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# OBESITY AND STIGMA

## STUDIES ON CHILDREN, ADULTS AND HEALTH CARE PROFESSIONALS

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We pretend we have open minds, yet we judge so fast
How can I change a million minds in this lifetime
I don't fit in their descriptions - though I try
What is it I have to do
Would I be Good Enough For You?

*Jay Sean*

To my mother

# ABSTRACT

Obesity may not only pose a threat to an individual's physical health but may also have socioeconomic and psychosocial consequences. Stigma is assumed to be a common experience among individuals with obesity and is also suggested to be one of the major contributors to health disparities. The overall aim of this thesis was to study obesity and stigma from children's, adults' and health care professionals' perspectives in Sweden.

A quantitative design with statistical analyses was used in **Study I**, **II** and **III**. These studies included national random samples of approximately 1400 10-year-old children and their parents and about 2600 men and women between 25 and 64 years of age. A qualitative descriptive design involving a phenomenographic analysis was used in **Study IV.** This study included a strategic sample of 10 general practitioners (GPs) and 10 district nurses (DNs) from primary health care centres in Stockholm County.

Children were more likely to be prejudiced against obesity than against average weight and thinness. The likelihood of children being prejudiced was found to vary with children's sex and with the rated figure's sex and body size. Children with high socioeconomic status (SES) were more likely to be prejudiced against a target with obesity than children with low SES (**Study I**). Boys' lower body esteem predicted a higher level of stereotyping of a girl figure with obesity, whereas girls' body esteem could not explain the variation in girl obesity stereotypes. Parents' strong beliefs about the controllability of weight and larger body size both independently predicted a higher level of obesity stereotypes in their children (**Study II**). Women with severe obesity reported discrimination more often than normal weight women and this was documented in all investigated contexts, i.e. workplace, health care and interpersonal encounters. Reports of discrimination among men seemed to depend on both the context and the level of obesity. Insulting treatment by physicians and nurses, and also experiencing inferior medical care than others and avoiding care due to fear of being mistreated, were most common among individuals with severe obesity (**Study III**). Even though health care professionals themselves did not explicitly expose negative attitudes towards obesity their conceptions of obesity were centred almost exclusively on lifestyle behaviours as causes and remedies. Successful encounters with individuals with obesity in primary care were conceived to rely a great deal on patient attitudes (motivation to change lifestyle, evasive behaviour, trusting in care, lack of self-confidence). However, the importance of both organizational and staff aspects for improving provider-patient encounters regarding obesity was stressed by both GPs and DNs. The conception that primary care is not an entirely appropriate setting for approaching obesity applied to both professional groups, but especially GPs (**Study IV**).

In conclusion, the findings in this thesis support the idea that obesity is a stigmatizing attribute in Swedish society; however, different social contexts and social identities condition the stigmatization of people with obesity. The results presented in this thesis can, for instance, contribute to new ideas about how to reduce stereotypes in children. The findings and knowledge gained from health care professionals' conceptions of their encounters with patients with obesity may also be useful in the continuing efforts to improve care of these patients.



**Keywords:** obesity; obesity (attitudes towards); stigma; stereotyping; prejudice; bias; children; adults; gender; primary care; health professionals; weight management; qualitative research

# SVENSK SAMMANFATTNING

Fetma innebär inte bara fysiska och medicinska hälsorisker utan kan också resultera i socioekonomiska och psykosociala konsekvenser. Stigmatisering av personer med fetma anses relativt vanligt och stigmatisering i sin tur anses vara en bidragande orsak till hälsoskillnader i en befolkning. Det övergripande syftet med denna avhandling var att undersöka fetma och stigmatisering utifrån barns, vuxnas och hälsopersonals perspektiv.

En deskriptiv kvantitativ design med statistiska analyser användes i **Studie I, II** och **III**. Dessa studier inkluderade cirka 1400 10-åriga barn samt en förälder och cirka 2600 män och kvinnor i åldrarna 25-64 år från hela Sverige. En deskriptiv kvalitativ design med en fenomenografisk analys användes i **Studie IV**. Denna studie bestod av 10 allmänläkare och 10 distriktssköterskor från primärvården i Stockholms län.

Det var signifikant större sannolikhet att barn hade fördomar om fetma än om normalvikt eller undervikt. Variationen i barns fördomar kunde förklaras med barnets kön och kroppsstorlek och kön på den figur som bedömdes. Barn från en hög socioekonomisk bakgrund rapporterade i högre utsträckning fördomar om fetma än barn från låg socioekonomisk bakgrund (**Studie I**). Ju mer negativ kroppsuppfattning hos pojkarna desto fler stereotyper hade de om en flickfigur med fetma, medan flickors kroppsuppfattning och stereotyper om en flickfigur med fetma inte var associerade. Om föräldrar hade en stark tro på personligt ansvar för fetma så angav barnen fler stereotyper om fetma, medan större kroppsstorlek hos föräldrar betydde att barnet angav färre stereotyper (**Studie II**). Kvinnor med svår fetma rapporterade oftare diskriminering än kvinnor med normalvikt. Detta samband fanns i alla undersökta sammanhang, det vill säga, arbetslivet, hälso- och sjukvården och i interpersonella möten. Diskriminering bland män var mer beroende av sammanhang och graden av fetma. Negativa upplevelser från möten med läkare och sjuksköterskor samt upplevelse att på orättvisa grunder blivit vägrad eller fått sämre vård än andra samt att ha undvikit vård på grund av rädsla för att bli utsatt för kränkande behandling var vanligast bland personer med svår fetma (**Studie III**). Även om hälsopersonal inte uppenbart uttryckte negativa attityder till fetma så var deras uppfattningar i stor utsträckning inriktade på livsstilsfaktorer som orsaker till fetma och lösningen på densamma. Hälsopersonal hade uppfattningen att patientens attityd (motivation till förändring, undvikande beteende, förlita sig på medicinsk vård, saknar självförtroende) var en viktig aspekt för ett lyckosamt möte i en primärvårdskontext, men att även såväl organisatoriska som personella faktorer var betydelsefulla för en väl fungerande vård för dessa patienter. Uppfattningen att primärvården inte är en alldeles självklar arena för att ta hand om fetma fanns också hos båda professionerna, men speciellt hos allmänläkarna (**Studie IV**).

Sammanfattningsvis så visar resultaten från denna avhandling att fetma är ett stigmatiserande attribut i det svenska samhället. Däremot verkar den sociala kontexten och den sociala identiteten ha betydelse för stigmatisering av personer med fetma. Vidare kan resultaten från denna avhandling bidra med nya idéer om hur stereotyper om fetma bland barn kan minskas. Kunskapen om hälsopersonals skilda uppfattningar om mötet med patienter med fetma kan förhoppningsvis också användas för att förbättra vården för dessa patienter.

# LIST OF PUBLICATIONS

This thesis is based on the following papers, which will be referred to by their Roman numbers.

**I.** Hansson LM, Karnehed N, Tynelius P, Rasmussen F. **Prejudice against obesity among 10-year-olds: a nationwide population-based study.** *Acta Paediatrica* 2009;98(7):1176-1182.

**II.** Hansson LM, Rasmussen F. **Predictors of 10-year-olds'obesity stereotypes: A population-based study.** *International Journal of Pediatric Obesity* 2010;5(1):25-33.

**III.** Hansson LM, Näslund E, Rasmussen F. **Perceived discrimination among men and women with normal weight and obesity. A population-based study from Sweden.** In print, *Scandinavian Journal of Public Health*, SAGE publications.

**IV.** Hansson LM, Rasmussen F, Ahlström G. **General practitioners' and district nurses' conceptions of the encounter with patients with obesity in primary health care.** *Manuscript submitted.*

# ABBREVIATIONS

| | |
|---|---|
| BE | Body esteem |
| BESAA | Body esteem scale for adolescents and adults |
| BMI | Body mass index |
| CI | Confidence interval |
| DNs | District nurses |
| GPs | General practitioners |
| LOUISE | Longitudinal database of education, income and occupation |
| OR | Odds ratio |
| PHC | Population and housing census |
| ULF | The Swedish survey of living conditions |
| RTP | Register of the total population |
| SES | Socioeconomic status |
| WHO | World Health Organization |

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# 1 INTRODUCTION

Research on stigmatization of people with obesity has been quite extensively performed in the United States (US). Studies have included children and adolescents as well as adults, and have covered different settings. Reviews suggest that stigmatization is pervasive in work-life, health care and education, and also in the media and close interpersonal relationships (Puhl & Heuer, 2009; Puhl & Latner, 2007). There is, however, more work to be done in this area. For instance, population-based studies have seldom been performed, but instead research has mostly been based on clinical or convenience samples. Questions also remain as to whether gender or socioeconomic position are important moderators of obesity stigmatization, and – most importantly – how children form stereotypes about obesity is not entirely known. Even though the evidence is strong for the presence of negative attitudes towards obesity among health care professionals; limited evidence is provided for actual mistreatment of people with obesity in health care. Furthermore, although not investigated in the present thesis, the impact of obesity stigmatization on psychological and physical health has received little attention. Available research suggests that obesity stigma increases the risk of depression, low self-esteem, poor body image, maladaptive eating behaviours and exercise avoidance, and possibly also further weight gain. Research has also found low effectiveness in improving attitudes towards obesity in both children and adults (Danielsdottir, O'Brien & Ciao, 2010). Because stigma is an important contributor to health disparities (Link & Phelan, 2006), better knowledge about the origin, development and spread of obesity stigmatization is needed.

Only very recently has research on obesity stigmatization in countries and cultures other than the US increased, and to the best of my knowledge the published research from Sweden remains scanty. There are, however, studies investigating associations between body mass index (BMI) status and social consequences, which show that young men with obesity have lower educational attainment (Karnehed, Rasmussen, Hemmingsson & Tynelius, 2006), and more often show downward then upward social mobility (Karnehed, Rasmussen, Hemmingsson & Tynelius, 2008), than their normal weight counterparts. Also, adolescent females with overweight have been shown to occupy lower social positions than normal weight females 14 years later (Hammarström & Janlert, 2005). These studies can only speculate about stigmatization as the cause of disadvantaged outcomes. A review of 1925 articles in daily newspapers between 1997 and 2001, however, demonstrates stigmatization of obesity in a Swedish media context (Sandberg, 2007). There is a rising prevalence of obesity both internationally and in Sweden (Neovius, Teixeira-Pinto & Rasmussen, 2008). Also, it is claimed that obesity stigma in part has its origin in cultures that value independence and focus on personal responsibility for life outcomes, in combination with the notion that thinness and success go hand-in-hand (Crandall & Martinez, 1996). These are two reasons further to investigate this complex issue. In this thesis population-based samples of children (and their parents) and adults, as well as a strategic sample of health care professionals, were used to study attitudes, stereotypes, prejudice and discrimination in relation to obesity.

# 2 BACKGROUND

## 2.1 THE STIGMA CONCEPT

Contemporary concepts of stigma originate from Goffman's (1963) classic book "Stigma: Notes on the management of spoiled identity". According to Goffman (1963, p. 3) the definition of stigma is "an attribute that is deeply discrediting which reduces the individual from a whole and usual person to a tainted, discounted one". Later Crocker et al. (1998, p. 505) proposed that stigmatization occurs when a person possesses (or is believed to possess) "some attribute or characteristic that conveys a social identity that is devalued in a particular social context". Stigma can be seen as a relationship between the attribute and a stereotype, and the stereotype becomes the basis for excluding or avoiding individuals with that attribute (Link & Phelan, 2001). Such stereotypes are generally known by a majority of members in a culture, including the stigmatized individuals themselves. By 10 years of age, most children are aware of cultural stereotypes of different groups in society, and children who are stigmatized seem to be aware of these stereotypes at even younger ages (Major & O'Brien, 2005).

The definitions above are in agreement that stigma consists of an attribute that marks people as different and leads to devaluation, and also that stigma is dependent on relationship and context. Link and Phelan (Link & Phelan, 2001) added the component of discrimination to the concept of stigma, which refers to "an unfair or unjustified difference in behaviour that systematically disadvantages members of another group" (Dovidio, Penner, Albrecht, Norton, Gaertner & Shelton, 2008, p. 479). They also included the component of power. Even though both groups; those that are in possession of power and those that are not, may stereotype and discriminate against another, the former group has access to resources and the power to set norms in society. The dependence of stigma on power, when it comes to obesity, may be difficult to apprehend; however, it is evident that there is a power difference between people who have obesity and those who do not.

Mainly, stigma is perceived as a social process with multiple dimensions. In brief, stigma exists when the interrelated components of categorization, stereotyping, separation, status loss and discrimination co-occur in a power situation (Link & Phelan, 2001). In general, stigma places more emphasis on the target, whereas the very closely related concept of prejudice focuses more on processes in perpetrators. In the seminal work by Allport (1954, p. 9) a definition of prejudice, in terms of ethnic prejudice, was put forward: "Ethnic prejudice is an antipathy based upon a faulty and inflexible generalization". Prejudice seems a little bit narrower in scope than stigma, but when the causes and consequences of prejudice are included, the concepts are similar (Phelan, Link & Dovidio, 2008). However, it has been suggested by several researchers that stigma refers to a broader process, which includes many components, and that prejudice refers to more attitudinal components. An additional term that has been extensively used is bias, more specifically weight bias in regard to obesity stigma. Bias is a broad term that encompasses any combination of negative thoughts, feelings and behaviours (Brownell, Puhl, Schwartz & Rudd, 2005). But, so as not to confuse the reader, the term bias has been scarcely used in the present thesis, because of its common usage in epidemiological research when discussing measurement error.

Phelan et al. (Phelan et al., 2008) attribute three functions to stigma, which indicate the sources and reasons for it. These are exploitation and domination (keeping people down), norm enforcement (keeping people in), and disease avoidance (keeping people away). Exploitation/domination reflects people's desire to maintain advantage; that is, for dominant groups to have more resources and power, some other groups have to have less. Stigma against low socioeconomic status (SES) groups, ethnic minorities and women may have its origin in this function. Conforming to social norms in society is perceived to be essential, and those who do not are blamed for lacking character or morality. This type of stigma applies to behaviour and identities that are perceived as voluntary, e.g. criminal behaviour, non-normative sexual behaviour, and obesity. Norms and un-acceptable behaviours in society are often set by dominant groups; however, these groups will not profit from the stigma process as seen in its exploitation/domination function. The function of disease avoidance may be difficult to explain as an entirely social construct, and it has therefore been suggested that evolutionary theory is better suited to this type of stigma. However, this function seems only to apply to those illnesses or physical deviations that are visible (Phelan et al., 2008). Human preferences for facial symmetry (Grammar & Thornhill, 1994), which can be seen very early in life and across cultures, may be evidence for the existence of this stigma function. It is suggested that the attributes an individual carries act as signals. Humans react cognitively to these attributes in order to avoid social contact with individuals who would jeopardize their survival (Major & O'Brien, 2005). Documented emotional reactions (fear, disgust, nausea) are, it is suggested, to be regarded as reflecting this stigma's past function (as a social signal of pathogen infection) rather than its function in current contemporary society. So, even if humans have a reactive "behavioural immune system", cultural values and beliefs have a role as to play with regard to which types of stereotypes are attached to the stigmatized individual (Major & O'Brien, 2005).

Obvious and overt prejudice has declined as society has changed and been replaced by "modern prejudice", which is more subtle and hidden, and which often includes contradictory feelings and opinions (Dovidio et al., 2008). Attitudes and stigma/prejudice are strongly related, but sometimes individuals act in a discriminatory manner against a group while not necessarily showing evidence of negative attitudes. An attitude is thought to have an affective and a cognitive component (Crocker et al., 1998). The affective component includes, for instance, feelings of distaste, dislike, disgust or even fear, while the cognitive component is what we refer to as stereotypical, namely "a cognitive structure that contains the perceiver's knowledge, beliefs, and expectancies about some human group" (Bigler & Liben, 2006, p. 42). Stereotyping is assumed to involve two processes, one automatic or unconscious, the other controlled. The automatic process is also referred to in terms of implicit attitudes (not investigated in the present thesis), and the controlled process as involving explicit attitudes (Bigler & Liben, 2006). Implicit attitudes are regarded as having evolutionary roots or as being acquired early in childhood through repeated messages. Such attitudes may continue to influence adult behaviours without them being aware of their biased reactions. This is one of the reasons why it is important to understand the origins of children's stereotypes and prejudice. Explicit attitudes are suggested to be more recently and consciously constructed attitudes (Wilson, Lindsey & Schooler, 2000). Explicit attitudes are thought to predict

deliberative behaviours, while implicit attitudes better predict spontaneous forms of behaviours (Bessenoff & Sherman, 2000). However, there is an ongoing debate in psychology research over the use of attitude and stereotype measures, implicit or explicit, as constructs of real behaviour. To establish links between attitude/stereotype measures and behaviours is a problem in the whole stigma arena (Phelan et al., 2008). One thing that makes such relationships even more difficult to investigate is the fact that our behaviours can also influence our attitudes and stereotypes; thus, it is likely that these different components of stigma are to some extent reciprocally related (Dovidio et al., 2008).

## 2.2 CHILDREN'S STEREOTYPE AND PREJUDICE FORMATION

Previously, social learning theory has served as a basis for general understanding of children's stereotyping. The theory emphasizes the cultural and social context of the child and assumes that stereotypes are acquired through observational learning. However, the theory overlooks the developmental process and assumes that the formation of stereotypes is the same across all ages. But, given the evidence that cognitive skills affect the construction of social stereotypes and their meanings (Aboud, 2003), Bigler and Liben (2006) have instead proposed a developmental inter-group theory of social stereotypes and prejudice. Both the environment in which children are raised and the child's way of interpreting and interacting with the environment is essential for the development of social stereotyping.

Developmental inter-group theory (see Bigler & Liben, 2006) describes four components that are important in the formation and maintenance of social stereotypes: establishment of the psychological salience of person attributes; categorization of encountered individuals along a salient dimension; development of stereotypes concerning salient social groups; and, application of a stereotype filter when individuals are encountered. The establishment of psychological salience of social groups in children are thought to rest on the awareness of difference (normal weight as opposed to obesity), and is also dependent on the proportional group size (with social categories becoming more salient when group size is unequal). Explicit labelling and use in a society is also important; that is, children develop stereotypes on the basis of those characteristics that the society deems as important for social categorization. This process is, though, presumed to be constructive rather than socially learned. Children construct beliefs about groups based on, for instance, adults' cues, which may be very subtle. There are also implicit processes, such as segregation, that lead children to view some social categories as important. Children note, for instance, similarities among those who live and work together, and this encourages them to construct beliefs about group differences. Thus, during the socialization process, children develop a set of expectations about people's physical appearance, manners and behaviours.

Children have an innate drive to classify things in their surroundings, so as to structure knowledge and reduce the complexity of the world; even at the age of three, they are assumed to be able to perform social categorization along a single dimension, and thus show stereotyping and prejudice. For instance, young children show strong same-sex preferences, even though cultural messages about gender traits differ. Later on (by ages 7-8 years), children have obtained multiple classification skills that enable them to sort along two dimensions; thus,

a child who has difficulty in understanding that the same individual can be a member of two groups at the same time will show higher levels of distortion and forgetting when approached with information that counteracts a previously formed stereotype. Cognitive skills that may be relevant to the formation of stereotypes are those associated with perspective-taking (ability to understand another's thoughts or emotions) and making probability judgments (imagine alternative outcomes of a problem). By the age of 5-8 years, children are posited to peak in their prejudice, since they prefer their in-group to out-groups, and also because they have only just started to realize that people can have perspectives different from their own. This inter-group process is not static, and cognitive processes are likely to affect the formation of stereotypes about social groups. From ages 8-10 and onwards, children will increase in their appreciation of others' perspectives, and this should lead to lower prejudice. By the age of 10-15, more sophisticated perspective-taking skills are developed, and it is suggested that these are linked to moral reasoning (Kohlberg, 2008). Children's ethical and moral reasoning and perspective-taking skills may thus in part determine a child's response to human differences.

The process of categorization is believed to produce constructive-cognitive developmental processes. This process will help in attributing meanings to social groups in the forms of beliefs and affects. According to Bigler and Liben (2006), four factors are regarded as important: essentialism, in-group bias, explicit attribution and group-attribute co-variation, and implicit attribution. Essentialism is the belief that members of a group share the same qualities (those that are similar on one dimension, e.g. obesity, are similar on other dimensions too, e.g. lazy). In-group bias is produced when children view the group to which they belong as superior to another group, which is also called egocentrism, reflecting a sort of fixation on one's in-group perspective. Self-esteem has been shown to be related to in-group bias, especially in elementary-school children, and it is suggested that they generalize their positive or negative feelings of themselves to all other in-group members. Thus, variation in children's self-esteem is believed to be important for the formation of stereotypes. Explicit attribution has to do with labelling and making propositional statements about social groups. Direct teaching may play only a minor role because adults today are most likely to suppress their prejudices. Some explicit attributions may be socially unacceptable and therefore are not expressed, whereas others remain acceptable; for instance, laziness is a stereotypical feature readily attributed by both children and adults to people with obesity. However, if explicit attributions among adults are rare, it is likely that children make them to a much greater extent, and peers may therefore be an important source of stereotypes. Children may also notice that some human characteristics are correlated with specific attributes, and that adults treat individuals differently according to which social group they are perceived to belong. Adults' non-verbal behaviours are also things that children try to interpret and give meaning. Such implicit behaviours and group attributions may form children's stereotypes, and because at least young children's stereotypes are more likely to work as rigid rules, they would, to a greater degree, generalize specific attributes to all members of a particular social group.

Thus, it is assumed that children's social stereotypes are created through cognitive processes about social categories rather than being copied directly from those held by individuals in their surroundings. It is proposed that such cognitive processes are also used as

filters when new information is about to be handled, and that this new information is often ignored and distorted so as not to counteract existing beliefs. Some adult attitudes and behavioural responses may therefore have their origin in these cognitive processes.

