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Weight Beliefs and Messages: Mindsets Predict Body-Shame and Anti-Fat Attitudes via Attributions

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Abstract

In two samples ($N = 247$, $N = 291$), we examined the link between beliefs and messages about the changeable (incremental theory) vs. fixed (entity theory) nature of weight, attributions for weight, and body shame. We recruited participants using online sampling, employing a correlational design in Study 1 and an experimental design in Study 2. Across both studies, we found evidence for the stigma-asymmetry effect—incremental, relative to entity beliefs/messages of weight predicted both (a) stronger onset responsibility attributions, indirectly *increasing* body

shame and (b) stronger offset efficacy attributions, indirectly *decreasing* body shame. Study 2 replicated the stigma-asymmetry effect with anti-fat attitudes. We discuss implications for public health obesity messages with the goal of reducing stigma.

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Attributions

Public health messages about the etiology of and risks associated with obesity are a topic

of research, media coverage, and debate. For example, some pundits argue that public health

communications should highlight the low rate of long-term successful weight-loss (e.g. Hafekost,

Lawrence, Mitrou, O'Sullivan & Zubrick, 2013). Others assert that messages should focus on

health improvements rather than on weight loss (Bombak, 2013). Although these suggestions are

often debated, one area of relative agreement within the scientific community is that there are

great costs associated with weight stigma—negative attitudes toward and the devaluing and

denigration of people perceived to carry excess weight (e.g., Major, Eliezer, & Rieck, 2012;

Major, Hunger, Bunyan, & Miller, 2014; Puhl & Brownell, 2006; Tomiyama, 2014). Widespread

weight stigma results in overweight and obese individuals being the target of prejudice and

discrimination and experiencing inequities in many realms of life from employment, to health

care, to education (Puhl & Heuer, 2009). Moreover, many overweight and obese individuals

experience body shame as a result of internalizing weight stigma-related experiences (Durso &

Latner, 2008). In addition to feeling shame or embarrassment about one's appearance, body

shame also has a moral underpinning related to the belief that one is failing to meet societal

standards and expectations (Noll & Frederickson, 1998). To make matters worse, negative

attitudes toward overweight and obese individuals and personal preferences for thinness form at

an early age and show little sign of decreasing (Cramer & Steinwert, 1998; Latner & Stunkard,

2003).

Considering the costs and enduring nature of weight stigma, a critical question arises:

What propagates negative feelings and attitudes toward the self and others who are perceived to

be overweight? One potential vehicle is messages focused on various etiologies of obesity that communicate different perspectives on the malleability of body-weight. For example, the state of Georgia in their Strong4Life health campaigns, noted: "Warning: Big bones didn't make me this way, big meals did," (DiBacco, 2011). This message delineates meal size as the cause of excess weight and therefore sends the message that people can change their weight through eating less. In opposition to messages focusing on modification of behavior and personal responsibility, there has been a surge in movements seeking to reduce the belief that weight is simply a result of overeating. For example, the *Health at Every Size Movement* notes: "Biology dictates that most people regain the weight they lose, even if they continue their diet and exercise programs," (Bacon, 2008, p. 170). This message implies that biology is the cause of excess weight and that people cannot modify their weight through behavioral changes. These two campaigns highlight, at least implicitly, different beliefs about the changeable vs. fixed nature of weight.

The goal of the current work is to empirically investigate how different beliefs and messages about the changeable vs. fixed nature of weight, called implicit theories, relate to attributions about body weight and subsequently contribute to weight stigma. More specifically, drawing on Herek's model of stigma (2007), in both studies we examine internalized stigma which "refers to an individual's personal acceptance of stigma as part of her or his own value system and self-concept" (Herek, 2007; p. 73). Internalization of societal stigma can be manifested as negative attitudes of feelings towards the self (e.g., body shame) or as negative attitudes and evaluations of others (e.g., anti-fat attitudes).

