The Impact of Living with Morbid Obesity on Psychological Need Frustration: A Study with Bariatric Patients

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Abstract

Guided by self-determination theory, the purpose of this study was to gain an understanding of the previous experiences of living with morbid obesity of 10 post-bariatric patients enrolled in a physical activity program. Qualitative data were collected through interviews and diarized observations. A thematic analysis revealed that participants suffered from health and mobility troubles in their daily life and experienced stigmatization and discrimination in most areas of their social functioning. Participants described how these experiences resulted in the thwarting of their basic psychological needs for autonomy, competence, and relatedness. In turn, psychological need frustration contributed to negative consequences such as body image concerns, low self-esteem, anxiety, and depression; controlled regulation of their eating behavior and extrinsic goals; rigid behaviors like avoiding social situations; and compensatory and self-defeating behaviors like giving up diet and physical activity regimens and binge eating (i.e., oppositional defiance). This study highlights how living with morbid obesity can impair optimal functioning and well-being via experiences of psychological need frustration.

Key words: morbid obesity, self-determination theory, stigmatization, need thwarting, need frustration, bariatric surgery

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Obesity is defined as a body mass index (BMI) greater than or equal to 30 kg/m2, and morbid obesity as a BMI greater than or equal to 40 kg/m2 (Booth, Charlton, & Gulliford, 2017; World Health Organization, 2017). Obesity, as a global phenomenon, emerged in western industrialized societies in the 1960s (Prentice & Jebb, 2004). According to the World Health Organization (2017), the worldwide prevalence of obesity has nearly tripled since 1975, with the 13 % of the world's adult population being obese in 2016 (11% of men and 15% of women).

Research conducted to date has focused heavily on the physical and physiological problems associated with obesity (Jinks, Jordan, & Croft, 2006; Ling, Brotherton, & Smith, 2009; Piper & Grunstein, 2010) which may result in reduced capacities for daily life activities (e.g., bathing, dressing, walking) (Mello et al., 2010; Raggi, Sirtori, Brunani, Liuizzi, & Leonardi, 2009; Sirtori et al., 2012). However, societal values related to body weight can also result in psychosocial consequences for obese people (Davin & Taylor, 2009; Puhl & Heuer, 2010). Being obese constitutes a chronic stressful condition which can have a negative impact on health, social behaviors and outcomes, and this issue is more prevalent for those people suffering from morbid obesity (Lewis et al., 2011).

Currently, there is an obesity discourse, frequently supported by the research community, which promotes a societal stereotype of obesity as a disability resulting from the individual's laziness and lack of self-control or willpower (Cliff & Wright, 2010; Gard, 2011; Puhl & Heuer, 2010). This individualist discourse places the responsibility for health firmly with the individual (Gard & Wright, 2001) and justifies weight stigmatization as an instrument to motivate individuals to adopt healthier behaviors. Such attitudes towards obese people can have serious negative psychological consequences for this population (Lather &

Stunkardt, 2003; Puhl & Heuer, 2010). For example, studies have documented the stigmatization of obese people in most areas of social functioning, resulting in problems like interpersonal strain and social alienation (Carr & Friedman, 2006), educational, professional, and occupational difficulties (Puhl & Brownell, 2001; Stunkard & Wadden, 1992), perceived prejudices in medical and health related settings (Puhl & Brownell, 2001), or the humiliation that arises from the failure to fit into theater or airplane seats (Stunkard & Wadden, 1992).

Psychological vulnerabilities among obese people are consistently documented and include lower levels of self-acceptance (Carr & Friedman, 2005), body-image disturbances (Greenberg, Perna, Kaplan, & Sullivan, 2005; Raggi et al., 2009; van Hout, van Oudheusden, Krasuska, & van Heck, 2006), intimate relationship problems (Raggi et al., 2009), less interpersonal contact (Bocchieri, Meana, & Fisher, 2002; Raggi et al., 2009), and poorer social skills (Carr & Friedman, 2006). This leads to a sense of isolation which can be attributed to the failure of family and friends to understand the frustrations associated with a weight problem (Stunkard & Wadden, 1992). These psychological vulnerabilities may lead to psychological disorders like anxiety (Kalarchian et al., 2007; Osei-Assibey, Kyrou, Kumar, Saravanan, & Matyka, 2010), difficulties in handling stress (Raggi et al., 2009), binge eating disorders (Collins & Bentz, 2009; Gruzca, Przybeck, & Cloninger, 2007; Osei-Assibey et al., 2010), low self-esteem (Osei-Assibey et al., 2010; van Hout et al., 2006), and depression (Collins & Bentz, 2009; Ma & Xiao, 2010; Osei-Assibey et al., 2010). In particular, bidirectional associations have been found between depression and obesity in both men and women (Lupino et al., 2010).

Although previous studies have identifed many negative psychosocial consequences of living with obesity, there is a lack of research about the motivational processes that guide maladaptive behaviors, and the development of different harmful outcomes that affect general life satisfaction in this population. In this sense, some authors (e.g., Biddle, Mutrie, Gorely, &

Blamey, 2012) advocate the need to use theoretical frameworks to analyze behaviors in health contexts with the objective of delineating the concepts involved in these motivational processes in order to develop effective intervention strategies. The primary and innovative purpose of the present study is to understand, from the perspective of self-determination theory (SDT, Deci & Ryan, 1980, 1985, 1991), how morbid obesity, and the wider social environment experienced by individuals living with morbid obesity, affects this population and has negative repercussions for their social and psychological functioning and health.

SDT is an organismic-dialectical theory of human motivation that has been widely applied to health contexts (Ng et al., 2012), including interventions with obese people to understand the mechanisms underlying positive behavior change (Teixeira et al., 2015). Analyzing the morbid obesity experience from the perspective of SDT could, therefore, benefit the design of motivational interventions aimed at improving the quality of life of this population. Specifically, SDT has been used to explain the process of "living well" (i.e., eudaimonic living), establishing the factors that promote versus thwart positive motivation and well-being in different contexts (Ryan, Huta, & Deci, 2008). As such, the theory is uniquely situated in order to inform current understanding of the experiences of individuals living with morbid obesity.

SDT is based on the premise that individuals are active in their pursuit to satisfy three basic and universal psychological needs for autonomy, competence, and relatedness. Autonomy refers to the need to be the origin of our actions, to have control over and endorse our own behavior and to make our own decisions, without pressure from other people. Competence describes the need to feel effective in ongoing interactions with the social environment. Finally, relatedness refers to the need to feel connected to people, to establish good relationships, and to feel that people respect and value you. In SDT, these needs specify innate psychological nutriments that are essential for motivation, ongoing psychological

growth, integrity, and well-being (Deci & Ryan, 2000). Social contexts that support satisfaction of the basic psychological needs facilitate natural growth processes, eudaimonic lifestyles (focused on what is intrinsically worthwhile), life satisfaction, positive affect, self-acceptance, a sense of meaning, vitality, and positive health outcomes (Ryan et al., 2008).

Conversely, when there is deprivation of basic psychological need satisfaction, SDT predicts significant psychological costs and accommodations (Deci & Ryan, 2000). Recent conceptualization about psychological growth from the perspective of SDT has begun to distiguish between the constructs of need dissatisfaction (i.e., a lack of need satisfaction) and need frustration (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011; Chen et al., 2015; Vansteenkiste & Ryan, 2013). From this point of view, need disatisfaction does not adequately tap the intensity of need frustration. Need frustration is experienced when basic psychological needs are thwarted within social contexts (Bartholomew et al., 2011). For example, morbidly obese people may perceive themselves to be less competent at completing life activities (need dissatisfaction), and thus have less vitality and positive affect. However, they can also be actively rejected by other people (need frustration), in which case they may suffer from more maladaptive functioning and symptoms of anxiety or depression. Differentiating between these constructs has both theoretical and practical import as need dissatisfaction is not related as robustly to malfunctioning and negative psychological outcomes as need frustration.

