An-Najah National University

Faculty of Graduate Studies

THE DEVELOPMENT AND VALIDATION OF IMAGE-BASED QUESTIONNAIRE FOR WEIGHT BIAS AND STIGMATIZATION ASSESSMENT AMONG SCHOOL-AGED CHILDREN: A CROSS-SECTIONAL STUDY

By

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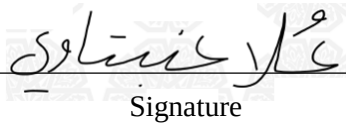
Dr. Ola Anabtawi	
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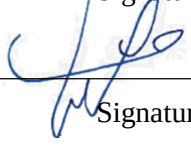
Dr. Hazem Agha	
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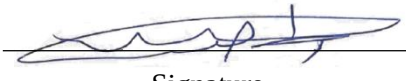
Dr. Raya Sawalha	
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Dedication

I dedicate this work to my family who have consistently believed on me.

To all the children who contributed with their pure mind and honest thoughts to this study.

To the children who are just starting their journey in life, who will become the future creator.

To every situation, and to every single person who has crossed my life and serve as a source of motivation, guiding me through their actions and words and even through their shared aspiration.

Lina.

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I would like to thank my family for their support and presence by my side, no words can capture my appreciation for them. I thank God for everything and for giving me the strength to be persevere.

Declaration

I, the undersigned, declare that I submitted the thesis entitled:

THE DEVELOPMENT AND VALIDATION OF IMAGE-BASED QUESTIONNAIRE FOR WEIGHT BIAS AND STIGMATIZATION ASSESSMENT AMONG SCHOOL-AGED CHILDREN: A CROSS-SECTIONAL STUDY

I declare that the work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student's Name: Lina Bustami

Signature: 

Date: 14/11/2024

List of Contents

List of Tables

List of Figures

List of Appendices

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Abstract

Background: Obesity is a well-recognized complex global epidemic. There are multiple causes and complications of obesity, physical and psychological ones. The experiences of weight bias and stigmatization against individuals with obesity is one challenge, which often goes unnoticed. Weight stigma is associated with many negative outcomes, including psychological disturbances, eating disorders, weight gain, and avoiding physical activity. Weight stigmatization is prevalent among different age groups, and was identified to be high among children at a young age.

Objective: The main purpose of the study is to assess the percentage of weight bias and stigmatization among school-aged children, through the development of an image-based tool that is suitable for children's cognitive abilities. This study is conducted as a step-1 for further educational intervention studies to reduce weight stigma among children.

Methodology: A cross-sectional study was conducted on 150 children aged 6-9 year in three schools in Nablus City, Palestine: Pioneers Baccalaureate School, Ethar School (2nd grade), and UNRWA school. The assessment was carried after the development and validation of a questionnaire, designed specially to assess weight stigmatization percentage among children at early age.

Result: 71% of children attributed "Ugly" adjective to characters with overweight compared to only 8.7% to those with under and normal weights. Also, 89% of children chose the character with overweight for "lazy" trait, 72% for "careless". In contrast, 81.9%, 81.9%, of participants chose the figures with underweight and overweight for "loved", and "good", adjectives, respectively. Only one child chose the figure with overweight as a best friend. 84.6% (n=126) chose figures with under or normal weights

as the one they like the most, while the one with overweight was chosen only 1.3% of time (n=1.3). Additionally, 81.9% (n=122) of children agreed with the statement that the character with overweight eats more than required, whereas only 18.1 (n=18.1) disagreed. 61.7% expressed their agreement with “I think he/she sleeps a lot”. In addition, 59.1% (n= 88) of children disagreed that the character can’t lose weight even when he/she stops overeating.

Conclusion: The study indicated a high percentage of weight stigmatization among school aged children in the current study. Stereotyping, weight bias and judgmental attitudes towards individuals with overweight were common in all the three sections of the developed image-based questionnaire. These findings highlight the importance of acting towards reducing weight stigma among children, and suitable educational programs are recommended to be established.

Keywords: weight stigma, weight bias, obesity, children, tool validation

Chapter One

Introduction

1.1 General introduction

In recent years, obesity prevalence has been increasing globally, despite the growing research and efforts aimed at managing this issue. Importantly, the causes of obesity are multifactorial, and not a single cause can be addressed to be the only one responsible for its development (1).

The American Association of Clinical Endocrinologist (AACE) viewed obesity as a chronic disease itself as it met the criteria for a disease. In light of that, ACCE established steps on prevention, diagnosis, and treatment of obesity (2). Yet, many arguments have been made on whether to consider obesity a disease or not (3). However, it's not argued that obesity has been proven to significantly contribute to the global burden of non-communicable diseases, including diabetes, hypertension, and cardiovascular disease (3). In addition to the physical complications, it has psychological consequences including low self-esteem, depression, eating disorders, and stress (4). Moreover, Individuals with obesity are targets of stigma, which is another serious complication of obesity that also causes chronic stress and greater BMI (5).

Weight stigma is one of the challenges individuals with obesity have faced and still face. This concept is composed of many elements, including stereotyping, labeling, and discrimination against individuals based on their weights (6). Many inaccurate beliefs regarding weight stigmatization persist within society. For example, it has been explored that stigmatization is frequently accepted due to the belief that shaming others with obesity is an effective motivation factor toward losing weight (7) (8). But, contrary to this, studies have demonstrated that weight stigmatization contributes to increasing obesity prevalence (9) (5)(10) (11). Additionally, individuals who exposed to stigma, in general, are susceptible to experiencing psychological disturbances (6). Despite the overall reported and published studies that clarify all its adverse effects on psychological status, body weight, obesity development and persistence, weight stigma continues to persist without receiving sufficient attention, and no adequate efforts are paid towards

solving this issue. Even within public health campaigns, weight stigma and its negative effects on obesity management are not highlighted.

To measure weight stigmatization percentage among children, many studies have used different tools that are suitable for children's age (12) (13) (14) (15) (16). It's deeply concerning that results revealed the high percentage of weight stigma and its associated consequences among children, which negatively impacts different aspects of their health and life quality (12) (17). Children were found to pose a tendency toward stigmatizing others with overweight and obesity, and to exhibit weight bias behaviors as early as three years of age (12).

1.2 Literature Review

1.2.1 Obesity overview

1.2.1.1 Definition and prevalence

"Obesity" was defined by the World Health Organization (WHO) as an excessive fat accumulation that can cause a potential risk to individuals' health. The formula for the body mass index (BMI) was used to indicate obesity and can be calculated by dividing the body weight (in kg) by the square of the height (in meters). Adults are considered having overweight with a BMI over 25, and having obesity with a BMI over 30 (18).

In regard to children, age and sex are considered when defining BMI. The CDC growth chart, which consists of revised versions developed in 1977 by the Natural Center for Health Statistics, is used to define BMI for age percentile for female and male children. The CDC growth chart indicates that children classified as having overweight within 85th and less than 95th percentile, and having obesity with 95th or greater percentile (19).

y 1980, one third of the world population was estimated to have overweight or obesity, and since this year, obesity has been remarked by its doubled prevalence (20). On the same hand, it's estimated by the WHO that by the year 2025, 167 million people will be susceptible to health risks due to having overweight or obesity (including both adults and children)(21). In 2016, obesity was evaluated to be prevalent in more than 340 million children and adultescents aged between 5 and 19 years, and in over 650 million adults (18).

In Palestine, the prevalence of overweight and obesity was 23.6% in 2021(22). Children's obesity prevalence was 3.2% by 2004 (23). In a study conducted later in 2019, the prevalence was 15.7%, which means an alarming increase in childhood obesity among Palestinian children within 14 years (24). However, it's expected that the numbers of school-aged children and adolescents living with obesity will increase from 150 million globally to more than 250 million by 2030 (25)

1.2.1.2 Etiology and consequences

A complex interaction between several factors may increase the risk of developing obesity (26) (1). According to the complexity of its development and consequences; obesity still remains insufficiently understood. In order to simplify the interrelated factors contributing to obesity development, Masood B & Moorthy classified them into two categories: modifiable and non-modifiable factors. Considering the non-modifiable, genetics were one of the uncontrolled factors that predispose individuals to obesity through polymorphisms, genetic mutations, and gene expression changes. Modifiable category included epigenetics, excessive calorie intake, inactive physical status, intrauterine environment, sleep duration, drugs, postnatal influences, socioeconomic, medical, psychological, and hormonal effects. Yet, despite the fact that many factors were classified as modifiable, effectively controlling all of these contributing factors remains a marked challenge (1).

The same as for the contributing factors, obesity associated consequences are also numerous and complex. In addition to the widespread occurrence of obesity as a public health crisis, it increases the risk of individuals' exposure to many diseases. Of these diseases are cardiovascular diseases, diabetes, neurodegenerative, respiratory, autoimmune, prostate, oral diseases, and metabolic syndrome (27), Beside this, psychological and mental disorders were also reported as obesity consequences. For example, individuals with obesity have higher risk of depression in comparison with their normal weight peers. Eating disorders, low self-esteem, body image dissatisfaction, stress are also common psychological consequences of obesity (4). Weight stigma is another complication faced by individuals with obesity, which also considered a mediator for obesity psychological consequences (28)

1.2.2 Weight stigma overview

1.2.2.1 Definition and manifestation

Weight bias can be defined through different means the negative beliefs and judgments expressed towards individuals with obesity and overweight through many behaviors, including discrimination, stereotyping, labeling, and separation (6).

It was demonstrated that many individuals with obesity are mostly labelled unhealthy and subjected to inaccurate behaviors and beliefs. For example, individuals who have obesity are often associated with the negative stereotype that they are inactive, disruptive, careless (17), self-indulgent, and devalued, even by their parents (29). It's important to note that, individual's own weight may have no effect on exhibiting weight stigma behaviors towards other, for example, participants with high BMI in a previous study also showed stereotyping and negative behaviors towards characters with overweight/obesity (30).

Furthermore, weight stigmatization has persistently been prevalent in employment domains, as individuals with overweight/obesity are less desirable for employers, and considered less efficient, skilled, and trustworthy than others with a lower body weight (31) (32). They are also less likely to be selected for employment opportunities and may even remain unemployed (33). In other words, weight stigma is common in several different environments. This is also applicable to medical, educational, social, and work environments (34).

In addition to the external weight stigma expressed by the unfair treatment, teasing, and stereotyping from others, individuals with obesity may believe those negative stereotypes and attribute them to themselves, which is referred to as the internalized form of weight stigma. External weight stigma plays a major role in the effective management of internalized weight stigma (35) (36). Thus, weight stigma experienced from social and external environments also interferes with individuals' own beliefs about themselves and consequently could affect their self-esteem. This was clearly identified in a study assessing weight stigma by asking participants to rate sets of target figures on multiple dimensions (e.g.; attractiveness, intelligence, happiness). One of the sets represented three characters of different weights (slender, large, very large bodies). In the study, even individuals with obesity rated the targets exhibiting obesity negatively, and didn't show

any preference for them (30). A study in 2008 revealed that weight stigma was stronger than any other form of stigma in the participating groups (e.g., religion) (36).

Despite the growing increase in obesity prevalence, evidence rarely reports a decrease in the prevalence of weight stigma. Weight stigma remains common even that several published sources has clarified its effects on obesity management and individuals own health and quality of life.

1.2.2.2 Effects and Consequences

The public health implications of weight stigma on individuals with obesity were overlooked and ignored, despite the fact that it poses a damaging risk to its basic values (28). Some have proposed that stigma on individuals with obesity is an effective influencer toward obesity management and a motivational factor toward losing weight (37) (7) (8). However, it's important to mention that many studies addressed the attribution theory as the main theoretical framework explaining why negative attributes are directed toward individuals with obesity (38), (28). That is, people relay on their beliefs about individuals' responsibility for having obesity or overweight and that they have full control over their situation (39) (40). In light of that, Puhl and Heuer examined in their study the existing evidence in order to highlight these assumptions about weight stigma, concluded that weight stigma can't be considered a useful tool for weight reduction or health improvement. Instead, it's a significant issue affecting the physical and psychological health of individuals with obesity and interfering with the efforts that could be spent on obesity management and prevention (28).

While there were those assumptions defending weight stigma, trying to make it acceptable as a tool for obesity reduction, weight stigma proved to be a cause of higher calorie intake (9), following unhealthy diets (5), being associated with binge eating (10), and avoiding physical activities (11), which in turn will all lead to weight gain. On the other hand, difficulties in regulating emotions, low self-esteem, social isolation, and stress are all psychological disturbances that stigmatized individuals are at risk of experiencing(6).

In a study by Carels and Rossi, the assessment of weight stigma effects among adults seeking weight loss treatment indicated poor treatment outcomes (41). Moreover, inducing women who have overweight to think about stereotypes that are related to body-

weight resulted in a noteworthy reduction in their intention to engage in a weight management program that includes exercise and maintaining a healthy diet (42). However, beside the unhealthy dieting behaviors, some findings suggested that there may be a role of weight stigma in individuals' choices of more risky treatments for weight loss, including bariatric surgery and the use of harmful commercial medications with no evidence of efficacy (43), (44). Moreover, weight stigmatization was also associated with the development of hypertension, insulin resistance, hypertension, and hyperlipidemia (45) due to its effect on rising cortisol levels (46).

However, it's important to mention that discrimination based on weight is not only experienced by adults; children and adolescents are also stigmatized and subjected to negative perceptions and attitudes (47).

1.2.3 Weight stigma in children

1.2.3.1 Prevalence and consequences

Weight stigma and its associated consequences are also common and experienced among children. It was suggested that educators, peers, and even parents stigmatize children with overweight (47). Among peers, weight stigma was prevalent and reported in many studies (48) (49). Some studies found that when compared to other children with different disabilities (e.g., wheelchair-bound, amputee), peers' most dislike was toward children who have overweight (48). Additionally, children were found to have a tendency toward stigmatizing other children with overweight or obesity and to exhibit weight bias behaviors as early as three years of age (12). Furthermore, it was reported that, among middle-aged children, weight-related teasing was one of the most prevalent social negative interactions (50) (51) (52).

On the other side, parents appeared to play a notable role in children's weight stigma, either through direct or indirect behaviors. For instance, parents in general, including- surprisingly- parents of children with overweight, demonstrated that negative traits are associated with children who have overweight or obesity (e.g., laziness) (53). Another notable key point is that some studies have demonstrated that parental conversations with children about healthy eating habits and physical activity without mentioning weight are not associated with any disrupted eating behaviors, instead, they may even prevent their development, in contrast to conversations that focus on body weight (54) (55).

