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Seasonal Body Consciousness: Changes in Body Image and Esteem throughout Seasons

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University Honors

Spring 2013

American University

## Abstract

**Objective:** To determine if there are differences in body consciousness throughout seasons, specifically from winter to summer. It is hypothesized that additional layers of clothing worn in the winter protects participants from attention to their bodies. Other factors, such as food consumption, mood affect, and exercise performed are considered.

**Method:** The study was conducted once in 2012 and again in 2013. In 2012, a packet of measures was given: the Contour Drawing Rating Scale, the Body Esteem Scale, the Positive and Negative Affect Scale, and the Perceived Sociocultural Pressure Scale. In 2013, the same measures were given save for the Perceived Sociocultural Pressure Scale. Participants completed the packet in the winter trial (January-February) and then once more in the summer trial (April-May). All measures were used to find differences in body consciousness.

**Results:** In 2012, the expectation that greater body dissatisfaction would occur in the summer trial was not met. There were no differences in body consciousness from the winter to summer trials. However, there were significant correlations between the Body Esteem Scale and the Negative Affect Scale, with the winter trial yielding a significantly greater amount of correlations than in the summer trial. Results were maintained for the 2013 trial.

**Discussion:** Due to the lack of sunlight and therefore absence of melatonin in the winter months, participants generally felt more negatively. Therefore, they transferred their negative feelings to their body image, increasing the number of correlations between Negative Affect and Body Esteem. The 2013 trial supported these findings.

**Keywords:** body dissatisfaction, negative affect, eating disorders, risk factors, seasonal difference

### Seasonal Body Consciousness: Changes in Body Image and Esteem throughout Seasons

The discussion on the prevalence and incidence of eating disorders has been increasing. The incidence of anorexia nervosa, for example, has seen an increase from .10 per 100,000 individuals per year in 1986 to 12.0 per 100,000 individuals per year in 2003 (Hoek and Hoeken, 2003). This upward trend in the incidence of anorexia nervosa has been apparent ever since the 1950s (Hoek and Hoeken, 2003). Bulimia nervosa, in comparison to anorexia nervosa, tends to have higher prevalence and incidence for females. For example, there has been an increase in incidence from 7.4 per 100,000 females diagnosed with bulimia in 1980 to 49.7 per 100,000 females diagnosed in 1983 (Hoek and Hoeken, 2003). These are striking statistics which call for attention.

To begin understanding why such concerning trends are increasing, one must understand the structure and development of eating disorders. Eating disorders rank among the 10 leading causes of disability among young women (Striegel-Moore and Bulik, 2007). In addition, anorexia nervosa has the highest mortality rate of all mental disorders (Striegel-Moore and Bulik, 2007). When evaluated, the increasing trend of the development of eating disorders mixed with the findings of the dangerousness of such disorders yields the importance for further research.

Eating disorders have an array of core features. Not surprisingly, eating habits are typically the main behavioral element of the disorder (Mayo Clinic, 2009). For anorexia nervosa, the pattern is to avoid and restrict food while victims of bulimia nervosa tend to binge (eating a copious amount of food within one sitting) and then purge (make oneself sick to the point of throwing up) (Striegel-Moore & Bulik, 2007). However, the most distinguishable element of an eating disorder is perhaps the disturbance in body image (Striegel-Moore & Bulik, 2007). Body image is the way in which an individual perceives his or her own body. It is the way the body

appears to the subjective observer (Blood, 2005). Poor body image is the heightened concern of appearance, thinness, weight, and shape. Consequences of the dramatization of focus on the body can result in what is known as body deception. Sufferers of eating disorders tend to experience body deception, the purposeful misrepresentation of one's appearance (Hildebrant, Shiovitz, Alfano, & Greif, 2007). In other words, it is the miscalculation of body image. In a study done by David Garner (2002) at the University of Toronto, 100 non-eating disordered subjects were asked to indicate what they perceived to be an accurate representation of their body size. They were to choose among a scale of differing sized images. Shockingly, the results led to 95% of women choosing the images that were registered as overweight (when in reality, a mere fourth of the subjects were overweight). This suggests that these subjects overestimated their body size. This study shows that it is common to view oneself deceptively.

