



# **The Effects of Overweight and Obesity on Depression, Anxiety and Bullying among Adolescent Females**

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## Foreword

Submitted in partial fulfillment of the requirements of the BSc Psychology degree, Reykjavik University, this thesis is presented in the style of an article for submission to a peer-reviewed journal.

## Abstract

Rates of overweight and obesity among adolescents has increased over the years, bullying has also been increasing. Research has differed on the association between overweight and obesity among adolescents and depression symptoms while research have found an association between overweight and obesity and anxiety symptoms among adolescents. It has been shown that the experience of being bullied increased the risk of depression and anxiety. In this current study the effects of overweight and obesity among adolescent females and their symptoms of depression, anxiety and their experience of being bullied was investigated. The relationship between bullying and symptoms of depression and anxiety was also examined. Finally it was examined whether bullying moderated the effects of overweight and obesity on depression and anxiety symptoms. The Icelandic Centre for Social Research and Analysis collected data for this study as a part of their research “*Youth in Iceland 2007*”. Participants were 2,115 adolescent females in the ages of 16 to 19 years. The results showed that overweight and obesity was associated with symptoms of depression, the experience of being bullied was associated with symptoms of depression and anxiety. The results also showed that there was not a significant interaction between overweight and obesity and bullying experience.

*Key words:* overweight, obesity, depression, anxiety, bullying

## Abstract-Icelandic

Algengi ofþyngdar og offitu meðal ungmenna hefur aukist á síðustu árum. Einnig hefur einelti verið að aukast. Niðurstöður rannsókna sem skoðað hafa áhrif ofþyngdar og offitu meðal ungmenna hafa verið misvísandi á meðan sýnt hefur verið fram á tengsl milli ofþyngdar og offitu meðal ungmenna og kvíða. Einnig hefur verið sýnt fram á það að einstaklingar sem verða fyrir einelti upplifi frekar kvíða og þunglyndi heldur en þeir einstaklingar sem ekki verða fyrir einelti. Í þessari rannsókn voru áhrif ofþyngdar og offitu meðal unglingsstúlkna á einkenni kvíða, þunglyndis og reynslu af einelti könnuð. Einnig var sambandið á milli eineltis og þunglyndi og kvíða kannað ásamt samvirkni ofþyngdar og offitu og eineltis á einkenni þunglyndis og kvíða. Notast var við fyrirbyggjandi gögn úr rannsókninni *Ungt Fólk 2007* sem fengin voru frá Rannsóknum og greiningu. Þátttakendur voru 2,115 unglingsstúlkur á aldrinum 16-19 ára. Niðurstöður rannsóknarinnar sýndu fram á samband milli ofþyngdar og offitu og einkenna þunglyndis. Einnig fannst samband á milli þess að verða fyrir einelti og þunglyndis og kvíða. Ekki fannst samvirkni á milli ofþyngdar og offitu og eineltis og áhrifum þeirra á þunglyndi og kvíða.

*Lykilorð:* ofþyngd, offita, þunglyndi, kvíði, einelti

The Effects of Overweight and Obesity on Depression, Anxiety and Bullying among  
Adolescent Females

It is worrying how fast rates of overweight and obesity have grown over the last decades. In 1980-1999 there was an increase in prevalence of overweight and obesity among children and adolescents (Ogden et al., 2006). Since then the prevalence has been stable but it remains high and a third of six to nineteen year old children and adolescents are now overweight, with 16% classified as obese (Han, Lawlor, & Kimm, 2010; Nichols, Rice, & Howell, 2011; Ogden et al., 2012).

Research has shown that children who are either overweight or obese are at more risk of becoming obese in adulthood compared with their normal weight peers (Rowland & Coffey, 2009; Serdula et al., 1993; Singh, Mulder, Twisk, Van Mechelen, & Chinapaw, 2008). Serdula and her colleagues (1993) examined the association between obesity in childhood and obesity in adulthood by reviewing literature published between the years of 1970-1992. Their results showed that obese children and adolescents were more likely to become obese in their adulthood compared with their normal weight peers, and that one third of obese pre-schoolers and half of obese schoolchildren became obese in their adulthood.