## 2.3 THEORY OF OBESITY STIGMA

A great deal of research has considered specific stigmas, and knowledge has increased about cognitive, affective, and behavioural components of stigma (attitudes, stereotypes and discrimination). However, obesity stigma as such has scarcely been considered in existing theories, and there are few overarching models of stigma (Bigler & Liben, 2006; Phelan et al., 2008). Some of the research that does exist has tried to explain obesity stigma from the perspectives of social learning, social identity or attribution of blame, but it has also been suggested that psychological theories may not be sufficient fully to capture the phenomenon (Puhl & Brownell, 2003).

In any case, one of the reasons why obesity stigma seems to be such a negative stigma is because it is visible and perceived to be under personal control (Crandall, 1994; DeJong, 1980; Weiner, Perry & Magnusson, 1988). The more people think that weight is a function of willpower, exercise and diet, the more negative attitudes will be expressed. Attribution theory suggests that people make judgments about the causes of people's outcomes. In the case of obesity, the individuals themselves are held responsible for their condition, which is attributed to a lack of willpower or laziness (Crandall, D'Anello, Sakalli, Lazarus, Wieczorkowska & Feather, 2001). Those who believe that obesity is the result of lack of impulse control and other personal shortcomings (internal causes) can be expected to be more likely to express negative attitudes towards obese individuals than those who attribute obesity to medical, heredity or environmental factors (external causes). Attribution theory would, thus, correspond to the stigma function of norm enforcement.

Attributions are also used as justifications for stigma, and therefore such attributions can work in both directions; that is, attributions can both legitimize and cause stigma (Crandall & Eshleman, 2003). Stigma and prejudice are often suppressed in today's society, but a suppressed prejudice may be expressed if it can be justified. It has been suggested that attributions of controllability of weight, and especially controllability of obesity, originate from political, economic and or social ideologies that share the common world view that the more one believes in individual responsibility for life outcomes, the more prejudice against obese individuals will be expressed. Attributions predict prejudice in general, but are more important in individualistic than in collectivistic countries (Crandall et al., 2001). Cross-cultural studies also show that prejudice against obesity only emerges if there is both a cultural preference for thinness and a belief that weight is under personal control (Crandall & Martinez, 1996). Thus, attributions may not entirely explain obesity stereotypes because there are social and cultural differences that are related to body weight.

There is considerable evidence that our own attitudes, beliefs and behaviours are influenced by our perceptions of the attitudes, beliefs and behaviours of individuals important to us. According to group-norm theory, stigma can develop through the socialization process (Sechrist & Stangor, 2005). Stereotypes are often shared by members of the same group, and

stereotypes are important in social interaction. Stereotypes are communicated constantly in everyday interactions between peers, children and parents, and through the media, etc. Knowing that others relevant to us have similar attitudes function as a form of validation, and the social consensus that is established in interactions give individuals a sense of belonging and confidence that their attitudes are shared by others. Research shows, for instance, that when people are told that others hold more favourable views of the obese, they express more positive attitudes after having been given such information, and even more so when information comes from a valued in-group (Puhl, Schwartz & Brownell, 2005). The social consensus model explains stigma from a social constructivist perspective, where the emphasis is on how one perceives the stigmatizing attitudes of others (Sechrist & Stangor, 2005). Thus, individuals may be more likely to form beliefs about people with obesity from their perceptions of others' beliefs rather than from their own interactions with obese individuals.

Social and cultural norms about body size are very likely to be an influential source in the formation of obesity stereotypes and stigma. Socio-cultural theory suggests that a number of socio-cultural influences (peers, family, media) transmit societal standards, e.g. in the case of beauty (Smolak, 2004; Thompson, Coovert, Richards, Johnson & Cattarin, 1995). This model emphasizes the desirability of an unrealistic level of thinness in people, especially among adolescent girls and young women. Thinness has long been associated with success and beauty (Grogan, 2008b), and this is regarded primarily as being achieved by diet and exercise. This image of thin people being successful seems to apply mostly to females, while males' image of success is more variable, even though muscular and slim seem to be the preferred norm. The stronger the belief that thinness is associated with success, the more likely it is that the thin ideal is also used when judging peers or others (Davison & Birch, 2004; Klaczynski, Daniel & Keller, 2009). Experts in the field of medicine also stress the importance of thinness, or at least average weight to stay healthy, and also the protective role it plays against lifestyle diseases (Muennig, 2008). Historical changes in beauty ideals (Grogan, 2008b) and the focus on the importance of average weight for health, in conjunction with the media's and the diet industry's emphasis on dieting and exercise for weight reduction, may therefore have had the unintentional effect of increasing obesity stigma (Latner & Stunkard, 2003).

Social norms in society are most often set by dominant and powerful societal groups and, although there are few studies that confirm that attitudes are more negative towards obesity among higher social groups, there are still findings to support this notion. In one study, children from high SES schools assigned fewer positive adjectives to an obese figure compared with children from low SES schools (Wardle, Volz & Golding, 1995), while, in another, fathers of 9-year-old girls with a higher education and income were found to be more likely to endorse obesity stereotypes (Davison & Birch, 2004). However, highly educated individuals have also reported less negative attitudes than low educated individuals (Hilbert, Rief & Braehler, 2008). Furthermore, the prevalence of BMI is lower and body dissatisfaction seems to be higher among high SES individuals than low SES individuals, and as women's level of education has increased over time, the body ideal has become more slender (Grogan, 2008a; McLaren & Godley, 2008). Socioeconomic differences in attitudes and beliefs about healthy lifestyle have also been documented (Wardle & Steptoe, 2003). This highlights that appearance investment

and attitudes about lifestyle can be group-level attributes, not just individual-level characteristics.

Obesity stereotypes emerge early, at around the age of three (Cramer & Steinwert, 1998), and seem to become stronger with age (Brylinsky & Moore, 1994; Klaczynski, 2008; Klaczynski et al., 2009). This might be interpreted in terms of children being gradually exposed to cultural messages about obesity and the ideal of thinness in society, which would be consistent with social learning theory. However, recent studies have shown that both adults and children react to individuals with obesity as if they were carrying some kind of disease (Klaczynski, 2008; Park, Schaller & Crandall, 2007); that is, it is suggested that obesity serves as a heuristic cue (a simple rule that helps people respond quickly to complex problems or incomplete information) for pathogen infection. Rejection of obesity is expressed to the same extent in children within cultures with both a low and a high prevalence of obesity, and with media that do and do not display obese people negatively. This suggests that obesity stigma is not only a function of social learning (Klaczynski, 2008). People are often unable to say how they have made judgments on physical appearance, indicating that implicit attitudes are important. Furthermore, children seem not always able to report the reasons for their reactions, but intuitively they would feel that they are correct (Major & O'Brien, 2005). This sense that there is something wrong and unfamiliar about individuals with obesity could explain the avoidance of people with obesity (Klaczynski, 2008). Even though the disease avoidance mechanism may have a role in the stigmatizing of obesity, developmental and cultural aspects seem important as well. This mechanism may later on be transformed into a set of beliefs about obese people, i.e. obesity stereotypes, which strengthen with age. During the child's developmental stages, these stereotypes are also likely to be reinforced by, for instance, the media, which present obese characters in a biased way (Greenberg, Eastin, Hofschire, Lachlan & Brownell, 2003), parents who relay the idea that obese individuals are unsuccessful (Adams, Hicken & Salehi, 1988), and a society that idealizes a thin appearance (Thompson & Heinberg, 1999). Consequently, children will be exposed to a variety of cues to which they will respond by trying to construct meaning.

## 2.4 MEASURING OBESITY STIGMA

The assessment of attitudes, stereotypes, and discrimination in general has a long history, but measurements of these components in relation to obesity are rather new. However, research has used diverse techniques to capture stigma against people with obesity, which have included survey methods, questionnaires with experimental manipulations, laboratory experiments and field studies. Explicit attitudes (self-reported and endorsed) and implicit attitudes (outside conscious control and awareness), and also behavioural reactions and personal experiences of stigma, have been investigated.

To determine attitudes and stereotypes in children, questionnaires in which children are asked to evaluate or assign positive and negative adjectives to figure silhouettes representing different body sizes have been used (Puhl & Latner, 2007). Children have also been asked to report their playmate preference, or to make peer and friendship nominations, and qualitative interviews have also been undertaken. In younger children, attitudes towards

obesity have been assessed by story-telling methods (Cramer & Steinwert, 1998). But, to the best of my knowledge, only one study has assessed implicit attitudes about obesity in children (Solbes & Enesco, 2010). Survey methods have the advantage of elucidating the stereotypes held by individuals concerning obesity, but they are often subjected to social desirability bias and social norms, and do not capture information regarding actual behaviour. Experimental studies, which have the advantage of enabling inferences about causality, have also been performed; for instance, children have been provided with information suggesting that the targets evaluated had little responsibility for their obesity (Bell & Morgan, 2000; DeJong, 1993; Sigelman, 1991). There are caveats, however, in particular that responses may not necessarily correspond to actual behaviours. Studies of self-reported experiences of teasing and bullying among children with obesity are also scarce, and the studies that have examined obesity stigma as a possible mediator of physical or psychosocial outcomes in children with obesity are still few in number.

Studies of adults have, to a high degree, relied on questionnaires that make certain statements about obese people's character and behaviour, etc. (Crandall, 1994; Latner, O'Brien, Durso, Brinkman & Macdonald, 2008). But there are also studies that have used adjective ratings (Teachman, Gapinski, Brownell, Rawlins & Jeyaram, 2003) and qualitative designs (Brown, 2006). In the last decade, further studies have been directed at unconscious attitudes or attitudes that people are not aware of or try to deny (Teachman & Brownell, 2001). There are only a few studies that measure stigma by directly asking people with obesity about their experience of discrimination (Puhl & Heuer, 2009), but there have been quite many studies of people's behaviour or rejection of people with obesity. These, mostly indirect measures, have involved investigating, for instance, seating distance from an obese person, time before a sales person responds to an obese customer, weight penalties, and job applicant ratings. However, field studies that can capture behaviours disclosing when perpetrators and targets interact in the real social world are few (King, Shapiro, Hebl, Singletary & Turner, 2006).

## 2.5 PREVALENCE AND AETIOLOGY OF OBESITY

The prevalence of obesity has increased in Sweden among both men and women (Lissner, Johansson, Qvist, Rössner & Wolk, 2000; Rasmussen, Johansson & Hansen, 1999). Studies of young men show a five-fold increase in the prevalence of moderate obesity (BMI of 30-34.9) and a ten-fold increase for severe obesity (BMI 35 or over) over a thirty-year period (Neovius et al., 2008). The prevalence of obesity in the Swedish adult population is today approximately 10% in both men and women, according to estimates based on self-reported BMI (Neovius, Janson & Rössner, 2006), and about 25% of the obese group seem to be individuals with severe obesity (Neovius et al., 2008). Recent data from Statistics Sweden show that prevalence between 2000/2001 and 2006/2007 has been stable, at around 10% (Statistics Sweden, 2010). Results from the US show a similar stabilizing trend in obesity prevalence for a similar period (between 1999/2000 and 2007/2008) in women, while a slight increase in prevalence was recorded for men. The prevalence of obesity in the US is estimated to be 32% for men and 35% for women (Flegal, Carroll, Ogden & Curtin, 2010).

Reports on secular trends in children are scarce from Sweden; however, they seem to correspond to the trend in adults. The prevalence of obesity in children 10 years of age in Gothenburg increased four to five-fold, to 2.9%, between 1983/85 and 2000/2001 (Neovius et al., 2006). A recent study reports that the prevalence of obesity (approximately 3-4%) among 10-11 year-old boys and girls stabilized between 1999 and 2005 (Lissner, Sohlström, Sundblom & Sjöberg, 2009). Such levelling-off in obesity prevalence corresponds to the findings of studies in other countries (Brown, Byatt, Marsh & McPherson, 2009). Sweden ranks low on the international obesity list (World Health Organization, 2010), but – because of a high rate of tracking over time – a majority of children with obesity will remain obese in adulthood (Guo, Wu, Chumlea & Roche, 2002).

Empirical evidence suggests that body weight is determined by complex interaction between biological and environmental factors (Bouchard, 2008), and family studies show that genetics play an important role in obesity (Rasmussen, Magnusson & Sörensen, 2008). For instance, responses to calorific reduction (Hainer, Stunkard, Kunesova, Parizkova, Stich & Allison, 2000), overfeeding (Bouchard, Tremblay, Despres, Nadeau, Lupien, Theriault et al., 1990), and exercise (Bouchard, Tremblay, Despres, Theriault, Nadeau, Lupien et al., 1994) are more similar within twin pairs than between twin pairs. Heritability is 50-80%, depending on population, age and period of time investigated (Rasmussen et al., 2008). However, it is suggested that the genetic influence has four levels: genetic obesity, strong genetic predisposition for obesity, slight genetic disposition for obesity, and genetically resistant to obesity (Loos & Bouchard, 2003). Slight genetic predisposition to obesity seems to be common in the population, and lifestyle, social, cultural and community factors will therefore be important for its development. Obesity is strongly associated with measures of socioeconomic position, place of residence, ethnicity, age and sex (Kark & Rasmussen, 2005; Neovius & Rasmussen, 2008b; Ogden, Carroll, Curtin, McDowell, Tabak & Flegal, 2006). Social position in men and attained education in women show a strong association with obesity in most developed countries (McLaren, 2007), even though the disparity in obesity across SES categories appears to have become less (Zhang & Wang, 2004). Hypotheses regarding social differences in obesity levels are several, but SES is likely to be both a causal factor for obesity and a consequence of obesity (Karnehed et al., 2008).

## 2.6 MEASURING OBESITY

Overweight and obesity are defined as an accumulation of excessive body fat that presents a risk to health. The World Health Organization (WHO) defines overweight, for adults, as having a BMI of 25 to 29.9, and obesity as having a BMI of 30 or over. BMI is calculated as weight in kilograms divided by squared height in metres ($kg/m^2$). The definition is based on the association between BMI and mortality, where studies indicate that the risk of mortality increases from BMI 25 and increases further over BMI 30 (Neovius, Sundström & Rasmussen, 2009; WHO, 2000). BMI has shown to provide a relatively good estimate of body fatness in epidemiological studies (WHO, 1997). However, BMI does not distinguish fat mass from muscle mass, and there is therefore a risk of misclassifying individuals. This is especially salient for men who are more likely than women to have a high BMI because of muscle mass rather

than fat mass. At a group level, however, BMI correlates fairly well with percentage of body fat (Gallagher, Heymsfield, Heo, Jebb, Murgatroyd & Sakamoto, 2000). However, depending on the outcome of interest, different measures of obesity or fatness may be needed (Heitmann, Frederiksen & Lissner, 2004; Rexrode, Carey, Hennekens, Walters, Colditz, Stampfer et al., 1998). In large epidemiological studies, BMI and waist- or hip circumference are quick, easy and cheap measurements of overweight and obesity, but other methods – like underwater weighing, air displacement plethysmography, labelled water techniques and dual-energy X-ray absorptiometry – are the most reliable in obtaining accurate measures of body fat (Parker, Reilly, Slater, Wells & Pitsiladis, 2003; Wang, Deurenberg, Guo, Pietrobelli, Wang, Pierson, Jr. et al., 1998).

For children, the International Obesity Task Force has developed sex-specific cut-offs for overweight and obesity (Cole, Bellizzi, Flegal & Dietz, 2000). BMI in children correlates quite well with body fat, as seen in adults. However, although the cut-offs have been seen to have high specificity (not misclassifying normal weight children as overweight or obese), they are regarded as having low sensitivity (misclassifying overweight and obese children as normal weight) (Neovius & Rasmussen, 2008a). Another way of defining overweight and obesity in children has been to use certain BMI percentiles of specific reference populations (Kuczmarski & Flegal, 2000).

It is difficult to ascertain at which BMI level the risk of stigmatization increases, because different approaches have been used in the measurement of obesity stigma. Often, a range of body figures representing extreme thinness to extreme obesity has been used, but there have been no known specific BMI levels attached to the figures (Kraig & Keel, 2001; Rand & Wright, 2000). Recently, there has been some development in these pictorial methods, which include BMI-based body size figures (Harris, Bradlyn, Coffman, Gunel & Cottrell, 2008; Swami, Chan, Wong, Furnham & Tovée, 2008). Furthermore, surveys have asked for people's attitudes to fat or obese people, or people who weigh too much, without giving participants guidance on the medical definitions, which allow them to make their own characterizations (Allison, Basile & Yuker, 1991; Crandall, 1994). Conceptualization of an overweight, obese or fat individual might therefore not be consistent across individuals and groups of people. Crandall, for instance, has chosen to use the wording fatness instead of obesity to distinguish between the medical condition (obesity) and a descriptive feature of someone's body size (Crandall, 1994). In large surveys that assess perceived discrimination, self-reported BMI has often been used (Puhl, Andreyeva & Brownell, 2008), and in clinical samples or studies in schools, where the sample sizes are often small, objectively measured BMI has been most commonly employed (Friedman, Reichmann, Costanzo, Zelli, Ashmore & Musante, 2005; Koroni, Garagouni-Areou, Roussi-Vergou, Zafiropoulou & Piperakis, 2009; Vartanian & Shaprow, 2008).

## 2.7 OBESITY STIGMA – CHILDREN

Existing studies of obesity stigma suggest that it is a common experience for children with obesity to encounter negative attitudes and victimization/teasing. However, due to the variety of assessment methods that have been used it is difficult to ascertain the specific prevalence rates of biased attitudes or stigmatizing encounters.

## Gender effects

A systematic review of gender and stigmatization of obesity, including both attitudes towards obesity and perceived victimization/teasing among individuals with obesity, indicates that girls are, to a greater degree, subjected to obesity stigma than boys (Tang-Peronard & Heitmann, 2008). This discrepancy seems, however, to be manifested in relation to the type of stigmatization. The sex difference was also more pronounced in studies with older age groups (11-18 years) than younger (2-5 and 6-10 years). Furthermore, studies finding sex differences were often the ones having the highest quality, suggesting that this result may also be due to methodology. A recent prospective study of 8210 7-8-year-old children finds that 36% of boys and 34% of girls with obesity self-report being stigmatized due to their weight (Griffiths, Wolke, Page & Horwood, 2006). Later figure silhouette studies of elementary-school children also show inconsistency in the judgment of the obese target by gender. The target with obesity was more disliked by girls than by boys in one study (Koroni et al., 2009), while boys were the ones making more negative evaluations of a silhouette with obesity in another (Penny & Haddock, 2007a). Studies including the effects of the sex of both the stigmatizer and the stigmatized are, however, scarce (Cramer & Steinwert, 1998; Klaczynski et al., 2009; Kraig & Keel, 2001; Stager & Burke, 1982). Kraig and Keel (2001) found variations in 7-9 year-olds' judgments according to target weight, target sex and sex of the child making the judgment, which indicate that all these factors need to be considered. A study investigating target weight, target sex and rater sex interactions among 10-16 year-olds revealed that female targets with obesity were denigrated more than male targets with obesity, but that there was no effect on the ratings based on the sex of the rater (Klaczynski et al., 2009). The difference between ratings of female and male targets with obesity also increased with age.

## Age effects

As previously mentioned, negative attitudes towards obesity are seen in early childhood (Cramer & Steinwert, 1998; Lehmkuhl, Nabors & Iobst, 2009; Margulies, Floyd & Hojnoski, 2008; Musher-Eizenman, Holub, Miller, Goldstein & Edwards-Leeper, 2004; Turnbull, Heaslip & McLeod, 2000). The evidence concerning the development of stronger, weaker or persistent negative attitudes with age is, however, inconclusive. Higher levels of stereotyping were assigned to an obese target by 5-year-olds compared with 3- and 4-year-olds (Cramer & Steinwert, 1998), and an increase in obesity stereotyping has been seen from kindergarten up to approximately 4$^{th}$ to 5$^{th}$ grade in a handful of studies (Brylinsky & Moore, 1994; Klaczynski, 2008; Sigelman, Miller & Whitworth, 1986; Wardle et al., 1995). There are, however, studies showing no effect of age (ages 8 to 12) (Tiggemann & Wilson-Barrett, 1998), and decreasing negative attitudes from about ages 5-6 to 10-11 (Penny & Haddock, 2007a; Solbes & Enesco, 2010). In one of these studies it was found that implicit attitudes to obesity were detected among 6-year-olds, and that these remained stable up to age 11. However, explicit and implicit attitudes were only correlated in younger children. Studies from the elementary-school period through adolescence are scarce, but they have shown an increase in stereotyping – from early ages to adolescence in boys (Lerner & Korn, 1972), and from ages around 10 up to 16 in both

females and males (Klaczynski et al., 2009). But a lack of an age effect (ages between 9 to 16) on stereotypes assigned has also been documented (Stager & Burke, 1982).

All the studies conducted have been cross-sectional, and not all have included the possible effects of gender or socio-demographics, which limits conclusions about possible developmental shifts. To the best of my knowledge, there is only one longitudinal study of the development of obesity stereotypes (Davison, Schmalz, Young & Birch, 2008). This showed that 9-year-old girls had decreased their reporting of obesity stereotypes in general by the age of 11, but stereotypes, such as obese individuals are lazy and that it is bad to be obese, did not change. Longitudinal trends in weight-related teasing also suggest that this experience decreases among overweight individuals (overweight and obesity analyzed together) as they make the transition from early to mid-adolescence, 42% to 31% in females and 45% to 20% in males (Haines, Neumark-Sztainer, Hannan, van den & Eisenberg, 2008).