This dual-process model (Bartholomew et al., 2011; Jang, Kim, & Reeve, 2016; Vansteenkiste & Ryan, 2013) suggests that need thwarting contexts lead people to experience need frustration which, in turn, is related to controlled motivation or amotivation, ill-being, and compensatory behaviors such as loss of self-control, rigid behavior patterns, and oppositional defiance (resistance to engage in the socially requested activity). Controlled motivation includes introjected regulation, in which behaviors are adopted to avoid feelings

of guilt; and external regulation, in which individuals engage in activities to obtain incentives and rewards or to avoid punishments and reprimands. It is likely that morbidly obese individuals who experience basic psychological need frustration in their lives will become amotivated or only engage in behaviors because they feel pressure from themselves or from significant others. This general tendency to focus on indicators of ineffectance, to not behave intentionally, and to be amotivated in life, is referred to as an impersonal causality orientation, and suggests a negative relation to eudaimonic well-being (Deci & Ryan, 2000).

A qualitative methodological approach, including individual interviews and observations recorded in research diaries, was adopted in the present study in order to gain a deep understanding of how morbid obesity, and the wider social environment experienced by those living with this situation, can thwart basic psychological need satisfaction. The consequences of need frustration on the daily lives of morbidly obese people were also explored. This qualitative approach can be considered to be relatively innovative given that most previous SDT-based research has been quantitative in nature (e.g, see the meta-analysis by Ng et al., 2012). Data coming from closed quantitative questionnaires, related to predetermined variables associated with SDT, give less option for the advancement of theory. A qualitative approach to SDT-based research offers a more flexible frame for new ideas to emerge and for the improvement of theory and the utility of its practical contribution. Moreover, qualitative methods offer better possibilities to analyze in depth, from a relativist ontology and a subjectivist epistemology, the lived experiences of individuals and the subjective impact of these experiences (Sparkes & Smith, 2014).

In this sense, we used a sample of post-bariatric patients enrolled in a physical activity program. Bariatric patients in this study have been classed as morbidly obese for a significant part of their life and therefore their experiences prior to surgery should shed light on the need frustration process and its effects on their eudaimonic well-being. An increased

understanding of these issues is important so that we can devise strategies, at both individual and societal levels, to avoid the thwarting of basic psychological needs, and associated negative consequences, in morbidly obese people.

Method

Participants

The participants in this qualitative study were 10 post-bariatric surgery patients (nine women and one man) aged between 31 and 59 years (M = 45.90, SD = 8.78). Seven patients were married, two were single, and one was divorced. Participants' socioeconomic status was established according to the information they reported about their income, education and occupation in a qualitative interview. Four participants were of low socioeconomic status, five of middle socioeconomic status, and one of high socioeconomic status. All participants had suffered from morbid obesity and, as a consequence, had received surgery in a Spanish public hospital. The inclusion criteria for bariatric surgery included having a BMI greater than 40 kg/m2, or greater than 35 Kg/m2 with associated comorbidity. Participants in the present study, weighed, on average, 107.09 Kg before the operation and 96.58 Kg one month after the surgery (mean BMI = 42.04 Kg/m2 pre-operation and 37.91 Kg/m2 post-operation). To receive surgery, patients also had to have followed endocrinology and nutritional monitoring; experienced previous failed obesity treatments; and have no medical, psychological or social contraindication for surgery. These criteria try to improve the surgery success rate regarding weight loss and the capacity to maintain healthy behaviors over time. Participants were recruited by their clinical psychologist one month after bariatric surgery (between November 2011 and February 2012) and enrolled onto a 6-month physical activity program.

Research Design and Ethical Considerations

This qualitative study was part of a wider research project carried out at the university of the first author of the study, which used a quasi-experimental and mixed-method design to analyze the physical, psychological, and social effects of a physical activity program on patients with morbid obesity who had undergone bariatric surgery a month before the beginning of the program. The project was approved by the ethical research board of the first author's university. Participants were informed about the procedure and provided written consent. The participants' anonymity was protected using pseudonyms. This was particularly important as the study was focused on personal and potentially sensitive issues and contained evaluations of other people.

The Physical Activity Program

The 6-month physical activity program consisted of two sessions per week during the first two months (months 1-2), three sessions per week during the following two months (months 3-4), and four sessions per week during the final two months (months 5-6). It included motivational strategies based on SDT to promote adherence to the program (e.g., the need for autonomy was supported by giving participants opportunities to choose different activities, the need for competence was supported by providing positive feedback and information to the patients about their progress, the need for relatedness was supported by proposing group physical tasks in which patients had to interact and collaborate). Many sessions of the program were designed for the development of aerobic fitness and muscular strength and resistance with machines in a fitness gym. In these sessions, participants followed their individual exercise plan supervised by the instructor of the physical activity program. The warm-down of the sessions included flexibility exercises that participants did in group. Moreover, during months 3-4-5-6, there was one group-based session per week offering other activities to favor motivation and relatedness (e.g., aquagym, indoor cycling, trekking, dancing, etc.). These group-based sessions were led by the same instructor. The

activities of the program were conducted in the facilities of the first author's university, except trekking, which took place in nearby natural settings.

Data Collection

The fieldwork was conducted by three members of the research group. Two different techniques were used to gather qualitative information. First, the director of the research project and the instructor of the physical activity program took chronological field notes about observed conversations and informal interviews related to participants' experiences associated with living with obesity and the effects of the physical activity program in their health and well-being. When participants spoke about the benefits of exercise participation, they used to compare their improvements with their negative experiences with morbid obesity before surgery. This information was useful for the aim of this study.

Data from observations were collected by the observers (the director of the research project and the instructor of the physical activity program) in their research diaries, writing down the information by hand in the moment it emerged, for its analysis after all the field work had been completed. Observers were asked to take field notes in a descriptive way, avoiding analysis and interpretation in this phase.

Specifically, the instructor collected qualitative information before, during, and after the 90-minute sessions which comprised the 6-month physical activity program. The director of the research project collected qualitative information from the participants when they visited the research center for pre and post health-related fitness testing and during the sessions he observed over the 6-month physical activity program (approx. 20 sessions).

Second, at the end of the physical activity program, a third researcher conducted and recorded an in-depth semi-structured interview with each participant (i.e., ten interviews) in a quiet room at the research center. These interviews included targeted questions, relating to key SDT-based concepts, about the effects of the physical activity program and the

experience of living with morbid obesity. When participants responded to these questions, they frequently referred to their previous situation and the experience of living with morbid obesity before surgery, often comparing it with their situation at the time of the interview. Moreover, open-ended questions related to the experience of living with obesity were included in the interviews (see Table 1). The interviews lasted between 40 and 60 minutes and were conducted by the same researcher.

[Insert Table 1 here]

Data Analysis

The field notes were transcribed by the observers and the semi-structured interviews were transcribed by the main researcher (the first author of this article who led the analysis). These transcriptions were carried out with a word processor software and consisted of 195 pages. The data were analyzed with the support of the software NVivo, which was used to organize and store the data efficiently (Bazeley & Richards, 2000).

The qualitative data of this study were analyzed with a thematic analysis (Braun & Clarke, 2006). A thematic analysis is a qualitative analytic method which can be used across a range of epistemological and theoretical approaches (Braun & Clarke, 2006). In line with Sparkes and Smith's (2014) recommendations, our analysis was based on a relativist ontology, because it was focused on knowing and understanding our participants' subjective perception of reality, instead of assuming an external/objective view of reality. We also followed a subjectivist epistemology, assuming that there is no theory-free or value-free knowledge. In this sense, the theoretical framework which informed our data analysis was SDT (see introduction).

The process of data analysis of this study could be described as follows. First, all the transcriptions were read to become familiar with the data and get a sense of it as a whole. Second, a process of initial coding was carried out. Any data extracts which represented

interesting information related to the experience of living with morbid obesity and the subjective impact of this experience was coded. This initial codification was inductive and descriptive to ensure that any information which could shed light to the purpose of the study was included in the analysis. The objective of this initial codification was to avoid that SDT, or any other concrete theory, could suppose a bias which influenced the discarding of any important information relating to the purpose of the study.

