

ORIGINAL ARTICLE

Development and validation of a brief version of the Stigmatizing Situations Inventory

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Summary

Objective

The Stigmatizing Situations Inventory (SSI) is one of the most commonly used measures of weight stigma experiences but may be impractical for some researchers because of its length (50 items). The present report describes the development and validation of a brief version of the SSI that could be used as a more efficient tool for assessing experiences with weight stigma.

Methods

In stage 1, data from three existing studies (total $n = 257$) were used to create two 10-item versions of the SSI. One version was primarily based on items that showed the highest item-total correlations, and the second version maintained the content coverage of the original measure by including one item (the one with the highest item-total correlation) from each of 10 subscales of the SSI. Stage 1 also provided a test of the convergent validity of these brief measures. In stage 2, four new samples (total $n = 832$) provided an independent test of the reliability and validity of the brief measures.

Results

The brief SSIs showed good reliability across all samples. Furthermore, the magnitude of the correlations between the brief versions of the SSI and other associated constructs was comparable with the magnitude of the correlations between those constructs and the full SSI.

Conclusions

The brief versions of the SSI are reliable and valid measures of stigmatizing experiences that provide a more efficient means of capturing stigma experiences without sacrificing the reliability and validity of the original measure.

Keywords: Weight stigma, Stigmatizing Situations Inventory, short form, validation.

Introduction

Weight stigma is a pervasive social problem. Experiences with weight stigma are becoming more common [1] and are now as frequent as experiences of stigma based on race [2]. There is substantial evidence that weight stigma can have negative consequences for a stigmatized individual. For example, more frequent weight stigma experiences are associated with poorer mental health [3]. There is also accumulating evidence that weight stigma can have negative consequences for physical health.

For example, more frequent experiences with weight stigma are associated with decreased motivation to exercise [4], decreased motivation to diet [5], poorer self-reported physical health [6] and poorer weight-loss outcomes [7] (but see reference [8]).

One of the measures most commonly used to assess people's experiences with weight stigma is the Stigmatizing Situations Inventory (SSI [9]). The SSI asks respondents to rate the frequency of their experiences with weight stigma in a range of different domains. The SSI was initially developed by asking individuals with obesity

to describe their experiences with weight stigma, as well as by examining the writings of female authors who had published work discussing their own experiences with weight stigma. The final version of the scale was subsequently validated with a sample of patients with moderate-to-severe obesity who were seeking weight-loss treatment (bariatric surgery, or pharmacotherapy and nutritional counselling). The SSI consists of 11 subscales focusing on different sources of stigma, including comments from children, from strangers, from family and from doctors; being excluded; being stared at; loved ones being embarrassed by your size; negative assumptions that people make; physical barriers or obstacles; job discrimination; and physical violence. Researchers typically use the mean of all items to index the overall frequency of stigma experiences. Numerous studies using the SSI have shown that a greater frequency of stigma experiences is associated with a range of factors, such as greater depression and anxiety, lower self-esteem and quality of life, greater body dissatisfaction and greater binge eating [5,9–13].

The SSI has been a useful tool for identifying the experiences that people have with weight-based stigmatization as well as the potential consequences of those stigmatizing experiences. One limitation of the SSI, however, is that it is a relatively long measure (50 items) and thus might be impractical for some researchers interested in studying weight stigma when time is limited. This present report describes the development and validation of a brief version of the SSI that could be used as a more efficient tool for assessing experiences with weight stigma.

Stage 1

Item selection

In order to determine which items to include in the brief version of the SSI, data were taken from three existing studies that had included the full SSI. The first two studies were advertised as studies on the 'life experiences of overweight and obese people' but did not specifically mention stigma, and the third study was framed as a study on 'exercise behaviour'. In each of these studies, participants completed paper-and-pen versions of the questionnaires. Sample 1 [4] included 111 adults from the USA who were overweight or obese (76% women, 71% Caucasians, mean age = 34.61 years, mean body mass index (BMI; kg/m²) based on measured height and weight = 32.12), sample 2 [14] included 46 adults from Australia who were overweight and obese (52% women, 46% Caucasians and 48% Asian, mean age = 28.37 years, mean BMI based on measured height and weight = 30.52) and sample 3 [15] consisted of 100 undergraduate

students from the USA (100% women, 58% Caucasians, mean age = 20.13 years, mean BMI based on self-reported height and weight = 23.30¹).

