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The Relationships between BMI, Facebook Social Comparison, Body Shape Concerns and Social Physique Anxiety in Female Undergraduates

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## The Relationship between BMI, Facebook Social Comparison, Body Shape Concerns and Social Physique Anxiety in Female Undergraduates

### ABSTRACT

Negative social comparison often takes place online, due to easily accessible social networking sites, this along with negative perceptions of one's own physique have been identified to negatively impact an individual's health. The current study aimed to target Social Physique Anxiety and investigate the relationship it may have with BMI, Body Shape Concerns and Facebook Social Comparison along with Facebook Intensity. Thus, building on previous research in relation to our perceptions of our physique, how we perceive others evaluate our physique online using social networking sites, and our Social Physique Anxiety levels. This study is unique in the variables it investigates, addressing various different factors that may affect Social Physique Anxiety. This study recruited 107 female students, ages 18-33, to participate in a set of online self-report questionnaires that produced a total score for each variable. Pearson's correlation coefficient revealed correlations between each variable and Social Physique Anxiety, with the exception of Facebook Intensity. The regression analysis however identified Body Shape Concerns as the only significant predictor of Social Physique Anxiety.

<b>KEY WORDS:</b>	SOCIAL PHYSIQUE ANXIETY	BMI	FACEBOOK INTENSITY	BODY SHAPE CONCERNS	FACEBOOK SOCIAL COMPARISON
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## Introduction

Social Physique Anxiety (SPA) a term used to describe the concern one feels when they believe others are negatively evaluating their physical appearance (Hart et al., 1989). SPA is a concept that researchers believe impacts a large proportion of women, as supported by Frazoi and Klaiber (2007) in their claim that this is a result of women being prone to compare their bodies to others, whether it be professional models or other attractive individuals, focusing on their weight and sexual attractiveness, thus resulting in body shape dissatisfaction and SPA. This leads to avoiding social situations activities and partake in unhealthy eating habits (Hart et al., 1989). Although the term SPA was coined decades ago little research has been conducted on SPA, what causes it and its potential effects on individuals, although in recent years it is a growing area of interest.

Multiple studies referred to in this paper use terms such as body image or body shape, however the underlying concept is the same. For the purpose of the current study the term 'Body Shape Concerns' (BSC) will be used, encompassing concepts used by previous researchers, and referring to an individual's negative perception of their body. It has been suggested that although BSC and SPA may be conceptually different terms, a strong link has been acknowledged, as identified in the work of Hart et al. (1989) and Eklund and Crawford. (1994), confirmed in a more recent publication by Koyuncu et al. (2010), who additionally suggested BMI and other anthropometric parameters could be significant predictors of SPA.

One publication (Thompson and Chad, 2002), focusing on the young female population, discovered that BSC significantly correlated with SPA (Hart et al., 1989), resulting in females at risk of developing an eating disorder. A positive correlation

between age and SPA was also found in females 12-18 years of age. Considering 90-95% of individuals who develop an eating disorder are young females between 12-20 years old (Nagel and Jones, 1993; Paxton, 1993; Hesse-Biber, 1996), this research highlights the severity of females experiencing low levels of SPA, and how it may drive young females to develop eating disorders, as well as the extent to which age correlates with SPA.

Thompson and Chad (2002) go on to suggest that the extent to which there is a positive correlation between age and SPA, may be a result of pubertal development, where females are sensitive to the evaluation of their appearance by others, explaining the elevated levels of SPA with age (Calam and Waller, 1998; Smith, 1999). Furthermore, proposing that as females age they are exposed and susceptible to the media and its stereotypical values and beliefs about the ideal body shape (Rodin and Larson, 1992; Frederick and Morrison, 1996; Hesse-Biber, 1996). Implying the media may be an influence as to whether an individual develops BSC and also may be an underlying contributor to the SPA levels of susceptible young females.

This publication highlights the importance of identifying the potential risk factors that predispose females to the development of BSC and SPA, with extreme cases resulting in eating disorders. Implementing interventions that counteract these risk factors is required in order to target the increasing health concern (Thompson and Chad, 2002). This research is open to critique, as clarifying whether SPA is a risk factor for developing an eating disorder requires a longitudinal study to gain reliable results, also the sample, it has been suggested may represent a population with a greater potential for eating disorders.

The findings discussed so far are supported by a publication (Kornapalli et al., 2017), investigating the relationship between BMI, Social Anxiety, Self-Esteem and BSC in college students ( $N = 260$ ), variables that are particularly of interest to the current study. The current study variable SPA comes under the umbrella term 'social anxiety', defined by the DSM as the fear of social situations where one is exposed to possible scrutiny by unfamiliar others (American Psychiatric Association, 2013). Whilst we cannot assume the significant positive relationship between BSC and social anxiety found in this study, reinforced by Nunn's (2009) research, will be replicated, as the current study refers to social anxiety specifically with regards to one's physique, we can accept the plausibility that BSC may have a bearing on SPA. It was also found that young females experience more BSC than young males, validating the current study's sample as it is entirely female. This study however did have its limitations, as participants were from a limited age group.

