezeichnet. Sonst isset ja gar nicht mehr so.”* (NE322, m, 13, low WBI, ¶87)

One interviewee mentioned that bullying is often a group phenomenon initiated by a group leader, who then activates other peers to engage in stigmatizing behaviours. In this context, he also suggests that young people display stigmatizing behaviours towards overweight peers as a means of amusing themselves. This view was supported by three other adolescents, all of whom had a non-German ethnic background and framed being teased by their friends as a joke or as a means to impress the opposite sex.

*“Alle auf einen ist immer lustiger als euhm... allein da zu stehen und derjenige zu sein. Das ist immer so gewesen, schon immer. Solange ich das schon kenne mit Beleidigungen.”* (NE322, m, 13, low WBI, ¶26)

*"[...] wenn schon, dann machen die nur Spaß... Also, 'Hey, Fette' oder so, aber jetzt nicht so ernst." (KL346, f, 16, high WBI, ¶12)*

*"[...] wenn Mädchen da sind, dann sind meine Freunde manchmal ein bisschen komisch. Weil sie dann eher so... Also... ich bin... ich bin so, wie ich bin, auch wenn Mädchen da sind, aber die müssen dann ex... entweder besonders cool sein und irgendwie denen beeindrucken (lachend) oder so mit weiss ich nicht was und dann so cool sein und dann irgendwie sagen 'Nee, (unverständlich) nerv mal nicht' und so. 'Da gehen wir jetzt ganz sicher nicht hin.' [...] Zum Beispiel gestern hab' ich meine Freunde angerufen. Die waren dann irgendwie so, vier Leute oder so von denen, bei einem irgendwie irgendwo und dann haben sie mich irgendwie... irgendwie so komisch geredet am Telefon, weil Mädchen dabei waren und dann haben sich die Mädchen so tot gelacht." (TN325, m, 13, high WBI, ¶86)*

In two other cases, participants also report that their friends or other young people use weight-based teasing as a means to exclude overweight peers from group conversations.

*"Nein... naja... also ich persönlich kenn' jetzt nur noch eine weitere Person, [...] die deswegen auch sehr häufig beleidigt wird oder halt auch benachteiligt wird, euhm... beziehungsweise immer von euhm... den meisten Leuten eigentlich immer in den Hintergrund gedrückt wird.[...] meistens auch bei Unterhaltungen, wenn sich ein paar Leute unterhalten, dann sagen sie zum Beispiel 'Geh mal weg!' oder so." (TL191, m, 13, high WBI, ¶28 - 30)*

*"Ich bin zum Beispiel öfters einfach (..) mmm... draussen gewesen mit Freunden und so (.) Bekannten... dann haben wir zum Beispiel bisschen Scherz gemacht, dann fanden die anderen es irgendwie manche vielleicht echt lustig. Dann kam sowas wie... natürlich 'Sei mal leise, du fatter Ball' oder Fettsack oder so." (TN325, m, 13, high WBI, ¶8)*

Two adolescents suggested that weight teasing is not only perpetrated by people of the same age as the victim, but also by younger children.

*"Untermischen unter kleineren Kindern geht auch nicht mehr, denn die sind ja noch schlimmer geworden. Ich hab' gedacht die Großen wären noch zickiger; nein die Kleineren, die sind jetzt so weit - die mobben mehr als überhaupt euhm... gemobbt werden kann. Die haben einige Wörter drauf, da denkt man 'Was ist jetzt los? Euhm... Tauschen die sich jetzt (.) die Rollen?'" (NE322, m, 13, low WBI, ¶79)*

*"Irgendwie, dass ich auch mal am Bus-Stande... das ist schon, das ist noch gar nicht so lange her und dann euhm... beim Schulbus-Stande... und zwei Mädchen vielleicht mit... also jüngere Mädchen... also Grundschule... wirklich hinter mir standen und ich stand einfach, hab' denen*

*nichts getan, stand einfach an der Bus-Haltestelle. Der Bus kam und euhm... ist halt ziemlich viel Gedrängel immer, weil der Bus schon ziemlich voll ist, und dann also hab' ich nur gehört wie die eine zur anderen so tuschelt "Ja... gegen die kommen wir gar nicht an in den Bus" oder halt so Sachen, ja?" (NN277, f, 18, high WBI, ¶14)*

The issue of receiving negative comments from peers as a result of occupying a lot of space in public facilities illustrated in the example above was also brought up by another participant.

*"Zum Beispiel, wenn ich [...] irgendwo sitze auf 'ner Bank, da kommen noch richtig viele, da sagen sie zum Beispiel voll oft sie "Mach mal Platz, Fettie" oder irgendwie sowas. Okay oder "Mach einfach mal Platz" oder "Mach dich nicht so breit". Das höre ich zum Beispiel ziemlich oft, aber da kann ich ja nicht... ich bin ja breit, also was soll ich dann da machen?" (TN325, m, 13, high WBI, ¶36)*

Moreover, adolescents reported receiving negative weight and appearance-related comments from strangers in other public settings such as shopping or going out with friends.

*"[...] wir wollten irgendwann mal zusammen shoppen gehen und da hatte sie ein T-Shirt an und irgend' so'n Junge ist vorbei gekommen, der hat gesagt "Zieh das bloss wieder aus! Mit sowas kannst du nicht rumlaufen." Und dann war's ja... weil's ein bisschen enger war, weil das es nicht mehr in ihre Größe gab und das war ganz schön krank." (RA204, f, 14, low WBI, ¶36)*

*"Ja. Also jetzt... ich hab' jetzt wie gesagt noch nichts Großes in dem Sinne erlebt, aber ich hab's halt schon erlebt, dass ich mal, wenn ich durch Berlin gelaufen bin oder so... oder mit vielen Freunden unterwegs war, dass dann mal irgendwelche jugendlichen Jungs oder weiss ich gesagt haben "Ja... Guck mal! Die f... die ist aber fett!" oder "Guck mal die Dicke!" oder so." (NN277, f, 18, high WBI, ¶14)*

Two boys also mentioned being teased by peers while playing team sports such as football or hockey.

*"Et kommt zwar noch Bemerkungen wenn man jetzt Fußball oder euhm... Hockey spielt... "Ey Alter, du kannst dich hinlegen, dann brauchst du ja nüscht mehr machen." (NE322, m, 13, low WBI, ¶87)*

*"Also ich hatte mit meinen Freunden Fußball... euhm... also Fangen gespielt und da sind einfach die ganze Zeit so euhm... Schüler gekommen und haben uns da gesagt "Ja... Wenn du rennst, bebt die Erde" und sowas." (ZR003, m, 14, high WBI, ¶16)*

Most interviewees (seven out of ten) provided examples of overweight youth being stigmatized by schoolmates. In this respect, they mentioned being subjected to negative scrutiny, being called

names and receiving negative comments about their looks and intellectual abilities. One participant also suggested that the extent of weight-based teasing increased with age, so that violent confrontations with bullies could occur in higher grades.

*"[...] zum Beispiel in der Schule. Also wenn man dann auf den Schulhof geht und naja die anderen dann einen immer so komisch angucken und dann kommen auch schon so Sprüche "Ah, ist die fett" oder so "* (LH054, f, 14, high WBI, ¶6)

*"Naja, in meiner Klasse zum Beispiel gibt es auch einige Jungs, euhm... die mich man... meistens beleidigen. Euhm... deswegen muss euhm... einfach sagen, zum Beispiel wenn ich jetzt zum Beispiel in 'nem... in irgendeinem Fach besser bin als jemand, beleidigen die einen "Eh du Fettsack du hast... kannst das sowieso nicht in Wirklichkeit" oder sowas. "* (TL191, m, 13, high WBI, ¶12)

*"In der ersten, zweiten Klasse war das so nicht das Problem, aber dritte, vierte, fünfte - da fing es denn an. In der achten kommt's dann schon aus Spaß so mal zum Boxen oder irgendwas aber das nehme ich immer noch nicht.. "* (NE322, m, 13, low WBI, ¶26)

Furthermore, four adolescents also reported being the target of weight-related insults when they had arguments with others. At times, insults were a response to study participants insulting their peers themselves. Similarly, a participant emphasized that overweight individuals are not only victims, but can also perpetrate stigma themselves.

*"Also wir hatten uns mal mit Jungs gestritten...[...] Mit Freunden... Und meinte der eine zu mir, ja... "Die Berliner Mauer ist doch nicht gefallen, wie ich sehe" (lacht). "* (KL346, f, 16, high WBI, ¶6 – 8)

*"Oder zum Beispiel, wenn ich m... mit jemandem manchmal mich streite und ich ihn zum Beispiel beleidige, da weiss ich dann eben, dann beleidigen die mich auch mit... deswegen, dass ich dick bin. Zum Beispiel meistens mit eben Fettsack oder fettes Schwein oder sowas oder fette Sau, was auch immer. Ja, aber... "* (TN325, m, 13, high WBI, ¶8)

*"[...] es gibt doch Leute, die dann selber dick sind und beleidigen also, da ist ein nein und ein ja ja drinne. "* (NE322, m, 13, low WBI, ¶2)

Interviewees also reported discrimination against overweight youth from potential dating partners. In this sense, two male participants reported overweight as a disadvantage in finding a dating partner, as girls were thought to prefer slender boys. Moreover, another boy claimed to have become sceptical in relationships with the opposite sex after his former girlfriend insulted him because of his weight, yet managed to find a partner who does not have any problem with his being overweight.

*"[...] zum Beispiel wenn... wenn man zum Beispiel eine Freundin oder einen Freund finden will*

*euhm... und die halt natürlich auf dünnere Personen halt steht, dass die einen halt auch nicht mögen. Also ja... ” (TL191, m, 13, high WBI, ¶168)*

*“Wenn ich dünner wär', weiss ich, dass ich vielleicht ein bisschen mehr mit... Also ich hab' genug Freunde und so. Ich treff' mich auch mit Mädchen, ist doch kein Problem, aber ich mein', ich... wenn ich dünner wär', wär' ich vielleicht mal mit denen zusammen oder so, aber ich weiss es nicht. ” (TN325, m, 13, high WBI, ¶158)*

*“[...] Hauptsache heisst es nicht nachher, wenn wirklich mal jetzt Ende ist, ich bin so 'ne fette Sau und euhm... jedesmal wenn ich über die Straße komme, kommt 'ne Beleidigung ohnehin. Das war das letzte, was ich hatte, vor ein paar Jahren oder so. Es ist immer noch Thema, aber das ist, bei... bei diesen jemanden weiss ich wenigstens, das wird nicht passieren danach. Deswegen hab' ich mir aber auch am Anfang erst gedacht wegen dem Mistrauen, wegen dem schon was passiert ist, denk' ich erstmal drüber nach und frag' sie auch erstmal. Nicht denken, fragen gleich, weil nachher Misverständnisse und alles wieder. Darauf hab' ich auch keine Lust. ” (NE322, m, 13, low WBI, ¶137)*

*“Ich hab' eine Freundin und die ist dünn. Die hat auch nie mal ein Problem gehabt. Die... die hat mich von Anfang an eigentlich unterstützt und (..) war auch sehr positiv darüber überrascht, dass es so schnell ging. (..) Ja... und da war auch schon immer kein Problem eigentlich untereinander. ” (NE322, m, 13, low WBI, ¶73)*

### **4.3.2. Weight stigma management**

#### **4.3.2.1. Coping with direct stigmatization**

Study participants' examples of how they reacted to situations in which they or other overweight youth were stigmatized based on their weight covered affective (emotional impact), cognitive (rationalization), active (advocacy, immediate action) and social (seeking social support) dimensions, as illustrated below.

##### **4.3.2.1.1. Advocacy**

In general, interviewees expressed their disapproval of stigmatizing behaviours and reported actively taking a stand against weight stigma, as well as providing support to stigmatized peers. While one participant mentioned trying to raise awareness about potential overweight causes that lie beyond personal control, another interviewee tried to prevent weight stigma in his peer group through targeted friend selection.

*“Ich find's scheisse, weil ich bin ja selber dick und wenn ich denn sehe, dass sie über andere reden, dann sage ich ja auch schon meine Meinung. Es kann ja sein, dass sie krank sind, 'ne Krankheit hat. Weil die kennen ja die Person nicht, die wissen nicht was für Probleme hat. ” (KL346, f, 16,*

high WBI, ¶134)

*“Also meine Freundin, die ist auch übergewichtig und \*hustet\* in der Grundschule war das so, wir waren ja zusammen immer... und sie haben sie immer gehä... [...] Und die meinten immer... ja, die haben uns immer gemobbt und sie war immer tr... sie hat immer geheult, sie hat immer noch mehr gegessen. Und da meinte ich, "es ist doch egal", also ich hab sie immer aufgemuntert”* (KL346, f, 16, high WBI, ¶156)

*“Denn die unterstütze ich eigentlich damit, dass ich sage... "Nee" und wenn Dünne bei uns mit drinne kommen, dass sie die Fre... euhm... Fresse halten, auf Deutsch gesagt und keinen anmachen von der Seite. Dazu such' ich mir die Freunde aus, dass... da wo ich weiss, dass sie die Klappe halten und nicht, wenn irgendeiner mit irgend... irgendeiner Dicken zusammen und sagt "Die blöde Kuh! Die ist so fett", dass wir gleich wieder ein Problem in der Gruppe haben, denn alle stinksauer sind. Da such' ich mir bestimmte aus.”* (NE322, m, 13, low WBI, ¶75)

#### 4.3.2.1.2. Rationalization

At a cognitive level, interviewees were also asked whether they could understand why they were discriminated against. Although some adolescents could not find any justification for weight stigma, others rationalized it as an automatic consequence of being overweight.

*Q: Und kannst du nachvollziehen, warum dir die Leute das machen?*

*“Ja, weil ich übergewichtig bin. (...) Ja, weil ich bin halt fett. (lacht)”* (KL346, f, 16, high WBI, ¶21 – 22)

On the other hand, some interviewees believed that weight stigmatization occurred as a result of perpetrators' psychological characteristics such as intolerance or complexes (including feelings of superiority), their inability to find other flaws in their targets other than their weight, or simply because they found it funny. A boy even empathized with his bullies and suggested that he would also insult other peers because of their weight during an argument, yet not to a great extent, since he was aware of how hurtful weight stigmatization was.

*“Also ich denk' mal, die können einfach nicht jemanden so hinnehmen, wie er ist. Also manche haben damit halt Probleme... und ja...[...] Also jemanden so anzusehen...[...] und sich dann für 'was Besseres zu halten...”* (LH054, f, 14, high WBI, ¶14 – 18)

*“Irgend'nen paar Mädchen aus den höheren Klassen, die so irgendwie total... ich glaub' Komplexe hatten sie.”* (RA204, f, 14, low WBI, ¶12)

*“Naja, die haben... ich denk' mal, die meisten Leute haben gar keinen anderen Anhaltspunkt euhm... zum Beispiel mich runter zu machen, [...] wenn ich denn besser bin als die, haben die halt*

*auch nur den einzigen Anhaltspunkt, mich zu beleidigen. Was anderes fällt ihnen dann halt auch dabei nicht ein.” (TL191, m, 13, high WBI, ¶10)*

*“Ich weiss nicht. (...) Weil sie's witzig finden oder so. (...) So zum Beisp... ich weiss nicht genau. (...) Ja... (...) Eigentlich kann ich's nicht nachvollziehen, also...” (ZR003, m, 14, high WBI, ¶12)*

*“Naja, ich kann's nachvollziehen, dass, wenn sich Leute mit mir streiten, denen... und denen nichts besseres einfällt, würd' ich's auch sagen. Also ich weiss nicht, hört jetzt dumm an, aber, wenn ich mich mit jemand streite und der, sagen wir es mal, der disst mich die ganze Zeit, und ich sag dann, kann ich... was soll ich dann sagen? Ja, "Du fettes Schwein" oder so "sei mal leise". Ich weiss nicht so genau. Dann würd' ich... ich würd's jetzt, weil... weil ich selber schon weiss, wie es sich anfühlt, nicht unbedingt die ganze Zeit sagen, aber ich kann's eigentlich nachvollziehen.” (TN325, m, 13, high WBI, ¶120)*

#### 4.3.2.1.3. Emotional impact

Regarding the emotional impact of weight stigmatization, most participants described stigmatization experiences as hurtful. Additionally, two girls described stigmatization as making them feel uncomfortable or sad, while a boy reported feeling upset when being called names or being ridiculed by peers in public, particularly in the presence of girls.

*“[...] das fand ich schon verletzend.” (KL346, f, 16, high WBI, ¶8)*

*“Dann bin ich auch schon manchmal traurig darüber.” (KL346, f, 16, high WBI, ¶34)*

*“Also es tut schon dann in dem Moment weh.” (NN277, f, 18, high WBI, ¶4)*

*“Aber eigentlich ist es mir... so bei so... es regt mich nur zum Beispiel ein bisschen auf, wenn ganz viele dabei sind und der so laut sagt zum Beispiel Fett-Joe oder so (lachend) ein Scheiss. [...] dass die manchmal noch vor (unverständlich) Mädchen oder so dabei sind, dann noch darüber so lachen, das mag ich nicht so gerne” (TN325, m, 13, high WBI, ¶10 - 12)*

Otherwise some participants claimed that they were not affected by teasing or bullying in the sense that they did not take it personally, ignored it and sometimes laughed about it themselves. For one participant, this type of stigma management was an effect of getting used to being stigmatized.

*“Also ich bin eigentlich einer, der (..) nicht gleich... der findet's eigentlich lustig, wenn einer kommt "Ja, da ist der Dicke". Das ist für mich eigentlich kein Problem gewesen, noch nie” (NE322, m, 13, low WBI, ¶10)*

*“Es kam schon zu Auseinandersetzungen, aber sonst bin ich eigentlich immer ganz lustig geblieben, habe mitgelacht, weil ich meinte, das ist sinnlos, wenn ich da jetzt gegenan kämpfe [...] Also ich hab' mich sonst eigentlich damit nicht... ich hab's nicht persönlich genommen.”*



(NE322, m, 13, low WBI, ¶20)

*“Ich achte da nicht drauf, aber... Also weil mir ist das ga... eigentlich ganz schon egal, was die sagen und dann achte ich da nicht drauf und hör' auch nicht hin.”* (RA204, f, 14, low WBI, ¶8)

*“Aber das kommt auch einfach um... also ich hab's seitdem so oft gehört, es stört mich jetzt nicht mehr wirklich. Wenn jetzt zum Beispiel jemand sagt zu mir Fettsack oder zum Beispiel, wenn die mich anreden - Leute die mich nicht kennen - mit Fettsack oder Dickie oder so. Aber ich finde das jetzt nicht so schlimm.”* (TN325, m, 13, high WBI, ¶8)

In the case of one participant, being indifferent to stigmatizing behaviour was the reflection of a more general attitude towards others' perceptions and feelings about himself.

*“Das ist mir egal. [...] wenn ich jetzt zum Beispiel Blödsinn mache oder irgendwas Dusseliges, denk' ich so "Lass die anderen labern über mich, wenn die was denken, dann sollen sie es denken. Die sind selber nicht besser", egal ob sie nun besser oder nicht sind. Mir ist es eigentlich relativ egal und wenn ich auch... wenn ich denn auch wirklich nervig bin, ist mir das eigentlich auch egal.”* (NE322, m, 13, low WBI, ¶30)

#### 4.3.2.1.4. Personal reactions in stigmatizing situations

When asked how they reacted to stigmatizing situations, interviewees reported both passive and aggressive coping strategies. In this sense, some participants reported avoiding confrontation by walking away or even losing interest in participating in team sports. Some adolescents claimed that they generally ignored stigma perpetrators as a self-defense mechanism, in order to avoid further victimization.

*“Also me... meistens versuche ich die euhm... zu ignorieren und s... manchmal auch euhm... sag' ich halt "Ja, ja" oder "Lass mich in Ruhe" und gehe dann halt weg, aber es hilft ja nicht, weil die sind ja in meiner Klasse und die würden's... die machen das ja immer wieder.”* (TL191, m, 13, high WBI, ¶6)

*“[...] ja... da hatte ich irgendwie keine Lust mehr, mitzuspielen und so.”* (ZR003, m, 14, high WBI, ¶6)

*“[...] in dem Moment bin ich meistens immer so verletzt, dass ich denen das auch nicht zeigen will und dann mich auch nicht traue, irgendwas zu sagen. Weil, wenn... dann hab' ich auch meistens immer Angst, dass vielleicht noch... nochmal was zurück kommt, dass sie nochmal was sagen”* (NN277, f, 18, high WBI, ¶6)

On the other hand, some adolescents chose to confront stigmatization agents, mostly by insulting them. In response to such verbal retaliation, two participants reported that bullies either apologized

or ceased to engage in stigmatizing behaviour.

*"[...] ich war sehr aggressiv. Da habe ich ihn auch sehr zurück beleidigt [...] Ja, er meint... Er hat sich danach entschuldigt."* (KL346, f, 16, high WBI, ¶10)

*"Naja... dass ich den Leuten auch mal, wenn ich sie gesehen habe, alleine so den Takt angesagt hab', dass sie danach den Mund dann ganz klein hatten."* (NE322, m, 13, low WBI, ¶22)

*"[...] und bei der anderen hab' ich gesagt, dass sie nicht besser aussieht und dann hat sie sich umgedreht und ist gegangen."* (RA204, f, 14, low WBI, ¶16)

*"Entweder ich sag' 'Fällt dir nichts anderes ein, ausser dass ich dick bin?' [...]"* (TN325, m, 13, high WBI, ¶10)

Additionally, two boys reported reacting more violently to weight stigmatization, including readiness to use of physical aggression in self-defence.

*"Euhm... ich weiss nicht mehr genau. Also sie haben mich immer weiter beleidigt, da hab' ich euhm... mit einem... also ich... hatte ich fast mit einem Jungen gekämpft. Ja und dann wäre's fast zum Kampf gekommen mit dem. Also mit seinem Freund."* (ZR003, m, 14, high WBI, ¶8)

*"Wenn mir einer an die Wolle geht, dann ich kenn' genug Tricks. Ich dreh' den meisten Leuten, wenn sie mir hau... sch... Böse wollen die Arm... Arme um, leg ihn auf den Boden, lass den Lehrer den Rest machen. Das bringt ja nichts, wenn ich dem auch eine rein haue, nachher hat der ein blaues Auge und ich hab' gar nichts davon ausser 'nen Verweis."* (NE322, m, 13, low WBI, ¶26)

#### 4.3.2.1.5. Seeking social support

Most interviewees reported not discussing about weight stigmatization experiences with other people as a means of coping. While two participants simply stated that they had never brought up the issue in conversations with family members or peers, others claimed that weight stigmatization experiences did not bother them as much as to seek support from others.

*"Naja... ich... ich sprich ja eigentlich mit keinem drüber, weil... es ist jetzt nicht... nicht so schlimm, dass euhm...mich das irgendwie jetzt weiter oder schlimmer psychisch belasten würde."* (TL191, m, 13, high WBI, ¶8)

Only three girls and one boy talked about their weight stigmatization experiences with others. Among them, the majority did so with their parents, particularly with their mothers. Other interviewees mentioned talking about such situations with their friends and siblings or with peers who had experienced other types of discrimination. One participant also addressed the issue of weight stigmatization with health professionals in the study setting.

*"Meistens ist's mir unangenehm, drüber zu sprechen oder ich trau mich's auch nicht zu sagen,*

*aber ich sag's dann meistens meiner Mama und die fühlt dann auch mit.“ (NN277, f, 18, high WBI, ¶10)*

*“Also einmal war ich auf 'ne... so 'ne Reise mit meinem Basketball-Team. Da hat's mich irgendwie genervt, dass sie die ganze Zeit irgendwas gesagt haben, ich hab' vergessen, was sie gesagt haben, aber irgendwas mit Dickheit zu tun. Dann bin ich in einem anderen Zimmer und hab' geheult, da war ich traurig, habe mit irgendjemand geredet in meinem Team, der selber irgendwie gehänselt wurde, weil er... (..) Das war... mit wem war das denn? Weil er so klein war oder irgendjemand mit 'ner Hautkrankheit, ich weiss nicht mehr so genau.“ (TN325, m, 13, high WBI, ¶16)*

*“Ja. Auf jeden Fall. Also mit meinen Eltern zum Beispiel [...] und die haben mich ja dann auch da unter... unterstützt [...] ich denke mal, es gibt auch euhm... zum Beispiel diese Studie, die Kindern helfen können, dass sie halt das in den Griff bekommen, wo ich sehr dankbar für bin auch und ja...“ (LH054, f, 14, high WBI, ¶10 – 12)*

#### 4.3.2.2. Coping with overweight as a stigmatized identity

##### *4.3.2.2.1. Weight stigma internalization*

Given that overweight is a socially stigmatized attribute, most participants made implicit or explicit use of common negative stereotypes in relation to overweight individuals in general and with themselves in particular. In this respect, interviewed adolescents displayed a high degree of thin body ideal internalization, accordingly preferring a thin or slender body shape over being overweight, and generalizing this preference.

*“[...] jeder möchte dünn sein und schlank und 'ne angenehme Figur haben,” (LH054, f, 14, high WBI, ¶60)*

*“[...] ich würd' nur gern für mich selber verändern, weil ich's nicht so hübsch finde“ (RA204, f, 14, low WBI, ¶109)*

*“[...] also mein Wunsch wäre, dass man natürl... also ich jetzt schlank wäre und halt euhm... ganz normal aussehe. Also ich weiss nicht wa... was viele Leute unter normal verstehen, aber halt euhm... dass man ke... halt euhm... keinen ausgebeulten Bauch hat, das ist einfach... dass man einfach schlank ist.“ (TL191, m, 13, high WBI, ¶86)*

*“Also ich würde auf jeden Fall, wenn ich mich entscheiden könnte, denn oder dück... euhm... dick oder dünn, würd' ich auf jeden Fall dünn wählen. Oder wenigstens dünner.“ (TN325, m, 13, high WBI, ¶68)*

Moreover, interviewees themselves equated an overweight body to being unattractive and deviant and felt ashamed for their physical appearance. Mostly girls also mentioned worrying about what other people thought about them, as well as disliking or even chastising themselves for being overweight. Most participants did not feel comfortable being overweight and believed this was also the case for other overweight individuals.

*“Also wa... dass ich mich zum Beispiel da schlecht dadurch fühle oder dass... ob ich jetzt nicht ich selbst wäre dadurch. Also das stimmt schon, weil ich find', ich war mal 'ne Zeit lang noch... noch wesentlich dicker und da sah ich no... auch noch ganz anders aus. Mittlerweile... also ich sehe mittlerweile wieder auch noch anders aus, hab' ich euhm... meistens ich... schäm' ich mich dafür auch, weil euhm... ja, ich bin jetzt euhm... auch naja anders als alle andere und das ist... ich sch... deswegen schäm' ich mich einfach. (..) Und so... naja ich bin halt damit auch nicht zufrieden.”* (TL191, m, 13, high WBI, ¶121)

*“[...] weil ich mal mich selber runter mache [...] oder wenn wir einkaufen gehen, dann sage ich, ich muss mal die... über die Übergrößen-Abteilung gehen[...]. Also ich mache mich da immer selber runter.”*(KL346, f, 16, high WBI, ¶96)

*“[...] bei mir selber halt, wenn ich mich im Spiegel irgendwie so angeguckt hab', dass ich mich irgendwie selber angefangen hab', mit mir zu reden, was ich überhaupt... jetzt, wie ich aussehe.”* (LE223, f, 16, low WBI, ¶12)

*“[...] also mich bedrückt es schon, weil ich ja halt mein Gewicht nicht mag und ja... damit mag ich mich auch an sich nicht so wirklich, also ausser jetzt mein Charakter oder auch andere Sachen, die dann halt ausser mein Gewicht eine Rolle (lachend) spielen.”* (LH054, f, 14, high WBI, ¶139)

*“Also ich glaub' auch nicht, dass Leute... dass sich irgendjemand selber so wohlfühlen.”* (NN277, f, 18, high WBI, ¶128)

Internalized weight stigma also manifested at a subtle, implicit level, as some participants gave examples of overweight individuals' tendency to avoid stigmatizing situations such as looking for jobs or going swimming. Other adolescents additionally reported having avoided social interaction in general when they were more overweight, which ultimately resulted in social isolation.