Implicit Theories, Attributions & Stigma

Taking a social-cognitive approach, we suggest that attributions, and subsequently stigma, depend largely, on people's implicit theories about whether body weight is a

characteristic that can be changed (incremental theory) or a characteristic that is fixed (entity theory). Implicit theories are an integral part of people's motivational systems and influence both self-regulatory processes and goal achievement (e.g. Burnette, O'Boyle, VanEpps, Pollack & Finkel, 2013). For example, in a weight management context, incremental theories predicted (a) more optimistic expectations about the potential to lose weight, (b) increased effortful-regulation and (c) less weight gain after severe dieting setbacks (Burnette 2010; Burnette & Finkel, 2012). In addition to informing one's own behavior, implicit theories also guide the inferences people draw from other's actions and outcomes. For example, individuals with incremental theories of people focus on the dynamics of the situation when making social judgments. In contrast, individuals with entity theories of people focus on traits and rely on stable characteristics when making social judgments (Molden & Dweck, 2006).

Implicit theories and attributions. Implicit theories are fundamental belief systems that create an allied system of attributions, which have been recognized as important mediators of adaptive and maladaptive coping patterns (Weiner, 1979). Attribution theory moved the field of motivation forward and serves as a foundation for much of the work on implicit theories. More specifically, individual's implicit theories start earlier in the psychological chain, creating the framework that guides goal strivings and subsequent interpretations of events (Dweck, 2000; Dweck, Chiu, & Hong, 1995; Dweck & Leggett, 1988; Hong, Chiu, Dweck, Lin, & Wan, 1999). More specifically, incremental theorists set learning goals that orient them to view setbacks as information about the need for greater effort or new strategies, thereby contributing to controllable attributions. In contrast, entity theorists set performance goals that orient them to view setbacks as information about their lack of ability, an ability that they cannot develop. Thus, incremental theorists focus more on effort attributions than entity theorists. And, although

both incremental and entity theorists attribute outcomes to ability—the meaning assigned to ability is different (Hong et al., 1999). Thus, entity theorists are more likely to focus on global stable trait attributions (Dweck, 2000). In short, from an implicit theory perspective, attributions unfold within the context of individual's different beliefs about the malleability of specific human attributes.

Implicit theories are also important for attributions within the context of stigma. For example, when characteristics that are deemed fixed are also devalued, such as with obesity, implicit theories influence the meaning assigned to the particular identity. Whereas incremental theorists are less likely to engage in essentialist thinking, entity theorists imbue the stigmatized person with an inherent 'differentness' that is deemed both serious and persistent (Allport, 1954; Haslam et al., 2006; Hegarty & Golden, 2008; Rothbart & Taylor, 1992). However, implicit theories also predict attributions of controllability (seeing overweight people as responsible for their weight), with incremental theorists attributing more blame. Building on this, in the stigma-asymmetry model, an incremental theory can both decrease stigma, by reducing essentialism, but increase stigma by strengthening blame attributions (Hoyt et al., 2014).

In summary, implicit theories are the meaning framework within which attributions regarding the self and others unfold. In the current work, we build on work linking implicit theories to attributions by differentiating between onset and offset attributions to investigate the implications of implicit theories of weight for weight stigma.

Onset/offset attributions and stigma. Attribution theory differentiates between onset and offset attributions, with the former referring to the responsibility one has for acquiring a condition and the latter referring to the means and potential efficacy for changing one's condition in the future (Brickman et al., 1982; Weiner, Perry, & Magnusson, 1988). Onset responsibility

attributions in the context of body-weight refer to personal accountability for one's current weight status, whereas offset efficacy attributions reflect whether or not one has the capacity to engage in effortful regulation and if this will contribute to future weight-loss. The former (onset) has to do with how the condition is acquired, and the latter (offset) with how and if the condition can be managed in the future.

Ample research suggests that the perceived causes for the onset of a stigmatizing condition influence attitudes and judgments of others, as well as the self (Weiner et al., 1988). This research consistently demonstrates that stronger attributions of onset responsibility and blame increase weight stigma (e.g., Crandall et al., 2001). For example, in an experimental study examining two types of onset responsibility attributions and weight stigma, participants reported more negative attitudes towards obese individuals when obesity was described as a result of excessive eating without exercise (onset responsibility), as opposed to as a glandular dysfunction condition (no onset responsibility; Weiner et al., 1988). However, researchers that differentiate between onset and offset attributions, find that attributions related to effort—especially those focused on the offset of the condition—are also critical for understanding judgments of others. For example, participants ascribed fewer negative stereotypes to obese individuals if they had successfully put in some effort to be healthy and lose weight (Black, Sokol & Vartanian, 2014; Fardouly & Vartanian, 2011). In summary, whereas onset responsibility can increase stigma, the belief that future weight-loss is possible through effortful regulation can reduce stigma.