## Body weight effects

Own body weight has consistently been shown not to have an effect on attitudes towards obesity in elementary-school children, regardless of method used (Counts, Jones, Frame, Jarvie & Strauss, 1986; Davison & Birch, 2004; Koroni et al., 2009; Kraig & Keel, 2001; Latner, Simmonds, Rosewall & Stunkard, 2007; Tiggemann & Anesbury, 2000; Wardle et al., 1995). It has been suggested that this evidence means that children with obesity are not protected by their "own group"; that is, in-group favouritism is common when it comes to other stigmatized groups, but this is not seen in obesity. A study of children in pre-school shows similar results, but in some judgmental tasks even stronger stereotyping about obesity was expressed by overweight children than by non-overweight children (Cramer & Steinwert, 1998). In another study, pre-school children's BMI did not predict assignment of negative adjectives to an overweight figure, whereas the number of positive adjectives attributed decreased with increasing BMI (Rich, Essery, Sanborn, DiMarco, Morales & LeClere, 2008). Additional research among pre-school children shows no effect of own body size on stereotyping (Holub, 2008).

## Body image effects

Body image is a multidimensional construct and is suggested to incorporate perceptual, affective, cognitive, evaluative and behavioural components (Smolak, 2004). Pre-school children who perceived themselves heavier showed less obesity stereotyping (Holub, 2008), while, in another study, the numbers of positive and negative adjectives assigned to an overweight figure were not related to perceived body size (Rich et al., 2008). The former authors suggest that this could be a sign of in-group favouritism. Children recognizing themselves as overweight or obese, despite the fact that they are thinner might identify with these children and therefore show less stereotyping. How satisfied one is with one's body size (domain-specific self-esteem) has also been found to be related to the number of negative stereotypes assigned to a figure with obesity. In a study of 7-12 year-olds, boys' greater body dissatisfaction predicted more negative stereotypes of a boy figure with obesity. No relationship was seen between girls' body dissatisfaction and obesity stereotypes assigned to a girl figure (Tiggemann & Wilson-Barrett, 1998). However, among 9-year-old girls, more

interactions with mothers about body shape issues and weight loss predicted a higher level of negative obesity stereotyping (Davison & Birch, 2004). However, studies that have taken into account both target sex and rater sex in relation to body image and body stigmatization are scarce.

## Media effects

A systematic review shows that the media present obese people in a biased manner (Greenberg et al., 2003) and, as mentioned previously, the stigmatization of obese individuals in a Swedish media context has been demonstrated (Sandberg, 2007). Advertisements and news media are also common arenas for framing messages that emphasize personal responsibility for weight and obesity (Puhl & Heuer, 2009). In conjunction with the denigration of obese individuals, magazines and television strongly communicate the thin ideal (Thompson & Heinberg, 1999), and in children's literature and movies, characters with obesity are often negatively presented (Puhl & Heuer, 2009). Therefore, it is likely that the media transmit negative stereotypes about obesity to children. Despite this, only two published studies have investigated the association between media use in children and obesity stigmatization. Among elementary-school children, boys' higher television viewing predicted increased stereotyping of obese girls (Harrison, 2000). However, boys' and girls' interpersonal attraction to a male television character with obesity predicted less stereotyping of a girl and boy figure with obesity. Elementary-school children's weekly playing of video games and total media use have also been associated with obesity stigmatization (Latner, Rosewall & Simmonds, 2007). In boys, total television viewing was correlated with obesity stigma, while girls' magazine reading was an independent predictor of obesity stigma. Studies of undergraduate females suggest that time spent reading fashion magazines may be related to negative attitudes towards obesity through dysfunctional appearance beliefs (Lin & Reid, 2009).

## Parental effects

There is little research on parental influence on children's likelihood of expressing obesity stigma. However, previous research has found that fathers' and mothers' higher investment in physical appearance predicts higher obesity stereotyping. Fathers and mothers emphasizing thinness and weight loss in interactions with their daughters also predict higher levels of obesity stereotyping in their 9-year-old girls (Davison & Birch, 2004). No direct link was found in the study between parents' obesity stereotypes and their daughters' obesity stereotypes. However, a study of adolescents has documented agreement between girls' obesity prejudice and their mothers' obesity prejudice (O'Bryan, Fishbein & Ritchey, 2004). Mothers' higher BMI and higher body dissatisfaction were independent predictors of pre-school boys' and girls' higher numbers of negative adjectives assigned to a figure with overweight (Rich et al., 2008). Furthermore, parents asked to tell a story to their children of a child of average weight, one with a disability and one with obesity, imaged the child with obesity as having the lowest self-esteem and being least successful (Adams et al., 1988). Studies also show that adolescents with obesity may be stigmatized by their own parents, e.g. parents having paid for college for their non-obese child, but not for their obese child (Crandall, 1995). There seems to be only one study

that has investigated parent's controllability beliefs regarding weight. This demonstrated that parents of 4-6 year-olds who held higher controllability beliefs on weight were more likely to restrict their children's food intake (Musher-Eizenman, Holub, Hauser & Young, 2007).

### Effect of the belief in personal responsibility for weight

It has been suggested that the belief that weight is controllable, or that people are personally responsible for their own weight, is one of the strongest reasons for people's negative responses to obesity (Crandall, 1994). Such a belief is also correlated with negative attitudes towards or stereotypes about obesity in pre-school children (Lehmkuhl et al., 2009; Musher-Eizenman et al., 2004) and in elementary-school children (Tiggemann & Anesbury, 2000). But these studies are correlational, and studies using an experimental design that have tried to combat negative attitudes towards obesity by using this notion have shown only modest effects. Children aged 6 and 10 who were given information that the obese target had little personal responsibility were less likely to blame the target for the condition compared with children who were not given any information about cause (Sigelman, 1991), but the children did not show more positive responses afterwards. Similar findings have been documented in other studies among 9-11 year-olds; less blame was assigned to the obese target if a medical (Bell & Morgan, 2000) or a genetic (Anesbury & Tiggemann, 2000) explanation was given. In the study by Bell and Morgan (2000), younger children were found to decline in their negativity, while older children did not change. This was also seen in the study by Anesbury and Tiggemann (2000). Adolescent males did not reduce their obesity stigmatization when a medical explanation for obesity was given, while females were less likely to display stigma when given such information (Kingsbury, 2009). One recent study has shown that internal causal attributions for obese targets increases with age (from 10 to 16) and that attributions become much stronger with age for female targets than for male targets (Klaczynski et al., 2009).

## 2.8 OBESITY STIGMA – ADULTS

Adults' negative attitudes towards obese individuals have been seen to be as pervasive as those of children (Puhl & Brownell, 2001). Increasing prevalence of weight discrimination has also been documented over the last decade (Andreyeva, Puhl & Brownell, 2008) in parallel with the trend of increasing obesity. When it comes to discrimination due to obesity, both institutional (health care, employment, education) and interpersonal mistreatment have been reported (Puhl & Heuer, 2009), and obesity stigma may be higher for women (Andreyeva et al., 2008).

### Personal responsibility for weight

Studies among adults that give information about the uncontrollability of obesity seem to be more effective in reducing stigma than similar studies among children (Crandall, 1994; DeJong, 1993; Grosko, 2007; Teachman et al., 2003; Weiner et al., 1988). However, the interventions are often very short and highlight different aspects of controllability (Danielsdottir et al., 2010). In their interactions, people do not normally have information regarding individual causes of obesity, so when access to this information is lacking, the person with obesity is assumed to be directly responsible for his or her condition (Ross, Shivy & Mazzeo, 2009). However,

individuals with obesity who are engaged in risk-reducing behaviour, such as exercise, are judged more positively, which suggests that people consider both aetiology and the risk the person with obesity is taking. Also, people with obesity engaged in binge eating are more negatively judged than persons without any indication of a possible blameworthy behaviour (Bannon, Hunter-Reel, Wilson & Karlin, 2009). If there is justification for stigmatization, then it seems more likely to be demonstrated (Crandall & Eshleman, 2003), however, if there is ambiguous responsibility for obese people's condition the degree of denigration may be similar as that found for people that are clearly responsible for their condition (Ross et al., 2009).

There is ample evidence that men show greater stigmatization of obesity than women (Crandall, 1994; Hebl, Ruggs, Singletary & Beal, 2008; Latner et al., 2008; Lewis, Cash, Jacobi & Bubb-Lewis, 1997; O'Brien, Latner, Halberstadt, Hunter, Anderson & Caputi, 2008; Puhl et al., 2005; Wang, Brownell & Wadden, 2004), but there is no evidence that men show higher belief in the controllability of weight (Bannon et al., 2009; Crandall, 1994; Lewis et al., 1997; Puhl et al., 2005; Teachman et al., 2003). Furthermore, adults' own body weight has not been found to correlate with controllability beliefs (Crandall, 1994; Lewis et al., 1997; Puhl et al., 2005; Quinn & Crocker, 1999; Wang et al., 2004). However, higher BMI among women predicts a weaker implicit attitude that people with obesity are lazy (Teachman et al., 2003), which – in parallel with research using explicit measures – shows that individuals with obesity are less likely than thinner individuals to regard people with obesity as lazy (Ross et al., 2009; Schwartz, Vartanian, Nosek & Brownell, 2006). Numerous studies though show that one's own body weight is seldom related to explicit attitudes or stereotypes about people with obesity (Puhl & Brownell, 2003).

## Work-life

Employees with overweight and obesity have been viewed as less conscientious, less agreeable, less emotionally stable and less extraverted than normal weight employees (Puhl & Heuer, 2009). A study using a nationally representative sample of adults, however, challenges this view, and shows that personality and body weight are very weakly associated, and that age and sex are more important (Roehling, Roehling & Odland, 2008). Two recent meta-analyses of experimental studies of obesity stigma in the workplace, however, conclude that overweight individuals are likely to be disadvantaged across different workplace outcomes compared with their normal weight counterparts (Roehling, Pilcher, Oswald & Bruce, 2008; Rudolph, Wells, Weller & Baltes, 2009). The effects of obesity stigma on hiring were not different between managerial and sales persons in one of the studies (Rudolph et al., 2009), but in the other study overweight employees were found to be more disadvantaged when it came to be evaluated for jobs with greater public contact (Roehling et al., 2008). In the meta-analysis by Roehling and colleagues (2008), women and men were equally likely to be subjected to discrimination. A majority of the studies reviewed were laboratory studies and not field studies. Studies of perceived employment discrimination are few, but women seem to have a greater tendency to report weight-related discrimination than men, which is apparent in all weight groups from normal weight to severe obesity (Puhl et al., 2008; Roehling, Roehling & Pichler, 2007); by

contrast reports of perceived workplace discrimination, without any given reason for the action, have not revealed any gender difference (Carr & Friedman, 2005).

## Health care

There is evidence that health care specialists endorse stereotypical views about patients with obesity and think that managing weight is the responsibility of the patient (Puhl & Heuer, 2009). In quantitative studies, general practitioners (GPs) and nurses in primary care regard lack of motivation and non-compliance among their patients as the most important problems when treating obesity (Bocquier, Verger, Basdevant, Andreotti, Baretge, Villani et al., 2005; Brown, Stride, Psarou, Brewins & Thompson, 2007; Campbell, Engel, Timperio, Cooper & Crawford, 2000; Thuan & Avignon, 2005). GPs and nurses also feel un-prepared and ill-equipped to treat obesity (Brown et al., 2007; Campbell et al., 2000; Fogelman, Vinker, Lachter, Biderman, Itzhak & Kitai, 2002; Thuan & Avignon, 2005). In experimental work, primary care GPs have judged patients with obesity to be less self-disciplined, more annoying, less likely to comply with advice, and worse at taking care of themselves than thinner patients (Hebl & Xu, 2001). Research also suggests that patients with obesity may be given less time at health care visits (Hebl & Xu, 2001), but also that less time is spent on educating obese patients about health compared with thinner patients (Bertakis & Azari, 2005). In qualitative studies, views about obesity have been more balanced and, despite frustration about patient adherence, GPs and nurses have expressed an interest in establishing a good patient-provider relationship (Brown & Thompson, 2007; Epstein & Ogden, 2005).

Obese individuals' own perceptions about experiences of negative treatment in health care have been divided. In a national representative sample, 8% of individuals with severe obesity (BMI over 35) reported some time in life being denied appropriate medical care, compared with 3% of thinner individuals (Carr & Friedman, 2005). In an obesity-treatment seeking sample (mean BMI of 42), 89% had experienced inappropriate comments from doctors (Friedman et al., 2005). On administering the same questionnaire to members in a weight-loss support group (mean BMI 38), about 69% reported having experienced negative remarks from doctors (Puhl & Brownell, 2006). The participants had also experienced negative encounters with nurses. In qualitative studies, obese participants have reported experiencing derogatory comments from health professionals, but many have also had very positive experiences, and some health professionals were seen as strong advocates of their treatment and care (Merrill & Grassley, 2008; Thomas, Hyde, Karunaratne, Herbert & Komesaroff, 2008). Women with obesity have reported satisfaction with the care they receive for their general health, but are less satisfied with care for their obesity and with their primary care GPs' expertise in this area. Only a small minority of the patients (0.4-8.0%) reported frequent, negative interactions with GPs concerning their weight (Wadden, Anderson, Foster, Bennett, Steinberg & Sarwer, 2000). In other studies, patients with obesity have reported greater satisfaction with health care providers than patients with normal weight (Fong, Bertakis & Franks, 2006), and patients with overweight have reported similar, good levels of care as thinner patients (Hebl, Xu & Mason, 2003).

### Interpersonal relationships

Individuals with obesity are likely to be mistreated in interactions with other people – strangers as well as acquaintances, and even family members (Puhl & Heuer, 2009). Individuals with overweight and obesity have reported that family members are the most common interpersonal sources of stigma (Friedman et al., 2005; Puhl & Brownell, 2006), and qualitative research also demonstrates that experiences of stigma from family members and friends are common (Rogge, Greenwald & Golden, 2004). In nationally representative material, it has been found that individuals with obesity are more likely to experience interpersonal mistreatment in general than individuals with normal weight (Carr & Friedman, 2005). However, in the same sample, no significant differences across BMI categories were found regarding quality of relationships with friends, co-workers, and spouses (Carr & Friedman, 2006). Carr and colleagues (2008) recently investigated whether specific forms of interpersonal treatment, such as harassment/teasing, being treated with disrespect, or treated as if one is dishonest or frightening, were associated with BMI status. Individuals with moderate obesity and severe obesity reported significantly higher levels of mistreatment than individuals with normal weight for all three outcomes, after controlling for a range of possible confounding factors. Results also suggest that obesity is more stigmatizing in a high social status context than in a low social status setting.

## 2.9 CONSEQUENCES OF OBESITY STIGMA

Why is it so important to study obesity stigma? One reason, among several, lies in the postulated health consequences of being subjected to the experience of stigma (Dovidio et al., 2008). Stigma potentially produces stress responses in the subject (Guyll, Matthews & Bromberger, 2001), and stress is a risk factor for hypertension, diabetes, depression and weight gain (McEwen, 2008). To date, however, there is limited knowledge of how obesity stigma contributes to physical ill-health and psychological distress in individuals with obesity. It has been suggested that people with obesity may be caught in a vicious circle; that is, the risk factor for being discriminated against, i.e. obesity, interacts with the outcome of discrimination, i.e. weight gain. To the best of my knowledge, there is only one study that confirms this particular relationship in obese individuals (Adams & Bukowski, 2008). Studies of ethnic discrimination show, however, that weight gain is a potential outcome of stigma (Cozier, Wise, Palmer & Rosenberg, 2009; Gee, Ro, Gavin & Takeuchi, 2008). And there are studies showing that health outcomes, such as depression, low self-esteem, disordered eating behaviours, avoidance of physical activity, and hypertension, among individuals with overweight and obesity may be attributed to the stigma experience (Puhl & Heuer, 2009; Puhl & Latner, 2007). Stigma-induced stress might at least partially mediate the relationship between obesity and health consequences.

# 3 AIM OF THE THESIS

The overall aim of the present thesis is to enhance knowledge about obesity and stigma in different settings and population groups in Sweden.

In **Study I**, the relationships between **children's** prejudice against average weight, thin and obese body sizes of different sex in relation to children's gender, SES, and own body size were investigated. **Study II** disentangled determinants of **children's** obesity stereotypes, such as parent's controllability beliefs about weight and body size, and also children's body esteem. **Parental** determinants of controllability beliefs about weight were also explored. The association between weight status among **adults** and perceived discrimination in relation to gender and SES was elaborated upon in **Study III**. Finally, **Study IV** described **health care professionals'** conceptions of the encounter with patients with obesity in primary health care and their conceptions of the causes of obesity.

# 4 METHODS

## 4.1 STUDY DESIGN

Different methods may be needed to fully capture the nature of human behaviour. While certain methods are best suited to answering particular questions, combining them may result in a more complete picture. A multi-method design can therefore be used to address an overall research question. The methods used, quantitative or qualitative, stand for themselves and shed light on different specific research questions, but taken together they may provide a synthesis or more comprehensive picture of the phenomenon under study (More, 2003). The present thesis combined three quantitative studies (**Study I-III**) and one qualitative study (**Study IV**). The different perspectives adopted may complement each other because they generate different kinds of knowledge. The quantitative research is designed to address questions that hypothesize relationships between variables, and seek to answer the questions "how much" and "how many". The aim is to try to isolate variables and find quantifiable associations between them, or to establish the cause of a phenomenon by testing different hypotheses. Qualitative research, on the other hand, deals with questions of meaning, interpretation, and socially constructed reality. The assumption is that humans in relationship with the surrounding world create meaning and meaningfulness. From this perspective, ideas about life cannot be fragmented because the whole human being has to be studied (Hallberg, 2002). Qualitative research is interested in *what* is talked about and *how* it is talked about (Giacomini & Cook, 2000). The aim is, thus, to identify descriptions and models that best describe the phenomenon under study, rather than describing the world by measuring and testing predetermined categories or descriptions. The designs and methods included in the thesis are summarized in **Table 1**. The major objective of the research was to explore the relationship between obesity and stigma and elucidate possible determinants of obesity stigma, while the qualitative study of health professionals provided an in-depth perspective on perceptions of obesity.

**Table 1.** Designs and methods used in the thesis.

| Study | Design | Participants | Data collection | Methods of analysis |
|---|---|---|---|---|
| **I** | Observational (*cross-sectional*)<br>-descriptive<br>-analytical | 1409 10-year-old children | Questionnaire<br>Register data | Descriptive<br>Chi-square test<br>Logistic regression (repeated)<br>Rasch |
| **II** | Observational (*cross-sectional*)<br>-descriptive<br>-analytical | 1383 10-year-old children with parent | Questionnaire<br>Register data | Descriptive<br>Linear regression<br>Logistic regression |
| **III** | Observational (*cohort*)<br>-descriptive<br>-analytical | 2688 adults aged 25-64 | Questionnaire<br>Register data | Descriptive<br>Logistic regression |
| **IV** | Descriptive | 10 DNs<br>10 GPs | Qualitative interviews | Phenomenographic |

DNs=District nurses; GPs=General practitioners

## 4.2 PARTICIPANTS

The subjects included in the three quantitative studies (**Study I-III**) make up national random samples, while the participants in the qualitative study (**Study IV**) were strategically selected from the Stockholm County area.

### Children and parents (**Study I and II**)

In August 2005, a random sample of all children with Swedish citizenship born in the year of 1995 (10 years of age) was drawn from the Register of the Total Population (RTP), held by Statistics Sweden. This included 1500 boys and 1500 girls. The child and one parent (freely chosen) were asked to fill in one questionnaire each, and consent to participation was regarded as having being given when both questionnaires were returned. The response rate was 53% ($n$=800) in girls and 46% ($n$=697) in boys. In **Study I**, 1409 children had complete information on all variables used in the analysis, while in **Study II**, 1383 child-parent pairs were investigated.

### Adults (**Study III**)

Individuals were recruited from a pool of 36 600 individuals who had previously participated in a yearly national survey (1996-2006) that investigates living conditions in the general population of Sweden (ULF, Statistics Sweden). Individuals had to be between 25 and 64 years of age in 2008, and have data on height and weight. Individuals who had died or emigrated before May 2008 were excluded. Included were all individuals with obesity (BMI$\geq$30), giving a total of 3018 individuals. A random sample ($n$=2000) of all normal weight (18.5$\leq$BMI<25) individuals who could be found in the ULF database ($n$=20068) was also selected. A total of 5018 participants were mailed a questionnaire, of which 56% responded. The analysis comprised approximately 2600 individuals, depending on the outcome being investigated.

### Health care professionals (**Study IV**)

Strategic sampling of general practitioners (GPs) and district nurses (DNs) was performed in accordance with a phenomenographic approach. To attain a maximum amount of variation, participants were to have different background characteristics, such as age, sex, and number of years in their profession. The participants were recruited from different primary health care centres in Stockholm County from May 2008 to March 2009. The criterion for inclusion was to be a GP or DN with a specialist education. The goal was to obtain equal numbers of participants from the two professions. Fifty-seven different health care centres were approached and participants came from 19 of these. The stated reasons for refusal to take part in the study were work-overload and re-organization, but there were also simple, unexplained refusals. The heads of the centres themselves sometimes denied participation, while in some cases it was the staff. The total number of included participants was 20 (10 GPs and 10 DNs).

## 4.3 PROCEDURE

### Children and parents (**Study I and II**)

Questionnaires were sent to the parent or custodian of the child, with one accompanying letter to the parent and one to the child stating the purpose of the study. Children were informed that

the questionnaires dealt with phenomena like bullying behaviour or experience of bullying. Parents were informed that the questions also focused on children's attitudes towards body size, especially obesity. The information letters made it clear that both parents and children responded to the questionnaire at their own free will. The parents were also asked not to interfere with the child's way of responding. Written reminders to fill in the questionnaire were sent out after 3 weeks. This was followed-up by a telephone call 2-3 weeks later. A final written reminder with the questionnaire was sent after a further 3 weeks.