*“Ich will mir jetzt so... Ich wollte mir schon öfter mal ein Minijob suchen, aber i... ich trau' mich selber halt nicht zu... richtig zu fragen.”* (NN277, f, 18, high WBI, ¶30)

*“Zum Beispiel im Schwimmbad... ist es keinen Nachteil, aber viele Dicke gehen auch nicht ins Schwimmbad, weil sie sich schämen zum Beispiel.”* (TN325, m, 13, high WBI, ¶62)

*“[...] vor der Therapie hier euhm... war ich sehr alleine für mich und hab' auch niemand an mich rangelassen und hatte eigentlich mehr Zeit für mich, sag' ich jetzt mal, um alles zu machen, und*

*seitdem... Also ich hatte keine Freunde sozusagen und jetzt ist es ja ganz anders.” (LH054, f, 14, high WBI, ¶149)*

#### 4.3.2.2.2. Overweight compensation

On the other hand, four interviewees could identify aspects which compensate for being overweight. In this respect, adolescents mentioned having a pretty face, being helpful, friendly, polite, honest, as well as being tall or having a good body posture as character or physical traits which at least partly atone for being overweight in the way they perceive themselves or are perceived by others. A male participant additionally reported actively trying to develop more skills (e.g. playing a music instrument or taking classes in electrotechnics) compared to his peers, as a way of achieving more social acknowledgment.

*“[...] wäre ich jetzt im Gesicht hässlich, dann würde ich mich noch schlechter fühlen.” (KL346, f, 16, high WBI, ¶120)*

*“Na klar... es ist immer mal so, also vielleicht bin ich halt vom Aus... also vielleicht bin ich ja dick, aber vielleicht bin ich ja auch ein hübsches Mädchen, also vielleicht finde ich mich ja selbst hübsch und das euhm... sehe ich als Vorteil halt.” (LE223, f, 16, low WBI, ¶30)*

*“Euhm... man kann auch eine gute Ausstrahlung haben. Euhm... auch vom charakterlichen immer nett sein und freundlich. Halt auch seine eigene Meinung haben, aber vor allen Dingen eigentlich auch ehrlich sein [...]” (LH054, f, 14, high WBI, ¶112)*

*“[...] ich denke, ich mach' auch mehr als jeder andere auch, weil zum Beispiel ich gehe auch öfters in einer... in einen Elektro-Kurs, w... wo ich halt auch Sachen so zusammenbaue, weil ich mich euhm... zum Beispiel sehr für Technik interessiere und euhm... zumi... andere Personen aus meiner Klasse ha... halt natürlich nicht und damit kann ich auch andere Leute so... zum Beispiel beeindrücken, ja? Wenn ich was kann, was sie nicht können. Und da passiert das halt auch meistens, dass sie dann neidisch auf mich werden oder sowas. Oder halt wenn ich euhm... Gitarre spiele oder sowas. Das hab' ich nämlich auch vor Kurzem angefangen hab' zu lernen.” (TL191, m, 13, high WBI, ¶142)*

#### 4.3.2.2.3. Agency and self-efficacy in losing weight

Another strategy of coping with being overweight mentioned by participants in the present study was taking action to lose weight, either independently or with the help of professionals and family members. In this sense, most interviewees emphasized the importance of personal agency in dealing with overweight and displayed relatively high levels of self-efficacy, which also translated in actual weight loss.

*"[...] auch ich alleine hab' angefangen, ja... "Das kann nicht so weiter gehen" und hab' mir dann gedacht "Ja, okay. Dann isst du das halt nicht und dann isst du lieber was Anderes, was Gesundes" und so... und dann hab' ich... euhm... war ich halt sehr unzufrieden und hab' mich dann auch hier an die Charité gewendet und hab' versucht halt, Hilfe mir zu holen, was dann auch gut geklappt hat."* (LH054, f, 14, high WBI, ¶156)

*"[...] auch wenn man übergewichtig ist, muss man ja trotzdem daran kämpfen, was zu machen so. Also nicht deswegen gleich aufgeben oder so und sagen "Nee, (lacht) will nicht mehr" (lacht)."* (RN101, m, 14, low WBI, ¶174)

*"Da muss ick eben dafür sorgen, dass ick eben regelmässig zum (lachend) Sport gehe. Man kann da nix mehr dafür tun. Man kann seine Eltern fragen. Wenn die Eltern nix machen, dann gibt's denn nur noch oft nur das Jugendamt. Oder die Schule, dass das Jugendamt einschaltet. Alles sowas."* (NE322, m, 13, low WBI, ¶157)

On the other hand, not being able to lose weight after attempting to do so was seen to elicit negative feelings of sadness, disappointment or anger.

*"[...] ich eigentlich relativ traurig, weil ich fett bin und ich kann nix... Also ich weiss es nicht, ich versuche mal alles, aber (..) es klappt irgendwie nicht."* (KL346, f, 16, high WBI, ¶198)

*"[...] die hat... die war wirklich ehrgeizig genug, denke ich mal, sie hat über 25 Kilo abgenommen und mittlerweile sieht sie aus wie ein Topmodel muss ich mal ehrlich sagen, aber da ist man schon (ein) bisschen so... neidisch, also dann möchte man genauso werden und dann ist man auf sich sauer halt, dass man das irgendwie nicht geschafft hat und dass... und traurig, weil... ja..."* (LE223, f, 16, low WBI, ¶128)

Participants also reported a wide range of positive effects of losing weight, such as increased self-confidence, a higher degree of satisfaction with their weight, use of more self-protective strategies of coping with weight stigma, as well as having more friends and being more popular among their peers.

*"[...] ich bin selbst noch nicht mit meinem Gewicht zufrieden, euhm... aber halt schon vorher jetzt. Da... also jetzt besser als davor (lacht)"* (LH054, f, 14, high WBI, ¶131)

*"Jetzt wird man halt angenommen und akzeptiert und keiner hat mehr so das Problem mit einem, wie man aussieht und man wird halt besser so angenommen, wie man ist und daher hat man dann auch mehr Freunde und kann dann auch sich mehr öffnen und Vertrauen auch zu anderen schliessen. [...] also wenn man danach an Gewicht... also eine körperliche Veränderung hat, ist es ja auch halt schöner anzusehen und innerlich ist man ja dann auch ver... viel auf... eh.."*

*aufgeschlossener und selbstbewusster und hat halt mehr Anschluss zu den anderen.*” (LH054, f, 14, high WBI, ¶149 – 151)

*“Manchmal hört man das zwar immer noch so [Beleidigungen], aber es ist nicht mehr so schlimm und man das jetzt auch für einen selber akzeptieren, also man hört dann auch gar nicht mehr da drauf [...]”* (LH054, f, 14, high WBI, ¶153)

*“Also ich sag' so mit (unverständlich), die Freunde, die ich hab', sind zum Grössteil von anderen Leuten euhm... schlechter bewerteten Personen also zum Beispiel quasi die Aussenseiter. Aber euhm.. i... in letzter Zeit hab' ich ja auch etwas mehr abgenommen, also ich nehm' immer mehr ab. Euhm... und jetzt gesell' ich mich mehr au... auch zu den euhm... beliebteren Schülern. Also ja... Also ich hab' halt, wo ich übergewichtig war, mehr zu den Unbeliebten gehört. Also jetzt langsam ändert sich das.”* (TL191, m, 13, high WBI, ¶46)

#### 4.3.2.2.4. Identity negation

Only one example of identity negation was provided, i.e. a peer not accepting her identity and not being open about it in public.

*“[...] ich hab'... kenn' auch eine Person von denen, die versucht immer vor anderen Leuten euhm... ihr Übergewicht euhm... zu.. zu unterdrücken. Also wenn jetzt andere Leute fragen, warum man jetzt zu viel wiegt oder was man isst, denn euhm... euhm... lügt sie meistens rum. Also das ist dann me... meistens gesponnen oder d... weiss ich...”* (TL191, m, 13, high WBI, ¶60)

### 4.3.3. Social network

As part of the interview, study participants were asked about their social network, with the aim of gaining insight into their access to social support. More precisely, adolescents reported on their main social contacts, their peer group composition, the extent to which they felt integrated in their peer group and the activities they commonly engaged in with their friends.

#### 4.3.3.1. Main social contacts

Most adolescents reported that they spent most of their spare time with their friends, while family members were the main social contacts for only two interviewees. Overall, four study participants mentioned both friends and family as their main social contacts, whereas these two networks partially overlapped in the case of one adolescent, who often spent time with her brother and his friends. Three participants also mentioned their classmates as spare time companions, while two adolescents dedicated significant amounts of their free time to their hobbies (e.g. dancing, playing basketball).

*“Euhm... ich... also... euhm... mit meinen beiden besten Freunden oder meinem besten Freund.*

*Sonst mit Klassenkameraden. Dann bin ich... (..) Ja, also ich hab' eigentlich viele Freunde oder ich bin mit meinem Bruder unterwegs und Freunden von ihm... und Leute auf meiner Schule eigentlich... ” (RA204, f, 14, low WBI, ¶51)*

*“Also am meisten euhm... würd' ich... also eigentlich mit meinen Eltern, weil die euhm... w... beziehungsweise mit meinem kleinen Bruder, der jetzt 2 Jahre alt ist. Der geht jetzt häufig auf den Spielplatz euhm... wir haben auch ein groß... euhm... in der Nähe gleich drei große Fußballfelder euhm... und mit dem gehen wir meistens auf den Fußballfeld und rennen da rum und euhm... haben auch meistens 'nen Ball dabei... Euhm... Aber mit Freunden aus meiner Klasse... treff' ich mich meistens mit euhm... einem Klassenkamerad... euhm... treffen wir uns und euhm... zocken manchmal was. Euhm... und mit einen, dem... mit dem gehe ich meistens raus und mach' ein paar verrückte Sachen. ” (TL191, m, 13, high WBI, ¶42)*

*“Ich mach' Sport dreimal die Woche, geh' auch regelmässig hin. Ich spiel' Basketball... Dann meine andere Freizeit verbring' ich mit Freunden zum Beispiel. ” (TN325, m, 13, high WBI, ¶70)*

#### 4.3.3.2. Peer group

##### 4.3.3.2.1. Gender structure

Regarding the gender composition of their peer group, three girls claimed that there was a balance between the number of boys and girls among their peers. Whether they were surrounded by more boys or more girls depended on the context or on the pursued activity for two girls and two boys.

*“Also, wenn ich mich verabrede, dann [...] mit Jungen [...] aber so mit Mädchen ist es denn mehr so zufällig und in der Klasse und so. ” (TL191, m, 13, high WBI, ¶50 - 54)*

*“Beides ist gleich, aber es kommt immer drauf an. Also manchmal bin ich mit mehr Jungs draussen, manchmal mit mehr Mädchen aber, ja...[...] Setzt sich gleichermassen zusammen. ” (LH054, f, 14, high WBI, ¶72 – 74)*

On the other hand, two girls of Turkish ethnicity suggested that, despite also having male friends, there were more girls than boys in their peer group.

*“Mehr Mädchen, aber auch Jungs. Also gemischt. Aber eher Mädchen. ” (KL346, f, 16, high WBI, ¶66)*

*“Jungen gibt es auch, aber mehr Mädchen halt. Weil ich mich, also (.) mich besser verstehe denke ich mal (lacht). ” (LE223, f, 16, low WBI, ¶50)*

Among boys, three participants had more male than female friends. Moreover, two boys expressed their preference for female friends, since they were perceived as being receptive to their ideas, more tolerant, less discriminating and good listeners. In contrast, a boy claimed that his male peers had a



more rejecting attitude and he did not share their interests.

*“Viel mehr Jungs. Also fast gar kein Mädchen. (..) Nur... Ich glaub' nur eins... eine oder zwei.”* (ZR003, m, 14, high WBI, ¶43)

*“Also euhm... die Mädchen in mei... in meinem Jahrgang sind eigentlich euhm... alle freundlich. Ich wei... also ich bin... also ich weiss nicht wieso, aber es war schon mal anders. Also all... alle Mädchen sind freundlich, also (..) die sehen mich jetzt nicht negativ oder so, als ob das... irgendwas schlecht an mir ist. Also zum Beispiel auch in Pausen, wenn die dann meistens euhm... die sitzen meistens in der Mensa und q... quatschen denn miteinander euhm... und immer, wenn man denn da vorbei geht euhm... dann beleidigen die einen auch nicht, aber oft wenn... mit denen kann man auch reden und so.”* (TL191, m, 13, high WBI, ¶48)

*“\*Seufzt\* Ich bin eher bei... unter Mädchen. Warum weiss ich auch nicht. Schon immer, weil Jungs, die... die powern so rein wie... sind die ganze Zeit nur am Labern, Rauchen... Es ist noch nie meins gewesen und gerade bei Mädchen komm' ich gut an, weil ich die Ideen habe.”* (NE322, m, 13, low WBI, ¶67)

#### 4.3.3.2.2. Overweight peers

During the interview, participants were asked whether there were other overweight youth in their peer group and whether weight was a criterion they used when choosing their friends. Regarding the first question, most interviewed adolescents reported having only few overweight peers, some even claiming that they only had one overweight friend or that they were the most overweight in their peer group. At the two extremes, a girl suggested that she was the only overweight young person in her social environment, whereas a boy claimed to have many overweight friends.

*“Hm... ein paar. Aber nicht viel. Die meisten sind ja so normalgewichtig. (..) Aber so viele Übergewichtige gibt's nicht also... in meinem... (unverständlich) Freundeskreis.”* (ZR003, m, 14, high WBI, ¶51)

*“Ja, sehr viele sogar.”* (NE322, m, 13, low WBI, ¶75)

*“Nein, eigentlich nicht. Mhm (verneinend) Ich bin die einzige. (lacht)”* (NN277, f, 18, high WBI, ¶54)

Furthermore, nine out of ten interviewees claimed that they did not choose their friends according to their weight status, although one girl claimed she felt more at ease being around other overweight youth. Other female participants emphasized the variety of body sizes in their peer group and suggested character traits such as sense of humour or similar interests to be more important criteria based on which friendships developed. Moreover, both a male and a female participant underscored

the fact that after having experienced social marginalization themselves, they did not wish to perpetrate similar behaviours against others.

*“Nee, aber bei dicken Freunden fühle ich mich wohler. Also ich... ich weiss nicht. Wenn ich so dicke Leute sehe, dann fühle ich mich wohler (..) mit denen zusammen.” (KL346, f, 16, high WBI, ¶ 70)*

*“Nee, gar nicht. Ich hab's eher... ich hab' eine Freundin, die ist zum Beispiel magersüchtig, aber ich hab' halt auch Freunde, die noch dicker sind als ich und das stört mich überhaupt gar nicht und den stört das irgendwie auch gar nicht. Es kommt meist auf den Charakter an, denke ich mir mal. Wenn du einen lustiger Typ bist, dann versteht man sich auch so. Also, außer auf den Aussehen zu achten.” (LE223, f, 16, low WBI, ¶ 54)*

*“Nein [...] Also mir ist es egal, ob sie dicker oder dünner sind... [...] weil ich war früher auch so und daher habe ich dann auch gelernt, die Leute so zu nehmen, wie sie sind und ja... mir sch... also für mich spielt das keine Rolle.” (LH054, f, 14, high WBI, ¶ 76 – 80)*

*“[...] eigentlich überhaupt nicht, weil euhm... ich meine, ich werde ja eigentlich benachteiligt und denn, find' ich, dass ich n... nicht noch... noch wählerischer sein sollte und a... andere Personen euhm... doch schlechter machen sollte, weil euhm... ich so... ich sollte ja eigentlich beliebter sein, ja? Und das... euhm... also ich... wenn ich halt zu den Unbeliebten gehöre, dann sollt' ich halt euhm... mich so qu... so... quasi so anpassen,” (TL191, m, 13, high WBI, ¶ 58)*

*“[...] also mir persönlich ist es ganz egal, wie meine Freunde aussehen. Hauptsache ich guck' auch nicht aufs Aussehen bei meinen Freunden. Wir haben uns einfach so kennen gelernt halt, so dass wir glei... uns gleich sympathisch waren und halt auf der gleichen Wellenlänge und auch die gleichen Interessen hatten. Also... nee, da hat das Aussehen oder... also von meiner Seite her gar keine Rolle gespielt oder (lacht)... was sie tun oder... (lacht)” (NN277, f, 18, high WBI, ¶ 52)*

In contrast, weight was a criterion for choosing friends in the case of a boy who preferred being around thin girls, especially in public, as he thought overweight girls were often unattractive.

*“Also wenn ich ganz ehrlich bin, ist es so, dass es bei Mädchen... hab' ich schon lieber mit... Also weil... öfters sind dicke Mädchen ziemlich hässlich, musste ich jetzt einfach so sagen... es gibt auch Schöne, aber ich bin lieber mit (..) dünneren Mädchen oder normalen Mädchen unterwegs, sag' ich mal jetzt. Also, wenn ich jetzt zum Beispiel... wenn sie zu mir kommt oder so, ich bei ihr bin oder so... dann ist es mir egal, wie sie aussieht, aber wenn ich zum (lachend) Beispiel mit ihr draussen rumlaufe... mit meinen Freunden auch meine anderen Freunde rausgehe, dann find' ich schon... Naja, es kommt drauf an eigentlich, wie sie aussieht. Nicht, ob sie dick oder dünn ist. Also meist... doch, eigentlich schon.” (TN325, m, 13, high WBI, ¶ 74)*

#### 4.3.3.2.3. Peer group integration

Another set of questions in the interview guide focused on the extent to which adolescents felt accepted in their peer group, whether they could actively contribute to making group decisions, as well as the most frequent activities they undertook together with their friends. In this respect, the majority of adolescents (seven out of ten) in the present study felt that their friends accepted and valued them for who they were. A girl even claimed to be a role model for her peers, allegedly because of her more mature character.

*“Weil die sehen mich als meistens auch Vorbild eigentlich, vielleicht weil sie junger sind oder auch wenn sie älter sind halt, dass sie mich, mein Charakter halt älter schätzen. Also mich selber Cha... älter schätzen, da mein Charakter anders ist.” (LE223, f, 16, low WBI, ¶170)*

*“Also meine Freunde geben mir die... geben mir nie das Gefühl irgendwie, dass ich anders als sie bin. Also... daran würde man jetzt nie merken, dass ich übergewichtig bin oder... Also nee... die... da bin ich total integriert. Die geben mir überhaupt nicht das Gefühl, dass ich irgendwie anders wär' als sie oder... Ja... (lacht)” (NN277, f, 18, high WBI, ¶160)*

Although they generally felt accepted and valued by their friends, two boys experienced some degree of marginalization by being part of a less popular group or by being regularly teased in certain situations (i.e. in the presence of girls).

*“Also, hm... jetzt bei meinen... bei meinen Freunden würd' ich sagen euhm... vor einiger Zeit war's ja noch schlimmer. Da würd' ich sagen, dass nur die Freunde, mit denen ich jetzt befreundet war, mit denen ich was zu tun hatte, dass euhm... die mich halt toll fanden, weil... also weil ich mit denen auch halt viel gemacht hab' und sie hatten auch selber nicht wirklich viele anderen Freunde hatten und das euhm...” (TL191, m, 13, high WBI, ¶164)*

*“[...] es würde bis auf die Mädchen vielleicht kein... also bis... sagen wir jetzt mal so mit rummachen oder so'n Scheiss euhm... würd's kein Unterschied machen, ob ich dick oder dünn bin bei meinen Freunden. Ich glaub' es ist ihnen ziemlich egal, weil (..) ich mag die auch so und... ich bin ja trotzdem genauso wie wenn ich dünn wär', weil ich mache mein Sport, ich chill' draussen... Also wenn ich dünn wäre, würd' ich nichts anderes machen. Also ich mach eigentlich alles so genau.” (TN325, m, 13, high WBI, ¶ 90)*

The most extreme case was that of a boy who reported being excluded because he was new in a group, because he had unattractive friends or because others took offence in his jokes. In response, the same participant claimed that he tried to protect new group members against social exclusion.

*“Ist man neu, ist man das Arsch noch (lacht). Wenn man neu in der Gruppe ist. Ich bin ja durch*

*die drei Jahre lang, die ich weg war aus der Stadt... woanders eben wohnen, da ist's ... kommt man dann nach drei Jahren wieder und auf einmal ist's Abstoßen pur da. "Was ist das für 'nen Vollpfosten, der da kommt?" und jetzt habe ich mich in... (unverständlich) jetzt im halben Jahr soweit aufgebaut, dass ich jetzt nicht mehr derjenige bin, der die anderen anleitet zu sagen, "Guckt mal, der Neue ist 'nen Vollpfosten" sondern "Guckt mal, der Neue, der... wäre gut, dass war den mit aufnehmen, dass der nicht so allein da steht.""* (NE322, m, 13, low WBI, ¶79)

*"Da ist... immer da gewesen, immer wenn ich ein paar Leute hatte, die mich unterstützen, reichte mir das aus. Im Moment war ich in der Klasse, nicht weil ich dick bin, sondern weil ich mich ja ausserhalb mit einer Hässlichen zusammen bin, euhm sozusagen hab', wenn man auch was Falsches sagt zum Beispiel wie ick det jetan habe aus Spaß, heisst et dann wirklich... da denken die alle ick mein' et ernst und... hätt' ich da drei Leute, die mich unterstützen, dann würde das schon gar nicht... euhm... ganz anders aussehen."* (NE322, m, 13, low WBI, ¶85)

Most study participants also felt that they could actively contribute to making decisions about common activities in their peer group, some even claiming that their opinions were highly valued or that they were often the ones who made activity suggestions in their peer group.

*"Ja, na klar. Die fragen mich auch ja, ob wir das und das machen oder so halt, ja. Also auf jeden Fall."* (NN277, f, 18, high WBI, ¶62)

*"Also, das ist immer so. Zum Beispiel jetzt wir wollten, wir gehen ja immer aus, jedes Wochenende... denn zum Beispiel wir wollten jetzt letzte Woche Schlittschuh fahren - da hatte ich die Idee, dass wir ein bisschen Schlittschuh fahren gehen, weil das mal was anderes wär', [...] weil wir gehen immer ins Café, ins Restaurant... Ja, also wir entscheiden immer so. Aber sonst habe ich immer die Ideen."* (KL346, f, 16, high WBI, ¶88 – 90)

*"Euhm... Naja, also ich glaube, wenn ich mit meinen Freunden unterwegs bin, (lachend) dreht sich das meiste um mich, weil, wenn ich mit denen unterwegs bin, also meine beste Freundin fragt mich halt jeden Tag, ob ich mit ihr weg gehe und auch wenn ich... auf was ich Bock hab' und alles und... ich glaub' so alle mit denen ich so befreundet bin fragen halt total oft, ob ich mit denen weg gehe und auf was ich Lust hab' und so. Oder auch meine Meinung zu irgendwelchen Sachen so beim Shoppen oder mit wem sie ausgehen soll und so... so Sachen."* (RA204, f, 14, low WBI, ¶77)

Adolescents generally describe a collective decision making process characterized by a tolerant climate, in which individual opinions are accepted and taken into account.

*"Weil wir besprechen uns so immer also pro und contra, was wir jetzt machen, was nicht, was*

*die anderen wollen” (KL346, f, 16, high WBI, ¶194)*

*“Also euhm... wenn ei... also wenn jemand einen Vorschlag macht, was man jetzt machen könnte, dann guckt man halt's ja... fällt einem noch was anderes ein und wenn halt nicht, dann nimm... wird der Vorschlag halt euhm... akzeptiert oder sonst spricht man einfach darüber und dann lassen... lassen... eeeh... lässt man entscheiden, was halt am besten ist. Also was Spaß macht und ja...” (LH054, f, 14, high WBI, ¶194)*

Only one male participant took on the role of group leader and preferred making decisions by himself. Two boys additionally mentioned that decisions about peer group activities were not spontaneous, but made in advance, for instance over the telephone.

*“Mit mir alleine. Warum ist's nicht weil ich jetzt übergewichtig war, sondern weil ich mir die Freunde gesucht habe, die was können. Ich bin noch eigentlich derjenige, der überall in Bruchhäusern rumrennt [...] allgemein in allen Häusern, die so schön aussehen und die nicht ganz zusammen fallen, aber noch halten als Clubhaus und wenn ich dann, wenn ick mein... mein Club aufgebaut hab', dass ich mir dann die Leute hole vielleicht oder... Weil wenn ich gleich mit allen Leuten losgehe ist das immer ein Lärm, es ist immer ein... wenn man was sagt, dann heisst es "Nee... Ver... du Spielverderber". Nee... da... da bin ich lieber... Spielverderber und mach' alles alleine erstmal und dann suche ich mir die Freunde, wo ich dann schön kann mit denen euhm... [...] Ich bin nunmehr gerne der Boss auch... egal wo, aber ist es schon immer... ich bin eben immer gut angekommen mit bestimmen, weil ich bin ein Gerechter und nicht derjenige, der die Leute, die er leiden kann... gibt er sowas und dem Rest "Haut ab!". Nee... dat ist denn... kriegt entweder jar keener wat oder alle etwas.” (NE322, m, 13, low WBI, ¶165)*

*“Also wenn ich jetz... mich jetzt zum Beispiel mit einem Klassenkamerad treffe, dann euhm... en... entscheiden wir das schon vorher, was wir eigentlich machen und danach gehen wir meistens dann nach Hause oder sp... zocken noch irgendwas aber so wirklich bestimmen... denn ruft der eine den andere an, also weiss ich, ob ich das bin oder jemand anders euhm... dass wir uns gegenseitig anrufen, es wird ja eigentlich immer v... euhm... vorher bestimmt. Also ist es jetzt nicht, dass wir so uns treffen und dann irgendwas entscheiden. So ist das eigentlich nicht.” (TL191, m, 13, high WBI, ¶166)*

The most frequently mentioned spare time activities in which the interviewed adolescents engaged together with their friends were being physically active (e.g. riding the bike, walking, playing football, bowling, swimming, etc.), as well as meeting up, relaxing and talking, or going to the cinema. Only one female and one male participant did not mention practicing any physical activity together with

their peers. Three participants mentioned partying or going to the disco, while another three participants reported using media such as watching television or playing video games in their spare time. Going shopping was reported as a frequent free time activity by three girls.