This differentiation between onset responsibility and offset efficacy is similar to the compensatory model for helping and coping, which differentiates between responsibility for the onset of the current problem and expectations about finding a solution to offset it (Brickman et al., 1982). The compensatory model focuses on empowering people to put effort into improving

in the future without berating themselves for the role they played in creating their current state. The compensatory model seeks to understand the beliefs that relate to helping and coping and is often applied in a clinical setting. In the current work, we differentiate between onset responsibility and offset efficacy to understand how these attributions relate to weight stigma.

Stigma-asymmetry model. More specifically, we suggest a stigma-asymmetry effect of incremental theories with a focus on internalized self-stigma—namely body-shame. That is, believing that weight is changeable, rather than fixed, will indirectly predict *increased* shame via stronger onset responsibility attributions, but will also indirectly predict *decreased* shame via stronger offset efficacy attributions. In line with the dominant theoretical perspective in social psychology (Crandall & Reser, 2005), we suggest that believing in the changeability of a stigmatized attribute casts those who fail to conform to societal expectations as responsible, therefore increasing shame. There is clear evidence that believing in the changeability of a particular stigmatized attribute (e.g., obesity) increases blame and responsibility, which increases negative evaluations of the self and others.

However, there is also a nascent line of work that has started to delineate how changeability beliefs may also weaken stigma. For example, with the context of psychopathology, believing in the changeability of a stigmatized attribute (as opposed to a biogenetic explanation), decreases stigma through its association with weakened prognosis pessimism and its tendency to reduce essentialist thinking (i.e., the belief that the devalued characteristic is a stable intrinsic aspect of the person; Haslam & Kvaale, 2015; Kvaale, Gottdiener & Haslam, 2013; Rüsch, Todd, Bodenhausen, Olschewski & Corrigan, 2010). The stigma asymmetry model also shows how messages stressing the changeable, relative to the

fixed, nature of a stigmatized quality can increase blame but can also reduce essentialist thinking (e.g., Hoyt, Burnette, Auster-Gussman, Blodorn & Major, 2016).

In the current work, we extend the stigma-asymmetry model to the context of body-shame, not just anti-fat attitudes and do so by focusing on attribution theory, differentiating between onset responsibility and offset efficacy. We suggest that believing in the potential to offset the condition via effortful regulation (i.e., offset efficacy) captures the psychological processes of both essentialism and prognosis pessimism outlined in past models. That is, failing to adequately exert effort to offset one's current stigmatized condition may reflect an underlying inherent moral deficiency as well as a permanence of the condition (Hutcherson & Gross, 2011; Rozin, 1999), and may also signal hopelessness regarding future prognosis. Such pessimism can lead to feelings of shame, whereas expectations for success predict more positive affect such as pride (Carver, 1988; Carver & Scheier, 1990). In conclusion, merging an implicit theory perspective with the onset and offset attribution literature, we hypothesize a stigma-asymmetry effect in which beliefs and messages about the changeable nature of weight have indirect and opposing effects on internalized weight stigma.

Study 1

Specifically, we suggest that incremental, relative to entity, theories (Study 1) and messages (Study 2) of weight will indirectly *increase* body shame (Studies 1-2) and anti-fat attitudes (Study 2) by strengthening onset responsibility attributions and will indirectly *decrease* body shame and anti-fat attitudes by strengthening offset efficacy attributions. The aim of Study 1 is to offer a preliminary examination of the stigma-asymmetry model.

Methods

Participants

We recruited 263 M-turk participants from the United States to take an online survey consisting of a series of questionnaires. We deleted 11 cases because of missing data (5 cases missing all data but first measure, 7 cases for not completing the outcome measures). For remaining participants ($N = 247$, female = 133; 1 missing), we had relatively limited and random missing data. We created mean scores based on available data and thus had no missing values for primary variables of interest. For models with covariates (i.e., BMI) which had missing data, we used the PROCESS default which is listwise deletion (Hayes, 2013).