### Adults (**Study III**)

Individuals to be included in the study were identified and linked to Statistics Sweden's RTP in March 2008. In May 2008, a questionnaire was sent together with an information letter. A written reminder was sent out 10 days later, which was followed-up by sending the questionnaire again after a further 3 weeks. The questionnaire data (2008) were then merged with data from a previous questionnaire (ULF-surveys 1996-2006) and data from national registers.

### Health care professionals (**Study IV**)

The head of each centre was first approached by an e-mail containing an information letter. Thereafter, the heads were contacted by telephone approximately one week later. If a head gave permission for the study, a GP or DN was contacted either by e-mail or telephone. The heads either gave suggestions about a preferred informant or gave permission to contact anyone from the staff list who fulfilled the inclusion criteria. When an informant refused participation the next eligible participant on the staff list was contacted; if the suggested informant refused a new health care centre was approached. After contact had been established, the informant chose the place for the interview.

## 4.4 DATA COLLECTION

### Children and parents (**Study I and II**)

Stereotypes and prejudice against body size: Children were presented with three different body size figures (thin, average weight and obese) of different sex. The figures have been used extensively in research to study body size perception (Rand & Wright, 2000). For each figure a set of adjectives was presented, and the children were asked to circle those adjectives that best described the target child. Children rated the figure with average weight first, then the thin, followed by the obese. Children rated figures of the same sex as their own first, and then figures of the opposite sex. In **Study I** a score was calculated for each target figure by subtracting the number of negative adjectives assigned divided by the total number of negative adjectives from the number of positive adjectives divided by the total number of positive adjectives. Thus, each child ended up with 6 scores, each of which could range from -1 to 1. Scores below 0 indicated that an overall negative evaluation had been made for the target figure and the individual was therefore defined as being prejudiced against that specific target.

For the outcome measure in **Study II** a different approach was adopted to create the stereotype score. Here the focus was on obesity stereotypes, and therefore a total score was

calculated for each sex by giving a score of -1 if a positive adjective was attributed to the figure with obesity but not to any of the other two figures, which indicated positive obesity stereotyping. A negative adjective assigned to both the figure with average weight and thinness, but not to the figure with obesity also resulted in a score of -1. Moreover, if a positive adjective was given to both the figure with thinness and average weight but not to the figure with obesity the score became +1, and so forth. All other combinations were scored 0, e.g. when a negative adjective was assigned to both the figure with thinness and obesity, but not to the figure with average weight (indicating positive stereotyping of average weight). The total score could range between -21 and +21, with higher scores meaning higher levels of obesity stereotyping.

BMI: Children's height and weight were reported by their parents/custodians (90%). In cases of missing data, height and weight were collected from school health records (7%). BMI was calculated and categorized as thinness, normal weight, overweight and obesity in children according to the cut-offs proposed by Cole and colleagues (Cole et al., 2000; Cole, Flegal, Nicholls & Jackson, 2007). Parents reported their own body size by indicating which of 9 figure silhouettes (ranging from very thin to very obese) they perceived as resembling their weight status (Rand & Wright, 2000). Previous studies using figure silhouettes have shown that they correlate fairly strongly with actual BMI in both men and women (Nicolaou, Doak, Dam, Hosper, Seidell & Stronks, 2008; Tehard, van Liere, Com & Clavel-Chapelon, 2002).

Place of residence: Information on place of residence was gathered from the RTP. The classification of municipalities is made by the Swedish Association of Local Authorities. Place of residence was divided into rural or urban areas, where urban included the three largest cities (>200 000 inhabitants) in Sweden with their suburbs (where more than 50% of the nocturnal population work in another municipality, most commonly in one of the three metropolitan municipalities) and other larger cities (50 000-200 000 inhabitants).

SES: Self-reported attained education among parents was used as a proxy for SES for both the parent and the child. High SES was defined as completing at least 15 years of education (corresponding to at least 3 years of university studies). The longitudinal database of education, income and occupation (LOUISE), held by Statistics Sweden (Statistics Sweden, 2005), was used to collect data on the highest educational level among the two parents of the child. Aggregated data, retrieved in early 2007, provided a basis for comparing responders and non-responders in **Study I**.

Body esteem: Children's affective evaluation of their body was measured by the Body Esteem Scale for Adolescents and Adults (BESAA) (Mendelson, Mendelson & White, 2001). The scale has three dimensions: general feelings about one's body (BE-Appearance); satisfaction with one's weight (BE-Weight); evaluations attributed to others about one's body and appearance (BE-Attribution). Lower scores are indicative of greater body dissatisfaction. The scale has been validated in an adolescent Canadian sample (Mendelson et al., 2001). A Swedish translation has

already been performed, and the scale has been used in an earlier sample of 10-year-olds (Erling & Hwang, 2004); however, there has been no thorough validation in a Swedish context. A principal component analysis of the sub-scale BE-Appearance was performed in a sub-sample to see if unidimensionality would hold. Using Rasch analysis, 66% of the variance could be explained by the first component, with the second component explaining 7%, which is slightly higher than the normally accepted 5% (Reckase, 1979). However, the contrast only included 2 items of a total of 10 on the scale, suggesting that the strength of the contrast was not that high. Furthermore, all items demonstrated acceptable goodness-of-fit, with infit and outfit mean square residuals between 0.6 and 1.4 (Wright & Linacre, 1994). Internal consistency in the present thesis was 0.86 for BE-Appearance, 0.90 for BE-Weight and 0.69 for BE-Attribution.

Beliefs about controllability of weight: Parents reported on their beliefs about the controllability of weight. We combined a 3-item measure, developed by Crandall (1994), with an additional question "Fat people are lacking in character". The measure uses a 5-point Likert scale and, due to rather few observations in the upper part of the distribution, the 75$^{th}$ percentile was chosen to distinguish parents with high or low beliefs concerning controllability. Internal consistency in the present sample was $\alpha$=0.64.

Thin appearance idealization: Parents were asked to report on socially acceptable body size for children. This was done by reporting on which sizes of 9 boy and girl figure silhouettes (Rand & Wright, 2000), ranging from very thin to very obese, they thought acceptable. Those parents reporting only sizes 1, 2 or 3 (the thinnest sizes) were defined as having a thin ideal for children.

## Adults (**Study III**)

Perceived discrimination: Lifetime and interpersonal discrimination were assessed in 2008. The lifetime measure includes questions about experiences of discrimination in situations like work-life, health care, police, banking and housing (Carr & Friedman, 2005; Krieger, Smith, Naishadham, Hartman & Barbeau, 2005). Interpersonal discrimination dealt with questions regarding disrespectful treatment, harassment/teasing and being treated as being dishonest or frightening (Carr & Friedman, 2005; Carr et al., 2008). Individuals had to report perceived discrimination in relation to at least one of the 11 included statements to be defined as being subjected to any lifetime discrimination. Health care and work-life included four and three questions respectively, from among which discrimination had to occur in one of the situations for a person to be defined as being discriminated against in that particular context. For the interpersonal scale, persons with responses of "a few times a year", or more often than that, to all of the nine items counted as being discriminated against in interpersonal encounters.

The two measures of perceived discrimination had not been used previously in a Swedish context, which required the performance of a forward and back English-Swedish translation. The measures were then checked for reliability using a 3-week test-re-test. A pilot study including 15 obese patients on a surgery waiting list, together with a convenience sample of 16 normal weight individuals, was used. Agreement between the categorical data on the two

occasions of measurement of lifetime discrimination was 0.68 for obese individuals, and 0.87 for normal weight individuals. For interpersonal discrimination, Kappa values were 0.44 for obesity, and 0.67 for normal weight. Kappa values of 0.44-0.59 are considered as indicating moderate agreement, 0.60-0.79 substantial agreement, and 0.80-1.0 almost perfect agreement (Viera & Garrett, 2005).

BMI: Height and weight were self-reported and collected at two time-points. The first data point was derived from participation in the previous national survey of living standards (ULF), conducted between 1996 to 2006, while the second data point was sampled 2008. BMI was categorized according to WHO criteria for normal weight ($18.5 \leq BMI < 25$), class-I obesity ($30 \leq BMI < 34.9$), defined as moderate obesity, and class-II/III obesity ($BMI \geq 35$), defined as severe obesity.

SES: Socioeconomic classification at data point one (1996-2006) was based on self-reported occupation in combination with register information on attained education. This was then indexed into an occupational code according to the population and housing censuses (PHCs), held by Statistics Sweden. Occupations were further classified in accordance with Statistics Sweden's socioeconomic index (SEI) into non-manual high, non-manual intermediate/low, workers, self-employed/farmers and others (those for whom no specific occupation was reported). Attained education by 2006 was retrieved from LOUISE, and categorized into low (2 years of secondary school or less), medium high (at least 3 years of secondary school but less than 3 years of higher education), and high (at least 3 years of higher education).

National background: Data on country of birth was taken from the RTP. The foreign-background category encompassed individuals born outside Sweden or having one parent or both parents born outside Sweden.

Place of residence: Individuals were categorized into urban, medium urban and rural area of living according to a previous study investigating prevalence of obesity and its association with place of residence (Neovius & Rasmussen, 2008b). The data were retrieved from the RTP.

Employment status: Men and women reported their current (2008) employment status, which was categorized as employed or student, self-employed, sick-leave at least 3 months or disability pension, un-employed or other.

Income: The family's current disposable income was used (LOUISE). Data were available for 2006. The measure includes income from employment, social benefits and other allowances, and takes number of household members into account.

Marital status: Marital status was established from the RTP and categorized as married, unmarried or divorced/widowed.

Long-term disease: At data point one, i.e. the period of the surveys conducted by Statistics Sweden between 1996 and 2006, men and women reported on any long-term disease or other physical health problem, such as diabetes, thyroid dysfunction, hypertension, or back pain. This information was dichotomized into co-morbidity or not.

Self-esteem: Rosenberg's self-esteem scale (Rosenberg, 1989) measures global self-esteem in adults. Internal consistency in the present thesis was 0.90.

Social desirability: A short form of the Marlowe-Crowne social desirability scale (Rudmin, 1999) was used to account for the provision of socially desirable answers in relation to discrimination among adults. Internal consistency was 0.67 in the present thesis.

### Health care professionals (**Study IV**)

Health care professionals were individually interviewed, either in their workplace ($n$=18) or at the interviewer's research department ($n$=2). The interviews lasted 30-80 minutes and were transcribed verbatim. Open-ended questions included *"Could you tell me about your experience of meeting patients with obesity?" "How do you perceive the life situation of patients with obesity?" "How do you think care is working for patients with obesity?" "Could you tell me what you think causes obesity?"* Answers were followed-up by using prompts to get informants to expound on their views (Sjöström & Dahlgren, 2002). Their scope and number depended upon how precisely and fully the informant answered the questions. All interviews were performed before the analysis was started.

## 4.5 DATA ANALYSES

### Children and parents (**Study I and II**)

Repeated logistic regression: A repeated measures logistic regression was used in **Study I** to assess the effects of child's sex and the figure's sex and body size on the likelihood of being prejudiced. The generalized estimation equation (GEE) procedure in PROC GENMOD in Statistical Analysis Software (SAS) 9.1 (SAS Institute I, 2002) was used to account for within-subject correlation. Odds ratios (ORs) and 95% confidence intervals (CIs) were used to describe the magnitude of the association, where present. Results were considered significant at an $\alpha$ level of 0.05 (two-tailed tests).

Rasch analysis: Rasch models use logarithmic transformations to convert data into equal-interval measures (Linacre, 2005). The Rasch model is based on assumptions concerning how probabilities of responses should be. The items or response alternatives in an instrument can therefore be distributed along an axis, where they represent the difficulty of the underlying construct (Conrad & Smith, 2004; Embretson, 1996); that is, in the present thesis the most rarely assigned adjectives were placed towards one end of the axis, and the more frequently assigned towards the other end. Thus, the hierarchy of how likely the items (in this case, adjectives) were assigned was used to analyze differences in response patterns between subgroups within the study population. The statistical package STATA 9.0 (Stata Corporation, 2009) was used to

generate goodness-of-fit statistics for the adjectives assigned to the different body figures. Subgroups were then compared by qualitatively studying the hierarchy of the adjectives.

Linear regression: In **Study II** multiple linear regressions were performed to estimate associations between the dependent variable, children's obesity stereotypes, and the independent variables, parents' controllability beliefs, parental body size and children's body esteem and BMI. Potential confounding was adjusted for in the analyses. The PROC REG procedure in SAS 9.1 was used. The strengths of the associations were described by giving the 95% CIs of the estimates.

Logistic regression: Logistic regression was used to estimate the associations between parental controllability beliefs and possible predictor variables. The PROC LOGISTIC procedure in SAS 9.1 was used.

## Adults (**Study III**)

Logistic regression: Logistic regression models were used to predict the ORs of perceiving discrimination among men and women with moderate obesity and severe obesity compared with men and women with normal weight. In the analyses, factors potentially related to obesity were controlled for (age, place of residence, foreign background, marital status, socioeconomic position, and co-morbidity). Because BMI was measured at two different time-points, a potential BMI change could influence the reporting of discrimination, which was adjusted for. Factors that might influence the actual reporting of discrimination were also controlled for, which included current marital status, income, attained education, employment status, self-esteem, and social desirability. The PROC LOGISTIC procedure in SAS 9.1 was used.

## Health care professionals (**Study IV**)

Phenomenography: This research method is a content-related approach, developed within educational research, which seeks to characterize, understand and describe the qualitatively different ways in which people make sense of the world around them (Marton, 1981; Marton & Booth, 1997). The phenomenographic tradition makes a distinction between two divergent focuses, the first-order and the second-order, where the former deals with how the world actually is and the latter, which is the essential one in phenomenograhy, concerns how the world is experienced (Marton, 1981). Phenomenographic research creates a structure for understanding different ways of conceiving a phenomenon (Marton & Booth, 1997), which can give valuable insights into how competence and education might be improved, in this case of health care professionals.

The analysis was directed towards similarities and differences between individual statements, and emanated in descriptive categories at a collective level (Marton, 1996). In accordance with the phenomenographical approach, the analysis was carried out in four phases (Marton, 1986; Schröder, Ahlström & Larsson, 2006). First, the tapes were listened to again to ascertain that the interviews had been correctly transcribed; thereafter, the text was read through several times to get an overall impression, and then statements of relevance to the aim

of the study were identified. Second, to identify distinct ways of conceiving a phenomenon the labelled statements were constantly compared, and preliminary conceptions were formed that represented each informant's view. Third, the conceptions were compared with one another, and then grouped into distinct descriptive categories to which names were given. Fourth, at the final stage, the relationships between the descriptive categories were investigated; the aim was to ensure that the categories were in agreement with the conceptions and also that they could be distinguished from one another. Constant comparing of the identified statements and conceptions was performed throughout the analytic process. The findings were constantly discussed in-depth by me and one of the supervisors (GA) until agreement was reached.

## 4.6 ETHICAL CONSIDERATIONS

All the studies in this thesis were approved by the Regional Ethics Committee, Stockholm, Sweden. The studies have also been guided by the ethical principles for medical research involving human subjects (World Medical Association, 2004), i.e. with respect for *autonomy*, and according to the principles of *confidentiality*, *non malfeasance*, and *beneficence.*

All study participants were informed about the purpose of the research; it was made clear that their participation was based on their own free will and the information they were to give would be treated confidentially. They were also informed that they, at any point in time, could abstain from participation in the study or withdraw their consent to participate without any reprisal. Informed consent was regarded as having been given by handing in the questionnaires in **Study I-III**. Children in **Study I** and **II** were approached by sending information letters to their parents. They were the ones who acted in the child's best interest, and therefore questionnaires had to be filled in by both the child and the parent, and returned, for them to be included in the study. However, a problem with survey research on large groups of people is the difficulty in ascertaining whether participants have understood the purpose of the particular study, and the potential benefits and risks of them being part of it. This was easier to achieve in the study of health care professionals (**Study IV**). DNs and GPs were first informed about the research by e-mail or during a phone call. All informants gave their consent to participate during a personal telephone call, and – just before the interview started – the information was repeated to ensure that they understood the purpose of the study and was willing to participate.

After the children and their parents (**Study I** and **II**) had been identified in the RTP, their personal identification (social security) number was replaced by a coding number, which was used when handling the data in further analyses. The same procedure was performed for the men and women in **Study III**. In this way, data could not be linked to any individual. Moreover, in the analyses, only larger subgroups of individuals were used when making comparisons, which made it impossible to identify individuals. In **Study IV** the audio files from the interviews were deleted directly after transcription and verification of their correct content had been achieved. The interview texts were then given a code. The specific primary health care centres that were approached were not displayed, which additionally guaranteed confidentiality of the informants.

**Study I** and **II** concerned attitudes and values, something that could have evoked discomforting feelings in some children. Perhaps this was especially true for those children who were either thin or obese, since they were asked to assign adjectives to body size figures that resembled their own. Even though children were also asked to judge average weight figures, the possibility that children with thinness and obesity felt singled-out cannot be ruled out. Parents were asked to report on their controllability beliefs about weight. These items included statements about obese people's personal responsibility for their condition. According to a report on discrimination and health (Folkhälsoinstitutet, 2006), it might be considered ethically doubtful to ask members of a potentially stigmatized group (in this case individuals with obesity) to answer questions about attitudes towards their own group.

The purpose of the qualitative interview (**Study IV***)* was to capture individuals' own experiences and conceptions. This meant that the interviewer, as well as the informants, did not know in advance what directions the interviews would take. The interview situation could represent the first time ever the informants had thought about the subject in question, and – during the course of the interview – attitudes and values may have been revealed that the informants did not even know they had. Therefore, it was important to be attentive to the reactions of the informants during the interviews and not press them to elaborate on an issue if they looked uneasy. In some cases, it was also apparent that informants made contradictory responses. Here, an ethical problem arises. What right does a researcher have to comment upon and interpret the statements made by an informant and how might the informant react to this reflection (Kvale, 1997). The approach of a qualitative interview is similar to that of a therapeutic conversation, but the aim is not to produce a change in the informant. Still, the interview can initiate a self-reflection process and emotional change that the informant has not asked for. However, this could also be regarded as beneficial because the reflective processing may lead to increased awareness about how patients with obesity are encountered and cared for in health care.

The result of this research is expected to attract greater attention to obese individuals' experiences of negative treatment in society, and the hope is that obese individuals will benefit from this. If obese individuals are hindered from reaching important goals in life due to prejudice and discrimination, preventive work has to be performed to reduce such stigmatization. However, one cannot exclude the possibility that this research evokes unwanted attention. It is possible that some obese individuals do not identify themselves as belonging to a stigmatized group, and for them the research may be regarded as non-beneficial.

# 5 RESULTS

The main results of each study (**I-IV**) are presented, while more detailed information can be found in the papers. The following results section also presents data that are not included in the manuscripts. These concern, for instance, predictors of controllability beliefs about weight among parents, conceptions about the causes of obesity among primary health care professionals, and the findings of a Rasch analysis of children's assigned adjectives.

## 5.1 OBESITY – A STIGMATIZING ATTRIBUTE

The unadjusted prevalence of children being prejudiced against figures with average weight, thinness, and obesity was 3%, 36%, and 60%, respectively (**Study I**). Children's likelihood of being prejudiced against the different figures is presented in **Table 2**. The ORs show that children were more likely to be prejudiced against the figure with obesity compared with both the average weight and the thin figure. On average, children assigned 4 negative stereotypes (range -14–19, depending on sex of the figure) to the figure with obesity, which were not assigned to the figures with thinness and average weight (**Study II**). The most common negative adjectives assigned only to the figure with obesity were slow, lazy, lonely, and sloppy. The most common positive adjectives that were not assigned to the figure with obesity but to the other figures were fast and good.

In the population-based study of adults, 43% of individuals with normal weight reported any life time discrimination, while 49% and 61% of individuals with moderate and severe obesity, respectively, reported the same. Weight status, adjusted for potential confounding factors, was associated with perceived discrimination. Individuals with moderate and severe obesity were more likely than normal weight individuals to report any lifetime discrimination, OR=1.28 (95% CI: 1.06; 1.55) and OR=1.79 (95% CI: 1.33; 2.41), respectively (**Study III**). Interpersonal discrimination was slightly more often reported among individuals with severe obesity than individuals with normal weight, OR=1.33 (95% CI: 0.98; 1.79).