Then, a deductive process of searching for themes started. It was in this phase when the research team checked that SDT fitted well with the data, and was useful to identify themes, do interpretative work, and theorize from the coded data extracts without discarding any important information. Many codes referred to negative experiences related to being obese in intolerant social contexts, and were revealing to understand the impact of these experiences on the frustration of basic psychological needs (autonomy, competence, and relatedness). However, other interesting codes were related to the personal negative experience of living with obesity (reduced mobility, health problems, and struggle to control weight) and its negative impact on basic psychological needs. We decided to include personal factors in our set of themes, although SDT only refers to the influence of social (not personal) factors in basic psychological need frustration. Our data supported that decision, and this inclusion could be good for theoretical discussions and the advance of theory. Finally, other codes were good examples to illustrate amotivation and the cognitive, affective and behavioral consequences of basic psychological needs thwarting. After a process of review and refinement, the final set of themes (Table 2) was coherent for the researchers and sustained the write-up of the thematic analysis presented in the next section.

All the qualitative data of this study were collected, transcribed, and analyzed in Spanish. The selected data extracts to support the finding of this article were translated to English in the final step of its writing. The existence of Spanish and English academics in the

research team was useful to ensure that the translation kept the meaning and language form of the original data.

[Insert Table 2 here]

Rigor and Trustworthiness

Several strategies were accomplished during the fieldwork to enhance the rigor and trustworthiness of this study (Shenton, 2004). First, a long stay in the field let the observers study participants in depth throughout the 6-month physical activity program. The long stay in the field also provided observers with enough time and opportunities to tackle emerging gaps and topics related to the research. Second, triangulation was established with the use of different techniques of data collection. The use of observation and interviews let the researchers verify that data collected with different techniques were congruent to sustain the findings of this article. Triangulation was also achieved by including a considerable number of participants with different profiles. This was useful to verify that individual viewpoints and experiences were in line with the rest of the participants. Third, several strategies were considered so that participants would feel free to give frank opinions. In this regard, participants were informed that they could withdraw from the study at any moment and could choose not to respond to a question if they did not feel comfortable with it. Researchers also showed a learning, instead of a judging, attitude during data collection (making questions with respect, never judging participants' opinions or behaviors, and showing kind and empathic gazes and gestures). In addition, the fact that the three researchers involved in the fieldwork frequently interacted with the participants, and maintained a friendly relationship with each of them, enabled participants to speak openly.

The process of data analysis, led by the main researcher, was supervised by the director of the research project and a specialist in qualitative research, who played the role of "critical friends" (Smith & McGannon, 2017). During a series of four meetings, the main researcher

presented the data analysis using diagrams, outlined the codes included in the different themes, and responded to the questions and suggestions of the "critical friends", which were useful to review and improve in group the thematic analysis. The involvement of "critical friends" during the process of data analysis encouraged the quality of interpretations and favored a more defendable and plausible data analysis (Smith &McGannon, 2017).

Findings and Discussion

The comments and interview responses provided by participants reflected how their past morbid obesity situation thwarted their basic psychological needs, not only because of the social context but also because of personal factors related to their morbid obesity state. We can see this experience of basic psychological need thwarting and its consequences through four major themes and seven sub-themes which were identified from the interviewees' data (Table 2).

Personal Factors and Basic Psychological Need Thwarting

Reduced mobility and health problems. According to the participants, morbid obesity reduced their motor abilities to a large extent, becoming a very restricting factor for their quality of life. This impact of obesity on health-related quality of life has been reported in some previous studies (Mello et al., 2010; Sirtori et al., 2012; Wiczinski, Döring, John, & von Lengerke, 2009). Participants described this condition through the following quotations:

> I don't feel so limited as I felt before [the surgery]… Just tying your laces… I had to juggle… (Andrew's interview: Man, 43 years old, married, taxi driver).
>
> … I have felt a psychological improvement regarding I feel more agile to do things I wasn't able to do, … things I didn't do before… for example, going up a ladder to put some boxes in order, because I wasn't able to, because I was afraid to mess the ladder up because of my weight… [She laughs] Do you know what I mean?… I had no agility or strength (Lezly's interview: Woman, 54 years old, single, psychiatrist).

Feelings of competence were actively thwarted by participants' reduced motor abilities. As participants realized they were not able to carry out the normal daily life activities, or interact effectively in their environment, they reported feelings of incompetence. This situation is according to the definition of competence need frustration, since participants had feelings of failure and doubts about their efficacy (Chen et al., 2015).

Moreover, the reduced mobility made individuals dependent on others to do some basic duties which they were not able to do on their own:

> Lucy (Woman, 53 years old, divorced, cobbler): I wasn't able to do anything before… I had to call my sister so that she could put on my socks or cut my toe-nails. I had to ask her for help when I cleaned the windows because right after starting to clean I said "phew…I am so tired!" (Instructor's research diary).

Physical limitations associated with morbid obesity thwarted the need for autonomy since participants needed other people to help them with daily life activities. The absence of psychological freedom and the impossibility of doing different actions on their own would reflect an autonomy need frustration (Deci & Ryan, 2000). Similarly, Bocchieri et al. (2002) noted that several of the morbidly obese patients in their study admitted the fact that they were dependent on their partners.

Motor impairment was even more evident for the participants in social contexts in which they compared themselves with others that could do these tasks with ease. In line with previous research (Bocchieri et al., 2002; Stunkard & Wadden, 1992), participants in the present study did not feel able to perform basic activities and were not able to get involved in some social activities, as other friends and colleagues did:

> … when we traveled to congresses, I remember, as a negative thing, people always going for a walk, while I felt very frustrated because I was not able to do it. It is obvious, you have to walk in a new city and I was always limited. I mean, I've lost the

> chance of knowing some places… I remember one time in Chicago that it was a hassle, all the people walking and walking, and it was very hot [She remembers the moment expressing tiredness with her voice tone]. (Lezly's interview: Woman, 54 years old, single, psychiatrist).

These experiences besides thwarting the need for competence and autonomy also thwarted relatedness satisfaction because it made their relationships dependence-based and meant that they could not engage in a lot of social activities (Bocchieri et al., 2002; Stunkard & Wadden, 1992). As a consequence, some of the participants perceived themselves as having less opportunities to feel a sense of connectedness arising from being part of a social group (Deci & Ryan, 2000).

Participants also reported a lot of health problems associated with being morbidly obese. They described the way in which the medicines they were forced to take regularly, and the medical equipment they needed to manage physiological conditions, hindered their physical and social functioning. Some participants explained how they experienced extreme knee pain, sometimes requiring surgery. Others described different troubles such as high blood pressure, diabetes, and respiratory difficulties, having to take a lot of pills, inject insulin or even use a breathing machine to sleep:

> Lucy (Woman, 53 years old, divorced, cobbler): Now, my well-being and comfort have improved. Before, I was always taking pills and sleeping with the breathing machine… (Director's research diary).
>
> Ronda (Woman, 44 years old, married, unemployed): …when I went to have a beer… Do you know how annoying it was asking people to wait for you whilst you inject insulin? (Instructor's research diary).

In this case, competence was thwarted by participants' health troubles and chronic pain since they didn't feel effective and capable in their daily routine, and autonomy was thwarted

because of their dependence on medicines or devices to live their lives normally. These findings are in line with previous studies reporting that obese individuals are more likely to suffer arthritis, diabetes, congestive heart failure, myocardial infarction, strokes (Alley & Chang, 2007), knee pain (Jinks et al., 2006), chronic pain (McCarthy, Bigal, Katz, Derby, & Lipton, 2009), and respiratory problems (Piper & Grunstein, 2010).

Struggle to control weight. Some of the participants stressed that people do not always become morbidly obese because of bad eating habits. They related individual circumstances as factors influencing their situation:

> Sometimes, society does not know how a person can become like that. Because it could be due to thyroid problems. It could be due to antidepressant pills. It could be due to genetics. It could be due to a lot of things. And classifying that fat man or that fat woman… perhaps there is a hidden problem which nobody sees (Alice's interview: Woman, 31 years old, married, hairdresser).

In this regard, participants thought that personal factors such as genetics, hormonal profile, or medicine intake related to depression increased their tendency to be obese in spite of their efforts to avoid it. Participants suggested that they were unable to lose weight, struggled to maintain any weight loss, or kept putting on weight, resulting in the perceived thwarting of their needs for autonomy and competence. This is in line with previous research which outlines associated feelings of discouragement, hopelessness, and a lack of confidence for future weight loss attempts (Bocchieri et al., 2002; Collins & Bentz, 2009; Davin & Taylor, 2009; Stunkard & Wadden, 1992).