*“Also wir gehen in Cafés, Restaurants, Kino, Bowling, Schlittschuh fahren (..) ja... (lachend) spazieren, schwimmen, ja... einkaufen (lacht)” (KL346, f, 16, high WBI, ¶176)*

*“Also entweder laufen wir draussen 'rum (lacht) oder sind halt euhm... beim Tanzen... Also ich hab' auch Leichtathletik gemacht und also Turnen. Da war ich dann auch halt mit denen zusammen oder es kommt immer darauf an. Also manchmal sind wir auch ins Kino gegangen, was dann nicht so oft war, (unverständlich). Aber die meiste Zeit verbringen wir einfach draussen, laufen ein bisschen 'rum und (lachend) reden.” (LH054, f, 14, high WBI, ¶186)*

*“Also meistens, naja, wie schon gesagt, Skateboard fahren euhm... mein... meine Kumpels haben auch meistens einen Roller oder wir fahren Waveboard und euhm... wo ich jetzt mit meinen Freunden war, haben wir uns immer Fußball angesehen und euhm... haben danach Fußball gespielt. Also ist... ich denk' mal, das ist so das Normale, was man tut als Freund.” (TL191, m, 13, high WBI, ¶162)*

#### **4.3.4. Body image**

A series of questions on overweight adolescents' body image was included in the interview guide, addressing issues such as personal physical traits which interviewees would or would not want to change, their perception of ideal body characteristics and their reference guide in this respect. Moreover, their body-related locus of control beliefs were targeted by questions on whether and how one could influence one's physical appearance.

##### **4.3.4.1. Participants' evaluation of their own bodies**

As a means of exploring their body perception, interviewed adolescents were asked to identify aspects of their bodies which they wished to be different and also aspects which they would not want to change. Accordingly, although three adolescents mentioned that the main physical change they wanted to achieve was losing weight, nine out of ten study participants wanted to have a slimmer stomach and half of the interviewees wished they had thinner legs. In this respect, two girls indicated their thighs as an area from which they wanted to lose weight. Three participants wanted to have thinner arms, whereas another two girls and one boy wished that their breasts looked different. More precisely, a girl wanted to have larger breasts, while another girl and a boy wished that their breasts were smaller. For the male participant, this area was particularly problematic, as it was a frequent ground for being teased and bullied by his peers. One boy wished he had a straighter

body posture and claimed he wanted to lose weight because he had musculoskeletal pain, while another male interviewee would have preferred a more toned body shape. Overall, the extent to which adolescents in the present study wanted to look differently covered a broad spectrum from only wanting to lose weight to striving for changes in most body areas.

*“Ja. Euhm... (..) (lachend) na klar möchte ich das (lacht). Ja, vielleicht in den (lachend) Oberschenkeln irgendwie was oder (..) Bauch, weiss ich... [...] Also halt nur ein bisschen vom Unterkörper so'n bisschen abnehmen.” (LE223, f, 16, low WBI, ¶184)*

*“Euhm... Also ich würde verändern auf jeden Fall, dass ich noch mit dem Gewicht runter komme, dass vielleicht euhm... dass meine Beine ein bisschen dünner sind und euhm... meinen Bauch auch. Euhm... ja, sonst habe ich gar nicht so viel Brust, sag' ich jetzt mal. Das möchte ich auch noch ein bisschen verändern. Ja... aber sonst eigentlich bin ich mit alledem zufrieden.” (LH054, f, 14, high WBI, ¶102)*

*“Es geht bis...[...] darum, dass die Knochen... Sonst würd' ich sagen, dass da... so wie es jetzt ist, ist in Ordnung. Nicht dicker, nicht dünner, aber im Moment tut mir auch noch ein bisschen was weh. Also da ist noch... Ein kleiner Spielraum ist da noch offen... also so an die 12 Kilo könnten noch mal runter, dass ich auf die sechziger auch normaler bin.” (NE322, m, 13, low WBI, ¶105 - 107)*

*“Ach... Weiss ich was... Die Wampe soll weg. Es ist, sagen wir so... Die Körperhaltung. Ick war... Ick immer so ein bisschen wa... durch Jewicht ooch den ganzen Tag lang oder so nach dem Sport. Denn nachher, wo man übt, wo (unverständlich) konnte ich mich ooch gerade machen, aber dat ist durch det ooch noch wieder auch wieder schwierig.” (NE322, m, 13, low WBI, ¶119)*

*“Also verändern würd' ich halt gerne... Auf jeden Fall mein Bauch würd' ich gerne schlanker haben und meine Oberschenkel, meine Arme vielleicht etwas. Ja... also... Ja... Meine Brust auf jeden Fall... Die hätt' ich auch (lachend) gerne viel kleiner und ja... mein Gesicht ein wenig schmaler. (lacht) Also ja... rundum Paket eigentlich (lacht).” (NN277, f, 18, high WBI, ¶96)*

*“Arme, Bauch und Rücken. (lacht) Also eigentlich will ich so (..) breit sein so. Nicht so Bauch...[...] so doll haben aber der halt den durchtrainiert ist so. Also was heisst durchtrainiert? Nicht zu doll, aber halt so... Kraft und so. (lacht)” (RN101, m, 14, low WBI, ¶106 – 108)*

*“Euhm... (..) mich regt auf jeden Fall meinen Bauch auf, dass er so dick ist. Dann euhm... meine Busen. Die regen mich am allermeisten auf, weil ich mit denen auch ziemlich... also ziemlich oft, sag' ich mal, gehänselt werde. Zum Beispiel, wenn ich jetzt irgendwie so'n enges T-Shirt oder so an habe, "Du hast doch voll die Brüste" oder so. Ist zwar auch so, aber ich... die hätte ich auf jeden Fall am liebsten weg. Oder dass dann fassen es manchmal welche an. Ich hasse das. Und*

*sonst meine Beine nerven auch ein bisschen, weil ich nicht so viele Hosen finde, die mir so gut passen. Immer mit Jogginghose hoch zu laufen nervt auch (lacht) ein bisschen. Ja und sonst... meine Beine... Ja eben Bauch, Beine, Po (lacht)."* (TN325, m, 13, high WBI, ¶114)

*"Alles. Also so das Gewicht soll weg, aber sonst eigentlich nix."* (ZR003, m, 14, high WBI, ¶73)

On the other hand, most interviewees (seven out of ten) did not wish to change their face in general or certain facial features such as their eyes, mouth or their hair, as some implied that these were the physical characteristics they most liked about their looks. A girl even suggested she did not want to undertake any changes in her upper body as a whole, while another female participant also would not want to change her hands and feet. A boy claimed that the only thing he would not want to change about his body was his sex. Consistent with his answer to the previous question, another male interviewee claimed he wanted his body to remain as it was, with the exception of the extra weight.

*"Mein Gesicht (lacht). [...] Ich weiss nicht, also ich find' das schönste an mir, an meinem Körper, mein Gesicht irgendwie."* (KL346, f, 16, high WBI, ¶118-120)

*"Ja, auf jeden Fall mein Lächeln. Also (lacht) meine Zähne sozusagen. Euhm... ja und meine Augen und meine Haare."* (LH054, f, 14, high WBI, ¶104)

*"Ja... Also vielleicht meine Augen mag ich eigentlich ganz gerne, meinen Mund, meine Haare (lacht). Ja... das sind dann halt so die Dinge... Meine Hände, meine Füße (lacht). Das wären so Dinge, die ich nicht verändern würde. Ja... (lacht)"* (NN277, f, 18, high WBI, ¶98)

*"Also, euhm... da fällt mir jetzt nicht... nicht wirklich was ein. Auf jeden Fall euhm... ich würde gerne männlich bleiben, ja. [...] Also, was anderes find' ich jetzt nicht, was ich jetzt behalten würde."* (TL191, m, 13, high WBI, ¶94 – 100)

*"Alles. Nur will ich bloss euhm... also das Gewicht nervt mich schon, aber sonst eigentlich nix."* (ZR003, m, 14, high WBI, ¶75)

A male participant did not answer this question, as he claimed not to place much value on physical appearance other than hygiene and suggested that inner values were more important and more difficult to change.

*"Veränderungen sind ja nicht das, was euhm... Sind ja meistens, dass die äusserlichen... Die innerlichen sind euhm... 48 Mal so schwer zu ändern als äusserliche."* (NE322, m, 13, low WBI, ¶109)

*"Was würd' ich jetzt verändern an mir aus... am Äusserlichen ist mir eigentlich ooch egal. Hauptsache ich sehe nicht aus wie die anderen, die mit sich euhm... zweimal in der Woche*



*waschen und schon grüne Jesichter haben (unverständlich). So mein' ich das jetzt. Sonst nee...*” (NE322, m, 13, low WBI, ¶115)

#### 4.3.4.2. Ideal body image

Interviewees were also asked to describe features of an ideal body, as well as to name the reference guides or role models that influenced their perception in this respect. In terms of ideal body features, half of the interviewed adolescents emphasized the relative nature of an ideal body, claiming that it was a matter of taste, which could not be generalized and that a person's attractiveness could only be judged as a whole.

*“Also jeder Mensch ist zwar anders, aber (...) Also jeder man hat das eigene Geschmack, würde ich sagen.”* (KL346, f, 16, high WBI, ¶128)

*“Hmmm... (..) weiss ich nicht. Also eigentlich liegt ja Schönheit in dem Auge des Betrachters. Also das ist schwer zu sagen.”* (NN277, f, 18, high WBI, ¶100)

*“[...] kommt so auf de... kommt so eigentlich auf den Menschen an, wie er so... so... so... komplett aussieht. Weil es gibt ja auch Leute, die nicht schlank sind und total hübsch sind und es gibt halt welche, die nicht schlank sind und nicht gut aussehen. Aber es gibt aber auch welche, die total schlank sind, wo man denkt "Mein Gott! Lauf wegen einer weiter eigentlich". Und es gibt welche, die schlank sind, wo du sagst "Ich hab' meine Traumfrau gefunden", aber...”* (RA204, f, 14, low WBI, ¶99)

However, all interviewees could give examples of features defining an attractive body according to their preferences or what they thought that others considered attractive. In this context, some of the features mentioned by the study participants were general and referred to both boys and girls. Such an example was having a “normal” weight, described by most participants as being neither too fat, nor too thin, or as having a well-proportioned body shape. In this sense, adolescents of both genders mentioned a slim abdomen as a physically attractive body feature. Other general characteristics of an attractive body were slim legs, a “friendly” or “pretty” face with bright eyes and a “nice” or “beautiful” smile, as well as firm skin.

*“Also die Figur muss stimmen. Also Beine, Arme und Bauch, Po, Brüste [...] Ja, das sollte nicht zu dick [...] und nicht zu dünn sein. Also normal.”* (KL346, f, 16, high WBI, ¶124 – 128)

*“Dass zum Beispiel Brustbereich... [...] und hier die Oberschenkel identisch sind, also gleich sind und vielleicht, dass im Bauchbereich ein bisschen... euhm (..) es dünner liegt halt, dass es...[...] ein bisschen eine schöne Form hat, ja.”* (LE223, f, 16, low WBI, ¶96 – 100)

*“Also euhm... halt (..) straffe Haut, würd' ich jetzt sagen, euhm... natürlich auch... auch schlank,*

*dass man jetzt keine... ausgebeulten Bauch hat, dass zum Beispiel wenn man ein... einen T-shirt hat und das ziemlich eng ist zum Beispiel, dass das euhm... so quasi angepasst und gerade ist und also, dass man halt nicht den... nicht den aus... den Bauch denn sieht oder so und euhm... zum Beispiel, dass auch seinen Hosen passen oder so, dass man nicht so große Oberschenkel oder so hat, ist wie so'n... also, dass man so allgemein euhm... so ziemlich gerade ist sozusagen."* (TL191, m, 13, high WBI, ¶102)

*"Also ich mag zum Beispiel an Leute, wenn sie ein schönes Lachen haben. Ja... wenn sie eben strahlende Augen haben, also das ist was eigentlich mich... mir an einem Menschen am besten gefällt. Also am meisten finde ich, dass euhm... schön wenn Leute ein nettes Lächeln haben, weil das ist für mich eigentlich, sag' ich mal, am sympathischsten oder am attraktivsten. Also das ist das, was mir eigentlich an einem Menschen am besten gefällt, wenn er ein nettes Lachen hat (lacht). [...] Freundliches Gesicht..."* (NN277, f, 18, high WBI, ¶120 - 122)

Hair was also frequently mentioned as a feature of an attractive body, yet its characteristics varied according to individual preferences. For instance, a male participant liked short or medium length hair in boys. On the other hand, boys found "beautiful" or "good" hair attractive in girls, whereas both a female and a male participant thought that an attractive girl should have long hair. Two male participants considered that attractive boys should be tall and four out of five male interviewees associated an attractive male body with being muscular. For girls, pronounced breasts and bottom were mentioned in the context of an attractive body.

*"Euhm... groß. (...) Hmm... dünn, also ein bisschen Muskeln. Kurzes Ha... euhm... Kurzes Haar oder so mittellang."* (ZR003, m, 14, high WBI, ¶79)

*"Also von einem Jungen... Sollte größer sein... (..) Hmmm... breiter ein bisschen, wenn's geht. Paar Muckis wären auch nicht schlecht (lacht). Euhm... (...) Braun, find' ich schöner als (lachend) weiss auf jeden Fall. Euhm... (...) Schönen Körper... (..) Ja, ein paar Muskeln, n... nicht so'n... nicht... nicht so 'ne lang gezogen."* (TN325, m, 13, high WBI, ¶124)

*"Auf jeden Fall halt normal. Also es muss nicht unbedingt schlank sein oder dünn, sondern einfach so normal halt und euhm...(..) Ja, ich weiss nicht. Ein bisschen also... so dass euhm... die Brust ein bisschen, euhm... da sind [...] sag' ich jetzt mal und ja... dann dünne Beine auf jeden Fall. Ja... und lange Haare."* (LH054, f, 14, high WBI, ¶106 – 108)

*"Also wenn sie richtig gut aussehen, dann haben sie eine... erstmal ein gutes Gesicht. (..) Nicht so viele Pickel, wenn's geht. Das... Es kommt zwar irgendwann wieder weg, aber das nervt mich trotzdem. Euhm... große Brüste. Also nicht zu groß, aber normal, sag' ich mal. Einen Arsch (lacht), (..) Beine (...). Ja... sonst nichts. Und gute Haare, wenn's geht."* (TN325, m, 13, high WBI, ¶130)

Most adolescents interviewed in the present study (seven out of ten) claimed that their role models in terms of physical appearance are people from their social environment. Accordingly, two girls mentioned family members and four participants mentioned friends as influential figures for their perception of attractive body characteristics. Additionally, two boys took peers at school as a reference in terms of physical appearance, and a girl mentioned observing others when going swimming. On the other hand, half of the interviewed adolescents reported taking public figures such as models or body images promoted by the media in general (e.g. magazines, television) as a reference for their perception of physical attractiveness. In this respect, one boy exclusively referred to video clips as promoting his ideal body image, while another male participant argued that since people who appear on television are accepted and acknowledged for their appearance, they are the representation of “normality”.

*“Ich schau in meinem Freundeskreis um, weil ich hab' eigentlich... meine Freunde und Freundinnen alles... Ich hab'... schöne Mädchen mit Arsch und Brüsten. Ich hab' Mädchen (lachend) ohne Arsch und ohne Brüste. Ich hab' Freunde die sind groß, die sind klein. Mit einem guten Körper, manche nicht. Und ich guck' einfach in meinem Freundeskreis, weil ich hab' da so ziemlich alles drin eigentlich.”* (TN325, m, 13, high WBI, ¶132)

*“Ja, also in den Zeitschriften und auf Postern und halt auch so Leute, die man so begegnet oder im Schwimmbad halt.”* (LH054, f, 14, high WBI, ¶110)

*“Naja, also ich würd' sagen... also es ist... in der ersten Linie sind das auch euhm... im größten Teil von meiner Schule, weil ich bin auch in vielen verschiedenen Kursen, also auch von anderen Klassen und euhm... die sehen eigentlich so ziemlich alle so in den... in dieser Weise aus alle und zum Be... also ich sag' mal auch im Fernsehen oder so also ist jetzt... ist jetzt auch nicht viel anders, sie sehen ja auch ungefähr so aus also es sind ja auch, ich sag' so mal so, die Leute werden ja im Fernsehen so akzeptiert wie sie so halt sind, deswegen sind sie halt auch im Fernsehen. Euhm (..) ja, die... die werden auch s... auch so akzeptiert, weil die sind halt so gut und die sind halt berühmt dadurch, also... also wie die aussehen. Also die meisten Leute, also auch Models zum Beispiel, die sehr durch ihr Aussehen... sie... haben die halt diesen Beruf und ja, das wäre so normal.”* (TL191, m, 13, high WBI, ¶104)

*“Eher im Fernseher. [...] Wenn euhm... zum Beispiel einen... Musik-Videos oder sowas.[...] Also bei Musik, die sind ja manchmal so 'ne (...) große Männer oder so dabei.”* (ZR003, m, 14, high WBI, ¶85 - 89)

However, a female participant claimed that, despite taking friends or models as a reference, she had developed her personal style.

*“Euhm... kommt drauf an. Also ich kann jetzt sagen halt, dass die meisten meiner Freunde gut aussehen euhm... und ein paar Models... Also (unverständlich), die Sie wahrscheinlich nicht kennen (lacht)... Euhm... Ja, an sowas. Aber eigentlich hab' ich mein eigenen Style.” (RA204, f, 14, low WBI, ¶101)*

Moreover, one boy suggested that he did not refer to other people as role models, but oriented himself only at his own person. Along the same line, a girl suggested she did not have any particular reference figures with respect to physical attractiveness, as both adolescents emphasized the importance of inner values (e.g. positive attitude) over external appearance standards.

*“An mir selber. Ist zwar... Ist zwar nicht zu sehen weil... das Schlimme ist ja, ich orientier' mich an... an mich selber. Ich wusste gar nicht, dass ich dünner geworden bin. Ich hab' gedacht, ich bin immer noch in dem Bereich wie vorher, aber (..) ich sehe mich selber euhm... genauso wie früher, nur ich weiss... Ich habe nicht gemerkt, wie ich... Nach mir ging's eigentlich nicht... Ich hab' nicht nach irgendwelchen anderen Leuten geguckt. Ist mir egal, wie der aussieht, ob der sportlich oder nicht... Nachher ist er 'nen Arschloch vom Inneren her.” (NE322, m, 13, low WBI, ¶121)*

*“Also (lacht) weiss ich jetzt gar nicht. Also... ich orientier' mich ja eigentlich an gar nichts. Vielleicht hab' ich das von meiner Familie so mitbekommen hab. Wir lachen alle viel und... ja... Ich lach' auch mal andere Leute an oder so... Weiss ich nicht... Also ich orientier' mich jetzt nicht an irgendwelchen speziellen Leuten aber... (lacht)” (NN277, f, 18, high WBI, ¶124)*

#### 4.3.4.3. Physical appearance locus of control beliefs

In order to address their control attributions with regard to physical appearance, interview participants were asked whether they believed people had any influence over their physical appearance and if so, to name some measures one could take in order to look good. Moreover, some interviewees made spontaneous comments which provided insight into their body-related locus of control beliefs.

Hence, some interviewees contextualized overweight and physical appearance as potentially or actually being caused by underlying conditions or medication, while another male participant suggested that financial affluence impacts on one's ability to influence one's physical appearance.

*“Also wenn man... wenn man keine Krankheit hat oder so, dann schon, ja.” (RN101, m, 14, low WBI, ¶148)*

*“Ja. Wenn man reich ist. Hmm... \*6 Sekunden Pause\* ich glaub' schon.” (ZR003, m, 14, high WBI, ¶191)*

A certain degree of ambivalence was noted in the case of two boys, who reported diverging control attributions at different times during the interview. In one case, a boy claimed that physical appearance was a matter of chance, whereas he believed that overweight resulted from excessive eating. The second case was that of a boy who answered that one could influence one's physical appearance when asked directly, but claimed that overweight and other deviant individuals could not do much about their condition at a previous point during the interview.

*“Man ist ja nicht dick, weil man euhm... nix isst sondern... oder... jetzt von den Krankheiten abgesehen, aber man ist dick weil man, weil man einfach zu viel... entweder Frust essen oder... Irgendwas muss ja da sein, um es drauf zu kriegen. Oder aus... weil man's schön findet, erstmal zu essen, weil essen schön ist [...]”* (NE322, m, 13, low WBI, ¶138)

*“Jeder ist... sieht anders aus. Da kann man nichts festlegen und wenn der einer eben Glück hat, hat der einer Glück und der andere nicht”* (NE322, m, 13, low WBI, ¶117)

*“Den Einfluss hat man eigentlich nicht.”* (NE322, m, 13, low WBI, ¶123)

*“[...] weil die Leute, die können ja auch nix dafür, wenn sie halt anders oder übergewichtig sind.”* (TL191, m, 13, high WBI, ¶58)

*“Naja, natürlich hat man einen Einfluss drauf. [...] oder es kann halt auch durch Medikamente passieren, also wie das bei... bei mir passiert ist, dass ich halt mal euhm... radikal zugenommen hab'...”* (TL191, m, 13, high WBI, ¶106)

However, most interviewees (nine out of ten) were able to give examples of actions which individuals could undertake in order to improve their physical appearance. In this sense, being physically active in general and practicing sports (e.g. biking or going to the gym) were mentioned by six participants. Consistent with previous statements, a male participant suggested going to the gym with the aim of increasing muscular mass.

*“Na, Sport machen. (lacht) Ja, also (..) selber was dafür tun. Nicht machen lassen oder so.[...] Nee, selber was tun dafür.”* (RN101, m, 14, low WBI, ¶142 – 144)

*“Also wenn man mehr Sport treibt oder so.”* (ZR003, m, 14, high WBI, ¶91)

*“Gut auszusehen? Naja vie... ich... viele Mädchen mögen Muckis... ins Fitness-Studio zu gehen. Das kann ich noch nicht, weil ich erst 13 bin. Erst in einem Jahr, glaub' ich. Also frühestens in einem Jahr.”* (TN325, m, 13, high WBI, ¶134)

Issues of styling such as clothing, hairdo and accessories, as well as self care (e.g. using face and hand creams) were mentioned by four girls and one boy as having the potential to increase physical attractiveness. In this context, make-up was often mentioned by female participants, but was not

deemed appropriate for boys by the male participant.

*“Ja, auf jeden Fall. Also man kann sich ja euhm... angemessen kleiden. [...] Ich denke so oder halt sch... auch jetzt zum Beispiel man kann sich ja auch schminken oder halt Sachen so wie Schmuck umlegen. Das auch... man kann sich halt hervorheben, sag' ich jetzt mal.” (LH054, f, 14, high WBI, ¶112)*

*“Ja, auf jeden Fall schon, weil so auf jeden Fall spielt die Pflege natürlich 'ne große Rolle jetzt, sag' ich mal, die Hygiene, ist jetzt stumpf gesagt, aber halt die Pflege, wie man... inwieweit man sich jetzt halt pflegt. Im Sinne von Haare machen oder schminken oder was weiss ich... auch eine große Rolle spielt jetzt halt das Sport machen, sich aktiv bewegen. Also ich glaub', da kann man schon Einfluss haben, auf seinen Körper. (lacht)” (NN277, f, 18, high WBI, ¶126)*

*“Seine Haare stylen, aber nicht zu viel stylen. (lacht) Und viele Mädchen finden ja auch sehr wichtig, wie man sich anzieht. Wenn man aussieht wie einen Depp mit Latzen und weiss ich nicht was... Topfschnitt und Brille sieht ein bisschen komisch aus. Da kann man sich ebend... ja... Pullover anziehen mit Jeans. Vielleicht 'nen... gute Schuhe und die Haare hoch machen oder weiss ich nicht wie... zur Seite. (..) Was man machen kann noch sonst (..) bisschen Gesichtscreme vielleicht (lacht). Und sonst (..) Schminken solltest du... find' ich... mag ich nicht bei Jungs. Okay, ich hab' so auch Freunde, die, wenn die (lachend) zum Beispiel immer diesen Augenringe haben so 'ne Augenringe-Rollator kaufen oder hier über Pickel so 'ne sch... so'n Puder oder sowas drauf schmieren, aber das find' ich dann... Ich mag's lieber, wenn die dann nicht sowas drauf machen. Was kann man sonst noch machen? (..) Vielleicht seine Hände ein bisschen gepflegt halten, mit Handcreme und so, weil ich mag so oldige Hände, wenn die so rau sind... Ich hasse das. Und sonst eigentlich nichts. Also fällt mir nichts mehr ein. [...] Und dann noch, wenn... wenn...[...] man ein Mädchen ist, sich rasieren auf jeden Fall.” (TN325, m, 13, high WBI, ¶134 - 138)*

Additionally, a boy and a girl also mentioned a healthy diet and low media use as actions aimed at improving physical appearance, while the same female participant also mentioned going to bed early as a measure in this respect.

*“Also man kann zum Beispiel, wenn man übergewichtig ist, ich kenne auch einige Leute, die jetzt nicht euhm... viel Sport machen sondern meistens nur zuhause sitzen... Also ich fahr'... ich fahr' euhm... zum Beispiel gerne Fahrrad und also... naja, also viele Leute kenn' ich, dass die eigentlich immer nur zuhause sitzen oder halt euhm... online Spiele spielen oder sowas. Euhm... also die halt sich halt nicht viel bewegen oder dann halt auch euhm... sich nicht richtig ernähren - also immer unregelmässig und so.” (TL191, m, 13, high WBI, ¶106)*

*“Also Sport machen, also gesund essen und die Ernährung umstellen, früher schlafen gehen, nicht*

*so viel Fernsehen gucken und Laptop, Internet (..) ja... und viel Wasser trinken.” (KL346, f, 16, high WBI, ¶142)*

#### 4.3.5. WBIS Validation

During the interviews, study participants were asked to fill in the WBIS again, as the starting point for a targeted discussion regarding its accessibility and acceptability, as well as adolescents' general evaluation of the scale and their recommendations for its improvement.

##### 4.3.5.1. Accessibility

Most adolescents declared that they did not find any of the scale items difficult to understand, with one of the youngest participants emphasizing that the wording of the scale was easy and accessible even for 12-year old children. However, during the interviews, two boys needed additional clarification for the answer option “neither... nor...” (“weder noch”). Moreover, two boys had difficulties understanding items 8, 11 and 7 (“Ich glaube nicht, dass ich es verdient habe, viele Freundschaften zu haben, solange ich übergewichtig bin”, “Wegen meines Gewichtes, verstehe ich nicht, wie jemand, der/die gut aussieht sich mit mir verabreden würde” and “Mein Gewicht ist mir sehr wichtig für mein Selbstwertgefühl”), respectively.

##### 4.3.5.2. Acceptability

Six participants reported that answering the scale items did not affect them from an emotional point of view. Accordingly, four participants claimed that they did not feel uncomfortable answering any of the scale items. However, another four participants mentioned five scale items as being sensitive, with Item 6 - “I hate myself for being overweight” (“Ich hasse mich, weil ich übergewichtig bin”) being nominated twice. Other nominated items were 9 and 5 (“[...] ob ich mit meinem euhm... Gewicht zufrieden bin oder euhm... (..) ob's mich halt bedrückt wenn ich jetzt so an mich denke”), 8 (“Ich glaube nicht, dass ich es verdient habe, viele Freundschaften zu haben, solange ich übergewichtig bin”) and 2 (“Ich bin weniger attraktiv als andere”).

Furthermore, two participants mentioned three items which they found inappropriate or superfluous. For instance, a boy suggested that item 4 (“Ich wünschte ich... mir, ich könnte mein Gewicht radikal verändern”) was inappropriate, since weight loss should take place at a slow, gradual pace.