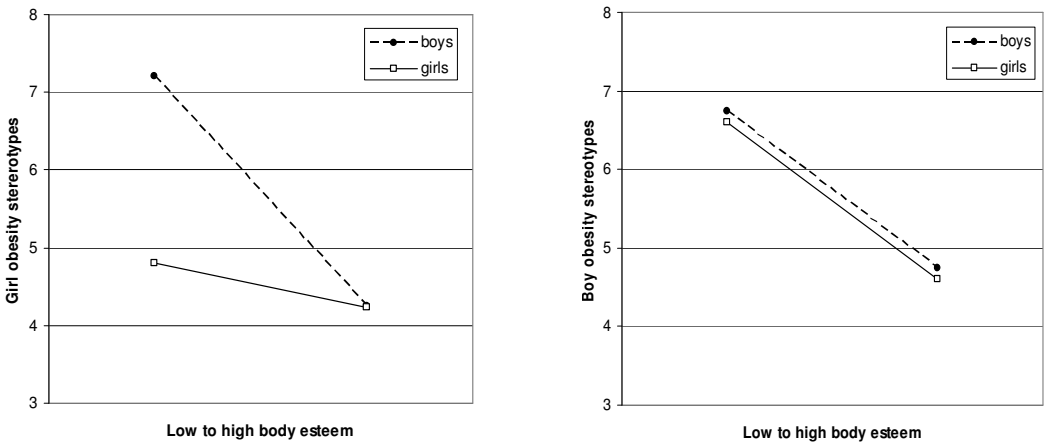
**Table 2.** Children's ORs for being prejudiced against different body sizes according to own sex and sex of figure. Ref=Reference category.

| | | **OR** for prejudice (95% CI) | | | |
|---|---|---|---|---|---|
| | **All children** | **Girls** (*n*=762) | | **Boys** (*n*=647) | |
| **Figure size** | (*N*=1409) | Girl figure | Boy figure | Girl figure | Boy figure |
| Average | **1** (Ref) | **1** (Ref) | **2.2** (1.0-4.8) | **3.0** (1.4-6.3) | **2.5** (1.2-5.3) |
| | | | *1 (Ref)* | *1 (Ref)* | *1 (Ref)* |
| Thin | **20.3** (16.0-25.7) | **52.5** (27.7-99.5) | **40.4** (21.3-76.7) | **34.7** (18.2-66.2) | **45.9** (24.1-87.3) |
| | | | *18.1 (11.5-28.3)* | *11.6 (7.53-25.7)* | *19.5 (13.8-27.4)* |
| Obese | **52.9** (41.7-67.0) | **112** (59.1-212) | **109** (57.6-207) | **97.8** (51.5-186) | **137** (71.9-260) |
| | | | *48.8 (31.2-76.4)* | *32.7 (21.3-50.1)* | *58.0 (41.2-81.7)* |

## 5.2 MODERATORS OF OBESITY STIGMA

### Gender

The probability of children being prejudiced varied with their own sex, and sex and body size of the figure (**Study I**). A model including a term for three-way interaction between child's sex, sex and body size of the figure showed the best fit. However, the figure with obesity was not judged differently by girls and boys. Also, the sex of the figure with obesity was not important for children's judgments. The most noteworthy discrepancies in judgment found between girls and boys were that girls were more likely to be prejudiced against the girl figure with thinness than boys (OR=1.5 95% CI: 1.2; 1.9) and boys were more likely to be prejudiced against the girl figure with average weight than girls (OR=3.0 95% CI: 1.4; 6.3). Studying the hierarchal pattern of the assigned adjectives using Rasch analysis, when boys judged the girl figure with thinness, all positive adjectives (except for good-looking) were found at the top (most likely assigned) and the negative adjectives at the bottom (least likely to be assigned); thus, the adjectives were distinctly separated from each other (**Appendix 1, Table A**). However, for girls, negative adjectives like lonely and different were quite high in the hierarchy and mixed together with positive adjectives. Some positive adjectives were also found quite low in the hierarchy, such as happy and healthy. For the girl figure with average weight no distinct pattern could be detected (**Appendix 1, Table B**).




Panel A Panel B

**Figure 1.** Associations between children's obesity stereotypes and body esteem.

However, it was found that boys attributed quantitatively more obesity stereotypes to the girl obese figure than girls (3.9 versus 3.5, $p$=0.025) (**Study II**). In multiple linear regressions analyses boy's body esteem was found to be associated with girl obesity stereotypes, rather than there being a mere sex difference (**Figure 1, Panel A**). The lower a boy's body esteem, the higher the level of girl obesity stereotypes. Girl's body esteem was, though, not significantly associated with girl obesity stereotypes.

Women with severe obesity were more likely to perceive discrimination than normal weight women, which was established in every investigated context (**Figure 2**) (**Study III**). Women with severe obesity were also more likely to experience discrimination in health care

and in the interpersonal arena than men with severe obesity. The difference between the ORs of perceived discrimination among women with moderate obesity and among women with normal weight did not reach statistical significance. Men with severe obesity were only affected by discrimination in a health care setting, while men with moderate obesity showed a higher probability of being discriminated against in a workplace setting compared with men with normal weight.

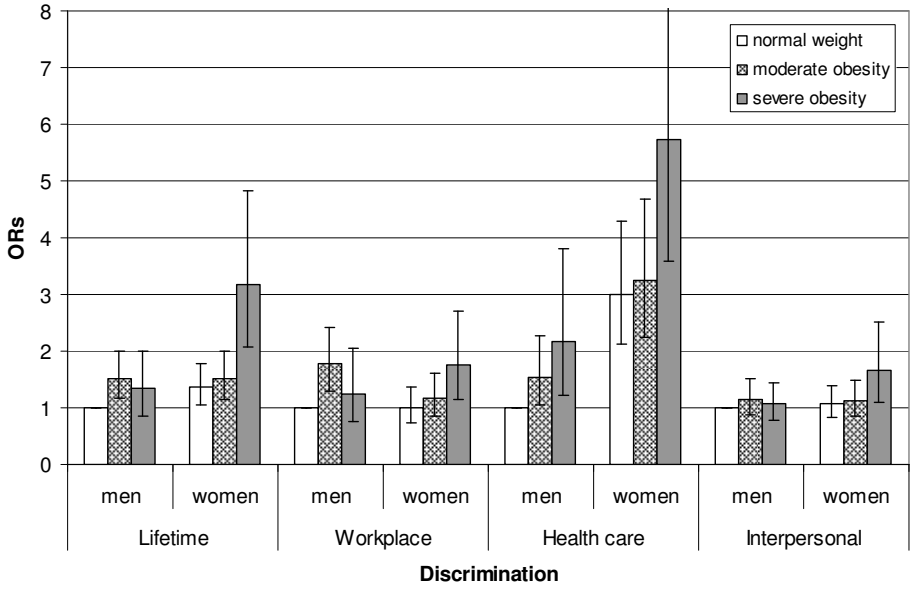



**Figure 2.** Adjusted ORs for reporting different types of discrimination in men and women according to weight status. Men with normal weight are the reference group.

## SES

Children with high SES were more likely to be prejudiced against a figure with obesity than children with low SES (OR=1.24 95% CI: 1.05; 1.45) (**Study I**). The estimate did not change after controlling for child's sex, place of residence, and weight status. Children with high SES were more likely to assign the adjective sloppy (OR=1.34 95% CI: 1.23; 1.47) and less likely to assign the adjective good (OR=0.74 95% CI: 0.67; 0.81) to the figure with obesity than children with low SES. Sex of the child made no difference. A Rasch analysis revealed that negative adjectives like sloppy and coward were found higher up in the hierarchy for the figure with obesity among children with high SES than among those with low SES. Also, positive adjectives like loved and good were placed lower in the hierarchy by high SES children than by low SES children (**Appendix 1, Table D**). However, in the analysis of possible predictors of obesity stereotypes, taking into account other influential sources, SES was not associated with the number of obesity stereotypes assigned (**Study II**).

SES moderated the association between adult's weight status and lifetime discrimination (**Study III**). A strong association was found between weight status and perceived lifetime discrimination for individuals with high SES, whereas no association was found for low SES individuals (**Figure 3**). Both individuals with moderate and severe obesity with high

SES were more likely to report any lifetime discrimination than their normal weight counterparts.

## Body weight

Children's weight status was not related to either a higher likelihood of reporting prejudice against obesity (**Study I**) nor a higher number of stereotypes assigned to the figure with obesity (**Study II**). Rather, it was the children's affective evaluation of their own body size that was important for reporting stereotypes (**Study II**). As previously mentioned, boy's body esteem, but not girl's body esteem was associated with obesity stereotypes; however, both boy's and girl's body esteem showed an association with boy obesity stereotypes (**Figure 1, Panel B**). Interestingly though, children with parents of larger body sizes reported lower levels of obesity stereotypes, which was the case for both boy obesity stereotypes (B=-0.26, 95% I: -0.07;-0.44) and girl obesity stereotypes (B=-0.23 95% CI: -0.04; -0.42).

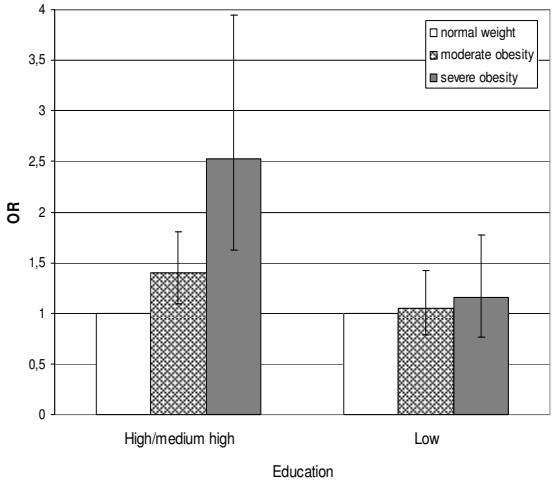



**Figure 3.** Adjusted ORs for reporting any lifetime discrimination in different SES strata.

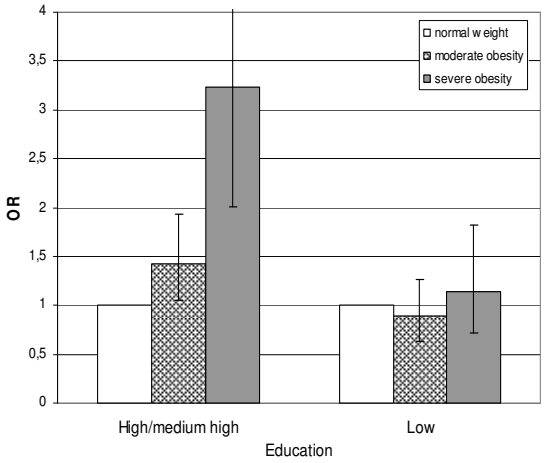



**Figure 4.** Adjusted ORs for reporting health care discrimination in different SES strata.

## Obesity as a personal responsibility

Fathers were more likely to assign obesity to controllable factors than were mothers. Parents with larger body sizes, i.e. reporting body size 5 or body size 6, were less likely to have strong beliefs about the controllability of weight. Furthermore, having a thin ideal for girls was strongly and independently associated with controllability beliefs. Sex or weight status of the parent's child did not affect the reporting of controllability beliefs (**Appendix 2**).

Parental controllability beliefs were, however, independently associated with children's boy (B=0.38 95% CI: -0.04; 0.80) and girl (B=0.34 95% CI: -0.05; 0.74) obesity stereotypes (**Study II**). The association between parental controllability and children's obesity stereotypes were found to be significant at trend level ($p$=0.05). When regressions were run separately for mothers and fathers, the association strengthened for mothers with regard to both outcomes (B=0.60 for girl obesity stereotypes, and B=0.50 for boy obesity stereotypes). However, the direction of the controllability beliefs' estimate was the opposite (not statistically

significant) for the two outcomes for fathers. The broad confidence intervals might indicate low statistical power.

Health care professionals described obesity mainly as a lifestyle phenomenon. The dominant conception was that obesity is caused by an unhealthy lifestyle. This included eating food stuffs with too much sugar and fat or industry-processed food, irregular patterns of eating, and simply eating too much in relation to physical activity. Another common conception was that obesity is caused by a lack of control over eating. Food was used for comfort and to reduce stress, but also consumed just out of boredom; a strong attraction to food was regarded as contributing to the development of obesity. Genetic explanations were seldom touched upon, but some staff acknowledged that inheritance and susceptibility to obesity were relevant in some cases. However, there was clear ambivalence regarding how much one can attribute to the genetic make-up of an individual, as opposed to an individual's lifestyle, as causes of obesity. These conceptions correspond to the construct concerning controllability beliefs in relation to weight.

## 5.3 OBESITY AND ENCOUNTERS IN HEALTH CARE

Perceived discrimination in health care seemed to be a salient feature for individuals with obesity (**Study III**). Men and women with severe obesity were both twice as likely to report discrimination as their normal weight counterparts. The association between weight status and health care discrimination was, however, modified by the SES background of the individual. **Figure 4** shows the ORs for health care discrimination stratified according to high and low SES. Individuals with obesity with high SES more often reported health care discrimination than their normal weight counterparts, while individuals with low SES were equally likely to report such discrimination.

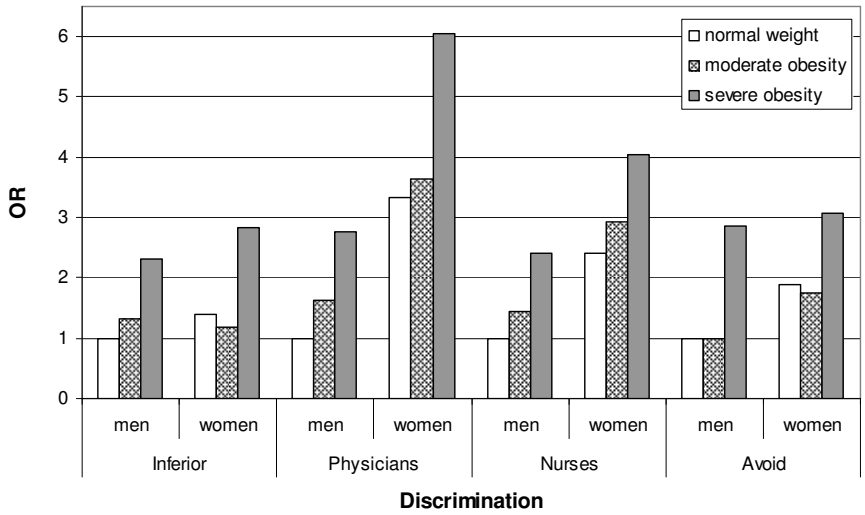



**Figure 5.** Adjusted ORs for reporting medical care inferior to that received by others, insulting treatment by physicians and nurses, and avoidance of health care due to risk of being mistreated. Men with normal weight are the reference group.

Investigation of the separate items that formed part of the overall health care measure revealed that women with obesity were not more likely to experience inferior medical care or to avoid health care due to risk of being met negatively than men with obesity. However, women with obesity were approximately twice as likely as men with obesity to report insulting treatment by physicians and nurses in health care (**Figure 5**).

Health care professionals described the encounter with patients with obesity in primary health care from organizational, their own, and patient perspectives (**Study IV**). The conceptions were both negatively and positively valued, and the outcome space consisted of five distinctively different descriptive categories: *Adequate primary health care, Promoting lifestyle change, Need for competency, Adherence to new habits* and *Patient attitudes* (**Table 3**).

Staff conceived that obesity had to be prioritized by the whole health care system and that a lack of effective treatment methods and guidelines were a threat to the quality of service for patients with obesity. More cooperation within primary health care and with obesity specialty units, together with long-term support and continuity in care, was regarded as necessary to further enhance the quality of care to obese patients. However, some staff did not acknowledge primary health care as an important actor but considered that care of patients with obesity was better handled by commercially run weight loss organizations or other public organizations. This conception applied more to GPs than DNs (see **Table 3.** *Adequate primary health care*).

**Table 3.** Health care professionals' perspective, descriptive categories and related conceptions

| **Perspective** | **Descriptive categories** | **Conceptions** |
|---|---|---|
| Organizational | Adequate primary health care | Overweight needs to be prioritized<br>Lack of distinct guidelines and evidence<br>Overweight not our responsibility<br>Continuity and long-term support<br>Cooperate for knowledge-based care |
| Staff | Promoting lifestyle change | Small steps and realistic goals<br>Raise awareness<br>Individually based solutions<br>Facilitate motivation |
| | Need for competency | Respectful encounters<br>Staff with active interest<br>Knowledge about diet and counselling |
| Patient | Adherence to new habits | Overcome deep-seated habits<br>Psychological and medical barriers<br>Socio-cultural barriers |
| | Patient attitudes | Motivation to change<br>Evasive behaviour<br>Trusting in care<br>Lack of self-confidence |

Staff seemed to have taken an active role and conceived it important to promote lifestyle change by guiding the patient to the right level of ambition and expectations concerning weight loss. Staff informed the patient to take small steps, and helped them to set up realistic goals. In some cases, raising awareness of the patient's condition was regarded as necessary. Staff also strived to find individually based solutions and facilitate motivation in the patient. However, regarding facilitating motivation, some staff relied on scare tactics (see **Table 3.** *Promoting lifestyle change*). Lack of skills in motivational interviewing and cognitive behavioural therapy constrained the patient-staff relationship. Staff conceived that work with patients with obesity was best performed by personnel with an active interest in the area, and nurses were often seen as competent and motivated. Nurses themselves had, however, divided views about GPs' involvement. Some GPs were regarded as avoiding the issue; while others showed willingness to work with overweight and obesity (see **Table 3.** *Need for competency*).

Staff acknowledged that changing habits is hard work and that many patients only lose a small amount of weight. All kinds of barriers (socio-cultural, psychological, medical and physical) in daily life were also conceived as making it difficult for the patient to adhere to new habits (see **Table 3.** *Adherence to new habits*). However, staff conceived that the success of care relied to a great degree on patient attitudes towards behaviour change. Staff conceived that patients often lack motivation, are a little bit lazy, and show evasive behaviour. Patients were also regarded as not taking responsibility for their health, and putting too much trust in pure medical care to solve their problem. There was also, however, the less blaming view that patients with obesity lack self-confidence when it comes to changing habits (see **Table 3.** *Patient attitudes*). Staff was also aware of the stigmatization of obese people, and found it important to be sensitive when bringing up weight issues; that is, some staff was careful not to blame the patient for their condition. Staff also considered that patients needed emotional support and consolidation, sometimes because of feelings of guilt and shame, but also because of the hopelessness of not being able to lose weight (see **Table 3.** *Need for competency*).

# 6 DISCUSSION

## 6.1 MAIN FINDINGS

Obesity is a salient attribute in Swedish society. Children readily assigned stereotypes, such as laziness, sloppiness and loneliness, to an individual with obesity; however, there was variation in the assignment of stereotypes. For instance, not all children reported prejudice against obesity, and the number of stereotypes assigned differed. However, children with high SES were more inclined to report that individuals with obesity are sloppy and less inclined to report that they are good than children with low SES. Although body esteem, parents' beliefs about the controllability of weight and parents' body size were associated with the number of children's obesity stereotypes they could only to a quite low degree explain the variation in children's obesity stereotypes. While gender did not emerge as a strong moderating factor in judging obesity in children, this was manifested in the studies among adults. Women's severe obesity was found to be a salient feature in all investigated contexts, whereas obesity stigmatization in men seemed to rely on both the setting and the level of obesity. Health care, an important advocate for people with obesity, was most intimidating for individuals with severe obesity. Experience of insulting treatment by physicians and nurses, as well as experiencing inferior medical care than others and avoiding medical care, was most common among severely obese individuals and especially among women. Although health care professionals themselves did not explicitly express negative attitudes towards obesity, their conceptions of obesity revolved mostly around lifestyle behaviours as causes and remedies for obesity, and patient attitudes as an important factor for successful encounters in health care. They did, however, also stress the necessity of improving conditions related to both organization and staff to enhance the patient-provider encounter regarding obesity.

## 6.2 FINDINGS IN RELATION TO PREVIOUS RESEARCH AND THEORY

### Gender

Studies that have taken into account both target sex and rater sex in relation to obesity stereotyping are scarce among children. However, there is evidence of gender-related effects on obesity stigmatization from studies investigating adolescents (Klaczynski et al., 2009; Tang-Peronard & Heitmann, 2008). Kraig and Keel (2001) found a strong preference for thinness in 7-9 year-old girls but also showed a tendency for same-sex preference regardless of the figure being judged. A recent study found that younger children (6-7 years) and especially girls were more likely to choose figures with thinness as their favoured norm, while older children (10-11 years-old) showed a preference for figures with average weight. This age difference is also confirmed by other studies (Musher-Eizenman et al., 2004; Wardle et al., 1995), and corresponds to the findings among 10-year-olds in the present thesis (**Study I**). Even though the idealization of thinness seems to begin early in children, this ideal may well be questioned by some children as they develop higher cognitive skills.

However, it was found that boys rather than girls made more positive judgments of the thin girl figure. This is difficult to interpret and one can only speculate about this finding. Possibly, it could be the first sign of the potential pressure some males put on females to

conform to the thin ideal. Young men have been shown to be more likely than young women to judge female targets' attractiveness on the basis of their weight (Hebl et al., 2008). However, an even more likely explanation is that mate competition promotes negative evaluations of physically attractive females by girls. There is anecdotal reports in the popular culture, for instance, that women hold negative attitudes towards thin women (Musher-Eizenman & Carles, 2009); however, that these two features are probable among elementary-school children is doubtful.

In any case, the least preferable body size was the obese, regardless of sex of the rater or sex of the target. Whether obesity stigmatization is dependent on social comparisons between not only normal weight and obesity but also between thinness and obesity is not known. However, the thinness culture seem to be an important aspect in the stigmatization of obesity (Crandall & Martinez, 1996), and may have become as important for males as females in contemporary society. Even though the girl figure with obesity was not judged more harshly, the girl figures provided in general more variation in judgments between boys and girls than the boy figures, suggesting perhaps that a girl's body size attracts more attention. In **Study II** obesity stereotypes were based on judgments of all three figures, which meant that not only obesity as a deviation from normality was tested, but also that the aspect of evaluating thinness was taken into account. It was found that boy's body esteem predicted higher level of girl obesity stereotyping, while girl's body esteem did not contribute to any variation in obesity stereotyping of a girl figure. However, sex did not moderate the association between children's body esteem and boy obesity stereotyping. One explanation for the mixed findings may be attributed to the ways boys and girls evaluated the figures, i.e. whether evaluation was based on potential friends or romantic partners or, as suggested previously, due to mate competition. Some researchers, however, suggest that body concerns are frequent among girls (Smolak, 2004), and therefore may not provide any variation in obesity stereotypes; however, apparently, when judging boy figures girls' body esteem becomes relevant.