This publication also concluded a significant difference between BSC, Self-Esteem and Social Anxiety in relation to different BMI levels, this supported by Yates et al., (2004) who identified a correlation between BMI, BSC and eating disorder risk in females. Yates et al., (2004) also discovered slim females tend to like their physique whilst larger females tend to dislike their physique. The implications of these publications suggest BMI may correlate with BSC, SPA and certain health conditions. Suggesting the reality of an individual's physique may affect the perceptions one has regarding their physique as well as their fear of being negatively evaluated by others in social situations because of their physique. Certain expectations for the current study derive from these particular publications also supported by Koyuncu et al. (2010), backing up the notion that implies BMI may affect SPA levels. Limitations of this study by Kornapalli et al., (2017) are evident, due to the relationship between

variables in terms of BMI only being determined, this provides little to no information on other predictor factors that may influence BMI and in turn social anxiety, such as physical disabilities. Therefore these findings may not be entirely ecologically valid, presuming those with a higher BMI, experience SPA, as other factors were not taken into account.

In contrast a similar investigation conducted by Calzo et al. (2012) ( $N = 16,882$ ), found distinct differences in the findings compared to that of the previous study, as the females with healthy BMI/in the healthy weight category were also associated with greater weight and shape concern, resulting in anxiety about how they were perceived by others, and at risk of developing an eating disorder. Many of the associations between these variables differ with gender and age. This publication however contradicts much literature suggesting that a females BMI will have a significant effect on the way one believes they will be evaluated in social situations, and in the actions they take in an attempt to control this (Leary, 1992). As gender differences are evident, the paper continues to discuss the concept of each adolescent assuming their stereotyped gender role by adopting the correct behaviours (Hill and Lynch, 1983). This implies that behaviours associated with body dissatisfaction and physique anxiety, may be more prevalent in females due to the pressures and expectations of a female's body to conform to the 'ideal' body shapes throughout history, as well as cultural values and their own perceptions rather than the reality of their BMI/physical weight.

Along with eating disorders increasing amongst the young population, Body Dysmorphia Disorder (BDD) is also on the rise (2% of the general population) (Veale and Bewley, 2015; Vashi, 2016) and as recent studies identify that 73% of individuals are unhappy with their physique and find themselves unattractive (Phillips, 2009) this

may indicate the distortion of an individual's self-perception of their physique. Taking this into account, it is plausible that in this day and age females may continue to be dissatisfied with their body even though they may be a healthy weight (Calzo et al., 2012) as they are unable to meet the unrealistic 'ideal' body shape portrayed through the media. The findings of the aforementioned study and its contradictory nature to those before it, provide unexpected possible outcomes for the current study's research into the relationship between BMI and SPA.

Considering much research supports the increasing diagnosis of eating disorders amongst the young adult population (Rosen and Neumark-Sztainer, 1998) and the strong link between SPA and eating disorders, it is widely accepted that young females are experiencing SPA at a more dangerous level more so than adults. Thus, factors need to be considered as to why this occurs more so in young females, and further research is required.

Advances in technology have combined peers and the media, two of the most significant influences that play a key role in development and maintenance of SPA, as suggested by Mack et al. (2007), through Social Networking Sites (SNS) easily accessible by handheld devices. The younger generation are the focus of much research on the impacts of SNS (Frison and Eggermont, 2015), as 96% of 16-24-year olds and 88% of 25-34 years olds have Facebook and it is observed to be part of the young generation's daily routine (Hallikainen, 2015). These percentages decrease with age (Office of National Statistics, 2017). If we are to acknowledge how many young individuals partake in SNS e.g. Facebook, more so than the older generation, and how there has been a positive correlation between SNS and body dissatisfaction (Fardouly and Vartanian, 2015), and other conditions, this provides the basis to research SNS in relation to SPA. The introduction of a new online gateway for negative



Facebook Social Comparison can compile a multitude of different aspects, from comparing lifestyles and in particular, the comparison of one's own physique to that of another on Facebook. Indicating this may influence SPA.

A publication by Frison and Eggermont (2015) ( $N = 910$ ), focusing on passive and active Facebook users, passive referring to those who view other's profiles and their 'newsfeed', active referring to those who actively chat with friends or actively interact. This study suggests the decrease in life satisfaction for adolescents may be explained by negative online comparison, affecting students overall social well-being (Feinstein et al., 2013; Fardouly & Vartanian, 2015) in particular for passive users, however it also suggests reciprocal association. Yet little research has been conducted into the effects of these negative comparisons through Facebook in relation to SPA, but many have identified possible negative outcomes, such as depression (Uhlir, 2016), decreased physical socialisation (Rameez, 2015) and body dissatisfaction (Fardouly et al., 2015). Findings also claim that those with high online social support may benefit from Facebook use, but those with low online social support may not. Building upon this, if SNS affect overall social well-being, SPA is an interesting factor to investigate. This study although provides an insight into the impacts of SNS on adolescent's well-being, considering positive outcomes also, has its limitations, in that a longitudinal study is required to explore suggested relationships.