Behaviors like weight bias and stigmatization have significant consequences. Binge eating, skipping meals, and vomiting were all unhealthy weight control outcomes used by adolescent girls as a result of maternal and paternal weight conversations. (56) (57)

Moreover, weight stigma induces significant negative effects on children's academic achievements, overall well-being, and consequently their personal choices and future career prospects (46). The negative perceptions and attitudes towards children and adolescents adversely reflected on their psychological and emotional health (12) (46). Evidence suggests that negative effects on the mental as well as physical health of children and adolescents can persist over a long period, which means they may extend into adulthood (46). Additionally, weight stigmatization in children leads to less motivation toward exercise and engagement in unhealthy eating patterns (17), which means that it may contribute to the development and persistence of obesity.

1.2.4 Weight stigma and Obesity

Far from the reported weight stigma negative effects on individuals' dietary habits (9)(5) (42) (10) physical activity status (11), that may contribute to even more weight gain and the development of obesity, Stephanie & Leah suggested in their study that biopsychological complications commonly attributed to the development of obesity and overweight, may be caused by weight stigma, rather than weight alone (48). In addition, stress was one of weight stigma consequences (49) (50). Importantly, many scientific studies explained multiple pathways through which obesity may result from stress, including effects on cognition and self-regulation, physiological effects (e.g., hypothalamic- pituitary- adrenal-axis activation), and biochemical effects (51) (52). On the other side, weight stigmatizing by media messages is revealed to cause high-calorie food consumption in individuals who consider themselves having overweight. Also, the stigmatizing effects of media massages reduce their feeling that they are able to manage and control their weight (50). Many studies' highlight the association between weight stigma and weight gain, and the overall contribution to increasing prevalence of obesity. As a result, this issue as a real public health concern that need to be mentioned for reduction strategies.

1.2.5 Public awareness and policies

A large study (53) was conducted as a multinational online cross-sectional survey, named "Attitudes, Stigma, and Knowledge" with the purpose of assessing the public's knowledge about obesity causes and management, and its association with weight stigma and treatments. The study revealed an association between weight stigma and the belief that obesity is within individual control, and can be completely prevented and treated by healthy lifestyle options. This indicated a large gap between scientific knowledge about obesity causes and public beliefs. Thus, the study further demonstrated the importance of educational intervention to improve public awareness of the complex and numerous causes of obesity as a tool to reduce stigma and, consequently, obesity prevalence.

The gap between scientific evidence of obesity and public misunderstanding was mentioned in the executive summary of the "Joint Consensus Statement and Pledge by International Scientific Organizations". Education of health care professionals about weight bias and its related consequences is needed. This can also help in changing the language used to describe individuals with obesity, eliciting weight stigma and further body shaming, and totally ignoring the complex medical origin of obesity (54).

Many additional studies followed strategies that depend on both education to reduce weight stigma in students and healthcare professionals, and change the belief of individuals controllability of body weight (55). One of the limited applied interventions that were taken toward the reduction of weight stigma was the implementation of a social media policy codifying weight bias as illegal (56). This was as a result of identifying social media as one of the factors that enhanced weight stigma by idealizing thin body shapes, promoting stereotyping and unsafe weight loss, and contributing to eating disorders (57).

1.3 Problem Statement

Weight stigma is a common problem amongst individuals with obesity across all age groups, including children. Children are grown with a typical thought about the ideal weight, and with the tendency toward blaming and holding negative beliefs towards others with excess weight (12) (58), which compose the aspects of weight stigmatization. What is important is, at early age, children may be more sensitive to the experienced weight stigma, as well as its consequences. They are borne to the high risk of developing

psychological problems (59) and to the consequences on their academic achievements and overall well-being (47). Consequently, this may affect their physical health, and the risk of outcomes they already faced due to the obesity, including metabolic disorders and cardiovascular problems (60) may be increased. Moreover, weight bias may affect children with overweight relation with physical activity due to the depressive symptoms resulting from peer victimization (61)which also return us to the cycle of the ineffective obesity management and to further weight gain in the same group.

According to the mentioned points, it's critical to pay attention towards reducing weight stigmatization on children with overweight and obesity, as much as we focus on controlling the obesity itself. It must be recognized that the negative effects of weight stigma on their mental and physical health may extend into adulthood, interfering with their wellbeing and hindering their efforts to control weight. Moreover, these consequences may remain, even after losing weight. This all emphasize the importance to establish interventions toward solving this problem, instead of allowing it to go unaddressed, and affect future generation of children with overweight and obesity. This was also suggested in a previous study where the author explained that focusing on reducing child's weight will not always be enough to manage the real problem, when weight prejudice and discrimination contribute significantly to health problems experienced by children with overweight (62).

In Palestine, research have focused on childhood obesity prevalence as well as related risk factors (23) (24). However, weight stigma among children hasn't even been addressed in any previous study, either as a risk factor or to assess its prevalence. This revealed the importance of evaluating the percentage of weight stigma among children in order to establish effective strategies toward reducing its associated behaviors and consequences.

1.4 Study Objectives

To develop a validated tool that is suitable for the assessment of weight stigmatization percentage among school-aged children, and to assess weight stigmatization percentage among 6-9-year-old children in three selected schools in Nablus City.

1.5 Significance of the study

In the absence of any previous data informing about the percentage of weight stigmatization among children at young ages, this study will be the first to provide a tool for current and future use in the purpose of its assessment, and static data regarding the weight stigmatization percentage among children. In addition, the study will assess the association between weight stigmatization behavior and some sociodemographic data, including parents' education, and child's weight.

This study is important because it's conducted with the purpose of establishing a backbone for future educational interventions to raise awareness and reduce weight stigmatization among children. This will help in creating a higher quality of life for children and also in preventing weight stigma consequences that contribute to the increasing prevalence of obesity and psychological disorders

Chapter Two

Methodology

2.1 Study Design

A cross - sectional design was used for this study to evaluate the percentage of weight stigmatization and bias behaviors among school aged-children. Data collection started on December 2023 and lasted until January 2024. Weight stigmatization was evaluated by a new developed and validated questionnaire. The questionnaire included tasks to assess the main aspects of stigma, including discrimination, stereotyping, and judgment. Children completed the questionnaires through 10-15-minute direct interviews with each of them by the main researcher in their schools. Socio-demographic data were also collected, and the weight and height of each child were measured and recorded, and weight status was classified according to weight-for-age growth charts for male, and for female.

2.2 Study Population

The study population consisted of school-aged children in Nablus schools.

2.3 Study Sample

The study sample consisted of 6-9-year-old children in three selected schools: Pioneers Baccalaureate, UNRWA, and Ethar, in Nablus City.

2.3.1 Sample Size Calculation

Sample size was calculated by Scalex SP calculator (71). 150 participants were determined. The expected percentage from a previous study was 60%, absolute precision was estimated to be ±8%, and 3% potential loss/missed data were considered

2.3.2 Sample characteristics

Inclusion and exclusion criteria

a. Inclusion criteria

- Children aged 6-9 years old
- Children who were allowed to participate by their parents' acceptance on the consent form.

- Children who accept to participate by the verbal consent.
- Children who were able to understand questions during the interview.

b. Exclusion criteria

- Children who were observed to answer without concentration, or who exhibited behaviors that may indicate certain conditions affecting their ability to focus (e.g., ADHD), were excluded.

2.4 Study Procedure:

The current study was conducted through three phases:

1. The first phase: the development of the questionnaire

The development of the questionnaire was based on a literature review of previous similar studies for assessing weight stigmatization and bias among children at an early age (12) (13) (14,63) (63) (64). After the comprehensive analysis of existing studies, all the tasks that were used for weight stigmatization and bias assessment among children at early age were collected, and summed in one table. Table 2.1 shows a part of the table. (The whole table is shown in Appendix C). The table was reviewed, and tools were analyzed, individually, to be compared to our Palestinian context, and to obtain a general idea about the ability to re-generate tools' content, and to use them in our current study.

Table 2. 1

A section of the table in which all the related previous studies were summarized

	Study	Year	Target	Samlpe size	Objective	Tool	Main outcome
1	Do children want skinny friends? The role of weight in children's friendship preferences and inter-group attitudes	2011	5-11 years - divided into 3 groups	151 (male and female)	assess children‟ s attitudes towards underweight, average-weight and overweight stimuli	A. Children selecting images - consisted of 3 male and 3 female figures (most underweight, average-weight, most overweight) B. 1. Trait assignment: select the provided traits of the 6 figures in pictures -The positive and negative descriptions were selected- Six trait descriptions were positive (happy, clean, helpful, good, polite, kind) and six were negative (rude, bad, unfriendly, sad, naughty, dirty). 2. participants were instructed to select the preferred image for friendship, playing with at school, and playing with at home	girls significantly preferred underweight images to average-weight and overweight images. These results revealed that the weight of the image was a decisive factor for participants when assigning positive or negative traits
2	"No fat friend of mine": Young children's responses to overweight and disability	2016	4 to 6 y children	Study 1: 126 children (63 F, 63 M) Study 2: 150 (79 F, 71 M)	To investigate childrens' weight bias. (+ disability)	Study 1:- *Story books*: 3 versions (main character in 1st: healthy weight, in 2nd:wheelchair, in 3th: Overweight). After reading: cards with a character and a question (e.g:some students are good at race while others are not, How likely do you think Thomas will win?), and a rating scales (by circles) were shown to childrens, followed by a question of comparsion between two character in the card. Study 2:- two further versions of the story books in which all of the central character 'Alfina's' peers were fat. Three version similar to study 1 (but the main character was female instead of Male). The other two versions: A) all character's friends are "fat". B) the main character along with all her friends are "fat").	Forcing choices between characters suggested children were more negative about fat (and wheelchair) character than would be concluded from children's ratings. - More negativity to the fat than wheelchair bound character. * when forced: children rejected story characters who were visibly different, and especially if the character was "fat". * body shape of 'Alfina's' friends had a minor effect on children's ratings but there was no convincing evidence of negative proximity effects.

As our questionnaire was meant to be completed by children, it depended on image characters. This was also the basis of all the previous studies we reviewed. We noticed that using this aspect of characters with different weight to assess weight stigmatization attitudes in children was common in earlier studies (63).

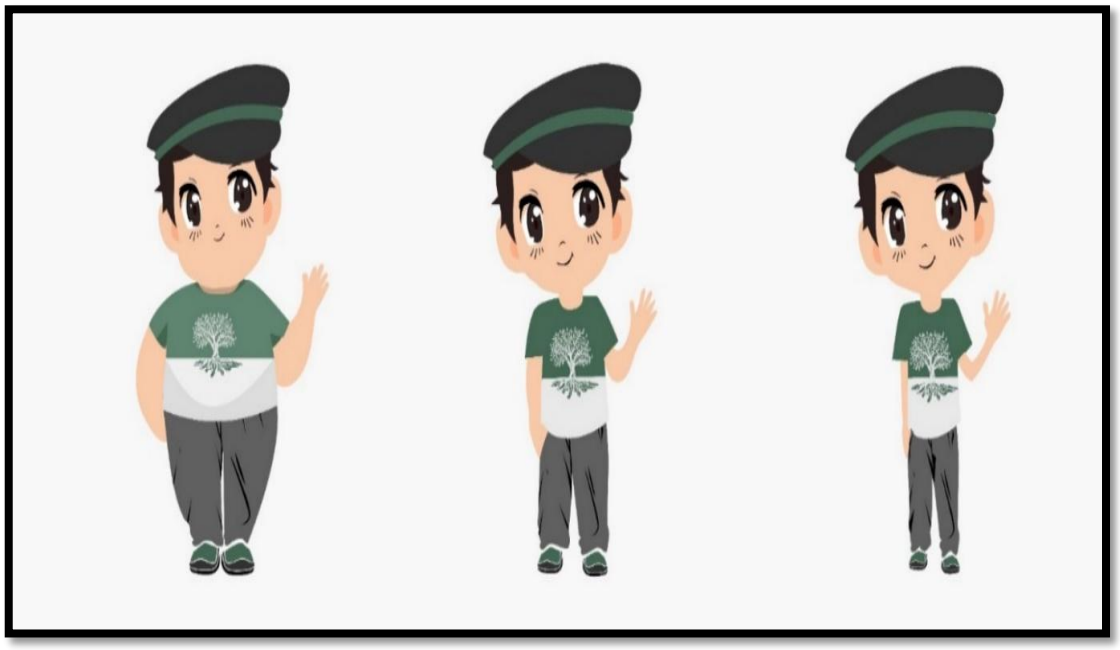
Characters in our study were designed by the researcher (a graphic designer), by Adobe Illustrator (a design software), representing three characters with underweight, normal weight, and overweight. Two versions for male and female participants were created (Figure 2.1). They meant to be colorful to motivate children, and were all similar in every detail except their weight. These characters were fully designed from their basic traits. The designs of characters were carefully made, and we paid attention to every detail, including insertion of Palestinian symbols, like the images of olive trees and doves that were printed on their shirts. In addition, some details of the initial designs were changed; to reach a level where they are close to the general style in our culture, including their clothes, their hair, and their colors. Figure 2.2 shows one example of the initial designed characters.

Figure 2.1

The designed characters of the current study

Figure 2.2

Initial design of the male characters



The developed questionnaire composed of four sections. One for participant's demographic data. The other are the three tasks to assess weight stigmatization among children:

a. Adjective Attribution Task where children had to attribute a list of positive and negative adjectives to one or more of the three figures. The selected adjectives were obtained from previous studies. Figure 2.3 shows some of the adjectives that were used in the previous studies. Adjectives were close to the used language of every country where each study was conducted. We reviewed, collected, and recorded all the used adjectives, evaluated if they were used in our society, excluded the ones that were not close to our used language, edited some to be more understandable for our participant's ages, and converted them to Arabic language.

Figure 2.3

Some of the used adjectives in the "Adjective Attribution Task" in previous studies

Ugly	Lazy	Smart	Honest
Pretty	Happy	Strong	Self-confident
Sloppy	Naughty	Weak	Kind
Neat	Well-behaved	Shy	Playful
Popular	Healthy	Slow	Rejected by others
Mean	Sick	Hungry	Aggressive
Active	Nice	Stupid	Fun

b. Friendship Selection Task: where children had to choose figures for different questions. As for the precious task, we reviewed the used questions that were asked to the children in previous studies. We chose questions that go with children's lifestyle, and developed new questions that include also activities that children usually do in our society.
c. Controllability Attribution Task: where they had to agree or disagree on a different sentence about the third (with overweight) character. Sentences in this task were obtained after reviewing previous studies that, in general, targeted the assessment of the public or individual knowledge about the factors attributed to obesity development. Sentences were established and rephrased many times to finally match children's mental level.