Developmental inter-group theory suggests that self-esteem predicts out-group denigration. Research documents that children generalize their favourable self-views to the group to which they belong, which then leads to in-group bias and denigration of members of out-groups (Bigler & Liben, 2006). In-group bias seems to be most common among children with high self-esteem; however, there is a lack of evidence concerning the mechanism behind it. Some studies suggest that individuals may raise their self-esteem by denigrating others, while other studies cannot find evidence that motivation to enhance self-esteem underlies inter-group bias (Bigler & Liben, 2006). It is suggested that global self-esteem derives from self-esteem in specific domains, and the more a culture emphasizes the importance of a specific domain (e.g. body esteem) for life success, the more it will affect global self-esteem (Mendelson, White & Mendleson, 1995). However, research investigating the link between body esteem and obesity stereotypes has produced contradictory results (Davison & Birch, 2004; Klaczynski et al., 2009; Pepper & Ruiz, 2007; Tiggemann & Wilson-Barrett, 1998). The results in the present thesis suggest that negative body esteem predicts a higher level of obesity stereotyping (**Study II**), which is in conflict with the prevailing view, but in line with other studies among elementary-school children (Davison & Birch, 2004; Tiggemann & Wilson-Barrett, 1998). O'Brien and

colleagues (2007) have, for instance, argued that the tendency for people with low body esteem to hold stereotypical attitudes towards the obese is explained by their greater disposition to make appearance-related comparisons. Those who repeatedly compare their body size with a physically inferior body size (obese) will develop negative attitudes towards obese people. Tiggemann and Wilson-Barrett (1998) argue though that the association between lower body image and obesity stereotyping reflects people's use of the same body ideals to assess themselves as they do others. The negative feelings about their body size are also directed at people with obesity, which results in negative attitudes towards obese people. Thus, low body esteem may reflect a desire to belong to the high social status group (people with thinness) and, even if people do not personally meet the thin ideal, they can evaluate others against it. However, given the evidence that obesity stereotypes emerge early in children, the direction may be the opposite; that is, a higher level of obesity stereotyping predicts lower body esteem. A recent longitudinal study showed that overweight girls (but not normal weight girls) who reported higher levels of obesity stereotyping at 9 years of age reported lower levels of self-esteem and perceived attractiveness at age 11 (Davison et al., 2008). This indicates that the internalizing of obesity stereotypes may be detrimental for children's self-worth. However, because this association was not found in normal weight children the lower self-esteem found in overweight children may be attributed to experiences of victimization, which was not assessed in the study.

Age-related increases in appearance idealization and decline in body esteem are evident from previous research (Jones, 2004), and are therefore important to bear in mind when interpreting the findings concerning body esteem and obesity stereotyping in the present thesis. A recent study among 10-, 13-, and 16-year-olds showed, for instance, that appearance idealization and body esteem mediated an age-related increase in obesity stereotyping (Klaczynski et al., 2009). This might suggest that appearance-based judgments are commonly used in judgments of others, and that they become more common when children enter the adolescent period. Denigration of female targets with obesity, as opposed to male targets with obesity, seems to become more pronounced with age, suggesting perhaps that the socio-cultural messages about the thin ideal for women may be activated again in the adolescent period. The focus on physical attractiveness in this period may also make body size a more salient attribute for social categorization, and therefore a rise in obesity stigmatizing attitudes is to be expected. Maybe this social categorization is also common among 10-year-olds who are maturing early and are concerned about body-related issues, as seen in the present thesis. A recent study in children showed, for instance, that implicit and explicit attitudes towards obesity are correlated in younger children (6-7 years), but that this correlation was only seen in 10-11 year-olds with high body image (Solbes & Enesco, 2010). Implicit attitudes remained across ages, suggesting that unconscious attitudes may continue to affect children's reactions to individuals with obesity, but that implicit attitudes may only be explicitly expressed by older children who deem body appearance to be important.

The stereotype trajectories in other areas suggest that children's gender and ethnic stereotypes become more flexible with age, and that stereotyping is used less (Bigler & Liben, 2006). The knowledge regarding possible developmental changes in obesity stereotyping is

incomplete due to a paucity of studies and inconsistent findings, at least for the elementary-school child into adolescence. Lazy and slow were two of the most common obesity stereotypes found in the present thesis among 10-year-olds (**Study II**). A recent longitudinal study showed that obesity stereotyping decreased in general in girls between the ages of 9 and 11, but stereotypes such as "it is bad to be fat" and "fat people are lazy" did not change (Davison et al., 2008). Davison and colleagues (2008) state that these are two of the most dominating views about obese people, and that these beliefs may be more difficult to affect. As outlined by Kohlberg (Kohlberg, 2008), children's moral reasoning at these ages begins to focus more on how one will be viewed by others and on concordance in interpersonal interactions. Thus, children may find it socially acceptable to attach laziness to obesity, because adults also explicitly express this attitude to individuals with obesity (Puhl & Brownell, 2003), but that other attributes are more influenced by children's moral reasoning. Furthermore, children's stereotyping may not be consistent across behaviour domains, and as children develop, different judgments may be made depending on the context in which the target with obesity is evaluated (Lehmkuhl et al., 2009; Penny & Haddock, 2007a). It has also been found among adults that there is a relationship between implicit and explicit beliefs about fat people being lazy (Teachman et al., 2003), which would indicate that it is more socially acceptable to acknowledge this belief than it is directly to evaluate someone as bad, but also that the belief about people with obesity being lazy seems to be acquired in early childhood and is not questioned by individuals as they develop. Lazy seems to be a very strong socio-cultural stereotype, while other stereotypes may be more constructively arrived at and vary according to, for instance, body image, gender, age or context.

Women with severe obesity experienced discrimination in the workplace, health care and interpersonal contexts; men with moderate obesity were more likely to experience workplace discrimination, while men with severe obesity suffered health care discrimination (**Study III**). There are several processes that may lead to discrimination of obese individuals in employment settings. The employer may not only consider the competence of the employee and questions about indirect labour costs, but also show affective reactions because of negative obesity stereotyping and feelings about physical attractiveness (Roehling, 1999). The previously shown and very ingrained stereotypes that people with obesity are lazy and have low self-discipline may affect perceptions of performance among obese employees. The first impressions may serve as a basis for judgments and may extend to other characteristics that are relevant qualities of an employee. However, a recent study could not establish a link between either implicit or explicit measures of anti-fat attitudes and anti-fat discrimination in a job-related situation (O'Brien et al., 2008), which indicates that attitudes alone are not sufficient to predict discriminatory behaviour.

As mentioned previously, individuals with obesity have been found to be discriminated against in a wide variety of simulated employment decisions: selection, placement, compensation, promotion, discipline, and discharge (Roehling, 1999; Roehling et al., 2008; Rudolph et al., 2009). There are, for instance, two recent studies from Sweden. One shows that 25% of 250 employers considered that employees with normal weight perform better than overweight employees (Agerström, Carlsson & Rooth, 2007), another that normal weight

applicants are 20% more likely than overweight applicants to be called for a job interview (Rooth, 2007). However, these field and laboratory studies have not provided evidence for any gender difference. Perceived discrimination in employment among obese individuals has seldom been investigated, and perception of discrimination is important because it may be more related to psychological distress and career decisions. Roehling and colleagues (2007) have also suggested that the lower levels of perceived weight discrimination compared with levels of actual discrimination seen in field and laboratory studies may be the result of internalized discrimination; that is, obese individuals express the same levels of negative stereotyping and attributing of blame as others, but may simply accept such negative treatment. Another reason may be that individuals with obesity may be discriminated against due to their weight while not being aware of it, because the reasons for excluding these individuals are not always revealed by the employer.

A majority of studies investigating perceived discrimination have involved limited samples, and few are population-based. Carr and Friedman (2005) found that individuals with moderate obesity (OR=1.51) and severe obesity (OR=1.84) were more likely to experience job-related discrimination than individuals with normal weight; however, no gender differences were found. Roehling and colleagues (2007) repeated the analysis with the same sample, but used weight-related discrimination rather than discrimination in general when comparing weight status groups. Individuals with moderate obesity and severe obesity were 38 and 108 times more likely to report weight-related discrimination, respectively. Furthermore, women were 16 times more likely to report weight-related discrimination, but there was no interaction between weight categories and gender. Our finding that it is men with moderate obesity and women with severe obesity who are most likely to report discrimination is difficult to interpret. Men are, however, likely to shift jobs to a greater extent than women, and plausibly this occurs more often among men with moderate obesity than men with severe obesity. Consequently, men with moderate obesity may have a greater likelihood of being evaluated in a hiring or promotion situation, which could be one reason for the higher reports of perceived workplace discrimination. Thus, different job-related processes may be important for obese women and men, even though previous studies do not show any consistency with regard to gender differences.

Much research on obesity and stigma has focused on attitudes towards obese individuals, but accounts of how people with obesity have been treated, according to their own perceptions, are scarce, at least in population-based samples. Clinical or convenience studies have shown that weight-related teasing, name-calling and denigrating comments are common experiences (Friedman et al., 2005; Puhl & Brownell, 2006). In the present thesis, women with severe obesity were found to be more likely to experience interpersonal discrimination than normal weight women (OR=1.76), while men were equally likely to report such discrimination, regardless of weight. An earlier study in the US using the same approach found that severe obesity was associated with more interpersonal discrimination (OR=1.66), and women reported it to a greater degree than men (OR=1.20) (Carr & Friedman, 2005). Carr, Jaffe and Friedman (2008) recently investigated whether specific forms of negative interpersonal treatment, such as harassment/teasing, being treated with disrespect, and being treated as if one is dishonest

or frightening, were associated with weight status. Individuals with severe obesity reported significantly higher levels of all three interpersonal discrimination outcomes. Women reported higher levels of disrespect but lower levels of harassment and treatment as if dishonest/frightening than men; however, gender did not moderate the association found between weight status and interpersonal mistreatment.

## SES

It has been suggested that stigmatization of obese girls is more pronounced in higher than lower SES groups (Tang-Peronard & Heitmann, 2008). In the present thesis, children from higher SES background were more likely to be prejudiced against a target with obesity regardless of sex of the target (**Study I**). One stereotype that also distinguished itself from other stereotypes with regard to SES was that of being sloppy. In **Study II** SES was not associated with the number of obesity stereotypes. However, it is likely that different stereotypes become salient in different social contexts and, as suggested by Grogan (2008a), the dominant groups in society and especially wealthy people set the standards for the ideal body shape. People with high SES may also be more likely to conform to the protestant work ethic (Quinn & Crocker, 1999), the beliefs attached to which are consistent with the notion that success comes from hard work. Investment in appearance is seen as something worthy of time and effort, and those who do not conform to these ideals may be perceived as weak-willed and sloppy.

Previous studies have shown that children with a high SES background attribute fewer positive adjectives, but just as many negative adjectives, to an obese target as children with lower SES (Wardle et al., 1995). This study used a school-based SES grouping. **Study I** and **II** included consideration of the individually self-reported educational level of the responding parent. However, the high SES group proved to be larger than the register-based grouping of SES that was used when comparing non-responders and responders. This could perhaps have diluted the estimate, which may have been greater if the high SES group had been smaller. However, higher educational level may not be able to account for SES differences in obesity stereotyping. It is possible that occupational background and material living standard of the family are important aspects as well. However, obesity is less prevalent in higher educational groups (most evidently among women), and people with a high education show more healthy behaviours and positive attitudes to healthy lifestyle than those with a low education. Children notice the difference in obesity level between those with whom their parents socialize and those with whom they do not; they may thus construct ideas about the group to which people with obesity belong, and prejudice may arise. Children, in high-education groups may also, to a greater degree, be confronted with cues about the importance of a slender body size and healthy lifestyle, which might fuel the formation of stereotypes and create distance between the in-group and the out-group; that is, people with obesity are perceived not to conform to the norms of the in-group, and also perceived as not belonging to it, resulting in stereotypes being formed.

The quite modest relationship found between SES and prejudice may, however, be explained by the fact that most Swedish schools are public, and children with different SES backgrounds attend the same school. Social status with regard to obesity stigma may therefore

become more important later in life, where it is more likely that people socialize with people from their own social group. It has been found that occupational prestige has a relatively small effect on BMI levels in women, but that education is more important for body size (McLaren & Godley, 2008). In men, however, lighter bodies have been found in professional health-related occupations while heavier bodies have been found among occupations characterized as having managerial/supervisory responsibilities. With regard to stigma, men are exposed to conflicting social pressures (because a larger body can reflect dominance and authority), while women have only to conform to one body shape, i.e. thinness. A recent study, however, showed that men with severe obesity in high status jobs are more likely to report lack of respect in comparison with their normal weight counterparts (Carr et al., 2008). For women, being severely obese with a high status job was found to result in a higher risk of being treated as dishonest or frightening than was the case for persons of normal weight. No difference could be detected between individuals with normal weight and severe obesity in low status jobs. The authors suggest that this could reflect typical gender expectations among the middle class; that is, men are expected to be competent workers, and women are supposed to comply with the thin ideal.

Although not statistically significant, we found that women with severe obesity in a high SES context were about twice as likely to report interpersonal mistreatment as men, and also as women in other weight categories and with other SES backgrounds (data not shown). Additionally, even though SES was not found to moderate the association between weight status and workplace discrimination in the present thesis, it is likely that gender is important in this context as well. Men with moderate obesity with high SES were, for instance, more likely to report workplace discrimination than men of normal weight with high SES, while men with low SES in the different weight status groups were equally likely to report workplace discrimination (data not shown). Because these findings were not statistically significant, they have to be interpreted cautiously. Studies of samples that are stratified for SES background may be needed to establish whether a social context where obesity is less acceptable is associated with a higher level of discrimination.

## Body weight

Developmental inter-group theory predicts that stigma is greater for targets more dissimilar to oneself. Children with obesity would thus stigmatize the thinner targets more than the obese targets, or at least express less negative attitudes towards obese than average weight and thin targets. Social learning theory, on the other hand, emphasizes the social milieu of the child. Society expresses the opinion that obesity is bad, and therefore stigma should be seen in children regardless of their own body size. BMI did not provide for any variation on either the prejudice (**Study I**) or the obesity stereotype (**Study II**) measures, which is consistent with social learning theory. The present results are also consistent with previous studies among both children and adults (Puhl & Latner, 2007). One reason for such non-existent "in-group" favourability may be that group membership is perceived to be controllable (people with obesity can lose weight and leave the group) (Friedman et al., 2005; Quinn & Crocker, 1999). Most studies, however, have used small samples in school settings, and the explanation for not

finding any relationship between body size and obesity stereotyping could have been lack of statistical power. The prevalence of obesity in Sweden is fairly low in comparison with other countries that have investigated the stigmatization of obesity and, because the sample in the present thesis was nationally representative, the number of children with obesity was rather low. Accordingly, this relationship may have to be investigated in a sample stratified for body weight to be able to reject this hypothesis. Children with obesity might though not have perceived the obese figure silhouette as someone like them. This may not be due to an incapability cognitively to apprehend the size of their body, but rather some children may not want to recognize their body as obese, because it's association with unfavourable attributes in society. Children have, for instance, been able more accurately to judge their peers body sizes than their own (Cramer & Steinwert, 1998). A recent study, however, indicates that perceptions about group belonging (perception of being of normal weight while objectively being obese, or perception of being obese while really being of normal weight) may be more important than actual weight status for forming stereotypes about obesity (Holub, 2008). But, as pointed out by the author, perceived and actual weight status may correspond better to each other at certain developmental stages, and therefore be less predictive of stereotyping.

Parent's body size was associated with children's obesity stereotypes (**Study II**). The heavier the parent's body, the lower was the number of obesity stereotypes assigned by the child. The child's weight status was controlled for in the analysis (without affecting the estimate), suggesting that it was not children with high BMI who were responsible for the association. This suggests that being familiar with obesity may be of importance. If obesity stigma to some degree functions as a disease-avoidance stigma, and if attitudes often operate through automatic emotional reactions, familiarity might reduce such reactions (Klaczynski, 2008; Phelan et al., 2008). Personal contact with, for instance, mentally ill persons is the most effective way of reducing that particular stigma (Phelan et al., 2008). There are, though, no intervention studies that have tried to improve attitudes towards obesity by using extended contact. However, studies among children in other stigmatized groups show that frequent contact with out-groups produce more positive attitudes (Cameron, Rutland & Brown, 2007).

The knowledge that in-group members are friends with out-group members may also provide an opportunity to improve attitudes. However, studies have shown that children and adults report less favourable ratings of individuals with average weight if they socialize with an individual with obesity (Hebl & Mannix, 2003; Penny & Haddock, 2007b). Thus, these studies indicate that individuals may not only avoid contact with obese people, but also with those that interact with them. Also, the increase in obesity stigma over the last decades (Andreyeva et al., 2008; Latner & Stunkard, 2003) has paralleled the increase in obesity prevalence, which suggests that familiarity has reinforced rather than reversed negative perceptions about obesity. However, changing attitudes may be more successful if the contact emphasizes dual identity, i.e. subgroup membership (normal weight versus obese) and common in-group identity (e.g. football team) (Cameron et al., 2007). This approach may, however, work best among young children where in-group bias is presumed to be more important. A recent study among adults showed, for instance, that having friends and family members with obesity did not influence ratings of an individual with obesity (Ross et al., 2009).

The likelihood that inter-group contact will work may therefore be low in view of this result, and the evidence that individuals with obesity are just as likely as thinner individuals to show stereotypical views about obesity. The mechanism underlying extended contact is not known, but it may possibly work through more positive images of obese people, personality information, increased empathy and an understanding of the relationship between people's obesity and behaviour/character. For instance, providing positive information about targets with obesity in pre-school children has been related to higher acceptance ratings (Lehmkuhl et al., 2009); presenting personality information about a female target has increased the range of body sizes considered attractive (Fisak, Jr., Tantleff-Dunn & Peterson, 2007); and, empathy-evoking interventions have been shown to effect improvements with regard to attributions, feelings and endorsements of stereotypes about targets with obesity (Grosko, 2007).

## Obesity as a personal responsibility

In adults, it is suggested that controllability beliefs about weight arise from a general perspective that emphasizes personal responsibility for life outcomes (Crandall et al., 2001). Stigmatizing attitudes about obesity may thus be more a question of world view than self-interest, which would explain why people with obesity and thinness are equally likely to express negative attitudes towards obesity. However, the present thesis found that heavier parents expressed lower levels of controllability beliefs than thinner parents, which is at odds with the previous literature (Crandall, 1994; Puhl et al., 2005). Whether children acquire attitudes about obesity and its controllability through social learning (thinness is the preferred norm and body weight is a personal responsibility), or merely through the ability of perceiving differences among those who are obese and those who are not, is not known. In **Study II** parents' controllability beliefs about weight were associated with their children's obesity stereotypes. Parents' controllability beliefs were in turn found to be related to their thin ideal for girls. This corresponds to recent research showing that individuals who view obesity as controllable demonstrate a stronger preference for thin body shapes (Carels & Musher-Eizenman, 2010). It is, thus, likely that parents high in controllability beliefs also have strict opinions about an ideal body size.

Previous studies have shown that parents high in obesity stereotyping are more likely to restrict their child's food intake (Musher-Eizenman et al., 2007), and that parents who are more likely to emphasize thinness and weight loss in interaction with their daughters have daughters who express a higher level of obesity stereotyping (Davison & Birch, 2004). Furthermore, higher parental body dissatisfaction has been found to predict preschool children's assignments of negative traits to an obese target (Rich et al., 2008). These studies suggest that social interactions between parents and children centred on weight, eating and body size are important. Studies investigating a direct association between parents' and children's obesity stereotypes, however, show inconsistent findings (Davison & Birch, 2004; O'Bryan et al., 2004). It is likely that children are not learning to hold these stereotypes only by copying their parents' stereotypes, but rather they are constructing stereotypes and beliefs through cognitive processing. Parents' different messages about body size may serve as cues for children to create meaning. Future research, therefore, should include both children's and

parents' controllability beliefs, possibly in combination with the consideration of other influential sources, such as the media, educators and peers, to establish whether there is direct learning of such beliefs.

## Obesity and encounters in health care

Ethnic prejudice has been identified as a major cause of health disparities (Dovidio et al., 2008). However, even though there is evidence that health care professionals react differently to people because of their ethnic background few studies have investigated health care professionals' attitudes and beliefs, and their possible influences on encounters with patients. Consequently, there is limited evidence to be able to draw conclusions in this setting. When it comes to obesity and health care, the situation is the same. Although there is strong evidence that health care professionals endorse stereotypes and negative attitudes about obese patients, there is only moderate evidence that people with obesity perceive discriminatory treatment in health care. Furthermore, there is only weak evidence that stigmatizing attitudes among health care professionals impede weight management practices and health care utilization (Puhl & Heuer, 2009). Even though quantitative studies show that negative attitudes to patients with obesity among health care professionals are widespread, qualitative studies present a more complex picture (Brown, 2006; Brown & Thompson, 2007; Epstein & Ogden, 2005; Mercer & Tessier, 2001). GPs and nurses in primary care have expressed an interest in the subject, and also concerns about establishing a common ground where provider and patient reach agreement with regard to the medical problem, goals of treatment and their different roles, all of which corresponds to the findings in the qualitative study presented in this thesis.

Health care professionals elaborated on organizational, staff and patient aspects with regard to obesity (**Study IV**). Staff's conception that existing obesity treatment is ineffective, together with views that obesity in general is not prioritized by the health care system and that patients show low motivation and responsibility with regard to changing their situation, are likely to make health care professionals frustrated and hesitant about their role in obesity management and their ability to make a difference for these patients. The previous literature also suggests that discriminatory actions at individual level are more likely to occur when situational demands are unclear, or when norms for appropriate actions are weak or ambiguous (Dovidio et al., 2008). The above mentioned conceptions, in conjunction with the belief that obesity is mainly caused by lifestyle behaviours related to dietary habits and physical activity, may unintentionally have an impact on patient-provider interaction. For instance, the view that people are obese because they have an unhealthy lifestyle and low impulse control, in combination with the conception that patients with obesity often shows low motivation, evasive behaviour, and rely upon medical care, corresponds to the construct of controllability beliefs about weight, which are related to negative attitudes to obesity. In previous studies, nurses and GPs have also ranked eating too much, unhealthy diet and physical inactivity above genetic, biological and environmental factors as the most important risk factors for obesity (Bocquier et al., 2005; Epstein & Ogden, 2005; Foster, Wadden, Makris, Davidson, Sanderson, Allison et al., 2003; Hoppe & Ogden, 1997; Ogden, Bandara, Cohen, Farmer, Hardie, Minas et al., 2001). GPs also tend to hold individuals responsible for both the

cause and the solution of their weight problem (Ogden et al., 2001). Nurses in a qualitative study perceived a complex range of causal factors, environmental, cultural and economic, all of which more or less influence people's lifestyles. Genetic and medical conditions were much less touched upon (Brown & Thompson, 2007).