Similarly, the concept is supported by Goldbeck et al. (2007), in a publication suggesting life satisfaction declining in adolescents (Goldbeck et al., 2007), resulting in anxiety, depression (Gilman & Huebner, 2006; Suldo & Huebner, 2006) and in some cases suicide (Valois et al., 2004), may be a result of negative online social comparison (Frison and Eggermont, 2015). The findings of this study ( $N = 1,274$ ) claim females reported significantly lower general and health related life satisfaction than

males. This paper also suggests negative Facebook Social Comparison may influence an individual's over all well-being.

According to Festinger's (1954) Social Comparison theory, our need to compare ourselves to others is innate, and when doing so derives the pressures to achieve a certain body shape, the 'ideal' figure, leading to body related anxiety (Sabiston et al., 2005). Applying Leary's (1992) framework, and previous literature suggesting avoiding social situations may be an effective response to SPA as a result of BSC, this may also be an effective response to SPA as a result of negative Facebook Social Comparison against others (particularly upward comparisons). Therefore, the question arises could negative Facebook Social Comparison influence SPA levels? If this is so the factor of intensity of social media use also needs to be considered, as this may affect the outcome of how often individuals take part in comparisons between themselves and those on Facebook. This will also identify if increased Facebook use itself leads to SPA.

A publication by Uhlir (2016) proposed that an individual may experience depressive symptoms due to the duration of time they spend on Facebook, as increased exposure to self-enhancing images of others, including celebrities as suggested by Fardouly et al (2015), provides a platform for negative social comparison with the unrealistic 'ideal'. This publication explores social comparison as a mediator of the intensity of social media use and its correlation with depression, as well as the concept that social media users tend to post favourable self-presentation posts and observe similar images from others. This resulting in an individual feeling inferior to others once viewing other's images. This study, although focuses on depression, justifies the current study and its use of the Facebook Social Comparison Scale (FSCS) and the Facebook Intensity Scale (FIS) to investigate SPA. Although the current study uses different versions of

these scales, the concept of Facebook Social Comparison has been observed to affect an individual's well-being. Thus social comparison and how frequent an individual is exposed to these SNS, where comparison is inevitable, suggests an excellent basis for research when considering previous literature into Facebook Social Comparison and its impacts on individuals health.

The findings in the previous study support the concept of experiencing SPA as a result of these SNS as these sites are an online simulation of a social situation, mirroring that of an individual's physique being evaluated by others in everyday social situations. Thus it is completely feasible that this may result in feelings of SPA, due to the individuals comparing themselves with self-enhancing images, particularly of celebrities (Koyuncu et al., 2010).

This paper also suggests that Facebook can be harmless to those who use it for reaffirming purposes, making downward comparisons, comparing themselves to those of a lower stance. However, it can be harmful to those who use Facebook and constantly make upward comparisons, coinciding with the views of Frison and Eggermont. (2015). This questions the ideology of Frestinger (1945) in that we may not all have a unidirectional drive upwards, and therefore these individuals who create a socially appealing self-presentation satisfying their own requirements, have been observed to have high self-esteem and social approval, resulting in SNS improving their social well-being (Kim and Lee, 2011), resulting in low SPA levels.

Due to previous literature suggesting self-report questionnaires being the most common method to retrieve data in this particular research area, and limited experimental research in this area, causal-effect relationship is yet to be established between Facebook Social Comparison, BMI, BSC and the criterion variable SPA.

Nevertheless, the previous literature into Facebook Social Comparison resulting in health and physique problems, and literature identifying BMI and BSC as important factors in negative physique perception in social situations, provides a suitable basis for the current study to adopt this method also.

The current study will therefore use a correlational survey design focusing on the female student population of Manchester Metropolitan University. The SNS Facebook, as it is the most widely used social networking site (Lenhart, 2015), with its users spending on average 2 hours a day, posting and viewing other profiles (Ivcevic & Ambady, 2013; Junco, 2013). Thus the focus of this research will be on Facebook, users intensity and its use as a social comparison platform, BMI as to identify the reality of an individual's physique, and BSC identifying the perceptions of an individual's own physique, and their relationship with SPA. The following study was conducted to gain more insight to the limited existing literature regarding the effects of Facebook as a social comparison platform, BMI, and BSC on an individual's SPA levels. The use of these variables derives from previous literature (Fardouly et al., 2015; Koyuncu et al., 2010; Kornapalli et al., 2017), in relation to SPA, reflecting upon this literature four research questions were constructed:

Research Question 1: To what extent does BMI predict SPA?

Research Question 2: To what extent does BSC predict SPA?

Research Question 3: To what extent does Facebook Social Comparison predict SPA?

Research Question 4: To what extent does Facebook Intensity predict SPA?