Each of the task's answers depended on the designed graphics, and the answer method was established to be suitable for children at early age.

2. The second phase: the validation of the questionnaire by testing its content validity and reliability

a. Content validity

was ensured by sending a copy of the questionnaire to researchers and experts in multiple related fields including, nutrition, psychology, and assessment fields. All their notes about the questionnaire were recoded, and all the mentioned points was adjusted, either by edition, deletion, or addition.

Some notes were regarding the tasks. For example, to combine some sentences which was detecting the same aspects. (e.g., combining: "who would you choose to accompany you in a trip?" and "who would you choose to go biking with?" in the friendship selection Task). In addition, some expert's notes provide recommendation in regard to the demographic data (e.g., adding the type of school, family member answer to be in groups instead of being answered as an open question).

b. Reliability

It was tested by a pilot study conducted on children aged 6 – 10 years old. The study comprised 18 randomly selected children; both female and male participants were included. Data collection from participants started after obtaining their parents' consent. In addition, children's verbal consent was also obtained.

Based on the experience of the researcher with the participating children and their response and understanding; some modifications were induced.

Sample size was representative of at least 9% of the large study (65).

Pilot study findings

1. Pilot study revealed that children aged 10 years old were not appropriate for our developed questionnaire. This was concluded because they tended to analyze their answers, and wondered how they can choose between characters they know nothing about. It may be an evident that the questionnaire was suitable for younger ages. As a result, the age range was determined to be 6-9 years, and 10-year group ages were excluded.

2. Reliability, was determined by Cronbach alpha after data collection and analysis in SPSS. Adjective Attribution and Friendship selections task yielded a high reliability (Cronbach's alpha = 0.884, 0.834). Controllability Attribution Task reliability was very low (Cronbach's alpha = 0.2).
3. The outcome variable in the sociodemographic part of the questionnaire was not an item to be knowledgeable for children, so it was excluded.
4. For the Adjective Attribution Task: 35 adjectives were included in the pilot study, including adjective's positive and negative pair. Yet, the study indicated that children were notably getting bored in the middle of the task, and this was affecting their answers' accuracy. Adjectives were reduced to 20, and only one of the adjective's pairs was selected to be included in the task (e.g., "good" was selected, whereas "bad" was excluded).
5. For the Controllability Task: three items were excluded from the task as they may be confusing for children and can't be correctly understood. In addition, they may indirectly assess the same aspect and have the same indication as other included items. (e.g., "the child in the picture spends a lot of time on video games", "the child in the picture has no available healthy food", and "the child in the picture has no friends or siblings to exercise with"). Also, the modification including adding "I think" before each sentence, and changing the type of child response from "yes," "no," or "I don't know" to "agree" or "disagree" with each statement.

*Note: The sample in pilot study was not included in the main study.

3. The third phase: Screening and assessment phase to determine weight stigmatization percentage among children:

Data collection started in December 2023 and lasted until January 2024.

Before starting the collection process, letters were sent home to the parents of all 6- to 9-year-old children at three local schools (N= 150) in Nablus City. The letters explained the study's nature, its design, and its objective to the parents. In addition, the letters ensure that the collected data will only be used for research purposes and that children will be asked friendly by the researcher about their willingness to participate. Finally, we asked for parental consent for their child's participation, which will be gained by returning the form signed by them along with the parent's and child's names written in clear letters.

One hundred and fifty children returned the form and were therefore included in the study. The researcher met with each child individually —in most cases— and in small groups composed of no more than five children. The interview was conducted in their schools in an empty room that children were familiar with and lasted for 10-15 minutes. Each child's name was recorded, and a code was given to them and assigned on the questionnaire.

Before starting the questionnaire filling, the researcher spent a few minutes having a quick conversation with the child in order for them not to feel frightened, and to engage with them. The researcher explained to children that they want to play a game by answering some questions related to three characters who were introduced to the child as three friends (characters with underweight, normal weight, and overweight), and explained that they are free to answer what they truly believe, as there is no true or wrong answer.

The first section of the questionnaire composed of the child's demographic data, which was collected from their school files. The second section assessed the percentage of stereotypes against others based on their weight. The third section assessed weight bias and social preference among children, and the last one assessed the percentage of judgment towards individuals with obesity.

2.5 Study instruments

A variety of methods have been used since early years to assess weight stigmatization among children at early ages, including preschool and age-school children.

Adjective Attribution Task and Playmate/ Friend Selection Task were commonly used for this purpose. However, Controllability Task was used less for the considered age group, yet it was also included in this study.

Details on the methods used in the current study were as follows:

2.5.1 Target Figures

The tool that was used included three tasks, all depended on colored, designed, and printed images that represented characters with underweight, normal-weight, and overweight (female and male characters for girls and boys, respectively). Characters were designed to be close to children's general culture, and were all identical in all details except their weight.

However**, c**hildren were asked before starting the tasks about the differences between the three characters. All the children were able to correctly identify the weight factor. However, the researcher ensures the difference for them again after their answers.

2.5.2 Adjective Attribution Task

To assess if children exhibit anti-fat prejudice and stereotype others with obesity; a modified Adjective Attribution Task was used. This task principle was used previously outside Palestine in many studies (12), (13) (14), and was used many years ago as one of the methods for evaluating the percentage of weight stigmatization and stereotyping among children (63). The task uses a list of positive and negative adjectives and asks the child to attribute each of them to the images they believe are suitable for (characters with underweight, normal-weight, and overweight).

Following the literature review of the previous related studies, the current task contends up containing 20 adjectives, half of them being positive (beautiful, loved, happy, clean, honest, helpful, good, healthy, strong, kind) and the other negative (sad, slow, lazy, introvert, careless, sick, shy, naughty, stupid, hungry) listed in a random manner. To make it easier for children to choose, the three characters were placed at the top of the adjective list (and coded as 1 = underweight, 2 = normal weight image, and 3 = overweight image character). Children were asked to put a tick under the character(s) they believed to be suitable for each adjective. However, in order to increase the accuracy of their answers, additional options were added, allowing the child to choose “none of them” or “all of them”, which were coded as 4 and 5, respectively. All the included adjectives were known and comprehensible for children, and if any trait was unclear, it was explained and clarified for them.

For each adjective, answers were summed and averaged to obtain a total score for each figure.

2.5.3 Friendship Selection Task

This modified task was developed based on many previous studies (12) (13) (14) which were also carried outside Palestine.

During the interview, the researcher asked the child to draw a circle around the figure(s) they chose from the underweight, normal weight, and overweight characters for each of

the questions in the task. Nine questions were involved in this task (who will you choose to be your friend?, who do you like the most?, who would you prefer to invite to your birthday party at home?, who would you prefer to play with at school?, who would you prefer to accompany you on a trip?, who would you take with you to the gym?, who would you take with you to the restaurant?, who would you prefer to set beside at school?, who would you share your food with?). However, children were also free to choose "all" or two of the figures.

The three figures were the same as those used in the adjective task, and were placed beside each question to ensure that children's answers were entirely focused on their choice. Answers were coded in the same manner as the previous task, in which 1 = underweight, 2 = normal weight, 3 = overweight, 4 = all.

Answers were summed to obtain a total score and a percentage for each question to each figure.

2.5.4 Controllability Task

This task was used to assess if children believe that a person's weight is within their own control and to evaluate if they hold judgments against individuals who have overweight. One previous study (64) assessed this domain among children. In their study, they included five items asked to children as questions (Do children have control over their weight? if a child is fat, is that his/her fault?, are children fat because they eat too much?, are children fat because they don't exercise?, and, can fat children become thin if they try?). questions were independent of any images, but they were used as direct questions asked to children, aiming to elicit a yes or no answer.

The assessment of weight controllability was included in earlier studies (66) (67) involving adult participants. Anti-fat Attitudes Questionnaire Willpower subscale (66), Perceived Etiology of Obesity (67) were used to assess individuals' belief regarding weight controllability. Hence, ideas in the current study were derived from items of these scales.

In this study, however, we tried to make it more suitable for young children by using the items as sentences related to the third image in our questionnaire, which represents the

character with overweight/obesity. Children were asked to express their agreement or disagreement with each sentence.

For this purpose, six previously used questions were rephrased into sentences and used, some of which were used to assess children's beliefs regarding the causes of obesity (I think the child in the image eats too much, I think the child in the image does enough exercise, I think the child in the image sleeps too much, I think his/her mother is also having overweight), and the remaining to assess their beliefs about individuals' ability to control their weight (I think the child in the image can become thin if he/she wants, I think the child in the image can't lose weight even if he stops overeating).

The researcher ensured and checked each child's ability to understand sentences and to express their agreement or disagreement correctly, especially when data collection was conducted in small groups.

In this task, agreement to items that indicated judgmental behaviors toward the figure with overweight was coded as 1, and disagreement answer was coded as 0. Whereas, agreement to items indicated overweight attribution to environmental causes was coded as 0, and disagreement was coded as 1. The numbers of children answers indicated judgmental behaviors, and those indicated attribution to environmental causes were summed for each question.

2.6 Data Analysis

The statistical analysis for this study was conducted in accordance with the various phases outlined in the study. For the pilot project, the reliability assessment was conducted utilizing the SPSS software to compute the Cronbach's alpha coefficient.

Factorial analysis was employed to assess the construct validity. Further analysis was conducted to ensure the construct validity of the measure (weight stigma) by the utilization of a system equation model. Experts proficient in this specific form of analysis were approached for their expertise. In the final phase of the study, the percentage of weight stigma and its associated factors was assessed using the statistical software SPSS. The percentage was determined through descriptive analysis. The relationship between weight stigma and socio-demographic variables was examined using the independent

sample t-test and one-way ANOVA test. The level of significance was considered 5%, and the power of the study 80%.

2.7 Ethical Consideration

This study's protocol was approved by The Institutional Review Board (IRB) ethical committee at An-Najah University.

Chapter Three

Results

3.1 Participant's sociodemographic data

The mean age of participants was 7.78 (SD= 0.97). 47% of them were males and 53% were females. 20% of participants were in the first grade, 48% in the second grade, 31.5% in the third grade, 83% of them recruited from private schools (Ithar and Pioneers Baccalaureate schools), and 66% from UNRWA school in Nablus. In addition, 62.4% of the participants classified as having normal weight, 25.5% having overweight, and 10% having underweight. Other sociodemographic information on participants is listed in Table 3.1.

Table 3.1

Sociodemographic data of participants represented by n, %

Characteristics		n	%
Sex	Male	70	47.0
	Female	79	53.0
Age	6-7 years	37	24.8
	7.1-8 years	64	43
	8.1-9.2 years	48	32.4
Class	First grade	30	20.1
	Second grade	72	48.3
	third grade	47	31.5
School Type	Private School	83	55.7
	Organization “UNRWA”	66	44.3
Living with	Mother and father	143	96
	One of them	6	4
Mother education	School education	44	29.5
	University education	50	33.6
	Post- graduate education	11	7.4
	Diploma	11	7.4
	Other	1	0.7
Father education	School education	66	44.3
	University education	23	19.2
	Post-graduate education	2	1.7
	Diploma	2	1.7
	Father not present	2	1.3
Mother work status	Works	54	36.2
	Doesn’t work	95	63.8
Father work status	works	130	87.8
	Doesn’t work	14	9.4
	Other	4	2.7
Family member without the participant (N=140)	1-4	77	51.7
	5-8	60	40.3
	8-11	3	2
Weight Status	Underweight values	16	10
	Normal weight values	93	62.4
	Overweight values	38	25.5

3.2 Adjective Attribution Task – Stereotype percentage

Table 3.2 illustrates the frequencies of selected figure for each adjective. It shows that most negative adjectives were attributed to the overweight figure. Whereas positive adjectives were attributed more frequently to characters of under and normal weight.

Results revealed that 71% of children attributed “Ugly” adjective to characters with overweight compared to only 8.7% to those with under and normal weights. Also, 89% of children chose the character with overweight for “lazy” trait, 72% for “careless”, 63.1% for “stupid”, and 85.4% for “dirty”.

In contrast, 81.9%, 81.9%, 81.2% of participants chose the figures with underweight and overweight for “loved”, “good”, and “clean” adjectives, respectively.

As participants were free to choose one or more characters, and the task mainly target the assessment of stereotyping against the figure with overweight in comparison to other figures, the answers were arranged in groups where they can be classified as “stereotyping” or “non- stereotyping” towards the figure with overweight. For instance, “under” and “normal” weight answers were grouped together. Assigning positive traits to both figures with under and normal weights will indicate a weight stigmatizing behavior towards the figure with overweight. Thus, answers were re-coded where: 1= choosing the figure with under or normal weigh, 2= choosing the figure with overweight, 3= choosing “no one” or “all”, 4= choosing both figures with under and normal weight, and 5 = choosing figures with normal and overweight together, or when choosing figures with under and overweight together.

Table 3.2

Frequencies of selected target figures for each adjective

Adjective Attribution Task	1 Under /or normal weight		2 Overweight		3 No one Or All		4 Underweight+ normal weight		5 (normal+overweight) (under+overweight)	
	n	%	*n*	%	*n*	%	*n*	*%*	*n*	%
Polite	120	80.5	6	4	19	12.8	4	2.7	0	0
Hungry	11	47	136	91.3	1	0.7	0	0	1	0.7
Shy	118	79.2	24	16.1	4	2.7	2	1.3	0	0
Careless	27	18.1	108	72.5	12	8.1	0	0	0	0
Helpful	122	81.9	5	3.4	16	10.7	4	2.7	1	0.7
dirty	21	14.1	87	58.4	39	26.2	0	0	1	0.7
Sad	47	31.5	73	49	28	18.8	1	0.7	0	0
Good	122	81.9	8	5.4	14	9.4	4	2.7	1	0.7
Clean	121	81.2	3	2	21	14.1	4	2.7	0	0
Healthy	131	87.9	10	6.7	2	1.3	5	3.4	1	0.7
Sick	38	25.2	84	56.4	23	15.4	2	1.3	1	0.7
Fast	139	93.3	2	1.3	3	2	5	3.4	0	0
Loved	122	81.9	8	5.4	13	8.7	5	3.4	1	0.7
Ugly	13	8.7	107	71.8	28	18.8	0	0	1	0.7
Honest	108	72.5	10	6.7	24	16.1	5	3.4	1	0.7
Strong	96	64.4	35	23.5	9	6	4	2.7	1	0.7
Stupid	19	12.8	94	63.1	36	24.2	0	0	0	0
Introvert	37	24.8	90	60.4	22	14.8	0	0	0	0
Kind	117	78.5	9	6	13	8.7	10	6.7	0	0
Lazy	12	8.1	125	83.9	12	8.1	0	0	0	0

For further comparison; Figure 3.1 shows the frequencies of adjectives attribution to the figure with overweight. Numbers of children who attributed each adjective to the figure with overweight was calculated. Then, the sum of children who attributed positive traits, and negative traits were calculated separately and each of them was divided by their total number. The resulted two total scores represent the mean of all children who attributed

positive traits, and negative traits to the figure with overweight. The mean of children number attributed positive traits to the figure was 9.6, while 92 attributed negative traits.

