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Effects of Group Play in Sand on Obese Women's Self-Perceptions

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Abstract

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Psychology

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Abstract

Obesity poses an escalating threat to public health in many countries. A better understanding of the psychological construct of obesity and alternative approaches for treating it are needed. The purpose of this study was to examine secondary data to measure the effects of a program using group play in sand on self-perceptions of obese Danish women. The framework was based on elements from the Bandura's social learning theory and conception of self-efficacy integrated with the concept of body image perception. Participants ($N = 34$) were obese women in Copenhagen, Denmark, who used group play in sand as their therapy program. They were recruited mainly through Facebook ads, newsletters, and flyers and posters by a center that facilitates different programs for stress relief and personal development. The participants answered questionnaire items about perceived stress, self-efficacy, and body image, with the latter items from Stunkard, Sørensen, and Schulsinger's rating scale. A one-way repeated measures ANOVA revealed changes in mean scores over 3 points in times. The results of the study show significant findings for the 3 variables with a significant decrease in stress level, a significant increase in self-efficacy, and a significant change in perception of body image resulting from the use of group play in sand. The results may contribute to positive social change by providing clinicians with an alternative tool of group play in sand, which might support success in weight loss and maintenance programs for obese women.

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Dedication

This dissertation is dedicated to my family, my mom, and my friends. Without your understanding, patience, and unconditional love, this project would not have been possible.

Acknowledgments

I am grateful for the huge help and support from my chair, Dr. Patti L. Barrows, who never gave up on me and continued supporting me even when the project sometimes was off track and facing a lot of obstacles. I am also enormously grateful for the help and valuable support from Dr. Peggy E. Gallaher, who helped me stay on track with my methodology even if I sometimes got very confused. Also thank you to the Writing Center and Library staff at Walden University who always were helpful in answering my questions or finding an article.

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Chapter 1: Introduction to the Study

Introduction

Worldwide obesity has more than doubled since 1980, and currently more than 30% of all people around the globe are overweight or obese (World Health Organization [WHO)], 2016). In Denmark, however, this trend of rising obesity has been observed only in adult women; between 2011 and 2013, the percentage of women who were overweight increased by 5%, and those who were obese increased by 2% (Matthiessen & Stockmarr, 2015). In contrast, rates of overweight and obesity did not change among Danish men or children in the same period. One reason for the increasing obesity among Danish women is a concomitant decrease in physical activity as a result of fewer jobs and lifestyles requiring physical activity (≥ 10,000 steps per day) and more jobs and lifestyles that require less physical activity (< 7,500 steps per day; Matthiessen, 2016). According to Matthiessen (2016), Danish women were less physically active from 2007 to 2012, taking 1,100 fewer steps (cycling included) per day in 2011-2012 than they did in 2007-2008. The number of steps did not change among Danish men. However, the differences in kinds of jobs does not completely explain the increase in weight, as obesity is a complex issue with no simple solutions and cannot be explained only by changes in physical activity and diet (Matthiessen & Stockmarr, 2015). Emotional and other factors may account for the increases in overweight and obesity rates among Danish women during this period

Clinicians have explored the use of various techniques to strengthen psychological factors that might account for overweight and obesity in individuals. One technique is sandplay a tool in which clients place miniature figurines in a sand tray and use them to express conscious and unconscious thoughts, feelings, and emotions with the result that the process might help them change their self-perceptions. To better understand the psychological construct and factors of obesity, I examined how the use of group play in sand as a treatment program affected perceived stress, self-efficacy of losing weight, and body image for obese women with a body mass index (BMI) greater than 25.0, a number determined by WHO (2016) and the United States' National Heart, Lung, and Blood Institute (NHLBI, 2013) as indicating obesity. The goal is to determine whether the technique of group play in sand might help strengthen psychological factors that might be weight influencers through fostering stress release, increased self-efficacy, and reduced concerns about body image. According to Matthiessen and Stockmarr (2015), these factors create a strong foundation for supporting healthy behaviors and may set the foundation for possible success in weight loss and maintenance programs for obese women. I begin Chapter 1 by providing background information on the psychological construct of obesity, focusing on the factors of perceived stress, self-efficacy, and perception of body image. The chapter also includes the problem statement; purpose of the study; research questions (RQs) and hypotheses; overviews of the theoretical framework and nature of the study; and discussion of the assumptions, scope and delimitations, limitations, and significance of the study.

Background

The McKinsey Global Institute (2014) found that more than 30% of people around the globe were overweight or obese, with the current prognosis suggesting that this may increase to 41% by 2030. Forty-eight percent of Danes were preobese ($25.0 < BMI < 29.9$), and 15% were in obesity Class 1 ($30.0 < BMI < 34.9$) in 2011-2013 (Matthiessen & Stockmarr, 2015). The number of preobese women has increased from 39% to 44%, and the number of women in obesity Class 1 has increased from 13% to 15% (Matthiessen & Stockmarr, 2015). This trend in general as well as specific to Danish women suggests that women are generally becoming increasingly overweight and obese. Torres and Nowson (2007) reported that stress-related eating was significantly associated with obesity in women; however, they could not find any correlation among the factors of stress, food intake, eating behavior, and obesity. Zhao et al. (2009) examined the associations among depression, anxiety, and BMI and found that depression and anxiety were significantly higher in underweight, overweight, or obese men and women than for people with a normal BMI.

Regarding techniques to address underlying issues accounting for overweight and obesity, Lee and Jang (2012) found that sandplay reduced depression, anxiety, and the secretion of cortisol--an indicator of stress associated with increased central body fat and extra weight--for college students with ADHD. Kim and Jang (2012) reported that sandplay was also effective in balancing the brainwaves of parents under stress. In a 10-week study, Sung-Hun and Min-Kyeong (2013) used sandplay therapy for university

students with ADHD tendencies and found a significant decrease in anxiety, interpersonal stress, and salivary cortisol as a result of the therapy.

In another study, researchers found that sandplay increased self-esteem (Shen & Armstrong, 2008; Sung-Hun & Min-Kyeong, 2013), a quality that has been closely related to self-efficacy (Judge, Erez, Bono, & Thoresen, 2002). If group play in sand influences stress level, including anxiety and depression usually found in obese women, it might increase self-efficacy and thus individuals' ability to manage their own weight (Clark, Cargill, Medeiros, & Pera, 1996). Using group play in sand presents the possibility of not only changing one's perception of self (Ammann, 1998; Bratton & Ferebee, 1999) but also releasing stress, both of which might support a positive change in body image perception.

Researchers have not yet examined the use of sandplay to alter a person's perception of body image. Thus far, researchers have focused only on sandplay's potential to reduce stress and self-esteem (Kim & Jang, 2012; Lee & Jang, 2012; Shen & Armstrong, 2008; Sung-Hun & Min-Kyeong, 2013). I found no research on the use of *group* play in sand; the lack of research is likely because sandplay is based on the theories of Jung (1964) and Kalff (2004), both of whom focused on individual sessions. The gap in the literature suggests the potential contribution of this study to both perceptions of body image and the use of a group setting related to sandplay. Because of the role of stress and the negative self-enforcing pattern obese women might become caught in, stress reduction and increased self-efficacy may be important additions to any

weight loss and maintenance program. This study might also help to provide evidence of the effectiveness of group play in sand as a tool in future weight loss and weight maintenance programs.

Problem Statement

The understanding of factors contributing to weight gain and obesity continues to evolve. Early nutrition scientists focused on diet, exercise, and nutrition to find causes of weight gain, while more recent researchers have focused on sleep patterns and stress (Knutson & van Cauter, 2008; Rosengren & Lissner, 2008; Matthiessen & Stockmarr, 2015) as factors that influence weight. Matthiessen and Stockmarr (2015) reported that stress is an overlooked factor related to weight gain because chronic stress alters the brain/reward system (Yau & Potenza, 2013), promoting an elevated desire for high-energy food, which overall may contribute to abdominal fat. The desire for high-energy food might also lead to unhealthy behaviors and an unhealthy lifestyle. Because of this, Lazzeretti, Rotella, Pala, and Rotella (2015) focused on the need to study unhealthy lifestyles and looked at the adoption of healthy behaviors as a factor that might improve treatment for obese people.

Psychological factors such as self-esteem, self-efficacy, and concerns about body image may also be factors that influence weight and thus have garnered the interest of researchers. To obtain a better understanding of the psychological construct of suggested obesity, I used information from Mond et al. (2007), Schwartz and Brownell (2004), and Traverso, Ravera, Lagattolla, Testa, and Adami (2000), who suggested focusing on body

image interventions and body acceptance as key points in weight loss and obesity treatments. In this study, I investigated group play in sand as a possible tool for closing the psychological gap in obesity treatments.

Purpose of the Study

The purpose of this study was to examine the effects of group play in sand on the self-perceptions of obese Danish women. I analyzed secondary data from a program that incorporates the recommendations of Mond et al. (2007), Schwartz and Brownell (2004), and Traverso et al. (2000) of focusing on body image by using the tool of group play in sand. This way of using sandplay has not been documented in the literature. I explored the effects of using sand in a group setting among obese Danish women. Specifically, I compared the quantitative effects of group sand play on perceived stress, self-efficacy, and perception of body image by a wait list (baseline) and pre- and posttreatment.

The program I studied works in the following way: When women contact the center for treatment, they are screened by program staff, and if they pass the screening, their names are added to those who are waiting for the next program. Five weeks before start, a screening employee at the center will assign the participants to different cohorts of five to seven people. The participants are then told their cohort number and are asked to complete measurement T1 (baseline assessment). When the program starts 5 weeks later, the women are asked to take measurement T2 (the pretreatment). After the 5-week treatment period of group play in sand, the women are asked to complete the posttreatment (T3). At baseline, pretreatment, and posttreatment, the women are assessed

for stress level, self-efficacy, and perception of body image. The time between baseline and pretreatment is the 5-week waiting period. The period between pretreatment and posttreatment is the 5 weeks of treatment (see Figure 1 for an overview of the study design).

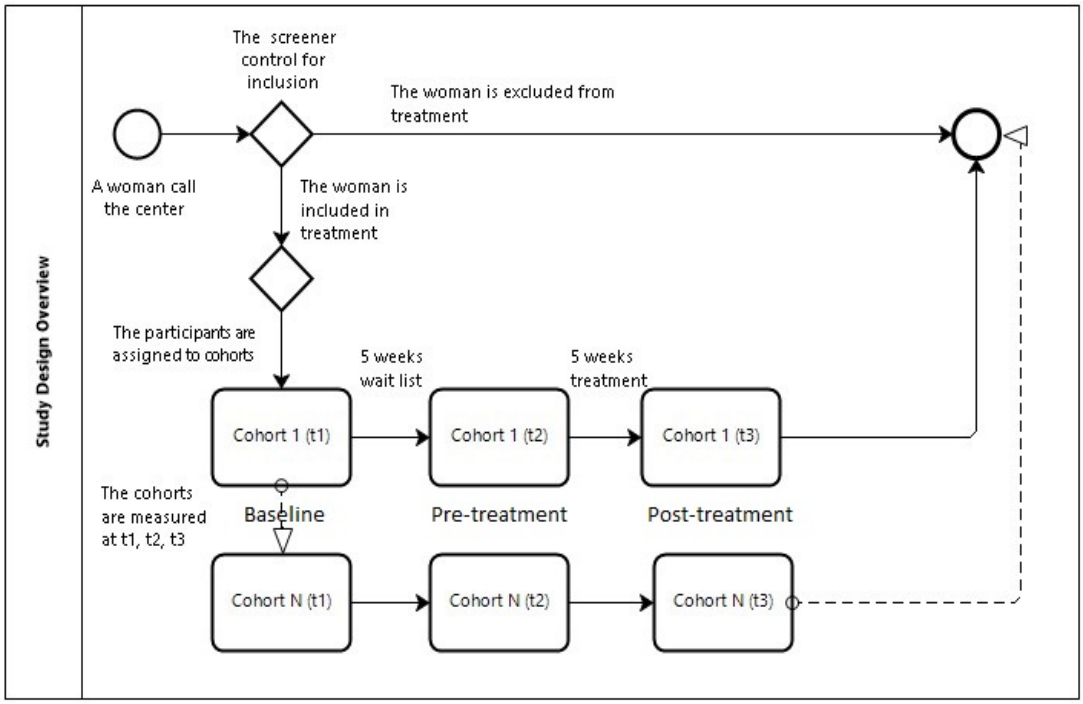


Figure 1. Study design overview.

At the end of the program, participants have an optional follow-up day of looking at the pictures of their sand trays to get a better understanding of their own process through the program. The follow-up day was not included as data in this study.

Research Questions and Hypotheses

RQ1: Does group play in sand have an effect on perceived stress among obese women?

$H_0$1 - Null: Group play in sand has no effect on perceived stress among obese women in the two cohorts (waiting period and treatment period) as measured by the Perceived Stress Scale (PSS).

H_a1 - Alternative: Group play in sand has an effect on perceived stress among obese women in the two cohorts (waiting period and treatment period) as measured by the Perceived Stress Scale (PSS).

RQ2: Does group play in sand have an effect on self-efficacy among obese women?

$H_0$2 - Null: Group play in sand has no effect on self-efficacy among obese women in the two cohorts (waiting period and treatment period) as measured by the Weight Efficacy Lifestyle Questionnaire (WEL).

H_a2 - Alternative: Group play in sand has an effect on self-efficacy among obese women in the two cohorts (waiting period and treatment period) as measured by the Weight Efficacy Lifestyle Questionnaire (WEL).

RQ3: Does group play in sand have an effect on perception of body image among obese women?

$H_0$3 - Null: Group play in sand has no effect on perception of body image among obese women in the two cohorts (waiting period and treatment period) as measured by the Stunkard Figure-Rating Scale.

H_a3 - Alternative: Group play in sand has an effect on perception of body image among obese women in the two cohorts (waiting period and treatment period) as measured by the Stunkard Figure-Rating Scale.

Theoretical Framework

The theoretical framework was used as a conceptual framework to illustrate the variables of stress (Figure 2, 6), self-efficacy (Figure 2, 4), and body image perception (Figure 2, 7) as dependent variables of the independent treatment group play in sand (sandplay; Figure 2, 3). Kalff's (2004) theory of sandplay (Figures 2, 3) together with Jung's (1964) theory about the ego and the self (Figure 2, 2) were coined as a frame for understanding and exploring the treatment of group play in sand. Group play in sand was also used as a label to distinguish it from traditional sandplay, which is not done in groups. The choice of using groups is based on Bandura's (1977) social learning theory where learning from modeling others, is combined with his self-efficacy theory (Figures 2, 4, and 5) that is closely related to the variable *self-efficacy*.

Because Kalff (2004) adapted sandplay from Jung's (1964) theory, I used it as the bridge between the understanding of the self and self-discrepancy (Higgins, 1987) between the selves. The self-discrepancy theory of Higgins (Figure 2, 1) was used to acknowledge the inner mental plane and unconscious mind of the women in the research. Self-discrepancy theory posits that individuals have three different selves: the actual, the ideal, and the ought (Higgins, 1987). Further, self-discrepancy theory highlights the distinction of, and a discrepancy between, an actual self and an individual's ideal self as a

discrepancy that can result in low self-esteem (Higgins, 1987). By using self-discrepancy theory, I sought to better understand the different selves an obese woman might perceive herself to be. More precisely, the aim was to see how perceptions of self might change with the process of using group play in sand as a tool for obese women struggling with stress, self-efficacy, and/or body image perception. The changes in self-perception were measured by Stunkard's body image perception (Figure 2, 7) scale.

Sandplay (Figure 2, 3) is a method and technique based on Jungian psychoanalysis (Grønkjær, 2010; Haaning, 2016; Jung, 1964; Kalff, 2004; Stein, 2010; Turner, 2017; Zhou, 2009). The use of sand as a therapeutic tool was developed by Lowenfeld (1939), a British pediatrician who was the first to describe the use of sand in a therapeutic setting with the term *world technique*. Kalff, a Jungian psychoanalyst, later refined the technique, combining Jung's theory of individuation, Neumann's (1954) stage theory of development, and elements from Buddhism, and created what is known today as sandplay. In sandplay, it is possible for a trained sandplay therapist over time to see the development of the ego and self (Jung, 1964) by analyzing the sandplay worlds the individual has created in the sand.

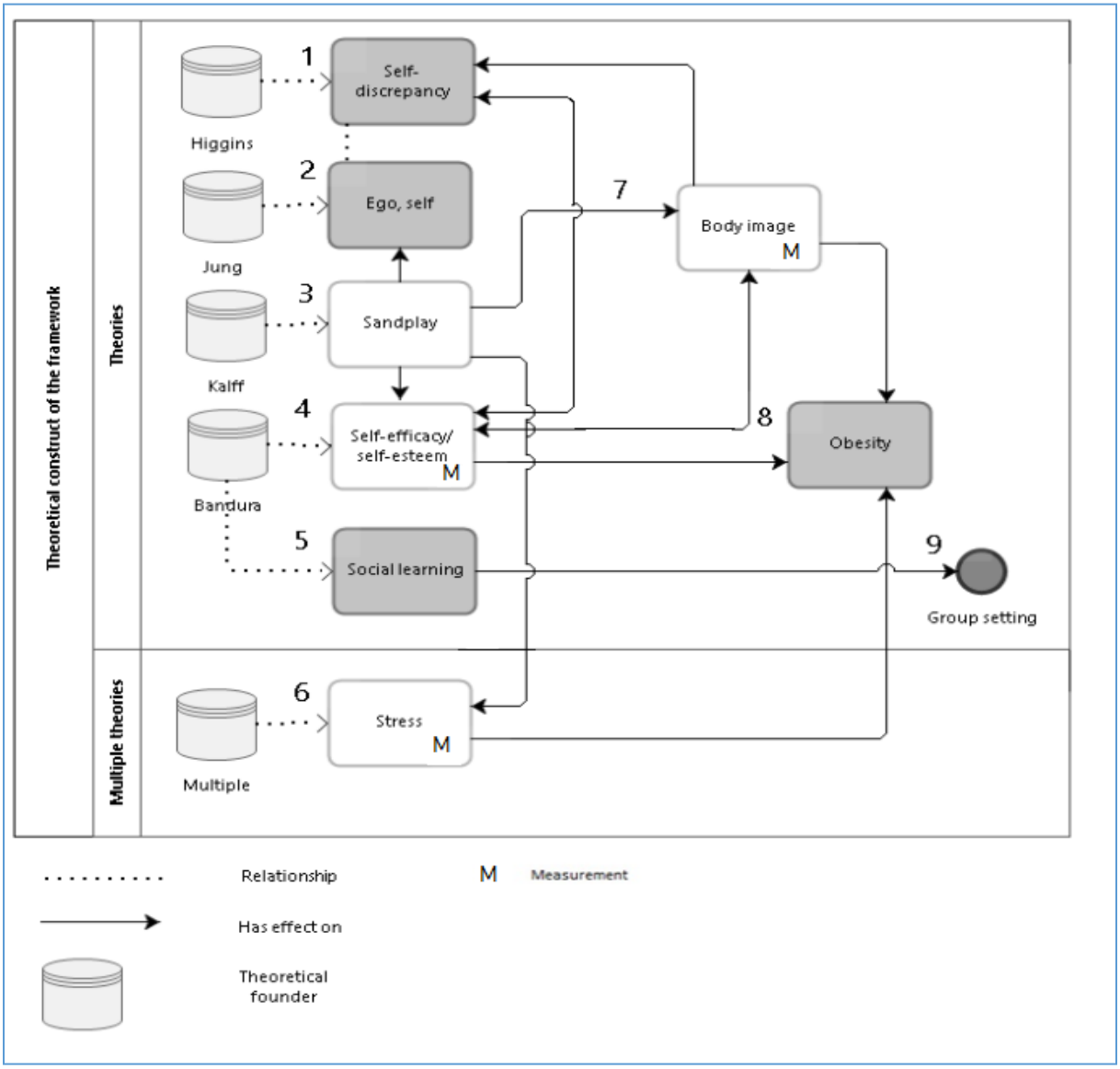


Figure 2. Theories used as conceptual framework.

Self-discrepancy theory (Higgins (Figure 2, 1), 1987), combined with the knowledge of sandplay (Jung, 1964; Kalff, 2004) and the measurement scales (Figure 2, M) of perceived stress, self-efficacy and perception of body image created a conceptual framework for understanding the data from the studied program and function as a way of

understanding the complexities of weight for obese women. Bandura's (1977) social learning theory (Figure 2, 5) states that learning is a cognitive process that takes place in a social context. This means that new behaviors can be acquired by observing and imitating others. Bandura's social learning theory is closely related to self-esteem and self-efficacy, including the concept that one can learn better in groups. The theory is also an argument for using a group setting (Figure 2, 9) in the design of the studied program.