## **Method**

### **Design and participants**

This current study is a correlational survey design, investigating the relationship between the predictor variables; BMI, Facebook Intensity, Body Shape Concerns and Facebook Social Comparison, and the criterion variable; Social Physique Anxiety. Participants were required complete a set of online questionnaires which measure each variable accordingly. The participants were female undergraduates over the age of 18, who had a Facebook account. This chosen audience building upon previous research, suggests a female sample may provide a more in-depth insight into SPA, due to it having been reported more commonly in women (Kornapalli et al., 2017). In order to achieve a sufficient sample size, a minimum of 108 participants was calculated using Green's (1991) calculation  $N \geq 104+k$ , where  $k$  is the number of predictor variables ( $k=4$ ). However, after cleaning the data only 107 participants completed the survey to a satisfactory standard. The sample was attained via an opportunity sample deriving from an invitation on the MMU Research Participation Pool, in which enclosed a link to the survey on Qualtrics (Qualtrics, 2017).

### **Measures**

A set of four demographic questions were presented at the beginning of the survey, including; age, year of study, height and weight (to calculate BMI) (Appendix 6).

#### *Facebook Intensity Scale*

Facebook Intensity was assessed via the Facebook Intensity Scale (FIS) (Appendix 7). This scale produced by Ellison et al. (2007) consists of 8 statements using a Likert scale to measure how often an individual uses Facebook (a high score reflects intense Facebook usage). The original study investigating undergraduate students ( $N = 286$ ),

found a high internal consistency and reliability coefficient ( $\alpha = 0.83$ ) (Ellison et al., 2007) this supported by O'Sullivan and Hussain. (2017) in a more recent study. Participants were required to reveal how many friends they had on Facebook, and a composition of questions revealed how often they used Facebook. An excerpt from the FIS, 'Around how many Facebook friends you have?' shows the nature of the types of questions. The first item in the FIS was extended to 10 options, to gain more detailed information and apply more to modern times, where approximately 59.14% of Facebook users have 200+ friends (Statista, 2007) thus the change was influenced by the work of Tong et al. (2008). The FIS is a readily available resource in the public domain, thus authors permission was not necessary.

### ***Body Shape Questionnaire***

Body Shape Concerns were assessed via the Body Shape Questionnaire (BSQ-34) (Appendix 8). This extensive questionnaire produced by Cooper et al. (1987) consisting of 34 questions, uses a six-point Likert scale to measure an individual's attitudes towards their body shape (a high score indicates an individual has high BSC). The creation and research of the BSQ-34 found a good internal consistency and reliability coefficient ( $\alpha = 0.97$ ) (Cooper et al., 1987) and thus has been used as a liable measure of BSC (Rosen et al., 1996) in many publications as seen in the work of Espina et al (2002) ( $N = 969$ ) where similar coefficients were found ( $\alpha = 0.97$  for females,  $\alpha = 0.96$  for males), also supported by Kornapalli et al (2017) publication. An excerpt question from the BSQ-34, 'Has eating sweets, cakes, or other high calorie food made you feel fat?', shows the nature of the questions. The BSQ-34 measure is a readily available resource in the public domain, therefore authors permission was not required.

### ***Social Physique Anxiety***

Social Physique Anxiety was assessed via the Social Physique Anxiety Scale (SPA) (Appendix 9). This questionnaire created by Hart et al. (1989) has been used in multiple studies including (Crawford and Eklund, 1994; Eklund and Crawford, 1994; Thompson and Chad, 2002; Koyuncu et al., 2010), and consists of 12 statements (five reverse items including 1, 2, 5, 8, 11) and uses a five-point Likert scale to measure an individual's SPA levels (a high score indicates the individual experiences low levels of SPA). The original paper ( $N = 54$ ) found an good construct validity, internal consistency and reliability coefficient ( $\alpha = 0.90$ ) (Hart et al., 1989). Other publications such as Crawford and Eklund, (1994) also using the SPAS ( $N = 104$ ) support this satisfactory construct validity, internal consistency and reliability coefficient ( $\alpha = 0.92$ ) as well as Thompson and Chad, (2002) finding a similar coefficient ( $\alpha = 0.91$ ) in their research ( $N = 77$ ). An excerpt from SPA scale, 'I am comfortable with the appearance of my physique', shows the nature of the statements. The SPA scale is a readily available recourse in the public domain, therefore authors permission was not required.

### ***Facebook Social Comparison Scale***

Facebook Comparison was assessed via Facebook Social Comparison (FSS) (Appendix 10). This questionnaire was adapted from Allan and Gilbert (1995), by Feinstein (2013) to relate to Facebook specifically. This consisting of 11 bipolar constructs and to measure an individuals perception of their social rank in relation to others (Allan and Gillbert, 1995) (a high score indicates positive feelings about one's self when comparing to those on Facebook, e.g. superiority of themselves compared to others). Feinstein et al. (2013) found a good internal consistency and reliability

coefficient ( $\alpha = 0.90$ ) higher than the original ( $\alpha = 0.87$ ) (Allan and Gillbert, 1995). An excerpt from the FSC shows the nature and presentation of the constructs participants are asked to rate themselves on 'Incompetent 1 2 3 4 5 6 7 8 9 10 More competent'. The FSCS is a readily available resource in the public domain, therefore the authors permission was not required.