The mean percentage of participants who attributed negative and positive traits to the figure with overweight was 62.9%, 6.7%, respectively.

Adjective Attribution Task total score was calculated by giving "1" score to answers indicating stereotyping behaviors, and "0" score to answers indicating no stereotyping behaviors toward the figure with overweight. For each child; a total score will result from the sum of scores for each adjective. Consequently, for 20 adjectives, the highest score is 20. Higher score indicating higher stereotyping tendency.

Table 3.3 presents the association between Adjective Attribution Task total score and the sociodemographic variables. A significant association was detected between Adjective Attribution Task total score and school name (p-value= 0.035) using One-Way ANOVA test. Weight status appeared to have no significant effect on the participants scores in the Adjective Attribution Task (see Table 3.3).

Figure 3.1

Mean percentage of the participants' traits attribution to the figure with overweight

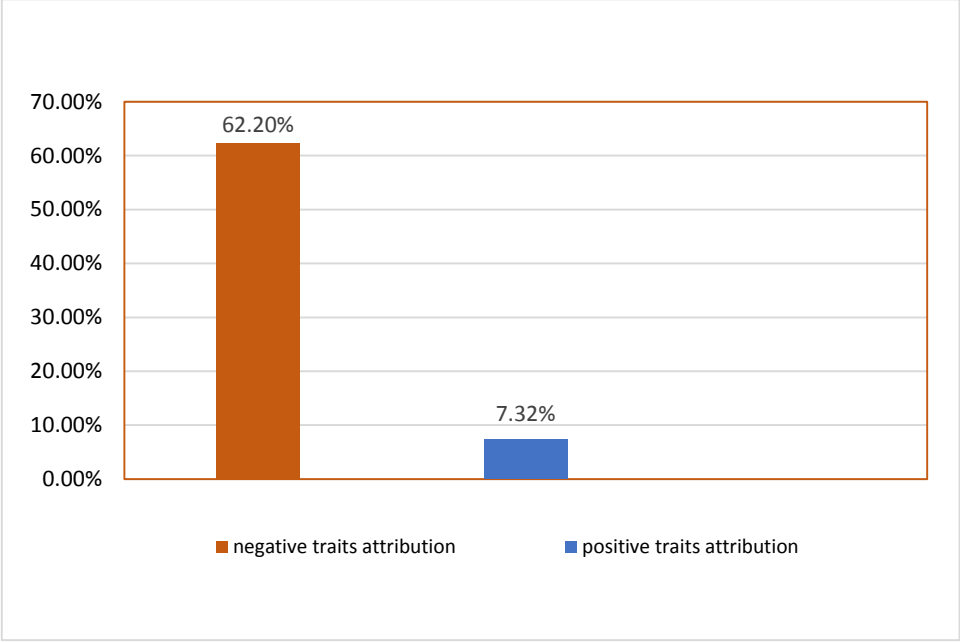


Table 3.3

Sociodemographic relation with Adjective Attribution Task's total score

variable		Task1: Adjective Attribution– total score	P-value
		Mean ± SD	
Sex	Male (n=66)	8.45 ± 2.90	0.776
	Female (n=74)	8.60 ± 3.41	
School type	Private schools (n=79)	8.46± 3.39	0.776
	Organization school (n=61)	8.62 ± 2.88	
School name	School 1- Pioneer (n=30)	7.30 ± 3.06	0.035*
	School 2- Ithar (n=49)	9.18 ± 3.42	
	School 3- UNRWA (n= 61)	8.62 ± 2.88	
Living with	Mother and father (n=135)	8.55 ± 3.14	0.702
	One of them (n=5)	8.00 ± 4.41	
Mother Education	School education (n=41)	8.73 ± 2.72	0.597
	Bachelor education (n=74)	8.64 ± 3.62	
	Post-graduate (n=6)	6.50 ± 3.39	
	Diploma (n=11)	8.54 ± 1.86	
	Other (n=1)	10	
Father Education	School education (n=61)	8.88 ± 3.52	0.684
	Bachelor education (n=49)	8.53 ± 2.76	
	Post-graduate (n=10)	7.90 ± 2.96	
	Diploma (n=11)	7.45 ± 3.26	
	Father not present (n=2)	8.5 ± 7.77	
Mother work status	Yes, works (n= 53)	8.54 ± 3.47	0.974
	No, doesn't work (n=87)	8.52 ± 2.99	
Father work status	Yes, works (n=124)	8.45 ± 3.03	0.695
	No, doesn't work (n= 12)	9.25 ± 4.26	
	Other (3)	9.00 ± 5.56	
Family members	1-4 (n= 74)	8.54 ± 3.24	0.926
	5-8 (n=55)	8.76 ± 3.23	
	8-11 (n=2)	8.50 ± 0.70	
Weight Status	Underweight values	9.06 ± 3.01	0.554
	Normal-weight values	8.62 ± 3.33	
	Overweight values	8.08 ± 2.9 5	

** Significant at p-value< 0.05 using one-way ANOVA test*

3.3 Friendship Selection Task – weight bias and discrimination percentage

Table 3.4 shows frequencies for target figures chosen to each question in the Friendship Selection Task. Only 0.7% (n=1) of children chose the figure with overweight as a best friend. 84.6% (n=126) chose figures with under or normal weights as the one they like the most, and the one with overweight was chosen only 1.3% of time (n=1.3). Additionally, 4% (n=6) choose to play with the character with overweight at school compared to 71% Who wants to play with their peers with normal or under weights, and 20.1% (n=30) choose the figure with overweight to bring along to the restaurant.

As the previous task, answers that indicate weight bias behaviors were given a "1" score, while a "0" score was given to answers indication no bias. The total score is calculated as the sum of scores for each participant. As the task includes 8 items; highest score is 8.

Answers were re-coded where: 1= choosing the figure with underweight or normal weight, 2= choosing the figure with overweight, 3= choosing "No one" or "All", 4= choosing figures with underweight and normal weight together, 5= choosing figures with under and overweight together, or choosing figures with normal and overweight together.

Sex, school type, school name were significantly associated with the total score of the Friendship Selection Task (p-value < 0.05) Independent sample t-test indicated a higher weight bias percentage in the private schools (M=2.71) compared to the organization school (UNRWA) (M=1.98) (Table 3.5).

Females (M =2.69) tended to pose more weight bias in the Friendship Selection Task than males (M= 2.04) as the total scores of female participants in the Friendship Selection Task were higher (M= 2.69) than males' total scores (M=2.04) (see figure 3.2).

Table 3 4

Friendship selection task for target figures

Friendship Selection Task	1 Underweight or normal weight figure		2 Overweight figure		3 "No one" Or "All"		4 Underweight + Normal weight figures		5 Under+ overweight figures Or Normal +overweight figures	
	n	%	*n*	%	*n*	%	*n*	%	*n*	*%*
Who would you choose as a friend?	124	83.2	1	0.7	17	11.4	7	4.7	0	0
Who do you like the most?	126	84.6	2	1.3	9	6	12	8.1	0	0
Which friend would you Invite to your birthday?	82	55	10	6.7	32	21.5	25	16.8	0	0
Which friend do you prefer to play with at school?	106	71.1	6	4	22	14.8	12	8.1	3	2
Who would you choose to accompany you to a journey?	92	61.7	11	7.4	28	18.8	18	12.1	0	0
Who would you like to bring along to the restaurant?	86	57.7	30	20.1	18	12.1	13	8.7	2	1.3
Who would you choose to set beside at school?	115	77.2	5	3.4	18	12.1	9	6	2	1.3
With whom would you share your food?	83	55.7	17	11.4	34	22.8	14	9.4	1	0.7

Table 3.5

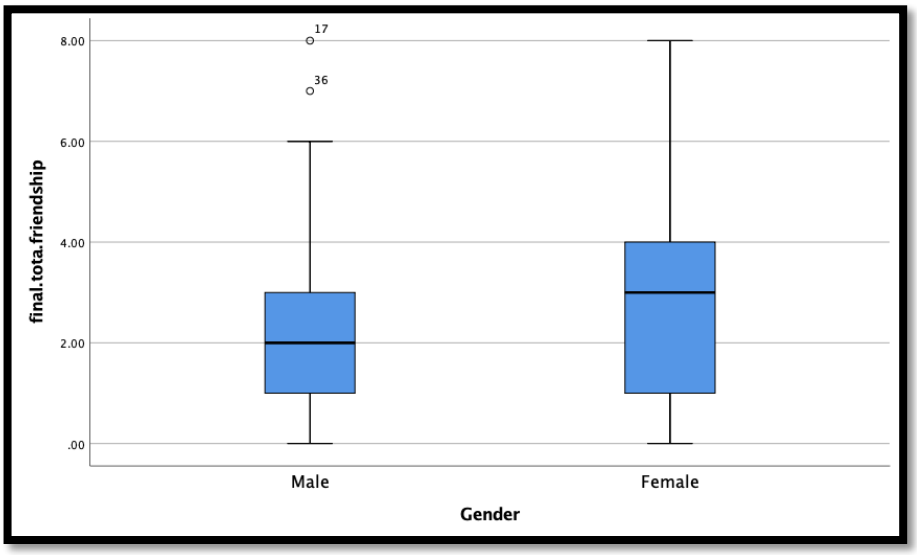
Sociodemographic relation with friendship selection task total score

Variable		Task2: Friendship Selection Task– total score	P-value
		Mean ± SD	
Sex	Male (n=70)	2.04 ± 1.78	0.047*
	Female (n=79)	2.69 ± 2.19	
School type	Private schools (n=83)	2.71± 2.29	0.023*
	Organization school (n=66)	1.98 ± 1.56	
School name	School 1- Pioneer (n=30)	2.23 ± 2.02	0.025**
	School 2- Ithar (n=53)	2.98 ± 2.40	
	School 3- UNRWA (n= 66)	1.98 ± 1.56	
Living with	Mother and father (n=143)	2.38 ± 1.97	0.892
	One of them (n=6)	2.50 ± 3.27	
Mother Education	School education (n=44)	2.25 ± 1.91	0.611
	Bachelor education (n=78)	2.60 ± 2.23	
	Post-graduate (n=6)	2.33 ± 1.36	
	Diploma (n=11)	2.00 ± 1.84	
	Other (n=1)	0.00	
Father Education	School education (n=66)	2.25 ± 2.15	0.520
	Bachelor education (n=50)	2.48 ± 2.03	
	Post-graduate (n=11)	3.18 ± 1.47	
	Diploma (n=11)	2.18 ± 1.40	
	Father not present (n=2)	4.00 ± 5.65	
Mother work status	Yes, works (n= 54)	2.74 ± 2.16	0.111
	No, doesn't work (n=95)	2.18 ± 1.93	
Father work status	Yes, works (n=130)	1.78 ± 1.47	0.470
	No, doesn't work (n= 14)	2.46 ± 2.02	
	Other (4)	2.75 ± 3.59	
Family members	1-4 (n= 77)	2.41 ± 2.08	0.316
	5-8 (n=60)	2.21 ± 1.87	
	8-11 (n=3)	4.00 ± 3.46	
Weight Status	Underweight values (n=16)	2.81 ± 1.79	0.230
	Normal-weight values(n=93)	2.48 ± 2.14	
	Overweight values. (n=38)	1.92 ± 1.63	

**, ** Significant at p-value< 0.05 using independent sample t-test, one way ANOVA test*

Figure 3.2

Females and males' comparison in Friendship Selection Task



3.4 Controllability Attribution Task- judgments and weight control- related beliefs assessment

As shown in table 3.6, most children tended to have judgmental beliefs towards individuals with overweight. 81.9% (n=122) of children agreed with the statement that the character with overweight eats more than required, whereas only 18.1 (n=18.1) disagreed. 61.7% expressed their agreement with "I think he/she sleeps a lot". In addition, 59.1% (n= 88) of children disagreed that the character can't lose weight even when he/she stops overeating. (Figure 3.3)

Independent sample t-test indicated no effect of any sociodemographic data on the Controllability Attribution Task (Table 3.7)

Figure 3.3

Controllability attribution Task- Frequencies of participants agreement and disagreement with each task's sentence considering the figure with overweight