The miscalculations that are made concerning the body have become so commonplace that the term "normative discontent" has been attributed to its phenomena. In other words, it is now the norm among Western populations to focus intently on body size. This is typically done in a judgmental and demeaning manner (Rodgers, Salés, & Chabrol, 2009). Women seem to be the primary target of body deception and dissatisfaction (Blood, 2005). They tend to strive for excessive thinness while men desire lean muscularity (Hildebrant, Shiovitz, Alfano, & Greif, 2007). It should now be understood that women generally view their bodies deceptively and negatively, which are major risk factors for the development of eating disorders. Unfortunately, there are many other risk factors.

Previous research has suggested that these patterns of negativity have been a result of various influences. Today, one of the greatest risk factors is the media and societal pressure to be thin. Media images, such as those in magazines, cause an implied idealization (Sypeck, Gray, &

Ahrens, 2003). Within the past decade, models in magazines and other fashion media have been underweight and thin (Striegel-Moore & Bulik, 2007). These images are popular and influential. As a result, they impose the idealization for thinness on the public (Sypeck, Gray, & Ahrens, 2003). It has also been shown that women are typically very sensitive to even the smallest push for thinness. For example, a study was done whereby women were told to complete a survey that measured body dissatisfaction. There were two conditions. The participants were either given instructions on completing the study by an average-sized woman or they were instructed by a thin-sized woman. Body dissatisfaction scores increased if the confederate was thin (Hildebrant, Shiovitz, Alfano, & Greif, 2007). If a single confederate can influence the scores of body dissatisfaction, then it is no surprise that media influences on appearance also have an effect on body image (Sypeck, Gray, & Ahrens, 2003).

In addition, friendship groups have shown an increase in shared values, which has increasingly been the importance of appearance and thinness (Paxton, Shutz, Wertheim, & Muir, 1999). Women compare themselves unfavorably to other women on the sole basis of appearance (Myers & Crowther, 2009). In addition to comparison and the competitiveness of comparison, studies that analyze friendship groups in terms of group dynamic have found that friend groups can produce body image concern among their members (Paxton, Schutz, Wertheim, & Muir, 1999). This was done through administering a number of questionnaires to students in six middle schools. The measures targeted information on body image concerns, eating behavior, relations with friends, pressures from family and media, and psychological status (Paxton, Schutz, Wertheim, & Muir, 1999). It was found that subjects within similar friendship cliques shared levels of body concern and dissatisfaction. The results explain that peer group interactions are crucial in the development of body dissatisfaction.

This overview of risk factors for eating disorders has included an array of categories from sociocultural factors to friendship groups. However, it is important to mention yet another contributing factor that may or may not increase the likelihood of an eating disorder. In a study that evaluated estimated body size (or body image) in Old Order Amish populations, it was found that no subjects overestimated his or her body size (Platte, Zellen, & Stunkard, 2000). It must be recalled that in the world of the Amish, the body is covered in traditional garment. The style of dress is one of simplicity, humility, and non-conformity (Platte, Zellen, & Stunkard, 2000). Women typically wear dresses that go down below their knees as well as top-collared shirts, long-sleeves, and bonnets. Since the attire from woman to woman remains consistent and modest, it can be suggested that coverage of the body gives rise to a decrease in the amount of concern attributed to it. In another study, ultra-Orthodox Jewish Women, otherwise known as *Haredi*, were found to have fewer serious eating problems than other women of the Jewish faith (Feinson, 2012). While these women are living in a Western environment, it is keen to note that these women have modest attire and cover their bodies in ways analogous to the Old Order Amish populations. Perhaps modest attire that exposes less skin and shape acts as a protective factor against body dissatisfaction and eating disorder behaviors.