The effects of adolescent overweight and obesity on depression have been examined and the results have differed (Frisco, Houle, & Lippert, 2013; Frisco, Houle, & Martin, 2009; Rhew et al., 2008; Richardson, Garrison, Drangsholt, Mancl, & LeResche, 2006; Sjöberg, Nilsson, & Leppert, 2005). Sjöberg, Nilsson, and Leppert (2005) investigated the relationship between obesity and depression among 4,703 adolescents in the ages of 15 to 17. Their results showed that there was a significant relationship between obesity and depression, where obese participants reported more symptoms of depression than their peers. Frisco and his associates (2013) used data from US-Based National Longitudinal study of Adolescent Health to examine what effects changes in weight during adolescence could have on depression. Their

results showed that participants who became obese during adolescence had double the odds of suffering from depression during early adulthood. The results from a study conducted by Richardson and his associates were similar. They examined the association between obesity and depression during puberty among 3,101 adolescents who were 11-17 years old. Their results showed that participants who had high levels of depression were twice as likely to be obese.

There is evidence that overweight and obesity are not associated with depression (Erermis et al., 2004; Mustillo et al., 2003; Swallen, Reither, Haas, & Meier, 2005; Wardle, Williamson, Johnson, & Edwards, 2006). Swallen and his associates (2005) did not find a significant relationship between overweight and obesity among 4,734 adolescents in grades 7 through 12. Neither did Wardle and his associates (2006), who twice examined the relationship between adolescent obesity and depression. Participants in the first study were 4,320 7<sup>th</sup> graders and the second study had 1,824 participants, also in the 7<sup>th</sup> grade. Results of these studies showed that there was no significant relationship between obesity and depression among participants in both samples. Needham and Crosnoe (2005) examined the association between overweight and depression among 18,924 adolescents between the ages 11 and 21 and found association between overweight and depression, but only among females. Rhew and associates (2008) also found a significant association between overweight and depression among 446 6<sup>th</sup> graders, their results showed that depressed adolescent females were more likely to be overweight and obese than non-depressed adolescent females. There is no apparent reason for the different results between researches on the association between overweight and obesity among adolescents and their symptoms of depression.

The effects of overweight and obesity on symptoms of anxiety among adolescents have also been examined (Anderson, Cohen, Naumova, Jacques, & Must, 2007; Erermis et al., 2004; Eschenbeck, Kohlmann, Dudey, & Schurholz, 2009; Lanza, Echols, & Graham,

2012). Erermis and his colleagues (2004) examined the frequency of psychiatric disorders, including anxiety disorder, among obese adolescents. Participants (N=90, 12-16 years of age) were divided evenly into three groups; clinically obese, non-clinically obese and those of normal weight. The results of the study showed that participants who were obese had higher levels of anxiety compared with participants who were of normal weight. The results of a study conducted by Anderson and his associates (2007) showed that obesity could be linked to the development of anxiety disorder, but only among adolescent females. Eschenbeck and his associates (2009) also found an association between overweight or obesity and anxiety among adolescent females. It has also been shown that overweight and obese adolescent females report more symptoms of anxiety than their peers (Lanza et al., 2012).

Over the last few years bullying has been increasing (Nansel et al., 2001) and research have shown the experience of being bullied can lead to symptoms of both anxiety and depression (Baldry, 2004; Lund et al., 2009; McCabe, Anthony, Summerfeldt, Liss, & Swinson, 2003; Nansel et al., 2001). Nansel and her associates (2001) examined the effects of bullying on symptoms of depression and anxiety among 15,686 students in the 6<sup>th</sup> to 10<sup>th</sup> grade. Their results showed that participants' who had been bullied reported more symptoms of anxiety and depression compared with their peers who had never been bullied. Those results are the same as the results of a study conducted by Baldry (2004). She examined the association between bullying and symptoms of depression and anxiety among 662 adolescents in the ages of 11 to 15. Her results showed that participants who had been bullied were more likely to report to have experienced symptoms of depression and anxiety. Other studies who have examined the association between bullying and symptoms of anxiety and depression have shown that being bullied in childhood can lead to social anxiety during childhood and adulthood (McCabe et al., 2003), and that children who are bullied are more likely to be diagnosed with depression in their adulthood (Lund et al., 2009).