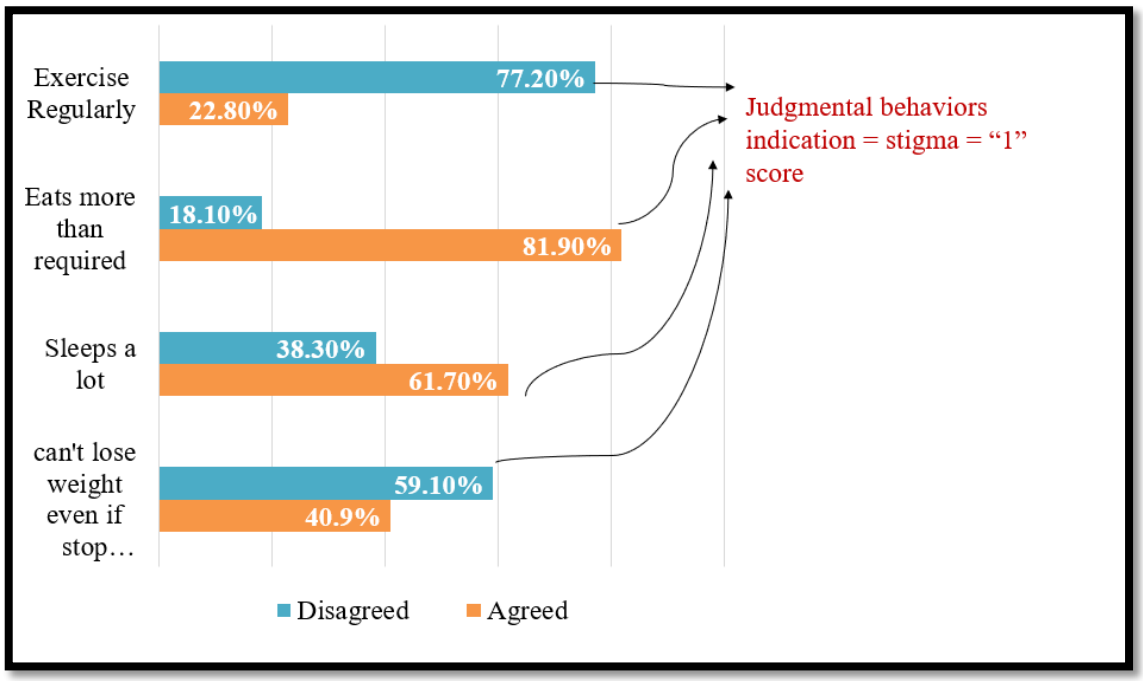


Table 3.6

Controllability attribution Task- Frequencies of participants agreement and disagreement with each task's sentence considering the figure with overweight

Controllability Task	Indication of environmental causes (0)		Indication of Judgmental causes (1)		Total	
	N	*%*	*N*	*%*	*N*	*%*
I think he/she eats more than required	27	18.1	122	81.9	149	100
I think he/she exercise enough	34	22.8	115	77.2	149	100
I think he/she born like this	56	37.6	93	62.4	149	100
I think he/she sleeps a lot	57	38.3	92	61.7	149	100
I think he/she can become thin if he/she tries	53	35.6	95	63.8	148	99.3
I think his/her mother also have overweight	45	30.2	102	68.5	147	98.7
I think she/he can't lose weight even if she/he stops overeating	61	40.9	88	59.1	149	100
Mean	47.5	31.9	101	67.8		

**Note: (agreement with sentences attributed having overweight to figure's own control=1= judgmental, the opposite= 0= environmental)*

Table 3.7

Sociodemographic relation with Controllability Attribution Task's total score

variable		Task 3: Controllability Attribution – total score	P-value
		Mean ± SD	
Sex	Male (n=68)	4.77 ± 1.38	0.963
	Female (n=78)	4.76 ± 1.26	
School type	Private schools (n=83)	4.84 ± 1.34	0.467
	Organization school (n=63)	4.68 ± 1.28	
school name	School 1 (n=30)	4.86 ± 1.19	0.763
	School 2 (n=53)	4.83 ± 1.43	
	School 3 (n= 63)	4.68 ± 1.28	
Living with	Mother and father (n=140)	4.77 ± 1.32	0.839
	One of them (n=6)	4.66 ± 1.21	
Mother Education	School education (n=44)	4.59 ± 1.33	0.455
	Bachelor education (n=77)	4.83 ± 1.32	
	Post-graduate (n=6)	5.50 ± 1.04	
	Diploma (n=11)	4.45 ± 1.50	
	Other (n=1)	4	
Father Education	School education (n=66)	4.54 ± 1.29	0.274
	Bachelor education (n=48)	4.79 ± 1.30	
	Post-graduate (n=11)	5.18 ± 1.53	
	Diploma (n=11)	5.36 ± 1.43	
	Father not present (n=2)	5.0 ± 1.41	
Mother work status	Yes, works (n= 52)	4.96 ± 1.25	0.202
	No, doesn't work (n=94)	4.67 ± 1.34	
Father work status	Yes, works (n=127)	4.78 ± 1.31	0.892
	No, doesn't work (n= 14)	4.85 ± 1.35	
	Other (4)	4.50 ± 1.29	
Family members	1-4 (n= 75)	4.76 ± 1.41	0.865
	5-8 (n=59)	4.74 ± 1.24	
	8-11 (n=3)	4.33 ± 1.52	
Weight Status	Underweight values	4.75 ± 1.39	0.346
	Normal-weight values	4.89 ± 1.31	
	Overweight values	4.51 ±1.32	

Further analysis for each item of the task -separately- revealed an association between participants' sex and their agreement on two items of the Controllability Attribution Task: "I think he/she eats more than required" (p-value= 0.043) and "I think she/he can't lose weight even if she/he stops overeating" (p-value= 0.035). (Table 3.8)

70.4% (n=19) of the total females (n=79) disagreed that the figure with overweight eats more than required, while 49.2% (n=60) of them agreed. On the other hand, only 29.6% (n=8) male participants disagreed on the same statement, while 50.8% (n= 62) agreed and exhibited judgmental behavior (Figure 3.3).

For the item "I think she/he can't lose weight even if she/he stops overeating": 57.4% (n=35) of the males agreed, and so had a tendency toward attributing overweight to environmental causes, and 39.8% (n=35) disagreed and exhibited judgmental behavior toward the figure with overweight. According to female; 42.6% (n=26) agreed, while 60.2% (n=53) disagreed and reflected a judgmental behavior (Figure 3.4).

Note: Controllability Taks was checked for reliability after conducting the main large study, yielded a Cronbach alpha of 0.634, which was the closest we could obtain to the reliable value.

Table 3.8

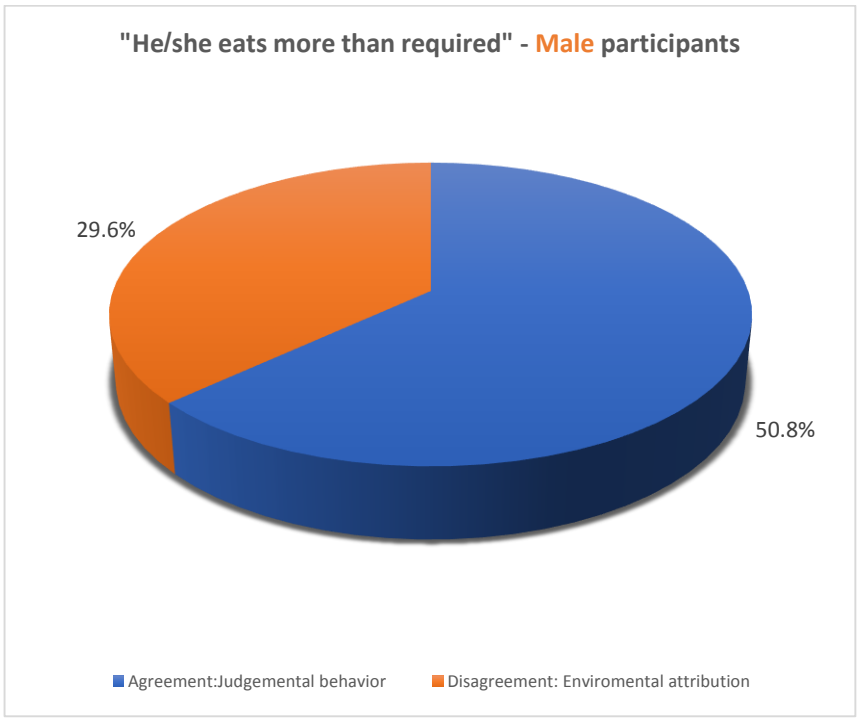
Sociodemographic data relation with each item of the Controllability Attribution Task

Variable	Sex	School type	Weight classification
	p-value		
I think he/she eats more than required	0.043*	0.684	0.893
I think he/she exercise enough	0.444	0.251	0.025*
I think he/she born like this	0.570	0.458	0.499
I think he/she sleeps a lot	0.551	0.800	0.810
I think he/she can become thin if he/she tries	0.144	0.257	0.148
I think his/her mother also have overweight	0.139	0.056*	0.011*
I think she/he can't lose weight even if she/he stops overeating	0.035*	0.995	0.557

**, ** Significant at p-value< 0.05 using independent sample t-test, One-way ANOVA- test.*

Figure 3.4

Female and male participants agreement on "He/she eats more than required"



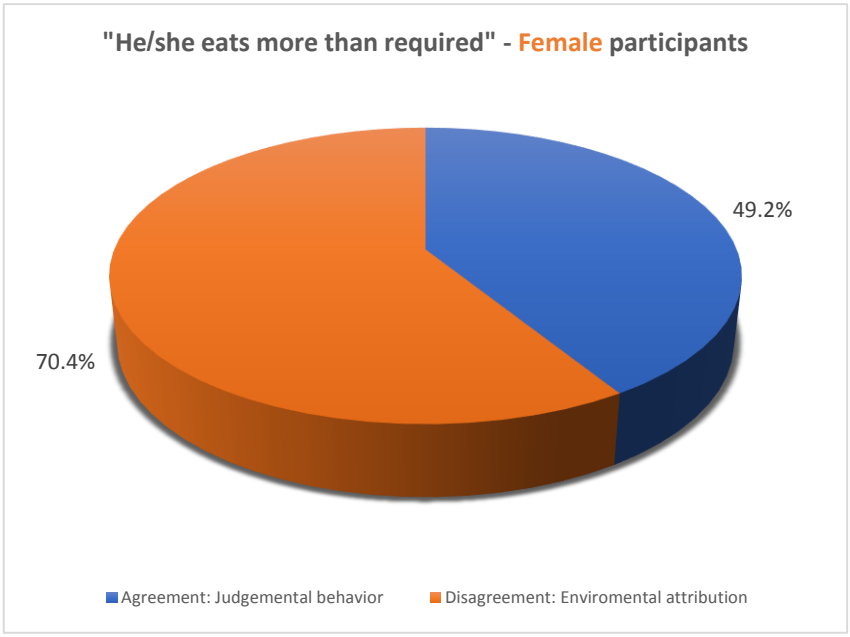
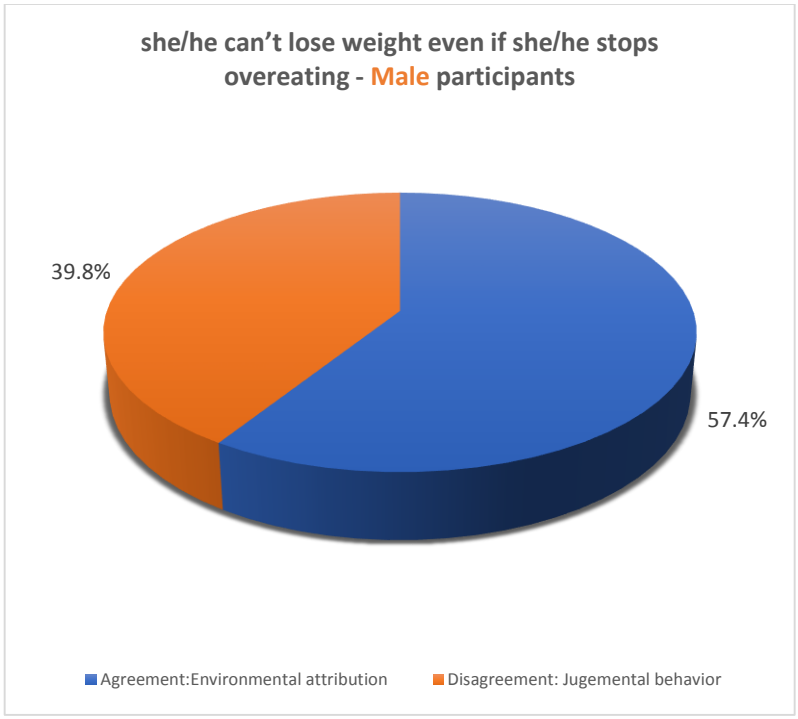
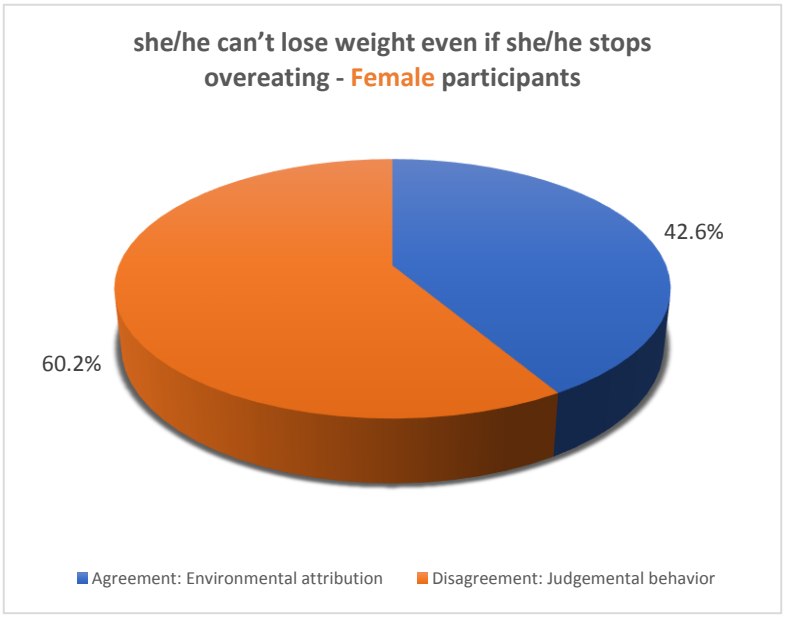


Figure3.5

Female and male participants agreement on "she/he can't lose weight even when she/he stops overeating"





Chapter Four

Discussion

4.1 The percentage of weight stigmatization

The main objective of the current study was to assess the percentage of weight stigmatization behaviors among children, by developing an image-based questionnaire. Results indicated a high percentage of weight stigmatization evidenced by the notable presence of three aspects of weight stigma: stereotyping, weight bias and discrimination, and weight-related judgments. Behaviors of weight stigmatization were expressed through the attribution of negative adjectives to the character having overweight/obesity, the social preference of the characters with normal and underweight, and the judgmental beliefs towards the character with overweight. It was not surprising that these attitudes were actually observed in our first school visit for data collection. A girl was complaining about the teasing she experienced in regard to her weight, as she was referred to as "fat" by a peer.

Preference of the characters with under and normal-weights was prevalent in the Friendship Selection Task. When children were asked about the one, they prefer as a friend, most of them chose the under or normal weight characters, while the character with overweight was almost never chosen. The same findings were concluded by many previous studies conducted on the same purpose using the same task (64) (12) (14).