Additionally, sandplay is linked to self-esteem, which is closely related to self-efficacy, because the ego is often strengthened, and self-esteem (Sung-Hun & Min-Kyeong, 2013) is often increased while working in the sand. Self-esteem (Figure 2, 4) is strongly related to perception of body image (Figure 2, 7; Ikeda & Naworski, 1992; McCabe & Ricciardelli, 2003; Steese et al., 2006), and a sense of dissatisfaction and lack of fulfillment (Higgins, 1987). Stress (Figure 2, 6) is related to overweight and obesity (Daubenmier et al., 2011; Oliver, Wardle, & Gibson, 2000; Yau & Potenza, 2013) and to the effects of sandplay (Sung-Hun & Min-Kyeong, 2013).

The conceptual framework was used as a reference point in the studied program for understanding the process. In this study, not all paths in Figure 2 of the conceptual framework were tested or measured--only the measurement marks (M) and the arrow 7 illustrating the major gap in the literature. Figure 2 expresses the relationship between the theories and why they are included in the conceptual framework for the studied program. The paths that were tested were the effects of the program group play in sand on stress,

self-efficacy, and body image. Indirect paths do have an effect, but for this study, they were not measured.

Conceptual framework relates to the study approach by matching the research questions of the effect of group play in sand (treatment) on obese women and how it affects perceived stress, self-efficacy, and perception of body image compared to the same cohort of obese women when they were in the waiting period.

Nature of the Study

The study was based on secondary data from a program using group play in sand as a treatment variable for exploring the unconscious mind. The program was designed for obese Danish women and had a waiting period. The same women were first on a 5-week waitlist followed by a 5-week treatment with the program group play in sand. Dependent variables were perceived stress, self-efficacy to lose weight, and perception of body image. Participants were obese Danish women with a BMI > 25.0.

Data were collected 5 weeks before start (T1; baseline), just before program start (T2; pretreatment), and directly after the program ended (T3; posttreatment, see Figure 1) and included the following measurements: Cohen's Perceived Stress Scale (PSS), the Weight Efficacy Lifestyle Questionnaire (WEL), and Stunkard's Figure Rating Scale (SFR). The center for the program and Walden University signed an agreement about use of secondary data (see Appendix A).

The data were analyzed by using a one-way repeated measures ANOVA within subjects to investigate changes in mean scores over three time points (T1; baseline, T2;

pretreatment, T3; posttreatment). Each dependent variable (perceived stress, self-efficacy, body image perception) was measured for the three time points. Based on a study by Borma, Fransen, and Lemmens (2007), the power analysis had a medium effect size of 0.25 (f=0.25), an alpha of 0.05, and a correlation between repeated measures of 0.5. The required sample size for power of 0.80 was 28.

Definitions

Body image: In this study, a measure that was assessed by using Stunkard's nine-figure scale (Stunkard et al., 1983) to determine self-perception of body image (physical appearance) by looking at perceptions of actual self, ideal self, and ought self, ranging from *extreme thinness* (1) to *extreme obesity* (9). The greater the discrepancy between the selves, the greater the emotional discomfort of the individual.

Free and protected space: A space for the client that is provided by the sandplay therapist and where changes can emerge (Kalff, 2004).

Obesity: Excessive body fat or an abnormally high accumulation of fat that potentially impairs health (WHO, 2016). Both WHO (2016) and NHLBI (2013) classify preobesity as BMI between 25.0 and 29.9 and obesity Class 1 as BMI between 30.0 and 34.9. WHO defines BMI as a person's weight in kilograms divided by the square of height in meters (kg/m2). Obesity is an important risk factor for potential health issues.

Sandplay: A nonverbal process developed by the Swiss Jungian psychotherapist Dora Kalff (2004) that is a deeper psychological method based on Jung's analytical psychology (Kalff, 2004; Turner, 2017; Zhou, 2009) where the sandplay client creates a

sand world corresponding to different dimensions of the client's personal and social life and reality (Dale & Luddon, 2000).

Sandtray: An activity that is like sandplay, which is based on Jung and Kalff (2004), except it includes group sand tray and multiple theoretical perspectives. Sandtray also focuses on active facilitation of the process in contrast to sandplay, where the belief is that the psyche heals itself if given enough time (Grønkjær, 2010; Jung, 1964).

Sandworld: A technique that, like sandplay (Kalff, 2004), is based on three pillars: the analytical part of the symbols, as in sandplay; the group, as it focuses on group processes; and relationships among the participants (Pattis Zoja, 2011). The process also includes the expressions in the sand (Pattis Zoja, 2011). Clinicians have mainly used the technique with vulnerable populations such as children who have survived disasters (Pattis Zoja, 2011).

Self-efficacy: Individuals' perception of their ability to perform a task within a specific context (Bandura, 1977). Self-efficacy deals with the ability or confidence to act upon and execute a specific task within a given context (Bandura, 1977; Stajkovic &

Luthans, 2002). This means that self-efficacy is like self-esteem but is specific to a task or performance.

Stress: The imbalance between internal mental thoughts and personal requirements and external pressures, such as job, family, and society (Eriksen & Ursin, 2013). Stress refers to physiological, behavioral, and cognitive responses to threatening events that exceed one's coping options (Lazarus, 1999). According to Carlson (2010), a person feels stress if the situation affects him or her, even when he or she verbalizes it as something different like anxiety. Stress is a dynamic condition in which an individual is confronted with his or her desire for a given important situation or goal, while perceiving information that makes him or her uncertain about the desired goal (Robbins, Judge, & Sanghai, 2007).

Assumptions

Assumptions were made based on the theoretical foundation and conceptual framework used for this study:

- Discrepancy (Figure 2, 1; Higgins, 1987) between different kinds of selves is related to low self-esteem.
- Self-esteem (Figure 2, 4; Bandura, 1977) is related to perception of body image (Figure 2, 7; Ikeda & Naworski, 1992; McCabe & Ricciardelli, 2003; Steese et al., 2006).
- Stress (Figure 2, 6) is related to overweight (Figure 2, 8; Daubenmier et al., 2011; Oliver et al., 2000; Yau & Potenza, 2013).

- Sandplay (Figure 2, 3) affects stress (Sung-Hun & Min-Kyeong, 2013), self-efficacy, and body image perception. This assumption led to another assumption that lowering stress level, increasing self-efficacy, and fostering a positive body image perception will help to reduce obesity or at least keep it at status quo.

The free and protected space is a cornerstone in sandplay and is an assumption made by Kalff (2004) and based on Jung's (1964) psychology that assumes the psyche is capable of healing itself. For a sandplay therapist, the assumption is that the sandplay process does the work of healing the psyche without the therapist's intervention as opposed to sandtray and sandworld therapy. The therapist is there to hold the psychological space and carry the unconscious psychic structure until the client becomes either consciously aware of the patterns and can thereby change his or her patterns or can unconsciously begin to change his or her habits.

This assumption is necessary in the context of using group play in sand as treatment, because analysis of the treatment used in this study was based on the theoretical foundations of Jung (1964) and Kalff (2004). Even though I used group play in sand (in contrast to sandplay's individual focus), the assumption from sandplay about the free and protected space was in effect. The facilitator of the studied group play in sand program ensured that the setup about free and protected space was used in the cohort context by providing space around the individual sand trays that were used so the individuals had a sense of their own free space.

Scope and Delimitations

The scope of this study was a population of obese (BMI > 25.0; WHO, 2016; NHLBI, 2013) Danish women who were able to participate in a five-week program with treatment once a week for 5 following weeks and who did not actively engage in any stress management programs (see Appendix B). The theories used were Jungian psychoanalysis and Higgins' (1987) self-discrepancy theory to reflect the unfolding of the self. According to Higgins (1987), any discomfort or discrepancy between the actual, ideal, and ought selves might motivate a call for action and change. I focused on the psychological factors of perception of stress, self-efficacy, and body image perception because of the seriousness of the escalation of overweight and obesity (WHO, 1998).

Limitations

I used secondary data from a cohort setting collected from a program of obese women exploring the unconscious mind. There is no knowledge of whether the results would be different if used in individual sessions or in what way a difference might exist. I am employed at a center where the program is run; however, to minimize bias, the questionnaires were collected anonymous online. I was not involved directly in the data collection but received a limited data set as an Excel spreadsheet with data after collection and after the signing of an agreement to use the data between the center and Walden University (see Appendix A). To eliminate bias, the data were coded and complied with the GDPR (General Data Protection Regulation) law in Europe, which

also complied with normal standards of scientific data collection in Denmark and at the center.

Significance

In 2010, 15.3% of Danish women declared they were stressed or often stressed compared to 9.8% of Danish men (Christensen, Ekholm, Davisen, & Juel, 2012). If that stress is related to eating, it might also be associated with obesity (Torres & Nowsin, 2007) and could play an important direct or indirect role in weight management. Considering the increasing number of obese people in the world (EpiCast report, 2013; McKinsey Global Institute, 2014; Matthiessen & Stockmarr, 2015; WHO, 2016), there is a need for new ways to help people control their weight. This study may be a step toward determining whether using group play in sand might support stress reduction, increase self-efficacy to lose weight, and change perceptions of distorted body image for obese women. If the study shows a significant difference in stress, self-efficacy, and/or perception of body image, the use of group play in sand might be added to future counselling within the areas of stress, self-efficacy, body image, and weight-related issues, setting the foundation for a broader social change. This change could benefit not only obese women but obese men and children struggling with the same issues.

Summary

Obese women may experience increased stress, low self-efficacy about their ability to lose weight, and a disturbed or distorted body image perception. In this research

study, I examined whether the use of group play in sand for obese Danish women had an effect on their perceived stress, self-efficacy, and body image perception.

Chapter 2 is the literature search strategy on the variables (stress, self-efficacy, body image) and on the treatment group play in sand. The chapter also addressed the framework of self-discrepancy theory as part of unfolding the theoretical foundation. This may be used to reflect on the different selves an obese woman might perceive herself to be or appear to be.

Chapter 2: Literature Review

Introduction

For this study, I considered previously overlooked factors of stress, self-efficacy, and body image as weight influencers among obese Danish women (Knutson & van Cauter, 2008; Lazzeretti et al., 2015; Matthiessen & Stockmarr, 2015; Rosengren & Lissner, 2008) in a cohort setting using group play in sand as a tool. Although throughout history, body fat was considered a sign of health and prosperity (WHO, 1998), obesity in the 21st century is known to be a threat to personal and public health, with Mokdad et al. (2003) finding a significant association between obesity and poor health, diabetes, high blood pressure, and poor health status as some of the outcomes. Being obese is now known to present an increased risk to health, and as such must be controlled for humans to lead healthy lives (Ford, Williamson, & Liu, 1997; Linde, Rothman, Baldwin, & Jeffery, 2006; Resnick, Valsania, Halter, & Lin, 2000).

According to Branca, Nikogosian, and Lobstein (2007), illnesses associated with obesity, including poor diet and lack of physical activity, are responsible for as many premature deaths and illnesses as using tobacco. Worldwide, obesity has been estimated to cause 3.4 million deaths and was responsible for 3.8% of disability-adjusted life-years in 2010 (WHO, 1998). These numbers are significantly elevated, and WHO, along with the United States' NHLBI (2013), are calling for global action and leadership for effective interventions to curb escalating obesity.

Scientists have traditionally recommended diet, exercise, and good nutrition (Jeffery, Wing, Sherwood, & Tate, 2003; Messier et al., 2004) to try to prevent obesity and maintain weight loss. More recently, however, many researchers have added sleep patterns and perceived stress to their focus (Knutson & van Cauter, 2008; Matthiessen & Stockmarr, 2015; Rosengren & Lissner, 2008) as factors that influence weight. Stress is often overlooked as a factor, according to Matthiessen and Stockmarr (2015), which might be problematic, because Zhao et al. (2009) found that psychological stress is significantly higher in those who are overweight and obese compared with people of normal weight.

One reason stress is an important factor to consider is that chronic stress alters the brain-reward system (Yau & Potenza, 2013) and promotes an elevated desire for high-energy food, which may contribute to abdominal fat. The desire for high-energy food might also lead to unhealthy behavior and lifestyle. Lazzeretti et al. (2015) stated that studying and learning the process of adoption of healthy behaviors is one of the factors that might improve obesity treatment. For that reason, I sought to determine whether stress reduction might assist women in changing to healthier eating habits and behavior. Psychological factors like self-esteem, self-efficacy, and concerns about body image (Lazzeretti et al., 2015) are also factors that influence weight. Linde et al. (2006) found that low self-efficacy was associated with increased obesity, suggesting self-efficacy might be an important contributor to successful weight loss. Together, these findings provided a rationale for the present investigation.

To better understand the psychological construct of obesity, Mond et al. (2007), Schwartz and Brownell (2004), and Traverso et al. (2000) suggested that body image interventions and body acceptance should be key elements in weight loss and obesity treatments. O'Dea and Abraham (2000) viewed perception of body image as a possible reinforcing factor for changed self-efficacy and indicated that self-efficacy and body image were factors related to weight as well as stress. Figure 3 illustrates the likely relationships among the factors.

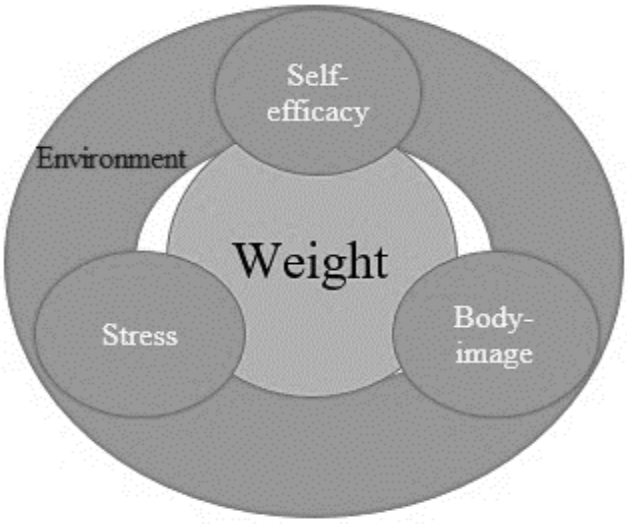


Figure 3. Psychological factors that influence weight.

Figure 3 illustrates how psychological factors interact with and are interwoven into the social environment and how this might affect weight. Influences from the social environment such as norms, rules, eating habits, and expectations as well as an individual's psychological factors, such as stress, self-efficacy, and perception of body image, are all factors that influence weight. Lazzeretti et al. (2015) suggested a focus on the process and adoption of healthy behavior from the perspective of using an alternative

tool. For this study, the alternate tool was group play in sand. I investigated whether using this technique indirectly supports the process of adopting healthy behavior by facilitating a decrease in psychological stress, an increase of self-efficacy, and a positively adjusted perception of body image.

Literature Search Strategy

The literature search strategy included choosing filters that exclusively selected peer-reviewed journals, articles, and books from multiple databases such as Academic Search Complete, eBook Collection (EBSCOhost), Health and Psychosocial Instruments, MEDLINE with Full Text, OpenDissertations, PsycARTICLES, PsycEXTRA, PsycINFO, PsycTESTS, and SocINDEX with Full Text. Key variables employed in the search string were *sandplay* (1,973 articles), *sandtray* (118 articles), and *sandworld* (two articles). When the word *group* was added, the result was 647 articles for sandplay, 15 articles for sandtray, and none for sandworld. When *obese* was added to the search string, only two articles showed up for sandplay and none for sandtray and sandworld. Google Scholar had 83 articles listed for the search string "group sandplay obesity," 51 articles for the string "group sandtray obesity," and only one article for the string "group sandworld obesity." The dates searched were between 2000 and 2019; however, literature and theories specifically related to the key variables were selected for historic value. I also used the reference lists from relevant literature to search for other potentially relevant information. Central theoretical articles or key figures within the field of study were sought by name or their specific DOI number.

Theoretical Foundation

I based the theoretical foundation on Higgins's (1987) self-discrepancy theory. I also drew from Jung's (1964) contributions to psychoanalysis because Jung's work is the fundamental cornerstone of sandplay therapy. Kalff's (2004) work and definitions of sandplay were also used because other therapies using sand (sandtray and sandworld) are based upon and emerged from sandplay. Kalff, a Jungian psychoanalyst, developed her theories with the Jungian way of thinking as one of the fundamental pillars in sandplay. The theories of Higgins (1987), Jung (1964), and Kalff (2004), therefore, formed the conceptual framework by adding perceptions of stress, self-efficacy, and body image as concepts to study the research problem of increasing obesity in the world (see Figure 2).

Self-Discrepancy Theory

Higgins developed his self-discrepancy theory in 1987 by offering three distinctions or representations of self (actual, ideal, and ought), and clarifying how internal disagreement among these representations causes emotional and psychological turmoil (see also Orellana-Damacela, Tindale, & Suarez-Balcazar, 2000). Three key variables exist within Higgins's self-discrepancy theory. The *actual self* is the representation of attributes and values the person believes he or she actually possesses or believes others believe he or she possesses (Higgins, 1987). The *ideal self* is the representation of the attributes and values that the person (or others) would ideally like to possess to be satisfied (Higgins, 1987). This can be both hope and aspirations and may often motivate change. The *ought self* is the representation of the attributes and values

that someone, either oneself or another, believes one should or ought to possess (Higgins, 1987). These can be *duties*, *norms*, *standards*, or *responsibilities*, and can all be linked to one's culture and environment. The different domains of the self can also be contradictory, resulting in emotional discomfort.

In 1957, Festinger coined the term *cognitive dissonance* to describe discomfort with conflicting attitudes, beliefs, or behaviors as the way people may act to try to resolve contradictions to reduce that discomfort. Higgins (1987) talked not only about internal discomfort but developed the self-discrepancy theory, one founded on the concept that people compare themselves to personal, internal standards. These standards function as self-representations or self-guides that might be contradictory and thus result in emotional discomfort. This means that the discomfort comes from inside by a mismatch of self-representations (Higgins, 1987). Higgins further believed that this discomfort motivates people to try to reduce the gap between different self-representations (Orellana-Damacela et al., 2000) to minimize the self-discrepancy.

Self-Discrepancy and Perception of Self

The perception of the self can also come from one's personal perspective or from significant others such as family, spouse, or friends (Higgins, 1987). Higgins (1987) stated that, for example, an identity crisis can exist because of a discrepancy between one's own self-concept and how the perceptions of others affect one's self-concept. Discrepancy between one's own and others' perspectives can result in emotional discomfort as guilt (a discrepancy from one's own perspective) or shame/unworthiness (a

discrepancy between one's and another's perspective). An example would be if one expects himself or others to perform well and one or the others fail to do so.

Another example would be that if one's ideal self that is associated with personal wishes, hopes, and desires are unfulfilled, the discrepancy between the actual self and the ideal self will cause low self-esteem (Higgins, 1987). The emotions related to this discrepancy are frustration, loss of interest in things, and a feeling of ineffectiveness. Discrepancies between the actual self and ought self (Higgins, 1987) are associated with discrepancies among norms and/or moral standards, as an emotional reaction arises from the anticipated pain to be inflicted by others. The discrepancy, then, is a mixture of how one perceives one's actual self, ideal self, and ought self, and the distances between them.

Because the different selves are interwoven, it is difficult to identify the actual self, ideal self, and ought self. To deal with this issue, I used Stunkard's nine-figure scale (1983) as a self-perception of body image (physical appearance) via the perception of selves (actual, ideal, ought), ranking from *extreme thinness* (1) to *extreme obesity* (9). The greater the discrepancy is between the selves, the greater is the emotional discomfort felt by the individual. This discomfort and discrepancy might be a motivational factor calling for change and using group play in sand might provide support for the connection between the unconscious and the self (Pattis Zoja, 2011).

Play in sand and the unconscious. Play in sand (including sandplay, sandtray, and sandworld) has been used to help a client project the unconscious onto a tray with sand instead of projecting the unconscious to other people or objects (Kalff, 2004). Using

the outer projection plan, working with sand can show a client a way of transforming behavior that minimizes the outer projections and discrepancies and concomitantly minimizes stress. In this study, it was conceptualized that the use of sand would minimize the projection of the self, according to Higgins's (1987) theory.

Jung (Grønkjær, 2010; Haaning, 2016) argued that the unconscious mind is both in the personal and collective fields of consciousness, with the personal unconscious based on actual experiences and structured into themes of complexes. The collective unconscious is innate and consists of instincts and historical and cultural archetypes that are not necessarily based on personal experiences. The instincts give the archetypes the emotional intensity and impulse to action, and the archetypes give the instincts their direction. When a client is confronted with the unconscious, a cascade of thoughts, feelings, memories, and even body sensations may rush through him or her (Grønkjær, 2010; Haaning, 2016). This chaos might call for dissonance within the client, but the emotional discomfort and felt dissonance depends on the distance between the selves--or self-representations within the client--which aligns with Higgins's (1987) description of emotional discomfort when the different representations of selves are not aligned.

Resnicow and Page (2008) argued that behavioral change might be a recurrent pattern of change within one individual or a pattern among individuals. This is where the actual self, ideal self, and ought self comes into play. If the patterns of change within the different selves could be identified, it would be possible to create optimized personalized and unique interventions (Resnicow & Page, 2008). In this study, the body is viewed as a

matrix for processing emotions, and the sand as the external landscape for these expressions. Working with group play in sand might therefore be the tool that offers stimuli for imagination and expressions and a valve to organize the unconscious chaos in the body's emotional life.