It is curious to know whether or not the addition or subtraction of clothing determines the concern of body image. Perhaps when women wear more layers, body image concerns decrease since less bodily shape is being defined. In that case, less clothing would yield a greater sense of concern for body image due to more exposure of body parts. An easier way to imagine this differentiation of attire is through the change of seasons. In North America, the winter months demand the addition of clothing. Thus, the body becomes more covered, decreasing the emphasis of shape and size. In addition, since more layers are being worn in the winter months, it is

possible that the level of competition to be thin decreases. Combined, less concern of appearance is acquired. However, during the summer months, most wear less clothing, perhaps influencing them to become more conscious of appearance. Naturally, the competition would seem to rise as women wear less clothing. The hypothesis of this study is that women will be less concerned with appearance in the winter months than in the summer months. The current study can potentially give yet another risk factor to be analyzed in order to find a solution to the ever increasing prevalence and incidence of eating disorders.

### Method

One version of the same study was conducted in the winter and summer of 2012 and a second version of the same study was conducted in the winter and summer of 2013.

Methodological detail will be discussed for both studies.

#### *Participants*

In 2012, fifty-six female students from American University were recruited as subjects. Subjects were between the ages of 18 and 22, most being 19 years old. Participants were predominantly Caucasian. Subjects were found through a variety of sources. Some contacted the American University Psychology Research Blackboard forum in order to find experiments to participate in. Others added their name and contact information to lists sent around psychology classrooms. Finally, there was some aid from social networking organizations (i.e. sororities) from the American University Greek Life. All subjects were entered to win a lottery of 100 US dollars. Research credit was given to those who needed it, as well as bonus credit for certain psychology courses.

In 2013, seventy-six female adults were recruited as subjects. Participants were between the ages of 18 and 27, with 20 being the mean age. 89.1% of participants were Caucasian. Subjects were recruited via the internet on social media websites (i.e., Facebook and email messages). There were no geographical restrictions, nor was there compensation. As a result, 43% of participants were located in the greater Washington D.C. area and 21% were located in Western Pennsylvania. It is important to note that while Washington D.C. typically has a warmer climate than Western Pennsylvania, there are little differences between temperatures. In order to avoid confounds, location was controlled for, which will be discussed within the results section.

### *Measures*

In both versions of the study, body image and its correlation to seasonal difference were measured through a variety of scales and measures. Measures used include the Contour Drawing Rating Scale, the Body Esteem Scale, the Positive and Negative Affect Scale, and the Perceived Sociocultural Pressure Scale. The Contour Drawing Rating Scale incorporates a series of nine ordered male and nine ordered female drawings. Subjects chose the image that best corresponded to how she perceives herself to be in terms of body size. Then, subjects were asked to choose the drawing that best depicts their ideal body size. Reliability for this measure is acceptable with  $r=.78$  (Thompson & Gray, 1995). Concurrent validity also yielded acceptability with  $r=.71$  (Thompson & Gray, 1995). The Body Esteem Scale (BES) evaluates characteristics related to body esteem. The questionnaire contains three subscales including sexual attractiveness, weight concern, and physical condition. The coefficient alpha is between .78 and .87 for all three female subscales, indicating a relatively high reliability rating (Franzoi, 1994). With the Positive and Negative Affect Scale (PANAS), participants were asked to indicate from 1 (very slightly) to 5 (extremely) how relevant the given characteristic was to them. There were 60 constructs listed



and participants were asked to rate them all. The coefficient alpha is between .84 and .87 for the Negative Affect Subscale, the measure used more prominently in the results (Watson, Clark, & Tellegen, 1988). Finally, the Perceived Sociocultural Pressure Scale, a measure that attempts to evaluate the pressure one feels to be thin from his or her family and friends, has an internal consistency of  $\alpha = .88$  and a test-retest reliability of  $r = .93$  (Stice & Bearman, 2001). This scale was only used in the 2012 trial. Combined, these measures were used to examine the differences in body consciousness from the winter months to the summer months. In addition to the listed measures, a few demographic questions were asked. In the 2012 study, subjects were asked their age, year, major, race, height, whether or not they had siblings, age of siblings, and the amount of exercise done throughout the week. The demographic questions were more in-depth for the 2013 study, with specific attention on type, frequency, and amount of exercise performed, detailed list of food consumption, and questions targeting whether or not participants generally felt more negative in the winter months and why. All items contributed to the overall analysis of the results.