Children preference of under and normal weight figures as friends may be explained by their beliefs that individuals with overweight/obesity hold negative traits compared to others. This is obvious in the current study as they labelled the character with overweight with ugliness, laziness, and carelessness, and being hungry, while they think the characters with under and normal weight are clean, loved, and good. However, stereotyping individuals with overweight and obesity was also common in the study of Musher who examined the percentage of anti-fat attitudes in children (64). The researcher asked the children to place different weight figures in a bipolar scale which consist of positive adjective on one end and a negative on the other. The findings revealed a discrimination against figures with obesity as they were assigned more negative traits

compared to those with normal or underweight. This is also in line with the results of other previous studies (14) (12).

The important note is, although children were free to choose more than one figure, they more frequently attributed negative adjectives only to the figure with overweight and the positive ones to the ones with normal and underweights. These discriminatory behaviors of children at a young age indicate that they may not arise from logical processing based on any educational system. Instead, this may indicate that the negative stereotyping and dislike of individuals with overweight or obesity may arise from a social or cultural issue neither than a way of thinking. The study of Cramer & Stienwert supported this, as they found that pre-school children aged 3-5 years exhibited stigmatizing attitudes towards the figure having obesity. They concluded that the origin of weight stigma attitudes in children is not a part of the natural cognitive development, but rather a result of child's social and cultural environment (68).

Moreover, children's friendship selection may also be influenced by **courtesy stigma**. This type of stigma extends to those who are close to the stigmatized individuals. As a result, children may avoid to associate with others who have overweight and obesity, as they may also be negatively perceived. This could further explain why children avoid choosing the figure with obesity as a friend and partner in different social or school activities, and even avoid setting beside her/him at school. Interestingly, previous research has shed light on this issue by investigate the effects of character's friends on the preference of this character. For example, a study involving adult participants found that normal weight individuals setting beside individuals with overweight are more negatively perceived than when setting next to someone who has normal weight (69). This finding was also observed in a study involving children, where they were asked to choose a friend from characters that were centered in a background of characters with either overweight or normal weight. Normal weight figures were liked less when they were presented in the center of a background with characters having overweight (70).

In addition to the stereotyping and social rejection, judgments and negative beliefs towards individuals with overweight were also prevalent in this study. Children exhibited a high judgmental attitude regarding weight control, and they believe that characters with overweight are responsible for their weights. The majority of children (81.9%) agreed

that the characters with overweight eat more than required, 77.2% disagreed they exercise enough, and 63.8% agreed that they can become thin if they tried. These results align with Margulies' study conducted on children aged 3-5 years, who found that pre-school age children pose a high tendency toward judging others who have overweight or obesity. They attributed fault to those having overweight, and indicated that "too much eating" and "lack of exercise" are the reasons behind the characters' weight, they exhibited the belief that overweight or obesity can be changed, and individuals can change their body size. The study suggested that controllability belief may mediate the weight stigmatization among children which were also expressed by stereotyping at this young age (14).

Similarly, Musher-Eizenman measured perceived causes and solutions for overweight by asking 4-6 years old children five "Yes" or "No" questions. The questions were testing children's beliefs about overweight, if being fat is a child's fault, if children are fat because they eat too much, if they are fat because they don't exercise, and if they can become thin if they try. Although results indicated a low-to-moderate amount of control attribution to over- weight children, the study found that children prejudice and anti-fat attitudes were strongly related to their belief that having overweight is controllable (64).

Notably, children's judgment attitudes towards figures with overweight, and their belief that they are responsible of their weight by eating too much and lack of exercise may also explain the stereotyping of the figures with overweight in our study, and why most of the children (91.3%, 83.9%) attributed "hungry" and "lazy" to the figure, while attributed "healthy" to the figures with normal and underweights. Consequently, this may indicate a lack of knowledge and understanding of the causes of obesity, even among adults, who significantly influence children's beliefs at a young age. This all contribute to the high percentage of weight stigma, its related consequences, and leading to the continuous cycle of increasing obesity rate.

These overall stigma behaviors of stereotyping, discrimination, judgment consist a real dangerous issue. Although this is the first study to assess the percentage and discuss this topic in Palestine, many studies outside Palestine had mentioned the serious consequences attributed to weight stigma.

4.1.1 General discussion

4.1.1.1 The absence of awareness & the possible consequences

From the findings discussed in the current study, it's evident that weight stigmatization is very common among children even at a young age. However, it's concerning that there have been no previous studies addressing this issue in Palestine, neither among children, nor adults. This lack of research indicates a lack of educational efforts that target raising awareness and correct children's beliefs about obesity and its scientific contributing factors. Consequently, the high percentage of weight stigmatization and judgment of the individuals who have overweight or obesity will persist. That's one reason why our society deals with stigmatization as a norm and even a justified behavior. Additionally, no enough attention is paid towards the negative impact of the language used by individuals, including adults, to describe those suffering from obesity, which plays an essential role in affecting their psychological wellbeing and their motivation to engage in weight management programs. The use of a stigmatizing language has been shown to promote shame, sadness, and has been found to adversely affect seeking care when used in healthcare settings (71) (72). Also, it has been reported that parental weight talk is associated with many adverse outcomes on psychological health, in addition to eating disorders and risky weight control strategies (73) (74).

While parents may sometimes be unaware that they are engaging in weight conversation with their children, which reflects the unconscious weight stigmatization, the words they use to describe their child's weight may promote shame, judgement, and stigma (75). Therefore, the idea of focusing solely on weight itself by using terms like "fat" "Chubby", and "Unhealthy weight" may not be effective in achieving the desired goal of weight loss and reducing obesity rates. Alternatively, it would be more effective to focus on highlighting overall health and rising awareness on healthy eating habits. Many studies ensured that engaging with children on conversations about healthy eating patterns and importance of physical activity is not associated with any eating disorders but rather may prevent their development (76) (77). Furthermore, a longitudinal study revealed that girls who were labeled "fat" by their parents is at higher risk to develop obesity nine years later (78). These findings underscore the importance of using respectful language that avoid stigmatizing signs in order to effectively prevent and manage obesity.

As previously mentioned, blaming individuals with obesity for their weight may arise from the idea that they are primarily responsible of their weight due to the lack of the essential awareness and educational programs on the various factors influencing obesity. Obesity is commonly attributed to overeating and lack of exercise, and this belief put individuals with obesity unfairly in continuous blaming cycle. This over simplifies belief about the origin of obesity is greatly contribute to weight stigma, when it's believed that obesity results mainly from laziness, carelessness, and overeating, all of which are believed to be personal choices (64). Yet, the cultural and social environments standards overlook the multiple psychosocial, biological, and environmental factors contribute to weight gain and thus simplifies the ability to manage weight (28). Blaming individuals with obesity for their weight may lead them to blame their selves and internalize these beliefs, which is internalized weight stigma. This type of stigma has many negative consequences for weight control, including lower motivation to diet (79), and difficulties in maintaining weight loss (80), emotional eating (81) and the development of eating disorders like binge eating (82). Moreover, individuals who believe they are responsible for their weight appeared to have low success in weight loss attempts, as they commonly experienced more attempts to lose weight (83) (84) which keeps a continuous cycle of self-blame when they don't succeed (85). Indeed, it was reported that there is a positive correlation between weight loss attempts and individual's weight (86). These previous studies, along with our research underline the lack of understanding of the factors influencing obesity and the belief of weight controllability, which is of the main factors attributed to the percentage of weight stigmatization. It's important to highlight this issue, as children at early age absorb these beliefs from adults, and as no adequate programs and materials are established to raise awareness, weight stigmatization will continue through further generations, and increase the rate of obesity.

Although weight stigmatization occurs very intensively through all ages, this experience is more painful and lifelong lasting when experienced by children. It has negative consequences on their academic and social outcomes, and their physical status, as well as their psychological status, self-esteem, and overall quality of life (87) (47). Also, internalized weight stigma in children is associated with the preference of being isolated due to their fear of being bullied and teased (88). Additionally, unhealthy weight control methods and eating disorders were also reported to be results of weight-based teasing among children and adolescents (89).

4.1.1.2 Intervention to raise awareness

Lin and Stutts conducted a study to evaluate the impact of different conditions on individuals' weight bias behaviors. The study assigned the participants into three conditions which consist of different scenarios about a person with obesity: Stereotypic, control, or counter stereotypic. Stereotypic condition suggested that the main causes of obesity are lifestyle choices, the control condition hadn't mention weight at all, and the counter stereotypic condition explained the uncontrollable factors contributing to obesity. Participants obesity bias was assessed before and after exposed to these conditions. Findings revealed that those in counter stereotypic condition showed a reduction in obesity bias and an increase in their belief regarding weight uncontrollability (90). This finding was also consistent with the study of Diedrichs and Barlow who found that an educational intervention that targets weight bias and the underlying causes of obesity is effective in reducing weight bias behaviors and changing weight controllability beliefs (91).

Thus, establishing an educational program targeting young children is promising in reducing weight stigmatization. Educational sessions that provide information on the various uncontrollable factors of obesity such as genetic, environmental, social, and psychological factors can be of the strategies in changing weight stigmatization behaviors among school age children. By doing so, we can work toward changing public beliefs and attitudes toward individuals with obesity, and help in more effective obesity control and management.

4.2 Gender and weight stigmatization

The current study indicated sex-related differences in the Friendship Selection Task, where female participants showed higher weight bias in their friend's selection. Generally, there are mixed findings in regard to sex effects on children's friendship selection. In consistent with our study some previous studies (92) (68) (16) reported girls' stronger rejection for the figure with overweight and higher preference for the one with underweight than boys. In contrast, other studies founded no sex effects on friendship selection among children (93) (14).

In addition, although the study detected no differences between males and females in the total score of the controllability task, the analysis of each item showed a significant

difference in two aspects. Females believed more than males that the figure with overweight can lose weight when stops overeating. However, male exhibited higher judgmental belief in that they believed more that the figure with overweight eats too much. It's possible that girls believe the figure with overweight doesn't eats too much, but think that stopping overeating will also help in losing weight, besides other methods like exercises. This assumption may be partially supported by another study, where females aged 5-6 years recommended more physical exercises and more dieting to girls and boys, respectively, as a solution for losing weight (94).

Generally, in regard to weight stigma, research indicated that girls were more susceptible to experiencing weight teasing than boys. Moreover, it was founded that girls with overweight and obesity are likely to suffer from stigmatization, while boys need to have obesity (BMI > 95%) in order to be stigmatized (95). In addition, when assessing weight stigmatization among children, some studies found that girls attributed fewer positive traits to the figure with overweight compared to boys, and thus displayed stronger weight stigmatization (12). On the other hand, some studies showed no differences between girls and boys in term of weight stigmatization (96) (97).

The exact reasons of the differences between male and female children in weight stigmatization were not fully explained in previous studies. Nonetheless, gender influence on weight stigma among adults was suggested to be a result of the cultural beauty ideal, which is "to be thin" for females, and "to be muscular" for males (98). As adults play a significant role in the transmission of these beliefs to children, this may explain why weight stigma percentage is different between females and males at a very early age.

4.3 Socioeconomic Status and Weight stigmatization

The two private schools (Pioneers & Ithar) showed higher weight bias in the friendship selection task compared to the UNRWA school. This may be attributed to socioeconomic status. However, socioeconomic effect on weight stigma was discussed earlier in limited studies. For example, a study suggested that mothers with higher socioeconomic status tend to have more weight control conversation, as they may be more sensitive to judgments about the weight of their children (99). In other words, this may enhance the possibility to increase weight-related talk and comments by which the child may be affected, or even the possibility to engage with children in weight conversation, which

may all lead to higher weight bias and judgements exhibited by the child towards others. Additionally, individuals with higher income were presumed to display more negative behaviors towards others with obesity (100). Furthermore, some research has also shown that upper social class exhibited higher weight stigmatization due to the lower prevalence of overweight among these groups (101).

In conclusion, socioeconomic status may influence parents' perspective toward overweight, and their understanding of obesity. This will be expressed through comments, conversation, or behaviors. Ultimately, children may adopt these beliefs and behaviors from their parents and display them towards other.

4.4 Limitations

The current study assessed the percentage of weight stigmatization among children by three designed figures representing under, normal, and overweight characters. however, there were two limitations of the study. Firstly, some children tend to choose answers by attributing the characters to someone they know, or to choose the one who is similar to them. This could be resolved by assigning a name to each character.

The second limitation is that the study was limited to two private and one UNRWA schools. Thus, it can't indicate the differences- if present- between weight stigmatization among children in private and governmental schools.

4.5 Conclusion

The Study provided a newly developed tool to assess weight stigmatization among school age children. The development of the questionnaire came after literature review and critical analysis of existing research, that shared the same target with ours. The tool was validated by checking the content validity, and reliability which was tested after a pilot study.

The assessment phase indicated a high percentage of weight stigmatization among school aged children in three schools in Nablus. Stereotyping, weight bias and judgmental attitudes towards individuals with overweight, which are all considered aspects of weight stigmatization, were common in the three sections of the developed image-based questionnaire.

Adjective Attribution Task revealed higher attribution of negative traits, and fewer attribution of positive traits to the character with overweight. For example, the children tended to choose the figure having overweight as the one who is “Lazy”, “Hungry”, “ugly”, and “careless”. In contrast, “Healthy”, “good”, “loved”, and “clean” were frequently attributed to figures with under and normal weights.

Friendship Selection Task showed children rejection of the character with overweight as a friend either at school or at different social activity. For example; they didn’t choose to play with him/her at school or to accompany to a journey. Moreover, only one child chose the same figure as a friend, and two participants chose the it as the one they like the most. Whereas, high preference of the figures with under and normal weights was common among children’s answers. However, girls tend to have higher weight bias in their friendship selection, and weight stigmatization was higher in the private schools compared to the organization (UNRWA) school.

Controllability Task reflected a high children’s belief in the ability of the characters with overweight to control their weight and a strong judgment towards them. Sex appeared to have no role in the total score of the task. Yet, the analysis of each item showed that males exhibited a stronger belief that individuals with overweight eat more than required, while females exhibited a stronger belief that they can lose weight if they stop overeating.

Weight stigmatization was common across the sample, regardless of children weight. This finding showed that the children with overweight or obesity may have a negative attitude and beliefs toward others even if they have the similar body size.

4.6 Recommendation

As weight stigmatization is very common even among children at an early age, where they are still unable to logically think or process information, this highlights how much efforts must be paid towards educational interventions.