## **Procedure**

Once gaining ethical approval from the Department of Psychology Research Ethics Committee at Manchester Metropolitan University and ensuring this study adheres to the ethical guidelines outlined by the British Psychological Society (BPS) when referring to research (Appendix 1), the study was active (Appendix 2). Participants were recruited through the Invitation (Appendix 3) posted on the MMU Research Participation Pool along with the link leading to the study via the online survey researcher platform Qualtrics (Appendix 2) (Qualtrics, 2017). Upon opening the link, participants were presented with the Participant Information Sheet (Appendix 4), which provided them with the participant inclusion criteria, brief information on the current study and what it contained (as not to influence the results via demand characteristics), as well as details of who to email for queries and the deadline in which all data withdrawals must be made. Following this, a Consent form (Appendix 5) was provided in which each participant had to sign their initials to each statement accepting the terms and conditions of the study. Once giving their consent and generating a unique code using the instructions provided (Appendix 6), enabling them to withdraw their data if needed, the participants went on to complete 4 demographic questions (Appendix 7). The participants were then required to complete a compilation of questions incorporating the measures for Facebook Intensity (FIS) (Appendix 8), Body Shape Concerns (BSQ-34) (Appendix 9), Social Physique Anxiety (SPA) (Appendix



10) and Facebook Social Comparison (FSCS) (Appendix 11). Upon completing the questionnaires participants were then fully debriefed on the purpose of the study and provided with a Debrief sheet (Appendix 12), this also contained information regarding the university's counsellor and how to get in contact if participation in the study caused any psychological distress.

## Results

The raw set of data was downloaded from Qualtrics to be analysed using IBM® Statistical Package for the Social Sciences 24.0 (SPSS). The output for the SPSS analysis can be viewed in the Appendix 13.

The data was prepared for analysis firstly by reversing items 1,2,5,8 and 11 from the SPA measure, as instructed by authors (Appendix 10) (Hart et al., 1989) this was not required for any other measure. The BMI was then calculated by using the calculation  $BMI = \frac{Weight(kg)}{Height(cm)^2}$ . Scale totals were calculated for all variable measures individually, by adding the scores of each item within the measure and dividing by the number of items within the measure. The internal consistency was assessed, and Cronbach's alpha coefficients produced for the following measures; FIS, BSQ, SPA and FSCS (Table 1).

**Table 1**

***Internal Consistency and Confidence Intervals for the four measures; FIS, BSQ, SPA, and FSCS***

Variable	Number of items in variable score	Cronbach's alpha	95% Confidence Interval for alpha	
			Lower	Upper
<b>FIS</b>	8	.64	.53	.74
<b>BSQ</b>	34	.97**	.96	.98
<b>SPA</b>	12	.92**	.90	.94
<b>FSCS</b>	11	.95**	.93	.96

**Note:** *F* test with true value of = 0.70. \*  $p < .05$  \*\*  $p < .001$ ; FIS - Facebook Intensity Scale, BS – Body Shape Questionnaire, SPA - Social Physique Anxiety, FSCS – Facebook Social Comparison Scale

Only three of the four scales demonstrated a Cronbach's alpha value significantly above 0.7, an acceptable level of reliability (Nunnally, 1978). The BSQ, SPA, and FSCS, all showed good levels of internal consistency above 0.7, showing Cronbach's alpha level significance where  $p < .001$ , supporting previous research (Cooper et al., 1986; Hart et al., 1989; Fienstein, 2013). Descriptive statistics were then calculated for each measure including the demographic variable the 'BMI' (Table 2).

**Table 2****Overview of Means and Standard Deviations for Each of the Variable's Total Scores**

<b>Variable</b>	<b><i>M</i></b>	<b><i>SD</i></b>
<b>Age</b>	21.72	2.82
<b>BMI</b>	22.76	4.68
<b>FIS</b>	30.94	5.79
<b>BSQ</b>	106.28	32.14
<b>SPA</b>	30.43	9.44
<b>FSCS</b>	61.21	14.84

**Note:** *M* – mean, *SD* – Standard Deviations, FIS – Facebook Intensity Scale, BS – Body Shape Questionnaire, SPA - Social Physique Anxiety, FSCS – Facebook Social Comparison Scale, BMI – Body Mass Index

For this sample the average BMI ( $M = 22.78$ ) which is within the 'normal' weight range, 20-24.9 as outlined by the World Health Organisation (WHO, 1995), however recent studies suggest 18.5-24.9 to be an acceptable weight bracket (Costa and Vasconcelos, 2010).

A compilation of Pearson bivariate correlations (1-tailed) were conducted between all measures, to identify whether there were significant relationships between the variables, including BMI (Table 3).