The majority of participants identified their race/ethnicity as White (78%), with 9% identifying as African American, 7% as Asian American, and the remaining identifying as another race or ethnicity. The average age was 35 ($SD = 12.50$). The majority of participants earned between $40,000 and $100,000 (45%) with majority of the remaining participants earning between 20,000 and $40,00 a year (44%), and a limited number earning greater than 100,000 (11%). The majority of participants had completed some college or beyond (83%). We calculated body-mass index (BMI) using the standard formula (weight in kilograms divided by height in centimeters squared) based on participants' self-report height and weight. The mean BMI was 27.45 ($SD = 6.88$). Using Center for Disease Control and Prevention BMI classifications, the distribution of BMI in our sample was 3.2% underweight, 38.1% normal weight, 27.9% overweight, and 29.6 % obese. This is similar to nationally representative United States samples. For example, a National Institutes of Health report summarizing data from the nationally representative National Health and Nutrition Examination Survey reported BMI in the United States in 2009-2010 as follows: 31.2% normal or underweight, 33.1% overweight, and 35.7% obese ("Overweight & Obesity Statistics", 2012).

Measures

Participants completed all measures online.

Implicit theories of weight. We used the standard 6-item implicit theory of weight scale, rated from (1) strongly disagree to (6) strongly agree. An example item is, "You can change your body weight considerably" (Burnette, 2010). Higher numbers represent agreement with an incremental theory. Alpha coefficient (α) for the current work is .91.

Onset responsibility. Participants rated on a 9-point scale (not at all responsible to very responsible) a single question focused on internal controllability and personal responsibility—two key components of blame attributions and subsequent stigma (Crandall & Reser, 2005). Specifically, the question asked: "How responsible are you personally for your current weight? That is, how much do you feel that your current weight is a result of choices you make, rather than something you can't control?"

Offset efficacy. We adapted an effort-based efficacy belief scale (Blackwell, Trzesniewski & Dweck, 2007) to the context of weight to capture offset attributions. More specifically, we simply added a weight-specific context. For example, the original general scale noted: "the harder you work at something, the better you will be at it," whereas our scale noted: "the harder I work at managing my weight, the better I will be at it." Our 6-item weight-specific offset efficacy measure retained 2 positive-worded items which assessed beliefs that effort leads to positive outcomes (e.g., "The more effort I put into managing my weight, the more successful I will be at it"). The 4 negative items assessed beliefs that effort is an indication of a lack of potential to lose weight (e.g., To tell you the truth, when I have to work hard at managing my weight, it makes me feel like I don't really have the potential to be (and remain) a thinner person"). Participants rated items on a (1) strongly disagree to (6) strongly agree scale. Test-retest reliability in past work is .82, and general reliability is .79 (Blackwell et al., 2007).

Reliability in this work was similar, α = .76. As additional evidence of validity of the adapted

scale, the bivariate correlation between implicit theories of weight and offset efficacy in the

current work, r (247) = .55, p < .001, is similar to an average of what is found in existing work

using the original general efforts believe subscale. For example, Blackwell and colleagues

(Blackwell et al., 2007) report a standardized regression coefficient of .80 between implicit

theories and effort, whereas Tempelaar and colleagues (Tepelaar, Rienties, Giesbers, &

Giselaers, 2015), report a correlation of .32—these two correlations averaged equals .56, which

is almost identical to the current work. Items were scored such that higher numbers represent a

stronger belief that with hard work, weight management is possible.

    Body shame. Participants completed the 6-item shame subscale of the Weight and Body-

Related Shame and Guilt Scale (Conradt et al., 2007). Participants rated items on a 0 (never) to 4

(always) scale. An example item is, "The appearance of my body is embarrassing for me in front

of others." Higher numbers represent greater shame. Alpha coefficient (α) for the current work

is .92[1].

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Results

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    See Table 1 for means, standard deviation, and bivariate correlations. Implicit theories

are positively correlated with both onset responsibility and offset efficacy. In addition, although

onset responsibility is not significantly correlated with body shame, offset efficacy is negatively

correlated. And, onset responsibility and offset efficacy are correlated positively with each other.

Additionally, implicit theories are not correlated with body shame or BMI. BMI is correlated

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[1] Although we have chosen to focus on body-shame, we also had included a 5-item pride measure (Castonguay, Gilchrist, Mack, & Sabiston, 2013), a single item body dissatisfaction assessment (CDRS; Thompson & Gray, 1995) and a shortened assessment of desire to change one's body-weight (Noll & Fredrickson, 1998). Analyses are similar using these measures as individual outcomes or reverse coding the pride items, standardizing items and creating one larger composite of body-shame/dissatisfaction.

positively with onset responsibility, negatively with efficacy and positively with body shame.