*“Würd' ich... würd' ich nicht machen. Radikal verändern heisst da gleich wie eine volle Veränderung. An sich... erstmal versuchen zu... langsam 'ran zu arbeiten. Immer Stück für Stück. Sonst es kann sein, dass du es... dass du es schaffst, aber in dem Augenblick sofort zurück fällt. Den Körper erstmal (unverständlich)... zurück stufen und sagen... Stück für Stück muss das*

*passieren. Sonst... nee... ist zu schnell.* " (NE322, m, 13, low WBI, ¶135)

On the other hand, another boy believed that item 9 ("Ich bin zufrieden mit meinem Gewicht.") was superfluous in a study with patients from a paediatric obesity clinic, since he assumed everyone accessing obesity care in the study setting wished to lose weight and would accordingly provide a negative answer.

*"Bin zufrieden mit meinem Gewicht." Das ist glaub' ich auch irgendwie ein bisschen... das hier ist ja 'ne... ist eine Klinik für Leute, die abnehmen, also hier geht niemand hin, der zufrieden mit seinem Gewicht ist. Dazu find' ich die Frage auch noch unnötig.* " (TN325, m, 13, high WBI, ¶174)

*"Bin zufrieden mit meinem Gewicht." Da... (..) Es ist ebend ein bisschen... Ich denk', dass jeder, der das ausfüllen würde, bei dem Gewicht oder wenigstens... trifft eher nicht zu oder so, aber das ist..."* (TN325, m, 13, high WBI, ¶188)

The same participant also emphasized the potential of item 6 ("Ich hasse mich, weil ich übergewichtig bin.") to cause respondents additional emotional distress to that implied by the actual statement.

*"Weil... 'Ich hasse mich, weil ich übergewichtig bin.' Ich meine, das ist dann noch mal... Wenn ich mich jetzt wirklich überhaupt nicht mögen würde, und mir dann noch j... und mich dann noch jemand fragt, ob ich mich hasse, weil ich dick bin, dann würde ich ja total den Klops kriegen. Einen Kolaps kriegen und... was... die Frage finde ich irgendwie nicht... irgendwie unbedingt angemessen, aber..."* (TN325, m, 13, high WBI, ¶172)

#### 4.3.5.3. General scale evaluation

Overall participants mentioned that the questions made them reflect on their answers, their own self-perception and their attitude toward certain discriminatory behaviours. Moreover, both a female and a male participants emphasized the fact that answering such intimate questions about oneself and one's overweight was a sensitive issue, with which they were not confronted on a daily basis.

*"Ja, was soll ich ankreuzen. (lacht) Also, stimmt es auch wirklich? Also ich muss ja offen sein hier und..."* (LE223, f, 16, low WBI, ¶123)

*"Euhm... die Fragen waren eigentlich sehr ausführlich zu beantworten und euhm... ja... also wenn man das so liest dann muss man sich auch erstmal so Gedanken darüber machen, was man jetzt ankreuzt und wie man sich dabei fühlt."* (LH054, f, 14, high WBI, ¶129)

*"Ja... also oft nachdenklich so, bei manchen Fragen wo... weil man selber würd' sich die ja im Alltag nicht stellen, aber wenn man sie denn doch so vor sich hat, dann ja... dann (lacht) denkt*



*man so "Stimmt", hab' ich jetzt eigentlich nicht so erwartet, aber in dem Moment, wo man in den Situationen, die da, sag' ich mal, beschrieben sind oder manche Situationen fühlt man sich halt, so wie man's angekreuzt hat, aber ja... ich... schon ein bisschen nachdenklich, weil man die ja... Fragen ja so nicht im Alltag aufkommen lässt so persönlich. Man stellt sich ja nicht eine von den Fragen so... "Ach... so...euh..." (lacht), sondern ist halt einfach so. Ja..." (NN277, f, 18, high WBI, ¶136)*

*"Naja... ich hab' mich so... es war mehr persönlich, das heisst nicht so allge... allgemein, was ich jetzt jeden Tag so sagen würde, sondern es war schon... intimer quasi." (TL191, m, 13, high WBI, ¶123)*

Another participant acknowledged having reflected on the aim and relevance of some of the scale items, yet accepted to fill in the scale, as it had a superordinate, informative purpose.

*"Aber man macht sich Gedanken drüber in dem Augenblick, warum euhm... die Frage nun kam. Was daran eigentlich so wichtig ist, aber (...) pff wenn's dazu dient, euhm... was herauszufinden, ist es schon richtig, wenn man sowas fragt." (NE322, m, 13, low WBI, ¶143)*

In general, four interviewees claimed that they found the questions good. Moreover, a girl claimed she had personally posed herself some of the questions included in the scale, while two other study participants suggested that the scale was exhaustive and included all facets of the covered topic.

*"Euhm (..) gut. Also sind schöne Fragen mit dabei, wie das letzte (..) euhm... das sind zum Beispiel Fragen, die ich mir selber mal stelle." (LE223, f, 16, low WBI, ¶121)*

*"Euhm... also ich find' die eigentlich ganz gut. Also ich würd' daran jetzt nichts verändern, weil die euhm... eigentlich alles so umschreiben, was man jetzt beantworten könnte. (..) Ja..." (LH054, f, 14, high WBI, ¶141)*

Other participants had a positive evaluation of the general scale but found some items disturbing or they considered the entire scale potentially useful for more affected individuals or groups, but described it as not being relevant for themselves. For instance, a boy viewed the scale items as superfluous and awkward.

*"Euhm... Sie passen in einer Selbsthilfegruppe. (lacht) Nein, also, ja, ob... wenn man ein Problem mit seinem Übergewicht hat, dann wahrscheinlich hilfreich, aber für mich ist das jetzt halt nicht so schlimm, weil ich hab' ja Freunde und alles und werd' halt nicht gemobbt und ich würd' nur gern für mich selber verändern, weil ich's nicht so hübsch finde (..) und ja." (RA204, f, 14, low WBI, ¶109)*

*"Wenn jetzt einer sehr depressiv oder so ist wegen sein Gewicht, dann passen die Fragen schon."*

*Aber, na... (lacht)“ (RN101, m, 14, low WBI, ¶188)*

*“Weil jetzt zum Beispiel jetzt ‘Ich wünsche...’ naja, das nicht aber, euhm... ‘Wenn ich viel an mein Übergewicht denke, fühl’ ich mich bedrückt’. Also... weiss nicht... (lacht) sind so komische Fragen.” (RN101, m, 14, low WBI, ¶166)*

Of the ten interviewees, half did not recommend making any changes to the current scale version, while an additional participant did not suggest modifying the scale, but pointed to the risk of affected young people not answering item 6 sincerely.

*“Ich glaube jemand, der sich wirklich nicht mag, weil er übergewichtig ist, der wird dann die Frage auch nicht wirklich ehrlich beantworten, weil wer gibt denn das dann bitte schön gerne zu?” (RA204, f, 14, low WBI, ¶127)*

Two other interviewees recommended adding more questions on topics such as parents' attitude toward their offspring's overweight, or overweight as a criterion in romantic partner selection and one's own intention to change, respectively.

*“Wie das mit meinen Eltern ist zum Beispiel. Ob die mich (..)... ob die mich zu sehr damit (...) bedrücken. Dass ich übergewichtig bin, dass sie mich zwingen, oder vielleicht, dass sie sich gestört fühlen, weil du übergewichtig bist.” (LE223, f, 16, low WBI, ¶137)*

*“Vielleicht wenn man ein Freund hat oder später mal heiraten wird, ob man halt drauf... Ob du drauf achtest, dass die Person auch so ist wie du oder geht das auch, dass es... dass diese Person anders aussieht. Ob du dich trotzdem mit dieser Person verstehen kannst.” (LE223, f, 16, low WBI, ¶145)*

Moreover, two interview participants suggested undertaking changes in the phrasing of items 6 and 5 (“Wenn ich viel an meinem Übergewicht denke, fühle ich mich bedrückt”).

*“Ich find’ die eigentlich super. Nur 9 und 6 finde ich ein bisschen... Also 6 würd’ ich auf jeden Fall vielleicht ein bisschen netter formulieren. ‘Ich mag mich nicht, weil ich übergewichtig bin’ oder...[...] ‘Ich bin nicht zufrieden mit mir, weil ich übergewichtig bin.’ fänd’ ich besser als ich hasse mich. Das find’ ich ein bisschen... Also das hör’ ich nicht gerne, wenn ich weiss, dass ich mich nicht mag. Da... Und sonst find’ ich die Fragen perfekt.” (TN325, m, 13, high WBI, ¶184 - 186)*

A participant suggested that scales like the WBIS are useful in order to protect vulnerable youth from the negative effects of being stigmatized in therapeutic settings.

*“Es gibt ja auch euhm... wenn man jetzt 'ne Kur kriegt, zum Beispiel. Dann muss doch derjenige auch wissen... euhm... (..) wie die denn da auch drauf sind. Nicht, dass er da ankommt und keiner kann ihn leiden. Denn ist der gleich wieder so geschwächt, dass er erst gar nicht mitmachen will und in seinem euhm... Zimmer sitzt und macht gar nix. Dass die Frage zum Beispiel kommt... euhm... Wenn du 'ne Kur wolltest, was da... für Kinder sind und auch, dass die... es wird zwar nicht wie... klappen, aber, dass die... euhm... die in der Kur kommen, in welche... erst vorher einen Fragebogen machen, wo drinne steht welcher Charakter er hat und welche Eigenschaften er gegen Dicke oder irgendwas, was er nicht leiden kann, hat, dass das verglichen wird mit allen und... ob das funktioniert. ” (NE322, m, 13, low WBI, ¶149)*

#### **4.4. *Triangulation of quantitative and qualitative data***

##### **4.4.1. Weight bias internalization**

Based on the previously described results, quantitative and qualitative data were triangulated, with the aim of enriching the description of the association between weight bias internalization and obesity-related quality of life at a theoretical level.

As a first step, the types of weight bias internalization experienced by adolescents and the inductively obtained qualitative categories in which they were embedded were identified. To this end, the qualitative categories were screened for codes containing adolescents' reports related to each item of the WBIS. The results of this deductive approach (see Table 33 below) indicate that interviewees provided personal or general examples regarding all WBIS items, with the exception of item 8 ("I don't think I deserve to have many friendships, as long as I am overweight"). As expected, most reports were identified in the category concerned with weight stigma internalization as a strategy of coping with overweight as a stigmatized identity (items 1, 2, 3, 6, 9, 10). At this level, the interconnectedness of weight stigma internalization facets such as thin ideal internalization, feelings of shame and discomfort with one's physical appearance, as well as negative self-directed emotions and evaluations became apparent. In close connection with internalizing the ideal of a thin body figure, interviewees also consistently expressed the desire to lose weight and radically change their appearance as a means of correcting their stigmata and attaining secondary benefits (e.g. higher self-esteem or access to dating partners). However, unsuccessful weight loss attempts had a negative emotional impact, arguably increasing the extent of weight stigma internalization. Accordingly, information on several WBIS items was identified in categories concerned with agency as a means of coping with weight stigmatization (items 5 and 7), adolescents' evaluations of their own bodies (item 4) and peer group stigmatization with regard to dating (item 11).

For most WBIS items, interviewees' median values at the time of the survey and interview, respectively, did not change (item 8) or only changed within a margin of  $\pm 0.5$  units (1, 2, 3, 4, 5), indicating their stability over time, as was the case of the summary score (see Section 4.1.1. Reliability). Greater changes were recorded for other items, however, indicating a tendency of reduced weight bias internalization on the second measurement. In this sense, a shift from agreement to disagreement regarding negative weight-related emotions and the belief of not having access to physically attractive dating partners, as well as a lower degree of weight dissatisfaction were observed. On the other hand, a negative tendency was reflected in interviewees' higher degree of agreement with weight status centrality for personal self-esteem and the feeling that their weight status does not reflect their real selves.

Table 33. Triangulation of interviewees' quantitative answer patterns to the WBIS<sup>1</sup> with their reports on weight stigma internalization

WBIS Item	Qualitative category/ subcategory/ code	Quotes	Median (Survey)	Median (Interview)	p-value
1. Als Übergewichtige/-r, fühle ich mich genauso fähig wie jeder andere.	Coping with overweight as a stigmatized identity/ Stigma Internalization	<i>"Ich würde jetzt glauben euhm... derjenige der dick ist, der hat das, euhm... hat die Sache... Der denkt sich 'Ich bin hässlich, ich bin sowieso blöd, keiner kann mich gleich... nicht leiden.' Dadurch haben die gleich die Grundeinstellung 'Ich krieg' weniger'. Vielleicht kommt einem so rüber, aber ich glaub' nicht, dass derjenige benachteiligt... Der glaubt, dass er benachteiligt ist, weil er dicker [ist]" (NE322, m, 13, low WBI, ¶54)</i>	4.5	5	0.915
2. Ich bin weniger attraktiv als andere wegen meines Gewichtes.	Coping with overweight as a stigmatized identity/ Stigma Internalization	<i>"[...] ich würd' nur gern für mich selber verändern, weil ich's nicht so hübsch finde" (RA204, f, 14, low WBI, ¶109)</i>	5	5.5	0.558
3. Wegen meines Übergewichtes, mache ich mir Sorgen darüber, was die anderen von mir denken.	Coping with overweight as a stigmatized identity/ Stigma Internalization	<i>"Ich hatte selbst die Phase, dass ich dann mich auch nicht mehr getraut hab', in der Öffentlichkeit was zu essen... 'ne Zeitlang schon 'ne Art kleine Essstörung entwickelt habe, weil ich halt genau diese Gedanken hatte, ja? 'Was denken die anderen Leute nur, wenn ich jetzt mich hier hinsetze auch wenn... selbst wenn ich nur einen Salat esse?' oder wenn ich jetzt einkaufen gehe, dass ich... wenn ich jetzt mal eine Tüte Chips auch so... kaufe... dann denken die gleich alle 'Oh, Gott! Die Dicke, die isst schon wieder Chips'. So halt, ne..." (NN277, f, 18, high WBI, ¶22)</i>	6.5	6	0.518

<sup>1</sup> Note: Median range 1 (complete disagreement) to 7 (complete agreement)

WBIS Item	Qualitative category/ subcategory/ code	Quotes	Median (Survey)	Median (Interview)	p-value
4. Ich wünsche mir, ich könnte mein Gewicht radikal verändern.	Adolescents' evaluation of their own bodies/ Features adolescents would like to change	<i>"Also verändern würd' ich halt gerne... Auf jeden Fall mein Bauch würd' ich gerne schlanker haben und meine Oberschenkel, meine Arme vielleicht etwas. Ja... also... Ja... Meine Brust auf jeden Fall... Die hätt' ich auch (lachend) gerne viel kleiner und ja... mein Gesicht ein wenig schmaler. (lacht) Also ja... rundum Paket eigentlich (lacht). //Ja... (lacht)" (NN277, f, 18, high WBI, ¶96)</i>	7	6.5	0.194
5. Wenn ich viel an mein Übergewicht denke, fühle ich mich bedrückt.	Coping with overweight as a stigmatized identity/ Agency/ Unsuccessful weight loss attempts	<i>"[...] ich eigentlich relativ traurig, weil ich fett bin und ich kann nix... Also ich weiss es nicht, ich versuche mal alles, aber (..) es klappt irgendwie nicht." (KL346, f, 16, high WBI, ¶98)</i>	6	5.5	0.598
6. Ich hasse mich, weil ich übergewichtig bin.	Coping with overweight as a stigmatized identity/ Stigma Internalization	<i>"[...] also mich bedrückt es schon, weil ich ja halt mein Gewicht nicht mag und ja... damit mag ich mich auch an sich nicht so wirklich [...]" (LH054, f, 14, high WBI, ¶139)</i>	5.5	3	0.065
7. Mein Gewicht ist mir sehr wichtig für mein Selbstwertgefühl.	Coping with overweight as a stigmatized identity/ Agency/ Self-efficacy in losing weight	<i>„[...] also wenn man danach an Gewicht... also eine körperliche Veränderung hat, ist es ja auch halt schöner anzusehen und innerlich ist man ja dann auch ver... viel auf... eh.. aufgeschlossener und selbstbewusster und hat halt mehr Anschluss zu den anderen." (LH054, f, 14, high WBI, ¶149 - 151)</i>	4	5.5	0.399
8. Ich glaube nicht, dass ich es verdient habe, viele Freundschaften zu haben, solange ich übergewichtig bin.	-	-	1	1	0.102
9. Ich bin zufrieden mit meinem Gewicht.	Coping with overweight as a stigmatized identity/ Stigma Internalization	<i>"Die wissen halt, dass ich mich meist nicht selber 'mit wohlfühle" (NN277, f, 18, high WBI, ¶64)</i>	1.5	3	0.038

WBIS Item	Qualitative category/ subcategory/ code	Quotes	Median (Survey)	Median (Interview)	p-value
10. Wegen meines Übergewichtes, habe ich das Gefühl, nicht ich selbst zu sein.	Coping with overweight as a stigmatized identity/ Stigma Internalization	<i>“Also wa... dass ich mich zum Beispiel da schlecht dadurch fühle oder dass... ob ich jetzt nicht ich selbst wäre dadurch. Also das stimmt schon, weil ich find', ich war mal 'ne Zeit lang noch... noch wesentlich dicker und da sah ich no... auch noch ganz anders aus. Mittlerweile... also ich sehe mittlerweile wieder auch noch anders aus, hab' ich euhm... meistens ich... schäm' ich mich dafür auch, weil euhm... ja, ich bin jetzt euhm... auch naja anders als alle andere und das ist... ich sch... deswegen schäm' ich mich einfach. (..) Und so... naja ich bin halt damit auch nicht zufrieden.” (TL191, m, 13, high WBI, ¶121)</i>	3	4	0.395
11. Wegen meines Gewichtes, verstehe ich nicht, wie jemand, der/die gut aussieht, sich mit mir verabreden würde.	Personal stigmatization experiences/ Peer group stigmatization/ Dating	<i>“Wenn ich dünner wär', weiss ich, dass ich vielleicht ein bisschen mehr mit... Also ich hab' genug Freunde und so. Ich treff' mich auch mit Mädchen, ist doch kein Problem, aber ich mein', ich... wenn ich dünner wär', wär' ich vielleicht mal mit denen zusammen oder so, aber ich weiss es nicht.” (TN325, m, 13, high WBI, ¶58)</i>	4.5	3	0.308

#### 4.4.2. Obesity-related quality of life

Interviewed adolescents in the present study reported a wide range of weight-related experiences and emotions which contribute to shaping their obesity-related quality of life, as indicated by the items of the KINDL® Obesity Module (see Table 34 below). On the one hand, overweight adolescents' quality of life is influenced by factors inherently associated with their extra weight such as mobility limitations (item 1), poor physical endurance (item 2) and musculoskeletal pain (item 13), the latter being also mentioned as a reason for attempting to lose weight. Moreover, overweight young people's difficulty in keeping up with classmates during physical education classes (item 12) was reported as a hypothetical reason why others (particularly physical education teachers) might feel bothered by overweight individuals. Moreover, interviewed adolescents did not feel angry or annoyed, but sad because of (failed) attempts of losing weight (items 3 and 4).

Weight stigmatization (marginalization, teasing) was reflected in several items of the KINDL® Obesity Module (items 3, 9, 10), illustrating its deleterious emotional impact on young people's quality of life. Although rationalized as supportive, parental pressure to lose weight and coercive measures in this respect were perceived as stigmatizing by two female participants, one of whom further reported internalizing diet control measures enforced by her mother and translating them in personal stigma correction attempts (items 7 and 8). Weight stigma internalization as a coping strategy expressed through feelings of shame and dissatisfaction with oneself was another category associated with obesity-related quality of life (items 5 and 6).

Interviewees' quantitative response patterns to the KINDL® Obesity Module (expressed as median values) illustrated a general tendency for overweight youth with high weight stigma internalization to report less favourable quality of life ratings on most scale items (1 to 9, 13, 14, 15). The median difference between youth with high and low weight bias internalization was not pronounced on some dimensions (physical fitness, diet control, family weight teasing, general weight stigmatization, intensity of overweight-related health impairments). In contrast, on other obesity-related quality of life facets (feeling less fit, sad, annoyed by weight loss attempts, ashamed, reporting obesity-related health impairments, being bothered by excess weight) extreme differences in the median values of interviewees with low and high weight bias internalization were observed. However, adolescents with high and low weight bias internalization had equal median quality of life values with regard to their being marginalized or being distracted at school by thoughts concerning food, while young people with high weight bias internalization reported minimally better values on their ability to keep up with others during physical education classes.



Table 34. Triangulation of interviewees' quantitative response patterns to the KINDL Obesity Module<sup>1</sup> with their qualitative reports on the respective items

KINDL® Obesity Module Item In der letzten Woche...	Qualitative category/subcategory/code	Quotes	Low WBI (N=4)	High WBI (N=6)
1. fühlte ich mich dick und unbeweglich	General disadvantages of being overweight/ Running difficulties	<p>“[...] eigentlich will ich mitspielen, aber wegen mein Gewicht oder so... ich kann ja nicht so gut mitspielen. [Mir geht schnell die Ausdauer aus und]<sup>2</sup> ich kann nicht so gut euhm... rennen.” (ZR003, m, 14, high WBI, ¶29 – 31)</p> <p>“Das einzige, dass ich im Sport 'ne 6<sup>3</sup> hatte sozusagen, wenn... zum Beispiel jetzt, dass wenn ich nicht recht schneller rennen kann, weil ich eben mehr Masse hab'. (...) So meine ich det. Jetzt... jetzt ... war nur ein Beispiel, weil... bringt ja nüscht wenn ich renne, aber trotzdem nicht schneller werde” (NE322, m, 13, low WBI, ¶56)</p>	1	4.5
2. war ich schnell außer Atem und mir ging schnell die Puste aus	General disadvantages of being overweight	<p>“Also so geht mir ganz oft die Ausdauer aus, kann nicht mehr so viel mitmachen wie die anderen” (ZR003, m, 14, high WBI, ¶29 – 31)</p> <p>“Eigentlich... ich hab'... in meinem Basketball hab' ich Nachteile wegen der Ausdauer, weil ich... ich mach' Sport selber. Und ich weiss, ob das, wenn ich dünner wär', ich da viel besser wär'. [...] Ja... Daran hab' ich auf jeden Fall Nachteile. Das stört mich. (..)” (TN325, m, 13, high WBI, ¶58)</p>	1.5	3.5

<sup>1</sup> Note: Median range 1 (never) to 5 (always)

<sup>2</sup> Despite not being directly related to item 1, the passage in square brackets is presented in order to add more contextual detail to the quote and illustrate the association between mobility and physical endurance limitations (items 1 and 2) among overweight adolescents.

<sup>3</sup> The German grading system ranges from 1 to 6, with 1 being the highest and 6 being the lowest grade.

KINDL® Obesity Module Item In der letzten Woche...	Qualitative category/subcategory/code	Quotes	Low WBI (N=4)	High WBI (N=6)
3. war ich wegen meines Gewichts traurig und niedergeschlagen	Coping with overweight as a stigmatized identity/ Agency/ Unsuccessful weight loss attempts	“[...] ich eigentlich relativ traurig, weil ich fett bin und ich kann nix... Also ich weiss es nicht, ich versuche mal alles, aber (..) es klappt irgendwie nicht.” (KL346, f, 16, high WBI, ¶198)	1	4
	Coping with direct stigmatization/ Emotional impact	“Da hat's mich irgendwie genervt, dass sie die ganze Zeit irgendwas gesagt haben, ich hab' vergessen, was sie gesagt haben, aber irgendwas mit Dickheit zu tun. Dann bin ich in einem anderen Zimmer und hab' geheult, da war ich traurig [...]” (TN325, m, 13, high WBI, ¶16)		
4. war ich genervt von den vielen Versuchen dünner zu werden	- Rather sad, not annoyed (see above)		1.5	4.5
5. habe ich mich wegen meines Gewichts geschämt	Coping with overweight as a stigmatized identity/ Stigma Internalization	„[...] ich war mal 'ne Zeit lang noch... noch wesentlich dicker und da sah ich no... auch noch ganz anders aus. Mittlerweile... also ich sehe mittlerweile wieder auch noch anders aus, hab' ich euhm... meistens ich... schäm' ich mich dafür auch, weil euhm... ja, ich bin jetzt euhm... auch naja anders als alle andere und das ist... ich sch... deswegen schäm' ich mich einfach. [(..) Und so... naja ich bin halt damit auch nicht zufrieden.] <sup>1</sup> ” (TL191, m, 13, high WBI, ¶121)	1.5	4.5
6. war ich wegen meines Gewichts mit mir selbst unzufrieden	Coping with overweight as a stigmatized identity/ Stigma Internalization	“[...] wenn ich mich im Spiegel irgendwie so angeguckt hab', dass ich mich irgendwie selber angefangen hab', mit mir zu reden, was ich überhaupt... jetzt, wie ich aussehe.” (LE223, f, 16, low WBI, ¶12)  “[...] weil ich ja halt mein Gewicht nicht mag und ja... damit mag ich mich auch an sich nicht so wirklich, also ausser jetzt mein Charakter oder auch andere Sachen, die dann halt ausser mein Gewicht eine Rolle (lachend) spielen.” (LH054, f, 14, high WBI, ¶139)	1.5	5

<sup>1</sup> Despite not being directly related to item 5, the passage in square brackets is presented in order to add more contextual detail to the quote and illustrate the association between feelings of shame and dissatisfaction with oneself (items 5 and 6) among overweight adolescents.