Although Bartholomew et al. (2011) emphasize the need thwarting behavior of significant others in their environment, the present data suggests that experiences of need frustration are not only influenced by social factors, but can also be induced by personal factors. In the case of illness or disability (e.g., morbid obesity), the personal limitations (both

physical and psychological) associated with the condition not only lead to low perceived autonomy, competence, and relatedness (need dissatisfaction), but also actively obstruct basic psychological need satisfaction and result in intense feelings of need frustration (Bartholomew et al., 2011; Vansteenkiste & Ryan, 2013).

Social Factors and Basic Psychological Need Thwarting

Social tendency to blame obese individual. The blaming obesity discourse, mentioned in the introduction, promotes a societal stereotype of obesity as a visible sign of neglect, a lack of self-control, and irresponsibility (Cliff & Wright, 2010; Crandall & Schiffhauer, 1998; Gard, 2011; Gard & Wright, 2001; Puhl & Heuer, 2010). In this regard, participants suggested that there was generally a lack of understanding in society regarding the causes of morbid obesity. They felt society blamed them and made them responsible of their own obesity:

> Sometimes, I think there should be more information in general about morbid obesity, because there are people who are not informed enough. I don't know… when people see a fat guy in the street they normally say: "what a fat guy, he must eat a lot!" This person has enough dealing with obesity. What else do you want? (Alice's interview: Woman, 31 years old, married, hairdresser).

A society focused on body shape. In addition, individuals' perceptions of societal ideals for body weight/image are reinforced through popular media, which predominately transmit images of thin and low body weight individuals not representative of the general population (Greenberg, Eastin, Hofschire, Lachlan, & Brownell, 2003) as well as negative stereotypical messages regarding overweight individuals (Greenberg et al., 2003; Himes & Thomson, 2007). Participants recognized feeling psychological distress due to ideal-body stereotypes and did not feel socially accepted:

> What happened? Don't you have the right to live because you are fat? I don't understand it. Perhaps I am more competent than a person who is the perfect size [She speaks with annoyance]. But this society has a bad habit […] of valuing appearance. But people are more than a body. They have a heart and a mind… (Ronda's interview: Woman, 44 years old, married, unemployed).

According to SDT, the social ideal of beauty can be understood as an extrinsic aspiration (or goal) which is more related to obtaining contingent approval or external signs of worth and thus it is less likely to yield direct need satisfaction and may even distract from it (Kasser & Ryan, 1993, 1996). People will accept and internalize a new behavioral regulation or guiding value to the extent that they perceive support for relatedness, autonomy, and competence in the context of behaving. The problem is that competence and relatedness are incompatible or competing with autonomy in this case. In order to feel competent and accepted, morbidly obese individuals have to subjugate their autonomy to the social control, demands, and pressures present in the environment. In other words, morbidly obese individuals lose their autonomy seeking a socially imposed ideal-body, in order to feel more competent and less marginalized by others. Whilst the satisfaction of relatedness and competence needs would facilitate internalization and can be sufficient to produce introjected values (or poorly integrated compartmentalized identification), supports for autonomy are also essential for a regulation to become more integral to one's self (Deci & Ryan, 2000). Moreover, competence and relatedness are also frustrated by a society influenced by the obesity discourse, as we can see in the following sections. In sum, society uses the obesity discourse as a controlling form of socialization regarding weight-control and, at the same time, endorses the unattainable goal of beauty which leads to feelings of alienation and anomie among morbidly obese individuals.

Experiences of rejection and stigmatization.

***Jokes and taunts*.** The participants discussed being the target of taunts and insults during their lives because of their morbid obesity. This situation has been reflected in the literature (Carr & Friedman, 2005; Lather & Stunkardt, 2003; Puhl &Heuer, 2010). The continuous jokes and lack of respect made participants feel incompetent, stigmatized, and rejected, and resulted in desperate situations like them not wanting to leave their home and suicidal thoughts:

> I was always the chubby one in the group or among friends or people I went out with. People on the street can be very cruel too… I remember a time, when I was very young, that I did not want to live, I didn't want to leave my house. Because people are very cruel. "Where is this fat woman going?", "take care baby, don't break the floor", "you could break the chair". Things like that… (Ronda's interview: Woman, 44 years old, married, unemployed).

***Professional and occupational difficulties*.** The individuals in this study described being marginalized when they looked for a job because they did not have an appearance close to the social stereotype:

> … I was looking for a job and I went to a gift shop … "Ok, you would do this job well but… you are chubby…" And I said, "look, I am fat, but you are stupid, and my problem has a solution, but yours does not" [She remembers the situation with outrage and annoyance] And I turned around and went home… That has always hurt me a lot. This is unfair not only for me, but for the rest of the people who are like me (Ronda's interview: Woman, 44 years old, married, unemployed).

Previous studies have reported how individuals make negative inferences about obese people in the workplace, believing that such people are lazy, lack self-discipline, and are less competent (Puhl & Brownell, 2001). Discriminatory behaviors and inequity in wages,

promotions, and employee evaluations are also common (Carr & Friedman, 2005; Crandall & Schiffhauer, 1998; Puhl & Brownell, 2001).

Struggle to find clothes. One of the most recurrent themes that the participants commented on was that it was practically impossible for them to find clothes for their size in clothing stores or commercial centers where most people go shopping, specifically in clothing stores of leading brands. They finally had to buy "ugly" or "old people" clothes. Their body shape, together with these kinds of clothes, produced a real stigma, a visible feature promoting others' rejection. Moreover, participants felt a lack of respect and faced awkward situations when they looked for clothes. For example, sales clerks referred to their obesity as the main reason for not having clothes which were suitable for them:

> Some time ago I went to a clothing store… there was a beautiful dress in the shop window and I asked her, "that dress, do you have it in a size for me?" She looks at me and says, "oh, do you want to wear that dress as fat as you are?"... And I say, "and could your fucking mother wear it?" And she says, "ok, don't be offensive". "You have offended me before". What is this? Talking to me like that. Just tell me you have no sizes (Pam's interview: Woman, 45 years old, married, cobbler).

This finding is in line with previous studies which have reported that sales clerks at stores are worryingly influenced by weight bias (Puhl & Brownell, 2006).

Non-valued physical activity exercisers. Participants felt bias and marginalization in gyms too, because they perceived these facilities as non-inclusive places that frustrated their needs for competence and relatedness. They saw themselves as being far removed from the sort of people who attended these facilities and they felt that staff and instructors did not care about them or cater for their specific needs. As a result they stop attending:

> …if you go to any gym they pay you no attention… there you have a muscly guy, like the rest of guys attending these places, and he tells you, "ten minutes on the treadmill",

> and he goes away. They give you a notebook… I didn't know how it worked and they explained four exercises to me and got rid of me. So, then, you quit attending [She explains it with outrage] (Lezly's interview: Woman, 54 years old, single, psychiatrist).

Perceived prejudices from medical and health professionals. Prejudices and negative attitudes of medical professionals toward obese individuals have been reported in previous studies (Puhl & Brownell, 2001, 2006), particularly with respect to very obese people (≥35 kg/m2) (Carr & Friedman, 2005; Crandall & Schiffhauer, 1998). Participants complained because obesity was always present in the doctors' diagnosis of their health problems without investigating other possible causes. They felt stigmatized because they perceived that doctors did not get involved enough and just recommended dieting and participating in physical activity without further explanations. Anderson and Wadden (2004) found that obese and bariatric patients believed that doctors did not understand their problems and did not discuss weight control with them. This circumstance is depicted in the following quotations:

> The only thing they tell you is "get on a diet". I think that is not the solution either. They should get involved a little bit more and there should be more information in order to not classify people (Alice's interview: Woman, 31 years old, married, hairdresser).
>
> Pam (Woman, 45 years old, married, cobbler): …The doctor just tells you to do more exercise and that's all (Director's research diary).