### *Procedure*

In the 2012 study, subjects contacted the primary researcher via email. The researcher then allotted times to the participants to enter the laboratory session. The study was divided into two sessions. The first session was held in January, 2012. Subjects arrived and the researcher obtained informed consent from each participant. Then, the researcher asked the participant to stand on the scale backwards in order to be weighed. In the case of the one individual who did not wish to be weighed, the researcher asked the subject to write her estimated weight down on the survey. Next, participants completed the packet of surveys. Subjects were separated within the room so as not to influence one another while completing the tasks. Once the participant had

completed her study, she was given her compensation (whether it was research credit or extra credit), and reminded that a second session will ensue at the end of the semester. The second session was at the beginning of April, 2012. Subjects were contacted via email and asked to return. The second session ran exactly as the first. All but two participants from the first session returned to complete the second session. Participants were again weighed, again standing backwards on the scale. The same measures were used, in exactly the same order. Once the subject had completed the packet of surveys, the researcher took the completed surveys, thanked the participant, and said that the winner of the lottery for \$100 will be announced shortly. The participant was then excused.

A similar procedure ensued for the 2013 study. Instead of the participants contacting the investigator, participants were asked to participate directly via Facebook and email in February of 2013. Following contact, instead of meeting with the participants, a link was given to the participants to complete the study online through [surveymonkey.com](http://surveymonkey.com). Certain qualitative data, therefore, were subjective (i.e., weight and height); however, a wider range of participants, locations, and demographic criteria were met through doing the study online. In April of 2013, participants were contacted again and asked to complete the second trial of the study. 84% of participants completed the second component of the study. There were no differences between the two surveys administered; both surveys administered were identical. Upon completion of the second trial, participants were thanked for their participation and excused from further participation. No compensation was given.

## Results

Both versions of the study set out to attempt to find differences in the way in which a woman perceives her body based on the change of seasons. The measure that was expected to show these changes most clearly was the Contour Drawing Rating Scale. However, in 2012, when calculated, barely any difference was found between scores from the winter months and those from the summer months. For example, the mean rating of a subject's perception of her own body was 5.55 in the winter 5.57 in the summer. Similarly, the mean for the ideal image a woman wished to be was 4.15 in the winter and 4.13 in the summer. Clearly, these differences reveal little change in patterns of body consciousness throughout the seasons. Similar findings were seen in the 2013 trial. The mean rating of a subject's perception of her body was 5.20 in the winter and 5.32 in the summer. The mean for the ideal image of a woman was 3.82 in the winter and 3.80 in the summer. These minimal differences were unsurprisingly insignificant.

However, the Body Esteem Scale and the Positive and Negative Affect Scale from the PANAS scale provided some interesting results. Correlations were calculated among all BES and Negative Affect Scale scores for the winter months and again for the summer months. Thus there were 529 correlations for the winter months and another 529 for the summer months. In order to reduce Type I error,  $\alpha = .005$  was used as the criterion for significance. As a result, a total 184 items were significant from both the winter and summer trials. Next, a new more stringent filter was added to evaluate significance levels. This time, values less than  $\alpha = .001$  were sought. For the winter months, this yielded 35 significant correlates. Surprisingly, only 4 correlates in the summer months were significant. The same statistical tests were run for the 2013 trial. Again measuring significant correlations between the Body Esteem Scale and the Negative Affect Scale showed 652 total correlations for the winter months and another 652 for the summer months.