Health care professionals may discount information about the role of genetic factors in obesity, delivered by experts, due to strong prior beliefs that were acquired in early childhood. The findings in the present thesis indicate that health care professionals are ambivalent with regard to how far obesity can be attributed to genetics. The conception that genes and lifestyle may interact was only expressed by some of the staff, suggesting that the knowledge of primary care professionals about the complexity of obesity is to some extent unevenly distributed. A better knowledge of the uncontrollable factors in obesity might improve attitudes towards patients with obesity (Danielsdottir et al., 2010). A recent experimental study, using a comprehensive health curriculum emphasizing uncontrollable reasons for obesity among health professional students, showed that implicit and explicit anti-fat prejudice can be decreased (O'Brien, Puhl, Latner, Mir & Hunter, 2010). Furthermore, providing a more balanced message about the causes and treatments of obesity and knowledge that their efforts may produce limited results regarding weight change in their patients could also be a way of easing pressure on staff.

Another conception that very few health care professionals addressed was obese patients' lack of self-confidence in changing their own behaviours. Providing the knowledge that self-efficacy is important in behaviour change might also effect an improvement with regard to health care professionals' beliefs about obese people's lack of motivation. However, staff's past beliefs that people with obesity are lazy and lack willpower may instead be reinforced by their present encounters. It is likely that those individuals seeking primary health care have more trouble in managing their weight, and possibly also have more psychological problems, than people with obesity in general. This is, of course, a problem if such reinforced beliefs are also used to generalize about individuals with obesity.

Previous research in the arena of ethnic disparities in health care suggests that health care professionals are seldom the ones with extreme overt attitudes. However, disparities in health care due to stigmatizing attitudes are often unrecognized by the health care system (Dovidio et al., 2008), and it is therefore important to address obesity stigma in this setting. Health care professionals in the present thesis, although not overtly expressing negative attitudes and prejudice, may bear unconscious attitudes that might be displayed in unconscious behaviours. In practice, health care professionals may spend less time with obese patients or engage in more negative interactions. Previous research among health professionals who treat obesity shows that negative implicit attitudes towards obesity are strong even though explicit attitudes are not that evident. But, the implicit attitudes were less strong than those found in a general population, suggesting that experience in caring for people with obesity increases acceptance (Teachman & Brownell, 2001). However, people who lack the motivation or cognitive resources to monitor or control their actions, such as when they are under time pressure or face substantial cognitive demands, may act in a discriminatory manner, since unconscious attitudes are likely to be activated in such situations (Dovidio et al.,

2008). Furthermore, health care professionals may see themselves as a group (in-group) with responsibility for helping a group of patients (out-group) with their medical problem, which might produce a sense of distance between patient and provider. Thus, the facts that people with obesity who seek care may come from more disadvantaged social groups, and that nurses and physicians generally belong to more privileged social groups, may evoke distance between patient and provider.

Studies of health care disparities suggest that socially disadvantaged groups receive medical care inferior to that received by more advantaged groups (Burström, 2009). However, in the present thesis, it was found that individuals with obesity with a high educational background were more likely to report health care discrimination than their normal weight counterparts, while no difference was detected for individuals with a low education (**Study III**). Possibly, health care staff may be less tolerant of people with obesity with a high education because they think that they ought to know better how to stay healthy, and therefore show evidence of negative treatment against people with obesity with a high SES background. The health care professionals in **Study IV** did not elaborate on possible differences in meeting people with obesity of various SES backgrounds, however, they did regard individuals living in more deprived areas as more likely to be obese than individuals in affluent areas. Some of the health care professionals also made statements like: "There are not that many with a high status job that seeks treatment for their obesity here at the primary care centre; we mainly take care of the ones with low status". Health care professionals may, however, not always be aware of the social status of their obese patients, and assume that they occupy a low social position. Mistreatment by health care professionals may be equally likely for a patient with obesity regardless of SES. The findings in the present thesis may instead reflect the different ways that obese high and low educated individuals react to stigmatizing encounters. Low status groups may be more used to derogatory treatment in general and therefore have developed coping strategies that are displayed in less reporting of discrimination, while high SES individuals do not expect to be mistreated and therefore are more likely to report discrimination. Highly educated persons and those with rich economic resources may also be more likely to place a higher value on slimness, to show higher levels of negative body image, and also to attribute obesity to internal causes. Attributing events to internal causes has been linked to low self-esteem (Puhl & Latner, 2007), and this could be one reason for the higher reporting of perceived discrimination among high SES obese individuals. However, self-esteem was controlled for in the studies, and therefore we need to seek other explanations.

Health care professionals' conceptions about the necessity of finding individually based solutions and providing respectful encounters, however, confirm awareness of the importance of patient-centred methods. This is meaningful because patients are less likely to follow provider recommendations if they perceive disrespect or discrimination (Ryan, Gee & Griffith, 2008). Previous studies have somewhat inconclusive findings regarding the extent of negative treatment from nurses and physicians in health care. The present thesis shows that insulting treatment by physicians and nurses increases with weight status (**Study III**). Physicians were found more often than nurses to be the source of insulting treatment. In the qualitative study, it was also found that GPs conceived primary care as not an entirely

appropriate arena in which to manage obesity, and felt that other professional groups, such as nurses or psychologists, had a bigger role to play than they did. Further, the conception that the work was best performed by those with an active interest in the subject applied more to GPs than to DNs. In conjunction with this, some DNs conceived that GPs were not that eager to intervene (**Study IV**). Whether low engagement in obesity treatment is associated with more negative attitudes towards obesity is not known; however, patients may sense low interest and engagement, and interpret them as disrespectful treatment. Studies have also shown that a collaborative relationship seems more important for nurses' job satisfaction than it does for physicians (Hansson, Arvemo, Marklund, Gedda & Mattsson, 2010). This may also translate to the collaborative situation between patient and provider. Powerful groups (e.g. physicians) may have the least interest in collaboration. However, both GPs and DNs in the present thesis acknowledged that they needed better skills in meeting their obese patients. They felt that they needed greater competence in motivational interviewing and cognitive behavioural therapy, and also with regard to dietary guidelines. One of the major issues may be how to bridge the gap between patient and provider expectations. Previous research has shown that patients perceive physicians to have the knowledge, skill, and time to provide weight management counselling (Ruelaz, Diefenbach, Simon, Lanto, Arterburn & Shekelle, 2007; Ward, Gray & Paranjape, 2009), whereas the health care professionals in the present thesis conceived that these things had to be improved. Thus, low self-confidence or insecurity among health care professionals about how to manage obesity may be influencing the patient-provider relationship.

Women were more likely to report insulting treatment by nurses and physicians in health care than men. Women with moderate obesity had, in turn, higher ORs than women with normal weight, and women with severe obesity had higher ORs than women with moderate obesity. This may be a sign of a lower acceptance of women's obesity among health care professionals, especially as the measures of perceived inferior medical care did not reveal any discrepancy between men and women. Even though it is likely that women are more inclined to report derogatory treatment, individuals with severe obesity were about twice as likely to report health care discrimination as individuals with normal weight or moderate obesity. Individuals with severe obesity belong to a group of people who potentially need extensive medical care. Therefore, it is worrying to see this level of perceived discrimination. It is especially women with severe obesity who may be treated most disrespectfully. The prevalence of severe obesity in primary care seems to be higher among women than men (9% versus 4%) (Pettersson, Johansson, Rössner & Neovius, 2008). Of women with obesity seeking care, 41% are severely obese, while the corresponding figure for men is only 16%. This may be one of the reasons for the higher reporting of health care discrimination among women with severe obesity. However, moderate obesity was more common among men seeking treatment in primary care (Pettersson et al., 2008), but, in the present thesis, they showed lower reporting of insulting treatment in health care than moderately obese women. This indicates that gender of the patient does have a role in obesity stigma in health care. In a qualitative study, women with obesity have expressed a need for physicians to be aware not only of what they say to the patient, but also of the way they say it (Ward et al., 2009).

## 6.3 WHAT MECHANISM OR THEORY IS MOST PROBABLE

There seem to be multiple mechanisms involved in the stigmatizing of obese people, and existing theories cannot fully explain what is going on. However, social norms (i.e. the stigma function of norm enforcement) about moral character and beauty ideals seem important. Different norms in different social groups may also explain some of the variation in the stigmatization of obese individuals, but it may also be a question of power relations (i.e. the stigma function of exploitation/domination). For instance, people with severe obesity often have several under-valued attributes at the same time: being a woman, belonging to a minority group, and having a low social status. These multiple disadvantaged statuses are important to consider. To date, there are few social theories that can explain variations in obesity stereotypes, which means that even the disease-avoidance function of stigma may play a role in obesity stigma. Thus, people may rely a great deal on implicit attitudes, which are assumed to be acquired early in childhood, when judging people with obesity.

## 6.4 METHODOLOGICAL CONSIDERATIONS

### Validity and reliability of the quantitative data (**Study I-III**)

Study design: The present thesis included consideration of national random samples of children (**Study I and II**) and adults (**Study III**). The strength of **Studies I** and **II** lies in the large, nationwide and population-based sample that was used. However, the cross-sectional design can only provide suggestive evidence of causal effects between the exposures and the outcomes. Therefore, the directions of the relationships are uncertain. **Study III** was based on a retrospective design, where individuals were asked to recall events of discrimination. Data on obesity status was collected before the assessment of discrimination, thus preventing any reverse causation. However, because no information was given on when in time discrimination occurred, it cannot be ruled out that discrimination preceded obesity. The main strength of **Study III**, apart from being nationwide and population-based, lies in the large sample of recruited individuals with obesity, which gave sufficient power to the study.

Selection bias: The participation rate in S**tudy I** and **II** was higher among girls, and among children with high parental education and of Swedish background. Therefore, it is not possible to generalize to all Swedish 10-year-olds. If participation and non-participation is differentially related to exposures or outcomes, bias would be created in the results. However, because no data on the relationship between non-participation and outcomes (prejudice and stereotypes) were retrieved, this could not be elaborated upon. Potentially, children with high prejudice against and stereotypes about obesity, in the presence of a parent, might have been reluctant to answer the questionnaire. Additionally, some parents might not have presented the material to their children because they were afraid that it might negatively influence them (possibly triggering body image problems or more prejudicial attitudes), or parents might quite simply have been critical of the actual assignment, which made them decline to participate.

Eligible participants in **Study III** came from an already selected sample of individuals; that is, the participants in question were those who had previously reported their height and weight in national representative population-based surveys (ULF). In the previous surveys,

women responded to a higher degree than men, and having a higher education and being born in Sweden were related to higher response rates. The response rate in the present thesis (2008) was 49% in men and 63% in women. In general, individuals in lower social positions and minorities show lower response rates in population-based studies. However, men with severe obesity and a foreign background responded more often than men with severe obesity and a Swedish background (59% versus 48%). Furthermore, men with normal weight and low education showed the lowest response rate (37%). One can only speculate how this latter aspect affected the results. It might be the case that the men with normal weight and low education who did not answer were less likely to have experienced discrimination, and therefore found the study irrelevant and refused participation. This would mean that the ORs for obese men were to some extent underestimated, and would also result in an underestimation of the ORs for discrimination among obese men with low education. Consequently, the discrepancy between the OR for discrimination of an obese individual with a high education, as opposed to a comparable individual with a low education, could be less.

The problem of higher underreporting of weight among individuals with overweight and obesity compared with normal weight individuals (Spencer, Appleby, Davey & Key, 2002) posed a threat to the selection of individuals in **Study III**. It is not likely that individuals in the normal weight group were missed due to misreporting of weight and height, but this is certainly possible when it comes to the obese group. Thus, it can be expected that a fraction of obese individuals were misclassified at the first time-point (ULF surveys 1996-2006); these individuals were probably identified as overweight, and thus not included in the frame from which the obese subjects were sampled. Whether people who underreport their weight were more likely to have experienced discrimination is not known. However, it is more likely that any misclassification of BMI was non-differentially related to the discrimination measure, and then the assumption would have been that the estimates are attenuated towards the null.

Outcome bias: The conceptualization of stereotypes about and prejudice against obesity has been subject to some debate (Puhl & Heuer, 2009; Puhl & Latner, 2007), and existing studies among both children and adults have used quite a variety of measures. Different methodologies might also be needed in different age groups to capture the phenomena; however, this area is in urgent need of psychometrically tested assessment methods. The measurement procedure adopted in the present thesis (**Study I** and **II**) had not been used before. The main reason for developing a new instrument was because it was intended for use in the homes of the selected families, where no control over assessment was possible. This differed from previous studies, which were mainly conducted in school settings. Therefore, the instrument had to be self-explicable, requiring a minimum of information to respondents. The procedure of letting children assign or not assign a certain adjective to the body figures could therefore be regarded as a very simplistic way of handling a complex subject. Designation of a certain characteristic to a specific target is presumably made to a lesser or greater degree and children in this age group are beginning to understand the world in a more complex way. Using a scale with adjective pairs (smart-stupid, neat-sloppy, etc.) would probably have given a more balanced picture of this age group's stereotypes and prejudice. But because children may

be reluctant to evaluate people negatively, in particular members of their own group, the opportunity to discard adjectives, and thereby not force the children to assign a certain adjective gave strength to the approach adopted.

The adjectives that were included in the instrument were a combination of previously used adjectives and adjectives that were most salient among children in a pilot study (using 50 adjectives). The use of more positive than negative adjectives was intentional, because it provided a good opportunity for the children to be positive, and ensured that the task itself did not provoke negative feelings. However, what were defined as negative or positive characteristics by the investigators might have differed from those of the respondents. Adjectives are very much tied to personal appraisals and values, and there are likely to be different opinions over what these adjectives really represent. This could have been investigated in the pilot study by allowing children to discuss how they interpreted the adjectives, and also what meanings these adjectives had in relation to the different body figures.

The definition of prejudice in **Study I** was based on assigning relatively more negative adjectives than positive adjectives to the target figure; that is, an overall negative evaluation was made. As previously mentioned, prejudice may be defined as an antipathy based upon faulty generalizations of a whole group or a member of that group (Allport, 1954). Thus, prejudice is the generally negative evaluation of a group or a member of a group and refers to the attitudinal components of stigmatization. Accordingly, the validity of the conceptualizing of prejudice in **Study I** might be questioned. Children's responses might rather be a reflection of their current knowledge of the stereotypes related to different body sizes. Stereotyping, which involves attribution of specific characteristics to a group or member of a group, is involved in the stigmatizing process, but it might not result in any specific affective response (dislike, disgust, fear, etc.) or unfair treatment (Dovidio et al., 2008). However, it is likely that automatically activated stereotypes among individuals who do not have the cognitive skills to control their actions will, in fact, discriminate.

A set of three body-size silhouette figures, namely, thin, average weight, and obese, were used. Previous studies did not consistently adopt this approach, but instead relied on comparisons against only one thinner body size. The advantage of the present approach is that it reduces some of the effects of mere deviance from normality (deviance is not used as a pejorative term, but more as social deviation from the body size norm) that both thinness and obesity represent. The figure silhouettes have been extensively used in research investigating children's body image (Smolak, 2004), and also for the measurement of attitudes in general towards obesity and thinness (Holub, 2008; Wardle et al., 1995). However, the validity of the figures has not been satisfactorily tested. First, no known BMI values have been ascribed to the different figures, and correlations between children's pictorial self-ratings and BMI are rather low ($r$=0.42-0.60) (Marsh, Hau, Sung & Yu, 2007; Smolak, 2004; Tiggemann & Wilson-Barrett, 1998; Truby & Paxton, 2002; Wardle et al., 1995). In a study using figure body sizes of known BMI status, adult participants tended to underestimate the weights of overweight, obese and extremely obese female figures, and slightly overestimate the weight of the normal weight female figure. For the male figures, accurate estimation was made of the overweight and obese

figures, but there was an overestimation of the weight of the normal weight figure and underestimation of the weight of the extremely obese figure (Musher-Eizenman & Carles, 2009). This suggests that accurate perceptions of body size are not that easy to obtain, not even among adults. In **Study I** and **II** the figure with obesity was at the extreme end of obesity, which of course raises the question of the external validity of the result. Such usage of very obese figures has also been criticized by several researchers (Lehmkuhl et al., 2009; Musher-Eizenman & Carles, 2009). This obese body size is not likely to correspond to very many children in Sweden, and the results may therefore more reflect a response to something that is highly unfamiliar. However, it may also, in the child's eye, merely represent a body size that is heavier than normal.

Discrimination is the posited behavioural outcome of attitudes and stereotypes, and is also distinct from these latter two concepts. A self-report measure of discrimination with a retrospective design regarding experience of perceived discrimination over the life course was used in **Study III**. One of the major threats to validity in this study is recall bias. There is evidence from other studies that there is a 5% fall-off rate per month in reporting life-events (Williams, Neighbors & Jackson, 2003). Whether such forgetting is related differently in the three weight status groups is difficult to tell, but – even though age was controlled for – the obese groups had a higher mean age. This might have resulted in an underestimation of the risk of perceived discrimination in the two obese groups. The test-re-test in the pilot study also confirms that some misreporting might be present in the obese groups (**Study III**). The items regarding lifetime discrimination included domains in life that plausibly have important consequences for people's opportunities in life. However, there could be situations that were neglected in this study that are more important for people with obesity than for people of normal weight. Even though individuals' own perceptions are important for their emotional well-being and presumably health, we do not know the accuracy of these reports.

To pose questions about discrimination is a challenge, because letting people self-report their experiences may result in both under- and over-reporting (Kaiser & Major, 2006). Some people might overreact in certain situations, and it is possible that individuals perceive themselves as being subjected to discrimination when objectively they are not. However, individuals might also perceive the opposite; either they do not interpret the situation as discriminatory behaviour, or they are so used to being mistreated that they refrain from reporting it. To recognize that one is a victim of discrimination may also be psychologically distressing. How one copes with mistreatment might also have a decisive influence on the reporting of discrimination. For instance, and as mentioned previously, higher SES individuals may report more discrimination because they are not socialized to expect discrimination whereas low SES individuals have developed a wide variety of coping mechanisms, albeit not necessarily positive ones. The perception among not only normal weight people but also among the obese that obesity is self-inflicted, and that an obese person is not worthy of respect from others due to a failure to control weight, may result in so-called internalized discrimination. Evidently, this could result in underreporting of discrimination because obese people may feel that mistreatment from others is justified.

Exposure bias: Parents reported their child's height and weight in **Study I** and **II**. Research is lacking as to whether reliable estimates of children's height and weight can be provided by their parents (Dubois & Girad, 2007). A study of 9-year-old children indicates that obesity appears to be accurately estimated by parents, but overweight is not (Banach, Wade, Cairney, Hay, Faught & O'Leary, 2007). Mothers, who were the most common parent reporting height and weight in the present thesis, have been shown to be a more reliable source for children's weight than fathers (Goldman, Buskin & Augarten, 1999).

In **Study III** the WHO's BMI cut-offs were used to define obesity and levels of obesity. The present thesis did not focus on the possible health consequences of obesity, but rather the social consequences of being perceived as obese. Possibly the BMI measure better reflects a person's body size than a person's actual fat percentage. However, an obese person's regional distribution of fatness could perhaps also be of importance for the likelihood of being stigmatized, something that the present thesis did not illuminate. Previous studies have investigated perceived discrimination and body fat, measured by waist circumference or the waist-to-hip ratio (Hunte & Williams, 2009; Vines, Baird, Stevens, Hertz-Picciotto, Light & McNeilly, 2007). Both these American studies found an inverse relationship between discrimination and abdominal fat accumulation in blacks, while whites showed an increased risk of experiencing discrimination if they had high-risk waist circumference. In addition to these studies, a recent study showed that body proportions are perceived to reflect personality traits (Mankar, Joshi, Belsare, Jog & Watve, 2008). A male figure's slightly fat and feminine body form, with abdominal obesity, was associated most strongly with the personality traits greedy, lethargic, rich, political, selfish, and money-minded, whereas a slightly fat and feminine male body without abdominal obesity was associated with loving, friendly, kind, honest, intelligent, talkative and methodical.

One important thing to consider is whether misclassification of individuals based on BMI is differentially related to the discrimination outcome. In **Study III** comparisons between normal weight and two levels of obesity, moderate and severe, were made. The degree of underestimation of weight is usually higher among heavier individuals, and therefore misclassification of individuals might be a threat to validity. The specificity of using self-reported BMI as a measure of obesity is quite high; that is, only a few are incorrectly classified as obese. However, the sensitivity of self-reporting BMI is lower (the procedure does not identify all those who are obese) (Nyholm, Gullberg, Merlo, Lundqvist-Persson, Råstam & Lindblad, 2007; Shields, Gorber & Tremblay, 2008). To the best of my knowledge, there are no studies that have investigated the misclassification of individuals at different obesity levels. However, it is likely that some individuals identified as moderately obese on the self-report measure actually were severely obese. This would mean that the moderate obese group was heavier than it should have been. Consequently, assuming that a higher obesity level increases the risk of discrimination, the risk of reporting discrimination might have been overestimated in the moderate obese group.