To test our primary hypotheses derived from the stigma asymmetry model, we conducted indirect effect analyses using Hayes' (Hayes, 2013) PROCESS macro model 4, entering both onset and offset attributions into the regression equation simultaneously as parallel or concurrent mediators, implicit theories of weight as the predictor and body shame as the outcome. Analyses revealed two significant indirect effects of incremental theories on body shame with 95% confidence intervals (see Figure 1): positively through onset responsibility (indirect effect = .09, 95% CI [.04, .16]) and negatively through offset efficacy (indirect effect = -.33, 95% CI [-.45, -.22]). The direction of the paths indicates that endorsement of a stronger incremental theory predicted stronger onset responsibility attributions, $\{B = .67, t(245) = 5.96, p < .001, 95\%$ CI [.45, .89]\} and stronger offset efficacy beliefs, $\{B = .54, t(245) = 10.34, p < .001, 95\%$ CI [.43, .64]\}. In turn, stronger onset responsibility attributions predicted *more* shame $\{B = .14, t(245) = 3.50, p < .001, 95\%$ CI [.06, .22]\}, but stronger offset efficacy beliefs predicted *less* shame $\{B= -.61, t(245) = -7.09, p < .001, 95\%$ CI [-.79, -.44]\}. Not surprisingly, considering these opposing indirect effects, there is no direct effect of endorsement of an incremental, relative to an entity theory on body shame $\{B = .09, t(245) = 1.07, p = .29\}$, nor a significant total effect $\{B = -.14, t(245) = -1.88, p = .06\}$. Although, using a 90% confidence interval the total effect does become significant such that incremental theorists report less shame.

We re-ran the above analysis using BMI as a covariate and all effects still hold: incremental theories, relative to entity theories correlate with greater onset responsibility, which correlates with greater shame. Incremental theories correlated with greater onset efficacy, which correlates with less shame. The direct effect is not significant, the total effects is only significant using a 90% confidence interval, and both indirect effects remain significant. Additionally, in

this model, BMI correlates positively with onset responsibility $\{B = .05, t(240) = 3.70, p < .001,$ 95% CI [.02, .08]}, negatively with offset efficacy, $B = -.02, t(240) = -3.26, p = .001,$ 95% CI [-.03, -.01]} and positively with body shame, $B = .03, t(238) = 2.71, p = .007,$ 95% CI [.01, .04]}.

Study 1 provided initial support for the stigma-asymmetry effect of incremental theories of weight on body shame. When considering the parallel mediators, incremental, relative to entity theories indirectly and *positively* predicted body shame through stronger onset responsibility attributions but indirectly and *negatively* predicted body shame through stronger offset efficacy attributions.

Study 2

Despite this initial evidence, we sought to bolster findings in a few key ways. First, our primary goal was to replicate the stigma-asymmetry effect by manipulating implicit theories of weight to garner causal evidence of their effect on onset responsibility and offset efficacy. Second, this experimental approach allowed us to focus on messages often seen in the media delineating various causes of obesity, thereby providing ecological validity. Third, we investigated the indirect effects of incremental theories on not just body shame but also anti-fat attitudes. Finally, as a secondary aim, we crafted an incremental message with the goal of eliminating the shame increasing costs of onset responsibility attributions but keeping the benefits of offset efficacy attributions. This message, which we term the *compensatory* incremental message, stressed not blaming oneself or others coupled with the idea that effortful targeted strategies can contribute to future weight-loss goals. We posited that this compensatory-incremental message should weaken onset responsibility attributions and eliminate the negative consequences of an incremental message for stigma.

Methods

Participants

We recruited M-turk participants online. We deleted 31 cases because of missing data (15 cases missing all data but first measures related to article, 16 cases for not completing the outcome measures). These data were missing at random and did not differ by condition, $X^2 = .10$, $p = .95$. For remaining participants ($N = 291$, female $= 178$; 2 missing), we created mean scores based on available data and thus had no missing values for primary variables of interest. For models with covariates (e.g., BMI) which had missing data), we used the PROCESS default which is listwise deletion (Hayes, 2013).