**Table 3.**  
***Pearson Correlation Matrix among all Variables***

	1	2	3	4	5
<b>1.FIS</b>	-				
<b>2.BSQ</b>	-.08	-			
<b>3.SPA</b>	-.02	-.71**	-		
<b>4.FSCS</b>	.07	-.45**	.41**	-	
<b>5.BMI</b>	-.03	.22*	-.24**	.05	-

**Note:** \* $p < .05$ . \*\* $p < .01$  (1-tailed); FIS – Facebook Intensity Scale, BS – Body Shape Questionnaire, SPA - Social Physique Anxiety, FSCS – Facebook Social Comparison Scale, BMI – Body Mass Index

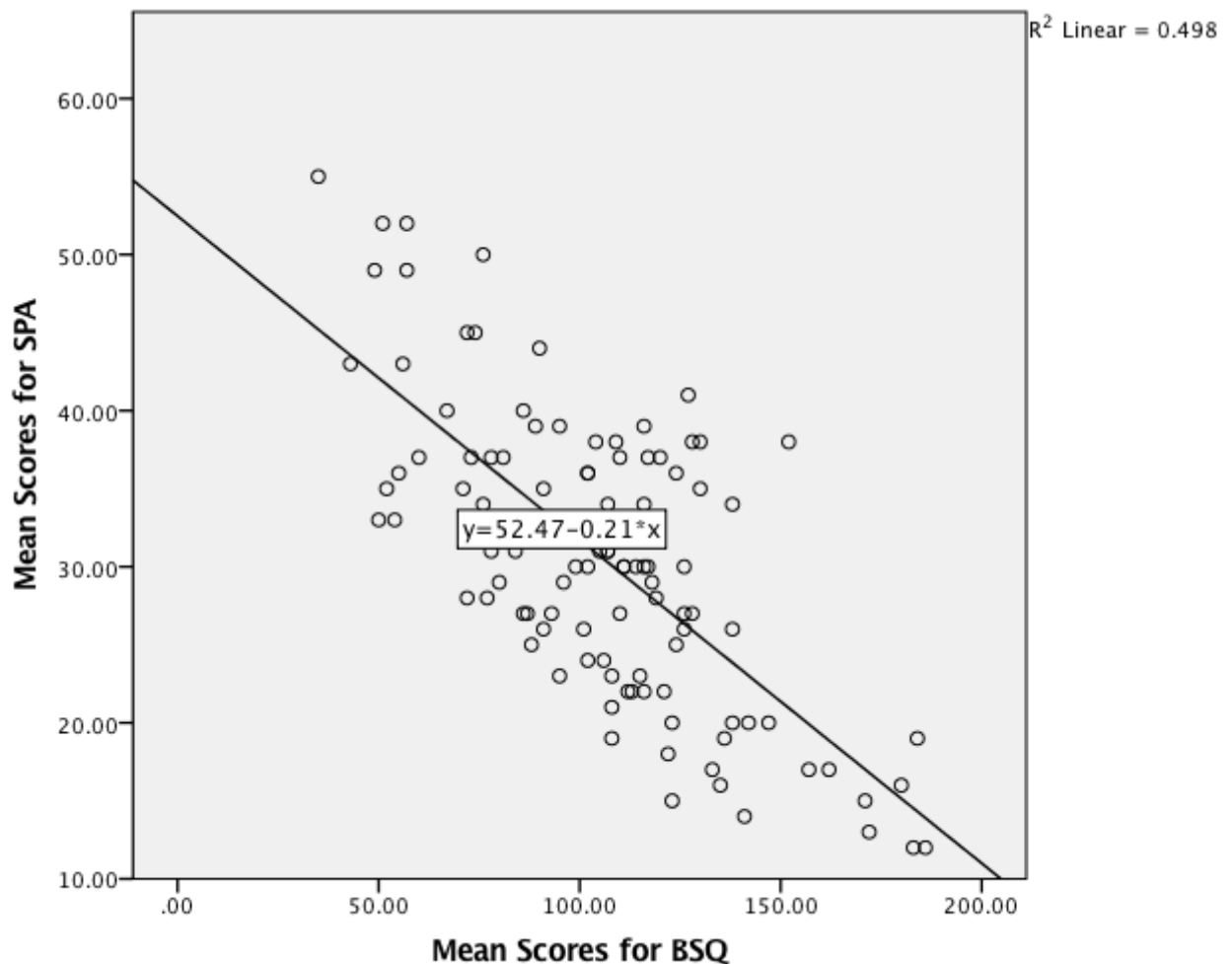
This correlation matrix (Table 3) shows the following variables correlated with SPA; FSCS, a significant moderate positive correlation, BMI, a negative correlation, and BSQ, a significant strong negative correlation. The FIS however did not significantly correlate with the SPA, thus it was not included in the multiple regression analysis. Interestingly, the FIS did not significantly correlate with FSCS or any other variable. The correlation matrix also shows many of the variables intercorrelated with each other, a significant negative moderate correlation between FSCS and the BSQ and between BMI and BSQ, this also found in the work of Yates et al. (2004) and Kornapalli et al. (2017).