KINDL® Obesity Module Item In der letzten Woche...	Qualitative category/subcategory/code	Quotes	Low WBI (N=4)	High WBI (N=6)
7. nörgelte meine Familie wegen meines Gewichts an mir herum	Reactions to adolescents' weight in their immediate social environment/ Parental support for losing weight	<i>"Wie das mit meinen Eltern ist zum Beispiel. Ob die mich (...) ob die mich zu sehr damit (...) bedrücken. Dass ich übergewichtig bin, dass sie mich zwingen, oder vielleicht, dass sie sich gestört fühlen, weil du übergewichtig bist. Aber sie wollen ja im Prinzip dein Gutes, also wenn ich mal von mir jetzt mal reden soll."</i> (LE223, f, 16, low WBI, ¶139)	1.5	3.5
8. musste ich zu Hause beim Essen auf mein Gewicht achten	Reactions to adolescents' weight in their immediate social environment/ Parental support for losing weight	<i>"Ja, also ich wurde auch euhm... so benachteiligt nach... mit dem Essen halt. Also die durften das essen und ich durfte es nicht essen zum Beispiel, weil euhm... andere dann gesagt haben, ja... "Dann wirst du noch dicker" oder so..."</i> (LH054, f, 14, high WBI, ¶152)	3	4
	Coping with overweight as a stigmatized identity/ Agency/ Self-efficacy in losing weight	<i>"[...] auch ich alleine hab' angefangen, ja... "Das kann nicht so weiter gehen" und hab' mir dann gedacht "Ja, okay. Dann isst du das halt nicht und dann isst du lieber was Anderes, was Gesundes" und so..."</i> (LH054, f, 14, high WBI, ¶156)		
9. wurde ich wegen meines Gewichts von anderen geärgert	Personal stigmatization experiences	<i>"[...] sowas ist mir auch schon öfter passiert, ich mein' dann, da ist man gerad', sag' ich mal, in so 'ner guten Phase, man denkt... "Oh, ja! Ich hab' 2 Kilo abgenommen" und dann kommt irgendwie eine Beleidigung, dann fühlt man sich wieder total zurück geworfen, denkt so "Wozu mach' ich das eigentlich?" Also einfach in Ruhe zu lassen, wie wir sind und ja..."</i> (NN277, f, 18, high WBI, ¶150)	1	2

KINDL® Obesity Module Item In der letzten Woche...	Qualitative category/subcategory/code	Quotes	Low WBI (N=4)	High WBI (N=6)
10. wurde ich wegen meines Gewichts ausgeschlossen, wenn andere etwas zusammen machten	Personal stigmatization experiences/ Peer group stigmatization	„Und die meisten Leute fangen früher schon an, Fußball zu spielen und wenn man dann, weiss ich... zwei Minuten später kommt, lassen die einen die ganze Stunde nicht mehr mitspielen oder so. Also das erleb' ich auch bei anderen, also hauptsächlich auch bei sp... euhm... sportlichen Aktivitäten.“ (TL191, m, 13, high WBI, ¶124)	1	1
	Social weight stigmatization/ Social weight stigmatization as a disadvantage	„Naja, meistens auch bei Unterhaltungen, wenn sich ein paar Leute unterhalten, dann sagen sie zum Beispiel "Geh mal weg!" oder so.“ (TL191, m, 13, high WBI, ¶130)		
11. war ich durch Gedanken ans Essen vom Unterricht abgelenkt	-	-	1	1
12. konnte ich trotz meines Gewichts beim Sportunterricht gut mitmachen	Attitudes towards overweight individuals in a broader societal context/ Reasons for negative attitudes	“[...] vielleicht es nervt die Sportlehrer (lacht). Ich weiss es nicht, wenn die so lange warten müssen, bis die gerannt sind oder jedesmal, weiss ich nicht was machen müssen aber sonst...” (TN325, m, 13, high WBI, ¶144)	2.5	3
13. hatte Beschwerden wegen des Übergewichts	Disadvantages of being overweight	“Ja, vielleicht die Knochen, dass denen alles weh tut.” (NE322, m, 13, low WBI, ¶144)	1	4
	Reasons for wanting to lose weight	„[...] darum, dass die Knochen... Sonst würd' ich sagen, dass da... so wie es jetzt ist, ist in Ordnung. Nicht dicker, nicht dünner, aber im Moment tut mir auch noch ein bisschen was weh.“ (NE322, m, 13, low WBI, ¶105 - 107)		
14. Stärke der Beschwerden	-	-	1	2.5
15. fühlte sich gestört durch das Übergewicht	-	-	1.5	5

## Chapter 5. Discussion

### 5.1. Sample characteristics

The present study used a mixed-method study design comprising a survey and in-depth interviews conducted with patients of a specialized, interdisciplinary outpatient clinic offering obesity care to children and adolescents who require more intensive therapy than could be provided in general practice. Since the topic of weight stigmatization implies a degree of psychological complexity which was deemed to exceed the reflection abilities of children below the age of 13, these were excluded from the study sample. Accordingly, on average, participants in the present study were older than youth in larger, representative German samples of paediatric obesity patients, with a mean age of 15.06 years compared to 12.6 or 12.4, as reported in other clinical studies (Hoffmeister, Molz, et al., 2011; Reinehr et al., 2009; Wiegand et al., 2010). Similarly to the sample of the nationally representative EvAKuJ study, female participants in the present study were slightly more numerous than their male counterparts, yet the difference between the percentage of female and male patients in the present study was not as high as in the EvAKuJ sample (2.6% vs. 16%) (Hoffmeister, Molz, et al., 2011). The weight status distribution in the present sample was similar to that reported by other clinical studies, with a minority of 15.7% of overweight youth. However, roughly half of our sample was extremely obese, whereas lower percentages ranging between 35% and 42% were observed in larger cohorts (Hoffmeister, Molz, et al., 2011; Reinehr et al., 2009; Wiegand et al., 2010). The overrepresentation of extremely obese adolescents was also reflected in the higher average BMI-SDS value of 2.53, compared to a value of 2.43 reported in the EvAKuJ study (Hoffmeister, Molz, et al., 2011).

Although this result may be partly attributable to the older age of participants in the present study, the large percentage of extremely obese participants in our sample reflects a general trend observed in the study setting, where the majority of patients were consistently found to be severely obese (Dannemann, Ernert, Rucker, Bau, et al., 2011; Senatsverwaltung für Gesundheit, 2007). Moreover, chi-square analyses revealed no statistically significant age and gender differences between participants in our sample and the exhaustive cohort of eligible adolescents who accessed obesity care in the study setting during the survey period. Accordingly, it can be assumed that the results of the present study are representative for the population of adolescents receiving obesity care at the Interdisciplinary Socio-paediatric Care Centre of the Charité - Universitätsmedizin Berlin and implicitly fairly representative for paediatric obesity patients aged 13 or above from the Berlin metropolitan area.

In terms of migration background, roughly half of our study sample consisted of young people of

non-German ethnicity (49.8%). The high rate of ethnically diverse patients in the study setting compared to the EvAKuJ cohort (13.8% youth with migration background) can be explained based on the use of different definitions. In this respect, the EvAKuJ study established migration background exclusively on the basis of the country in which the patients and their parents were born (at least two family members born abroad) (Hoffmeister, Molz, et al., 2011), whereas the focus of the present study lay on ethnicity, for the definition of which several additional criteria such as citizenship and mother tongue were used. Moreover, the definition of ethnicity in the present study was more conservative, as even adolescents with only one migrant parent were considered to have a non-German ethnic heritage compared to the more integrative definition of the EvAKuJ study. On the other hand, the higher probability of encountering an ethnically diverse population in the Berlin metropolitan area compared to the general German population can also explain the high proportion of non-German youth in the present study.

In contrast to the situation observed for ethnicity, only 23.6% of the study participants could be classified as having a low socio-economic status based on the Family Affluence Scale-II, while 75.4% had a more affluent social status. Considering the prominence of low socio-economic status as a risk factor for paediatric overweight in Germany (Beyerlein et al., 2011; Kleiser et al., 2009), our results point to an underrepresentation of socio-economically disadvantaged, overweight adolescents in the study setting.

The secondary sample used for the qualitative study component was drawn from the global survey sample in such a way as to allow for the description of a great variety of stigmatization experiences. The resulting sample was accordingly balanced with regard to gender, whereas adolescents with high weight stigma internalization, adolescents younger than 16 years old and German teenagers were overrepresented in the qualitative sample. Despite achieving a high degree of sample heterogeneity, no overweight boy aged above 16 years was interviewed. Accordingly, further research on weight stigmatization experiences among older male adolescents is needed.

### ***5.2. Reliability of the survey scales***

In order to explore study participants' well-being on a broad spectrum of psychosocial dimensions, previously validated scales for the assessment of generic and obesity-related quality of life, self-esteem, body-related locus of control, self-efficacy, social support and family climate were integrated in the survey instrument. Similar to previous reports (Erhart et al., 2007; Luszczynska et al., 2005; Ravens-Sieberer et al., 2010; The KIDSCREEN Group Europe, 2006; von Collani & Yorck Herzberg, 2003), most of the scales used in the study displayed a higher degree of internal consistency than the acceptable level of 0.70, with good values (>0.80) being observed for the KIDSCREEN-10 Index,

Rosenberg's Self-Esteem Scale, the General Self-Efficacy Scale developed by Schwarzer and Jerusalem (1999), as well as for the short version of Donald and Ware's Social Support Scale (1984) used in the KiGGS survey. The obesity module of the KINDL® instrument had one of the highest internal consistency values (0.859) in the present study, which was also higher than previously reported values (Wille et al., 2010).

Regarding the KLC instrument for the assessment of body-related locus of control, only the global internal and external scales had an acceptable internal consistency (0.718 and 0.738, respectively), similar to what had previously been reported in the literature (Roth, 1999). The domain specific subscales had internal consistency values between 0.483 and 0.660, and hence did not reach the 0.70 threshold, which might have been due to the fact that each of these subscales only includes three items.

The short version of the Family Climate Scales displayed an acceptable internal consistency level in the KiGGS survey ( $\alpha=0.76$ ) (Erhart et al., 2007), yet failed to do so in the present study. However, since Cronbach's  $\alpha$  level for this scale was minimally lower than the acceptable threshold of 0.70 ( $\alpha=0.692$ ), it was decided to use the scale in its original form, in order to allow for the comparison of the study results with reference values from the KiGGS survey. However, removing one item of the scale would have increased the scale internal consistency to a level comparable with that obtained in the KiGGS survey ( $\alpha=0.754$ ). A possible explanation is that this particular item might have been too ambiguous or difficult to understand for participants in the present study. Accordingly, a critical evaluation of the scale, including the assessment of its internal consistency is recommended for its use in further research.

### ***5.3. Study participants' psychosocial well-being***

Consistent with previous research (Buttitta et al., 2014; Finne et al., 2013; Flodmark, 2005), the average generic QoL displayed by participants in the present study was lower than what has been observed in the general population (48.99 vs. values above 50 in the nationally representative KiGGS study) (Ellert et al., 2014). Even when stratifying study findings by gender, the average generic QoL values of boys and girls in the present study are lower when compared to both age and gender specific norm values for the KIDSCREEN-10 Index, and the recent results of the KiGGS follow-up survey (Ellert et al., 2014). Compared to another clinical paediatric overweight sample (Wille et al., 2010), both female and male participants in the present study fared slightly better than their overweight peers with regard to their generic QoL (48.08 vs. 46.7 for girls and 49.93 vs. 49 for boys). As opposed to previous research (Ellert et al., 2014; Nadeau et al., 2011; Wille et al., 2010) generic QoL did not vary with gender, nor with socio-economic status in the present study. However, similar

to the findings of Ravens-Sieberer and colleagues (2001), older adolescents (16-18 years old) had a lower generic QoL compared to their younger peers (13-15 years old).

On the other hand, significant gender differences were noted in terms of study participants' obesity-related QoL, as previously suggested by Wille and colleagues (2010). In this respect, female participants in the present study had significantly lower obesity-related QoL scores compared to their male peers ( $p=0.021$ ). However, this gender difference is hardly attributable to lower social support levels in the present study as opposed to what has previously been described in the literature (Ravens-Sieberer et al., 2001), since, although not statistically significant, female participants reported higher perceived social support scores compared to their male peers (82.59 among boys vs. 85.79 among girls,  $p=0.175$ ). Overall, study participants of both genders reported higher values on the KINDL® Obesity Module and hence a better obesity-related QoL compared to overweight youth in another clinical sample (Wille et al., 2010), with values of 65.38 vs. 61.5 for girls and 71.03 vs. 67.3 for boys.

As suggested in the literature (Ravens-Sieberer et al., 2001; Strauss, 2000), overweight adolescent girls in the present study were also found to be relatively disadvantaged compared to boys in terms of their self-esteem ( $p=0.002$ ). In turn, no age differences in self-esteem were identified in the present study, which may be due to the fact that no children younger than 13 years old were included in the study sample and indicates a relative homogeneity in the group of younger and older adolescents with regard to their self-esteem. In general, study participants reported a lower self-esteem level than German overweight adolescents in another smaller sample, with a mean score of 2.16 compared to 2.6 as reported by Giel and colleagues (2013).

On average, overweight youth in the present study reported a higher internal body-related locus of control and a lower external body-related locus of control tendency compared to the community sample used by Mrazek (1989) for the validation of the KLC instrument (mean values of 29.38 vs. 27.07 for internal KLC and 19.05 vs. 20.93 for external KLC). Both female and male study participants reported the same median internal KLC scores (29 and 30, respectively) as the age-specific norm values suggested by Albani and colleagues (2007), while their external KLC median values were much lower than in the norm sample (18 vs. 26 for girls and 18.5 vs. 27 for boys, respectively). These results may indicate a natural selection bias among overweight youth, since individuals with a high internal locus of control might be more likely to cope with overweight by accessing obesity care (Puhl & Brownell, 2003b). On the other hand, it is possible that receiving therapy in the study setting had a sensitizing effect on overweight adolescents, reducing their beliefs that physiological processes and physical appearance are the result of chance. Moreover, compared to previous research using the



KLC (Mrazek, 1989; Roth, 1999), adolescent obesity patients included in the study sample appear to be a homogenous group with regard to body-related locus of control, as no statistically significant differences could be observed in their internal or external body-related locus of control based on age, gender, ethnicity, socio-economic status or weight status. Some trends were visible in participants' domain-specific body-related locus of control, yet, given the poor internal consistency of the specific subscales, these will not be further elaborated upon.

A strong internal orientation of overweight adolescents' body-related locus of control was also observed in the qualitative data. In this sense, the potential influence of external factors on weight was only mentioned by some interviewees as an alternative explanation to the dominant view that physical appearance could be influenced through individual actions. Such contextualization attempts can be viewed as participants' effort to cope with their negative identity, as suggested by Puhl and Brownell (2003). Additionally, the ambivalent attributions of two participants may indicate natural variations in body-related locus of control beliefs depending on the targeted dimension of physical appearance and its degree of generality (e.g. a general belief in fate/genetic determinants of body features, but individual responsibility for weight status or internal attribution of overweight in general, but external attribution of personal overweight). Consequently, this calls for precision in framing the scope and developing targeted instruments for research on body-related locus of control.

Information on study participants' body image were only collected as part of the interviews and comprised both a quantitative and a qualitative component. Consequently, given the small size of the secondary sample used for the interviews (10 adolescents), quantitative results will only be discussed in the context of the qualitative data. On the body figure rating scale, all interviewees chose silhouettes illustrating an overweight body size, suggesting a relatively accurate weight status perception. This is consistent with previous research (Frisco et al., 2010; Park, 2011), yet unsurprising, since study participants were patients at a specialized obesity clinic. Although most interviewees defined an average body shape as ideal, both boys and girls showed a high degree of thin-ideal internalization in their evaluations of their own bodies and their desired body changes, which were largely consistent with their ideal body features (e.g. slim stomach, slim legs, etc.). As opposed to claims of boys having a larger spectrum of acceptable body shapes (Yates et al., 2004), male participants were similar to their female counterparts in their desire to lose weight, while the majority of boys strived towards the muscular body ideal described by Agliata and colleagues (2004). As suggested in the literature (Maximova et al., 2008; McCabe & Ricciardelli, 2003; Rodgers et al., 2009), family and peer group members represented role models with regard to physical appearance

for most interviewed adolescents. However, half of the interviewees also mentioned media as playing an important role in shaping their perception of ideal body image. In this respect, the extreme case of an adolescent who viewed body ideals promoted by the media as normal based on their widespread social acknowledgment points to the prominence of media in establishing and promoting physical appearance norms.

Both overweight boys and girls in the study sample reported similar, yet slightly lower mean self-efficacy values compared to age and gender specific norm values (29.22 vs. 29.65 for girls and 29.81 vs. 31.15 for boys). Similar to previous research using community samples (Callaghan, 2006; Luszczynska et al., 2004; Mazur et al., 2014), no significant differences in study participants' self-efficacy were identified based on their age, but based on their socio-economic status. However, the association between participants' self-efficacy and their socio-economic status did not follow a linear gradient. Instead, youth belonging to the middle affluence category reported the highest self-efficacy values, while adolescents in the low affluence category had the lowest mean self-efficacy score ( $p=0.014$ ). No statistically significant differences were observed between either middle and high or high and low affluence groups. Study participants' self-efficacy also varied with their degree of overweight, as obese adolescents reported significantly higher self-efficacy values when compared to both their overweight and extremely obese peers ( $p=0.018$  and  $p=0.036$ , respectively). Surprisingly, overweight youth displayed the lowest self-efficacy level in the present study.

In terms of their perceived access to social support, study participants of both genders scored higher compared to their peers in the nationally representative KiGGS survey (82.59 vs. 71.10 among boys and 85.79 vs. 79.43 among girls) (Holling et al., 2008). Moreover, as illustrated in the community sample used in the KiGGS survey, overweight girls in the present study reported a higher perceived social support level than their male peers. Nevertheless, the difference between girls and boys in the study sample was less pronounced than that between male and female KiGGS respondents. No statistically significant differences in perceived social support could be observed in the quantitative data based on participants' socio-demographic characteristics.

The qualitative data reflected the same homogeneous picture regarding study participants' access to social support and showed that interviewed adolescents generally perceive themselves as being well embedded in a supportive social network. In this context, family was seen to play a secondary role, as the majority of interviewees spent most of their spare time with their friends, who emerge as an important source of support and comfort in the face of adversity, including stigmatization, as previously suggested by Curtis (2008). Accordingly, in most cases, interview participants felt that they were not only accepted, but also valued by their friends and that they played an active, important

role in deciding on common activities. Moreover, adolescents also mentioned situations in which friends stood up for them against weight stigmatization, as well as their own efforts in supporting other overweight peers who were discriminated against based on their weight, thus emphasizing the protective role of friendship relations against the negative effects of weight stigma.

As a means of assessing the extent to which study participants perceived their families as being cohesive and supportive, a short version of the Family Climate Scales was used both in the KiGGS survey and in the present study. Compared to youth in the KiGGS community sample, both female and male study participants reported lower scores (mean values of 54.46 vs. 55.55 for girls and 56.76 vs. 57.82 for boys), pointing to more deficits in their family resources than can be observed among young people in the general population. No statistically significant differences in participants' family climate scores could be observed based on their socio-demographic characteristics.

#### ***5.4. Stigmatization experiences – integration of quantitative and qualitative results***

Information on the extent to which overweight adolescents experience and internalize weight stigmatization was collected both during the survey and the interviews conducted as part of the present research. Overall, survey results showed that the majority of study participants (78.5%) had made the experience of being stigmatized based on their weight at least once from at least one of the listed categories of social agents. The weight bias internalization scores of adolescents in the study sample were fairly normally distributed, covering almost the entire spectrum from a minimum score close to 1 (1.18) to the absolute maximum of 7, with most participants generally displaying an average internalization of weight stigma (mean=3.78, median=3.82).

In the context of the global study, the quantitative and qualitative components had a different focus. Whereas the survey results aimed primarily at obtaining an overview of the frequency of weight stigmatization experienced by adolescents in their interactions with both peers and adults, interviewees reported on the contexts in which such stigmatization occurred and on their coping strategies. Accordingly, the study results on stigmatization agents and stigma management are discussed in their complementarity below.

##### **5.4.1. Stigmatization agents and contexts**

As described in the literature (Puhl & Latner, 2007; Puhl, Peterson, et al., 2013b), the main agents of weight stigmatization among adolescents accessing obesity care in the study setting were their peers. Among these, schoolmates and male siblings were the most frequently mentioned weight stigma perpetrators. Moreover, the most prominent setting in which study participants experienced weight stigmatization was at school. This finding is supported by existing literature (Curtis, 2008;

Edmunds, 2008; Puhl, Peterson, et al., 2013b; Rees et al., 2013) and was mainly driven by the high frequency with which overweight adolescents were teased by their schoolmates because of their weight, observed both in the survey results (59.2%) and in interviewees' descriptions of stigmatizing situations. In turn, overweight youth in the present study did not feel discriminated against by their teachers to the extent described in other studies (16.8% vs. 27% in Puhl, Peterson and colleagues (2013b)).

In the interviews, discriminatory behaviour display from teachers was only reported in the context of physical activity. In this respect, participants' accounts also illustrated a condescending lowering of physical performance standards in the case of overweight youth, as suggested by Washington (2011). On the other hand, some interviewees felt disadvantaged when physical education teachers or coaches applied the same evaluation criteria for overweight and slender students, whereas others attributed negative outcomes (e.g. bad grades, not being selected for the best team) to their own reduced physical performance levels. However, interviewed adolescents also described physical activity teachers and coaches as being supportive and encouraging them to improve their physical performance. Physical activity settings were also typical contexts in which overweight youth were teased by their peers at school, as previously described by Curtis for British adolescents (2008).

Also, although interviewed youth felt generally well integrated in their group of friends, both quantitative and qualitative data converge in illustrating that stigma also occurs at this level. Despite not being as high as described in previous research (Puhl, Peterson, et al., 2013b), the extent of weight stigmatization by friends reported by participants in the present study is not negligible. In this sense, 26.2% of survey respondents reported having been teased, insulted or harassed by their friends based on their weight at least once. Interview data provided further insight on the stigmatization context, showing that in individual cases, overweight adolescents were stigmatized by their friends in situations in which such behaviour presented the latter with an advantage (e.g. personal amusement or relative display of power as a means to impress potential dating partners). Beyond weight teasing, the social marginalization of overweight youth and of overweight individuals in general was a recurrent topic during the interviews. Similar to previous findings (Meers et al., 2011), study participants rationalized the exclusion and marginalization of overweight youth as being grounded in stereotypes equating overweight with an undesirable identity. Against this background, a particular concern among interviewees was experiencing difficulties in finding a dating partner, which is consistent with previous research indicating a later sexual initiation among overweight adolescents in a nationally representative US sample (Cheng & Landale, 2010). However, although other studies found overweight girls to be at higher risk of being single (Sweeting, 2008; Tang-

Peronard & Heitmann, 2008), in the present study only boys expressed concerns in this respect.

Weight based marginalization was seen to manifest not only at a direct, individual level, but also in a more subtle form at the broader society level, by designing public infrastructure and goods to fit standard, thin body sizes. Consistent with the literature (Edmunds, 2008; Rees et al., 2013), several interviewees illustrated this type of exclusion by reporting difficulties in finding fitting age-appropriate and fashionable clothing. Moreover, a girl also evoked the example of setting upper weight limits for public leisure facilities (e.g. trampolines), which automatically excluded obese youth.

In their closer social environment, participants in the present study also experienced weight teasing from their parents and other adult family members (e.g. aunts, uncles, grandparents) (Puhl & Latner, 2007) to an extent which was similar or lower compared to the findings of previous research (Eisenberg et al., 2003; Goldfield et al., 2010; McCormack et al., 2011; Neumark-Sztainer et al., 2010; Neumark-Sztainer et al., 2002; Olvera et al., 2013; van den Berg et al., 2008). During the interviews, only two girls mentioned experiencing pressure from their parents to lose weight. Although this was rationalized by the interviewees as parents' attempts to support them in attaining a positive goal (weight loss), the means of choice were perceived as coercive and discriminatory.

Another type of weight stigmatization experiences described by overweight youth was being teased or insulted by strangers in public spaces. While survey results show that 32.5% of the global sample had made such an experience at least once, interviewees provide valuable examples of the settings in which such stigmatization occurred. In this respect, overweight youth were targeted by unknown weight teasing perpetrators while shopping (Rees et al., 2013) or going out with peers, particularly if the latter were also overweight (e.g. other overweight youth attending obesity rehabilitation care). Other contexts in which overweight youth were stigmatized by strangers involved access to physical space in public (e.g. getting in the bus, sitting on a bench or in the subway), with perpetrators covering a broad age range from primary school students to seniors. This finding suggests that, although the applicability of the realistic conflict theory to weight stigma has been subject to critique (Puhl & Brownell, 2003a), weight stigmatization does occur in situations marked by competition over resources. Moreover, the realistic conflict theory might also explain why slender youth engage in stigmatizing behaviour targeted at their overweight friends as a means of gaining access to dating partners, as observed in the present study.

Interestingly, conflicts with peers were also described as a context in which weight stigmatization occurred, partly in response to overweight adolescents' own offensive behaviour. Moreover, interviewees themselves suggested that overweight individuals could also be stigma perpetrators,

thus providing further support for research in which such behaviours were previously described (Janssen et al., 2004; Kukaswadia et al., 2011; Schwartz et al., 2006).

Given that all study participants accessed obesity care and were recruited through an obesity clinic, a major point of interest in the present study was to explore the extent to which overweight adolescents perceived themselves to be stigmatized by various categories of health professionals, since little relevant literature was found on this topic. In this respect, study participants felt most stigmatized by doctors (19.4%), followed by dietitians (11.5%), nurses (5.8%), social workers (4.7%) and psychologists (3.1%). This distribution could be explained based on the different roles of various health professions in the therapy of paediatric obesity and, consequently, the type of contact different professionals have with patients and the contents they address during their consultations (e.g. diet control). Moreover, depending on the extent of their overweight and psychosocial distress, it is very likely that some patients have never had contact with social workers and psychologists in the study setting. On the other hand, every patient visiting the obesity clinic is consulted by a medical doctor and a dietitian, which might explain the higher rates at which study participants perceived themselves as being stigmatized by members of these professions. No mention of stigmatization experiences in the healthcare setting was made during the interviews. Instead, some participants reflected upon and expressed their gratitude for the positive effects of accessing therapy and losing weight (e.g. becoming more popular among their peers).

Although it cannot be excluded that health professionals view and react to their overweight patients in a judgemental and biased way as suggested by adolescents in a different study (Rees et al., 2013), it can be argued that obesity therapy has an inherent discriminatory nature. As suggested by Link and Phelan in their theoretical framework (2001), in healthcare settings overweight youth are assigned a deviant label based on objective measurements (diagnosis) and are suggested that they need to work on themselves in order to become “normal” (i.e. to reach a normal weight status). In the case of adolescents, this premise structures all further interaction between healthcare professional(s)-patient, a dyad marked by a typical power imbalance. In this sense, Link and Phelan's stigma conceptualization can help explain why adolescents might be or consider themselves stigmatized by health professionals when accessing obesity care.

Considering the high prevalence of paediatric obesity and its negative consequences, the present research acknowledges the validity and utility of focusing on behavioural, modifiable risk factors in obesity therapy and prevention efforts. However, doing so may have led to the unintended effect of reinforcing stereotypes about agency and individual responsibility for weight and physical appearance in the general population, despite the fact that in Germany, the KiGGS study results

clearly illustrate the important role of genetic disposition, structural factors and early life experiences as risk factors in the development of paediatric obesity (Kleiser et al., 2009). Consequently, its internal attribution strengthened the social consensus on stereotypes defining overweight as a negative, undesirable identity.

From a gendered perspective, interviewees' reports converge with previous research (Ata & Thompson, 2010) in providing indications that weight stigma is perpetrated by boys more often than by their female counterparts, who were perceived as being less discriminating. Such a trend is also noticeable in the survey results at a family level, as overweight adolescents reported being more frequently teased by male (brothers, fathers) compared to female (sisters, mothers) family members (see Table 24), as previously described by Rehaag (2010) in her research on weight stigma among German adolescents. For all other listed categories, no gender distinction can be made based on the collected data.

#### **5.4.2. Coping with weight stigmatization**

An important reason for adding a qualitative component to the present study was the necessity of moving beyond the frequency of weight stigmatization experiences in order to gain insight into the mechanisms employed by overweight youth in managing stigma. In this sense, nearly the entire spectrum of coping mechanisms described in the literature (Puhl & Brownell, 2003b; Rehaag, 2010) was observed in interviewees' accounts of their personal experiences with weight stigma. As reflected in the interview material, a conceptual distinction was made in the analysis between strategies used by overweight adolescents to cope with manifest stigma (e.g. teasing, bullying) and those used to cope with their overweight as a stigmatized identity.

When confronted with discriminatory, manifestly stigmatizing behaviours, adolescents' reactions can be broadly categorized in either passive/defensive (e.g. ignoring, avoiding or walking away from stigmatizing situations) or aggressive (e.g. verbal retaliation or threatening with physical confrontation). Consistent with previous research (Bauer et al., 2004; Curtis, 2008; Li & Rukavina, 2009; Neumark-Sztainer et al., 1998), most study participants mainly used passive strategies to cope with direct stigmatization, yet some also reverted to more aggressive strategies. However, aggressive reactions to weight stigma described in the interviews mostly translated into verbal assertion and threats, with only two male participants displaying readiness to engage in physical confrontations.