Sandplay, Sandtray, and Sandworld

Sandplay is a nonverbal therapy used to achieve increased consciousness and awareness about unconscious psychological issues. One of the premises of sandplay therapy is that the psyche has a natural tendency to heal itself (Jung, 1964), based on the psyche's instinctual wisdom. It is paramount for the sandplay therapist to create a free and protected space where changes can emerge (Kalff, 2004). Sandplay unfolds a symbolic inner world and is said to be like an X-ray to the psyche. In classical therapy, there is a confrontation between the unconscious and conscious minds, where the unconscious mind manifests itself in nightly dreams, body reactions, visions, and imaginative activities, and the therapist helps the client analyze the different unconscious manifestations that may bring him or her new awareness (Ammann, 1998). This classical approach is in line with the approach of sandtray and sandworld where the therapist facilitates change via active dialog. All three directions use sand as the medium, and the therapist uses the created worlds to understand the client and the difficulties of the client nonverbally (Ammann, 1998; Nagliero, 1995).

Sandworld and sandtray therapy are more aligned with the principles of classical therapy, using the sand as a tool for discussion, where sandplay and the Jungians and

Kalff (2004) let the process unfold itself without interruptions from the therapist. For example, in classical therapy and sandworld/sandtray therapy, the verbal unfolding is a process and dialog between the client and the therapist. This verbal and language-oriented process relates to the rational side of consciousness (Ammann, 1998), according to sandplay therapists, and can be difficult for some people to express. Sandplay focuses more on the nonverbal and free protected space (Kalff, 2004) as two of their key premises.

Sandtray / Sand world	Rational / Linear questions	Conscious	Verbal process
Sandplay	Chaos / Circular open minded	Unconscious	Non-verbal process

Figure 4. Sandplay as a nonverbal process.

The challenge of expressing feelings by verbal processing may occur because feelings and emotions are covered and remain at a distance from the conscious mind. Building the bridge between the unconscious and conscious mind or between the inner and outer world can be supported by one's hands and the use of sand (Ammann 1998), where the tray is a protecting frame for unfolding the unconscious mind. Freud saw the unconscious as the primary process and saw the logical and conscious mind as the secondary process. He wanted to make the unconscious *conscious*; thus, his statement about the lack of control of a person's own mind (Epstein, 1994). Sandplay and the use of group play in sand, as well as sandtray/sandworld therapy, provide a tool to facilitate

externalization of unconscious material in the psyche by symbolically using sand, water, and mini figures (Albert, 2015; Zappacosta, 2004).

Zappacosta (2004) also described the sand tray as an extension of the body where the sand reconciles energies of the psyche and body. The power of working with sand is to bypass the messages from the unconscious mind and facilitate intrapsychic change by making the abstract concrete in the sand. Working with sand and mini figures is a symbolic, unconscious, and nonverbal visual communication, with many layers of meaning, in contrast with verbal therapy. This means that trauma that cannot be articulated can be explored, and chaos and shadows can be brought to light and contained (Hunter, 2008; Kalff, 2004).

Use of sandplay. There are two levels or planes of focus in Jungian sandplay analysis: (a) listening to the here and now, including the parallel analysis of the transference-countertransference mechanisms that are determined by the material and figures brought to the sand by the client and (b) listening through the sand tray (Castellana, 2009) to what the sand is telling the therapist nonverbally. The nonverbal environment is an effective medium for clients with poor verbal skills or those who have experienced trauma (Turner, 2017), as the free and protected space in sandplay supporting the nonverbal process is the basic reason sandplay was suggested as the tool used in this study.

Traumas and high arousal might decrease activation of Broca's area in the brain, which is the area where subjective experience is transformed into speech (van der Kolk,

1998). The activity in Broca's area has also been found to be smaller for trauma survivors who develop post-traumatic stress disorder (PTSD) and may explain why people with PTSD or stress, have difficulties in articulating their experiences. A nonverbal intervention might facilitate recognizing those moments (Turner, 2017; van der Kolk, 2014) through the use of group play in sand, sandplay, sandtray, or sandworld. Lacroix et al. (2007) described two types of memories: the implicit (nonverbal) and the explicit (verbal). Nonverbal memory can be activated by sensory stimulation (Steele, 2006) through using sand.

Traditionally, sandplay is used in individual settings based on the framework of Jungian analytical theory; however, Margaret Lowenfeld (1993) used a big room where each of many children had a tray of sand and a therapist. Brecht (Turner, 2017), who also used group settings, called his method "sandtray" to distinguish it from the traditional sandplay approach of Kalff (2004). The distinction is not on the tray or figures used, but on the process: whether it is focused on one individual or on a group setting. Brecht adapted the individual sandplay approach and modified it to a group approach with positive results (Turner, 2017). The question and discussion within the sandplay society is whether group sandplay has the same depth as individual sandplay therapy. For this study, the Jungian approach to sandplay was used in combination with the group setting from sandtray and sandworld.

Use of sandtray/sandworld. Sandtray and sandworld therapy are based on the same foundation as sandplay therapy, an *individual* therapy, while sandtray and

sandworld are about sharing an experience together in groups (Pattis Zoja, 2015). Sandtray and sandworld add a social perspective to the work with the sand. Sandworld is used for children between 5 and 15 years old and is based on voluntary work from facilitators trained by the International Association for Expressive Sandwork (www.sandwork.org). Sandworld has three pillars: (a) the symbolic use of miniature figures and the free and protected space, where it aligns with Jung and Kalff (2004), (b) the nonverbal relationship with the other participants in the group, and (c) the group itself (Pattis Zoja, 2015). Sandtray therapy facilitates symbolic expression beyond conscious awareness in the same way sandplay and sandworld do (Homeyer & Sweeney, 2005).

Sandtray and sandworld focus more on the phenomenology that unfolds during the process of working with sand, while sandplay is more analytical. Sandtray focuses on both the group and individual levels, while tending to be more descriptive about the experience of how people feel, perceive, remember, make sense, and so forth. Sandtray has more direction from the therapist, because the therapist often gives a theme to the group that the participants/clients should create from. This is in opposition to sandplay where the therapist is silent and allows the client to create whatever he or she likes. One direction in sandtray could be “Create a tray of one of your earliest memories from childhood.” The therapist then processes the sandtray together with the participant following the guidelines by Homeyer and Sweeney (1998) and uses basic reflections, like “You seemed to have difficulty choosing which miniature would represent yourself.” The following are the distinctions of the therapies:

Table 1

Summary of Directions for Working With Sand

	Individual therapy	Group therapy	No interaction or facilitation (analytical view)	Interaction and facilitation (phenomenological view)
Sandplay	x		x	
Sandworld		x		x
Sandtray	x	x		x
Group play in sand		x	x	

The main reason for the different directions for working with sand is to help the *unseen* become *seen* (Homeyer & Sweeney, 2005) by adding symbols as mini figures. Data from this study were based on a project that theoretically used theory from sandplay; however, sandplay focuses only on the individual perspective, the project used in this study had extended the sandplay perspective with a group perspective using cohorts in their program. The wording *group play in sand* means that the perspective and framework for this study is a new and mixed way of using sand. As inspiration for the group process, I used both sandworld (Pattis Zoja, 2011) and sandtray (Homeyer & Sweeney, 1998) because sandworld is used mainly for children, and sandtray is used for both children and adults.

Group play in sand requires a tray of 30” x 20” that is 3 inches in depth as recommended by Kalff (2004). The sides and bottom are painted blue for a sense of water or sky. If the sand is moved aside, it may suggest a lake, ocean, pond, or other body of water. Often there are two sand trays--one with wet sand and one with dry sand, or one with dry sand and a bottle of water to add to the sand if the client wants to sculpt the sand

or create a pond or lake. A variety of miniatures in different categories are also in the room: natural objects, wild animals, reptiles, vegetation, sea and water, dragons and unicorns, fantasy and fairytale, buildings, structures, people, and symbolic objects (Ammann, 1998; Kalff, 2004).These enable the client to extend her imagination during the process.

The sand represents the earth, and by sculpting the sand, the client may become more in touch with herself (Albert, 2015). The sand also indicates the relationship with the unconscious mind and how the client relates to the deeper layers of the psyche (Albert, 2015). By connecting to the sand, the client activates sensory perception which connects her to her body. Through this connection, the mental images and symbols emerge (Castellana & Donfrancesc, 2005), and she experiences an inner awareness of herself (Patti Zoja, 2011). The facilitator in the room needs to pay attention to two distinct planes: the here and now reality of the client (what is going on), and the underlying unspoken, or what the sand is revealing (Castellana & Donfrancesc, 2005). In the program used for this study, the therapist does not interpret the validity or question the sculpturing or minifigures in the sand. Bliss and Klein (1990) stated that eating disorders can be a somatic symptom of an unconscious expression, the reason that unconscious expression is of interest. Bliss and Klein (1990) further discussed Erickson's concept that both the conscious and unconscious are in the room at the same time, aligning with the two planes the sandplay therapist should heed. By this means, the therapist actively involves himself or herself only a little during the process (in alignment

with sandplay) and needs to be confident that the psyche heals itself, which is one of Jung's premises for his psychoanalysis. The sand tray is thought to be a visual and symbolic expression of the client's inner world (Donald, 2014).

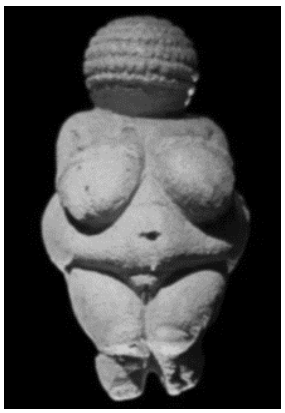
First step of the process. After initial introduction to the process of group play in sand, the first step is to create a sand world. The client might want to sculpture the sand and add water to the sand if the sand is dry. The client may also select miniature figures from the shelves and place the figures in the sand (Kalff, 2004). This process continues until the client has a sense of being finished or senses a natural place to stop. Often the selection of figures and placing them in the sand is a silent process, where the facilitator only speaks if the client asks a question or is looking for something she cannot find on the shelves. Then the therapist can ask a helping question about what she is looking for. The therapist does not ask questions about why the client chose these figures in a directive or intervening way (Ammann, 1998) in alignment with Jungian sandplay.

Second step of the process. After finishing the sand tray, the client is invited to look at her sand world. Her sand world should offer a deeper understanding and should facilitate transformation in the psyche (Ammann, 1998). The client then should have an experience in the outer world of being seen (Pattis Zoja, 2011). The client is asked if she wants to label the sand world or wants to say anything about the creation (Albert, 2015) in a few words or sentences. Ammann (1998) stated that there should be no interpretation. The therapist should only be an observer (also recommended by Kalff, 2004), and should only ask if there is something coming into the client's mind while

watching the sand creation. It is the shared look as a witness by the client, facilitator, and, in this study includes the cohort that initiates the change process (Ammann, 1998; Kalff, 2004). This second part of the process is very important. Even though the sand tray is created in a cohort setting, participants create only their own sand trays and their own secret spaces during the process. The cohort exists in the second step as a witness without words and does not interact with or ask questions about another's sand tray.

Literature Related to Key Variables

Until the late 19th century, corpulence represented wealth, as fat people had enough food to eat and were free from diseases that caused thinness (Farrell, 2011). Excess flesh, then, was a sign of prosperity. A fitting example is the Venus of Willendorf, discovered in 1908, or the Sleeping Lady from Malta, who is said to be a fertility goddess.



Venus of Willendorf (Kabel, 2007)

The Sleeping Lady from Malta (van der Crabben, 2009)

Figure 5. Historic perceptions of overweight.

Although historically, obesity was linked with wealth and status, this perception ended around the 1920s when the diet industry began. An obese person then was perceived as one who was ignorant of nutrition and could afford only cheap and fattening food (Farrell, 2011). The belief that a civilized body is a thin body continued the legitimatization of discrimination against and disdain for obese people. Being obese became a stigma as the culture continued to idealize thinness (Hvid, 2017; Schwartz & Brownell, 2004).

Sobal (2017) argued that body weight is a social construct of a culture and that without social and cultural expectations and pressure, weight should be a matter of health. Sobal also discussed perceptions of weight: What is too thin or too fat? How does the perception vary across cultures, and how does the perception block or enhance

finding a romantic relationship or a job? The interpretation of weight in a society and culture has huge consequences for the individual.

Lynch et al. (2009) tested different hypotheses of how perceived and ideal body size and body size satisfaction might be related to weight gain over time. One assumption was that African Americans were more satisfied with larger body sizes as a part of their culture, and therefore had a higher prevalence of obesity and less motivation to lose weight. A total of 3,665 participants were included in the Lynch study, which used the Stunkard nine-figure scale. Lynch asked participants about different body size perception variables: actual body size ("How do you think you look?"), ideal body size ("What is your ideal figure"), and calculated body size satisfaction as the difference between perceptions of actual and ideal body size. Lynch et al. (2009) categorized the results using the categories of *too small* (actual-ideal < 1), *satisfied* (actual=ideal), *a bit too large* (actual-ideal = 1), and *much too large* (actual-ideal > 1), and found that perception of one's own body image actually influenced annual weight gain and weight loss. Lynch et al. (2009) found that obese women who perceived themselves as obese did lose weight, while those who *were* obese, but perceived themselves as normal weight, gained weight. The *perception* of size, therefore, can influence annual weight gain or loss for obese women (Lynch et al., 2009). Another finding was that if the women considered themselves *a bit too large*, they gained more than those who considered themselves as *much too large*. This speaks to the importance of an adjustment to self-discrepancy between one's perception of body image and the facts of weight/BMI (Higgins, 1987). If

a person does not see herself as obese, it is difficult for her to see her size as a part of the problem and try to do something about it.

Weight reduction, however, does not always solve body dissatisfaction issues (Garner & Garfinkel, 1997), and sometimes greater self-efficacy is needed before a person is ready to act to change habits and beliefs. (Glanz, Rimer, & Viswanath, 2008; Prochaska, DiClemente, & Norcross, 1992) This means that weight loss programs and weight maintenance programs must consider both the client's perception of body image and the self-efficacy of a client's ability to lose weight.

Social pressure, community, and belonging. Not fitting one's perceptions of social and cultural expectations of idealized weight or not appearing to fit societal expectations of "attaining an 'ideal' weight is a social achievement" (Sobal, 2017, p. vii) sought by both obese people and by those who perceive themselves as heavier than they are (Rozin & Fallon, 1988). The pressure can be both outside from the environment and society or inside, in which women who perceive themselves as obese often think they cannot lose weight (Chang, 2007).Their low self-efficacy when it comes to losing weight (Clark et al., 1996) might be linked to pressure and outside desire rather than internal motivation (Hvid, 2017). Hill and Peters (1998) suggested that the key factor to stop the obesity trend is to correct the environment, and they argued that people should concentrate on environment rather than biology as the main driver. Hill and Peters also acknowledged the important influence of the biological markup playing an important role in the individual response within the environment. The importance of the environment

can be illustrated by an example of Kestly (2010), who spoke of five 5th-grade schoolboys who were often referred to the principal for fighting in the school yard and disruptive behavior in the classroom. After these boys participated in group sandtray (Kestly called it "sandplay," but following the definition of this research study it will be called "sandtray" therapy) for 12 weeks, the principal reported that they had a fundamental behavior change because they were not referred to her office again. Kestly (2010) concluded that group sandtray participation had the potential of changing behavior in a relatively short period.

A reason that group play in sand is effective could be the use of shared stories. When the schoolboys (above) had created their trays, they told the others about their scenery (the second step of the process). This shared storytelling is a way people make sense of life (Siegel & Hartzell, 2003) and is a way of building community and a sense of belonging, which many obese people do not feel. Often the obese are exposed to condemnation and insults, and many obese people try to live up to the ideal of thinness, which is also a beauty ideal. The body becomes a trademark and identifier (Hvid, 2017), and the obese like to normalize to get out of the shadow of condemnation.

Group play in sand. Using group play in sand might be a way out of the shadows for the obese client, because in the process of sand creation, free and exploratory play occurs. When the client is creating in the sand, she selects figures from the shelves that she needs for the tray. As soon as she starts looking at the shelves for an object/figure, her brain will begin to select, sort, and assemble data as nonverbal storytelling goes on in

her brain (Damasio, 1999). The nonverbal and wordless stories are responses to the objects on the shelves and are founded in sensory-based images where the consciousness ranges from nonverbal to verbal storytelling (Damasio, 1999). Siegel and Hartzell mentioned storytelling as one of the primary ways the brain organizes itself, meaning that using group play in sand might be one of the keys to unlock and rearrange one's inner stories. Stories founded on a response to outer ideals of body image, as wordless and nonverbal stories in one's brain, may be embodied in new ways by using group play in sand. This aligns with the way Castellana (2009) expressed the importance of listening to the two planes of stories: (a) the here-and-now story we can see on the surface where we can use psychological transference and countertransference to understand the story and (b) the underlying story that we can only see or hear if we listen carefully to what the tray and sand are telling us--what Freud called the "primary story."

Hvid (2017) argued that body-perception and self-esteem is mostly a matter of feeling good about one's self. If the unhealthy behavior and habits are not linked (conscious or unconscious) to the life situation in which they were established, it might be difficult to change the unhealthy pattern. Hvid (2017) indicated that it is necessary to look at the point of creation of the story as a footprint or traumatic experience that has printed the thoughts, feelings, and emotions into the mind and body. Using the sand helps to build an integrated story through the choice of figures from the shelf (Kestly, 2010). The selection of a specific figure from the many at their disposal is the catalyst for changing and rewriting these inner stories, because the selection of a specific figure is a

conscious choice. The figure that is chosen is unpredictable and might be the unconscious answer to what is needed at the tipping point--going from chaos to order in the inner world or from unconscious to conscious awareness.

Body image and self-esteem. Body image and self-esteem are interwoven (Ikeda & Naworski, 1992). McCabe and Ricciardelli (2003) found in a study of 507 adolescents that those most dissatisfied with their bodies were those with the lowest self-esteem and that girls were more influenced than boys. This might indicate that self-esteem and dissatisfaction are linked together and that women are more dissatisfied with their body image than men. Similarly, Steese et al. (2006) found women often had a sense of dissatisfaction with their bodies because they tended to choose a smaller ideal body size than their current body size, which automatically set them in cognitive dissonance and psychological discomfort and dissatisfaction with their bodies (Festinger, 1957; Higgins, 1987), according to the self-discrepancy theory.

Cognitive dissonance might be explained by the unarticulated rules of people with eating disorders (Cooper & Fairburn, 1987). These rules or attitudes are conceptual schemes such as, “To be fat is to be a failure, unattractive, and unhappy,” and “To be thin is to be successful, attractive, and happy,” and “To exert self-control is a sign of strength and discipline” (p. 3) to which the individual assigns meaning and value and evaluates herself. Eating disorders determine not only conceptual schemes of the individual, but also have a direct effect on brain activation patterns (Miyake et al., 2010), which might reflect the cognitive discrepancy of a distorted body image and a disturbance in

evaluation of one's own body image (self-discrepancy) in a realistic fashion. This thinking pattern might be applicable to the obese as well.

Dissonance is caused by the ego trying to manifest consistency and the self-deception of trying to maintain or restore self-esteem (Greenwald & Ronis, 1978). This dissonance can also be a result of increased outside pressure to have perfect bodies, which von Kardorff and Ohlbrecht (2008) said were specific socio-somatic reactions to social change and a rejection of social demands. According to Bray (1997), Bruch (1941), and Hamburger (1951), obesity can be a shield against the outside world. Higgins (1987) also found changes in emotions depending on whether the dissonance or discrepancy was between the actual self and the ideal self or between the actual self and ought self. To test this, Higgins (1987) set up a matrix of the three selves. He asked whether the discrepancy between the actual and the ideal self leads to dissatisfaction, depression, disappointment, low self-esteem, and lack of self-fulfillment, and whether discrepancy between actual self and ought self could lead to fear, anxiety, resentment, self-criticism, and a sense of worthlessness or weakness.

Perceived Stress

Cannon (1932) and Selye (1946) introduced the concept of stress, and although Levine (2005) tried to make the definition more precise, today the word *stress* may be unclear because it covers both the stimuli that cause stress and the biological, psychological, and behavioral responses to stimuli (Romero, Dickens, & Cyr, 2009). Le Moal (2007) defined stress as multidimensional with a focus on balancing the

physiological system. If the system is not balanced, it might lead to disease, though individual responses and ways of coping play an important role in the reaction to a stressor. Le Moal (2007) suggested that the concept of homeostasis should be replaced with the concept of allostasis, which has the core concept of "wisdom of the body" (Cannon, 1932); however, Ramsay and Woods (2014) agreed with Le Moal and explained that allostasis goes beyond the homeostatic roots of balance and is used to achieve stability through change (Ramsay & Woods, 2014; Sterling & Eyer 1988).