Physical barriers and obstacles in public accommodations and transports. One of the most common types of stigma for obese individuals was encountering physical barriers and obstacles in daily life (Phul & Brownell, 2006) that made them feel ineffective in their interaction with the environment. Obese individuals can experience problems in theaters, restaurants, airplanes, buses and trains because of inadequate seat size and features such as

seatbelts (Phul & Brownell, 2006; Stunkard & Wadden, 1992). Participants perceived an unfriendly environment as we can see through the following quotation:

> For example, in the past when I traveled by plane I was not able to fasten the seatbelt, or if you travel by train you do not have enough room to open the lunch table because of your belly… And then, for example, when I drove I reached the wheel with my body… (Lezly's interview: Woman, 54 years old, single, psychiatrist).

As has been described in the previous sections, participants with morbid obesity suffered stigmatization, discrimination, and negative attitudes in different social contexts. The jokes and taunts that they frequently suffered, and the contempt of employers, shop assistants, fitness instructors, and health professionals thwarted their need for relatedness, giving rise to feelings of frustration, relational exclusion and loneliness (Chen et al., 2015). The underestimation by diverse social agents, together with the difficulty they had finding a job, buying nice clothes, or finding public facilities adapted to their size thwarted their need for competence, giving rise to the belief that they were not capable and worthwhile people. The difficulties and barriers they had to face in order to find a job, to buy the clothes they liked, or to travel also thwarted their need for autonomy. In this sense, previous studies have reported similar findings and have pointed out that social contexts influenced by the current obesity discourse promote an evaluating-controlling context that presses obese people to adopt healthier behaviors (Puhl & Heuer, 2010) and, therefore, forestalls rather than facilitates their need for autonomy (Deci & Ryan, 2000).

Amotivation

Studies of several overweight people conducted before they underwent bariatric surgery showed patient's passive dependency and self-denigration, resignation, chronic sense of helplessness, hopelessness, and failure (Stunkard & Wadden, 1992). This psychological state of amotivation towards life in general (i.e., an impersonal causality orientation) was depicted

by some participants. They described feeling carried along by the events without caring about what happened to them:

> There was a moment I was very downcast and I didn't care about living or dying (Ronda's interview: Woman, 44 years old, married, unemployed).
>
> … I was very messy before … I saw myself so bad that I didn't care about the way I lived (Telma's interview: Woman, 31 years old, single, cobbler).

The absence of environmental conditions that allow satisfaction of basic psychological needs, in participants' immediate contextual situations and in their global developmental histories, is thus a key predictor of becoming controlled or amotivated, which has significant negative consequences for their vitality, integrity, and health (Deci & Ryan, 2000). This process is perfectly depicted in Vallerand's (1997) hierarchical model which states that motivation exists at three levels of generality (global, contextual, and situational). The different experiences that thwart the satisfaction of participants' basic psychological needs, because of the morbid obesity condition itself and because of stigmatization at the situational and contextual level are, over time, likely to have a recursive bottom-up effect on the participants' causal orientations at the global level (Postulate 4: Vallerand, 1997). This may cause them to develop a high level of amotivation or an impersonal causality orientation, both of which have been associated with a number of maladaptive consequences such as self-derogation and feelings of helplessness (Deci & Ryan, 2000; Ryan, Deci, & Grolnick, 1995).

Consequences

Need thwarting and subsequent maladaptive motivation and impersonal causality orientations can have serious negative cognitive, affective, and behavioral consequences.

Cognitive-affective level. Several studies have shown higher levels of impaired body image (Raggi et al., 2009), body dissatisfaction, and negative body image in severely obese individuals compared to the general population (van Hout et al., 2006). Likewise, body image

disparagement, which consists in the belief that one's body is grotesque and loathsome and that others view it with hostility and contempt, is a common problem among severely obese persons (Stunkard & Wadden, 1992). We can appreciate through the participants' comments this negative perception of their body, and this belief which made them feel shame and embarrassment showing their body even to their loved person:

> I have never seen myself as pretty, I have always been a little bit ugly… I didn't like myself, either dressed or naked… When I was with my husband, I even felt anger when he stared at me, because I didn't feel pretty (Ronda's interview: Woman, 44 years old, married, unemployed).

Moreover, it is broadly assumed in the literature that obesity has a negative impact on self-esteem (Osei-Assibey et al., 2010; van Hout et al., 2006) and self-acceptance (Carr & Friedman, 2005), causing negative emotions (Stunkard & Wadden, 1992). Some of our participants also admitted suffering from extremely low self-esteem and very negative thoughts and feelings, as we can see in the following quotation:

> I was embittered… of seeing myself…and when I went to buy clothes. I was always exhausted, complaining… (Lucy's interview: Woman, 53 years old, divorced, cobbler).

Participants also admitted having suffered anxiety and depression. Previous studies have emphasized the association between obesity and depression (Atlantis & Baker, 2008; Luppino et al., 2010), which becomes more prevalent in morbidly obese individuals (Collins & Bentz, 2009; Ma & Xiao, 2010; Osei-Assibey et al., 2010). There is also some evidence that depression could increase the odds for developing obesity (Luppino et al., 2010). As we can appreciate in the following quotation, participants felt hopeless and became pessimistic towards life:

> Lucy (Woman, 53 years old, divorced, cobbler): I got depressed, anxious… I stuffed myself…the world has ended for me… (Director's research diary).

Behavioral level. Participants described how they would avoid social situations (inventing excuses or showing a lack of interest) in order to prevent exposure to social contacts that they perceived to be potentially rejecting. Several studies have shown avoidant behaviors to be a common response to stigmatization and negative social evaluation in morbidly obese individuals (Carr & Friedman, 2006; Kalarchian et al., 2007; Puhl & Brownell, 2001). This behavior is depicted in the following quotation:

> …I was very isolated. My friends called me to go for a coffee and I didn't go. "Let's go for a walk"… and I had always an excuse. "My baby is sick, and so on" or my child said "Mummy, let's go there"…and I said "No, I don't feel like doing it" (Ronda's interview: Woman, 44 years old, married, unemployed).

Another behavior that participants discussed was the tendency to avoid talking about the problem and facing it. They recognized that speaking about their obesity problem was uncomfortable and tiring, so they tried to escape from conversations related to obesity.

According to SDT, these avoidant behaviors can be characterized as rigid behavior patterns that are adaptive to the extent that they protect individuals from the inner hurt resulting from the thwarted needs but may, over time, lead to further thwarting of need satisfaction (Deci & Ryan, 2000).

Another defensive adaptation promoted by the thwarting of psychological needs is the development of controlled regulatory styles. For example, an individual's eating behavior may become regulated via introjected motivation against the backdrop of having been controlled by the contingent regard and evaluations of significant others (Strauss & Ryan, 1987). Participants used "body control" as a substitute satisfaction to reduce deficits in perceived competence and autonomy, but rather than staying on the natural track toward healthy development, they became controlled:

> I have been on a diet for half my life. You get tired at the end… "what is this?"… you always eat the same and… there is a moment… "fuck, I feel like going out and having an ice-cream", "why can't I go out and have an ice-cream?" But I am always controlling the food issue (Alice's interview: Woman, 31 years old, married, hairdresser).

In this vein, research has shown that patients adhere less to medical regimens when their motivation is controlled (external or introjected) rather than autonomous (Williams, Grow, Freedman, Ryan, & Deci, 1996). Participants recognized suffering multiple failed dieting attempts, which is in accordance with previous studies (Bocchieri et al., 2002; Collins & Bentz, 2009; Saunders, Johnson, & Teschner, 1998):

> A paper… breakfast, lunch and dinner, the same, the same… next week the same… You realize you are making a big sacrifice and you don't lose weight… so you get anxiety, nerves on edge and you go back to the same… to eat because of the nerves you have (Emily's interview: Woman, 49 years old, married, unemployed).

According to Baumeister (1997), adults engage in a variety of self-defeating behaviors as a result of breakdowns in self-regulation, and, in terms of SDT, a breakdown in self-regulation is similar to controlled motivation and amotivation (Deci & Ryan, 2000). So participants who follow introjected regulations in their dieting behavior react with binge eating behavior (health care negligence) or learned helplessness (amotivation) when they fail dieting. Specifically, research has shown that food is often used as a coping mechanism by those with weight problems, particularly when they are sad, anxious, stressed, lonely, and frustrated (Bocchieri et al., 2002; Collins & Bentz, 2009; Phul & Heuer, 2010):

> I had a problem… so much anxiety… you cope with that anxiety, apart from crying… you cope with it by eating, and keeping your mind busy eating when you aren't

> crying… All the anxiety you have because of your problem (Emily's interview: Woman, 49 years old, married, unemployed).