The consequences of weight stigma on physical and psychological health of the children can extend into adulthood. In addition, weight stigmatization in children leads to less motivation toward exercise and engagement in unhealthy eating patterns, which means that it may contribute to the development and persistence of obesity. Therefore, it’s

important to act towards reducing weight stigma among children, and suitable educational programs are recommended to be established.

The findings of this study underline the importance of rising children awareness on the multiple factors contributing to obesity, and this should begin at the early school level.

Establishing an intervention will minimize cultural and social beliefs influence on children's perception.

Children's obvious recognition of body size as a factor for evaluating others, or for choosing them as a friends, and for employing judgments, emphasize the importance to work on rising awareness. This could be induced by regular classes, that target clarifying obesity-related factors, and consequently, helps in preventing oversimplification of obesity. To be affective, it recommended to be done through children-favored methods, like story-telling, and enjoyable materials, including books or simple videos. As a result, those classes will leave a lasting impact on their mind, and ease knowledge absorption, especially at early ages. Focusing on this age group will help in reducing obesity rate, as well as promote effective management.

It's also recommended to treat children with obesity equally and with respect, in all environments, including schools, and this could involve both teachers and parents. As caregivers, they play an essential role in inducing positive changes in children's habits and thoughts. Importantly, the messages delivered to children by educational programs should also focus on encouraging them to adopt positive lifestyle habits and choices, rather than focusing on weight itself, which may enhance weight stigmatization.

Researcher can use the tool developed in the current study to measure results after conducting an educational intervention. In this way, they can check the efficacy of the intervention in reducing weight stigmatization attitudes among children.

On the other side, we can't ignore the prominent role of media on children. The messages delivered by media may easily enhance weight bias, and build negative thoughts towards individuals with overweight and obesity. As children nowadays tend to also be exposed to social media, or even to messages conveyed by ads; establishing policies could also be effective to restrict the way in which obesity, and individuals with obesity are introduced. The language used to describe individuals with obesity must avoid stigmatizing and

blaming, to help in rising awareness on the diversity of each case, and avoid passing messages that individuals with obesity are totally responsible of their weight. It's important to pay attention towards languages used especially while targeting factors that associate with obesity.

Another point to mention, public health programs ignored discussing weight stigma as one of the issues that limits efforts paid toward the managements and prevention of obesity. Rising public awareness on the complex etiology of obesity will also affect children awareness, when improving the cultural and social beliefs of obesity. Accordingly, this promote reducing weight stigma and, as a result, help in reducing obesity prevalence.

As this was the first study to discuss weight stigma in Palestine, and as it measured a high percentage of weight stigmatization among children at early ages, it's recommended to be the first step towards more subsequent research, delivering both, more statistical data on the assessment of weight stigmatization, and effective interventional programs aiming to reduce stigmatization among this age group.

We deeply believe on the ability of rising awareness to induce positive changes in habits and attitudes, as well as thoughts. The lack of research on this topic, indicates a gap between public thoughts and scientific facts. From this point, we can support that weight stigma originates from misunderstanding regarding the complex etiology of obesity. Social and cultural environments continue considering obesity as a result of individual's choices, and keeps putting pressure on individuals living with obesity, affecting their motivation to lose weight. Thus, as it was previously mentioned, we highly recommended researchers to start working on rising children's awareness and knowledge on the multiple factors contributing to its development. This is a backbone to reduce weight stigmatization, to protect children's psychological status, as well as to reduce obesity prevalence, and improve its management.

Abbreviations

Abbreviation	Meaning
AACE	American Association of Clinical Endocrinologist
ADHD	Attention Deficit Hyperactivity Disorder
BMI	Body Mass Index
CDC	Centers for Disease Control
IRB	The Institutional Review Board
WHO	World Health Organization

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Appendices

Appendix A

The questionnaire used in the study and the consent form.

نموذج طلب موافقة على المشاركة في بحث علمي

أولياء الأمور الأعزاء ;نهديكم التحية وبعد،

بموجب هذا النموذج، نود أخذ موافقتكم على م شاركة طفلكم/ طفلتكم في درا سة بحثية لر سالة ماج ستير حول سمنة الأطفال وما يتعلق بها من سلوكيات بين الأطفال في مستويات الصفوف الأساسية.

يت ضمن البحث إجابة الطالب/ة على ا ستبيان يحتوي على ر سومات لـ شخ صيات أطفال، م صمم بطريقة محببة للطفل وتراعي إدراكه، خلال لقاء معه قصير مدته 10–15 دقيقة مع الباحثة.

يُجرى هذا البحث بغية قياس مدى انتشـــار ســـلوكيات مختلفة بين الأطفال من تحيّز ووصـــم بناء على الوزن، وبهدف إنشاء خطط مستقبلية تسعى إلى تقليل انتشار هذه الظواهر وبالتالي تقليل انتشار السمنة، باعتبار ان هذه الـ سلوكيات هي أحد العوامل التي ت ساعد في انت شارها ب شكل أكبر، كما ويـ سعى بالتالي إلى الحفاظ على صحة الطفل النفسية بشكل عام.

لن يكون الطفل عر ضة لأي أخطار عند الم شاركة في هذه الدرا سة، وقد صُمم الا ستبيان بطريقة قريبة لكونها ترفيهية بالنسبة له، فلن يكون هناك أي احتمالية لاستياء الطفل.

يجوز لكم الموافقة على م شارك طفلكم في الدرا سة، كما ويجوز لكم عدم الموافقة، ولا يوجد خ سارة لأي مزايا في حال عدم الموافقة، كما ننوّه لكم أنه لن تتم مشـــاركة الطفل دون موافقته عن طريق ســـؤاله عن رغبته بالمشاركة بشكل شخصي من قبل الباحثة.

في حال كان لديكم أي أسئلة أخرى حول الدراسة، يمكنكم التواصل على الرقم التالي: ٠٥٩٩١١٤٣٧٣.

<u>موافقة ولي أمر الطالب/ـــة:</u>

☐ أوافق على مشاركة طفلي/تي بهذه الدراسة.

اسم ولي أمر الطالب بالأحرف الكبيرة الواضحة .....

توقيع ولي امر الطالب: .....

اسم الطالب بالأحرف الكبيرة الواضحة: .....

فريق البحث:

لينا بسطامي

د. عُلا عنبتاوي

د. منال بدرساوي

Questionnaire No.:

رقم الاستبانة:

	1- No, doesn't work لا، لا تعمل
Father's work status	1- Yes, works. نعم، يعمل
	2- No, doesn't work لا ، لا يعمل
Family members in the same house (other than you) عدد أفراد العائلة في نفس المنزل (عداك)	
Income الدخل	1- < 2000 2- 2000-4000 0004>
Body weight (kg) الوزن (كم)	
Height (cm) الطول (سم)	
Growth Chart for the child مخطط النمو	

Part One: Participant's Demographic information

الجزء الأول: المعلومات الديموغرافية للمشترك

Age **العمر**	
Sex **الجنس**	
Class **الصف**	
School name **اسم المدرسة**	
School Type **نوع المدرسة**	مدرسة خاصة
	مدرسة حكومية
Living with **أعيش مع**	1- Mother and father الأم والأب
	2- One of them مع أحدهما
	3- Other غير ذلك
Mothers Education **تعليم الأم**	1- School education تعليم مدرسي
	2- University education تعليم جامعي
	3- Not educated غير متعلمة
Father's Education **تعليم الأب**	1- School education تعليم مدرسي
	2- University education تعليم جامعي
	3- Not educated غير متعلم
Mother's work status	2- Yes, Works نعم، تعمل

Meet our friends

تعرّفي على صديقاتنا!

(1)

(2)

(3)

Part Two: Traits Attribution Task

الجزء الثاني: نسب الصفات

Put ✓under the image which you think is suitable for each adjective:

ضعي ✓ تحت الصورة التي ترينها مناسبة لكل من الصفات التالية:

	Picture 1 **الصورة 1**	**Picture 2** **الصورة 2**	**Picture 3** **الصورة 3**	**No one** **لا احد**	**All** **جميعهم**
					
Polite مؤدبة					
Hungry جائعة					
Shy خجولة					
Careless مهملة					
Helpful متعاونة					
Dirty غير نظيفة					

				**No one** **لا احد**	**جميعهم**
Sad حزينة					
Good جيدة					
Clean نظيفة					
Healthy صحية					
Sick مريضة					
Fast سريعة					
Loved محبوبة					
Ugly قبيحة					
Honest صادقة					
Strong قوية					
Stupid غبية					
Introvert انطوائية					

				**No one** **لا احد**	**All** **جميعهم**
Kind لطيفة					
Lazy كسولة					

Part 3: Friendship Selection Task

الجزء الثالث: اختيار الأصدقاء

Draw a circle around the picture that you consider suitable for each question:

ضعي دائرة حول الصورة التي تعتقدي أنها مناسبة لكل من الأسئلة التالية:

	Friend in picture1 **الصديقة في الصورة 1**	**Friend in picture2** **الصديقة في الصورة 2**	**Friend in picture3** **الصديقة في الصورة 3**	**All** **جميعهم**
Who will you choose to be your friend? أي منهم ستختارينها أن تكون صديقتك؟				

Who do you like the most? أي منهم تعجبك اكثر؟				
Who will you invite to your birthday at home? أي منهم سوف تدعينها إلى حفلة ميلادك في منزلك؟				
Which friend would you prefer to play with at school? أي منهم تُفضلين أن تلعبي معها في المدرسة؟				
Which friend would you prefer to accompany you on a trip? من منهم ستختارين أن تشاركك في رحلة/ مشوار؟				
Who would you take with you for some exercises? من منهم ستصحبينها معك إلى اداء التمارين؟				

Who would you take with you to the restaurant? من ستصحبينها معك إلى المطعم؟				
Which friend would you choose to set besides at school? من منهم ستختارين أن تجلس بجانبك في المدرسة؟				
With whom you will share your food? من منهم سوف تشاركينها طعامك؟				

Part 4: Controllability Attribution Task

الجزء الرابع: نسب القدرة على التحكم

Choose one of the following- “Agree”, “Disagree”, or “have no opinion” for each statement regarding the female character: -

اجب هل توافق أم لا على الجمل التالية التي تخص الصديق في الصورة:-

	Agree أوافق	Disagree لا أوافق
She eats more than required? اعتقد أن الطفلة بالصورة تأكل أكثر من اللازم؟		
She exercises enough? اعتقد انها تقوم بممارسة الرياضة بشكل كاف؟		
She was born like this? اعتقد أن الطفلة بالصورة ولدت هكذا؟		
She sleeps a lot? اعتقد أن الطفلة بالصورة تنام كثيرا؟		
She can become thin if she tries? أعتقد انها تستطيع أن تصبح نحيفة اذا ارادت ذلك؟		
Her mother is overweight? اعتقد أن والدة الطفلة وزنها زائد؟		
It’s very hard to lose weight even if she stops overeating? اعتقد انها لا تستطيع خسارة الوزن حتى لو توقفت عن الاكل الزائد		

Questionnaire: Male Version

Questionnaire No.:

رقم الاستبانة:

Part One: Participant's Demographic information

الجزء الأول: المعلومات الديموغرافية للمشترك

Age **العمر**	
Sex **الجنس**	
Class **الصف**	
School name **اسم المدرسة**	
School Type **نوع المدرسة**	1 - مدرسة خاصة
	2 - مدرسة حكومية
Living with **أعيش مع**	1- Mother and father الأم والأب
	2- One of them مع أحدهما
	3- Other غير ذلك
Mothers Education **تعليم الأم**	1- School education تعليم مدرسي
	2- University education تعليم جامعي
	3- Not educated غير متعلمة
Father's Education **تعليم الأب**	1- School education تعليم مدرسي
	2- University education تعليم جامعي
	3- Not educated غير متعلم
Mother's work status	1- Yes, works نعم ، تعمل
	2- No, doesn't work

	لا لاتعمل
Father's work status	1- Yes works نعم يعمل
	2- No, doesn't work لا، لا يعمل
Family members in the same house (other than you) **عدد أفراد العائلة في نفس المنزل (عداك)**	
Income **الدخل**	1- < 2000 2- 2000-4000 3- > 4000
Body weight (kg) **الوزن (كم)**	
Height (cm) **الطول (سم)**	
Growth Chart for the child **مخطط النمو**	

Meet our friends!

تعرّف على أصدقائنا!