Using  $\alpha = .001$ , 67 items were significantly correlated in the winter and 22 were found in the summer. Running an independent t-test in order to determine whether or not these values were significant, it was found that the difference between the number of significant intercorrelations was indeed significant with p-value being .0001. As such, it is clear that there are more significant intercorrelations in the winter than in the summer in both trials. When comparing the items on the BES scale that were significantly correlated with items on the Negative Affect Scale, it was found that many negative characteristics, such as feeling blameworthy or angry towards oneself, were significantly correlated with BES items only in the winter. Feeling blameworthy, for example, proved not to be significantly correlated to any BES items in the summer. These findings prompt a few interesting questions. Why were there such stark differences between the number of significant correlations in the winter months and the summer months? Why were subjects who felt angry with themselves more likely to feel upset with her looks in the winter than in the summer? Why did subjects who felt blameworthy feel discontentment towards their weight in the winter, but not so much in the summer?

### Discussion

Contrary to expectations, no significant differences were found in the way in which subjects viewed themselves in the winter compared to the summer. Based on the results obtained from the Contour Drawing Rating Scale, subjects' perceived body size and idealistic body size barely changed between trials in both the 2012 and the 2013 studies. While no differences were apparent in terms of body perception, an interesting find was discovered in terms of relationships between body dissatisfaction and mood affect.

This interesting and statistically significant discovery was through using the Negative Affect Scale and the Body Esteem Scale. The two scales had items intercorrelated in both the winter and summer trials between studies, but the winter trial yielded a significantly higher number of correlations than the summer. There are a few proposed hypotheses as to why this occurred.

First, it is possible that the lack of sunlight in the winter months contributed to the absence of melatonin in the body. Melatonin is a key vitamin that can be obtained from sunlight (Brzezinski, 1997). Lack of exposure to the sun and subsequent diminishing levels of melatonin contribute to the lethargy that takes place in populations during the winter (Brzezinski, 1997). In fact, in the 2013 study, 68.4% of participants felt more depressed in the winter months and most listed lack of sunlight as the primary reason to their negative affect. The feelings of lethargy stem from an array of factors, including the decreased exposure to sunlight, reducing the levels of natural melatonin, the subsequent reduced amount of exercise, and the increased consumption of carbohydrates. This combination can lead to weight gain. As a result, individuals might be prone to feel blameworthy, guilty, and embarrassed – all items on the Negative Affect Scale (Brzezinski, 1997). It is proposed that in the winter trial, as lethargy increased, the number of correlations between the Negative Affect Scale and the Body Esteem Scale went up.

Another proposed hypothesis as to why the winter correlations significantly surpassed those of the summer rests in the fact that perhaps certain items were more appropriate for the winter than for the summer, despite the lack of significant temperature differences. For example, the last three items of the BES (“I worry about the way I look”, “I think I have a good body”, and “I’m looking as nice as I’d like to”) had no significant correlations in the summer. Perhaps this is because these items strictly deal with perception of appearance rather than desire to change one’s

appearance. As current research has shown, there is an implied and inherent pressure to be conscientious of appearance. Such *thoughts* alone may be more prevalent in the winter. However, *actions* to change one's appearance are possibly more prevalent in the summer. Therefore, items such as "I am preoccupied with trying to change my weight" were only apparent in the summer trial. The desire to take actions to change one's body in the summer makes sense as more of the body is exposed. Similarly, in the winter, the thoughts of changing one's body occur, but not the actual actions themselves. These differences may contribute to the great jump between correlations in the winter and summer trials.

As previously mentioned, the 2013 study attempted to arrive at more conclusive answers as to why a difference between body esteem and negative affect might occur. Participants were asked to list the foods consumed the day prior to completing the study. In the winter trial, participants reported eating spaghetti, sandwiches, salsa, pasta, and chicken. The summer trial showed fewer carbohydrates in food consumption. The main food items consumed were yogurt, sushi, granola bars, cheese, almonds, and sandwiches. It is proposed that carbohydrates might help create a feeling of heaviness, thus negativity, which may translate towards lower body esteem.