Such behavior may result in temporary attenuation of their distressed mood, but the weight gain and the resulting guilt may reactivate the cycle and lead to further basic psychological need frustration. Research depicts a perpetual cycle of mood disturbance, overeating, and weight gain (Collins & Bentz, 2009). The link between need frustration and binge eating found in the present study is particularly important given the recent inclusion of binge eating disorder in the fifth edition of the diagnostic and statistical manual of mental disorders (DSM-5, American Psychiatric Association, 2013). Perhaps now that it is formally recognized as a disorder, social stigma will be reduced. However, it appears that experiencing weight stigma not only facilitates unhealthy eating behaviors like binge eating, but also promotes a refusal to diet and increases the likelihood of physical inactivity (Phul & Heuer, 2010) and exercise avoidance (Vartanian & Shaprow, 2008):

> My problem because of obesity: anxiety and depression. I was chubby, but I went from 80-81 kilograms to 125… They told me "walk", and I laid on the sofa; "don't eat that", and I ate double… I refused to follow orders… (Sofie's interview: Woman, 59 years old, married, unemployed).

From the point of view of SDT, this defiance and health care negligence could be considered to be a form of coping behavior that makes the problem worse and leads to the continued thwarting of basic psychological need satisfaction (Deci & Ryan, 2000). In sum, the results of this study were in line with the postulates of the SDT-based dual-process model of need satisfaction and need frustration (Bartholomew et al., 2011; Jang et al., 2016; Vansteenkiste & Ryan, 2013). The experiences of need frustration in morbidly obesity people were associated with extrinsic goals, controlled regulations and amotivation, ill-being (e.g., body image concerns, low self-esteem, anxiety, and depression), and compensatory behaviors

such as releasing self-control (e.g., binge eating), rigid behavioral patterns (e.g., avoiding social situations), and oppositional defiance (e.g., resistance to engage in health-conducive behaviors like dieting and physical activity).

Conclusions

The present study aimed to explore the experiences of individuals living with morbid obesity from a SDT perspective. It makes an important contribution to our understanding of the personal and social factors that thwart basic psychological need satisfaction in this population as well as the negative cognitive, affective, and behavioral consequences which result from experiences of need frustration and impact on daily living. In particular, the qualitative data showed the importance of taking personal factors into account in order to obtain a more comprehensive understanding of need frustration. Previous SDT-based research focused primarily on analyzing the effects of social-contextual factors on basic psychological need satisfaction and overlooked the importance of individual difference factors. Our findings illustrate how suffering from morbid obesity can lead to experiences of need frustration, not only because of the stigmatizing and controlling social context (Bartholomew et al., 2011; Vansteenkiste & Ryan, 2013), but also because of personal limitations associated with their morbid obesity state. Therefore, it would be interesting to add personal factors into the SDT dual-process model of need satisfaction and need frustration. Future quantitative studies based on SDT could include personal variables to test them and to improve our knowledge about these motivational processes.

In addition, the current findings should be used to foster eudaimonic well-being and lifestyle patterns through the development of strategies aimed at improving the quality of life of individuals living with morbid obesity. For example, obese people will be more likely to adhere to diets or physical activity programs when health care professionals and significant others adopt psychological strategies and behaviors which promote need satisfaction and

more autonomous behavior. Health care professionals should treat morbidly obese individuals with closeness and understanding and help them develop realistic short and long term goals. They should also focus on the importance of health as the primary motivator for behavior change (rather than messages which emphasize achieving an ideal weight) as these are more likely to promote more autonomous (e.g., identified) regulations for weight loss and physical activity. In this sense, motivational interviewing has been suggested as an effective strategy to change dietary habits and reduce BMI (Saffari, Pakpour, Mohammadi-Zeidi, Samadi, & Chen, 2014). In fact, motivational interviewing has already been applied from a SDT perspective (Teixeira, Silva, Mata, Palmeira, & Markland, 2012). When individuals fully endorse weight loss goals and, therefore, feel autonomous as well as competent, their efforts are more likely to result in long term behavior change (Teixeira et al., 2012). Thus it is vital that we understand and attend to both personal and situational factors which thwart basic psychological need satisfaction and undermine the internalization of health-related behaviors which are important for weight control.

Moreover, individuals suffering from morbid obesity should be supported in developing adaptive coping strategies to help them deal with the need thwarting personal limitations and social stigmatization associated with the condition (i.e., so that they do not internalize negative weight-related stereotypes). For example, using positive self-talk (to facilitate feelings of competence) and seeking social support (to promote feelings of acceptance and relatedness) have been found to relate to a healthier psychological adjustment (Puhl & Brownell, 2006). In this sense, self-help groups could be an important instrument for people suffering from morbid obesity as they would allow individuals to share common concerns and problems and receive support from others. Teaching acceptance and mindfulness may be related to basic psychological need fulfillment (Chang, Huang, & Lin, 2015). It should, therefore, help diminish the likelihood of psychological distress and facilitate weight loss

outcomes and, as such, improve quality of life (Lillis, Hayes, Bunting, & Masuda, 2009). In addition, a recent meta-analysis of mindfulness-based interventions for overweight and obese people showed an improvement in psychological health, eating attitudes, depression and anxiety (Rogers, Ferrari, Mosely, Lang, & Brennan, 2017). Although weight loss is important for physiological and psychological health, Robison and Carrier (2004) advocate a movement called "Health at Every Size" which campaigns against dieting in favor of body weight acceptance. This movement aims to support people to adopt practices that will improve their health and develop their resilience and coping ability against the trauma of living in a weight centered society (O'Hara & Taylor, 2014).

Finally, negative attitudes and behaviors towards obese individuals should be removed from society through promoting legislation to prohibit weight-based discrimination. The current study showed that the controlling and pressuring messages present in social obesity discourse thwart psychological needs and lead to amotivation or controlled regulations/orientations which are associated with negative cognitive-affective (e.g., anxiety) and behavioral (e.g., giving up diet and physical activity regimens and binge eating) outcomes. This situation affects more women than men, not only because they have higher physiological levels of adiposity, but also because there is a stronger social emphasis on them in relation to their appearance (Garret, 2004). This hegemonic obesity discourse must be challenged and anti-stigma messages must be spread throughout society if we are to help obese individuals and prevent further increases in the prevalence of obesity.

Whilst the present study provides important insight into the practical challenges and stigmatization/discrimination associated with living with morbid obesity, the findings are limited in that our participants discussed their past experiences (i.e., before they underwent bariatric surgery). This retrospective account could affect the accuracy of the information provided. However, participants were only one month post-surgery when they were recruited

for the study and, therefore, should not have had too much difficulty recalling their previous experiences of living with morbid obesity. On the other hand, the participants did choose to undergo bariatric surgery after having experienced previous failed obesity treatments and associated comorbidity. This may mean that our participants had developed particular relationships with their bodies and/or ways of living with the condition which differ from the experiences of people with morbid obesity who do not want to undergo bariatric surgery or even lose weight. Nevertheless, an in-depth understanding of this sub-sample and their experiences of psychological need frustration represents an interesting contribution to the literature and will help to inform strategies which provide support for the increasing number of individuals who are living with the condition. Nonetheless, future studies could analyze possible differences in experiences of need frustration between people with morbid obesity who want to undergo bariatric surgery and those who do not wish to receive the operation.

Some limitations concerning our qualitative research approach should also be recognized. A longitudinal process of data analysis during the observations of this study, in parallel to data collection, would have allowed observers to collect more detailed information related to the aim of the study and ensure data saturation. Moreover, future phenomenological approaches would be desirable to analyze the experience of living with morbid obesity in more depth and shed further light on this important research topic.

References

Alley, D. E., & Chang V. W. (2007). The changing relationship of obesity and disability, 1988–2004. *Journal of the American Medical Association, 298,* 2020-2027. doi:10.1001/jama.298.17.2020

American Psychiatric Association. (2013*). Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: APA.