**Table 4****Summary of Multiple Linear Regression Analysis for BMI, FSCS and BSQ scores in predicting SPA scores**

<b>Variable</b>	<b>B</b>	<b><math>\beta</math></b>	<b>t</b>	<b>Sig.(p)</b>
<b>Constant</b>	49.51			
<b>BMI</b>	-.22	-.11	-1.52	.130
<b>FSCS</b>	.09	.14	1.74	.085
<b>BSQ</b>	-.18	-.62	-7.79	<.001

**Note:**  $R^2 = .506$ ; BS – Body Shape Questionnaire, SPA - Social Physique Anxiety, FSCS – Facebook Social Comparison Scale, BMI – Body Mass Index

A multiple linear regression was conducted using the enter method with the following predictor variables, the BSQ, FSCS and the BMI and the criterion variable was SPA. A significant model emerged  $F(3,103) = 37.13, p < .001$ , this model explains 50.6% of the variance of social physique anxiety ( $R^2 = .506$ ). Table 4 identifies the BSQ as predicting a significant proportion of the variance of SPA. BMI and FSCS were found not to be significant predictors.



**Figure 1. Scatterplot with regression line showing significant negative relationship between SPA (Social Physique Anxiety) and BSQ (Body Shape Questionnaire) scores.**

The analysis indicates that for every one standard deviation that the BSQ increases the SPA score decreases by .62 of a standard deviation (see Table 4). A high score on the BSQ reveals high body shape concerns; a low BSQ score reveals low body shape concerns. A high score on the SPA scale reveals low SPA levels, a low score indicates high SPA levels, thus explaining the negative relationship found.

## **Discussion**

The current study aimed to investigate the relationship between Facebook Social Comparison, BMI, BSC and SPA among young females. Pearson's correlation coefficients revealed correlations between the predictor variables Facebook Social Comparison, BMI and BSC with the criterion variable, SPA. Crucially, the multiple regression analysis revealed a significant negative relationship between BSC and SPA, the only significant relationship. Taking into account the scoring of the SPA scale, this implies that high levels of SPA may be due to BSC. The aforementioned research questions were addressed in this study.

### ***Research question 1***

High BMI positively correlated to elevated levels of SPA, thus the reality of one's physique does in fact predict SPA, however only to an extent, as the multiple regression analysis found the relationship between BMI and SPA was not significant. This contradicts much literature that identifies BMI to be an important factor of an individual's overall social well-being and health in relation to their physique as well as SPA levels (Yates et al., 2004; Koyuncu et al., 2010; Kornapalli et al., 2017), suggesting in light of previous literature, the current study does not support high BMI significantly correlate with high SPA, to the extent first thought.

### ***Research Question 2***

The regression analysis revealed a significant negative correlation between BSC and SPA, supporting the notion that BSC is a predictor of high levels of SPA. The findings of this study are in line with many other publications in particular Kornapalli et al. (2017), who's multiple regression analysis found BSC to be a significant predictor of high social anxiety levels. Thus supporting the claim that one's BSC predict whether



an individual feels anxiety regarding their physique when in a social situation (Leary, 1992; Eklund and Crawford, 1994; Hart et al., 1989; Koyuncu et al., 2010).

### ***Research Question 3***

Although a significant positive correlation was found between Facebook Social Comparison (FSCS) and SPA, the regression analysis revealed Facebook Social Comparison was not a significant predictor of SPA, this conflicting with expectations deriving from previous publications (Festinger, 1954; Frison and Eggermont, 2015; Uhler, 2016). Thus indicating that it cannot be assumed that those who negatively compare themselves to others on Facebook have high levels of SPA.

### ***Research Question 4***

The FIS was revealed to not correlate with any variable and findings suggest it has no bearing on an individual's SPA levels. This conflicting with the findings of Ellison et al. (2007), suggesting it may interact with social and psychological well-being and may benefit many individuals.

### **Conclusions limitations and future research implications.**

The findings of the current study, with regards to BSC, replicate those of previous research, in particular the work of Thompson and Chad (2002) finding a significant correlation between BSC and SPA, and risk of developing an eating disorder. This also supported by a more recent study by Kornapalli et al. (2017), where the relationships identified show a significant positive correlation found between BSC and Social Anxiety. However, due to the scoring of the SPA measure (high score indicated low SPA) a negative correlation was found in the current study but with similar

implications. This relationship found in the current study between the aforementioned variables, supports the claim that experiencing BSC resulting in SPA, can lead to individuals avoiding situations where their body may be on show, or certain physical activities (Hart et al., 1989; Crawford & Eklund, 1994; Eklund & Crawford, 1994; Lantz et al., 1997). Some individuals also try to change their body and many resort to drastic measures such as extreme dieting, fasting, or bingeing (Hart et al, 1989; Petrie, 1993). This is in line with Leary's (1992) self-presentation framework, in that many adopt these behaviours in an attempt to control how they are evaluated, particularly women wanting to portray themselves as the cultural ideal (Krane et al., 2001).

A relationship identified between BMI and SPA was found, supporting correlational identifications in previous research (Koyuncu et al., 2010; Kornapali et al., 2017), but not to the extent once thought, as the relationship found was not significant. This may be explained by Calzo et al. (2012) and his findings claiming BMI does not affect the concerns one has about being negatively evaluated by others. This contradicts much literature suggesting that a females BMI will have a significant effect on the anxiety levels one feels when they believe they are being negatively evaluated by others, and in the action they take in an attempt to control this (Leary, 1992). With the increasing rate of BDD and also distorted self-perception, as well as this publication's findings, this provides an interesting base for future research on a much larger scale, in order to find the extent to which BMI is an important factor in the development of SPA.