Research has shown that overweight and obese adolescents are more frequently victims of bullying compared with their normal weight peers (Janssen, Craig, Boyce, & Pickett, 2004; Pearce, Boergers, & Prinstein, 2002; Strauss & Pollack, 2003; Tang-Péronard & Heitmann, 2008; Valente, Fujimoto, Chou, & Spruijt-Metz, 2009). Strauss and Pollack (2003) investigated social networks of 90,118 adolescents in the ages of 13 to 18. Participants were asked to name five friends and the results showed that overweight participants named as many friends as their peers but received fewer friend nominations and were more likely to receive no friend nomination. Valente and his associates (2009) conducted a similar study and their results showed that obese girls in the ages of 12 to 14 named more friends than their normal weight peers, but got fewer nominations. It has been shown that overweight and obese females in the ages of 11 to 16 are more frequently victims of bullying than their normal weight peers and that they experience more relational victimization compared with overweight and obese male adolescents who experience more overt victimization (Janssen et al., 2004; Pearce et al., 2002; Tang-Péronard & Heitmann, 2008).

Because of the different results between researches regarding the relationship between obesity and symptoms of depression it is important to explore this further. More longitudinal studies should be conducted to see the long-term effects of overweight or obesity during adolescence on symptoms of depression, especially among overweight or obese adolescent females, since studies have shown that they are more likely to suffer from depression than overweight or obese adolescent males (Erickson, Robinson, Haydel, & Killen, 2000; Needham & Crosnoe, 2005; Rhew et al., 2008). When it comes to anxiety previous studies have shown that there is a significant relationship between adolescent overweight or obesity and symptoms of anxiety (Anderson et al., 2007; Erermis et al., 2004; Eschenbeck et al., 2009; Lanza et al., 2012) and that the relationship was stronger among adolescent females than adolescent males (Anderson et al., 2007; Eschenbeck et al., 2009). Overweight and

obese adolescents are more frequently victims of bullying (Pearce et al., 2002; Strauss & Pollack, 2003; Tang-Péronard & Heitmann, 2008; Valente et al., 2009) and the experience of being bullied has been associated with symptoms of depression and anxiety (Baldry, 2004; Lund et al., 2009; McCabe et al., 2003; Nansel et al., 2001). Therefore, it was examined in this sub-study whether the experience of being bullied moderates the effects of overweight and obesity among adolescents. The effects of overweight and obesity on symptoms of depression, anxiety and the experience of being bullied were examined. The relationship between bullying and symptoms of depression and anxiety was also examined.

The hypotheses of the study were three. First it was hypothesized that overweight and obese female adolescents experienced more symptoms of depression and anxiety. Second, it was hypothesized that the experience of being bullied would be associated with more symptoms of depression and anxiety. The third hypothesis was that the experience of being bullied would moderate the effects of overweight and obesity on symptoms of depression and anxiety.

## **Method**

### **Participants**

The Icelandic Centre for Social Research and Analysis (ISCRA) collected the data for the present study in October 2007 as a part of their research called *Youth in Iceland* (Rannsóknir og greining, 2007). Participants in the study were adolescents who were enrolled in 30 colleges in Iceland in October 2007. Students under the age of 18 who did not get permission from their parents to participate in the survey were excluded from the study along with students who did not speak Icelandic. Participants did not receive any payment or compensation of any kind for participating in the study. Participants in this sub-study, however, were 2,115 adolescent females in the ages of 16 to 19 years who attended college in Iceland in October 2007.

## Measures

*Demographic questionnaire:* In this sub-study, 5 questions from the original study were used and analysed to test the hypotheses. The chosen questions measured the following variables: age, bullying, anxiety, depression, height and weight.

*Overweight/obesity:* Participants' self-reported height and weight were used to calculate their Body Mass Index (*e. BMI*), which is a convenient tool with which to diagnose overweight and obesity and is used in most countries (Cole, Bellizzi, Flegal, & Dietz, 2000; Dietz & Robinson, 1998). A BMI value was calculated using the following formula; weight in kilograms / (height in meters)<sup>2</sup>. Participants who had BMI values <18.5 were defined as underweight, those who had a BMI value in the range of 18.6-24.9 were defined as of normal weight and participants with a BMI in the range of 25-29.9 were defined as overweight. Participants with BMI values higher than 30 were defined as obese. Before calculating participants' Body Mass Index, participants who were under 20 kilograms and over 200 kilograms were excluded. Participants who were shorter than 140 centimetres and higher than 220 centimetres were also excluded.