A 10-item version of the SSI (SSI-B_a) was created by first considering the average item-total correlation across all three samples. However, Smith, McCarthy and Anderson [17] caution against simply using items with the highest item-total correlation because the breadth of content coverage of the measure can be compromised. Thus, two provisions were added to the item selection process: (1) no more than two items could belong to any one of the SSI's subscales, and (2) at least half of the subscales must be represented. This approach ensured a reasonable breadth of coverage while also including items that loaded most highly on the scale. A second 10-item measure (SSI-B_b) was created that included the item with the highest average item-total correlation for each of 10 SSI subscales (the 'physically attacked' subscale was omitted because it contains only a single item, and endorsement of that item is rare [10,11]). The items composing each of the two brief measures are presented in Table 1, along with the SSI subscale to which the item belongs and the average item-total correlation for that item. All items from the full and brief versions of the SSI were rated on the 10-point scale used in the original measure [9]: 0 = *Never*, 1 = *Once in your life*, 2 = *Several times in your life*, 3 = *About once a year*, 4 = *Several times per year*, 5 = *About once a month*, 6 = *Several times per month*, 7 = *About once a week*, 8 = *Several times per week*, 9 = *Daily*. Cronbach's alphas for the full SSI and for the two brief measures are shown in Table 2. All versions of the SSI showed good reliability.

Convergent validity

Correlations were computed between the three versions of the SSI (i.e., the full scale and the two brief versions) and other measures associated with stigma experiences that were also included in those studies. For sample 1, these measures include participants' BMI, the Rosenberg Self-esteem Scale (RSES [18]) as a measure of global self-esteem and the Body Dissatisfaction, Drive for Thinness and Bulimia subscales of the Eating Disorders Inventory (EDI [19]) as measures of eating disorder pathology. Sample 2 included participants' BMI and the total number

¹The majority of participants in sample 3 (75%) were in the healthy-weight range, but that study showed that even individuals who are not overweight or obese according to official definitions can still experience weight stigma and the negative consequences associated with stigma. Other work has also shown that self-perceived weight status is more important than actual weight status in the context of weight stigma [16]. Thus, including this sample increases the breadth of applicability of the measure.

Table 1 Items included in the brief SSI measures, along with the SSI subscale to which they belong and the average item-total correlation

SSI-B _a		SSI-B _b	
Item	SSI subscale	Item	SSI subscale
Average item-total correlation		Average item-total correlation	
Children loudly making comments about your weight to others	Comments from children	Being singled out as a child by a teacher, school nurse and so on, because of your weight	Avoided, excluded or ignored
Having a doctor recommend a diet, even if you did not come in to discuss weight loss	Comments from doctors	Being stared at in public	Being stared at
A doctor blaming unrelated physical problems on your weight	Comments from doctors	Children loudly making comments about your weight to others	Comments from children
Having a romantic partner exploit you, because she or he assumed you were 'desperate' and would put up with it	Comments from family	Having a doctor recommend a diet, even if you did not come in to discuss weight loss	Comments from doctors
Overhearing other people making rude remarks about you in public	Comments from others	Having a romantic partner exploit you, because she or he assumed you were 'desperate' and would put up with it	Comments from family
Having strangers suggest diets to you	Comments from others	Overhearing other people making rude remarks about you in public	Comments from others
Having people assume you overeat or binge eat because you are overweight	Negative assumptions	Not being hired because of your weight, shape or size	Job discrimination
Having people assume you have emotional problems because you are overweight	Negative assumptions	Having family members feel embarrassed by you or ashamed of you	Loved ones embarrassed by your size
Being glared at or harassed by bus passengers for taking up 'too much' room	Physical barriers	Having people assume you overeat or binge eat because you are overweight	Negative assumptions
Not being able to fit through turnstiles, on amusement park rides or on other similar places	Physical barriers	Being glared at or harassed by bus passengers for taking up 'too much' room	Physical barriers

SSI, Stigmatizing Situations Inventory.

Table 2 Cronbach's alphas for each version of the SSI in stage 1 samples

	Sample 1	Sample 2	Sample 3
SSI	0.94	0.94	0.94
SSI-B _a	0.87	0.90	0.89
SSI-B _b	0.84	0.85	0.84

SSI, Stigmatizing Situations Inventory.

of stigma experiences that participants reported over a 2-week period using ecological momentary assessment. For sample 3, the measures include participants' BMI, the RSES and the Body Dissatisfaction subscale of the EDI.

Scores on all three versions of the SSI were positively correlated with participants' BMI, negatively correlated with self-esteem (although these correlations were not significant in sample 3) and positively correlated with eating disorder pathology. Furthermore, there was a strong positive correlation between scores on the SSI and the frequency of stigma experiences reported in participants' everyday lives using ecological momentary assessment. Importantly, as shown in Table 3, the magnitude of the correlations between the SSI and these various measures was comparable with all three versions of the SSI. Thus, the brief versions of the SSI perform as well as the full version of the scale.