As suggested by Puhl and Brownell (2003), in some cases, verbal assertion proved useful in discouraging perpetrators from further engagement in stigmatizing behaviours. In turn, avoiding further stigmatization was named by other interviewees as a reason for remaining passive when being teased or bullied. Avoidance coping mechanisms were also observed in interviewees'

rationalization of weight stigma as being an expression of perpetrators' personal complexes or bias. On the other hand, adolescents' indifference as a justification for being passive in stigmatizing situations can also be explained in light of self-protective mechanisms (e.g. rejecting overweight as a central identity element or habituation to teasing or bullying).

Seeking social support as a means of coping with manifest stigma was not frequently reported by interviewees and occurred mainly in cases of recurrent stigmatization, associated with significant psychological distress. This may be due to the fact that overweight youth generally find it uncomfortable to talk about their stigmatization experiences or are not disturbed by them to an extent to which they would feel compelled to seek support from others, as explicitly stated by study participants.

As opposed to the fairly dual character of strategies used in managing direct stigmatization, coping with overweight as a stigmatized identity covered a broader range of mechanisms, including compensation, attempts to eliminate the stigmatized attribute by losing weight, identity negation as well as the internalization of negative stereotypes. Regarding compensation, overweight adolescents interviewed in the present study reverted to skill development in areas expected to provide them with a relative advantage over their peers (e.g. electrotechnics), as well as to measures aimed at shifting the focus from their stigmatized attribute to their perceived qualities (e.g. through styling or positive behaviour).

Consistent with accessing obesity care in the study setting, interviewees also mentioned taking initiative and attempting to lose weight as a means of coping with their stigmatized attribute. In this respect, study participants reported significant social benefits of successfully losing weight. However, as suggested by Puhl and Brownell (2003) the pursuit of weight loss was also associated with detrimental coping strategies, as upward comparisons to peers who are thin or who have successfully lost weight were seen to elicit negative feelings and frustration against the background of interviewees' unsuccessful weight loss attempts.

Marks of weight bias internalization, as operationalized by Durso and Latner (2008) in their Weight Bias Internalization Scale, emerged as a recurring topic in participants' accounts. Accordingly, interviewees were seen to adopt common stereotypes about overweight and apply these in their rationalizations of personal stigma experiences, in their self-perception, as well as in their behaviour. In this respect, interviewees framed stigma as a natural consequence of their being overweight, disliked themselves, felt ashamed and worried about what others thought about them because of their appearance. Ultimately, overweight youth also reported acting in stereotypical ways, by withdrawing from social interactions which were perceived as endorsing a high stigmatizing potential



(e.g. job search, swimming). In extreme cases, such enacted self-stigmatization was associated with social isolation.

A single case of identity negation was reported during the interviews. However, other elements of identity negotiation as described by Puhl and Brownell (2003) and Rehaag (2010) could be identified throughout interviewees' accounts, in their attempts to define themselves as having a "normal" identity and in their claims to a fair and equal treatment from others. In this respect, study participants challenged common overweight stereotypes by presenting themselves as being physically active and playing an active role in their peer group. Moreover, similar to the results of previous research with German overweight adolescents (Rehaag, 2010), some interviewees attempted to rationalize stigma as being due to other personal characteristics rather than overweight (e.g. being new in a group, being annoying) or trivialize it by framing stigmatizing attitudes among friends as joking. Compared to the findings of Rehaag (2010), however, weight stigma trivialization was not specific to youth of non-German ethnicity. Furthermore, a female interviewee also expressed her wish that others give overweight individuals a fair treatment, while emphasizing the demotivating effect of weight stigmatization on weight loss attempts.

## **5.5. Hypotheses testing**

### **5.5.1. Hypothesis 1. Validity and reliability of the Weight Bias Internalization Scale**

One of the main aims of the present study was to establish whether the Weight Bias Internalization Scale (WBIS) developed by Durso and Latner (2008) for overweight adults could also be used as a reliable and valid measure of weight bias internalization among German overweight adolescents. Based on the data collected from youth accessing obesity care in the study setting, the German translated version of the WBIS displayed high internal consistency (Cronbach's  $\alpha=0.87$ ), yet lower than the value reported by Roberto and colleagues (2011) ( $\alpha=0.92$ ). This might be explained based on the different structure of the study samples, as the study conducted by Roberto and colleagues (2011) included only extremely obese adolescents enrolled for bariatric surgery, arguably a more homogenous group than the sample used in the present study. Moreover, the WBIS scores obtained by interview participants during the survey displayed a strong, significant association with the scores they obtained when asked to fill in the WBIS a second time during the interview (Pearson's  $r=0.877$ ,  $p=0.001$ ). Despite the small sample size ( $N=10$ ) and some variation in participants' responses to individual items (see Table 33), this finding provides initial insight into the stability of WBIS scores over time. Consequently, it is sensible to assume that the translated version of the WBIS can be used as a reliable tool for the assessment of weight bias internalization among adolescents accessing obesity care in Germany.

Furthermore, correlation and factor analyses were conducted in order to assess the criterion (concurrent) and construct validity of the WBIS, respectively. As expected based on previous research (Roberto et al., 2011), adolescents' WBIS scores were strongly, negatively associated with their self-esteem values, indicating that among overweight youth, self-esteem decreases with increasing weight bias internalization (Pearson's  $r = -0.698$ ,  $p < 0.001$ ). However, in contrast to the hypothesized association, study participants' WBIS scores did not significantly correlate with their scores on the internal scale of the body-related locus of control measure (KLC-IN). Instead, a significant, yet relatively low correlation could be observed between participants' scores on the WBIS and on the external scale of the body-related locus of control measure (KLC-EX - Pearson's  $r = 0.277$ ,  $p < 0.001$ ). This finding, although surprising at first sight, can be explained based on the different focus of the two scales: whereas the WBIS items are phrased in a personal manner and address the respondent directly, the KLC instrument presents respondents with general, impersonal statements regarding control attributions. Accordingly, study participants' stronger external body-related locus of control with increasing levels of weight bias internalization can be understood as a coping strategy, as described by Puhl and Brownell (2003). In this respect, it can be assumed that adolescents who identify themselves with the negative stereotypical features of being overweight will attempt to externalize control over physical appearance as a self-protection mechanism (Puhl & Brownell, 2003b; Rehaag, 2010). Such an explanation is also supported by previously identified associations between adolescents' external body-related locus of control and body-related anxiety and alienation (Mrazek, 1989).

The translated scale items did not display a good fit as components of a single construct (the p-value associated to the goodness-of-fit chi-square test was highly significant). Rather, an exploratory factor analysis revealed a two-dimensional scale structure, similar to the findings of Durso and Latner (2008). Based on the factor loadings, a theoretical distinction could be made between two scale dimensions focusing on weight satisfaction (2 items) and self-stigmatization (9 items), respectively. After removing the two weight satisfaction items, an additional exploratory factor analysis retrieved a single factor solution, with loadings above 0.5 for all items and a Cronbach's  $\alpha$  value of 0.868.

During the interviews, most participants found the scale acceptable (i.e. did not feel uncomfortable answering the scale items, did not think the items should be modified), despite its sensitive and personal nature. Moreover, the scale was viewed as comprehensive and useful for identifying overweight young people at risk for psychological distress, as well as in optimizing therapy environments. Although some comprehension issues emerged in the case of items whose phrasing implied a double negation for a positive answer (e.g. Item 8 "I don't think I deserve to have many

friendships, as long as I am overweight.”), most interviewees considered the scale to be accessible to the target group of adolescents aged 13 and older. Furthermore, the comprehension difficulties elicited by item 8 might explain its poor performance in reliability and validity analyses (see section 4.1), as well as its lack of power to discriminate between gender, age and weight status categories (see Table 27). Accordingly this item can be omitted from the WBIS, without affecting its internal consistency (see Table 8).

In conclusion, despite leaving room for improvement, the translated German version of the WBIS can be used as a reliable and valid tool for the assessment of weight bias internalization among German adolescents.

### **5.5.2. Hypothesis 2. The influence of socio-demographic characteristics and weight status on adolescents' weight bias internalization**

The second hypothesis formulated in the present study assumed that extremely obese and female adolescents, as well as those who belong to an ethnic minority group or have a low socio-economic status would have higher weight bias internalization scores. In this respect, ANOVA and regression analyses results did not reveal significant effects of ethnicity, weight and socio-economic status on overweight adolescents' internalization of weight bias in the global sample. On the other hand, significant effects of socio-economic status on weight bias internalization were observed in the secondary sample used for the interviews. As interviewees were only selected from the lowest and highest centiles (below the 10<sup>th</sup> and above the 90<sup>th</sup> percentile) of the WBIS scores distribution, it can be argued that socio-economic status plays an important role in shaping extreme forms of weight bias internalization (either extremely low or extremely high), but loses its significance against the background of a majority with average weight internalization values.

As opposed to previous findings (Roberto et al., 2011), gender had a significant impact on study participants' weight bias internalization scores both in ANOVA and regression analyses. In this sense, being female was seen to increase participants' level of weight bias internalization scores by 0.496 units ( $p=0.002$ ) in a regression model in which adolescents' socio-demographic characteristics, weight, experience with weight stigmatization and individual resources were controlled for. Having made the experience of weight stigmatization ( $\beta=0.792$ ,  $p<0.001$ ) and participants' self-efficacy ( $\beta=-0.016$ ,  $p=0.007$ ) were additional significant predictors of weight bias internalization in the present study.

Although initially a significant predictor of weight bias internalization when controlling for socio-demographic characteristics (age, ethnic minority background and gender), participants' weight status (BMI-SDS) lost its significance when their experience with stigmatization was introduced into

the regression model. Consistently, no statistically significant differences in the extent of weight bias internalization could be identified between extremely obese adolescents and their lighter peers in a Mann-Whitney Test ( $p=0.121$ ), nor when considering the three weight groups independently in ANOVA analyses ( $p=0.208$ ).

In conclusion, the null hypothesis that no association exists between participants' weight bias internalization and their socio-demographic and weight characteristics can only be rejected for gender, which emerged as an important predictor of weight bias internalization in the study sample.

### **5.5.3. Hypothesis 3. The impact of adolescents' weight bias internalization on their quality of life**

For the third hypothesis, the influence of weight bias internalization on overweight adolescents' generic and obesity-related quality of life was looked into by means of hierarchical multiple regression analyses, controlling for socio-demographic characteristics, weight, experience with stigmatization, as well as individual resources. The results of the performed analyses indicated that, together with ethnic minority group affiliation, weight bias internalization was a strongly significant predictor for both generic and obesity specific quality of life. In both cases, weight bias internalization was negatively associated with quality of life, as expected based on previous research (Roberto et al., 2011). Accordingly, an increase of one unit in study participants' weight bias internalization decreased their generic quality of life by 2.051 units and their obesity-related quality of life by 10.060 units, at  $p$ -values below 0.001.

In conclusion, the null hypothesis that weight bias internalization is not significantly associated with overweight adolescents' quality of life can be rejected. Consequently, it is sensible to assume that weight bias internalization is associated with quality of life impairments among overweight youth accessing obesity care. Interestingly, having a migration background was also a significant predictor of reductions in both generic and obesity-related quality of life, which may be due to the double stigmata of being overweight and a member of an ethnic minority group.

### **5.5.4. Hypothesis 4. The protective effect of individual resources against the negative consequences of weight bias internalization on quality of life**

Study participants' personal, social and familiar resources were introduced in the hierarchical multiple regression models, since it was assumed that they would positively impact on adolescents' quality of life and potentially reduce the strength of its negative association with weight bias internalization. In this respect, none of study participants' individual resources significantly predicted their obesity-related quality of life. On the other hand, overweight adolescents' level of social support ( $\beta=0.156$ ;  $p<0.001$ ) and their family climate ( $\beta=0.118$ ;  $p=0.009$ ) were significant predictors

of their generic quality of life. Moreover, introducing participants' resources in the regression analysis reduced the impact of weight bias internalization on generic quality of life to 2.051 from an initial level of 3.445 in the first model, in which only adolescents' weight and socio-demographic characteristics were adjusted for.

In conclusion, overweight adolescents' social and familiar resources were found to have a significant, positive impact on their generic well-being, but not on their obesity-related quality of life.

### ***5.6. Towards a theory of weight stigma among overweight adolescents***

Based on the triangulation of quantitative and qualitative data, a theoretical model for the association between overweight, weight based stigma and obesity-related quality of life among overweight teenagers accessing obesity care is proposed in Figure 9 below. Considering their high internal body-related locus of control orientation, as well as their interview reports, it can be argued that youth accessing obesity care foster strong beliefs of weight controllability. Consistent with their low external body-related locus of control orientation, interview reports on potential external causes for overweight were scarce (illness, secondary effects of medication). Key structural factors in the development of paediatric obesity (e.g. social status and migration background) were never mentioned during the interviews, suggesting that overweight adolescents might not yet be able to recognize their significance at this stage.

Further, the interview material was rich in examples of what adolescents perceived to be the origins of stigma, or negative attitudes towards overweight. In this respect, all psychosocial mechanisms described in the literature as potential causes for weight stigmatization could be identified in interviewees' reports. Firstly, adolescents pointed to the great extent to which overweight is stereotypically associated with negative lifestyle choices concerning eating, physical activity and media use, reflecting widespread beliefs about weight controllability and internal attributions of overweight at a societal level. Secondly, interviewees' observations regarding the general tendency towards social marginalization of overweight individuals, partly because of their deviance from societal beauty norms, suggests that overweight might also be perceived as an integrated threat to the shared social value of thinness. Consequently, it is sensible to assume that overweight youth are avoided by others (particularly peers) due to an inherent fear of social contagion and status loss through their association. Accordingly, in interviewed adolescents' perception, non-overweight youth attempt to preserve a positive group identity through downward social comparisons to their overweight peers by labelling the latter as worse individuals altogether.

On the other hand, based on their experiences and observations, interviewees viewed the fact that overweight people take up more space in public facilities (e.g. public transportation) as a critical

reason why overweight is disapproved of at a societal level. In this sense, adolescents argued that, from the perspective of the non-overweight, occupying more space might be perceived as an advantage, when in fact, needing more space or exceeding weight limits might actually be a disadvantage for overweight individuals using public facilities.

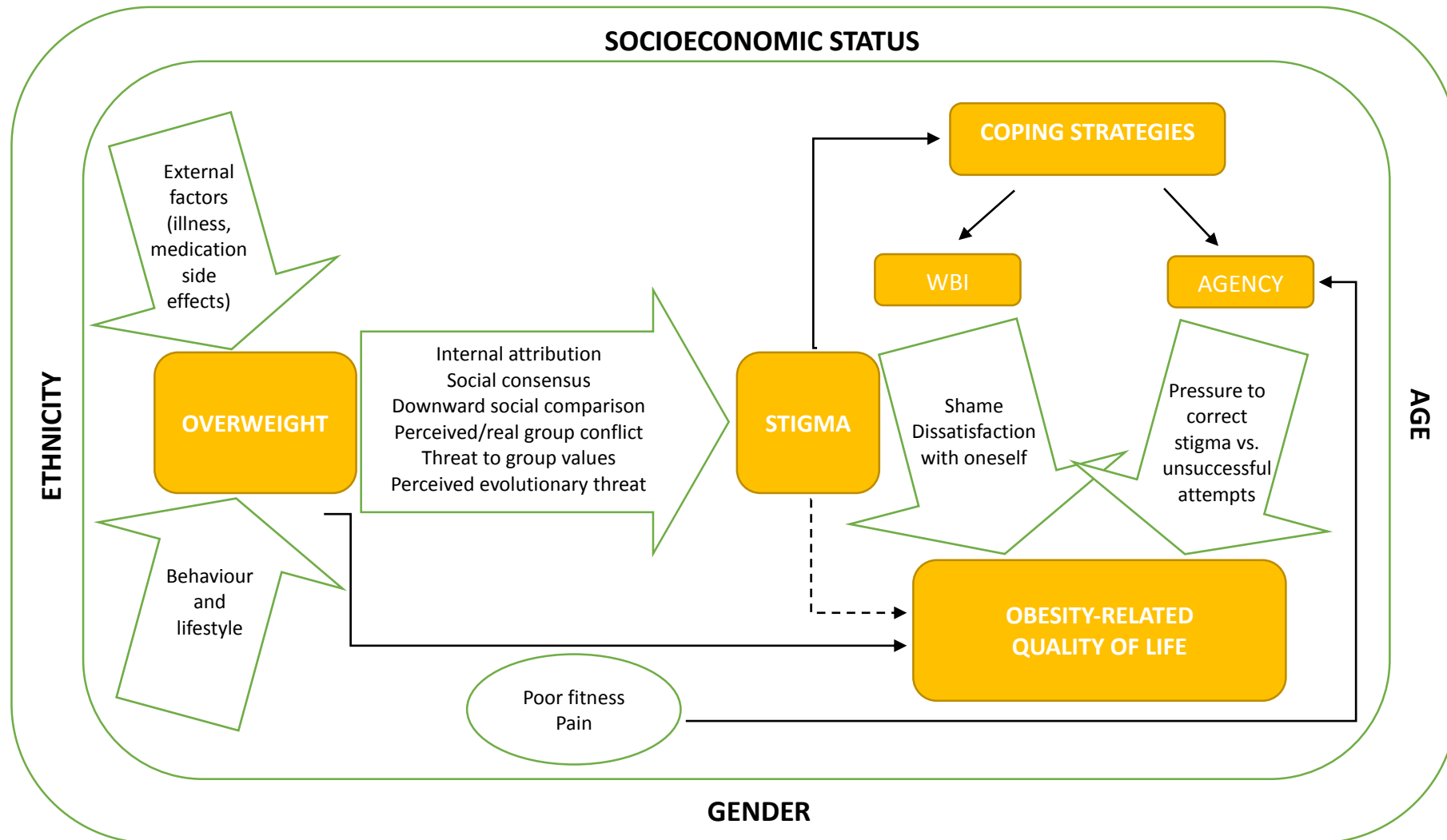
From an evolutionary perspective, overweight adolescents' poor physical fitness was thought to result in weight stigmatization, since it might be perceived as disruptive in the context of physical education classes. At this level, it can be argued that overweight stigma stems from its perception as an evolutionary threat, in the sense that slow students hinder the progress of their peers in a society centered on values of time and (physical) performance.

Once weight stigma is established, however, it can negatively impact on overweight adolescents' obesity-related quality of life either directly, through manifest stigmatization experiences or indirectly, through unfavourable coping mechanisms, such as internalization of stigma or internal attribution of failed weight loss attempts. With regard to its direct effects, it can be argued that weight stigma impacts on overweight adolescents' obesity-related quality of life by eroding their peer and adult social support basis. In the present study, however, the relatively low frequency of discrimination experiences, coupled with adolescents' reported high levels of social support suggest that weight stigma negatively influences obesity-related quality of life indirectly, through unfavourable coping mechanisms.

In this sense, weight stigma internalization was identified as a significant predictor of obesity-related quality of life impairments in regression analyses. Moreover, interview reports suggest that adolescents' thin ideal internalization and consequently feeling ashamed and dissatisfied with their physical appearance are potential pathways through which weight stigma internalization translates into quality of life reductions. Detailed analyses of adolescents' WBIS response patterns in the global sample further indicated a higher dissatisfaction with their appearance among girls.

On the other hand, overweight-related fitness impairments and musculoskeletal pain also have a negative impact on adolescents' physical quality of life and were consequently reported as reasons for choosing to cope with being overweight by attempting to lose weight. However, the inconsistency between pressures to lose weight and unsuccessful weight loss attempts was seen to generate negative self-directed emotions, which arguably lead to further reductions in overweight adolescents' quality of life.

Figure 9. Theoretical model of the association between overweight, weight stigma and obesity-related quality of life



## Chapter 6. Conclusions and recommendations

The topic of weight stigmatization and its negative consequences on overweight adolescents' well-being is currently understudied in Germany, as in most other parts of the world. To date, only few relevant German studies exist, focusing mainly on the widespread negative stereotypes towards overweight youth among their peers, adolescents' strategies of coping with weight stigma and the negative impact of weight teasing on overweight-related behaviours.

In contrast, the present study provides a first comprehensive description of weight stigma frequency, agents, contexts, consequences and management in a clinical sample of ethnically diverse, overweight adolescents from the Berlin metropolitan area. The mixed-method study design allowed for a mutual compensation of the individual shortcomings of surveys and interviews by providing both an overview of the targeted phenomenon and detailed information on how weight stigmatization is experienced by overweight youth aged 13 to 18 years old.

Although only half of the adolescents who were invited to participate in the study (53%) eventually completed the survey, these represented half of all eligible patients attending care in the study setting during the observation period and did not differ in terms of their age and gender from young people who chose not to participate. Accordingly, it can be assumed that the survey results can be generalized to the entire population of overweight youth accessing obesity care in the study setting and provide insight into the situation of obesity patients in the Berlin metropolitan area. However, the results obtained in the present study cannot be generalized to the entire population of overweight adolescents in Berlin and its surroundings. As is the case with quality of life, it is assumed that the internalization of weight stigma by overweight adolescents in the general population is lower than that observed in the studied clinical sample. Therefore, further research exploring the occurrence, magnitude and correlates of weight bias internalization among overweight youth in the community is recommended.

Furthermore, to the author's knowledge, the present study was the first to address weight stigma internalization among overweight adolescents in Germany and attempt to validate an instrument for its assessment in this population segment. In this sense, the validity and reliability of the Weight Bias Internalization Scale developed by Durso and Latner (2008) were evaluated after the scale had been translated and adapted for use with German youth. The results showed that the German translation of the Weight Bias Internalization Scale was an overall reliable and valid tool. Study results point to a two-dimensional scale structure, in which most items assess the internalization of negative stereotypes and views about overweight (self-stigmatization), while two items focus on respondents'



satisfaction with their weight status. Hence, it is argued that the adapted, German version of the Weight Bias Internalization scale could be validly reduced to 9 items when focusing strictly on self-stigmatization. Nevertheless, the two items reflecting respondents' satisfaction with their weight might provide additional, useful insight into overweight individuals' motivation for change in therapy settings. The two-dimensional scale structure is illustrated in Table 35 below.

*Table 35. German translation of the Weight Bias Internalization Scale with items pertaining to the self-stigmatization dimension marked with 1 and items pertaining to the personal weight satisfaction dimension marked with 2*

		Trifft gar nicht zu	Trifft nicht zu	Trifft eher nicht zu	Weder noch	Trifft eher zu	Trifft zu	Trifft voll und ganz zu
1.	Als Übergewichtige/-r, fühle ich mich genauso fähig wie jeder andere. <sup>1</sup>	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
2.	Ich bin weniger attraktiv als andere wegen meines Gewichtes. <sup>1</sup>	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
3.	Wegen meines Übergewichtes, mache ich mir Sorgen darüber, was die anderen von mir denken. <sup>1</sup>	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
4.	Ich wünsche mir, ich könnte mein Gewicht radikal verändern. <sup>2</sup>	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
5.	Wenn ich viel an mein Übergewicht denke, fühle ich mich bedrückt. <sup>1</sup>	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
6.	Ich hasse mich, weil ich übergewichtig bin. <sup>1</sup>	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
7.	Mein Gewicht ist mir sehr wichtig für mein Selbstwertgefühl. <sup>1</sup>	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
8.	Ich glaube nicht, dass ich es verdient habe, viele Freundschaften zu haben, solange ich übergewichtig bin. <sup>1</sup>	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
9.	Ich bin zufrieden mit meinem Gewicht. <sup>2</sup>	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>
10.	Wegen meines Übergewichtes, habe ich das Gefühl, nicht ich selbst zu sein. <sup>1</sup>	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>

		Trifft gar nicht zu	Trifft nicht zu	Trifft eher nicht zu	Weder noch	Trifft eher zu	Trifft zu	Trifft voll und ganz zu
11.	Wegen meines Gewichtes, verstehe ich nicht, wie jemand, der/die gut aussieht, sich mit mir verabreden würde. <sup>1</sup>	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>	6. <input type="checkbox"/>	7. <input type="checkbox"/>

Interviewed adolescents perceived the strong phrasing of certain items as having the potential to both cause additional distress to affected youth and encourage reporting bias. Moreover, some adolescents encountered difficulties answering items which required a double negation for a positive answer. This might be a consequence of the researcher's attempts to preserve as much of the original meaning and phrasing of the scale items as possible during their translation into German. Based on these observations and other recommendations made by study participants during the interviews, the items perceived as being most problematic (6 and 8) could be rephrased as suggested below.

6. Ich mag mich selber nicht, weil ich übergewichtig bin.

8. Ich habe es nicht verdient, viele Freundschaften zu haben, solange ich übergewichtig bin.

Given its poor performance on validity and reliability assessments, item 8 could be omitted altogether.

Based on the results obtained by using the Weight Bias Internalization Scale in the study sample, adolescents receiving obesity care generally reported an average level of weight bias internalization. Nevertheless, the extent to which study participants internalized weight stigma was strongly associated with their self-esteem and was a strongly significant predictor of both their generic and their obesity-related quality of life, independent of socio-demographic factors, weight status, experience with stigmatization, and individual resources. These results are indicative of the substantial impact of weight bias internalization on overweight adolescents' well-being and point to the urgency of integrating this factor in paediatric obesity therapy concepts. Also, as it is unclear to what extent weight stigma internalization favours further stigmatization, more research is needed in this area.

Furthermore, the internalization of weight stigma appears to be particularly problematic for girls, as detailed analyses of adolescents' answers to the WBIS items suggest that their degree of body dissatisfaction is higher compared to boys. Given brevity constraints, the study questionnaire did not include instruments for the assessment of respondents' body image or the individual components of their generic quality of life. Accordingly, further research is encouraged to explore potential

associations between adolescents' weight bias internalization and their body image satisfaction, as well as between weight bias internalization and specific quality of life dimensions. Such research could arguably help attain a deeper understanding of the reasons why adolescent girls internalize weight stigma to a greater extent than boys. Moreover, gender differences in weight stigma perpetration should be further investigated, in order to enable targeted intervention.

Since all participants were recruited from an obesity clinic, it is sensible to assume that attempting to lose weight was a common, long-term strategy to cope with weight stigmatization for most adolescents who took part in the present study. Beyond weight loss attempts, however, study participants made use of a broad spectrum of weight stigma management strategies, including confrontation and/or passive acceptance of manifest stigma, internalization of negative stereotypes and attitudes about overweight, as well as weight status compensation. From a theoretical viewpoint, a distinction between strategies used to cope with manifest stigma and those employed in coping with overweight as a stigmatized identity was illustrated based on the interview data. This classification offers an alternative to criteria suggested in previous studies and is deemed as a useful tool for the conceptualization and operationalization of coping strategies in further research.

Consistent with natural changes in individuals' social network during adolescence, the present study illustrates the crucial role of peer relationships in the context of weight stigmatization. In this respect, overweight adolescents' peers emerged not only as the main perpetrators of weight stigmatization, but also as important sources of comfort and social support. In line with adolescents' preference for support in the face of weight stigma (Puhl, Peterson, et al., 2013a), this finding points to the necessity that efforts towards reducing weight stigmatization in the community also target young people, particularly in the school setting. However, caution is warranted in this respect, as previous research suggested that interventions targeting weight stigma in schools can also have the unintended effect of increasing the visibility and stigmatization of overweight youth (Curtis, 2008; Edmunds, 2008).

Considering that weight stigmatization has been found to be counterproductive for successful weight loss, possibilities of offering non-stigmatizing support to overweight youth should be looked into. This is particularly relevant for therapy settings, given that roughly every fifth study participant reported feeling stigmatized by health professionals. Not addressing this issue on time could result in adolescents' withdrawal from care, which, in turn, can lead to higher healthcare costs and loss of healthy life years on the long term, due to delays in the diagnosis and treatment of potential comorbidities. Accordingly, further research should explore whether or to what extent various categories of professionals involved in providing care to overweight adolescents address weight stigma in their consultations. Moreover, the extent to which overweight youth accessing obesity care

in other settings perceive therapy and/or health professionals as being stigmatizing should also be explored, as a first step towards improving obesity care for paediatric populations, as well as developing appropriate training for health professionals.