*Anxiety:* Information about symptoms of anxiety was measured with the Symptom Checklist-90-R (RSCL 90) (Derogatis & Savitz, 1999). The questions were as follows: "How many times did you experience the following indisposition or discomfort over the last 30 days"; 1= "You felt nervous", 2= "You were suddenly afraid for no reason", 3="You were tense". The response options were: 1= "Nearly never", 2= "Rarely", 3= "Sometimes", 4= "Often". Mean score for anxiety variables was obtained by computing them together.

*Depression:* Information about symptoms of depression was measured with the Symptom Checklist-90-R (RSCL 90) (Derogatis & Savitz, 1999). The questions were as follows: "How many times did you experience the following indisposition or discomfort over the last 30 days"; 1="You were sad or had little interest in doing things", 2= "You had little

appetite”, 3= “You were lonely”, 4= “You easily cried or wanted to cry”, 5= “You had a hard time falling asleep or staying asleep”, 6= “You were depressed or sad”, 7= “You were not excited about doing anything”, 8= “You felt slow or weak”, 9= “You felt that the future was hopeless”, 10= “You thought about taking your own life”. The response options were as follows: 1= “Nearly never”, 2= “Rarely”, 3= “Sometimes”, 4= “Often”. Mean scores for depression variables were obtained by computing them together.

*Bullying:* Bullying was assessed with the question “How well does the following statement apply to you? “I feel like I am being bullied in school.” The response options for this question were 1= “Does always apply to me”, 2= “Does often apply to me”, 3= “Does sometimes apply to me”, 4= “Does rarely apply to me”, 5= “Does never apply to me”. Before analysing the data the values for bullying had to be recoded so their range would match that of the other variables.

### **Procedure**

Every student who attended school on the given day was asked to participate in the survey. Those who agreed to take part in the survey completed the questionnaire in their classroom. Parents of students under the age of 18 received an email concerning the survey and were asked for permission that their child could participate in the survey. If the parents did not reply, it was assumed that they had given consent. All students were asked not to write their name, social security number or any other identifying information that could hinder their anonymity on the questionnaire. Participants were instructed to complete the questionnaire and told to ask for help if they had any problems or questions. They were also informed that they could withdraw their participation at any time. When the students had finished answering the questionnaires, they were asked to put them in closed envelopes and hand them over to their teacher. The present study has minor ethical issues that have to be addressed.

Some of the questions in the questionnaire ask participants to recall memories of traumatic experiences that can cause some discomfort or stress.

### Statistical analyses

One-way between subjects ANOVA was conducted too see whether overweight and obesity had any effects on participants' symptoms of depression, anxiety and bullying experience.

Also, one-way ANOVA was used to see what effects the experience of being bullied had on symptoms of depression and anxiety. A two-way ANOVA was conducted to examine the interaction between BMI values and bullying experience on depression and anxiety to see if bullying moderated the effects of overweight and obesity on symptoms of depression and anxiety.

### Results

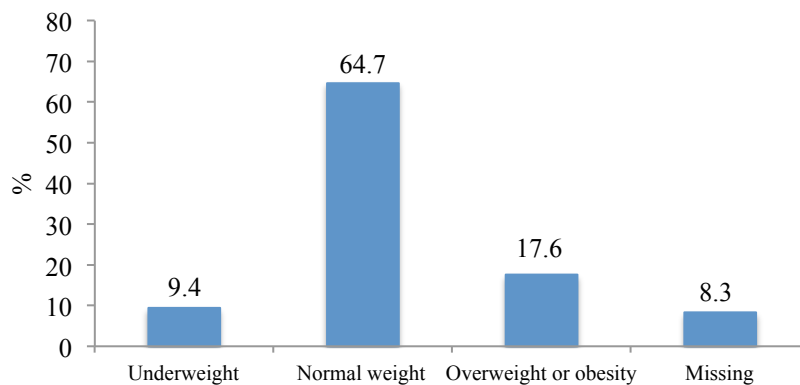
Table 1 shows descriptive statistics for variables used in this study. It shows the number of participants, who all were female. The table also shows minimum and maximum values, mean score and standard deviation for age, height, weight and BMI values of participants. Mean score, minimum and maximum and standard deviation are also showed for participants' symptoms of depression and anxiety along with their experience of being bullied.