Anderson, D. A., & Wadden, T. A. (2004). Bariatric surgery patients' views of their physicians' weight-related attitudes and practices. *Obesity Research, 12,* 1587-1595. doi:10.1038/oby.2004.198

Atlantis, E., & Baker, M. (2008). Obesity effects on depression: systematic review of epidemiological studies. *International Journal of Obesity, 32,* 881-891. doi:10.1038/ijo.2008.54

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., & Thøgersen-Ntoumani, C (2011). Psychological need thwarting in the sport context: Assessing the darker side of athletic experience. *Journal of Sport and Exercise Psychology, 33,* 75-102.

Baumeister, R. F. (1997). Esteem threat, self-regulatory breakdown, and emotional distress as factors in self-defeating behavior. *Review of General Psychology, 1,* 145-174. doi:10.1037/1089-2680.1.2.145

Bazeley, P., & Richards, L. (2000). *The Nvivo qualitative project book*. London: SAGE.

Biddle, S. J. H., Mutrie, N., Gorely, T., & Blamey, A. (2012). Interventions for physical activity and sedentary behavior. In G. L. Roberts & D. C. Treasure (Eds.), *Advances in motivation in sport and exercise* (3rd ed., pp. 357-386). Champaign, IL: Human Kinetics.

Bocchieri, L. E., Meana, M., & Fisher, B. L. (2002). Perceived psychosocial outcomes of gastric baipass surgery: A qualitative study. *Obesity Surgery, 12*, 781-788. doi:10.1381/096089202320995556

Booth, H. P., Charlton, J., & Gulliford, M. C. (2017). Socioeconomic inequality in morbid obesity with body mass index more than 40 kg/m2 in the United States and England. *SSM - Population Health, 3*, 172-178. doi:10.1016/j.ssmph.2016.12.012

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77-101. doi:10.1191/1478088706qp063oa

Carr, D., & Friedman, M. A. (2005). Is obesity stigmatizing? Body weight, perceived discrimination, and psychological well-being in the United States. *Journal of Health and Social Behavior, 46,* 244-259.

Carr, D., & Friedman, M. A. (2006). Body weight and the quality of interpersonal relationships. *Social Psychology Quarterly, 69,* 127-149. doi:10.1177/019027250606900202

Chang, J. H., Huang, C. L., & Lin, Y. C. (2015). Mindfulness, basic psychological needs fulfillment, and well-being. *Journal of Happiness Studies, 16,* 1149-1162. doi:10.1007/s10902-014-9551-2

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L, Deci, E. L., Van der Kapp-Deeder, J., … Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion, 39,* 216-236. doi:10.1007/s11031-014-9450-1

Cliff, K., & Wright, J. (2010). Confusing and contradictory: considering obesity discourse and eating disorders as they shape body pedagogies in HPE. *Sport, Education and Society, 15*, 221-233. doi:10.1080/13573321003683893

Collins, J. C., & Bentz, J. E. (2009). Behavioral and psychological factors in obesity. *The Journal of Lancaster General Hospital, 4,* 124-127.

Crandall, C. S., & Schiffhauer, K. L. (1998). Anti-fat prejudice: Beliefs, values, and American culture. *Obesity Research, 6,* 458-460. doi:10.1002/j.1550-8528.1998.tb00378.x

Davin, S. A., & Taylor, N. M. (2009). Comprehensive review of obesity and psychological considerations for treatment. *Psychology, Health & Medicine, 14,* 716-725. doi:10.1080/13548500903431501

Deci, E. L., & Ryan, R. M. (1980). The empirical exploration of intrinsic motivational processes. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 13., pp. 39-80). New York: Academic Press.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (Ed.), *Nebraska symposium on motivation: Vol. 38. Perspectives on motivation* (pp. 237-288). Lincoln, NE: University of Nebraska Press.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behaviour. *Psychological Inquiry, 11,* 227-268. doi:10.1207/S15327965PLI1104_01

Gard, M. (2011). Truth, belief and the cultural politics of obesity scholarship and public health policy. *Critical Public Health, 21,* 37-48. doi:10.1080/09581596.2010.529421

Gard, M., & Wright, J. (2001). Managing uncertainty: obesity discourses and physical education in a risk society. *Studies in Philosophy and Education, 20,* 535-549. doi:10.1023/A:1012238617836

Garret, R. (2004). Gendered bodies and physical identities. In J. Evans, B. Davies, & J. Wright (Eds.), *Body knowledge and control. Studies in the sociology of physical education and health* (pp. 140-156). London: Routledge.

Greenberg, B. S., Eastin, M., Hofschire, L., Lachlan, K., & Brownell, K. D. (2003). Portrayals of overweight and obese individuals on commercial television. *American Journal of Public Health, 93,* 1342–1348.

Greenberg, I., Perna, F., Kaplan, M., & Sullivan, M. A. (2005). Behavioral and psychological factors in the assessment of obesity surgery patients. *Obesity Research, 13,* 244-249. doi:10.1038/oby.2005.33

Grucza, R. A., Przybeck, T. R., & Cloninger, C. R. (2007). Prevalence and correlates of binge eating disorder in a community sample. *Comprehensive Psychiatry, 48,* 124-131. doi:10.1016/j.comppsych.2006.08.002

Himes, S. M., & Thompson, J. K. (2007). Fat stigmatization in television shows and movies: a content analysis. *Obesity, 15,* 712-718. doi:10.1038/oby.2007.635

Jang, H., Kim, E. J., Reeve, J. (2016). Why students become more engaged or more disengaged during the semester: A self-determination theory dual-process model. *Learning and Instruction, 43,* 27-38. doi:10.1016/j.learninstruc.2016.01.002

Jinks, C., Jordan, K., & Croft, P. (2006). Disabling knee pain-another consequence of obesity: results from a prospective cohort study. *BMC Public Health, 6,* 258. doi:10.1186/1471-2458-6-258

Kalarchian, M. A., Marcus, M. D., Levine, M. D., Courcoulas, A. P., Pilkonis, P. A., Ringham, R. M., … Rofey, D. L. (2007). Psychiatric disorders among bariatric

surgery candidates: Relationship to obesity and functional health status. *American Journal of Psychiatry, 164,* 328-334. doi:10.1176/ajp.2007.164.2.328

Kasser, T., & Ryan, R. M. (1993). A dark side of the American dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology, 65,* 410-422. doi:10.1037/0022-3514.65.2.410

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Society for Personality and Social Psychology, 22,* 280-287. doi:10.1177/0146167296223006

Lather, J. D., & Stunkardt, A. J. (2003). Getting worse: the stigmatization of obese children. *Obesity Research, 11,* 452-456. doi:10.1038/oby.2003.61

Lewis, S., Thomas, S. L., Blood, R. W., Castle, D. J., Hyde, J., & Komesaroff, P. A. (2011). How do obese individuals perceive and respond to the different types of obesity stigma that they encounter in their daily lives? A qualitative study. *Social Science & Medicine, 73,* 1349-1356. doi:10.1016/j.socscimed.2011.08.021

Lillis, J., Hayes, S. C., Bunting, K., & Masuda, A. (2009). Teaching acceptance and mindfulness to improve the lives of the obese: a preliminary test of a theoretical model. *Annals of Behavioral Medicine, 37,* 58-69. doi:10.1007/s12160-009-9083-x

Ling, C. G., Brotherton, S. S., & Smith, S. O. (2009). Review of the literature regarding gait and class III obesity. *Journal of Exercise Physiology Online, 12(5),* 51-61.

Luppino, F. S., de Wit, L. M., Bouvy, P. F., Stijnen, T., Cuijpers, P., Penninx, B. W. J. H., & Zitman, F. G. (2010). Overweight, obesity, and depression. A systematic review and meta-analysis of longitudinal studies. *Archives of General Psychiatry, 67,* 220-229. doi:10.1001/archgenpsychiatry.2010.2

Ma, J., & Xiao, L. (2010). Obesity and depression in US women: Results from the 2005-2006 national health and nutritional examination survey. *Obesity, 18,* 347-353. doi:10.1038/oby.2009.213

McCarthy, L. H., Bigal, M. E., Katz, M., Derby, C., & Lipton, R. B. (2009). Chronic pain and obesity in the elderly: Results from the Einstein aging study. *Journal of the American Geriatrics Society, 57,* 115-119. doi:10.1111/j.1532-5415.2008.02089.x

Mello, D. B., Verdini, M. L. P., Dantas, E. H. M., Giani, T. S., Ferreira, M. A., Emygdio, R. F., & Hortale, V. A. (2010). Impact of obesity on quality of life in the elderly. *Medicina Sportiva, 14*(2), 63-66.