Stress and chronic stress can be activated by the fight-or flight-instinct, which is a natural reaction of human evolution and is activated by a given stressor (Folkman, Lazarus, Gruen, & DeLongis, 1986). Chronic stressors alter both the brain/reward system and brain function (Yau & Potenza, 2013) and promote elevated desires for hyperpalatable food, which overall may contribute to abdominal fat. Block, He, Zaslavsky, Ding, and Ayanian (2009) found a strong association between chronic stress and weight gain among individuals with high BMI compared to those with low BMI who were experiencing the same degree of stress. Rosengren and Lissner (2008) found that decreased sleep and increased stress disposed women to increased abdominal obesity, findings supported by Knutson and van Cauter (2008).

Stress was conceptualized by Folkman, Lazarus, Gruen, and DeLongis (1986) as a relationship between the person and the environment. A stress experience can be emotional (interpersonal conflict) or physiological illness, or even pharmacological (Yau & Potenza, 2013). Uncontrollable situations can also be stressful and can lead to passive

coping, helplessness, and depression (Folkman et al., 1986). The way people cope depends on the stress of the condition such as whether the condition threatens their self-esteem. Stressful and threatening conditions, if repeated, might have long-term negative implications for health and well-being. There are two processes for mediating stress according to the cognitive theory of psychological stress and coping (Lazarus & Folkman, 1984). When coping, the person can either deal with the problems (problem-focused) or regulate the emotions (emotion-focused) that cause the distress (Folkman et al., 1986; Lazarus & Folkman, 1984).

Stress eating. Stress eating is one way of coping with a psychological stress or a way of regulating emotions. Biology and genes might dispose one for obesity, but lifestyle choices with irregular eating patterns, lack of sleep, stress, and easy access to cheap, high-energy food make it easier to overeat and gain weight. Stress can change eating patterns, and that change might eventually lead to obesity. Being obese might also be stressful because of not meeting the norms and standards of society, which may lead to increased eating as a coping mechanism.

Increased cortisol (an indicator of stress) has also been associated with increased central body fat and extra weight, as chronic stress can affect appetite and eating behaviors (Sojcher, Fogerite, & Perlman, 2012). Stress increases intake of high-energy dense foods that are high in sugar and fat, especially among high emotional eaters (Oliver et al., 2000). Stress is also an important factor in weight gain. Daubenmier et al. (2011) argued for chronic psychological stress and elevated cortisol as factors that might

contribute to excess abdominal adiposity (fat). Stress might also increase cortisol and trigger consumption of high-fat food (Daubenmier et al., 2011; Oliver et al., 2000; Yau & Potenza, 2013).

Sinha (2008) argued for stress as influencing preferences for craving addictive substances and hyperpalatable (high in fat and sugar) foods. Yau and Potenza (2013) argued that stress is an important factor in developing an addiction and that hyperpalatable food may also possess addictive qualities because stress activates the brain's reward system. Around 40% of all people shift food preferences towards highly palatable food when they are stressed (Dallman, 2010; Maier, Makwana, & Hare, 2015; Rudenga, Sinha, & Small, 2012). Adam and Epel (2007) concurred about the food shift when stressed, but not on the percentage, arguing that 30% of people decrease their food intake followed by weight loss, and 70% increase their food intake, often followed by weight gain. Adam and Epel stated that many people use food as stress relief, which may compromise their health (2007). The changed eating pattern during stress is caused by the emotional brain (Dallman, 2010). Neseliler et al. (2017) found that students stressed during final exams felt more hunger and changed their eating behaviors.

Stress can also affect weight through other mechanisms. There may be a direct effect of cortisol, a stress hormone, and central body fat (Sung-Hun & Min-Kyeong, 2013) or abdominal fat (Houshyar, Manalo, & Dallman, 2004), because of psychological distress and elevated cortisol (Daubenmier et al., 2011). Torres and Nowson (2007) reported that stress-related eating was significantly associated with obesity in women;

however, they could find no significance between stress, food intake, eating behavior, and obesity. Wallis and Hetherington (2004) found that emotional eating was linked to increased intake of food after an ego-threatening stressor, and Cocrane (2008) noted a need for treatments that includes repair of ego damage and development of self-efficacy for overweight people. This means that if the behavior is going to change, the individual needs to increase her or his expectations of self-efficacy, because expectations of self-efficacy are the most powerful predictor and indicator of behavioral change (Bandura, 1977).

Sandplay and emotional eating. Sandplay both stabilizes the ego (Ammann, 1998; Turner, 2017) and gives it possibilities to reform itself. This means sandplay might be beneficial for emotional eaters who increase their eating after ego-threatening stressors. Kalff (2004) saw the task of the ego as balancing inner drives with the outer world (which is in line with Freud's definition of ego), where sandplay is the process, the sand is the medium, and the result of the process--the picture in the sand--is the outcome (Allan & Berry, 2002). Sandplay releases blocked psychic energy and activates the self-healing process that Jung (1964) believed was embedded in the human psyche. The manifestation of the self--the pattern of inner order and wholeness--is one of the most important elements in development of personality (Kalff, 2004). Only when the self has manifested itself can the ego develop. Stabilization of the relationship between the self and the ego is also an important focus area in sandplay (Kalff, 2004). Sandplay decreases depression and anxiety (Lee & Jang, 2012; Sung-Hun & Min-Kyeong, 2013), lowers the

secretion of cortisol (Lee & Jang, 2012; Sung-Hun & Min-Kyeong, 2013), and reduces stress (Sung-Hun & Min-Kyeong, 2013), which makes sandplay a promising tool for stress relief. For this study, group play in sand was used as the descriptor for extended sandplay with a cohort instead of an individual focus, as it is believed that group play in sand has the same effect as traditional Jungian sandplay.

Self-Efficacy

Self-efficacy is what people believe about themselves and their abilities, rather than the way they truly are and what they can actually do. People with low self-efficacy, for example, perform below their ability because of their limiting beliefs. If self-efficacy is too high, the person has an unrealistic picture of his or her own ability or is an overperformer. Self-efficacy is a part of social cognitive theory, which relates to how people learn in a social context. This means that self-efficacy might be increased in social contexts by modeling others (Bandura, 1977; Glanz et al., 2008). A cohort setting is usually used in a weight-loss program as it stimulates social learning (Figures 2, 9).

Self-efficacy might be related to stressful life events. Maciejewski, Prigerson, and Mazure (2000) investigated self-efficacy as a mediator between stressful life events and depressive symptoms and found a significant relationship between depression and life events and how these influenced self-efficacies. Maciejewski et al. (2000) also found that for those who have suffered from depression, life events have had a significantly negative effect on self-efficacy. The opposite is true for those without prior depression and whose life events have had no apparent effect on self-efficacy. Maciejewski et al. (2000) did not

discuss, however, whether the depression was a result of a previous life event before their study, only that if a person already had depression, it might negative affect his or her self-efficacy.

Self-efficacy to lose weight. High total self-efficacy, high self-efficacy about ability to lose weight, and high self-efficacy to resist eating when food is available are all associated with higher initial weight loss (Shin et al., 2011). This could mean a focus on increased self-efficacy might be a factor that helps with increased weight loss (Shin et al., 2011). Bandura (1977) claimed a direct correlation between perceived self-efficacy and behavioral change. If the client believes she will make a difference (high self-efficacy), she is more likely to make a positive behavioral change. Clark et al. (1996) studied the change in self-efficacy following obesity treatment and found improvements in the participants' ability to manage their weight after treatment. Bas and Donmez (2009) concluded that self-efficacy has an important role to play in treating obesity.

Negative thoughts, beliefs, and self-efficacy about one's own power to affect a situation will influence the success, performance, and choices a person makes (Luszczynska & Schwarzer, 2005). Duarte et al. (2017) found that women with higher BMI had higher external shame and self-criticism. This means that women with high BMI likely have negative thoughts and beliefs about themselves and decreased self-efficacy. Duarte et al. (2017) also found that weight loss was positively associated with favorable social comparisons and was negatively related to self-criticism. A buffer or mediator of negative thoughts and emotions (Jang & Kim, 2012; Park & Lee, 2013)

might be group play in sand or other tools related to sand. Park and Lee (2013) found that sandplay was effective in reducing depression, anxiety about relationships (including interpersonal relationships), negative thoughts about self, and loss of will. If using sand can increase self-efficacy, it might help buffer against stress, which was mentioned as important by Bandura (1982) and Jerusalem and Schwartzer (1992).

Sand and self-efficacy. If patterns of behavior are going to change, the unconscious must be approached (Jung, 1953). In the collective unconscious universe, the archetype resides, and for any change to happen, it is necessary to understand the meaning of the symbol behind the archetype and deal with the underlying issue (Felitti, Jakstis, Pepper, & Ray, 2010). Sung-Hun and Min-Kyeong (2013) found that sandplay increased self-esteem, which has been suggested to be closely related to self-efficacy. This means that using sand or sandplay might be effective as a tool that supports self-efficacy. However, no researchers have been found who have investigated the relationship between sandplay and self-efficacy for the population of obese people--either in individual therapy or cohort sessions. Sandplay has been found to facilitate a reduction of negative emotions and loneliness and to support self-expression (Jang & Kim, 2012). Therefore, sandplay (including using sand in therapy) fits well with the self-discrepancy theory of Higgins (1987) of facilitating connection to the self.

Body Image

Discussions among experts about the driving factor in the epidemic tendencies of obesity are currently multifaceted, moving beyond previous views considering only

biology and environment as the main factors. Hill and Peters (1998) argued that the dramatic rise in obesity among the population is not biology or genes, because they have not changed much over time. Instead, they argued, the environment is the culprit that promotes behavior that causes obesity. A beautiful female, according to conventional norms, is thin (Jupp, Collins, McCabe, Walker, & Diment, 1983; Hvid, 2017; Schwartz & Brownell, 2004).

Often the obese have unconscious body concerns and attitudes about body size and shape (Jupp et al., 1983). Even though the perception of body might change over time (even if the individual loses weight), the perception often persists into later life if it is created during adolescence (Stunkard & Mendelson, 1967). However, Jupp et al. (1983) found that after a course of counselling for weight reduction and ego building, the concerns about body image for obese people would be the same as those for people of normal weight. Based on findings of Jupp et al. (1983), ego stabilization and ego building might be factors to include in future designs for obesity treatment, according to Jung (Kalff, 2004; Turner, 2017), just as you can expect from long-term use of sandplay, but the time frame depends on the traumas a person brings to the therapy. According to Higgins (1987), minimizing the discrepancy between the different selves also minimizes the self-criticism and dissatisfaction people have with themselves and might strengthen the ego (sense of actual self). This means that if there is any significant effect of the use of sandplay on self-efficacy, this practice might strengthen ego building, according to not only Jung but also by Higgins.

Group play in sand can be used as a nonverbal contrast to cognitive behavioral therapy (CBT) that focuses on a dysfunction in cognition and the belief system. Even though CBT has been found effective for weight-loss changes (Tsiros, Sinn, Coates, Howe, & Buckley, 2008), CBT assumes that the client has recognized the dysfunctional cognitive pattern and is ready to restructure this pattern of beliefs (Walpole, Dettmer, Morrongiello, McCrindle, & Hamilton, 2011). The problem is that often the client is not consciously aware of the pattern that is blocking change. Therefore, the tool called "group play in sand" has been chosen for this study to determine whether this tool might support and facilitate working with unconscious patterns because this tool works on the nonverbal and irrational side of the unconscious mind (see Figure 4).

Because self-efficacy might be increased in a social context (Bandura, 1977; Glanz et al., 2008) data from the researched program using group play in sand are used for this study, where data were chosen to contrast with the previous viewpoint of reduced focus on social support (Carter, Dellucci, Turk, & Mir, 2015) as a factor affecting obesity in women.

In contrast with Carter et al., Renjilian, Perri, Nezu, McKelvey, Shermer, and Stephen (2001) found that cohort therapy for obese people had a significantly greater effect than individual therapy, regardless of a participant's preference for cohort vs. individual therapy. The Renjilian et al. (2001) treatment period was six months, and the findings supported the use of cohorts. It has not been possible to find research looking at differences between cohort vs. individual therapy specific for the variables in this study:

stress, self-efficacy, and body image; therefore, I use the general approach that cohort therapy is more significant for obese people.

Friedman, Reichmann, Costanzo, and Musante (2002) further mentioned that body image is related to self-esteem, degree of obesity is associated with self-esteem and correlated with body image, and that the relationship between weight and self-esteem is partially mediated by body image. These assertions support both the assumptions and hypothesis of this study. If one of the variables is strengthened, that results might have a positive effect on one of the others.

As the researcher, my interest is seeing if group play in sand can facilitate unconscious creation (McNally, 2001), facilitate new supporting stories, and moderate the distorted perception of body image. The goal is to verify whether group play in sand has the potential to reduce stress, increase weight self-efficacy, and minimize the dissonance of the perception of body image.

Group play in sand was utilized in the studied program to explore the unconscious patterns of the mind, as a cohort setting enforces the sense of social support and stimulates observational learning from the cohort--not in a normal way of direct modelling of behavior, but in a way of indirect modelling as witness to the other women's stories when told in the cohort. This is thought to be in line with Bandura's (1977) and the Glanz et al. (2008) way of modeling others in a social context to increase and support self-efficacy. Another researcher, Lowenfeld (1993), rejected the idea that

language alone could heal trauma and that if one wanted to make a difference, it is at the sensory, nonverbal level--one activated by group play in sand.

Group play is also in line with recommendations from Hvid (2017), where the symbolic expression in sand links the life situation to the unconscious mind and creates possibilities for change. Using sand in cohorts differs from traditional sandplay only in the second step of the process, where the participants share among their cohort members instead of only sharing with the therapist.

Summary

Many factors influence a healthy lifestyle. In this study, perceived stress, weight self-efficacy, and perception of body image are understood as important factors related to obesity. Using secondary data from a program using group play in sand as the tool connecting the dots of influencing factors in weight related issues could explain psychological factors and unconscious patterns of the psyche that block weight loss. Further research is needed that specifically focuses on the different effects of group play in sand used in weight loss settings for obese people, such as the potential influence on sleep patterns and lifestyle changes, changes in healthy diet and nutrition, and other treatments for obese clients to further show how group play in sand might have a positive effect on other aspects of obesity. It would also be worth studying the effects of group play in sand on eating disorders like anorexia, bulimia, and binge eating.

Group play in sand might be used as an alternative tool for interventions or as mediating the escalating public health problem of obesity. Group play in sand might be

the new tool to address unconscious matter and a way to minimize a psychological distance to the body. Using sand may provide a possibility to reconnect with the body and release unconscious energy related to psychosomatic issues. In Chapter 3, I describe the research method and rationale and present the methodology and data-collection process.

Chapter 3: Research Method

Introduction

The aim of this research was to learn whether using group play in sand might affect obese women's perceived stress, self-efficacy, and body image. I identified these three dependent variables as important in the context of weight loss among obese women. I analyzed secondary data from a 5-week group play in sand program for obese women who had a 5-week waiting period before program start. The identified study cohort was Danish women, excluding men and children. Program leaders use group play in sand as an alternative tool for exploring the unconscious mind. I analyzed possible stress release from the sandplay because working with sand has been found to decrease stress and help increase self-esteem (Sung-Hun & Min-Kyeong, 2013); researchers have suggested that both stress and self-esteem are closely related to self-efficacy (Judge, Erez, Bono, & Thoresen, 2002). Using group play in sand might also help with perception of body image, because therapies working with sand stabilize the ego and give the ego the possibility to reform and stabilize itself (Ammann, 1998; Turner, 2017). Along with strengthening of the ego, working with sand may strengthen the self, which might have a positive effect on self-efficacy and thus on perception of body image. Included in this chapter are discussions of the research design and rationale, instruments, data analysis, and ethical procedures.

Research Design and Rationale

I used secondary data collected by the center that facilitated the group play in sand program for the obese women. Participation in the program included tree assessments at baseline, pretreatment, and posttreatment. Baseline (T1) was the start of the 5-week waiting period before program start. At this point the cohort got their first assessment sent by mail from the center. Pretreatment (T2) was an assessment in the center just before the program started with treatment and posttreatment (T3) was the final assessment in the center right after the program ended (see Figure 1 for a graphical overview of the study design). The participants also had an optional follow-up day in the center where they discussed their pictures of their sand tray and their experiences from the program, but data from this day are not included in this research study.

The aim of this study was to examine whether group play in sand (independent variable) reduces perceived stress, increases self-efficacy to lose weight, and adjusts the discrepancy in the perception of body image (all three are dependent variables) of obese women. All three variables were measured to test the effect of group play in sand and to see if any changes explained the effect of the treatment. The research questions focused on perceived stress (measured by the PSS), self-efficacy (measured by the WEL), and perception of body image (measured by the SFR) and are in this design illustrated by the M in Figure 2. As shown in Figure 2, the relationships between sandplay (represented by the arrow) and self-esteem/efficacy and sandplay and stress are established in the

literature. However, the connection between sandplay and body image had not been researched previously, according to my review of the literature.

The research design was a quantitative study and involved the use of secondary data. I used this approach because of the central RQ for this study: Does group play in sand have an effect on stress, self-efficacy, and/or body image perception? I determined that the RQ could be answered best by quantitative analysis. The secondary data were measured using different measurement scales (PSS, WEL, and SFR). The data were collected as a part of a program for obese women to serve as a byproduct for later reflection in the therapeutic process on their follow-up day. Program makers used the protocol from sandplay, which means that photos of the sand tray and the facilitator's notes from the sessions were journalized as the primary data and were used at the follow-up day. In the original design, the assessments were used for individual feedback on the follow-up day and for reflection of the participants to increase awareness about their hidden and unconscious psychological patterns of stress, self-efficacy, and body image perception; however, the variables were not statistically analyzed by the center. I performed statistical analyses as part of my secondary analysis of the data in this research study.

Methodology

Population

The target population was obese (WHO, 2016; WHO, BMI; NHLBI, 2013) Danish women with a BMI above 25.0 who were 19 years old or older. The population

was approximately 850,000 individuals, according to Statistic Denmark (www.dst.dk/en). This figure is supported by the increase in numbers of preobese and obese women in Denmark (Matthiessen & Stockmarr, 2015).

Sampling and Sampling Procedures

The typical group play in sand program includes the following inclusion criteria for the target population: women who are not pregnant or have a diagnosed eating disorder, participate actively in a weight loss program, or are on prescribed medication for depression (see Appendix B). I based the sampling strategy on the study of Borma, Fransen, and Lemmens (2007) with a total sample size of 28 for a power of 0.80, alpha of 0.05, and effect size of 0.25.

The center uses a rolling sign-up procedure for the screening. When a cohort has between five and eight participants, the cohort is closed, and the next cohort starts to be filled with participants. In the beginning, some of the cohorts were terminated because they started during holiday season and the center needed to correct their procedure for advertising to match the holiday season. Cohorts 1, 2, and 3 started with five participants but ended with two and three participants after the third session with group play in sand, the reason the data from these cohorts are not included in this research study. The feedback from the participants was that this was because of there being seasonal holidays in Denmark during this period. Cohorts 4 and 6 did not begin because only three participants signed up. Cohorts 5, 7, 8, 9, 10 and 11 had all gone through the full program with five or more participants (see Table 2). The agreement with the center was that I

would receive a limited data set with at least 28 participants in total and in which the participants had been in a cohort with a minimum of five participants of whom five (or more) did complete the program.

Table 2

Data Collection

		Time point		
Cohort	Participants	T1	T2	T3
1	5	5	5	2
2	5	5	5	3
3	5	5	5	3
4	3	-	-	-
5	5	5	5	5
6	3	-	-	-
7	6	6	6	6
8	5	5	5	5
9	5	5	5	5
10	8	8	8	8
11	5	5	5	5
Total	55	49	49	42

The waiting period had a time lapse of five weeks between baseline and pretreatment and five weeks between pretreatment and posttreatment (the treatment

period). This means that between baseline and pretreatment, and between pretreatment and posttreatment, there were equal time-lapses. All cohorts were running the same process with the tests for baseline, pretreatment and posttreatment, but they could run separate from each other or in parallel. This means that all data (baseline, pretreatment, posttreatment) had to be adjusted to be independent of actual time. In Table 2 it is only data in the grey area that are included in this study, which means 34 participants in total as valid data because the first three cohorts only had between two and three participants at posttreatment, and the criteria for the received limited data set was minimum five or more participants.

Procedures for Secondary Data

In the original program for the center, women were recruited using advertisements on Facebook, in the center's newsletter, its webpage calendar, on different related webpages within health and diet, in newsletters specific for the population of nurturing and diet, and by posting flyers in the community near the center. The focus was on women with a BMI above 25.0 who lived within 100 km from the center. If the women were interested in the program, they called or sent an email and would be called by the screener using the protocol for inclusion (see Appendix B). If a participant withdrew from the program, she would not be replaced, and if it was before the treatment started, the cohort might not even start if there was a lack of participants.

Data in the main study were collected at baseline, pretreatment, and posttreatment to measure perceived stress, self-efficacy, and perception of body image. These data were

collected by online assessments for all time periods. When the treatment was running (between pretreatment and posttreatment), photos of the sand trays were taken by the facilitator (and by the participant who created the sand tray) for each session in the five weeks of the program. These photos were included and used at the follow-up day after the program had ended, as reflection and progression for the women, but were not used as data in this study.