Table 1.

#### *Descriptive statistics for scales used in this study*

	N	Minimum	Maximum	Mean	Std. Deviation
Age	2115	16	19	17.28	1.10
Height	2048	146	200	168.02	6.09
Weight	1990	30	195	63.89	14.03
Body Mass Index	1972	9	71	22.62	4.79
Depression	2056	0	30	8.46	6.69
Anxiety	2081	0	9	2.99	2.44
Bullying	2102	1	2	1.04	.21

Participants were divided into three groups based on their BMI values. Figure 1 shows the percentage value of each group. As the figure shows, 9.4% of participants were classified as being underweight, the majority of participants, or 64.7% were classified as being normal weight and 17.6% met the criteria for being classified as overweight or obese. Data for 8.3% of participants was missing.



*Figure 1.* Participants divided into groups based on their BMI values.

A one-way between subjects ANOVA was conducted to compare the effects of participants' BMI values on symptoms of depression and anxiety along with their experience of being bullied.

The results of the one-way ANOVA showed that BMI values had significant positive effects on participants' symptoms of depression ( $F(2,1892)=1.988, p=.007$ ). Table 2 shows mean and standard deviation for depression, anxiety and the experience of being bullied. The table shows that participants who were underweight ( $M=9.28, SD=7.38$ ) and overweight and obese ( $M=9.22, SD=6.26$ ) reported more symptoms of depression compared with their normal weight peers ( $M=8.18, SD=6.63$ ). The difference between the groups was only significant between the overweight and obese group and the normal weight group ( $p=.021$ ).

Participants' BMI values did not have significant effects on symptoms of anxiety ( $F(2,1912)=1.750, P=.176$ ). Table 2 shows that underweight participants reported more symptoms of anxiety ( $M=3.33, SD=2.62$ ) than did normal weight participants ( $M=2.99,$

SD=2.44) and overweight or obese participants ( $M=2.99$ ,  $SD=2.31$ ). There was not a significant relationship between the groups ( $p>0.05$ ).

The results of the one-way ANOVA on the effects of BMI values on bullying experience was not statistically significant ( $F(2,1928)=1.037$ ,  $p=.335$ ). Table 2 shows that overweight or obese participants reported more experience of being bullied ( $M=1.06$ ,  $SD=.23$ ) than did participants who were underweight ( $M=1.5$ ,  $SD=.23$ ) and of normal weight ( $M=1.04$ ,  $SD=.19$ ). The difference between the groups was not significant ( $p>0.05$ ).

Table 2.

*Mean scores and std. deviation for anxiety, depression and bullying for each group*

	Depression		Anxiety		Bullying	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Underweight	9.28	7.38	3.33	2.62	1.05	.23
Normal Weight	8.18	6.63	2.99	2.44	1.04	.19
Overweight and obese	9.22	6.26	2.99	2.31	1.06	.23

A one-way between subjects ANOVA was also conducted to examine the effects the experience of being bullied might have on symptoms of depression and anxiety.

Results showed that the experience of being bullied had significant positive effects on participants' symptoms of depression ( $F(1,2047)=106.864$ ,  $p=.000$ ). Table 3 shows that participants who had experienced being bullied reported more depression ( $M=15.33$ ,  $SD=8.01$ ) compared with their peers who had not experienced being bullied ( $M=8.13$ ,  $SD=6.45$ ).

The experience of being bullied also had significant positive effects on participants' symptoms of anxiety ( $F(1,2071)=51.355$ ,  $p=.000$ ). Participants who had the experience of being bullied reported more symptoms of anxiety ( $M=4.71$ ,  $SD=2.86$ ) than participants who had not experienced being bullied ( $M=2.90$ ,  $SD=2.39$ ).

Table 3

*Mean scores and std. deviation for anxiety and depression depending on bullying experience*

	Depression		Anxiety	
	Mean	Std. Deviation	Mean	Std. Deviation
Bullying experience	15.33	8.01	4.71	2.86
No bullying experience	8.13	6.45	2.90	2.39

A two-way ANOVA was conducted to examine the effects of BMI values and the experience of being bullied on symptoms of depression and anxiety.