Stage 2

The findings from stage 1 suggest that the brief versions of the SSI could be a useful alternative to the full SSI, without sacrificing the reliability or validity of the measure. However, the results from stage 1 are based on comparing the full SSI with brief versions of the SSI that are

composed of items that participants completed as part of the parent measure itself. Smith *et al.* [17] point out that this approach overestimates the degree of correspondence between the full and brief measures because the items included in the brief measure also appear in the full measure. Those authors offer two solutions to address this problem: one solution is to have participants complete both the parent measure and the short form; the second solution is to test the psychometric properties of the short form when it is completed without the parent measure. Based on these suggestions, stage 2 involved testing the brief SSI with four new samples in which participants completed both the full SSI and a brief SSI (SSI + SSI-B_a or SSI + SSI-B_b) or completed just the brief SSI (SSI-B_a or SSI-B_b).

Participants

Data from each sample were collected online via Amazon's Mechanical Turk, which has been shown to produce data that are comparable with traditional methods in quality and reliability [20,21]. The advertisement indicated that the research sought individuals who were overweight or obese for a study about their life experiences but again did not mention stigma. Sample 4 consisted of 204 individuals (51% women, 82% Caucasians, mean age = 35.70 years, mean BMI = 35.66), sample 5 consisted of 218 individuals (51% women, 82% Caucasians, mean age = 35.30 years, mean BMI = 34.59), sample 6 consisted of 196 individuals (46% women, 79% Caucasians, mean age = 36.52 years, mean BMI = 35.64) and sample 7 consisted of 214 individuals (49% women, 83% Caucasians, mean age = 36.96, mean BMI = 36.00). This study was approved by the university's ethics committee.

Table 3 Correlations between the SSI and the additional measures included in stage 1

	Sample 1			Sample 2			Sample 3		
	SSI	SSI-B _a	SSI-B _b	SSI	SSI-B _a	SSI-B _b	SSI	SSI-B _a	SSI-B _b
BMI	0.54***	0.55***	0.53***	0.23	0.31*	0.35*	0.46***	0.43***	0.40***
RSES	-0.27**	-0.26**	-0.27**	—	—	—	-0.12	-0.16	-0.09
BD	0.42***	0.35***	0.35***	—	—	—	0.39***	0.35***	0.33***
DFT	0.28**	0.25*	0.26**	—	—	—	—	—	—
BUL	0.49***	0.43***	0.46***	—	—	—	—	—	—
Episode	—	—	—	0.48***	0.51***	0.61***	—	—	—

* $P < 0.05$. ** $P < 0.01$. *** $P < 0.001$.

SSI, Stigmatizing Situations Inventory; BMI, body mass index; RSES, Rosenberg Self-esteem Scale; BD, Body Dissatisfaction subscale of the Eating Disorders Inventory (EDI); DFT, Drive for Thinness subscale of the EDI; BUL, Bulimia subscale of the EDI; Episode, frequency of stigma episodes over a 2-week ecological momentary assessment period.

Measures

Stigmatizing Situations Inventory

Participants in sample 4 completed both the SSI and the SSI-B_a, participants in sample 5 completed only the SSI-B_a, participants in sample 6 completed both the SSI and the SSI-B_b and participants in Sample 7 completed only the SSI-B_b. Cronbach's alpha was excellent for all versions of the SSI (Table 4).

Additional measures

As in stage 1, participants completed the RSES (Cronbach's alphas = 0.92–0.93) and the Body Dissatisfaction, Drive for Thinness and Bulimia subscales of the EDI (Cronbach's alphas = 0.82–0.89). In addition, all participants completed the Weight Bias Internalization Scale [22] as a measure of the extent to which individuals have internalized negative attitudes and beliefs about individuals with obesity (Cronbach's alphas = 0.94) and the Depression Anxiety Stress Scales [23] as a measure of negative affect (Cronbach's alphas = 0.89–0.93). Participants also provided demographic information, including sex, ethnicity, age, and height and weight (which were used to calculate their BMI).

Convergent validity

As shown in Table 5, SSI scores were positively correlated with participants' BMI, negatively correlated with self-esteem and positively correlated with the three measures of eating disorder pathology (although the correlations with body dissatisfaction were not significant in samples 5 and 6). Scores on the SSI were also positively correlated with internalized weight bias and with negative affect. As in stage 1, the magnitude of the correlations was very similar for the full and brief versions of the SSI.

Sex differences

Because there were approximately equal numbers of women and men in each sample, further analyses were

Table 4 Cronbach's alphas for each version of the SSI in the stage 2 samples

	Sample 4	Sample 5	Sample 6	Sample 7
SSI	0.98	—	0.97	—
SSI-B _a	0.94	0.92	—	—
SSI-B _b	—	—	0.90	0.91

SSI, Stigmatizing Situations Inventory.