#### *Limitations and Future Implications*

There are quite a few limitations that may have contributed to the results, the main one being the climate in Washington D.C. during the 2012 study in addition to the general climate in the 2013 study. In 2012, January and February in D.C. were quite mild. The lowest temperature registered was 34°F, and the highest temperature noted was 70°F. The summer was not very different. The lowest registered temperature was 52°F while the highest was 77°F. This was frustratingly found once more in the 2013 study. Even across the nation (granted, most

participants were from the Northeast United States), the mean temperature in the winter was 32°F and 54°F in the summer. Since the winter was quite mild, it is likely that participants were not layering themselves in clothing, essentially covering their bodies. Likewise, the summer did not have high temperatures, thus participants were not obliged to wear less clothing to compensate for the outside heat. As a result, there were probably little differences in types of clothing worn between the sessions.

In relation to the hypothesis of lethargy ensuing in the winter, the demographic section of the questionnaire showed that there were no difference in the amount exercised between the winter and the summer trials. 46.9% of participants exercised two to three times a week across both studies, with as much as 49.2% of participants exercising inside, away from any possible direct sunlight. It is still possible that the lack of melatonin in the winter months caused individuals to eat more carbohydrates than they did in the summer, exercise less, and remain indoors. In the 2012 study, types or amount of food consumed was not measured, a major limitation to the study. This was modified and these variables were measured in the 2013 study, but no conclusive data on individual melatonin levels were feasibly calculated.

The 2013 study had a number of additional limitations. Perhaps one of the most concerning was the fact that weight and height variables were subjectively reported. Having the participants self-report their own weight and height increased the probability of response-bias, especially in regards to weight. Participants might say that they weigh less simply knowing that someone will be reading the results. However, the 2012 study objectively measured these items and the findings between both studies were maintained, suggesting that perhaps the subjectivity of weight and height recording have little influence on the results.

In order to improve the 2012 study, subjects were asked about food consumption and exercise amount. If it is indeed true that the winter creates a more lethargic demeanor, both food intake and exercise needed to be measured. It is possible that differences between the winter and summer trial would be highlighted this way. In addition, if the type of exercise and amount of exercise were evaluated, perhaps there would be differences between the winter and summer trials. Does it make a difference if activities performed in the winter are mostly indoor compared to outdoor activities in the summer? These items were tested and measured in the 2013 study. Unfortunately, both studies yielded the same results, suggesting that even through measuring food consumption and detailed exercise activity, there are perhaps no concrete differences between body perception in the winter and summer based on weather changes.

In order to better conduct the study as a whole, it would be beneficial to measure melatonin levels in order to determine whether negative affect is connected to lower melatonin levels. If such a finding were made, there would be greater support that the winter months indeed bring about negative affect. This would further support the finding for the connection between negative body esteem and negative affect, especially since this has already been established in previous studies.

In addition, while the 2013 trial had an increased sample size and more varied geographic pool, it seems as though if differences were indeed to be found, a greater sample size is needed in addition to greater geographic variability. Having more participants would solidify findings more than they have been. The geographic variability is important in order to find greater temperature differences between the winter and summer trials.

The final future implication is the possibility that there are indeed no differences between body perceptions between the seasons. This is very possible; however, the clear differences



between mood affect in the winter and summer do suggest differences, especially since negative affect has continually been connected to decreased body esteem in females. It would perhaps be beneficial to conduct a study that analyzed similar variables but used two groups, one experimental, where exercise is done 6 times a week, and one control, where no exercise is done. Both groups would complete similar surveys and questionnaires, the body mass index would be objectively calculated, and melatonin levels would be taken through blood sampling. This would be a study of greater degree and scale. This experimental study would increase the possibility of significant and meaningful findings.

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