The results of two-way ANOVA showed that there was not a significant interaction between the effects of BMI values and the experience of being bullied on symptoms of depression ( $F(2,1884)=1.907$ ,  $p=.149$ ). The results also showed that BMI values did not have significant effects on participants' symptoms of depression ( $F(2,1884)=.350$ ,  $p=.704$ ), but the experience of being bullied did have significant effects on participants symptoms of depression ( $F(1,1884)=47.640$ ,  $p=.000$ ). Table 4 shows mean scores and standard deviation for symptoms of depression among participants based on their BMI values and the experience of being bullied. The tables show that participants who had experienced being bullied reported more symptoms of depression than did their peers who had not experienced being bullied.

Table 4

*Mean score and Std. Deviation for depression based on experience of bullying*

	Have been bullied		Have not been bullied	
	Mean	Std. Deviation	Mean	Std. Deviation
Underweight	15.56	7.67	8.96	7.25
Normal weight	15.87	8.60	7.85	6.33
Overweight and obese	13.62	6.81	8.93	6.13

The results of the two-way ANOVA also showed that the interaction between the effects of BMI values and the experience of being bullied on symptoms of anxiety were not

statistically significant ( $F(2,1903)=.654$ ,  $p=.520$ ). These results suggest that together, BMI values and the experience of being bullied do not have more effects on participants' symptoms of anxiety and depression than they do separately. BMI values did not have significant effects on participants symptoms of anxiety ( $F(2,1903)=.283$ ,  $p=.753$ ), but bullying did have significant effects on participants' symptoms of anxiety ( $F(1,1903)=20.475$ ,  $p=.000$ ). Table 5 shows mean score and standard deviation for symptoms of anxiety among participants based on their BMI values and their experience of being bullied. The table shows that participants who had been bullied reported more symptoms of anxiety than did those who had never been bullied.

Table 5

*Mean score and Std. Deviation for anxiety based on experience of bullying*

	Have been bullied		Have not been bullied	
	Mean	Std. Deviation	Mean	Std. Deviation
Underweight	4.44	3.54	3.28	2.57
Normal weight	4.94	2.89	2.91	2.38
Overweight and obese	4.45	2.37	2.91	2.28

## Discussion

The current study aimed to investigate the relationship between overweight and obesity and symptoms of depression and anxiety and the experience of being bullied. The effects of bullying on symptoms of depression and anxiety were also examined. There was also examined if there was an interaction between BMI values and the experience of being bullied to see if bullying moderated the effects of BMI values on symptoms of depression and anxiety. Participants were 2,115 adolescent females in the ages of 16 to 19 who attended college in Iceland in 2007.

The findings of the study support the hypothesis that overweight and obese adolescent females experience more symptoms of depression. The results show that underweight and overweight and obese participants reported more symptoms of depression and these results

are consistent with previous findings from studies that have examined the association between overweight and obesity and symptoms of depression and anxiety (Frisco et al., 2013; Needham & Crosnoe, 2005; Rhew et al., 2008; Richardson et al., 2006; Sjöberg et al., 2005). Since there was not a significant relationship between overweight and obesity and symptoms of anxiety do the results not support the hypothesis that overweight and obese adolescent females experience more anxiety than their peers. These results are inconsistent with findings from previous studies that have found a significant relationship between overweight and obesity and symptoms of anxiety (Anderson et al., 2007; Erermis et al., 2004; Eschenbeck et al., 2009). The results of the study showed that obese and overweight participants were not more likely than their peers to have experienced being bullied. These results suggest that bullying is not a mediator for symptoms of depressions and anxiety among overweight and obese adolescent females. These results indicate that the experience of being bullied does not increase symptoms of depression and anxiety among overweight and obese adolescent females.

The results of the study did support the second hypothesis of the study and results showed that there was a significant relationship between bullying experience and participants' symptoms of depression and anxiety. These results indicate that adolescent females who have experienced being bullied report more symptoms of depression and anxiety than adolescent females who have not experienced being bullied. These results support findings from previous research on this matter (Baldry, 2004; Lund et al., 2009; McCabe et al., 2003; Nansel et al., 2001).