(1)

(2)

(3)

Part Two: Traits Attribution Task

الجزء الثاني: نسب الصفات

Put ✓under the image which you think is suitable for each adjective:

تحت الصورة التي تراها مناسبة لكل من الصفات التالية:✓ ضع

	Picture 1 الصورة 1	Picture 2 الصورة 2	Picture 3 الصورة 3	No one لا احد	All جميعهم
					
Polite مؤدب					
Hungry جائع					
Shy خجول					
Careless مُهمل					
Helpful متعاون					
Dirty غير نظيف					

				**No one** **لا احد**	**All** **جميعهم**
Sad حزين					
Good جيد					
Clean نظيف					
Healthy صحي					
Sick مريض					
Fast سريع					
Loved محبوب					
Ugly قبيح					
Honest صادق					
Strong قوي					
Stupid غبي					
Introvert انطوائي					

				**No one** **لا احد**	**All** **جميعهم**
Kind لطيف					
Lazy كسول					

Part 3: Friendship Selection Task

الجزء الثالث: اختيار الأصدقاء

Draw a circle around the picture that you consider suitable for each question:

ضع دائرة حول الصورة التي تعتقد أنها مناسبة لكل من الأسئلة التالية:

	Friend in picture1 **الصديق في الصورة 1**	**Friend in picture2** **الصديق في الصورة 2**	**Friend in picture3** **الصديق في الصورة 3**	**All** **جميعهم**
Who will you choose to be your friend? أي منهم ستختاره أن يكون صديقك؟				

Who do you like the most? أي منهم يعجبك اكثر؟				
Who will you invite to your birthday at home? أي منهم سوف تدعوه إلى حفلة ميلادك في منزلك؟				
Which friend would you prefer to play with at school? أي منهم تُفضل أن تلعب معه في المدرسة؟				
Which friend would you prefer to accompany you on a trip? من منهم ستختار أن يشاركك في رحلة/ مشوار؟				

Part 4: Controllability Attribution Task

الجزء الرابع: نسب القدرة على التحكم

Choose one of the following- "Agree", "Disagree", or "have no opinion" for each statement regarding the male character: -

اجب هل توافق أم لا على الجمل التالية التي تخص الصديق في الصورة:-

	Agree أوافق	Disagree لا أوافق
I think he eats more than required? اعتقد أن الطفل بالصورة يأكل أكثر من اللازم؟		
I think he exercises enough? أعتقد أنه يقوم بممارسة الرياضة بشكل كاف؟		
I think he was born like this? أعتقد أن الطفل بالصورة ولد هكذا؟		
I think he sleeps a lot? أعتقد أن الطفل بالصورة ينام كثيرا؟		
I think he can become thin if he tries? اعتقد انه يستطيع أن يصبح نحيف اذا اراد ؟		
I think his mother is overweight? اعتقد أن والدة الطفل بالصورة وزنها زائد؟		
I think It's very hard for him to lose weight even if he stops overeating? أعتقد أن الطفل لا يستطيع خسارة الوزن حتى لو توقف عن الاكل الزائد		

End of the questionnaire

Appendix B

IRB Approval Letter

An-Najah National University
Faculty of Medicine & Health Sciences
Institutional Review Board

جامعة النجاح الوطنية
كلية الطب وعلوم الصحة
لجنة اخلاقيات البحث العلمي

Ref: Med. Oct. 2023/2

IRB Approval Letter

Title of Research:

The development and validation of image-based questionnaire for weight bias and stigmatization assessment among school-aged children: A cross-sectional study

Submitted by:
Lina Baher Bustami

Supervisor:
Ola Anabtawi, Manal Badrasawi

Aproved:
2nd October. 2023

Your Study Title **The development and validation of image-based questionnaire for weight bias and stigmatization assessment among school-aged children: A cross-sectional study.."** reviewed by An-Najah National University IRB committee and was approved on 2nd Oct,. 2023

Hasan Fitian, MD

IRB Committee Chairman

IRB
Institutional Review Board

Nablus - P.O Box :7 or 707 | Tel (970) (09) 2342902/4/7/8/14 | Faximile (970) (09) 2342910| E-mail : IRB@najah.edu

Appendix C

Previous studies' summary used in questionnaire development process.

	Study	Year	Target	Samlpe size	Objective	Tool	Main outcome
1	Do children want skinny friends? The role of „weight" in children" s friendship preferences and inter-group attitudes	2011	5-11 years - divided into 3 groups	151 (male and female)	assess children" s attitudes towards underweight, average-weight and overweight stimuli	A. Children selecting images - consisted of 3 male and 3 female figures (most underweight, average-weight, most overweight)	girls significantly preferred underweight images to average-weight and overweight images.
						B. 1. Trait assignment: select the provided traits of the 6 figures in pictures -The positive and negative descriptions were selected- Six trait descriptions were positive (happy, clean, helpful, good, polite, kind) and six were negative (rude, bad, unfriendly, sad, naughty, dirty). 2. participants were instructed to select the preferred image for friendship, playing with at school, and playing with at home	These results revealed that the weight of the image was a decisive factor for participants when assigning positive or negative traits

2	"No fat friend of mine": Young children's responses to overweight and disability	2016	4 to 6 y children	Study 1: 126 children (63 F, 63 M)	To investigate childrens' weight bias. (+ disability)	Study 1:- <u>*Story books*</u>: 3 versions (main character in 1st: healthy weight, in 2nd:wheelchair, in 3th: Overweight). After reading: cards with a character and a question (e.g:some students are good at race while others are not, How likely do you think Thomas will win?), and a rating scales (by circles) were shown to childrens, followed by a question of comparsion between two character in the card.	Forcing choices between characters suggested children were more negative about fat (and wheelchair) character than would be concluded from children's ratings. - More negativity to the fat than wheelchair bound character.
				Study 2: 150 (79 F, 71 M)		Study 2:- two further versions of the story books in which all of the central character 'Alfina's' peers were fat. Three version similar to study 1 (but the main character was female instead of Male). The other two versions: A) all character's friends are "fat". B) the main character along with all her friends are "fat").	* when forced: children rejected story characters who were visibly different, and especially if the character was "fat". * body shape of 'Alfina's' friends had a minor effect on children's ratings but there was no convincing evidence of negative proximity effects.

3	Body Size Stigmatization in Preschool Children: The Role of Control Attributions	2004	pre-school age children 4-6 y	42 (18 F, 24 M)	1- Assess children's attitudes towards others with different body size. 2- Assess the behavior manifestation of this anti-fat attitudes. 3- Examines how children's perceptions of the controllability of weight might be related to body size stigmatization and friendship selections based on body size.	1- Anti-Fat Prejudice: adjective rating scale, a positive adjective on one end and a negative adjective on the other. Children placed each figure (thin,average..) at the point on the scale between the two polar adjectives where they thought it belonged.	preschoolers in this study assigned more negative characteristics to "chubby" figures than to thin or average figures.
						2- Friendship Selection: a sheet of paper with 18 randomly arranged figures used in the adj task. (3 chubby, 3 averagesize, and 3 thin girls, and 3 chubby, 3 average-size, and 3 thin boys.	"Chubby" figures were chosen as desirable playmates less often than thin figures or average-size figures. "Chubby" figures were almost never (n = 3) chosen as the best friend.
						3- Attributions of Control: Scale with 5 items (Do children have control over their weight? (2) If a child is fat, is that his or her fault? (3)Are children fat because they eat too much? (4) Are children fat because they don't exercise? and (5) Can fat children become thin if they really try?). If yes: follow up with definitely or maybe, completing a 3-point scale (0 = no, 1 = maybe, and 2 = definitely).	A novel finding that preschoolers' attributions for individuals' weight were related to their negative stereotyping of overweight individuals. Children who believed that weight was within an individual's control showed stronger prejudice toward overweight figures

4	Anti-fat or anti-thin attitudes toward peers? Stereotyped beliefs and weight prejudice in Italian children	2013	5-10 years - pupils divded in two age-groups	140 pupils (70 females, 70 males)	Explored weight prejudice in children by examining 4 aspects.	1- Fat Stereotypes Questionnaire: a list of 22 characteristics, half +ve (cheerful, kind,quiet..) and half -ve (slow, shy, sick…), children assign each of these 22 to one of three figures (underweight, normal, overweight).	Pupils attributed negative characteristics to overweight and positive traits to normal-weight body pictures. (+ this research investigated negative stereotypes toward underweight children)
						2- Anti-fat Attitudes Scale: 18 items on a scale ranging from 1 (=strongly disagree) to 3 intervals (=strongly agree). E.g: “Fat children are rejected by their classmates”, “Fat children, growing up, will always be fat”….	The hypothesis that pupils would express high levels of anti-fat attitudes, was partially confirmed only with regard to younger pupils.
						3- Friendship and rejection tasks: children were asked to choose one of the three targets (overweight, underweight, and normal-weight) would like to have as best friend, one that they would like to accept as classmate, one they wouldn’t like to walk around and to play with.	significant differences between the two age groups: a) younger pupils expressed negative attitudes toward overweight children and positive attitudes toward underweight ones. B) older rejected underweight children and chose overweight as best friends and classmates.

5	Body Size Stigmatization: An Examination of Attitudes of African American Preschool-Age Children Attending Head Start	2006	3 - 5 years children of low socioeconomic status	76 children (34 males, 42 Females)	Assess body size stigmatization attitudes, their effect on friendship selection, and controllability beliefs.	1-Adjective Task: Adjective pair was presented on a card. For each adjective pair, two boxes: One contained a -ve adjective (e.g., ugly), the other box contained a +ve one (e.g.,pretty). Once chose an adjective to describe the figure, a flap was lifted that displayed a bar graph with two additional choices (e.g., ‘‘kind of pretty/ugly’’ or ‘‘very pretty/ugly’’)	Overweight figure received ratings that were most negative across the majority of adjective pairs. (not across all pairs)
						2-Friendship Selection Task: four items designed to assess playmate and friendship selection. All items required children to choose from the Underweight, Average, and Overweight figures.	Children preferred Average figure first across all items, significantly more often than the Overweight or the Underweight figures
						3-Controllability Task: Children were asked a total of 10 ‘‘Yes/No’’ questions. first eight questions (about both underweight and overweight) assessed beliefs about fault, food consumption,exercise, and parent size. And two questions assessed beliefs about the ability to become thin and the ability to control body size.	Children indicated that the Overweight figure was ‘‘fat’’ because of ‘‘too much food’’ and because of a ‘‘lack of exercise’’ and that the Overweight figure could both change and control body size

6	Weight-Stigma and Body Satisfaction among Preschool Children (* This study is part of DONUT-project)	2021	3 - 7y children	282 preschool children	assess children´s weight stigma, stereotypes, and to examine body perception and body satisfaction	*by Interview with 3 parts:* 1-Playmate Preference Task: three-silhouette method, Two series of pictures were created, one for girls and one for boys. After presenting the pictures, the children were asked to pick up the one they preferred as a playmate and one they would not like to be friends with. Answers were coded as 1 (=underweight), 2 (=normal weight) and 3 (=overweight).	Normal or underweight figures were chosen as desirable playmates. Our participants like overweight persons less and wish to interact with them less
						2-Adjective Attribution Task: 18 attributes were read out to the children (e. g., "Which of the children do you think is ugly?"). coded as 1 (=underweight), 2 (=normal weight) and 3 (=overweight).	Negative attitudes about overweight persons are present in very young children. Our pre-schoolers describe overweight people predominantly as ugly, unpopular, and lazy.
						3-Children's body perception and satisfaction: 7 figures presented to children and were asked to choose one figure that looks the most like to them and one figure that they would most like to look like.	children with a higher weight selected overweight target figures more often to negative adjectives and less often for positive adjectives than children with a lower weight.

جامعة النجاح الوطنية
كلية الدراسات العليا

استخدام استبيان يعتمد على الرسومات لتقييم ظواهر التحيز والوصم بسبب الوزن بين الأطفال في سن المدرسة – دراسة مقطعية

إعداد
لينا باهر عمر بسطامي

إشراف
د علا عنبتاوي
د. منال حج حمد

قدمت هذه الرسالة استكمالا لمتطلبات الحصول على درجة الماجستير في التغذية وتكنولوجيا الغذاء، من كلية الدراسات العليا، في جامعة النجاح الوطنية، نابلس – فلسطين.

2024

استخدام استبيان يعتمد على الرسومات لتقييم ظواهر التحيز والوصم بسبب الوزن بين الأطفال في سن المدرسة – دراسة مقطعية

إعداد

لينا باهر عمر بسطامي

إشراف

د علا عنبتاوي

د. منال حج حمد

الملخص

الـ سمنة هي أحد الم شاكل المعقدة شيوعا على م ستوى العالم، وي ساهم في ظهورها عدة عوامل. يعد التعرض للو صم بـ سبب الوزن أحد أبرز التحديات التي تواجه الأ شخاص الذين يعانون من الـ سمنة. و صمة العار بسبب الوزن ترتبط بعدة نتائج سلبية، مثل المشاكل النفسية، اضطرابات الأكل، اكتساب الوزن، وتجنب القيام بالتمارين الرياضية. أثبتت الدراسات أن ظاهرة الوصم شائعة في مختلف الأعمار، وقد ثبت وجودها بشكل كبير في فئة الأطفال حتى في عمر مبكر.

تهدف الدراسة إلى قياس مدى انتشار ظاهرة "وصمة العار بسبب الوزن" بين الأطفال في سن المدرسة، وذلك عن طريق إنشاء أداة تعتمد على الرسومات، تناسب الأطفال في هذا العمر. تم القيام بهذه الدراسة لتشـــكل خطوة أولى تجاه تدخلات مســـتقبلية في الجانب التعليمي؛ للتخفيف من هذه الســـلوكيات بين الأطفال.

شارك بالدرا سة 150 طفل (9-6 سنوات) في ثلاثة مدارس في مدينة نابلس. تم إن شاء الأداة خلال مرحلتين. المرحلة الأولى ت ضمنت مراجعة الدرا سات الـ سابقة الم شابهة للدرا سة الحالية. أما الثانية، التحقق من دقة الأداة التي تم انشـــاءها، عن طريق فحص المحتوى (بمراجعته من قبل باحثين وخبراء

مختصين)، وعن طريق فحص مصداقية الأداة. المرحلة الأخيرة من الدراسة تضمنت الجمع الفعلي للمعلومات من الأطفال في المدارس.

أظهرت الدراسة أن 71٪ من الأطفال نسبوا صفة "قبيح" الى الشخص الذي لديه وزن زائد مقارنةً ب 87٪ قاموا بنسبها لباقي الرسومات. أيضا، 89٪ قاموا باختيار الصورة المعبرة عن الوزن الزائد لصفة "كسول"، و72٪ ل "مهمل". على العكس، 81.9٪ من الأطفال قاموا باختيار الشخصيات بالوزن المنخفض والمتوسط للصفات: "محبوب"، "جيد". قام طفل واحد باختيار الشخصية بالوزن الزائد كصديق مفضّل. 84٪ قاموا باختيار الرسومات التي تمثل الوزن المتوسط والمنخفض عند سؤالهم عن الشخص الذي يفضلونه، مقابل 1.3٪ قاموا باختيار الرسمة التي تمثل الوزن الزائد. 81.9٪ أظهروا موافقتهم على الجملة التي تفيد أن الشخص بالوزن الزائد يأكل أكثر من اللازم، بينما قام 18.8٪ بعدم الموافقة. 61.7٪ من الأطفال قاموا بالموافقة على جملة "اعتقد أن الشخص بالصورة (الوزن الزائد) ينام كثيرا".

خلصت الدراسة إلى الانتشار الكبير لظاهرة وصم الأشخاص الذين لديهم وزن زائد او سمنة. وصم هؤلاء الأشخاص بصفات سلبية، والتحيز، والأحكام ضدهم كانت ظاهرة في جميع أجزاء الاستبيان. نتائج هذا البحث تبيّن أهمية تسليط الضوء على الظاهرة، و ضرورة العمل على الحد من انتشارها خاصة بين الأطفال. هذا بدوره يوضح أهمية انشاء برامج تعليمية لتحقيق هذا الهدف، وبالتالي الحد من انتشار السمنة، باعتبارها واحدة من النتائج السلبية المترتبة على وصمة العار تجاه الأشخاص الذين لديهم وزن زائد.

الكلمات المفتاحية: وصمة الوزن، تحيز الوزن، السمنة، الأطفال، التحقق من صحة الأدوات.