The majority of participants identified their race/ethnicity as White (79%), with 9% identifying as African American, 7% as Asian American, and the remaining identifying as another race or ethnicity. The average age was 36 ($SD = 12.59$). The majority of participants earned between $20, and $40,000 (48%) with majority of the remaining participants earning between 40,000 and $100,00 a year (41%), and a limited number earning greater than 100,000 (11%). Most participants had completed some college or beyond (84%). The mean BMI was 27.37 ($SD = 7.5$). The distribution of BMI in this sample was 3.1% underweight, 40.9 % normal weight, 26.8% overweight, and 27.5% obese—similar to Study 1 and the national averages.

Procedures

We randomly assigned participants to one of three conditions to manipulate implicit theories of weight. In the incremental-standard condition ($n = 98$), participants read a *Psychology Today* type article used in past work to encourage an incremental theory of weight (Burnette, 2010). In the entity condition ($n = 100$), participants read a similar article about the static nature of weight including the classification of obesity as a disease (Burnette, 2010; Hoyt, Burnette &

Auster-Gussman, 2014). The incremental-compensatory condition ($n = 93$) was designed to eliminate the indirect effects via blame and therefore included information about the changeable nature of weight but also stressed the importance of not blaming or shaming people for being overweight (e.g., "A key to success is not blaming or shaming yourself or others").

Measures

Implicit theories of weight. As a manipulation check, we used the same standard six-item implicit theory of weight measure used in Study 1 (Burnette, 2010). Once again, higher numbers represent agreement with an incremental theory of body weight. Alpha coefficient (α) for the current work is .92.

Onset responsibility. In addition to including the single item used in Study 1, we also included four items from the beliefs about obese people scale (BAOP; Allison, Basile, & Yuker, 1991) that focus on blaming overweight people for their excess weight —namely blaming their eating and exercise behaviors (e.g., "Obesity is usually caused by overeating" and "Most obese people cause their problem by not getting enough exercise." This scale is rated from 1 (strongly disagree) to 6 (strongly agree). A maximum likelihood factor analysis with promax rotation revealed a single factor with an eigen value of 2.97, accounting for 60% of the variance. Thus, we z-scored and created one overall mean score to develop a single onset responsibility measure. Alpha coefficient (α) for the current work is .82.[2]

Offset efficacy. We included the same 6-item offset efficacy scale used in Study 1. Alpha coefficient (α) for the current work is .74.

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[2] We included the original full BAOP scale but this scale has items that do not specifically tap attributions related to controllability or responsibility and that are perhaps closer to an assessment of implicit theories (e.g., "In many cases, obesity is the result of a biological disorder"). Analyses are similar using the full BAOP, although we focus on the items tapping onset responsibility.

Body shame. Participants completed the same 6-item shame subscale of the Weight and Body-Related Shame and Guilt Scale used in Study 1 (Conradt et al., 2007) rated on a 0 (never) to 4 (always). Higher numbers represent greater shame. Alpha coefficient (*α*) for the current work is .92. [3]

Anti-fat attitudes. Participants responded to the dislike subscale of the established anti-fat attitudes scale on a 7-point scale ranging from 1(strongly disagree) to 7 (strongly agree; Crandall, 1994). An example item is "Fat people make me somewhat uncomfortable." Higher numbers represent stronger negative attitudes. Alpha coefficient (*α*) for the current work is .91.

Results

See Table 2 for means, standard deviations, and bivariate correlations. As in Study 1, incremental theories correlated positively with both onset responsibility and offset efficacy. And, although onset responsibility is not correlated with body shame, offset efficacy is negatively correlated. Onset responsibility is positively related to anti-fat attitudes, whereas offset efficacy is negatively correlated. Additionally, onset responsibility and offset efficacy are positively correlated. Implicit theories are negatively correlated with body-shame but not correlated with anti-fat attitudes. And, implicit theories are negatively correlated with body-mass index. BMI is correlated negatively with offset efficacy, positively with shame, and negatively with anti-fat attitudes but not significantly correlated with onset responsibility in Study 2.