In practice, it is argued that psychologists, the category of health professionals by whom adolescents felt least stigmatized, should address the topic of weight stigma in the therapy setting, and, whenever possible, in the school setting, in order to also reach overweight youth who do not receive obesity care. Moreover, the results of the present study suggest that overweight adolescents mostly bring up the topic of weight stigmatization with their parents, peers or health professionals in situations of extreme personal distress. Accordingly, parents, caregivers and health professionals are advised to occasionally probe for potential stigmatization experiences among overweight youth (particularly among girls), in order to identify and address their negative consequences before they become chronic.

Health professionals in the study setting are encouraged to reflect upon their personal obesity-related beliefs and practice, in order to identify aspects which might come across as stigmatizing behaviour in their interactions with patients and their caregivers. Neutral, probing questions (e.g. “How do you get along with other children at school?” or “How do you get along with your sibling(s)?”) should be asked regularly, as a means of exploring and keeping track of patients’ experiences with stigmatization. Whenever children and adolescents report being marginalized, teased or bullied because of their weight, the use of the WBIS is advisable in order to identify the burden of stigma on their psychological wellbeing and accordingly plan further counselling options. Ideally, targeted counselling should focus on supporting young people in developing appropriate, acceptable and positive strategies of coping with weight stigma.

In general, a shift from the almost exclusive focus on behavioural risk factors in popular health communication (e.g. in the media, in health campaigns) to a more inclusive presentation of obesity causes is needed. To this end, an increased uptake of alternative explanations for the etiology of obesity in the public discourse is recommended, in order to raise awareness of its multiple determination. It is argued that presenting genetics and social structure as important factors in shaping obesity risk might sensitize the public opinion in this respect and reduce stereotypes associating obesity with individual behaviour. In turn, a weaker association of overweight with personal attributes and actions might decrease readiness to engage in stigmatizing behaviour against overweight individuals in the general population.

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## ANNEXES

### A. Participant information materials

1. Information letter for parents
2. Informed consent form for parents
3. Information letter for adolescents
4. Informed consent form for adolescents

### B. Research Instruments

1. Questionnaire
2. Interview guide

### C. Additional quantitative results

1. Characteristics of the WBIS items after removal of items 4 and 9
2. Summary of one-way ANOVA analysis of the health, physical appearance and physical performance subscales of the KLC instrument by selected socio-demographic variables
3. Socio-demographic characteristics of adolescents eligible for interview selection

## **ANNEX A**

### **PARTICIPANT INFORMATION MATERIALS**

**BITTE NEHMEN SIE SICH 5 MINUTEN ZEIT UM DIESE UNTERLAGEN  
GENAU DURCHZULESEN.**

**WIR WÜRDEN UNS SEHR FREUEN, WENN SIE DURCH IHRE  
TEILNAHME DIE DURCHFÜHRUNG UNSERER STUDIE UNTERSTÜTZEN**

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## Eltern-Information

### Wissenschaftliche Studie

"Gewichtsbezogene Stigma-Erfahrungen und Internalisierung bei  
übergewichtigen Jungen und Mädchen in Berlin"

Beteiligte Institutionen



Sehr geehrte Eltern,

wir möchten Sie darüber informieren, dass wir in diesem Jahr an der Adipositas Sprechstunde des Sozialpädiatrischen Zentrums in Zusammenarbeit mit der Berlin School of Public Health eine Forschungsarbeit durchführen werden. Die Studie wird im Rahmen der Promotionsarbeit von Frau Carmen Cristina Ciupitu (wissenschaftliche Mitarbeiterin an der Berlin School of Public Health), mit der Unterstützung von Prof. Dr. Birgit Babitsch und Frau Dr. Susanna Wiegand, Fachärztin für Kinder und Jugendmedizin an der Charité, durchgeführt. In der Studie geht es darum, mehr über die Erfahrungen, die Ihr Kind wegen seines Übergewichtes in seinem Umfeld gemacht hat, herauszufinden. Ziel der Studie ist auch, zu untersuchen, ob diese Erfahrungen die Meinung Ihres Kindes über sich selbst und sein Wohlbefinden beeinflussen. Die Ergebnisse der Studie werden uns dabei helfen, falls notwendig, angepasste Unterstützungsangebote für Ihr Kind und andere übergewichtige Kinder zu entwickeln.

Ablauf und Ziele der Studie. Im Rahmen der Studie werden wir Ihr Kind darum bitten, bei einem seiner Termine an der Adipositas Sprechstunde zwischen Februar und Juni 2012, einen Fragebogen auszufüllen. Der Fragebogen ist aus verschiedenen Teilen zusammengesetzt, die darstellen sollen, wie es Ihrem Kind gerade geht, was seine Meinung über sich selbst und seine Familie ist und ob es wegen seines Übergewichtes gehänselt, gemobbt oder beleidigt wurde. Für das Ausfüllen des Fragebogens erhält Ihr Kind ein Buchgutschein im Wert von 5,-€ als Dankeschön für seine Mitarbeit.

Zudem benötigen wir auch Daten zur Körpergröße und zum Gewicht Ihres Kindes, seiner Herkunft, seinem Alter und zur Länge seiner Betreuung an der Sprechstunde. Diese Informationen werden durch den behandelnden Arzt/die behandelnde Ärztin mit Ihrem Einverständnis und unter Berücksichtigung der ärztlichen Schweigepflicht der Krankenakte Ihres Kindes entnommen.

Zwischen Juli und September 2012 werden wir Ihr Kind möglicherweise zu einem persönlichen Gespräch einladen. Dabei wollen wir mehr über konkrete Situationen erfahren, in denen Ihr Kind wegen seines Gewichtes gehänselt, gemobbt oder beleidigt wurde und wie es damit zurechtgekommen ist.

Pseudonymisierung in unserer Studie bedeutet, dass den personenbezogenen Daten Ihres Kindes (z.B. Name, Kontaktdaten, Körpergröße) durch einen systematischen Kodierungsschlüssel ein Pseudonym, das nicht die Initialen Ihres Kindes enthält, zugeordnet wird. Das Pseudonym setzt sich aus Buchstaben und Zahlen zusammen und verhindert die Möglichkeit einer direkten Zurückverfolgung seiner Identität in dem endgültigen Datensatz. Zugriff auf dem Kodierungsschlüssel, der es erlaubt, die erhobenen Daten mit Ihrem Kind in Verbindung zu setzen, haben nur Frau Ciupitu, Frau Dr. Wiegand und Frau Prof. Dr. Babitsch.

Sie haben das Recht auf Auskunft über alle bei der Studienleitung vorhandenen personenbezogenen Daten über Ihr Kind. Sie haben auch das Recht auf Berichtigung unrichtiger personenbezogener Daten. In diesen Fällen wenden Sie sich bitte an die zuständige wissenschaftliche Mitarbeiterin, Frau Ciupitu. Die Email-Adresse, Postanschrift und Telefonnummer von Frau Ciupitu finden Sie am Ende des Formblattes.

Die Teilnahme an der Studie ist freiwillig. Das bedeutet, dass Sie jederzeit ohne Angabe von Gründen Ihre Einwilligung zur Teilnahme Ihres Kindes an der Studie und zur Verarbeitung der im Rahmen der Studie erhobenen Daten widersprechen und ihre Löschung bzw. Vernichtung verlangen können. Wir möchten Sie zudem darauf hinweisen, dass die Studienergebnisse in wissenschaftlichen Fachzeitschriften veröffentlicht werden. Dabei bleibt die Identität Ihres Kindes jedoch anonym. Bei der Teilnahme Ihres Kindes an der Studie entstehen daher für es kein Nachteil und keine Gefahr.



Datenspeicherung. Im Rahmen dieser Studie werden Daten von Ihrem Kind mittels eines schriftlichen Fragebogens und, im Falle der Durchführung eines Interviews, anhand einer digitalen Tonbandaufnahme erhoben. Zudem wird der behandelnde Arzt/die behandelnde Ärztin Daten zu Ihrem Kind seiner Patientenakte entnehmen. Alle somit erhobenen, pseudonymisierten Daten werden bis zu ihrer elektronischen Erfassung und Speicherung im Büro der zuständigen wissenschaftlichen Mitarbeiterin, Frau Ciupitu (Berlin School of Public Health, Seestr. 73, Raum 2.0021), in einem abgeschlossenen Schrank aufbewahrt. Zugang zu den Daten haben dabei ausschließlich die zuständige wissenschaftliche Mitarbeiterin (Cristina Ciupitu) und ihre Betreuerin (Prof. Dr. Birgit Babitsch). 3 Monate nach ihrer elektronischen Erfassung werden sämtliche Tonbandaufnahmen und Fragebogen datenschutzgerecht gelöscht, bzw. vernichtet. Nach dem Studienende werden die erhobenen Daten auf elektronischen Datenträgern 2 Jahre lang bei der Leitung der Adipositas Sprechstunde gespeichert. Eine Weitergabe von Einzelangaben an Dritte erfolgt nicht.

Für weitere Fragen, haben Sie jederzeit die Möglichkeit, sich an Frau Cristina Ciupitu zu wenden. Sie erreichen sie täglich unter der Telefonnummer 030 - 450 570 827 oder per Email an [carmen-cristina.ciupitu@charite.de](mailto:carmen-cristina.ciupitu@charite.de).

Wir würden uns sehr freuen, wenn Ihr Kind an der Studie teilnimmt. Dazu möchten wir Sie bitten, die beiliegende Einwilligungserklärung auszufüllen, zu unterschreiben und an Frau Cristina Ciupitu zurückzuschicken oder bei dem nächsten Termin Ihres Kindes in der Adipositas-Sprechstunde mitzubringen. Die Postanschrift lautet:

Carmen Cristina Ciupitu  
Berlin School of Public Health an der Charité  
Seestraße 73, Haus 10, 2. OG, R.2.0021,  
13347 Berlin.

***Für Ihre Unterstützung ein herzliches Dankeschön!***



***Carmen Cristina Ciupitu, MscPH***



***Dr. Susanna Wiegand***

## Einwilligungserklärung zur Teilnahme an der Studie

### "Gewichtsbezogene Stigma-Erfahrungen und Internalisierung bei übergewichtigen Jungen und Mädchen in Berlin "

Hiermit erkläre ich, dass ich, Beteiligte Institutionen

über das Ziel und Bedeutung der pseudonymisierten Befragung meiner Tochter  
/meines Sohnes, \_\_\_\_\_,  
schriftlich (siehe *Eltern-Information* in der Version vom 21.12.2011) aufgeklärt  
wurde. Ich habe die mir vorgelegte Teilnehmer/-innen-Information verstanden  
und eine Ausfertigung derselben und dieser Einwilligungserklärung erhalten.



Ich hatte Gelegenheit, Fragen an die Projektmitarbeiterin, Frau Cristina Ciupitu, zu stellen. Auch hatte ich ausreichend Zeit, meine Entscheidung über die Teilnahme meines Kindes an der Studie unbeeinflusst zu treffen. Mir wurde zugesichert, dass ich die Teilnahme meines Kindes an der Studie ohne Angabe von Gründen und ohne nachteilige Folgen für mich oder mein Kind jederzeit zurücknehmen kann. Ich bin damit einverstanden, dass von meinem Kind Angaben in Form eines schriftlichen Fragebogens und einer Tonbandaufnahme erhoben werden, die 3 Monate nach ihrer elektronischen Erfassung gelöscht werden. Mir ist bewusst, dass die elektronischen Datenträger nach Verarbeitung und Veröffentlichung der Ergebnisse 2 Jahre lang aufbewahrt werden.

## Einwilligungserklärung zur Datenerhebung- und Datenverarbeitung

Ich erkläre mich damit einverstanden, dass im Rahmen dieser Studie mein Kind betreffende personenbezogene Daten/Angaben erhoben und pseudonymisiert in Papierform sowie auf elektronischen Datenträgern aufgezeichnet und verarbeitet werden dürfen. Ich bin auch damit

**einverstanden, dass die Studienergebnisse in anonymer Form, die keinen Rückschluss auf die Identität meines Kindes zulassen, veröffentlicht werden.**

Sollte nur ein Sorgeberechtigter unterschreiben erklärt er/sie damit gleichzeitig, dass er/sie entweder über das alleinige Sorgerecht für sein/ihr Kind verfügt oder das Vertretungsrecht für den zweiten Sorgeberechtigten ausübt.

Berlin, den

Unterschrift der Mutter

Unterschrift des Vaters

**BITTE NIMM DIR 5 MINUTEN ZEIT UM DIESE UNTERLAGEN GENAU DURCHZULESEN.**

**WIR WÜRDEN UNS SEHR FREUEN, WENN DU DURCH DEINE TEILNAHME DIE DURCHFÜHRUNG UNSERER STUDIE UNTERSTÜTZST**

Carmen Cristina Ciupitu, MScPH

Charité – Universitätsmedizin Berlin  
Berlin School of Public Health

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EGZB, Haus 10  
13347 Berlin

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Fax 004930450570972  
E-mail: Carmen-cristina.ciupitu@charite.de

bsph.charite.de

Date: 25/01/2016

## Teilnehmer/-innen-Information

### Wissenschaftliche Studie

"Gewichtsbezogene Stigma-Erfahrungen und Internalisierung bei übergewichtigen Jungen und Mädchen in Berlin"

Hallo!

wir möchten dich darüber informieren, dass wir in diesem Jahr an der Adipositas Sprechstunde des Sozialpädiatrischen Zentrums in Zusammenarbeit mit der Berlin School of Public Health eine Forschungsarbeit durchführen werden. Die Studie wird im Rahmen der Promotionsarbeit von Frau Carmen Cristina Ciupitu (wissenschaftliche Mitarbeiterin an der Berlin School of Public Health), mit der Unterstützung von Prof. Dr. Birgit Babitsch und Frau Dr. Susanna Wiegand, Fachärztin für Kinder und Jugendmedizin an der Charité, durchgeführt. In der Studie geht es darum, mehr über die Erfahrungen, die Jugendliche wegen ihres Übergewichtes machen, herauszufinden. Wir wollen auch untersuchen, ob diese Erfahrungen die Meinung der Jugendliche über sich selbst und ihr Wohlbefinden beeinflussen. Die Ergebnisse der Studie werden uns dabei helfen, passende Unterstützungsangebote bei negativen Erfahrungen zu entwickeln.

Beteiligte Institutionen



Ablauf und Ziele der Studie. Im Rahmen der Studie werden wir dich darum bitten, bei einem deiner Termine an der Adipositas Sprechstunde zwischen Februar und Juni 2012 einen Fragebogen auszufüllen. Der Fragebogen ist aus verschiedenen Teilen zusammengesetzt, die darstellen sollen, wie es dir gerade geht, was deine Meinung über dich selbst und deine Familie ist und ob du wegen deines Übergewichtes gehänselt, gemobbt oder beleidigt wurdest. Für das Ausfüllen des Fragebogens bekommst du dann von uns ein Buchgutschein im Wert von 5,-€ als Dankeschön für deine Mitarbeit.

Zudem benötigen wir auch Daten zu deiner Körpergröße und deinem Gewicht, deiner Herkunft, deinem Alter und zur Länge deiner Betreuung an der Sprechstunde. Diese Informationen werden durch deinen behandelnden Arzt/deine behandelnde Ärztin mit deinem Einverständnis und unter Berücksichtigung der ärztlichen Schweigepflicht deiner Krankenakte entnommen.

Zwischen Juli und September 2012 werden wir dich dann möglicherweise zu einem persönlichen Gespräch einladen. Dabei wollen wir mehr über konkrete Situationen erfahren, in denen du wegen deines Gewichtes gehänselt, gemobbt oder beleidigt wurdest und wie du damit zurechtgekommen bist.

Pseudonymisierung in unserer Studie bedeutet, dass deinen personenbezogenen Daten (z.B. Name, Kontaktdaten, Körpergröße) durch einen systematischen Kodierungsschlüssel ein Pseudonym, das nicht deine Initialen enthält, zugeordnet wird. Das Pseudonym setzt sich aus Buchstaben und Zahlen zusammen und verhindert die Möglichkeit einer direkten Zurückverfolgung deiner Identität in dem endgültigen Datensatz. Zugriff auf dem Kodierungsschlüssel, der es erlaubt, die erhobenen Daten mit dir in Verbindung zu setzen, haben nur Frau Ciupitu, Frau Dr. Wiegand und Frau Prof. Dr. Babitsch.

Du hast das Recht auf Auskunft über alle bei der Studienleitung vorhandenen personenbezogenen Daten über dich. Du hast auch das Recht auf Berichtigung unrichtiger personenbezogener Daten. In diesen Fällen wende dich bitte an Frau Ciupitu. Ihre Email-Adresse, Postanschrift und Telefonnummer findest du am Ende des Formblattes.

Die Teilnahme an der Studie ist freiwillig. Das bedeutet, dass du jederzeit ohne Angabe von Gründen deine Einwilligung zur Teilnahme an der Studie und Verarbeitung deiner im Rahmen der Studie erhobenen Daten widersprechen und ihre Löschung bzw. Vernichtung verlangen kannst. Wir möchten dich zudem darauf hinweisen, dass die Studienergebnisse in wissenschaftliche Fachzeitschriften veröffentlicht werden. Dabei bleibt deine Identität jedoch anonym. Bei deiner Teilnahme an der Studie entstehen daher für dich keine Nachteile und keine Gefahr.

Datenspeicherung. Im Rahmen dieser Studie werden von dir Daten mittels eines schriftlichen Fragebogens und, im Falle der Durchführung eines Interviews, anhand einer digitalen Tonbandaufnahme erhoben. Zudem wird dein behandelnder Arzt/deine behandelnde Ärztin einige Daten aus deiner Patientenakte entnehmen. Alle somit erhobenen, pseudonymisierten Daten werden bis zu ihrer elektronischen Erfassung und Speicherung im Büro der zuständigen wissenschaftlichen Mitarbeiterin, Frau Ciupitu (Berlin School of Public Health, Seestr. 73, Raum 2.0021), in einem abgeschlossenen Schrank aufbewahrt. Zugang zu den Daten haben dabei ausschließlich die zuständige wissenschaftliche Mitarbeiterin (Cristina Ciupitu) und ihre Betreuerin (Prof. Dr. Birgit Babitsch). 3 Monate nach ihrer elektronischen Erfassung werden alle Tonbandaufnahmen und Fragebögen gelöscht, bzw. vernichtet. Nach dem Studienende werden die erhobenen Daten auf elektronischen Datenträgern 2 Jahre lang bei der Leitung der Adipositas Sprechstunde gespeichert. Eine Weitergabe von Einzelangaben an Dritte erfolgt nicht.

Für weitere Fragen, hast du jederzeit die Möglichkeit, dich an Frau Cristina Ciupitu zu wenden. Du erreichst sie täglich unter der Telefonnummer 030 - 450 570 827 oder per Email an [carmen-cristina.ciupitu@charite.de](mailto:carmen-cristina.ciupitu@charite.de).

Wir würden uns sehr freuen, wenn du an der Studie teilnimmst. Dazu möchten wir dich bitten die beiliegende Einwilligungserklärung auszufüllen, zu unterschreiben und an Frau Cristina Ciupitu zurückzuschicken oder bei deinem nächsten Termin in der Adipositas-Sprechstunde mitzubringen. Die Postanschrift lautet:

Carmen Cristina Ciupitu  
Berlin School of Public Health  
Seestr. 73, Haus 10, 2. O.G., R. 2.0021,  
13347 Berlin.

***Für deine Unterstützung ein herzliches Dankeschön!***



***Carmen Cristina Ciupitu, MscPH***



***Dr. Susanna Wiegand***

## Einwilligungserklärung zur Teilnahme an der Studie

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Berlin, den

Unterschrift des/der Teilnehmers/in



**ANNEX B**

**RESEARCH INSTRUMENTS**

Liebes Mädchen, lieber Junge,

mit diesem Fragenbogen möchten wir mehr über deine Gesundheit, Gefühle und Erfahrungen herausfinden. Später werden wir dich zu einigen Aspekten noch mal befragen, um herauszufinden, ob und wie sich das verändert hat.

Deine Antworten auf diese Fragen sind für uns sehr wichtig. Wir bitten dich, die nachstehenden Fragen genau durchzulesen und ehrlich zu beantworten. Bitte beantworte ALLE Fragen vollständig. Es gibt dabei kein richtig oder falsch. Es ist genauso so, wie du dich fühlst und das ist genau das, was wir wissen wollen.

Die Fragen lassen sich über das Ankreuzen der für dich richtigen Aussage beantworten.

Bei Fragen kannst du dich jederzeit an uns wenden.

Wir sagen schon jetzt ein dickes Dankeschön!!!!



Pseudonym: \_\_\_\_\_

## Deine Gesundheit

Wenn du an die <u>letzte</u> Woche denkst...		Überhaupt nicht	ein wenig	mittelmäßig	ziemlich	sehr
1.	Hast du dich fit und wohl gefühlt?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
	nie	selten	manchmal	oft	immer	
2.	Bist du voller Energie gewesen?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
	nie	selten	manchmal	oft	immer	
3.	Hast du dich traurig gefühlt?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
	nie	selten	manchmal	oft	immer	
4.	Hast du dich einsam gefühlt?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
	nie	selten	manchmal	oft	immer	
5.	Hast du genug Zeit für dich selbst gehabt?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
	nie	selten	manchmal	oft	immer	
6.	Konntest du in deiner Freizeit die Dinge machen, die du tun wolltest?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
	nie	selten	manchmal	oft	immer	
7.	Haben deine Mutter / dein Vater dich gerecht behandelt?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
	nie	selten	manchmal	oft	immer	
8.	Hast du mit deinen Freunden Spaß gehabt?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
	überhaupt nicht	ein wenig	mittelmäßig	ziemlich	sehr	
9.	Bist du in der Schule gut zurechtgekommen?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
	nie	selten	manchmal	oft	immer	
10	Konntest du gut aufpassen?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

	ausgezeichnet	sehr gut	gut	weniger gut	schlecht
Wie würdest du deine Gesundheit im Allgemeinen beschreiben?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Pseudonym: \_\_\_\_\_

## Wie geht es dir?

In der <u>letzten</u> Woche ...		nie	selten	manchmal	oft	immer
1.	fühlte ich mich dick und unbeweglich	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
2.	war ich schnell außer Atem und mir ging schnell die Puste aus	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
3.	war ich wegen meines Gewichts traurig und niedergeschlagen	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
4.	war ich genervt von den vielen Versuchen dünner zu werden	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
5.	habe ich mich wegen meines Gewichts geschämt	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
6.	war ich wegen meines Gewichts mit mir selbst unzufrieden	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
7.	nörgelte meine Familie wegen meines Gewichts an mir herum	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
8.	musste ich zu Hause beim Essen auf mein Gewicht achten	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
9.	wurde ich wegen meines Gewichts von anderen geärgert	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
10.	wurde ich wegen meines Gewichts ausgeschlossen, wenn andere etwas zusammen machten	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
11.	war ich durch Gedanken ans Essen vom Unterricht abgelenkt	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
12.	konnte ich trotz meines Gewichts beim Sportunterricht gut mitmachen	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

13.	Wie häufig hast du in der letzten Woche Beschwerden wegen deines Übergewichts (Adipositas) gehabt?				
	1 <input type="checkbox"/> nie	2 <input type="checkbox"/> selten	3 <input type="checkbox"/> manchmal	4 <input type="checkbox"/> oft	5 <input type="checkbox"/> immer

14.	Wie stark waren deine Beschwerden wegen des Übergewichts in der letzten Woche?				
	1 <input type="checkbox"/> gar keine	2 <input type="checkbox"/> etwas	3 <input type="checkbox"/> mittelmäßig	4 <input type="checkbox"/> ziemlich	5 <input type="checkbox"/> sehr stark

15.	Wie sehr hat dich dein Übergewicht in der letzten Woche gestört?				
	1 <input type="checkbox"/> gar keine	2 <input type="checkbox"/> etwas	3 <input type="checkbox"/> mittelmäßig	4 <input type="checkbox"/> ziemlich	5 <input type="checkbox"/> sehr

Pseudonym: \_\_\_\_\_

## Deine Erfahrungen mit den Anderen

<b>Wurdest du mal aufgrund deines Gewichtes von folgenden Personen belästigt, schikaniert oder gehänselt? Wie oft ist das passiert?</b>				
	nie	einmal	mehrmals	regelmäßig
1. Mutter	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
2. Vater	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
3. Schwester	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
4. Bruder	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
5. Andere Familienmitglieder Wer? _____	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
6. Ärzte/-innen	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
7. Krankenschwester	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
8. Ernährungsberater/-innen, Diätassistenten/-innen	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
9. Psychologen/-innen;Therapeuten/-innen;	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
10. Sozialpädagogen/-innen; Familienhelfer/-innen	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
11. Lehrer/-innen	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
12. Mitschüler/-innen	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
13. Freunde/-innen	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
14. Verkäufer/-innen	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
15. Leute auf der Straße/ Unbekannte	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
16. Andere Wer? _____	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>

Pseudonym: \_\_\_\_\_

## Wie findest du dich?

I		Trifft gar nicht zu	Trifft eher nicht zu	Trifft eher zu	Trifft voll und ganz zu
1.	Alles in allem bin ich mit mir selbst zufrieden.	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
2.	Hin und wieder denke ich, dass ich gar nichts taue.	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
3.	Ich besitze eine Reihe guter Eigenschaften.	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
4.	Ich kann vieles genauso gut wie die meisten anderen Menschen auch.	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
5.	Ich fürchte, es gibt nicht viel, worauf ich stolz sein kann.	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
6.	Ich fühle mich von Zeit zu Zeit richtig nutzlos.	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
7.	Ich halte mich für einen wertvollen Menschen, jedenfalls bin ich nicht weniger wertvoll als andere auch.	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
8.	Ich wünschte, ich könnte vor mir selbst mehr Achtung haben.	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
9.	Alles in allem neige ich dazu, mich für einen Versager zu halten.	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
10.	Ich habe eine positive Einstellung zu mir selbst gefunden.	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>

II		Trifft gar nicht zu	Trifft nicht zu	Trifft eher nicht zu	Weder noch	Trifft eher zu	Trifft zu	Trifft voll und ganz zu
1.	Als Übergewichtige/-r, fühle ich mich genauso fähig wie jeder andere.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
2.	Ich bin weniger attraktiv als andere wegen meines Gewichtes.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
3.	Wegen meines Übergewichtes, mache ich mir Sorgen darüber, was die anderen von mir denken.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
4.	Ich wünsche mir, ich könnte mein Gewicht radikal verändern.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
5.	Wenn ich viel an mein Übergewicht denke, fühle ich mich bedrückt.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
6.	Ich hasse mich, weil ich übergewichtig bin.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
7.	Mein Gewicht ist mir sehr wichtig für mein Selbstwertgefühl.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
8.	Ich glaube nicht, dass ich es verdient habe, viele Freundschaften zu haben, solange ich übergewichtig bin.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
9.	Ich bin zufrieden mit meinem Gewicht.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
10.	Wegen meines Übergewichtes, habe ich das Gefühl, nicht ich selbst zu sein.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
11.	Wegen meines Gewichtes, verstehe ich nicht, wie jemand, der/die gut aussieht, sich mit mir verabreden würde.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>