Access to data. I was not responsible for data collection of the weight programs. The clinic fully sponsored the research and supervises treatment as they normally do. Supervision of programs and facilitators is within the normal scope of the clinic and within the normal protocol of sandplay.

A data agreement was signed between the center for the program and me for use of the data as secondary data for this study (see Appendix A). The clinic takes 100% responsibility for the data and follows the General Data Protection Regulation (GDPR, 2016) EU law of how to handle personified data. The clinic released the data for secondary use in an Excel file as a limited data set. I received an anonymized data file with a unique identifier per woman with height, weight, BMI, age, and response to the questionnaires for baseline, pretreatment, and posttreatment.

All participants in the program were informed up front about data use and protection of data according to the GDPR (2016) EU law and to standard use of data in the center. The center normally collects anonymized data for articles and research papers. Participants were also informed about exiting the program and the program procedures.

When the participants filled in the assessment (baseline, pretreatment, posttreatment), they were again told in writing about the GDPR regulations and data storage, and when they began the program, they were again informed about the GDPR orally.

Instruments

The following were used in the program for instrumentation and operationalization of the constructs.

Cohen's Perceived Stress Scale (PSS). Cohen's perceived stress scale *(*1983) was originally developed as a 14-item instrument to measure perceived stress level. This scale is the most widely used as a psychological instrument for measuring the perception of stress. The PSS measures to which degree an experienced situation in one's life appears as stressful. The questions in the PSS ask about feelings and thoughts during the last month and whether the respondent felt a certain way. All items are rated on a 5-point scale from *never* (0) to *very often* (4); higher scores indicate more of the measured construct.

***Reliability and validity*.** The Danish consensus version of the 10-item Perceived Stress Scale (PSS-10) was used so as not to interfere with validity because of language issues. The Danish consensus version is a new version in Denmark created by involving the authors of the three previous Danish translations, which had slight variations in translation. The consensus version was back translated into English and examined in a sample of 64 patients with work-related stress complaints, evaluating the terms of psychometric properties in terms of agreement, reliability, validity, responsiveness, and

interpretability. The results of the Danish consensus version of the PSS-10 were satisfactory according to validity, reliability, and consistency, and no statistically significant differences were found (mean difference = -0.6, 95%, Cronbach's alpha = 0.84.; Eskildsen et al., 2015). The receiver operating characteristic (ROC) curves of the change scores showed as improved or unchanged. PSS scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1, & 4 = 0) to the positively stated items (items 4, 5, 7, & 8) and then summing across all scale items. The estimates of minimal clinically important change were 11 points and 28% for absolute and relative change scores, respectively (Eskildsen et al., 2015).

Operationalization. The Danish consensus version of the PSS-10 has 10 questions asking about thoughts and feelings during the previous month. For each answer, the respondent places an "X" over "how often they" felt a certain way (Cohen & Janicki-Deverts, 2012). The "how often" are scaled from never to very often. Each answer is coded from 0 to 4. The cumulative score for all ten items is the total PSS-10 score and they are ranged from 0 to 40. Higher PSS-10 scores indicate a greater feeling of psychological stress (Cohen & Janicki-Deverts, 2012).

Weight Efficacy Lifestyle Questionnaire (WEL). The Weight Efficacy Lifestyle Questionnaire (Clark, Abrams, Niaura, Eaton, & Rossi, 1991), is a 20-item instrument, used to measure weight self-efficacy (how comfortable participants are with their ability to manage their weight), based on a 10-point scale ranging from 0 *not confident* to 9 *very*

confident, divided into five situational factors: negative emotions, availability, social pressure, physical discomfort, and positive activities.

Self-efficacy is the participant's belief about her own ability to perform the necessary behavior to achieve a desired outcome (Bandura, 1977, 1986). Eating self-efficacy is the individual's belief in her own ability to maintain a healthy weight (Glynn & Ruderman, 1986; Clark et al., 1991), and is an important mediating mechanism in advancing understanding of obesity (Clark et al., 1991). The WEL was developed as a response to the treatment studies of obese individuals who quickly regained weight after treatment as a model to help advance knowledge of mediating mechanisms and to improve treatment of obesity (Clark et al., 1991).

Self-efficacy is a person's judgment of her ability to cope effectively in a situation and is based on Bandura's (1977) theory of self-efficacy, which is an integrative cognitive-social learning framework. Self-efficacy is an important ingredient supporting sustained behavioral change (Fløl o, Andersen, Nielsen, & Natvig, 2014) and has demonstrated a predictive impact on individuals' motivation and capability for change. This means that a person with low self-efficacy is challenged by resisting emotional eating or use of other substances (Abrams & Niaura, 1987; Brownell, Marlatt, Lichtenstein, & Wilson, 1986). In contrast, a person with high self-efficacy can cope more successfully in challenging situations where emotional or stress eaters normally would eat. Self-efficacy for eating is therefore an important predictor of the successful adoption and maintenance of weight management behaviors. The WEL is a commonly

used measure of eating self-efficacy consisting of 20 items, with four questions within each of the five situational factors.

Reliability and validity. Clark et al. (1996) investigated how changes in self-efficacy follow obesity treatment. The reason for their investigation was that self-efficacy scores had predicted outcomes in numerous studies of addictive behaviors (Annis & Davis, 1988; Brownell et al., 1986; Marlatt & Gordon, 1985; Velicer, DiClemente, Rossi & Prochaska, 1990). At the time of the Clark et al. (1996) study, the relationship between self-efficacy and obesity treatment had not been well researched. Clark et al. (1996) tested the WEL with 162 participants in a worksite weight management program. The Cronbach alpha coefficients of internal consistency ranged from .90 to .70. Then they cross-validated the five situational factors of the model, using a sample of 220 obese patients at a hospital-based weight management program. They found that the factor for all 20 items ranged from .62 to .92. The WEL is a measure judged reliable and valid in obese populations (Clark et al., 1991). The WEL provides a total weight self-efficacy score based on the sum of the item scores. Higher WEL scores indicate a greater feeling of self-efficacy.

Operationalization. The WEL is not translated into Danish; however, the center has translated the original test and uses the Danish version in their program. For each answer, the respondent places a circle around the right answer. Each answer is coded from 0 *not confident* to 9 *very confident*. The WEL scores are obtained by summarizing

the scores for each situational factor, and the cumulative score for all items is the total WEL score.

Stunkard's nine-figure scale. The Stunkard nine-figure scale was used to measure perception of body image. Guillermo and Suárez (2018) researched the relationship between body image and obesity by Stunkard's silhouettes in 3- to 18-year-old Spanish children and adolescents and found that 61.2% were dissatisfied with their body and many wanted to be thinner (44.7% men and 46% women). This is not only the case for children and adolescents but may be assumed to fit into many women's ways of thinking. According to studies of body dissatisfaction (Cororve, Gleaves, & Pearson, 2004), women tend to choose a smaller ideal body size than their actual body size, which highlights the concept that the psychological problem of body dissatisfaction has a higher prevalence than the physiological problem of obesity. Thirty-four percent of men and 17.9% of women were classified as overweight or obese, compared to their response of longing for being thinner (Guillermo & Suárez, 2018). This discrepancy and body dissatisfaction might lead to eating disorders or depression or both conditions. Given this information, the psychological problem of body image might be of higher interest than the actual BMI of the person. The Stunkard nine-figure scale was used to identify the person's perceptions of her own body, the ideal body, and what she thinks others might expect she should look like.

Reliability and validity. Cardinal, Kaciroti, and Lumeng (2006) tested the Stunkard Figure Rating Scale (SFR) to see if it was a valid and reliable index of weight

status for adult women. They tested 72 women who participated either in person or by viewing the scale on video. Their findings were that the SFR scale was both a valid and reliable measure of women's weight status when it was rated as viewed by an unrelated observer either in person or on videotape. The BMI for each person was highly correlated: $r = 0.91$ for in-person rating and $r = 0.87$ for videotape rating.

The Stunkard nine-figure scale has not been translated into Danish because it is a visual measure with drawings (schematic silhouette) of women. The center uses the scale with nine women because the population is women. The scale is graduated from *extreme thinness* (1) to *extreme obesity* (9), indicating how a person perceives her own body's physical appearance (Stunkard et al., 1983).

The self-discrepancy theory has been applied to the body image research to understand the domains of self: the actual, the ideal, and the ought (Bissell & Rask, 2010; Harrison, Taylor, & Marske, 2006; Veale, Kinderman, Riley, & Lambrou, 2003), and to understand the differences between the perceptions of self. Higgins (1987) represented the self-discrepancy theory: When different types of discrepancies exist between self-representations, these are related to different kinds of emotional vulnerabilities. Higgins (1987) was looking at different domains of the self (actual, ideal, ought) and compared these domains with the perceptions of the self (is it your own or is it the perception of a significant other?). Higgins (1987) used this theory to investigate different emotional states of the self. A comparison of Stunkard and Higgins is shown in the following table.

Table 3

Comparisons of Stunkard and Higgins

Stunkard	**Higgins**
Own body self	Actual self
Ideal body self	Ideal self
Others' expectations	Ought self

Using the comparisons of perception of body image and self-discrepancy, it might be possible to frame the discrepancy with the motivation to change. Higgins (1987) found that the ideal self-motivated people to change, improve, and achieve and that absence of discrepancies was associated with the emotions happy, satisfied, calm, and secure.

Operationalization. The use of Stunkard's nine-figure scale follows the structure by Lynch et al. (2009) where the respondents are asked to fill out three perception variables: actual body size ("Choose the figure that reflects how you think your body actually looks"), ideal body size ("Choose the figure that reflects how you would like your body to look"), and others' expectation of body size ("Choose the figure that reflects how you think others expect your body size should look"). Body size satisfaction is calculated as the difference between perceived actual and ideal body size. Following this, the body size satisfaction results are categorized after Lynch et al. (2009): too small (self - ideal < 1), satisfied (self = ideal), a bit too large (self - ideal = 1), and much too large (self - ideal > 1). The body size satisfaction is related to the mark of body size of others to reflect if others' opinions and expectations of body size have any influence. In this case,

others can be family members, friends, society, and so forth. The participants mark each figure on the Stunkard nine-figure scale with the naming of actual, ideal, or other, depending on how they see themselves, how they would like their body to be, or how they think others would like their body to be.

Sand as an intervention instrument. The original theoretical framework behind group play in sand is sandplay, which is based on Jungian psychoanalysis (Stein, 2010). Sandplay is a nonverbal process in which the client creates a picture in the sand to give the unconscious mind a voice. This creation in the sand is seen as a psychological map of the psyche (Grønkjær, 2010; Haaning, 2016). The purpose of group play in sand is to release blocked psychic energy and activate the self-healing process that Jung (1964) believed was embedded in the human psyche. The manifestation of the self, the pattern of inner order and wholeness, is one of the most important in the development of personality (Kalff, 2004). Only when the self has manifested itself can the ego develop. The program runs for five weeks, and the participants receive one session each week for 1.5 hours.

Deviations from standard treatment. Using group play in sand deviates from traditional Jungian sandplay because it uses a cohort setting. It also deviates from sandtray therapy even though sandtray therapy uses cohorts. *Sandtray* uses directive dialog, discussion, and direct feedback to the client from the therapist or facilitator about the creation in the sand, which is not the case in the use of the group play in sand program. In group play in sand, the idea of the free and protected space from sandplay (Kalff, 2004) is used as a foundation. It also deviates from *sandworld* in that it is not

being used for dealing with a crisis, which sandworld normally is. However, it may be argued that some obese women are part of a vulnerable population that may have experienced a crisis.

Reliability and validity. Sandplay has been found valuable in stabilization of the relationship between the self and the ego, which is an important focus area in sandplay (Kalff, 2004). Sandplay has also been found to decrease depression (Lee & Jang, 2012), anxiety (Lee & Jang, 2012; Sung-Hun & Min-Kyeong, 2013), the secretion of cortisol (Lee & Jang, 2012; Sung-Hun & Min-Kyeong, 2013) related to stress, and increased self-esteem, which has been suggested to be closely related to self-efficacy (Sung-Hun & Min-Kyeong, 2013). All of these make sandplay, and in this study, group play in sand, both a promising tool for stress relief and increased self-efficacy and a promising tool for aligning discrepancy theory and perception of body image. The participants might experience anxiety, lack of self-esteem, depression, and blame, shame, and guilt as responses to discrepancies between the actual self, ideal self, and ought self.

Operationalization. The program were divided into cohorts with approximately five to eight participants in each cohort. Each cohort had five sessions of group play in sand in a cohort setting. The protocol for the session was in two parts. First, the participant created an individual sand world or sand picture in silence. At this stage, there was no communication between the participants and only communication between the participant and the facilitator if the participant was looking for a specific figure on the shelves and couldn't find it. The second part occurred when the facilitator asked the

participant to label the sand world/picture with a headline and tell what she experienced during its creation. This second part was done while the cohort was watching the sand trays as a silent witness. At this stage, it was up to the participant if she wanted to say anything. Sometimes she did not, and this was accepted. In these cases, the rest of the cohort just watches the sand tray for a few minutes in silence to acknowledge the creation.

Normally, sandplay sessions are in individual blocks of five or six sessions--depending on the level of stress or traumatization--of 1.5 hours. The “theme” is then naturally changed, and the participant can start on a new theme if she likes. However, the number of sessions is individual and differs a great deal from person to person. For this study, the block was set to five sessions each of 1.5 hours in a cohort setting of 5-8 people.

he center follows a protocol for the group play in sand sessions. In general, it runs in the following manner for the initial meeting:

1. The facilitator explains to the participants how the process normally runs (amount of time and number of sessions). The sessions were once a week, 1.5 hours per session, for five continuous weeks, with the facilitator having the responsibility of setting the “frame” or holding the “secure and protected space” (Weinrib, p.26) as Dora Kalff explained, but it is the participants who do the work and create within the tray of sand.

2. The facilitator also explains how to exit the program, and how data will be stored and used according to GDPR (2016).
3. The facilitator verifies BMI of the participants by measuring their weight (pretreatment). The weight scale also calculates the BMI for the facilitator.
4. The participants are led into the sandplay room where the facilitator explains the procedures for using sand and figures, such as how they can use water, followed by the following steps:
    a. First step: The nonverbal creation process starts. The participant does her individual work in the tray with sand. This is normally in silence unless the participant has any questions for the facilitator. The facilitator does not interrupt or intervene. Each participant is offered a tray of dry sand and a can of water if she wants to sculpt the sand or make lakes, a sea, and so forth. When the participant has a sense of being done or when the time is up, she stops and waits outside the room until the time is up (1h) or all participants have completed their sand trays. Normally, the cohort members finish almost at the same time.
    b. Second step: The verbalization of the experience during the session. This is the end of the session, at which time the facilitator asks the participants if they have any comments about their process or on their tray of sand, or if they want to label the tray (Albert, 2015). The participants only speak if they want to, and it is permitted to say, “I have nothing to say.”

The second step is the one in which each participant briefly puts words on her sand tray if she wants to. No cohort discussions occur, and the other participants do not comment on each other's trays. They only listen and observe and are the silent witnesses to the process. Even if a participant does not want to say anything about her tray, either because she does not have any words to add, or she does not want to speak aloud, the view of her tray in silence still offers a deeper understanding of her psyche (Ammann, 1998). This is important even though it is on a nonverbal and unconscious level. According to the protocol, the facilitator takes individual photos of the sand tray(s) when the participants have left the room. The sessions between initial and final sessions follow the structure of the two steps described above. No additional activities or changes occur.

c. End of session. Often the facilitator can see a "goodbye" in the tray of the participants if the end of sessions is agreed on beforehand (as in this case) and has not been interrupted by someone's early exit from the program. After the final session, the participants receive a link to the online posttreatment assessment consisting of Cohen's Perceived stress scale (PSS; Cohen et al., 1983), Weight Efficacy Lifestyle questionnaire (WEL; Clark et al., 1996), and the Stunkard nine-figure rating scale (SFR), this final assessment is filled out by the participants at computers in the center.

The weight and calculation of BMI is conducted by the facilitator after ending the last sandplay session (posttreatment). The facilitator ensure that all assessments are filled out (the facilitator get an email response if something is mission) and all weight and BMI data are valid (visual check) before the participants leave the center.

Data Analysis Plan

All data are secondary and are collected within 12 months. In this case, it was from spring 2019 to spring 2020. The center that runs the program had an increased loss of participants during spring 2019 because of holidays for the participants and because of startup issues like participants who did not recognize the importance of participating in all five sessions but thought they could take a holiday between them. The center also had the huge challenge during spring 2020 with finalizing their last cohorts because of the COVID-19 virus that shut down the whole country a week after the last session for the last cohort. The center only released their limited data set information about the cohorts who had between five or more participants throughout the program and entered these as raw data in an Excel spreadsheet without any personified data (the grey data in Table 2).

When I received the limited data set, it was adjusted according to time (baseline, pretreatment, posttreatment) and ensured that only valid data were in the sheet. When the data were cleaned and ready for use, the Excel sheets were imported into the Statistical Package for Social Sciences (SPSS) Version 21 for analysis (Green & Salkind, 2010). When data were received in the limited data set, each participant was identified by a

unique number, and the data were screened for completeness and quality when the Excel sheet was received. Any incomplete record was deleted from the record set. When the record set was controlled, the data within the record set was "data washed," meaning the data were formatted correctly, for example, so there was no numeric data in text fields. I paid special attention to the Danish separator versus the U.S. separator. In the United States, the separator is a period (weight 87.5); in Denmark it is a comma (weight 87,5). There was an alignment of time so that all cohorts had a baseline, pretreatment and posttreatment when they chronologically might be different actual time periods. For example, cohort 2 has time baseline (T1), pretreatment (T2) and posttreatment (T3), where cohort 3 also has baseline (T1), pretreatment (T2) and posttreatment (T3), but in actual time, posttreatment for cohort 2 could be baseline for cohort 3 (see Figures 1 and Table 2). In this case, the time periods were converted to fit baseline (T1), pretreatment (T2) and posttreatment (T3) so that it was possible to conduct the data analysis. When all fields in the Excel sheet were formatted correctly, they were loaded into the Statistical Package for Social Sciences (SPSS) Version 21 for analysis (Green & Salkind, 2010). The RQs and hypotheses were as follows:

RQ1: Does group play in sand have an effect on perceived stress among obese women?

$H_0$1 - Null: Group play in sand has no effect on perceived stress among obese women in the two cohorts (waiting period and treatment period) as measured by the Perceived Stress Scale (PSS).

H_a1 - Alternative: Group play in sand has an effect on perceived stress among obese women in the two cohorts (waiting period and treatment period) as measured by the Perceived Stress Scale (PSS).

RQ2: Does group play in sand have an effect on self-efficacy among obese women?

H_02 - Null: Group play in sand has no effect on self-efficacy among obese women in the two cohorts (waiting period and treatment period) as measured by the Weight Efficacy Lifestyle Questionnaire (WEL).

H_a2 - Alternative: Group play in sand has an effect on self-efficacy among obese women in the two cohorts (waiting period and treatment period) as measured by the Weight Efficacy Lifestyle Questionnaire (WEL).

RQ3: Does group play in sand have an effect on perception of body image among obese women?

H_03 - Null: Group play in sand has no effect on perception of body image among obese women in the two cohorts (waiting period and treatment period) as measured by the Stunkard Figure-Rating Scale.

H_a3 - Alternative: Group play in sand has an effect on perception of body image among obese women in the two cohorts (waiting period and treatment period) as measured by the Stunkard Figure-Rating Scale.

The data were analyzed using a one-way repeated-measures ANOVA. The repeated measures was taken over three times (baseline, pretreatment, posttreatment). An

overall F test was used to test for changes over time. If any statistical significance was found, then a post-hoc test was performed for any difference between baseline and pretreatment (the waiting period) and for any difference between pretreatment and posttreatment (the treatment period). The following were collected during the assessments: baseline; T1stress, T1self-efficacy, T1body image; pretreatment; T2stress, T2self-efficacy, T2body image; posttreatment; T3stress, T3self-efficacy, T3body image.

Threats to Validity

External validity was challenged because use of sandplay, sandtray, and sandworld would not use the exact procedures for the studied program group play in sand as in existing therapy settings. However, a natural and normal session was reflected as much as possible by using the room with figures and other materials as in a normal therapeutic sandplay setting. The challenge was also the setup of the setting. Normal sandplay is often a one-to-one session, a process which is challenged in this study using the setup from Lynch et al. (2009), and by using group play in sand similar to sandtray and sandworld. Because of this, the setting for this study might be a threat to the validity of sandplay. To try to offset this threat, the sandplay protocol was used consistently across the cohorts that were used as data set in this study. The wording “group play in sand” was used even though the theoretical foundation is based on Jungian analysis and sandplay (Kalff, 2004).