Ng, J. Y. Y., Ntoumanis, N., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Duda, J. L., & Williams, G. C. (2012). Self-determination theory applied to health contexts: A meta-analysis. *Perspectives on Psychological Science, 7,* 325-340. doi:10.1177/1745691612447309

O'Hara, L., & Taylor, J. (2014). Health at Every Size: a weight-neutral approach for empowerment, resilience and peace. *International Journal of Social Work and Human Services Practice*, *2*(6), 272-282. doi:10.13189/ijrh.2014.020611

Osei-Assibey, G., Kyrou, I., Kumar, S., Saravanan, P., & Matyka, K. A. (2010). Self-reported psychosocial health in obese patients before and after weight loss. *Journal of Obesity, 2010,* 1-6. doi:10.1155/2010/372463

Piper, A. J., & Grunstein, R. R. (2010). Big breathing: the complex interaction of obesity, hypoventilation, weight loss, and respiratory function. *Journal of Applied Physiology, 108,* 199-205. doi:10.1152/japplphysiol.00713.2009

Prentice, A., & Jebb, S. (2004). Energy intake/physical activity interactions in the homeostasis of body weight regulation. *Nutrition Reviews, 62,* S98-S104.

Puhl, R. M., & Brownell, K. D. (2001). Bias, discrimination and obesity. *Obesity Research, 9,* 788-805. doi:10.1038/oby.2001.108

Puhl, R. M., & Brownell, K. D. (2006). Confronting and coping with weight stigma: an investigation of overweight and obese adults. *Obesity, 14,* 1802-1815. doi:10.1038/oby.2006.208

Puhl, R. M., & Heuer, C. A. (2010). Obesity stigma: Important considerations for public health. *American Journal of Public Health, 100,* 1019-1028. doi:10.2105/AJPH.2009.159491

Raggi, A., Sirtori, A., Brunani, A., Liuizzi, A., & Leonardi, M. (2009). Use of the ICF to describe functioning and disability in obese patients. *Disability and Rehabilitation, 31,* S153-S158. doi:10.3109/09638280903317724

Robison, J., & Carrier, K. (2004). *The spirit and science of holistic health: More than broccoli, jogging, and bottled water...More than yoga, herbs and meditation*. Indiana: Authorhouse.

Rogers, J. M., Ferrari, M., Mosely, K., Lang, C. P., & Brennan, L. (2017). Mindfulness-based interventions for adults who are overweight or obese: a meta-analysis of physical and psychological health outcomes. *Obesity Reviews, 18,* 51-67. doi:10.1111/obr.12461

Ryan, R. M., Deci, E. L., & Grolnick, W. S. (1995). Autonomy, relatedness, and the self: Their relation to development and psychopathology. *Developmental Psychopathology, 1,* 618-655.

Ryan, R. M., Huta, V., & Deci, E. L. (2008). Living well: A self-determination theory perspective on eudaimonia. *Journal of Happiness Studies, 9,* 139-170. doi:10.1007/s10902-006-9023-4

Saffari, M., Pakpour, A. H., Mohammadi-Zeidi, I., Samadi, M., & Chen, H. (2014). Long-term effect of motivational interviewing on dietary intake and weight loss in Iranian obese/overweight women. *Health Promotion Perspectives, 4,* 206-213. doi:10.5681/hpp.2014.027

Saunders, R., Johnson, L., & Teschner, J. (1998). Prevalence of eating disorders among bariatric surgery patients. *Eating Disorders, 6,* 309-317. doi:10.1080/10640269808249267

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22,* 63-75.

Sirtori, A., Brunani, A., Villa, V., Berselli, M.E., Croci, M., Leonardi, M., & Raggi, A. (2012). Obesity is a marker of reduction in QoL and disability. *The Scientific World Journal, 2012,* 1-6. doi:10.1100/2012/167520

Smith, B., & McGannon, K. R. (2017). Developing rigor in qualitative research: Problems and opportunities within sport and exercise psychology. *International Review of Sport and Exercise Psychology*. Advance online publication. doi:10.1080/1750984X.2017.1317357

Sparkes, A. C., & Smith, B. (2014). *Qualitative research methods in sport, exercise and health. From process to product*. London: Routledge.

Strauss, J, & Ryan, R. M. (1987). Autonomy disturbances in subtypes of anorexia nervosa. *Journal of Abnormal Psychology, 96,* 254-258. doi:10.1037/0021-843X.96.3.254

Stunkard, A. J., & Wadden, T. A. (1992). Psychological aspects of severe obesity. *American Journal of Clinical Nutrition, 55,* 524S-532S.

Teixeira, P. J., Carraça, E. V., Marques, M. M., Rutter, H., Oppert, J-M., De Bourdeaudhuij, I., … Brug, J. (2015). Successful behaviour change in obesity

interventions in adults: a systematic review of self-regulation mediators. *BMC Medicine, 13,* 84. doi:10.1186/s12916-015-0323-6

Teixeira, P. J., Silva, M. N., Mata, J., Palmeira, A. L., & Markland, D. (2012). Motivation, self-determination, and long-term weight control. *International Journal of Behavioral Nutrition and Physical Activity, 9,* 22. doi:10.1186/1479-5868-9-22

Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 271-360). New York: Academic Press.

van Hout, G. C. M., van Oudheusden, I., Krasuska, A. T., & van Heck G. L. (2006). Psychological profile of candidates for vertical banded gastroplasty. *Obesity Surgery, 16,* 67-74. doi:10.1381/096089206775222023

Vansteenkiste. M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration, 23,* 263-280. doi:10.1037/a0032359

Vartanian, L. R., & Shaprow, .J. G. (2008). Effects of weight stigma on exercise motivation and behavior: a preliminary investigation among college-aged females. *Journal of Health Psychology, 13,* 131-138. doi:10.1177/1359105307084318

Wiczinski, E., Döring, A., John, J., & von Lengerke, T. (2009). Obesity and health-related quality of life: Does social support moderate existing associations? *British Journal of Health Psychology, 14,* 717-734. doi:10.1348/13S910708X401867

Williams, G. C., Grow, V. M., Freedman, Z., Ryan, R. M., & Deci, E. L. (1996). Motivational predictor of weight loss and weight-loss maintenance. *Journal of Personality and Social Psychology, 70,* 115-126.

World Health Organization. (2017). Obesity and overweight (Fact sheet No. 311). Retrieved from http://www.who.int/mediacentre/factsheets/fs311/en/

Table 1

Examples of Targeted (concerning SDT) and Open Questions in the Interview

Targeted questions
- Have you felt any improvement in your health or physical fitness with the physical activity program? Do you feel more competent to get on your daily life than before? (Competence)
- Did obesity suppose for you a limitation in daily life tasks? Can you now do more daily life tasks by yourself? (Competence / Autonomy)
- Did you feel limitations in your social life before surgery? Do you feel more valued than before? (Relatedness)
- Do you think society, doctors, politicians… do as much as possible to help obese people? (Relatedness)
Open questions
- What has obesity meant in your life? At the labor, social, emotional, sexual level…
- How was living with morbid obesity?
- What negative experiences did you live associated with being obese? If you lived any bad experience…
- What would you advise to other people in your situation?

Table 2

Structure of Themes and Sub-themes Arising from Thematic Analysis

Themes	Sub-themes
Personal factors and basic psychological need thwarting (frustration of competence, autonomy and relatedness)	Reduced mobility and health problems Struggle to control weight
Social factors and basic psychological need thwarting (frustration of relatedness, competence and autonomy)	Social tendency to blame obese individual A society focused on body shape Experiences of rejection and stigmatization - Jokes and taunts - Professional and occupational difficulties - Struggle to find clothes - Non-valued physical activity exercisers - Perceived prejudices from medical and health professionals - Physical barriers and obstacles in public accommodations and transports
Amotivation	
Consequences	Cognitive-affective consequences Behavioral consequences