The regression analysis identified that a relationship between negative Facebook Social Comparison (FSCS) and SPA was found, but not significant. The implications of this finding suggest that negatively comparing oneself against those on Facebook does not significantly predict high SPA levels. This finding supports but only to an

extent the concept that we partake in negative online social comparison (Festinger, 1954).

Referring to the results produced by Goldbeck et al. (2007) on SNS and negative Facebook Social Comparison, the current study also established a relationship between similar variables and coincides with the notion that health risks stem from SNS, as they are a readily available platform for negative Facebook Social Comparison.

Supporting Festinger's (1954:124) 'unidirectional drive upwards', the results of the current study, along with previous literature (Frison and Eggermont, 2015; Uhlir, 2016) suggest the extensive list of negative impacts that negative Facebook Social Comparison can potentially have, are due to our tendency to compare to those better off than ourselves (Frazoi and Klaiber, 2007). Yet there are many researchers that oppose this view, suggesting SNS are also a platform for positive social comparison and can increase well-being for certain individuals (Uhlir, 2016), yet both views support the relationship found in the current study. However, taking into account that celebrities also appear on an individual's Facebook page often without invitation (Fardouly et al., 2014), and many images are self-enhancing and edited, one may feel they negatively compare to those on Facebook, but may not experience SPA levels that coincide with this. This could be due to social situations where people are not 'edited' or able to choose a 'self-enhancing' version of themselves to present, along with the unlikely possibility of socializing with celebrities who represent the unrealistic ideal. This may explain the lack of a significant relationship between these variables, as negative comparison against others on Facebook and SNS, does not necessarily mirror a negative perception of how they may be viewed in a face to face social situation, and vice versa.

Additionally, the FIS measure was found not to correlate with SPA or any other measure. Implying, that the intensity to which one uses Facebook does not affect an individual's SPA levels, supporting the work of Frison and Eggermont (2015) in their claim the individuals can use Facebook for positive use. Extensive research is yet to be conducted into the intensity to which one uses Facebook (using the FIS measure) and the health implications specifically in relation to one's SPA. However, studies which use similar measures such as Uhler, (2016), can be considered relevant to that of the current study, despite the differences in findings, suggesting a correlation between SNS intensity and health issues is evident.

Although the study produced interesting results, limitations are evident, as causal relationships between the predictor variables and criterion variable cannot be assumed from this research, despite a significant relationship being identified between BSC and SPA. The relationship found between BSC and SPA, may be explained by the complex underpinning that they may in fact be conceptually similar, due to the belief that they both stem from our perceptions and not reality, contradicting the work of Hart et al. (1989) in particular.

The current study did not address how our perceptions of comparisons, whether positive or negative, were formed, and how often we take part in these comparisons on Facebook. Building upon this study, future research will combine a questionnaire addressing where these perceptions derive from, with a Facebook intensity scale that refers specifically to how often we take part in social comparison, whether it be positive or negative. Full account of the influential research of Frison and Eggermont. (2015) suggesting an individual's active and passive Facebook use needs to be measured in order to build up an understanding of how often individuals spend viewing other's posts, as they are subconsciously making social comparisons need to be included.

However, this may prove difficult to measure with a self-report questionnaire, as passive use is suggested to be unconscious, thus if this is when most social comparison takes place, many may not report taking part as they are not aware they are doing so.

The reliability of the FIS used in this study is questionable, however, the first item, it has been suggested, may not measure how intensely an individual uses Facebook in this day and age. As observations of the findings in the current study, and the implications of others, suggests the number of friends one has does not correlate with how long they spend on Facebook. This may be due to Facebook being a platform not only to interact with friends but view posts of news articles, others sharing videos and web pages, as well as celebrities automatically appearing on an individual's Facebook page. Thus, we not only have access to our friends but many others around the world, indicating lack of friends may not affect intensity of use.

Although SNS have been identified as a platform for Facebook Social Comparison by many, Chen and Lee. (2013) delve further into the uses of Facebook and suggest, 'commenting' and 'liking' are also important factors of an individual's psychological distress. Thus arises the question, is negative feedback or lack of social support (Frison and Eggermont, 2015) an important factor that effects SPA? More research into this particular aspect of a SNS would enable a clearer understanding of how SPA is developed and if it may be a combination of negative Facebook Social Comparison and receiving negative feedback on Facebook that results in SPA.

Overall, the current study is consistent with previous literature, yet it is assumed based on previous literature and that of the current study, that dissatisfaction with the body may be due to being overweight, therefore a BMI measure was introduced. Although

this factor may account for a large proportion of why women may be dissatisfied with their body, other factors have not been considered. Therefore, more in depth research is required into what it is that women are dissatisfied with, such as the shape of their nose or other specific body parts, in order to gain a clear understanding of what it is that may result in SPA. Thus further research may include a predictor variable that encompasses not only weight but the body dissatisfaction specifics (Calzo et al., 2012).

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