Pseudonym: \_\_\_\_\_

## Wie siehst du das?

	Trifft nicht zu	Trifft eher nicht zu	Trifft eher zu	Trifft eher stark zu	Trifft stark zu
1. Wer nie krank wird, hat eben Glück.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
2. Gute Gesundheit ist überwiegend Zufall.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
3. Man kann für seine Gesundheit nicht viel tun.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
4. Wer krank wird, ist überwiegend selbst schuld.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
5. Wenn man auf sich selbst achtet, bleibt man gesund.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
6. Jeder ist für seine Gesundheit selbst verantwortlich.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
7. Wer immer gut aussieht, hat eben Glück.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
8. Gutes Aussehen ist überwiegend Zufall.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
9. Man kann für sein Aussehen nicht viel tun.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
10. Wer nicht gut aussieht, ist überwiegend selbst schuld.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
11. Wenn man auf sich selbst achtet, sieht man gut aus.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
12. Jeder ist für sein Aussehen selbst verantwortlich.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
13. Wer immer körperlich leistungsfähig ist, hat eben Glück.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
14. Gute körperliche Leistungsfähigkeit ist überwiegend Zufall.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
15. Man kann für seine körperliche Leistungsfähigkeit nicht viel tun.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
16. Wer körperlich nicht so leistungsfähig ist, ist überwiegend selbst schuld.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
17. Wenn man auf sich selbst achtet, ist man körperlich leistungsfähig.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
18. Jeder ist für seine körperliche Leistungsfähigkeit selbst verantwortlich.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Pseudonym: \_\_\_\_\_

Gibt es jemanden, ...

	nie	selten	manchmal	oft	immer
1. ... der dir zuhört, wenn du das Bedürfnis nach einem Gespräch hast?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
2. ... der dir Liebe und Zuneigung zeigt?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
3. ... mit dem du zusammen Spaß haben kannst?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
4. ... der dir Informationen gibt, um dir beim Verstehen einer Situation zu helfen?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
5. ... der dich umarmt?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
6. ... mit dem zusammen du dich entspannen kannst?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
7. ... mit dem du etwas unternehmen kannst, um dich abzulenken?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
8. ... der dich liebt und der dir das Gefühl gibt, geliebt und gebraucht zu werden?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

Bitte kreuze an, wie gut dich die folgenden Aussagen beschreiben!				
	stimmt nicht	stimmt kaum	stimmt eher	stimmt genau
1. Die Lösung schwieriger Probleme gelingt mir immer, wenn ich mich darum bemühe.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
2. Wenn mir jemand Widerstand leistet, finde ich Mittel und Wege mich durchzusetzen.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
3. Es bereitet mir keine Schwierigkeiten, meine Absichten und Ziele zu verwirklichen.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
4. Auch bei überraschenden Ereignissen glaube ich, dass ich gut mit ihnen zurechtkommen kann.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
5. In unerwarteten Situationen weiß ich immer, wie ich mich verhalten soll.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
6. Für jedes Problem habe ich eine Lösung.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
7. Schwierigkeiten sehe ich gelassen entgegen, weil ich mich immer auf meine Fähigkeiten verlassen kann.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
8. Wenn ich mit einem Problem konfrontiert werde, habe ich meist mehrere Ideen, wie ich damit fertig werde.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
9. Wenn ich mit einer neuen Sache konfrontiert werde, weiß ich, wie ich damit umgehen kann.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
10. Was auch immer passiert, ich werde schon klarkommen.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>



Pseudonym: \_\_\_\_\_

## Zum Schluss noch ein paar Fragen zu dir und deiner Familie

I.		Stimmt nicht	Stimmt kaum	Stimmt eher	Stimmt genau
1.	In unserer Familie geht jeder auf die Sorgen und Nöte der anderen ein.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
2.	Am Wochenende geht es bei uns zu Hause häufig ziemlich eintönig und langweilig zu.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
3.	In unserer Familie gibt es nur wenige Regeln, an die man sich halten muss.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
4.	Wir kommen wirklich alle gut miteinander aus.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
5.	Wir gehen oft ins Kino, besuchen Sportveranstaltungen oder machen Ausflüge.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
6.	An den Regeln, die es in unserer Familie gibt, wird ziemlich starr festgehalten.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
7.	Bei allem, was wir zu Hause tun, sind wir mit Begeisterung dabei.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
8.	Bei uns vergeht kein Wochenende ohne dass wir etwas unternehmen.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
9.	Bei uns zu Hause ist ziemlich genau festgelegt, was getan werden darf und was nicht.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
10.	In unserer Familie hat jeder das Gefühl, dass man ihm zuhört und auf ihn eingeht.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
11.	Abends und an den Wochenenden unternehmen wir selten etwas, sondern bleiben lieber zu Hause.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
12.	Bei uns ist man eher großzügig, wenn bestimmte Dinge nicht so hundertprozentig gemacht werden.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

II.	Wie viele Computer besitzt deine Familie insgesamt?
1 <input type="checkbox"/>	keinen
2 <input type="checkbox"/>	einen
3 <input type="checkbox"/>	zwei
4 <input type="checkbox"/>	mehr als zwei

III.	Besitzt deine Familie ein Auto?
1 <input type="checkbox"/>	nein
2 <input type="checkbox"/>	ja, eins
3 <input type="checkbox"/>	ja, zwei oder mehr

IV.	Hast du ein eigenes Zimmer nur für dich allein?
1 <input type="checkbox"/>	nein
2 <input type="checkbox"/>	ja

Pseudonym: \_\_\_\_\_

V.	Wie häufig bist du mit deiner Familie in den <u>letzten 12 Monaten</u> in den Urlaub gefahren?	
1	<input type="checkbox"/>	überhaupt nicht
2	<input type="checkbox"/>	einmal
3	<input type="checkbox"/>	zweimal
4	<input type="checkbox"/>	mehr als zweimal

Der Fragebogen ist hier zu Ende. HERZLICHEN DANK FÜR DEINE MITARBEIT!

Wenn du uns noch etwas mitteilen bzw. ergänzen möchtest, dann findest du hierfür Platz.

Pseudonym: \_\_\_\_\_

## Leitfaden

*In diesem Interview möchte ich gerne mit Dir über Deine Meinungen zu Übergewicht und Deine Erfahrungen damit sprechen. Du kannst ganz offen und ehrlich sein, denn es gibt dabei kein richtig oder falsch. Wenn du etwas nicht verstehst, kannst du jederzeit nachfragen.*

*Ich möchte dich darum bitten, im Interview nicht deinen Namen zu nennen oder andere Angaben zu machen, die auf deine Person schließen lassen. Falls dies doch passiert, löschen wir diese Sequenzen unmittelbar nach dem Interview.*

*Bist du nun bereit, mit dem Interview zu beginnen?*

### I. Erfahrungen mit Diskriminierung

1. In dem Fragebogen, den du auch vor einigen Monaten ausgefüllt hast, gaben viele Jugendliche an, dass sie aufgrund ihres Gewichtes beleidigt, schikaniert oder gehänselt wurden. Kannst du dir vorstellen, dass so etwas vorkommt?
2. Hast du das selbst schon mal erlebt? Wenn ja, beschreibe mir bitte eine Situation, in der **dir** das passiert ist (was passiert ist, wer dabei war).
3. Was hast du in dieser Situation gesagt/gemacht? Wie hast du reagiert?
4. Wenn solche Situationen aufgetreten sind, hast du mit jemandem darüber gesprochen und wenn ja, mit wem?
5. Kannst du nachvollziehen, warum die Leute das mit dir gemacht haben?

*Ich würde jetzt gerne mit Dir ein bisschen allgemeiner darüber sprechen, wie mit Menschen, die dicker sind, in unserer Gesellschaft umgegangen wird.*

6. Was würdest du sagen, was denken die Leute, wenn sie eine übergewichtige Person sehen? (Wie würden sie diese Person beschreiben?) Gibt es Eigenschaften, die deiner Meinung nach übergewichtigen Menschen zugeschrieben werden?
7. Was denkst du, gibt es irgendetwas was die Leute an Übergewichtigen stört?
8. Denkst du, dass Übergewichtige benachteiligt werden? Wenn ja, was für Nachteile fallen dir ein?
9. Hast du jemals das Gefühl gehabt, dass du aufgrund deines Gewichtes Nachteile hattest oder kennst du jemanden, der/die solche Erfahrungen gemacht hat? Wann/wobei ist das passiert?
10. Gibt es auch Vorteile, die man als Übergewichtiger hat?
11. Hast du mal die Erfahrung gemacht, dass übergewichtig zu sein, von Vorteil ist? Wann/wobei?

Pseudonym: \_\_\_\_\_

*Als Nächstes möchte ich gerne mit Dir über deine Freizeit und deine Freunde/-innen sprechen.*

## **II. Soziale Netzwerke**

12. Mit wem verbringst du am meisten deine Freizeit?
13. Wie setzt sich dein Freundeskreis zusammen? Gibt es da mehr Jungen oder mehr Mädchen?
14. Spielt das Gewicht eine Rolle bei der Auswahl deiner Freunde/Freundinnen oder ist dir das egal, ob sie eher dicker oder dünner sind? /gibt es auch Jugendliche mit Übergewicht unter deinen Freunden oder sind sie eher schlank?
15. Wenn du dich mit deinen Freunden triffst, was unternimmt ihr zusammen?
16. Wie fühlst du dich unter deinen Freunden? Geben sie dir das Gefühl, dass du akzeptiert und geschätzt wirst, genau so wie du bist? Kannst du auch mitentscheiden, was ihr zusammen unternimmt? Erzähl mir ein bisschen davon.
17. Wird dein Gewicht in deinem Freundeskreis mal thematisiert? Wenn ja, was sagen deine Freunde/Freundinnen dazu? Wie fühlst du dich dabei?

## **III. Körperwahrnehmung**

18. Wie würdest du dein körperliches Aussehen auf dieser Skala einschätzen? → Skala
19. Was ist für dich das ideale Aussehen für ein/en Mädchen/Junge deines Alters? → Skala
20. Gibt es etwas, was du an deinem Körper gerne verändern möchtest? Wenn ja, was und warum?
21. Gibt es etwas, was du an deinem Körper in keinem Fall ändern möchtest? Wenn ja, was und warum?
22. Was sind die Hauptmerkmale eines schönen Körpers, deiner Meinung nach?
23. Wie bist du auf diese Merkmale gekommen? Woran orientierst du dich dabei? (Vergleich mit Gleichaltrigen; Schönheitsideale in den Medien)
24. Was kann man tun, um gut auszusehen? Hat man darauf überhaupt einen Einfluss?

## **IV. Akzeptanz der WBIS Skala**

25. Jetzt würde ich dich gerne darum bitten, folgende Fragen schriftlich, durch das Ankreuzen der für dich zutreffenden Antwortmöglichkeit zu beantworten.
26. Wie fandst du die Fragen?
27. Wie hast du dich beim Antworten der Fragen gefühlt?
28. Gab es eine besondere oder mehrere Fragen, die du schwierig zu verstehen fandst?
29. Gab es eine besondere oder mehrere Fragen, die du ungern beantwortet hast/ als unangenehm empfunden hast?

Pseudonym: \_\_\_\_\_

30. Wie könnten deiner Meinung nach die Fragen verbessert werden?

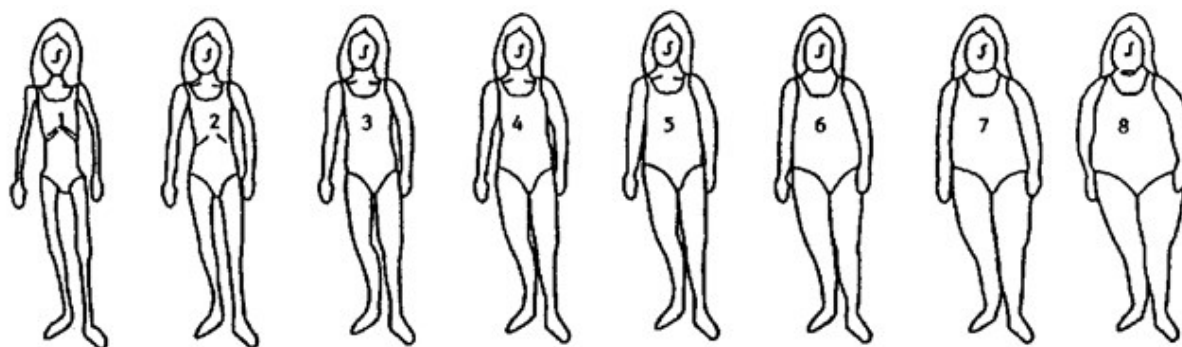
**Zum Abschluss,** gibt es etwas, das du hinzufügen möchtest, was bisher noch nicht angesprochen wurde?

*An dieser Stelle möchte ich nun das Interview beenden. Vielen lieben Dank für deine Teilnahme!*

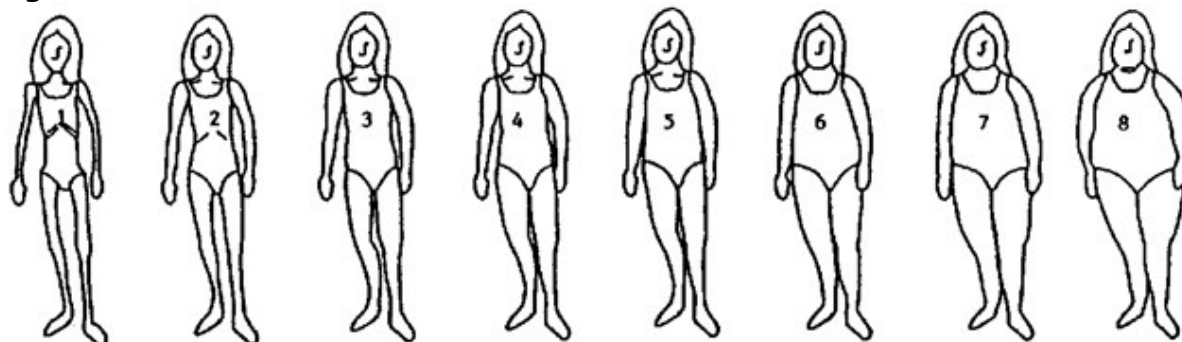
Pseudonym: \_\_\_\_\_

### Skala Körperwahrnehmung - Mädchen

#### Frage 17



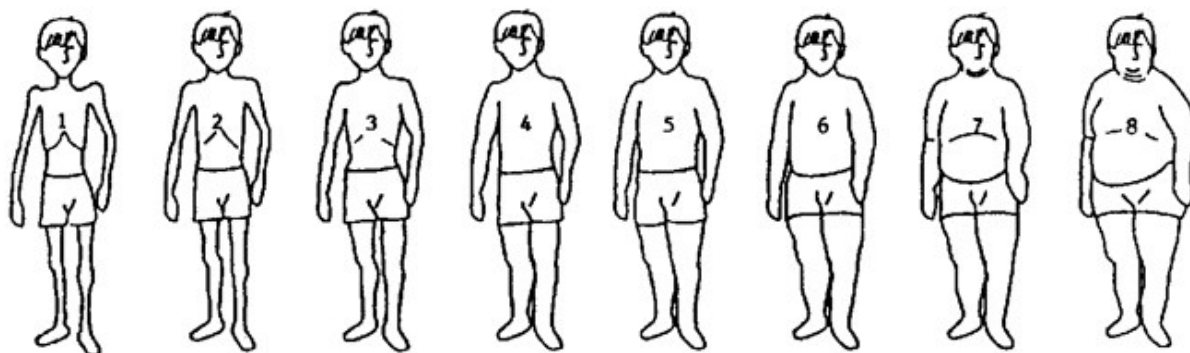
#### Frage 18



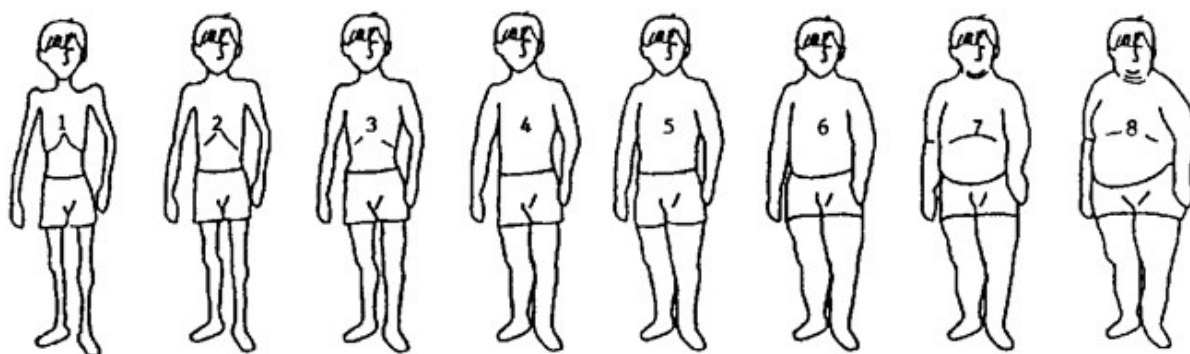
Pseudonym: \_\_\_\_\_

### Skala Körperwahrnehmung - Jungen

#### Frage 17



#### Frage 18



Pseudonym: \_\_\_\_\_

**WBIS- Skala**

II		Trifft gar nicht zu	Trifft nicht zu	Trifft eher nicht zu	Weder noch	Trifft eher zu	Trifft zu	Trifft voll und ganz zu
1.	Als Übergewichtige/-r, fühle ich mich genauso fähig wie jeder andere.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
2.	Ich bin weniger attraktiv als andere wegen meines Gewichtes.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
3.	Wegen meines Übergewichtes, mache ich mir Sorgen darüber, was die anderen von mir denken.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
4.	Ich wünsche mir, ich könnte mein Gewicht radikal verändern.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
5.	Wenn ich viel an mein Übergewicht denke, fühle ich mich bedrückt.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
6.	Ich hasse mich, weil ich übergewichtig bin.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
7.	Mein Gewicht ist mir sehr wichtig für mein Selbstwertgefühl.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
8.	Ich glaube nicht, dass ich es verdient habe, viele Freundschaften zu haben, solange ich übergewichtig bin.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
9.	Ich bin zufrieden mit meinem Gewicht.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
10.	Wegen meines Übergewichtes, habe ich das Gefühl, nicht ich selbst zu sein.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
11.	Wegen meines Gewichtes, verstehe ich nicht, wie jemand, der/die gut aussieht, sich mit mir verabreden würde.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>



**ANNEX C**  
**ADDITIONAL QUANTITATIVE RESULTS**

**Annex C1. Characteristics of the WBIS items after removal of items 4 and 9**

<b>Item</b>	<b>Factor loading</b>	<b>Item-total correlation</b>	<b>Alpha, if item deleted</b>
1. Als Übergewichtige/-r, fühle ich mich genauso fähig wie jeder andere.	0.677	0.578	0.856
2. Ich bin weniger attraktiv als andere wegen meines Gewichtes.	0.582	0.523	0.861
3. Wegen meines Übergewichtes, mache ich mir Sorgen darüber, was die anderen von mir denken.	0.777	0.710	0.843
5. Wenn ich viel an mein Übergewicht denke, fühle ich mich bedrückt.	0.809	0.723	0.842
6. Ich hasse mich, weil ich übergewichtig bin.	0.822	0.736	0.840
7. Mein Gewicht ist mir sehr wichtig für mein Selbstwertgefühl.	0.565	0.464	0.867
8. Ich glaube nicht, dass ich es verdient habe, viele Freundschaften zu haben, solange ich übergewichtig bin.	0.503	0.407	0.869
10. Wegen meines Übergewichtes, habe ich das Gefühl, nicht ich selbst zu sein.	0.773	0.682	0.846
11. Wegen meines Gewichtes, verstehe ich nicht, wie jemand, der/die gut aussieht, sich mit mir verabreden würde.	0.670	0.575	0.856

**Annex C2. Summary of one-way ANOVA analysis of the health, physical appearance and physical performance subscales of the KLC instrument by selected socio-demographic variables**

Variable	Category (N)	Mean (SD)	ANOVA	Tukey's post-hoc group comparisons	Tukey's post hoc test p-value
Internal health-related locus of control					
Age	13-15 y.o. (118)	9.92 (2.46)	F=0.188 p=0.665	-	-
	16-18 y.o. (70)	9.76 (2.34)			
Gender	Female (96)	9.51 (2.39)	F=4.106 p=0.044	-	-
	Male (92)	10.22 (2.39)			
Ethnicity	German (88)	9.89 (2.40)	F=0.053 p=0.949	German-Turkish	0.961
	Turkish (53)	10.00 (2.50)		German-Other	0.997
	Other (40)	9.85 (2.40)		Turkish-Other	0.953
Weight status	Overweight (29)	9.55 (2.67)	F=0.326 p=0.722	Overweight-Obese	0.854
	Obese (64)	9.84 (2.33)		Overweight-Extremely obese	0.701
	Extremely obese (93)	9.97 (2.43)		Obese-Extremely obese	0.947
SES (Family affluence)	Low (45)	9.93 (2.21)	F=0.240 p=0.787	Low-Middle	1.000
	Middle (93)	9.92 (2.56)		Low-High	0.836
	High (48)	9.65 (2.34)		Middle-High	0.794
External health-related locus of control					
Age	13-15 y.o. (113)	6.23 (2.56)	F=0.045 p=0.832	-	-
	16-18 y.o. (70)	6.31 (2.68)			
Gender	Female (92)	6.25 (2.36)	F=0.004 p=0.949	-	-
	Male (91)	6.27 (2.84)			
Ethnicity	German (87)	6.14 (2.58)	F=0.174 p=0.840	German-Turkish	0.936
	Turkish (50)	6.30 (2.54)		German-Other	0.837
	Other (40)	6.43 (2.90)		Turkish-Other	0.973
Weight status	Overweight (28)	5.89 (2.85)	F=0.321 p=0.726	Overweight-Obese	0.784
	Obese (62)	6.29 (3.03)		Overweight-Extremely obese	0.710
	Extremely obese	6.34 (2.23)		Obese-Extremely	0.993

Variable	Category (N)	Mean (SD)	ANOVA	Tukey's post-hoc group comparisons	Tukey's post hoc test p-value
	(91)			obese	
SES (Family affluence)	Low (42)	6.52 (2.71)	F=0.482 p=0.618	Low-Middle	0.828
	Middle (92)	6.24 (2.64)		Low-High	0.589
	High (47)	5.98 (2.48)		Middle-High	0.844
Internal physical appearance-related locus of control					
Age	13-15 y.o. (118)	9.25 (2.46)	F=0.000 p=0.994	-	-
	16-18 y.o. (70)	9.24 (2.42)			
Gender	Female (95)	9.27 (2.43)	F=0.027 p=0.870	-	-
	Male (93)	9.22 (2.47)			
Ethnicity	German (87)	9.31 (2.20)	F=0.019 p=0.981	German-Turkish	0.979
	Turkish (53)	9.23 (2.62)		German-Other	0.996
	Other (41)	9.27 (2.78)		Turkish-Other	0.996
Weight status	Overweight (30)	9.33 (2.34)	F=0.037 p=0.964	Overweight-Obese	0.995
	Obese (64)	10.22 (2.62)		Overweight-Extremely obese	0.968
	Extremely obese (92)	9.21 (2.50)		Obese-Extremely obese	0.981
SES (Family affluence)	Low (44)	9.18 (2.35)	F=0.027 p=0.974	Low-Middle	0.976
	Middle (94)	9.28 (2.60)		Low-High	0.999
	High (48)	9.21 (2.24)		Middle-High	0.987
External physical appearance-related locus of control					
Age	13-15 y.o. (117)	6.65 (2.29)	F=0.480 p=0.489	-	-
	16-18 y.o. (70)	6.91 (2.88)			
Gender	Female (95)	6.84 (2.64)	F=0.264 p=0.608	-	-
	Male (92)	6.65 (2.42)			
Ethnicity	German (87)	6.44 (2.48)	F=2.786 p=0.064	German-Turkish	0.086
	Turkish (54)	7.35 (2.67)		German-Other	0.974
	Other (39)	6.33 (2.17)		Turkish-Other	0.126
Weight status	Overweight (30)	6.67 (2.26)	F=0.148 p=0.863	Overweight-Obese	0.998
	Obese (63)	6.63 (2.45)		Overweight-Extremely obese	0.939

Variable	Category (N)	Mean (SD)	ANOVA	Tukey's post-hoc group comparisons	Tukey's post hoc test p-value
	Extremely obese (92)	6.85 (2.70)		Obese-Extremely obese	0.866
SES (Family affluence)	Low (44)	6.39 (2.20)	F=0.605 p=0.547	Low-Middle	0.746
	Middle (93)	6.72 (2.64)		Low-High	0.518
	High (48)	6.96 (2.48)		Middle-High	0.854
Internal physical performance-related locus of control					
Age	13-15 y.o. (118)	10.27 (2.47)	F=0.961 p=0.328	-	-
	16-18 y.o. (69)	9.91 (2.31)			
Gender	Female (96)	9.97 (2.43)	F=0.985 p=0.322	-	-
	Male (91)	10.32 (2.39)			
Ethnicity	German (87)	10.45 (2.48)	F=2.588 p=0.078	German-Turkish	0.777
	Turkish (54)	10.17 (2.16)		German-Other	0.062
	Other (41)	9.41 (2.54)		Turkish-Other	0.288
Weight status	Overweight (29)	10.66 (2.33)	F=1.136 p=0.323	Overweight-Obese	0.699
	Obese (64)	10.22 (2.62)		Overweight-Extremely obese	0.311
	Extremely obese (92)	9.90 (2.30)		Obese-Extremely obese	0.701
SES (Family affluence)	Low (43)	10.05 (2.17)	F=0.985 p=0.375	Low-Middle	0.978
	Middle (95)	9.96 (2.37)		Low-High	0.583
	High (47)	10.55 (2.73)		Middle-High	0.354
External physical performance-related locus of control					
Age	13-15 y.o. (116)	5.88 (2.28)	F=1.773 p=0.185	-	-
	16-18 y.o. (70)	6.36 (2.52)			
Gender	Female (95)	6.19 (2.32)	F=0.583 p=0.446	-	-
	Male (91)	5.92 (2.44)			
Ethnicity	German (87)	5.91 (2.25)	F=0.306 p=0.737	German-Turkish	0.720
	Turkish (52)	6.23 (2.46)		German-Other	0.988
	Other (41)	5.98 (2.56)		Turkish-Other	0.865
Weight status	Overweight (29)	5.66 (2.13)	F=0.876 p=0.418	Overweight-Obese	0.887
	Obese (63)	5.90 (2.52)		Overweight-Extremely	0.458

Variable	Category (N)	Mean (SD)	ANOVA	Tukey's post-hoc group comparisons	Tukey's post hoc test p-value
				obese	
	Extremely obese (92)	6.26 (2.36)		Obese-Extremely obese	0.632
<b>SES (Family affluence)</b>	Low (42)	5.74 (2.30)	F=0.563 p=0.570	Low-Middle	0.556
	Middle (95)	6.19 (2.43)		Low-High	0.899
	High (47)	5.96 (2.26)		Middle-High	0.845

### Annex C3. Socio-demographic characteristics of adolescents eligible for interview selection

		Low WBIS (N=18)	High WBIS (N=19)	Total (N=37)
<b>Gender</b>	Female	8	13	21
	Male	10	6	16
<b>Age group</b>	13-15 y.o.	12	11	23
	16-18 y.o.	6	8	14
<b>Ethnicity</b>	German	9	8	17
	Non-German	9	10	19