First, as a manipulation check, we investigated if participants in the two incremental conditions (incremental-standard and incremental-compensatory) reported a stronger endorsement of an incremental theory of weight than participants in the entity condition. An ANOVA confirmed this, $F(2, 288) = 41.67$, $p < .001$, partial eta-squared = .22. Tukey post hoc

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[3] Although we had other items tapping body-dissatisfaction, to replicate Study 1, we focus on the same six items assessing body shame that we had included in Study 1.

follow-up tests revealed that participants in both incremental conditions (incremental-standard:

M = 5.06, *SD* = .82; incremental-compensatory: *M* = 4.97; *SD* = .76) reported stronger

endorsement (*p* < .001) of an incremental theory than participants in the entity condition (*M* =

4.00, *SD* = 1.09). Participants in the incremental-standard and incremental-compensatory

conditions did not differ from each other on implicit theories (*p* = .78).

Second, we tested whether the manipulation of blame in the incremental-compensatory

condition was successful. That is, we investigated if participants in the incremental-standard

condition reported greater blame than participants in the incremental-compensatory condition

and the entity condition. An ANOVA confirmed this, $F(2, 288) = 5.48$, $p = .005$, partial eta-

squared = .04. Tukey post hoc follow-up tests revealed that participants in the incremental

standard condition (*M* = .20, *SD* = .73) reported significantly more blame than participants in the

incremental-compensatory condition (*M* = -.l4, *SD* = 79, *p* =.005) or participants in the entity

condition (*M* = -.07, *SD* = .73, *p* =.04). Participants in the incremental-compensatory and entity

conditions did not differ from each other on blame (*p* = .79).

Next, to replicate the stigma-asymmetry effect, we used the incremental-standard

condition compared to the entity condition, controlling for the incremental-compensatory

condition by dummy coding. Analyses using body-shame as the outcome revealed two

significant indirect effects of the incremental-standard condition, relative to the entity condition,

on body shame with 95% confidence intervals (see Figure 1): positively through onset

responsibility (indirect effect = .07, 95% CI [.02, .17]) and negatively through offset efficacy

(indirect effect = -.20; 95% CI [-.37, -.07]). The direction of the paths indicates that participants

in the incremental-standard relative to the entity condition reported stronger onset responsibility

attributions, {$B = .34$, $t(288) = 3.15$, $p = .002$, 95% CI [.13, .55]} and stronger offset efficacy

beliefs, {B = .39, t(288) = 3.21, p = .002, 95% CI [.15, .63]}. In turn, stronger onset

responsibility attributions predicted *more* shame {B = .22, t(286) = 2.80, p =005, 95% CI

[.06, .37]}, but stronger offset efficacy beliefs predicted *less* shame {B = -.52, t(286) = -7.71, p

< .001, 95% CI [-.65, -.39]}. Not surprisingly, considering these opposing indirect effects, there

is no effect of the incremental-standard, relative to the entity condition on body shame including

no direct effect {B = -.06 t(288) = -.41, p = .68} and no total effect {B = -.19, t(288) = -1.26, p

= .21}. Additionally, controlling for BMI, the indirect effects remain significant, as do all other

links reported above. And the direct and total effects are still not statistically significant. BMI

predicts less offset efficacy, {B = -.02, t(283) = -3.59, p < .001, 95% CI [-.04, -.01]}, does not

predict blame, p = .82, but does predict greater shame {B = .05, t(281) = 6.58, p < .001, 95% CI

[.03, .0]}

Using anti-fat attitudes as the outcome, similar findings emerge. Analyses again revealed

two significant and opposing indirect effects of the incremental-standard relative to the entity

condition with 95% confidence intervals: through onset responsibility (indirect effect = .11, 95%

CI [.03, .22]) and offset efficacy (indirect effect = -.11, 95% CI [-.23, -.04]). As reported above,

participants in the incremental-standard, relative to the entity condition reported stronger onset

responsibility attributions, {B = .34, t(288) = 3.15, p = .002, 95% CI [.13, .55]} and stronger

offset efficacy beliefs, {B = .39, t(288) = 3.21, p = .002; 95% CI [.15, .63]}. In turn, stronger

onset responsibility attributions predicted *stronger* anti-fat attitudes, {B = .31, t(286) = 3.65, p

<.001; 95% CI [.15, .48]}, and stronger offset efficacy beliefs predicted *weaker* anti-fat

attitudes{B = -.28, t(186) = -3.72, p < .001; 95% CI [-.43, -.13]}. Additionally, controlling for