Parents reported on their beliefs concerning the controllability of weight (**Study II**). Controllability beliefs have been investigated quite extensively in relation to obesity stigmatizing attitudes, but the measures used have differed and few have been thoroughly

validated. The instrument used in the present thesis consisted in a combination of questions previously used in the US (Crandall, 1994) together with a question specifically adapted for the study. The original instrument has shown good construct validity (Latner et al., 2008), but with moderate internal consistency, 0.66-0.77 (Crandall, 1994; Latner et al., 2008). The internal consistency in the current sample was 0.54 on the original measure, but increased to 0.64 after adding the question. Internal consistency refers to the overall degree to which the items that make up a scale are inter-correlated, whereas homogeneity or unidimensionality indicates whether the scale items assess a single underlying factor or construct. For a scale to be regarded as homogenous, all items have to be intercorrelated, but high correlation does not guarantee unidimensionality (Clark & Watson, 1995). Thus, validating a scale that measures controllability beliefs in a Swedish context seems warranted.

The body esteem scale used has not been thoroughly validated in a Swedish context. However, a previous study of Swedish 10-year-olds (Erling & Hwang, 2004), and also the present thesis (**Study II**), showed internal consistencies that were in line with a sample of 12-13 year-olds in Canada (Mendelson et al., 2001). The children's body esteem in the previous Swedish study was somewhat lower than found in **Study II**, which also showed less discrepancy between boys' and girls' body esteem. One can only speculate about these differences; possibly, time trend effects may be operating, or they may be attributable to the present thesis being based on a national representative sample, whereas the previous study only included children from a specific area in Sweden. In any case, the minor validation of the subscale BE-Appearance in the present thesis indicated that the scale could work quite well in this particular population group. But, as with the controllability beliefs measure a more extensive validation must be performed to establish the limitations and strengths of the scale.

Attained education was used as a proxy for SES in **Study I**, **II** and **III**. An individual's education is a crude measure of social position and it is likely that other indicators, such as profession, occupational position, income, and possibly also past generation's socioeconomic position may have to be considered as well. For instance, the social acceptance of obesity may be less in occupations within health care regardless of socioeconomic position, while in the sphere of industry a man in a position of management/supervision may be seen as benefiting from a physical dominance that a larger body size might provide. It seems therefore necessary to include different socioeconomic indicators in future studies to fully understand the gender patterning of obesity stigmatization. Studies of social class and BMI, for instance, show that education is more important for BMI level in women, whereas for men what seems important is the occupational domain in which he operates (McLaren & Godley, 2008). Furthermore, women's body dissatisfaction, a construct associated with obesity stereotypes in the present thesis, is more related to educational attainment than occupationally defined social class, which suggests that, at least for women, educational attainment may be a useful indicator in this area of research (McLaren & Kuh, 2004).

Confounding: Controlling for confounding is a central task in epidemiological research, and it implies that the effect of exposure on outcome is mixed up by a factor that is associated with both the exposure and the outcome (Rothman, 2002). A factor must be unbalanced across

exposure categories to be regarded as a confounder. Moreover, the confounder cannot be a mediator; that is, it should not be on the causal pathway between the exposure and the outcome. Even though the analyses in S**tudy I-III** were adjusted for confounding factors, one cannot rule out the possibility that residual confounding, due to unmeasured confounders, misclassification of confounders or mediators, affected the results. In **Study I** and **II** several factors may have acted as confounders and, if unmeasured, they might have produced bias in the results. For instance, cognitive development and maturation status are two factors that would have been advantageous to include.

In **Study III** possible confounding factors were adjusted for. Confounding between, for instance, obesity and self-reported discrimination may, however, be a problem due to possible selective recall as a function of current mental health status. However, there is no clear consensus on which psychological confounding variables to include in studies of discrimination and health (Williams et al., 2003), and although it is reasonable to suppose that psychological status can affect reporting of discrimination, one prospective study does not confirm this relationship (Brown, Williams & Jackson, 1999). Self-esteem may, however, be a confounding factor in the relationship between obesity and discrimination. Clinical studies show that obesity is related to self-esteem, but the evidence in the general population is weak (Friedman & Brownell, 1995; Wardle & Cooke, 2005). Nevertheless, because the general population also includes those clinical subgroups, it might be important to adjust for self-esteem. On the other hand, low self-esteem could also be a consequence of discrimination (Major & O'Brien, 2005), and if so it would not be appropriate to adjust for this. However, research also suggests that low self-esteem is related to greater belief in personal responsibility for weight in individuals with obesity but not in individuals with normal weight (Quinn & Crocker, 1999), which might indicate that it is important to adjust for self-esteem.

## Trustworthiness of the qualitative data (**Study IV**)

A qualitative study with a phenomenographic design was used in **Study IV**. This type of analysis was considered the most appropriate for answering the research question, which was to describe health care professionals' conceptions of obesity. The findings would provide insights about possible gaps in knowledge or different understandings of obesity among primary health care professionals. Thus, the aim was to identify qualitatively different and similar conceptions of how primary health care professionals experience encounters with patients with obesity and how they understand the causes of obesity. The basic assumption of phenomenography is that ways of experiencing a particular phenomenon vary in a group of individuals.

In qualitative studies, terms such as credibility, dependability and transferability are used instead of validity and reliability (Creswell, 2000). The scientific criteria are also referred to in terms of the trustworthiness of a study. In phenomenography, great importance is attached to coherence criteria of truth. The fundamental question is how well identified descriptive categories represent informants' conceptions, and are not simply constructions of the researcher (Hallberg, 2002). This is in contrast to correspondence criteria, mostly used in the positivistic research tradition, where the important question is if the found categories

correspond to reality. In qualitative research, the working process is thought of as a constant validity check, involving, for example, the opportunity to verify an informant's statements in the course of an interview (Hallberg, 2002).

The *credibility* of a study has to do with selection of participants, data collection and analysis (Creswell, 2000). Our health care sample originated from the population of all GPs and DNs working at primary health care centres in the Stockholm metropolitan area (**Study IV**). A total of approximately 190 primary health care centres were identified, of which 57 were approached. The staff interviewed came from 19 of these. The included centres were situated in both affluent and poor areas of Greater Stockholm, and were both large- and small-scaled. As mentioned above, phenomenographic research aims to identify conceptions and describe variations in them. To reach maximum variation in conceptions the sample needs to be strategically chosen, and data have to be collected until no new information is found (Patton, 1990). Theoretically, sampling should be continued until redundancy has been reached; however, there are suggestions that 20 informants in a reasonably homogenous group is sufficient to capture all the variation in conceptions of a phenomenon under study (Wahlström, Lagerlöv, Lundborg, Veninga, Hummers-Pradier, Dahlgren et al., 2001). The health care professionals were also selected to give as wide variation as possible on the basis of the following background variables: age, sex, specialty, and professional experience. An additional strength of the study was the ability to recruit male nurses, something that has not been achieved in previous studies. However, half of the participants were recommended by the heads of the primary health care centres. It is likely that staff with a more positive attitude was chosen, but it could also be that heads chose those who had greatest experience of meeting patients with obesity. Of the 20 participants, seven were involved in some kind of weight or diabetes management. Whether greater experience of obese patients is related to more or less negative attitudes is not known. On the other hand, heads might have chosen themselves or members of their staff because they had a critical view of how obesity is currently being handled within primary health care.

The interviews were conducted by the same researcher and in a setting that the informant had chosen. However, a majority of the professionals were interviewed during work hours in their office and often between patient visits. This might have meant that some of the informants were feeling stressed about imminent encounters and unable to relax. Even though they had informed other staff about having a private meeting occasional small disturbances, like a knocking on the door and passing small messages were present during a few interviews. In any case, with the knowledge that these professionals groups have a high workload, it was regarded as most convenient to perform the interviews in the workplace. The credibility of data was also ascertained by giving thick descriptions of the conceptions, followed by quotations that exemplified and confirmed each one of them. Each part of the research process, presentations of interview questions and analysis were thoroughly described. Moreover, during the course of analysis, the researcher had in-depth discussions with an experienced researcher in phenomenography about the identified conceptions, descriptive categories and quotations. The researchers involved in the analysis of the data were also from different

disciplines (nursing and public health nutrition), which helped to prevent personal and disciplinary biases from influencing the findings.

The criterion of *dependability*, i.e. stability of data over time, was guaranteed by given all the informants the same main interview questions and having the interviews performed by the same researcher. However, the interviewer's background as a nutritionist may have unwittingly prompted some informants to elaborate more on issues concerning promotion of healthy diets and physical activities. Other aspects relevant to the encounter with patients with obesity in this particular setting may therefore have been missed. Furthermore, some may have felt that the research purpose was to evaluate their current practice regarding obesity treatment and therefore tried to appear at their best, or - the opposite – felt suspicious about how the results would be used and acted defensively. However, the researcher had no dependent relationship with any of the participants that might have influenced the results. Likewise, the transcribed interviews were read several times while simultaneously listening to the tape to verify a correct transfer of data.

Whether results can be useful in another group or setting is addressed in terms of the *transferability* of the study. The health care professionals had mostly a national background, as Swedish, and more women than men were included. However, this study is the first to involve male nurses when investigating conceptions of obesity in primary health care. It was an eligibility criterion that DNs and GPs had a specialist education, which meant that the age group under study was somewhat older than the population of professionals. Nevertheless, there was a wide variation of ages within the study group. Furthermore, approximately half of the selected informants had been involved in some kind of weight management strategy. These limitations should be kept in mind when interpreting the findings. Still, in qualitative research, the usefulness of the study in another setting can also be left to the reader to decide (Hallberg, 2002). The rich descriptions of the conceptions give the reader an opportunity to evaluate the trustworthiness of the results. Finally, phenomenographic studies are mainly contextual, and the experience of a phenomenon is related to a specific setting; therefore, it is likely that some of the findings may only be transferable to primary health care in Sweden.

## 6.5 CONCLUDING REMARKS AND FUTURE DIRECTIONS

This thesis shows that individuals with obesity are likely to be confronted by stigma during the whole life course. For instance, children were more likely to be prejudiced against obesity than against thinness and average weight, and adults with obesity were more likely to have experienced any lifetime discrimination than individuals with normal weight.

The evidence in the present thesis that children's body esteem and parents' body size are related to children's obesity stereotypes suggests that interventions that improve domain-specific self-esteem and increase interaction with individuals with obesity may result in less denigration. Improvement in body esteem among children may also be beneficial for obese children in two ways, particular because they often suffer from lower body esteem than thinner children. Some stereotypes about obesity seem highly resistant to change, and it is therefore warranted to prevent stereotyping before it is formed. This means that all the influential sources that young children face in everyday interactions need to be approached. Prospective

longitudinal studies are also required so as better to understand how developmental changes in children may affect the expression of stereotypes, explicit or implicit, and related stigmatization.

It was found that children with high SES were more likely to be prejudiced against obesity than children with low SES, and perceived discrimination was more likely to be reported among obese individuals with high SES than low SES. This confirms that the SES background of both the perpetrator and the stigmatized is important to consider. Furthermore, women with severe obesity perceived discrimination in every investigated context, while men's perception of discrimination relied on both level of obesity and context. This indicates that we have to direct our attention at questions about structural issues, power relations and group identity.

Perception of insulting treatment by physicians and nurses increased with increasing weight status and was most common among women with severe obesity. Although health care professionals did not display explicit dislike of patients with obesity, many of their conceptions were centred on patient attitude. Furthermore, staff conceived the current health care system and existing obesity management as unsatisfactory, but also felt that primary care may not be an appropriate arena for addressing obesity. Few of the staff elaborated on the complexity of obesity, but instead saw obesity purely as a lifestyle problem. It seems therefore necessary to raise awareness of possible unconscious attitudes about obesity, and also to provide knowledge about complexity of the condition and further training in obesity management among health care professionals. Also, primary health care staff may not only have to guide obese individuals to healthier behaviours, but also help them find coping strategies to deal with stigma.

There is today little direct evidence that health care professionals' attitudes and stereotypes about obesity affect patient-provider interaction, and therefore research investigating the association between obesity stigma in health care and actual practice is needed. It has been suggested that obesity stigma in health care could be especially detrimental, because it is likely to result in avoidance of health care, which could lead to poorer self-care and a subsequently higher risk of complications and further weight gain. Health care providers must therefore treat people with obesity with respect and adopt an approach that facilitates collaboration. However, if treatment methods and the organization of primary care for patients with obesity are also improved, this would most likely ameliorate the patient-provider interaction.

Future studies that investigate the health consequences of obesity must consider including measures of stigma, since some of the burden of disease among obese individuals may actually be attributed to this experience. Finally, because existent interventions show modest results in changing obesity stigmatizing attitudes we may have to emphasize acceptance, equality and respect for individuals with obesity.

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## Appendix 1

**Table A.** Hierarchy of adjectives for the figures with **thinness**.
Negative adjectives are in bold.

| GIRL FIGURE | | BOY FIGURE | | |
|---|---|---|---|---|
| **Girls** | **Boys** | **Girls** | **Boys** | |
| Kind | Kind | Kind | Kind | Frequent |
| Honest | Honest | Fast | Honest | |
| Fast | Joyful | Honest | Joyful | |
| Good | Fast | Joyful | Fast | |
| Joyful | Good | Good | Clean | |
| **Lonely** | Clean | Clean | Good | |
| Clean | Satisfied | Popular | Popular | |
| **Different** | Popular | Loved | **Lonely** | |
| Popular | Healthy | Satisfied | **Different** | |
| Loved | Happy | Happy | Satisfied | |
| Satisfied | Hard-working | Hard-working | Happy | |
| Hard-working | Loved | **Different** | Healthy | |
| **Coward** | **Different** | **Lonely** | **Coward** | |
| Happy | **Lonely** | Healthy | Loved | |
| **Strange** | **Coward** | **Strange** | Hard-working | |
| Healthy | **Sloppy** | **Sloppy** | **Sloppy** | |
| **Sloppy** | **Strange** | **Coward** | **Strange** | |
| Good-looking | **Slow** | Good-looking | **Slow** | |
| **Slow** | Good-looking | **Slow** | **Lazy** | |
| **Lazy** | **Lazy** | **Lazy** | Good-looking | |
| **Stupid** | **Stupid** | **Stupid** | **Stupid** | Rare |

**Table B.** Hierarchy of adjectives for the figures with **average weight**.
Negative adjectives are in bold.

| GIRL FIGURE | | BOY FIGURE | | |
|---|---|---|---|---|
| **Girls** | **Boys** | **Girls** | **Boys** | |
| Kind | Kind | Kind | Kind | Frequent |
| Joyful | Joyful | Satisfied | Healthy | |
| Healthy | Satisfied | Joyful | Joyful | |
| Satisfied | Healthy | Healthy | Satisfied | |
| Happy | Happy | Fast | Popular | |
| Popular | Good | Popular | Fast | |
| Honest | Honest | Happy | Happy | |
| Good | Fast | Good | Good | |
| Loved | Popular | Honest | Clean | |
| Clean | Clean | Loved | Honest | |
| Good-looking | Loved | Clean | Loved | |
| Fast | Hard-working | Hard-working | Hard-working | |
| Hard-working | Good-looking | Good-looking | Good-looking | |
| **Lonely** | **Coward** | **Sloppy** | **Coward** | |
| **Sloppy** | **Different** | **Lazy** | **Sloppy** | |
| **Different** | **Sloppy** | **Coward** | **Lonely** | |
| **Coward** | **Lonely** | **Lonely** | **Lazy** | |
| **Lazy** | **Lazy** | **Different** | **Different** | |
| **Slow** | **Slow** | **Stupid** | **Slow** | |
| **Strange** | **Strange** | **Slow** | **Strange** | |
| **Stupid** | **Stupid** | **Strange** | **Stupid** | Rare |

**Table C.** Hierarchy of adjectives for the figures with **obesity**.
Negative adjectives are in bold.

| **GIRL FIGURE** | | **BOY FIGURE** | | |
|---|---|---|---|---|
| **Girls** | **Boys** | **Girls** | **Boys** | |
| Kind | **Slow** | Kind | **Lazy** | Frequent |
| **Slow** | Kind | **Slow** | **Slow** | |
| **Lazy** | **Lazy** | **Lazy** | Kind | |
| Joyful | Joyful | Joyful | Joyful | |
| **Lonely** | Honest | **Lonely** | **Different** | |
| Honest | **Different** | **Different** | Honest | |
| **Different** | **Lonely** | Honest | **Lonely** | |
| Clean | Clean | Clean | **Sloppy** | |
| Good | **Sloppy** | Good | Clean | |
| Popular | Good | **Sloppy** | Good | |
| **Sloppy** | Popular | Popular | Healthy | |
| Loved | Satisfied | Loved | Satisfied | |
| **Coward** | Healthy | **Coward** | Popular | |
| Healthy | Loved | Satisfied | Loved | |
| Satisfied | **Strange** | Healthy | **Strange** | |
| **Strange** | **Coward** | **Strange** | **Coward** | |
| Happy | Happy | Happy | Happy | |
| Hard-working | Hard-working | Hard-working | Hard-working | |
| **Stupid** | **Stupid** | **Stupid** | **Stupid** | |
| Good-looking | Good-looking | Good-looking | Good-looking | |
| Fast | Fast | Fast | Fast | Rare |

**Table D.** Hierarchy of adjectives for the figures with **obesity**.
Negative adjectives are in bold.

| **GIRL FIGURE** | | **BOY FIGURE** | | |
|---|---|---|---|---|
| **Low SES** | **High SES** | **Low SES** | **High SES** | |
| Kind | Kind | Kind | **Slow** | Frequent |
| **Slow** | **Slow** | **Slow** | Kind | |
| **Lazy** | **Lazy** | **Lazy** | **Lazy** | |
| Joyful | Joyful | Joyful | Joyful | |
| **Lonely** | Honest | **Different** | **Lonely** | |
| Honest | **Different** | **Lonely** | Honest | |
| **Different** | **Lonely** | Honest | **Different** | |
| Clean | Clean | Clean | **Sloppy** | |
| Good | **Sloppy** | Good | Clean | |
| Popular | Popular | **Sloppy** | Good | |
| **Sloppy** | Good | Popular | Popular | |
| Loved | **Coward** | Loved | Satisfied | |
| Healthy | Satisfied | Healthy | **Coward** | |
| Satisfied | Loved | Satisfied | Healthy | |
| **Strange** | Healthy | **Coward** | Loved | |
| **Coward** | Happy | **Strange** | **Strange** | |
| Happy | **Strange** | Happy | Happy | |
| Hard-working | Hard-working | Hard-working | Hard-working | |
| **Stupid** | **Stupid** | **Stupid** | **Stupid** | |
| Good-looking | Good-looking | Good-looking | Good-looking | |
| Fast | Fast | Fast | Fast | Rare |

Predictors of parents' controllability beliefs about weight (*N*=1364).

| | | Proportion holding a controllability belief | Univariate OR | Model I OR | Model II OR | Model III OR | Model IV OR |
|---|---|---|---|---|---|---|---|
| **Sex** | Female (*n=1118*) | 25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| | Male (*n=246*) | 34 | 1.56 (1.16; 2.10) | 1.56 (1.16; 2.10) | 1.59 (1.18; 2.14) | 1.56 (1.16; 2.11) | 1.58 (1.17; 2.13) |
| **Place of residence** | Rural (*n=543*) | 25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| | Urban (*n=821*) | 28 | 1.13 (0.88; 1.44) | 1.12 (0.87; 1.44) | 1.12 (0.87; 1.44) | 1.11 (0.86; 1.43) | 1.10 (0.85; 1.42) |
| **Education** | Low (*n=926*) | 26 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| | High (*n=438*) | 27 | 1.02 (0.79; 1.32) | 0.98 (0.76; 1.27) | 0.95 (0.73; 1.23) | 0.94 (0.72; 1.23) | 0.94 (0.72; 1.23) |
| **Body size**[1] | 2 (*n=22*) | 32 | 1.04 (0.42; 2.60) | | 0.99 (0.39; 2.48) | 0.93 (0.37; 2.35) | 0.97 (0.39; 2.45) |
| | 3 (*n=153*) | 28 | 0.87 (0.58; 1.30) | | 0.85 (0.57; 1.27) | 0.85 (0.57; 1.27) | 0.84 (0.56; 1.26) |
| | 4 (*n=516*) | 31 | 1.0 | | 1.0 | 1.0 | 1.0 |
| | 5 (*n=501*) | 22 | 0.65 (0.49; 0.86) | | 0.64 (0.49; 0.86) | 0.65 (0.49; 0.87) | 0.65 (0.49; 0.87) |
| | 6 (*n=134*) | 22 | 0.62 (0.39; 0.96) | | 0.58 (0.37; 0.92) | 0.59 (0.37; 0.93) | 0.59 (0.37; 0.93) |
| | 7-9 (*n=38*) | 29 | 0.91 (0.44; 1.87) | | 0.92 (0.44; 1.90) | 1.00 (0.49; 2.09) | 0.95 (0.46; 1.97) |
| **Child sex** | Girl (*n=736*) | 27 | 1.0 | | | | |
| | Boy (*n=628*) | 26 | 0.92 (0.73; 1.18) | | | | |
| **Child BMI**[2] | Thinness (*n=105*) | 22 | 0.72 (0.44; 1.17) | | | 0.70 (0.43; 1.14) | |
| | Normal weight (*n=1046*) | 28 | 1.0 | | | 1.0 | |
| | Overweight (*n=180*) | 21 | 0.69 (0.47; 1.01) | | | 0.72 (0.48; 1.06) | |
| | Obesity (*n=33*) | 27 | 0.96 (0.44; 2.10) | | | 1.14 (0.52; 2.54) | |
| **Thin ideal for girls** | no (*n=1293*) | 26 | 1.0 | | | 1.0 | 1.0 |
| | yes (*n=71*) | 39 | 1.86 (1.14; 3.05) | | | 3.08 (0.98; 9.63) | 1.74 (1.06; 2.87) |
| **Thin ideal for boys** | no (*n=1287*) | 26 | 1.0 | | | 1.0 | |
| | yes (*n=77*) | 35 | 1.53 (0.94; 2.48) | | | 0.54 (0.17; 1.68) | |
| ***AIC*** | | | | 1579 | 1577 | 1576 | 1575 |

[1]According to Rand & Wright, 2000; [2]According to Cole et al 2000, 2007.