Assessments comparing the baseline (T1) score, pretreatment (T2) and posttreatment (T3) score were conducted across all cohorts to ensure internal validity. A

factor that could influence the outcome was the duration of the program set to five weeks by the center. This because the themes in sandplay sessions normally fades out after five to six sessions and then a new theme emerge. However, there are also people who are in sandplay therapy for years as it depends on how their inner structure and inner life unfold. A history and maturation threat can be present if a participant had a traumatic childhood. Then that person might need more than five sessions of sandplay therapy. This question was not asked in the assessment and could be interesting to explore if the data analysis shows no significant change in data; however, it is assumed that this error is ruled out by the use of multiple cohorts across time. Furthermore, if any significance is registered a post hoc test is performed for any difference between baseline and pretreatment, and between pretreatment and posttreatment.

Both internal and external validity can be threats to the validity of a conclusion. In this study, the different directions of working with sand were not addressed nor were there discussions between cohorts and individual sessions, including possible cohort dynamics.

Ethical Procedures

I used secondary data and a signed agreement form to ensure participant anonymity (see Appendix A). The participants were told before the program began about data storage and data use according to the GDPR (2016) EU law, which corresponds to the law in Denmark. The participants were also told about possible data use for scientific research, research articles, and scientific articles but that their names would not be

revealed, and they would not be identified in any way without their written permission. The ethical considerations for the study were minimal, and benefits are expected to outweigh the risks, as the results of the study may assist in improving the lives not only in the selected population but for all who are struggling with obesity. The participants were also told that they could withdraw from the program at any time without any reason, without any consequences and anything relating to them would be deleted immediately. If anyone stated they did not want their data to be used for any reason, it was removed and locked up and unavailable for secondary data use.

Protection of participants' rights. Data are stored under safe lock according to regulations from The Danish Data Protection Agency and the requirements of Walden University. No identifying information was collected from participants, and personal information was handled according to the GDPR law, Datatilsynet (The Danish Data Inspectorate), and Walden University. Surveys and other data have only a number as their unique identifier, and data were only released to me as a limited data set. As the researcher, I have signed an agreement with the center to use the limited data set only as secondary data for Walden University. The center submitted an Excel file to me containing only the limited data set.

Risks. There were no known risks, pain, or other physical or psychological factors related to the intervention that could cause harm or discomfort to the participants. There was no exposure to or collection of biological materials or collection of information from patients' health records.

Other ethical issues. I am interested in sandplay and have a sandplay education from the Danish Sandplay Institute. I am aware that the method differs from traditional use of sandplay by adding the cohort session perspective. Because of this perspective, other directions of using sand (sandtray and sandworld) are included in the study. I work in the center that facilitates the program, but to mitigate any influence, bias, or my personal interests, I did not see the collected data set in full before anonymization, receiving only the limited data set from the center.

Summary

This chapter was an overview of the research design and how data were collected and handled during the research. I also discussed the use of secondary data and how the sampling was done in the group play in sand program where data was collected as secondary data. Finally, I explained the use and operationalization of instruments and how data were analyzed. Chapter 4 is a presentation of the data collected, results of the intervention, and a comparison of those results to the findings from the control cohort.

Chapter 4: Results

Introduction

In Chapter 4, I present the analysis of the secondary data. The chapter includes a restatement of the purpose and RQs and hypotheses, a discussion of the data collection, and an interpretation of the results. The purpose of the study was to gain greater insight into the psychological constructs of obesity by examining the efficacy of group play in sand (based on sandplay) as an alternative tool for treating obese women. I wanted to explore the complexity of obesity and ascertain whether group play in sand might be useful for learning more about perceived stress, self-efficacy, and body image perception. Data were secondary data from a clinic in Denmark. The dependent variables were perceived stress (PSS), weight self-efficacy (WEL), and perception of body image (SFR). The null hypotheses for PSS, WEL, and SFR were rejected, and the alternative hypotheses were supported. PSS, WEL, and SFR showed that the use of group play in sand had a positive effect on participants by lowering their stress levels, increasing their self-efficacy about weight, and minimizing discrepancies between their perception of their body.

Participants in the group play in sand program completed a 5-week waiting period followed by a 5-week treatment period. When the women entered the waiting period, their baseline (T1) was assessed for the variables (PSS, WEL, SFR). When they entered the treatment program, a pretreatment (T2) assessment was collected, and when the program ended after five weeks, a posttreatment (T3) assessment was collected.

Data Collection

Program staff collected data in the center House of Change in Spring 2019 and Spring 2020. As the researcher, I received a limited data set end of March 2020. The center follows the GDPR European law of data protection (GDPR, 2016), and the participants in the program were told the data might be used as anonymous information for research, which is standard for the center for that type of program. Participants were recruited from January 2019 when the center was recruiting actively using mainly Facebook ads, newsletters, and flyers handed out in the local community--the normal way of recruiting for the center. The response rate was high in 2019; however, when the program was about to start at the end of January 2019, many women dropped out before baseline, and some dropped out in the treatment period. In some cases, the program did not start at all because of lack of participants. Some participants exited the program because of the many holidays during the spring in Denmark.

Participants who exited the program (see Cohorts 1, 2, and 3 in Table 2) were withdrawn from the program and not replaced. There was no discrepancy in the data collection from the original plan presented in Chapter 3 because the plan was to receive a limited data set from the center with at least 28 participants. The center differed slightly from the plan because of the COVID-19 pandemic that began in Denmark in March 2020, because for this period, the center had to offer disinfection and plastic gloves for participants and create more space between the sandboxes to follow the regulations from

the Danish government. Twenty-four participants in the limited data set had their final sessions during March 2020, the first week of the COVID-19 lockdown in Denmark.

Twenty-four participants were active in the study during the first week of the COVID-19 restrictions and further 10 participants were in the study before COVID-19, in total thirty-four participants who completed the program. At baseline, they were all women between 31 and 68 years old with a BMI > 25.0 who lived within 100 km from the center and were a representative sample of the population of interest. The first cohort was not included in the limited data set by the center because there was no waiting period for this cohort, and they started directly with treatment. The rest of the cohorts followed a 5-week waiting period and a 5-week treatment, and the center did screen the cohorts for number of participants, only to include cohorts with five or more participants in the limited data set. The cohort numbers as well as the participant IDs were renumbered by the center in the limited data set; therefore, it is not possible to determine which original cohort responded in a certain way or which particular participant responded in a certain way.

After receiving the limited data set, I aligned the time so that all participants had a baseline (T1), pretreatment (T2), and posttreatment (T3) scores. The time periods were converted to align with baseline, pretreatment, and posttreatment so that it was possible to conduct the data analysis. After I had formatted all fields in the limited data set correctly I did test for outliers, following a data load to the Statistical Package for the Social Sciences (SPSS) Version 25 for further analysis (see Green & Salkind, 2010).

I checked all data in the limited data set for missing data before loading to SPSS and also checked for number alignment because Denmark uses a comma (87,5 kg) and American English speakers use a period (87.5). Therefore, all data regarding weight measurement were changed from the Danish format to the English format for this report. However, in SPSS, the settings were Danish format, so the Danish version was used for the data load. All results were double-checked for consistency between the Danish and English for unique qualities besides language. I also added three BMI calculations for baseline, pretreatment, and posttreatment because only weight and height were in the original data set received from the center. The calculation of the BMI followed the metric of BMI = mass of weight (kg) /height * 2.

PSS. For the perceived stress measurement, the results were summarized to one number for each time period (baseline, pretreatment, posttreatment), and questions were scored using the scale: 0 = *never*, 1 = *almost never*, 2 = *sometimes*, 3 = *fairly often*, and 4 = *very often*. Four of the items in the 10-item PSS questionnaire were positively stated (Items 4, 5, 7, and 8), which meant that they needed to be reversed (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 and 4 = 0) before summarizing. Higher scores indicated higher stress levels.

WEL. For the weight self-efficacy measurement, the results were also summarized to one number for each time period (baseline, pretreatment, posttreatment). The weight self-efficacy questionnaire was comprised of 20-item questions scored on a 10-point scale ranging from 0 (*not confident*) to 9 (*very confident*). Higher summarized scores indicated a higher level of weight self-efficacy.

Stunkard Figure Rating Scale. The SFR scale is a questionnaire with drawings of nine female bodies ranging from 1 (*anorexic*) to 9 (*very obese*). The participants responded to a five-item questionnaire and were asked to answer according to the scale (1-9) of the pictured women. I used these responses to measure several things: how they perceived their body image, the body they would be satisfied with, their ideal body, and how they believed that others saw them and would like them to be. Higher scores indicated perception of a more obese body image.

For the figure rating scale questionnaire, I added two columns in the analysis for each time period (baseline, pretreatment, posttreatment) to calculate values of dissatisfaction and delta values of unrealistic perception of own body image. The delta value of dissatisfaction (Δsat) was calculated as the discrepancy between the women's perceptions of themselves (SFR-Me) and how they would like their body to look if they were satisfied with their body image (SFR-Satisfied). A satisfaction discrepancy of zero (Δsat = 0) would then be expected to express that the women were satisfied with how they looked. A greater Δsat indicated the woman was more dissatisfied with her body image.

The delta value of unrealistic perception (Δme) of one's body image was calculated as the difference between the figure number selected in the body image questionnaire of how the women perceived themselves at that time (SFR-Me) and the figure number calculated from her actual weight and BMI. The woman's calculated BMI might show that she is a Number 5 according to Figure 6, but in her assessment (SFR-

Me), she selected a Number 7 as her actual body image perception at that moment, indicating a discrepancy of 2 (Δme). It is expected that the greater discrepancy (difference), the more unrealistic the women were about their actual body image (unable to see herself as she actually appears). This value also shows how accepting a woman was with her own body image perception and reality according to her actual BMI.

Figure 6 is from a study by Wesnes et al. (2014) which considers whether obesity could be a risk factor for developing multiple sclerosis by a Norwegian and Italian population. Figure 6 was selected in this study because Norway and Denmark both are Scandinavian countries and therefore similar in body structure, and because Denmark has not made a separate scale of Stunkard's Figure-Rating Scale with figures combined with the BMI scale. The Figure 6 is cropped to show only women and Norwegian BMI. The BMIs in Figure 6 were used to compare the calculated BMI (based on actual height and weight) for the women to a figure number that can be used as a reference when calculating values of realistic/unrealistic perceptions of body image (Δme).

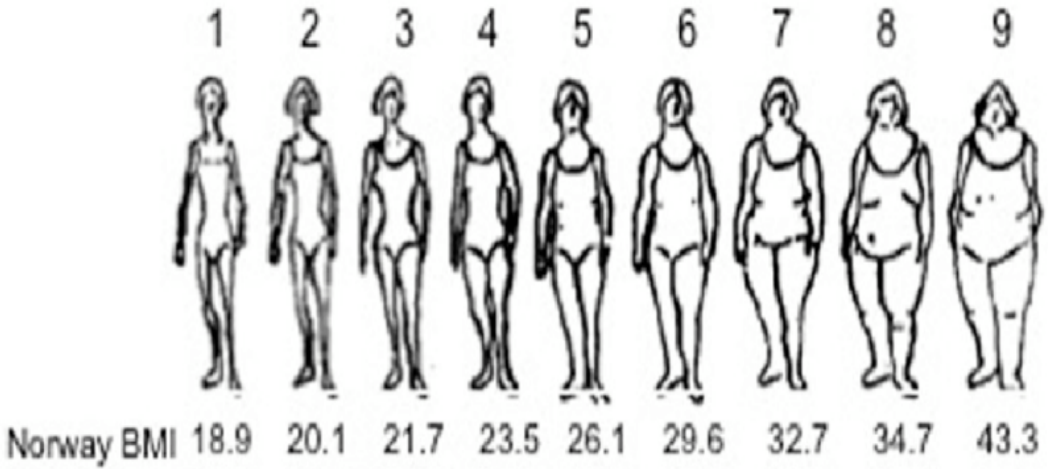


Figure 6. Stunkard's Figure Rating Scale combined with Norwegian BMI. Adapted with permission (see Appendix D).

Because of GDPR, the center collected only name, e-mail, phone, age, height and weight, and calculated BMI.

Treatment

It was unfortunate that the program began in the spring of 2020, particularly since Denmark closed down during March of 2020 because of COVID-19 when the last cohorts ended their sessions. This might also have had an influence on the participants' responses to the measurements at the time posttreatment (T3) for the last cohorts that were ending their sessions in March 2020. No participant left the program because of COVID-19, but some responded that they were stressed and anxious and did not understand what was going on. Some said they were eating more because of the anxiety and because of stress in society in general, which affected them. The beginning of the COVID-19 lockdown was also the same month Denmark was bombed during World War II. Although the circumstances were certainly different, it affected some participants

negatively because of the war-like situation of many people lacking food (or their perception of lacking food), and some experiencing flashbacks to World War II or remembered hearing about the war from their parents. The protocol treatment was as good as possible under the circumstances, but because participants had to wear plastic gloves or used disinfectant and had more space between them for the last session of group play in sand it could not replicate the initial experience.

Results

Procedures

I conducted a one-way repeated measures ANOVA within-subjects to find out whether there was a statistically significant change in the mean scores of the variables of perceived stress, weight self-efficacy, and perception of body image as a function of treatment (group play in sand). The advantage of ANOVA is that it tells if there are mean differences between each variable at the different time points; the disadvantage is that it does not tell specifically where the difference is and might require a follow-up post hoc test if the test showed any significance (Field, 2014). The one-way repeated measures ANOVA was run in two steps: Step 1 was a pre-test for format, outliers, and homogeneity. Step 2 was the main ANOVA test testing for whether means were equal (null hypothesis). If Mauchly's test of sphericity was met, I performed a post hoc test to find which means were not equal. If Mauchly's test of sphericity was violated, I used a Greenhouse-Geisser correction.

Table 4

Mauchly's Test of Sphericity - Greenhouse-Geisser

Measure	Mauchly's W	Approx. Chi- Square	df	Sig	Greenhouse-Geisser
PSS	.971	.951	2	.622	.972
WEL	.787	7.677	2	.022	.824
SFR	.740	9.623	2	.008	.794
Sat	.795	7.326	2	.026	.830
Me	.716	10.695	2	.005	.779
BMI	.790	7.555	2	.023	.826

Step 1: Pretest

In Step 1, the limited data set was reviewed for the US format (instead of Danish) outliers, and homogeneity for the variables of perceived stress, weight self-efficacy, and perception of body image. In the limited data set, all data were changed from the Danish convention of using a comma to the U.S. use of a period. An example is changing for the weight 87,5 kg (Danish) to the U.S. method 87.5 kg. Both the Danish and US versions were kept for the data analysis. ANOVA assumed that the data were normally distributed, and that data had homogeneity of variance (Field, 2014). Finally, ANOVA requires that the observations were independent of each other.

Step 2: Main Test

The main ANOVA measures if the means are equal (null hypothesis) (Field, 214). This test reveals statistical evidence in the results from the one-way ANOVA with

repeated measures. The *p* value (Field, 2014) reveals if the evidence is strong enough and the hypothesis is valid. Descriptive statistics (mean, SD) are analyzed, and sphericity (Mauchly's test) is assessed to see if the variance is equal and if the hypothesis can be accepted or rejected. Finally, if Mauchly's test is met, the pairwise comparison is used to investigate differences between waiting period and treatment period; otherwise, if the Mauchly test is violated, the test of within-subjects effects are used with the multivariate and univariate tests (Salkind & Green, 2012) to determine if there is a significance.

Table 5

Descriptive Statistics for Variables

Variable	Mean	SD
Perceived stress-T1	19.79	6.049
Perceived stress-T2	18.38	7.479
Perceived stress-T3	14.50	6.416
Weight self-efficacy-T1	110.94	35.269
Weight self-efficacy-T2	113.91	35.185
Weight self-efficacy-T3	139.00	29.968
Body image perception-T1	6.88	1.094
Body image perception-T2	6.68	1.036
Body image perception-T3	6.21	1.149
BMI-T1	30.93	3.773
BMI-T2	30.50	3.702
BMI-T3	30.31	3.615
Unrealistic body perception-T1	1.12	.880
Unrealistic body perception-T2	1.00	.778
Unrealistic body perception-T3	.65	1.098
Dissatisfied with body perception-T1	2.65	1.368
Dissatisfied with body perception-T2	2.32	.878
Dissatisfied with body perception-T3	2.03	1.087

Note. $N = 34$ for all variables.

Perceived Stress

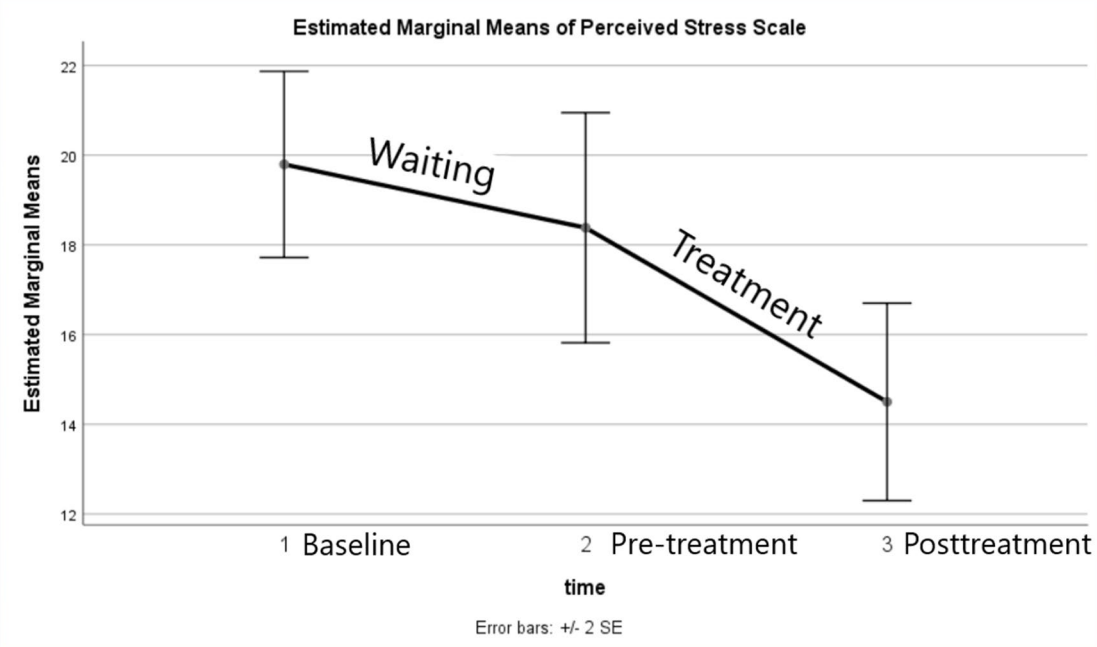


Figure 7. Decrease in perceived stress over time.

For perceived stress, the research question was "Does group play in sand have an effect on perceived stress among obese women?". Looking at the descriptive statistics for the variable perceived stress, Table 5 shows that the baseline (T1) was rated with a greater degree of measured stress (M = 19.79, SD = 6.049) than posttreatment (T3) which was rated with the lowest stress (M = 14.50, SD = 6.416), which means the women's stress level dropped over time. Mauchly's test of sphericity indicated that the assumption of sphericity had been met, χ^2 (2) = .951, p = .622. Since the overall F test was statistically significant for the one-way ANOVA, $F(2, 66) = 15.272$, $p < .001$, the pairwise comparison is reported with a Bonferroni post hoc test, which allows us to

discover which specific means differed. Between baseline and pretreatment, the mean difference was not significant, $p = .392$ ($MD = 1.412$, $SE = .911$); however, there was a significant difference between baseline and posttreatment ($MD = 5.294$, $SE = 1.058$, $p < .001$) as well as for the period between pretreatment and posttreatment ($MD = 3.882$, $SE = 1.002$, $p = .001$). The results showed a significant effect of time with differences ($p < .001$) between the conditions (waiting period and treatment period) for obese women who used group play in sand compared to the same women in pretreatment control conditions (waiting period). Figure 7 visualize that the women's stress level is decreasing significant over time, and that there is a significant difference between waiting period and treatment period for obese women who used group play in sand.

Self-Efficacy

The research question was "Does group play in sand have an effect on self-efficacy among obese women?". Looking at the descriptive statistics for the variable weight self-efficacy, Table 5 shows that the posttreatment (T3) was rated with the highest measured self-efficacy ($M = 139.00$, $SD = 29.968$), and baseline (T1) was rated with the lowest measured weight self-efficacy ($M = 110.94$, $SD = 35.296$), which mean the women increased their level of self-efficacy related to handling their weight over time. Mauchly's test of sphericity indicated that the assumption of sphericity has been violated, $\chi^2(2, N = 34) = 7.677$, $p = .022$, and therefore, a Greenhouse-Geisser correction was used showing that all corrections agreed. When using an ANOVA with repeated measures

with a Greenhouse-Geisser correction, the mean scores for self-efficacy were statistically significant F (1.648, 66) = 24.557, $p < .001$, $\eta p^2 = .427$.