Table 5 Correlations between the SSI and the additional measures included in stage 2

	Sample 4		Sample 5	Sample 6		Sample 7
	SSI	SSI-B _a	SSI-B _a	SSI	SSI-B _b	SSI-B _b
BMI	0.29***	0.25***	0.26***	0.22**	0.24**	0.28***
RSES	−0.42***	−0.40***	−0.31***	−0.30***	−0.29***	−0.37***
BD	0.14*	0.17*	0.11	0.08	0.11	0.24***
DFT	0.43***	0.43***	0.26***	0.30***	0.31***	0.37***
BUL	0.54***	0.51***	0.47***	0.44***	0.45***	0.63***
WBIS	0.39***	0.38***	0.30***	0.26***	0.25***	0.44***
DASS	0.55***	0.55***	0.49***	0.40***	0.34***	0.49***

* $P < 0.05$. ** $P < 0.01$. *** $P < 0.001$.

SSI, Stigmatizing Situations Inventory; BMI, body mass index; RSES, Rosenberg Self-esteem Scale; BD, Body Dissatisfaction subscale of the Eating Disorders Inventory (EDI); DFT, Drive for Thinness subscale of the EDI; BUL, Bulimia subscale of the EDI; WBIS, Weight Bias Internalization Scale; DASS, Depression Anxiety Stress Scales.

conducted to determine whether there were any notable sex differences in participants' responses. There were no significant differences between women and men in the overall reported frequency of stigma experiences, and there were no significant interactions between participant sex and SSI scores for any of the other variables that were assessed in this study.

Discussion

Both brief measures of the SSI demonstrated good reliability across all samples. Furthermore, the magnitude of the correlations between the SSI and other measures was very similar for the full SSI and for the two brief versions of the SSI. Perhaps of particular significance is the fact that even the brief versions of the SSI showed strong positive correlations with the number of experiences people reported with stigma in their everyday lives, providing additional support for the validity of these measures. Overall, then, the brief versions of the SSI are reliable and valid measures of stigmatizing experiences that provide a more efficient means of capturing stigma experiences without sacrificing the reliability and validity of the original measure.

A strength of the present study is the inclusion of a range of different samples (community members, students and Mechanical Turk 'workers'), the inclusion of women and men (whereas past research on weight stigma has predominantly focused on women) and the use of different assessment methods (paper-and-pen in samples 1–3 and online in samples 4–7), all of which should increase the generalizability of the results. Furthermore, care was taken to ensure that the brief measures

preserved (at least to some degree) the content coverage of the full SSI and that the psychometric properties of the brief measures were tested with independent samples. It would, however, be useful for future research to test the brief SSI with clinical samples (e.g., individuals undergoing bariatric surgery and individuals with binge eating disorder) and also to assess the predictive validity of the brief SSI for behavioural and physical health outcomes.

The results of the present report showed that the two brief versions of the SSI perform equally well. Given that SSI-B_b provides maximal coverage of the domains represented in the full SSI, it may be beneficial to use that version over SSI-B_a (see Appendix for the complete SSI-B_b measure). Note that the analyses presented in this report are based on the overall mean score on the SSI. The brief SSI (even SSI-B_b) is not intended to be used as an assessment of the SSI subscales; therefore, researchers interested in capturing specific domains of stigma experiences would be advised to use the full SSI. For researchers interested in global experiences with weight stigma, however, the brief SSI can be a useful tool, particularly in contexts within which time limitations are an important consideration.

Conflict of Interest Statement

No conflict of interest was declared.

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Appendix Stigmatizing Situations Inventory-Brief (SSI-B)

Below is a list of situations that people encounter because of their weight. Please indicate whether, and how often, each of these situations happens to you.

0	1	2	3	4	5	6	7	8	9
Never	Once in your life	Several times in your life	About once a year	Several times per year	About once a month	Several times per month	About once a week	Several times per week	Daily
Being singled out as a child by a teacher, school nurse, etc., because of your weight.									0 1 2 3 4 5 6 7 8 9
Being stared at in public.									0 1 2 3 4 5 6 7 8 9
Children loudly making comments about your weight to others.									0 1 2 3 4 5 6 7 8 9
Having a doctor recommend a diet, even if you did not come in to discuss weight loss.									0 1 2 3 4 5 6 7 8 9
Having a romantic partner exploit you, because she or he assumed you were 'desperate' and would put up with it.									0 1 2 3 4 5 6 7 8 9
Overhearing other people making rude remarks about you in public.									0 1 2 3 4 5 6 7 8 9
Not being hired because of your weight, shape or size.									0 1 2 3 4 5 6 7 8 9
Having family members feel embarrassed by you or ashamed of you.									0 1 2 3 4 5 6 7 8 9
Having people assume you overeat or binge eat because you are overweight.									0 1 2 3 4 5 6 7 8 9
Being glared at or harassed by bus passengers for taking up 'too much' room.									0 1 2 3 4 5 6 7 8 9