Finally it was hypothesized that bullying would moderate the effects of overweight and obesity on symptoms of depression and anxiety. Results of the study showed that there was not a significant interaction between the effects of BMI values and the experience of being bullied on depression and anxiety symptoms among participants. The lack of

interaction between BMI values and bullying experience could be explained by a number of participants that reported being overweight and obese, but only 17,6% of the participants were classified as being overweight and obese and had there been more people in the group, the results could have been different. Results of the study also showed that bullying had significant main effects on symptoms of depression and anxiety among participants. Results showed that participants who had experienced being bullied reported more symptoms of depression and anxiety than participants who had not experienced being bullied.

The current study has some limitations. First, the study relied on self-reported data considering participants weight and height. It has been shown that adolescents tend to underreport their weight (Elgar, Roberts, Tudor-Smith, & Moore, 2005) and that can affect the results. Self-reported data was also used to assess participants' experience of bullying and their symptoms of depression and anxiety. Future studies should try to obtain information about participants' behaviour and bullying experience from other sources, for example from participants' family, friends and teachers. Another limitation is that information about participants' bullying experience was assessed with one question. This could have affected the results of the study, and future studies should use more questions to obtain information about bullying experiences among their participants. It is also a limitation that questions considering participants' symptoms of depression and anxiety only asked about participants' feelings over the last 30 days. It would have been better to use questions concerning participants' history of depression and anxiety or their symptoms over the last year.

Overweight and obesity among adolescent females increases their risk of depression and anxiety, but does not increase their risk of being bullied. Future studies should focus on finding factors that can prevent obesity and overweight to improve adolescent health. It would be good to conduct longitudinal studies to see the long-term effect of adolescents overweight and obesity on psychological well-being. Bullying is a problem that has been

increasing over the last years. Future studies should continue to explore the association between bullying and psychological well-being and focus on finding factors that can prevent or decrease the prevalence of bullying and the effects it has on peoples' psychological well-being.

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Appendix A

Chosen questions.

**1. Hvaða ár ertu fædd(ur)?**

- A) 1993
- B) 1992
- C) 1991
- D) 1989
- E) 1988
- F) 1987
- G) 1986
- H) 1985
- I) 1984
- J) 1983
- K) Annað, árið 19\_\_\_\_\_

**2. Hver er þyngd þín í kílógrömmum? (Þyngd í heilum kílóum. Ekki nota aukastafi)**

(Skrifaðu svarið í reitina hér að neðan, settu aðeins einn tölustaf í hvern reit)

Svar:    kílógrömm

**3. Hver er hæð þín í sentimetrum?**

(Skrifaðu svarið í reitina hér að neðan, settu aðeins einn tölustaf í hvern reit)

Svar:    sentimetrar

**4. Hversu vel finnst þér eftirfarandi staðhæfingar eiga við um þig?**

(Merktu við EINN reit í HVERJUM lið)

N) Mér finnst ég vera lögð/lagður í einelti í skólanum

**Svarmöguleikar:**

- 1. Á nær alltaf við um mig
- 2. Á oft við um mig
- 3. Á stundum við um mig
- 4. Á sjaldan við um mig
- 5. Á nær aldrei við um mig

**5. Hversu oft varðst þú var/vör við eftirfarandi vanlíðan eða óþægindi síðastliðna 30 daga? (Merktu einn reit í hverjum lið)**

- J) Taugaóstyrk
- K) Skyndilega hræðslu á nokkurrar ástæðu
- L) Þú varðst uppspenntur
- M) Þú varst leiðu(ur) eða hafðir lítinn áhuga á að gera hluti
- N) Þú hafðir litla matarlist
- O) Þér fannst þú einmana
- P) Þú grést auðveldlega eða langaðir til að gráta
- Q) Þú áttir erfitt með að sofna eða halda þér sofandi
- R) Þú varst niðurdreginn eða dapur/döpur
- S) Þú varst ekki spennt(ur) fyrir að gera nokkurn hlut
- T) Þér fannst þú vera hægfara eða hafa lítinn mátt
- U) Þér fannst framtíðin vonlaus
- V) Þú hugsaðir um að stytta þér aldur

**Svarmöguleikar:**

- 1. Nær aldrei
- 2. Sjaldan
- 3. Stundum
- 4. Oft