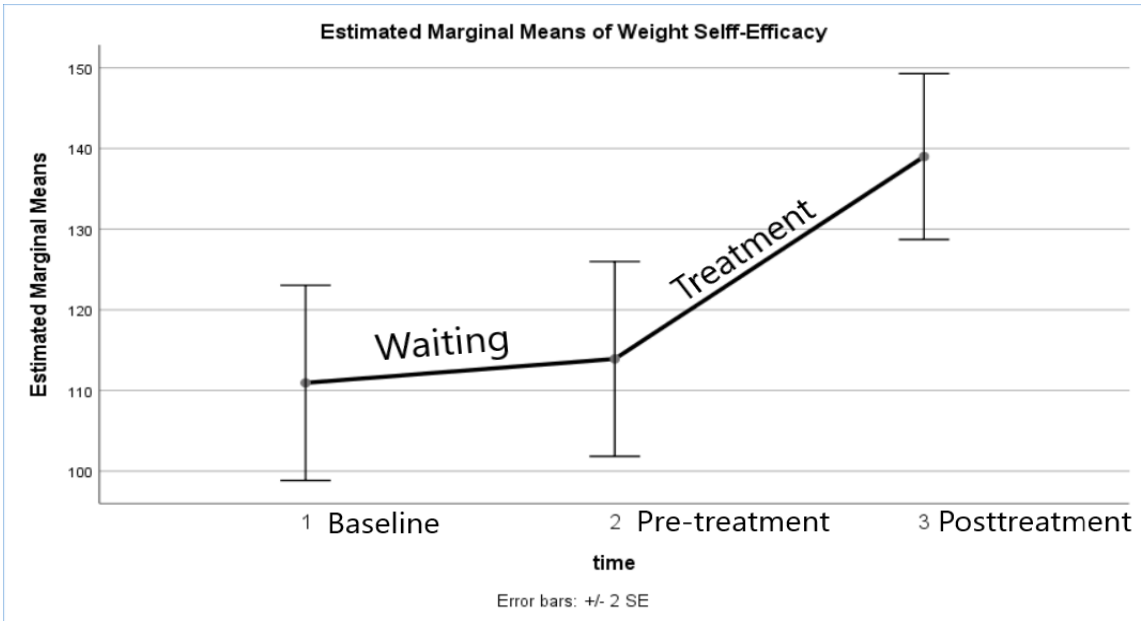


Figure 8. Increase in weight self-efficacy over time.

This research did reveal a significant difference over time ($p < .001$) between the conditions (waiting period and treatment period) for obese women who used group play in sand compared to the same women in pretreatment control conditions (waiting period). Figure 8 depicts that the women's self-efficacy of handling their weight increases significant over time and that there is a significant difference between waiting period and treatment period for obese women who used group play in sand.

Stunkard's Figure Rating Scale

For body image perception, the research question was "Does group play in sand have an effect on perception of body image among obese women?". Considering the descriptive statistics for the variable body image perception, Table 5 shows that the

posttreatment (T3) was rated with the lowest measured perception of body image (M = 6.21, SD = 1.149) and baseline (T1) was rated with the highest measured perception of body image (M = 6.88, SD = 1.094), which means the women's perceptions of an obese body image decreased over time.

Mauchly's test of sphericity indicated that the assumption of sphericity had been violated, $\chi^2(2, N = 34) = 9.623$, $p = .008$. Because of that perception, I used a Greenhouse-Geisser correction. When using an ANOVA with repeated measures with a Greenhouse-Geisser correction, the mean scores for body image perception were statistically significant for the treatment $F(2, 66) = 9.254$, $p = .001$, $\eta p^2 = .219$.

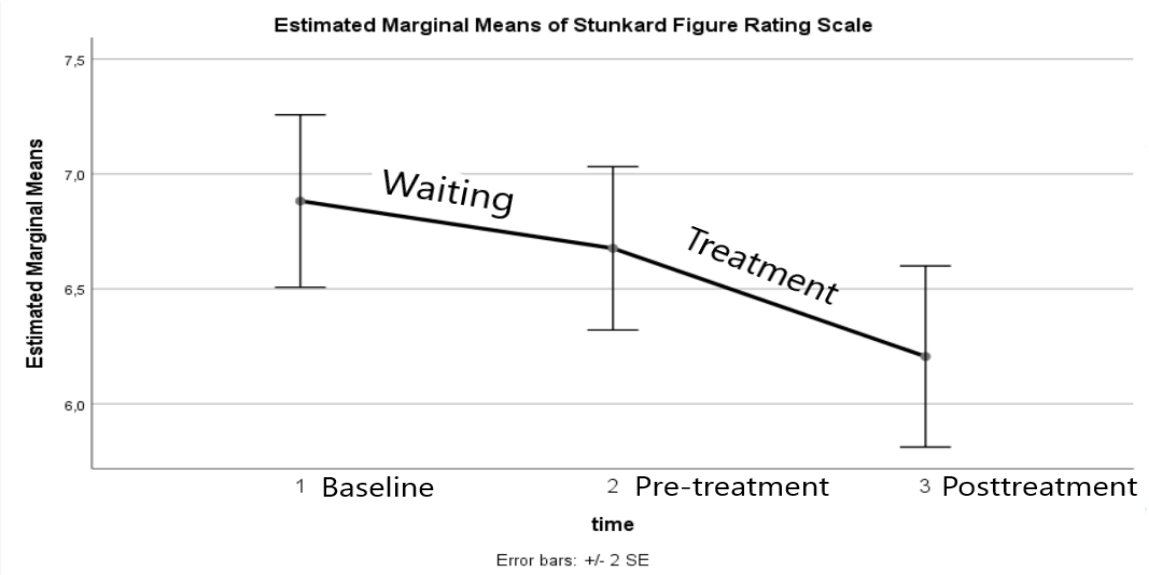


Figure 9. Decrease in body image discrepancy over time.

The results revealed a significant difference over time (p = .001) for obese women who used group play in sand compared to the same women in pretreatment control conditions (waiting period). Figure 9 illustrated that the women's perception of body

image decreased significantly over time and that there was a significant difference between the waiting period and treatment period for obese women who used group play in sand. This mean that after the group play in sand the women did not see them self as much overweight as before they entered the program. In the limited data set, I added two extra columns: Δme, which express the difference between the women's perception of themselves right now (SFR-Me) and the calculated figure rating number based on their BMI for each time period. This indicator was added to show how realistic (or unrealistic) the women were about their perceptions of their own body images. The greater this number was, the more discrepancy between how the women perceived their body size compared to their actual body size based on their BMI. A greater number (discrepancy) indicated that these women were unrealistic about their perceived body images.

The other column added was Δsat, which shows the difference between how the women perceived themselves at that moment (SFR-Me) and how they would need to appear to be satisfied with their body image (SFR-Satisfied). This indicator illustrated how satisfied (or dissatisfied) they were about their body image. The greater this number, the more discrepancy between perception of body size and how they would like to look. A greater number (a discrepancy) indicated they were dissatisfied with their body image. Looking at the descriptive statistics for the variables Δme and Δsat, Table 5 shows that the baseline for both variables (Δme-T1 and Δsat-T1) was rated with the highest mean measure ($M = 1.12$; $M = 2.65$), which means participants showed a high discrepancy about how realistic they were about their body image perception, as many saw

themselves as more than one figure more obese than they were and also a high discrepancy about their satisfaction level with their body image (they would like their body to be 2.65 figures smaller than they see themselves before they would be satisfied with their bodies). The posttreatment for both variables (Δme-T3 and Δsat-T3) was rated with the lowest mean measure ($M = .65$; $M = 2.03$) which means that after treatment they had a more realistic perception of themselves and they were generally more satisfied with their body image (decreased discrepancy).

Mauchly's test was violated for both Δme ($\chi^2(2, N = 34) = 10.695$, $p = .005$) and Δsat ($\chi^2(2, N = 34) = 7.328$, $p = .026$). When using Greenhouse-Geisser and Huynh-Feldt for Δme $F(2, 66) = 3.891$, $p = .036$, $\eta p^2 = .105$ and for Δsat $F(2, 66) = 5.331$, $p = .011$, $\eta p^2 = .139$, the p value was significant. Even though Mauchly's test was violated, the pairwise comparisons for Δsat showed a significant difference between baseline and posttreatment ($p = .025$), which means that the women during the waitlist and treatment had become more satisfied, also the p-value for Δme did show significant change ($p = .049$) during treatment, which means that through treatment the women became more realistic about their body image and how they perceived themselves. This research study did not go deeper into the level of satisfaction or realism about body image for the obese women because it was not a part of the original research question; however, it could be interesting in a future research to determine if there were any relation between body image perception, BMI, realism, and satisfaction as a result of a group play in sand treatment in a time period of five weeks or longer.

Summary

To test the efficacy of the use of group play in sand on obese women, I conducted a series of one-way repeated measures ANOVAs. These tests were found to be statistically significant for the three research questions used to reveal whether group play in sand had a significant effect on perceived stress, weight self-efficacy, and body image perception for obese women over 19 years of age with no active participation in weight loss programs. I also investigated the difference between two conditions (waitlist/treatment) at three time points: baseline, pretreatment, and posttreatment. This quantitative research study showed that obese women participating in a group play in sand treatment, over time, did decrease their stress levels, increase their weight self-efficacy--meaning they were now more comfortable and felt they were able to manage their weight--and also changed perceptions of their body image to a more realistic view (the size they were according to their weight scale). Furthermore, there was a tendency that the women also became more satisfied with their body image; however, based on the results, it is not possible to say if this satisfaction was based on a reduced BMI, increased weight self-efficacy, reduced stress levels, or a more realistic view of themselves. Chapter 5 will be a discussion about the findings, recommendations, and conclusions from the three measurements: perceived stress, weight self-efficacy, and perceived body image. The challenge was also the setup of the setting. Normal sandplay is often a one-to-one session, a process which is challenged in this study using the setup from Lynch et al. (2009), and by using group play in sand similar to sandtray and sandworld. Because of

this, the setting for this study might be a threat to the validity of sandplay. To try to offset this threat, the sandplay protocol was used consistently across the cohorts that were used as data set in this study. The wording “group play in sand” was used even though the theoretical foundation is based on Jungian analysis and sandplay (Kalff, 2004).

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to investigate whether group play in sand influenced perceived stress level, self-efficacy, and body image perceptions of obese Danish women. I used questions based on the PSS (Cohen et al., 1983), WEL (Clark et al., 1996), and the SFR (Stunkard et al., 1983) as measurements to get a better understanding of the psychological construct of obesity in women. In addition to the measurement scales, age, height, and weight were collected and BMI were calculated. I received the secondary data in a limited data set from a Danish clinic that had run a program for obese women over 19 years old with a BMI >25.0.

Sandplay has a positive effect on decreasing stress level (Kim & Jang, 2012; Lee & Jang, 2012; Sung-Hun & Min-Kyeong, 2013) and increasing self-esteem (Shen & Armstrong, 2008; Sung-Hun & Min-Kyeong, 2013). Even though self-esteem and self-efficacy are suggested as closely related (Judge, Erez, Bono, & Thoresen, 2002), there has been no direct exploration of how sandplay affects self-efficacy. In reviewing the literature, I found no research about sandplay and the impact of body image perception. This study provides information that can be used by health care providers, researchers, and other professionals working in the area of obesity. The RQs were as follows:

RQ1: Does group play in sand have an effect on perceived stress among obese women?

RQ2: Does group play in sand have an effect on self-efficacy among obese women?

RQ3: Does group play in sand have an effect on perception of body image among obese women?

The findings demonstrated significant change over time in participants' stress level, self-efficacy, and body image perception as a result of the 5-week group play in sand program, which was based on theories of sandplay.

Interpretation of the Findings

There were several noteworthy findings. Some are supported in the existing literature, and some contributed new information to research in the area of obesity.

Perceived Stress

I used the Danish consensus version (Eskildsen et al., 2015) of the 10-item Perceived Stress Scale (PSS-10) to measure stress level among the participants. In this study, I showed that perceived stress was significantly reduced for the obese women in the 5-week program. This result is in line with sandplay studies by Sung-Hun and Min-Kyeong (2013), who studied stress level among university students and confirmed that sandplay--in this case group play in sand--has a decreasing effect on stress level. Fifty-six percent of the obese women in this study had a decrease in their stress level while they were on the waiting list, compared to 67.5% while they were in treatment. Three percent stayed at the same stress level while they were in the waiting period compared to 15% while in treatment period, and 41% increased their stress levels while in the waiting

period compared to 17.5% in the treatment period. When the women were in waiting period, there was less stress level than there was increase; however, when they were in the treatment period, there was significant difference between decreased stress level and increased stress level, with a majority decreased. Findings from this study of group play in sand support the existing research of sandplay (Lee & Jang, 2012; Sung-Hun & Min-Kyeong, 2013) that showed that group play in sand has a positive effect on decreasing stress.

Self-Efficacy

I used the WEL questionnaire (Clark et al., 1991) to measure self-efficacy among the participants. Findings from this study showed that self-efficacy was significantly increased for the obese women in the program using group play in sand as treatment; this finding supports research studies about sandplay's positive effect on self-esteem (Sung-Hun & Min-Kyeong, 2013) and also confirms studies (Sung-Hun & Min-Kyeong, 2013) suggesting that self-efficacy and self-esteem are closely related. Fifty percent of the obese women had a decrease in their self-efficacy while they were on the waiting list, compared to only 9% while they were in treatment with group play in sand. None of the participants had the same self-efficacy level in either the waiting or the treatment periods. Fifty percent did increase their self-efficacy while they were in the waiting period; 91% did so when they were in the treatment period with group play in sand. The results from this study of using group play in sand as treatment confirm the research of Sung-Hun and

Min-Kyeong (2013), showing a close relation between self-efficacy and self-esteem supporting the use of group play in sand as an effective tool for increasing self-efficacy.

Stunkard's Figure Rating Scale

I used Stunkard's nine-figure rating scale (Stunkard et al., 1983) to measure the participants' perception of body image. In this study, I showed that perception of body image did change significantly over time for the obese women in the studied program using group play in sand. Over a quarter of the obese women in the program had a decrease in their perception of body image size while they were in the waiting period compared to a 50% decrease in perception of body image size in the treatment period using group play in sand. This means that 50% of the women saw themselves as less obese after treatment with group play in sand. Fifty-six percent did not feel any change in their perception of their body size while they were in the waiting period compared to 41% in the treatment period. Finally, 17.5% of the women on the waiting list felt they were more obese while waiting compared to only 9% while in treatment. The results showed that the use of the technique group play in sand changed the women's perception of their body size from an obese body size to a less obese body size.

These results indicated a more realistic perception of body image and add knowledge to the field of obesity because no research was available within sandplay, sandtray, or sandworld's effect on body image perception (size). After treatment, the selected figure number in SFR compared to the calculated figure number from the women's actual BMI decreased. Thirty eight percent of the women decreased the span of

their discrepancy after treatment, while only 26.5% decreased their discrepancy in the waiting period, and only 12% increased their discrepancy on treatment compared to 26.5% in the waiting period. The findings extend the knowledge in the discipline of obesity, especially the field of obese women.

Limitations of the Study

The findings of this study contribute both to the existing literature about sandplay's positive effect on stress and also the limited literature on sandplay's effect on self-efficacy--including a new contribution to the literature about sandplay's (group play in sand's) effect on perception of body image of obese women. The study has some limitations as well. The data might have been skewed because the posttreatment assessment was conducted in the first week of lockdown in Denmark as a response to the COVID-19 pandemic of 2020. People in general were confused about what was happening; some were frightened and anxious, and some older citizens said the confusion in society felt like their experiences during wartime (World War II).

These feelings of insecurity might have influenced the participants and their last assessment (posttreatment) and, therefore, the results of this study. However, because the assessment timestamp is in the first week where Denmark is locking down it is assumed that the confusion in society only affects the stress level (if any) and not the variables self-efficacy and body image perception. Fifty-six percent of the women did decrease in stress level during the wait period, however in the same period of time (wait) 41% of the women also increased their stress level, only 3% did stay at the same stress level during

the waiting period. In the treatment period 67.5% of the women decreased their stress level, 17.5% increased their stress level and 15% stayed at the same stress level during treatment. The drop of stress level during wait list could be the psychological factor of placebo, that the women expected positive changes in their life now they were accepted on the program (inclusion criteria), but it is unsure and need further investigations. Also, further investigations about how and if COVID-19 had any effect on stress level e.g. some started hoarding because they thought there were limited supply of food etc. could be interesting to investigate further and could be a limitation to the validation of the study.

The women's perception of how they saw their body did change over time. They slightly saw themselves as less obese, became more realistic about their body and more satisfied with their body during treatment. Their BMI and weight did change over time with an average weight at baseline 87.21 to an average weight at 86.02 just before treatment (pretreatment), to an average weight 85.51 at posttreatment. It is not possible to say further if or how the weight and BMI change had any influence on the results of the study or if the weight reduction had influence on the body perception or vice versa. Further it is not possible to say anything about the effect of COVID-19. The food supply in Denmark was plenty, however some *felt* the supply was limited and started hoarding, and some of the participants told the center they had started eating more food (especially high calory food) because of COVID-19. How this felt sense of urgency or maybe increased stress have influence on the study is not possible to tell.

Another limitation is the theoretical framework. There was only focus on the variables of stress, self-esteem/self-efficacy, and body image perception. A further exploration of the relation between self-discrepancy theory (Higgins, 1987) and the exploration of the unconscious in the sand might be considered for future research. Third, the theory of social learning was used in this study as implicit theory because group play in sand was based on and founded in the psychology of social learning. This could be revealed in a future study by focusing on the implicit effects of group play in sand on the learning environment. Fourth, the use of surveys could have been skewed even though it was anonymous, especially at baseline where the participants added their weight based on their personal weight scale which could differs from the weight scale used in the center, or they could have submitted a different weight just because they wanted to adjust their weight up (the inclusion criteria was BMI>= 25) or down (to "look better"). At pretreatment and posttreatment all participants were weighed in the center in a separate room with only a facilitator measuring the weight. In addition, all participants told the facilitator that the weight scale at the center was slightly lower than their own personal scale. This study was limited to obese women (BMI >= 25) over 19 years old who were not (a) pregnant, (b) not in an active program for weight management, (c) not diagnosed with an eating disorder, (d) not using prescribed, heavy medication, or (e) did not suffer from clinical depression/were feeling very depressed.

It was expected that group play in sand would have a more significant effect on the women's stress levels (67.5% perceived a decrease in stress level after treatment)

because previous studies (Kim & Jang, 2012; Lee & Jang, 2012; Sung-Hun & Min-Kyeong, 2013) had shown that sandplay positively affected decreasing the stress level, and group play in sand was based on the sandplay protocol even though it used cohorts instead of individual therapies that are used in sandplay. The results are interesting because they did show a significance in reduced stress during treatment (67.5%) even when COVID-19 was increasing in Denmark, and some participants reported to the center they had started to stress eat, but responses about their stress level show otherwise across the cohorts in response to sand play. Also, the participants decrease in average weight over time do not show effect of stress eating. Another threat is the participants response to the assessments, not all participants will respond in the same way hereby a threat to validity. A replication of the study might show if the increased stress level of 17.5% after treatment was a result of COVID-19.

For weight self-efficacy, I had hypothesized that group play in sand would have a positive effect on obese women because previous findings had suggested a positive relationship between participating in sandplay and increased self-esteem (Shen & Armstrong, 2008; Sung-Hun & Min-Kyeong, 2013). The findings from this research supported the assumptions that self-efficacy can be equalized with findings from self-esteem (Judge et al., 2002). The current research showed a positive relationship between group play in sand and participants increased self-efficacy about their own weight.

Using the theoretical framework, the study was limited only to investigate self-efficacy and not self-esteem, and I did not go into detail about how the discrepancy

between the different selves influenced self-esteem, dissatisfaction, and disappointment (Higgins, 1987). Future researchers might also consider how minimizing the discrepancy between the selves influences the ego (Ammann, 1998; Turner, 2017), and investigate if sandplay or group play in sand can be the treatment that repairs ego damage as Cochrane (2008) mentioned as important in future treatment plans.

The research about body image perception was limited to an investigation of whether group play in sand had any impact on obese women and maybe could reduce their concerns about being overweight. The women saw themselves as close to a Figure number 7 in the Stunkard's figure rating scale at baseline but ended with a perception of their body close to a Figure number 6 in the Stunkard's figure rating scale at posttreatment--dropping a discrepancy of 1 Figure number. They also became more realistic about their body image during treatment, and their dissatisfaction levels dropped. This indicated that the treatment had a significant effect on their perceptions of body image; however, a suggestion for future research would be to investigate a possible cause-and-effect relationship between body image perception, satisfaction, and how realistic the participants were about their own body images. These were not researched in this study. Another limitation of the study was that it is not known how the effect of individual sandplay therapy affects body image perception, and we do not know what size the ideal cohort should be to maximize the effect. The cohort setting was expected to increase social learning, but it was unclear how social learning would unfold in a nonverbal cohort setting. A future study investigating how the nonverbal and unconscious

unfold in a group play in sand setting so that the unconscious in the psyche would heal itself (Kalff, 2004) could be interesting.

The five-week period of treatment and the 1.5 hour session for group play in sand are variables that could be investigated and changed as needed for optimization in future research. Another researcher could address external validity by comparing sandplay, sandtray, and sandworld with the group play in sand technique to investigate strengths and weaknesses of different therapeutic settings. Future therapists could mix techniques, using what is needed and suitable for their clients. Another study might start with individual sessions and then fit the client into a group program or start with nondirective work and end with a more interactive relationship with the therapist when the client has stabilized her ego and self-efficacy and is ready for a more progressive direction. In this study, the different directions of working with sand were not discussed, nor were the discussions between cohorts and individual sessions, including possible group dynamics. Internal validity could also be addressed in a future study by learning the backgrounds of the participants and pursuing the effects this might have had on them.

Recommendations

Recommendations for Practice

This research study showed that group play in sand had a similar effect on stress relief as sandplay. The results also showed that the treatment had a positive effect on self-efficacy as sandplay does on self-esteem, and hereby support the suggestions that self-esteem and self-efficacy are closely related. Finally, the findings show that group play in

sand has a positive effect on decreasing discrepancies about body image perception, a finding that is new to the literature and adds information to both sandplay and obesity treatments. As such, the significant findings show that group play in sand can benefit and support obese women as an alternative setting to traditional and existing weight loss and maintenance programs. The recommendations are therefore that group play in sand could be a valuable alternative tool for therapists within the field of obesity and a valuable tool for future researchers to study.

Recommendations for Future Research

The results of this study suggest that group play in sand benefits obese women as an alternative setting where the women significantly decrease their stress levels, increase their weight self-efficacy, and adjust their perception of body image to a more realistic view. Group play in sand supports weight loss and maintenance programs by facilitating the psychological factors (stress, self-efficacy, body image) that can influence weight; therefore, it could be a valuable tool to use as supplemental to existing weight loss therapy and maintenance treatments. The women in the group play in sand program had a BMI at baseline between 25.1 and 39.4, and posttreatment they had a BMI between 24.4 and 37.7. Future research about group play in sand's effect on BMI short term and long term could be interesting to study.

Matthiessen and Stockmarr (2015) mentioned that obesity is a complex issue and might need to be viewed from different paradigms (Figure 10). One example of that might be the use of the old paradigm using physical activity, diet, and nutrition,

combined with the new paradigm looking at sleep patterns and stress in combination with lifestyle behavior. Finally, a future paradigm including self-efficacy and perception of body image might be useful to include to get the full perspective of the complex situation of weight gain and obesity. This could provide valuable insights for new and extended programs for weight loss and maintenance for obese people.

Figure 10. The paradigms of obesity.

In the future, it could be interesting to analyze the differences between self-efficacy (WEL) between individual sandplay sessions and sessions of cohorts of five or more to learn at what cohort size the best result emerges. A study about perceived stress (PSS) and perception of body image (SFR) could also be useful to measure for individual sandplay therapy vs. group play in sand and adjust the cohort size to find the best result. Another recommendation is to conduct a 1-year study investigating whether perception of

body image influences annual weight gain and weight loss as Lynch et al. (2009) mentioned.

This study is the first that linked theories of sandplay, group play in sand, with obese women and their perception of their body. This could be a beginning of a new health paradigm within obesity indicating that combining all perspectives and paradigms (old, new, and future) together as a holistic and combined factor that supports health professionals with different tools they can use in weight loss and maintenance programs. Further research is needed with health professionals and doctors from a collaborative approach. In addition, invention of a new assessment tool could be valuable to help the doctors suggest best options for their clients. The possible future research areas are:

- A replication of the study to see if COVID-19 had any negative effects on the results or if the results get better after COVID-19.
- A study of whether the group play in sand protocol has the same effect on men and children.
- A deeper investigation about why the women in treatment have a more realistic perception of their body image.
- A deeper investigation about women's dissatisfaction level with body image and how it might change over time.
- A research about individual sandplay therapy vs. group play in sand to determine if there is any significant difference.
- A research dealing with the length of the therapy, both in terms of each

session (1.5 hour) but also the time frame of five weeks. Including the cohort size that is most effective.

- A study about how the nonverbal and unconscious unfold in group play in sand and how this nonverbal field can be a supporting learning field.
- A study comparing sandplay, sandtray, sandworld, and group play in sand techniques to investigate strengths and weaknesses for each technique and a protocol for future therapists and health care providers to be aware of when to use each technique.
- A deeper investigation about if the women unconsciously are trying to control their weight before treatment with group play in sand.
- A qualitative study interviewing each participant at each measurement point in time to unfold what effect the program has on them.

Implications

The literature provided support for the impact that sandplay has on lowering stress level and increasing self-esteem. In this study, I investigated the effect of sandplay used in a cohort setting as group play in sand with obese women. I investigated how group play in sand affected perceived stress level, weight self-efficacy, and perception of body image when participants were in the waiting and in the treatment periods. This study showed that group play in sand did have a significant effect on lowering the women's stress level, increasing their self-efficacy regarding weight, and helped them get a more realistic perception of their body images.

During this research, I had the opportunity to speak to a professor at the National Institute of Public Health (NIH) in Denmark, who specialized in obesity. She was very interested in the results of this study and is awaiting the results of the research and the recommendations. I also had the privilege to speak to a medical doctor who was a board member of the International Society for Sandplay Therapy (ISST), He was also very interested in my study and suggested that I write an article about sandplay and group play in sand for ISST, and maybe speak on the topic at their international conferences. This opens up some future possibilities where organizations and part of the society are interested in improving or extending their existing methods. I see this as a possibility to create positive social change, not only in Denmark but internationally as well.

The results of the studied program might be used to improve treatments for obese women and suggest similar treatments for obese men and children. It might also serve as an inspiration for further research on the use of group play in sand for other populations with symptoms of stress, low self-efficacy, and distorted body image perception. Finally, the results of the study might also be included in future weight-related programs focusing on prevention and/or in combination with or supplemented by other techniques such as investigating unconscious patterns, finding the right balance between diet and nutrition, and focusing on optimal sleep pattern.

The results of this study close a gap in the literature and provides valuable and needed information about the effects of group play in sand on perception of body image when using group play in sand as therapeutic treatment. The results might contribute both

to obesity treatments and maintenance programs and suggests the need to use sand/group play in sand in new ways. As a doctoral student and as a health professional, I intended to create awareness about new ways, tools, and perspectives on how to support obese women with weight loss and maintenance programs. I find the results very interesting and I am looking forward to sharing my results with the professor from NIH Denmark and the MD from ISST to encourage the use of group play in sand as a social change tool for obese women.

Conclusion

Cororve, Gleaves, and Pearson (2004) showed that women in general have body dissatisfaction and tend to want a smaller body than their ideal or actual body size. This means that they often have dissonance and discrepancy between how they perceive themselves right now and how they would like to be. That discrepancy points up the psychological problem of body dissatisfaction. Results from this study suggest that body dissatisfaction should be included in obesity studies and treatments as well as stress and self-efficacy. Results from this study also suggest that the future paradigm of obesity shown in Figure 10 might be an effective framework to include for future treatment to support the full and holistic perspective of the complexity of obesity, including old, new, and future paradigms in every treatment and maintenance program and then selecting the best fit for the individual.

It might be interesting and useful to study group play in sand with different symptoms related to the variables of stress, self-esteem, and body image perception to see

if any of these are reflected in their assessment after the group play in sand sessions. If so, group play in sand should be included as alternative tool for a wide range of therapies and programs, which is also what Fitzgibbon, Blackman, and Avellone (2000) and Sand et al. (2017) suggested. Jung (1964) indicated that the use of symbols (which the use of the mini figures in group play in sand represent) is universal and not related to race, age, or gender, which speaks more into using group play in sand as a universal tool for stress, self-efficacy and body image perceptions issues.

The conclusion of this study is that perceived stress is significantly decreased for obese women who use group play in sand compared to the same women in pretreatment control conditions (waiting period). It is also concluded that group play in sand has a significantly positive impact on self-efficacy and perception of body image for obese women compared to those who did not go through the experience.

This finding can be used as a rationale to develop a new health paradigm for obese women suggesting a new treatment model focusing on alternative tools for weight loss and maintenance programs that are the best fit for the obese client.

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Appendix A: Data Use Agreement

DATA USE AGREEMENT

This Data Use Agreement ("Agreement"), effective as of 12.12.2018 ("Effective Date"), is entered into by and between Mariane Zoi Antares ("Data Recipient") and Ditte Frederiksen ("Data Provider"). The purpose of this Agreement is to provide Data Recipient with access to a Limited Data Set ("LDS") for use in research in accord with the HIPAA and FERPA Regulations.

1. Definitions. Unless otherwise specified in this Agreement, all capitalized terms used in this Agreement not otherwise defined have the meaning established for purposes of the "HIPAA Regulations" codified at Title 45 parts 160 through 164 of the United States Code of Federal Regulations, as amended from time to time.
2. Preparation of the LDS. Data Provider shall prepare and furnish to Data Recipient a LDS in accord with any applicable HIPAA or FERPA Regulations

Data Fields in the LDS. No direct identifiers such as names may be included in the Limited Data Set (LDS). The researcher will also not name the organization or center in the doctoral project report that is published in ProQuest. In preparing the LDS, Data Provider or designee shall include the data fields specified as follows, which are the minimum necessary to accomplish the research: subject identifier, group number, age, weight, BMI, timestamp (T1, T2, T3), measurement on; PSS, WEL and body image.

Responsibilities of Data Recipient. Data Recipient agrees to:

1. Use or disclose the LDS only as permitted by this Agreement or as required by law;
    a. Use appropriate safeguards to prevent use or disclosure of the LDS other than as permitted by this Agreement or required by law;
    b. Report to Data Provider any use or disclosure of the LDS of which it becomes aware that is not permitted by this Agreement or required by law;
    c. Require any of its subcontractors or agents that receive or have access to the LDS to agree to the same restrictions and conditions on the use and/or disclosure of the LDS that apply to Data Recipient under this Agreement; and
    d. Not use the information in the LDS to identify or contact the individuals who are data subjects.
2. Permitted Uses and Disclosures of the LDS. Data Recipient may use and/or disclose the LDS for its research activities only.
3. Term and Termination.
    a. Term. The term of this Agreement shall commence as of the Effective Date and shall continue for so long as Data Recipient retains the LDS, unless terminated earlier as set forth in this Agreement.
    b. Termination by Data Recipient. Data Recipient may terminate this agreement at any time by notifying the Data Provider and returning or destroying the LDS.

c. Termination by Data Provider. Data Provider may terminate this agreement at any time by providing thirty (30) days prior written notice to Data Recipient.

d. For Breach. Data Provider shall provide written notice to Data Recipient within ten (10) days of any determination that Data Recipient has breached a material term of this Agreement. Data Provider shall afford Data Recipient an opportunity to correct said alleged material breach upon mutually agreeable terms. Failure to agree on mutually agreeable terms for correction within 30 days shall be grounds for the immediate termination of this Agreement by Data Provider.

e. Effect of Termination. Sections 1, 4, 5, 6(e) and 7 of this Agreement shall survive any termination of this Agreement under subsections c or d.

4. Miscellaneous.

a. Change in Law. The parties agree to negotiate in good faith to amend this Agreement to comport with changes in federal law that materially alter either or both parties' obligations under this Agreement. Provided however, that if the parties are unable to agree to mutually acceptable amendment(s) by the compliance date of the change in applicable law or regulations, either Party may terminate this Agreement as provided in section 6.

b. Construction of Terms. The terms of this Agreement shall be construed to give effect to applicable federal interpretative guidance regarding the HIPAA Regulations.

c. No Third Party Beneficiaries. Nothing in this Agreement shall confer upon any person other than the parties and their respective successors or assigns, any rights, remedies, obligations, or liabilities whatsoever.

d. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

e. Headings. The headings and other captions in this Agreement are for convenience and reference only and shall not be used in interpreting, construing or enforcing any of the provisions of this Agreement.

IN WITNESS WHEREOF, each of the undersigned has caused this Agreement to be duly executed in its name and on its behalf.

DATA PROVIDER DATA RECIPIENT

Signed:  Signed: 

Print Name: Ditte Frederiksen Print Name: Mariane Zoi Antares

Print Title: Facilitator Print Title: Researcher

Appendix B: Inclusion/Exclusion Criteria for the Program

Recruitment for the group play in sand program follows a protocol where interested obese women apply for the program by e-mail or phone. They are screened by phone for inclusion criteria and added to the waiting period. Screening

Question	Yes	No
Is your age 19 or younger? Danish: Er din alder 19 år eller under?		
Is your BMI less than 25.0? Danish: Er din BMI under 25.0?		
Do you actively engage in programs for handling weight issues? Danish: Er du aktivt involveret i programmer omkring håndtering af vægt issues?		
Are you pregnant or have a diagnosed eating disorder? Danish: Er du gravid eller har du en diagnosticeret spiseforstyrrelse?		
Are you taking strong prescribed medication? Danish: Er du stærkt medicineret?		
Are you depressed* or have a clinical depression? Danish: Er du deprimeret eller har en klinisk diagnose på Depression?		

Women with one or more “Yes” in their answer are excluded from the research.

The woman needs to be adult and have a BMI within the obesity class. If the woman already participates in another program related to weight, it is difficult to measure if the group play in sand program works. If the woman is pregnant, it is difficult to measure her real BMI and if she is also diagnosed with an eating disorder, this might have influence on an unstable BMI and weight in general.

* Women who are depressed or have a clinical depression are excluded, because a negative emotional state predicts poor treatment outcomes (Linde, Jeffery, Levy, Sherwood, Utter, Pronk, & Boyle, 2004), particularly for obese woman, where Linde et al. (2004) found a relationship between depressed women with low weight self-efficacy and higher body weight, and the success of long-term weight loss (6 and 12 months). Heavy medication can also have an effect on the woman's ability to perceive herself accurately and give correct feedback on the group play in sand program.

Appendix C: Permission to Use Instruments

I used the following instruments in this dissertation: Cohen's Perceived Stress Scale (PSS), the Weight Efficacy Lifestyle Questionnaire (WEL), and Stunkard's Figure Rating Scale (SFR).

There is no specific permission to obtain to use **Cohen's Perceived Stress Scale (PSS).**

PERMISSION FOR USE OF THE PERCEIVED STRESS SCALE

I apologize for this automated reply. Thank you for your interest in our work.

PERMISSION FOR USE BY STUDENTS AND NONPROFIT ORGANIZATIONS: If you are a student, a teacher, or are otherwise using the Perceived Stress Scale (PSS) without making a profit on its use, you have my permission to use the PSS in your work. Note that this is the only approval letter you will get. I will not be sending a follow-up letter or email specifically authorizing you (by name) to use the scale.

PERMISSION "FOR PROFIT" USE: If you wish to use the PSS for a purpose other than teaching or not for profit research, or you plan on charging clients for use of the scale, you will need to see the next page: "Instructions for permission for profit related use of the Perceived Stress Scale".

QUESTIONS ABOUT THE SCALE: Information concerning the PSS can be found at https://www.cmu.edu/dietrich/psychology/stress-immunity-disease-lab/index.html (**click on scales on the front page**). Questions about reliability, validity, norms, and other aspects of psychometric properties can be answered there. The website also contains information about administration and scoring procedures for the scales. Please do not ask for a manual. There is no manual. Read the articles on the website for the information that you need.

TRANSLATIONS: The website (see URL above) also includes copies of translations of the PSS into multiple languages. These translations were done *by other investigators*, not by our lab, and we take no responsibility for their psychometric properties. If you translate the scale and would like to have the translation posted on our website, please send us a copy of the scale with information regarding its validation, and references to relevant publications. If resources are available to us, we will do our best to post it so others may access it.

Good luck with your work.

Sheldon Cohen
Robert E. Doherty University Professor of Psychology
Department of Psychology

https://www.cmu.edu/dietrich/psychology/stress-immunity-disease-lab/scales/revised-pss-request-reply-for-all-requests.pdf

The information for the **Weight Efficacy Lifestyle Questionnaire (WEL)** is the only one that has any permissions information. It states:

Permissions: May use for Research/Teaching

Weight Efficacy Life-Style Questionnaire (WEL)

Alternate Name:	Weight Efficacy Lifestyle Questionnaire
Acronym:	WEL
Purpose:	The Weight Efficacy Life-Style Questionnaire was developed to measure self-efficacy in individuals receiving obesity treatment.
Description:	The Weight Efficacy Life-Style Questionnaire was developed in 1991 to measure self-efficacy in individuals receiving obesity treatment. The majority of the initial 40 items on the Weight Efficacy Life-Style Questionnaire (WEL) were adapted from Condiotte and Lichtenstein's (1981) Smoking Confidence Questionnaire. Items were added and refined on the basis of clinical experience and administration of the measure to a sample of 162 obese patients. Subjects were asked to rate their confidence about being able to successfully resist the desire to eat using a 10-point scale ranging from 0 (not confident) to 9 (very confident). A principal components analysis revealed a five-component solution by two different methods of determining the number of components to retain (Velicer's, 1976, minimum average partial procedure and Horn's, 1965, parallel analysis method). The five components (Negative Emotions, Availability, Social Pressure, Physical Discomfort, and Positive Activities) contain 4 items each, resulting in the final 20-item WEL. Scale scores were computed by summing the 4 items for each of the five scales. The Cronbach alpha coefficients of internal consistency ranged from .90 for the Social Pressure scale to .70 for the Positive Activities scale. The WEL was also administered pre- and posttreatment to 21 subjects who enrolled in a 26-week weight management program. Correlations between the WEL total and subscale scores and the Eating Self-Efficacy Scale (ESES; Glynn & Ruderman, 1986) total and subscale scores were computed. The total scores of the two scales were significantly and negatively (scales are scored in opposite directions) correlated at pretreatment, r(19) = -.67, (p < .001), and posttreatment, r(19) = —.55, (p < .01). Additionally, the Negative Emotion subscale on the WEL was significantly correlated with the Negative Affect subscale on the ESES at pre-treatment, r(19) = -.80, (p < .001), and at posttreatment, r(19) = -.50, (p < .05). The Availability subscale on the WEL was significantly correlated to the Socially Acceptable Circumstances subscale on the ESES at pretreatment, r(19) = -.75, (p < .001), and at posttreatment, r(19) = -.51, (p < .05). (PsycTESTS Database Record (c) 2016 APA, all rights reserved)
Test Year:	1991
Author:	Clark, Matthew M.; Abrams, David B.; Niaura, Raymond S.; Eaton, Cheryl A.; Rossi, Joseph S.
Affiliation:	Clark, Matthew M., The Miriam Hospital, Providence, Rhode Island, United States Abrams, David B., The Miriam Hospital, Providence, Rhode Island, United States Niaura, Raymond S., The Miriam Hospital, Providence, Rhode Island, United States Eaton, Cheryl A., Division of Behavioral Medicine, The Miriam Hospital, Providence, Rhode Island, United States Rossi, Joseph S., Cancer Prevention Research Center, University of Rhode Island, Rhode Island, United States
Correspondence:	Clark, Matthew M., Division of Behavioral Medicine, The Miriam Hospital 164 Summit AvenueProvidence, Rhode Island, United States, 02906
Instrument Type:	Inventory/Questionnaire
Format:	The 20-item Weight Efficacy Life-Style Questionnaire rates responses on a 10-point scale ranging from 0 (not confident) to 9 (very confident).
Language Available:	English
Construct:	Self-Efficacy in Obese Patients; Weight Efficacy
Test File:	Full text: 999901406_full_001.pdf
Commercial Availability:	No
Permissions:	May use for Research/Teaching
Fee:	No
Test Items Available:	Yes
Classification:	7200 Personality
Test Release Date:	20110912
Test Correction Date:	20160808
Digital Object Identifier:	http://dx.doi.org.ezp.waldenulibrary.org/10.1037/t01406-000
Accession Number:	9999-01406-000

I asked for the permission to use **Stunkard's Figure Rating Scale (SFR).** I asked professor Craig Lee Hanis, because he and Dr. Torkild Sorensen has written articles together with Dr. Stunkard.

Dear Professor Hanis,

I am going to do my PhD dissertation where I will use the Stunkard 9-figure scale.

I would like to request for permission to use the Stunkard 9-figure scale.

Is it by you I request? or can you help me where I request for permission?

Thanks in advance and best regards

Mariane Zoi Antares

Walden University

Mariane,
Since we published the scale, we have gone ahead and given permission for other investigators to use it freely in their research. We hereby give you permission also and wish you the best in your work.
Take care,
Craig

Craig L. Hanis, Ph.D.
Human Genetics Center

Marianezoi,
Please feel free to use the figures. Hopefully they will help.
Take care,
Craig

Craig L. Hanis, Ph.D.
Human Genetics Center

Appendix D: Permission to Republish Wesnes et al.'s Norwegian BMI

I obtained permission to use the Norwegian BMI in combination with Stunkard's Figure Rating Scale in Figure 6 from Kristin Wesnes.

Hi Kristin,

I do have permission to use the Stunkard's silhouettes 😊
I just wanted to add your Norwegian BMI 😊

Thanks and best regards
Mariane Zoi Antares

I'm pleased to hear that :-) But remember- the mean BMI in my study is from a case-control study where 1/3 were MS-patients (953 cases) and about 2/3 from the general population (1717 controls), thus maybe not reflecting the BMI of the general population. But perhaps that's not necessary for your study.

Best regards, Kristin Wesnes