BMI, the indirect effects remain significant, as do all other links reported above. And the direct

and total effects are still not statistically significant. BMI predicts less offset efficacy, {B = -.02,

t(283) = -3.59, *p* < .001, 95% CI [-.04, -.01]}, does not predict onset responsibility, *p* = .82, but

does predict less anti-fat attitudes {*B* = .06, *t*(281) = -3.83, *p* < .001, 95% CI [-.05, -.02]}

Next, we examined the potential of the incremental-compensatory condition to eliminate

the positive indirect effects of incremental, relative to fixed, messages about obesity on stigma

but maintain the negative indirect effect. The incremental-compensatory condition did not differ

from the entity condition in predicting onset responsibility (*B* = .07, *t*(288) = .66, *p* = .51) and

thus did not indirectly increase stigma (body shame or anti-fat attitudes) through onset

responsibility. Furthermore, compared to the entity condition, the incremental-compensatory

condition indirectly decreased shame (*B* = -.20, 95% CI [-.35, -.07]) and anti-fat attitudes (*B* =

-.11, 95% CI [-.22, -.04]) through offset efficacy. Additionally, there was no direct effect of the

incremental-compensatory condition, relative to the entity condition on body shame, {*B* = .004, *p*

= .98} and no total effect on body-shame, {*B* = -.18, *p* = .24}. Furthermore, there was no direct

effect on anti-fat attitudes, {*B* = .10, *p* = .62}and no total effect on anti-fat attitudes {*B* = .01, *p*

= .94}. All these links remain when controlling for BMI. In summary, the incremental-

compensatory message relative to the entity condition attenuated the positive indirect effect of an

incremental message on weight stigma through onset responsibility but maintained the negative

indirect effect via offset efficacy. Also, based on the manipulation check reported above, the

incremental compensatory reduced onset responsibility relative to the incremental-standard

condition and thus there would be no indirect effect to stigma via this process when comparing

these two conditions.

General Discussion

Across both studies, results provided support for the stigma-asymmetry effect of

incremental theories and messages about weight on body shame (Studies 1-2) and anti-fat

attitudes (Study 2). A stronger endorsement of an incremental theory and a message stressing the

changeable nature of weight, relative to a fixed theory and a message stressing the static nature

of weight, indirectly and *positively* predicted weight stigma through stronger onset responsibility

attributions but indirectly and *negatively* predicted weight stigma through stronger offset

efficacy. We demonstrated the stigma-asymmetry effect both with individuals' self-reported

theories and by manipulating implicit theories of weight using messages similar to those often

seen in the media delineating various causes of obesity, thereby providing ecological validity. In

Study 2, we also crafted a compensatory-incremental message that eliminated the indirect stigma

increasing effects of onset responsibility attributions but kept the stigma decreasing benefits of

offset efficacy. Additionally, a manipulation check confirmed that the incremental compensatory

condition significantly reduced blame, relative to the incremental standard message.

     The current work has important theoretical and practical implications. Our work

contributes to the growing body of research attempting to clarify seemingly contradictory

findings associating beliefs about the changeability of traits with stigma. In this work, we

extended the stigma asymmetry model to look at the effect of changeability beliefs and messages

on internalized stigma—with a focus on body shame. By merging an implicit theory perspective

with the attribution literature on onset responsibility and offset efficacy, we have a more nuanced

understanding of how beliefs in the changeability of weight can simultaneously increase and

decrease internalized stigma toward both the self and others. We suggest that the stigma-

asymmetry model is a robust theoretical framework that can likely help us better understand

internalized, self-directed stigma in domains beyond weight, such as sexuality or mental health.

     In terms of practical applications, understanding, reducing, and ideally eliminating

weight stigma is critical. There is evidence that shaming people about their weight is likely to

backfire, increasing stress and decreasing self-regulation (Major et al., 2014), and ultimately

leads to poorer health outcomes (e.g. Schafer & Ferraro, 2011). The current work highlights the

importance of developing nuanced messages about not only the etiology of obesity but also the

potential to offset the condition. These messages impact people's self-beliefs, attributions, and

ultimately weight stigma—the internalization of stigma as indicated by feelings of body-shame

and negative attitudes towards others (Herek, 2007). Overall, the findings can contribute to the

discourse on creating targeted and effective public health messages about the nature of obesity.

Limitations & Future Directions

Before putting these findings into practice, some limitations are worth addressing. First, it

is possible that in the long-term, offset efficacy fosters false hope, which is known to raise mood

but may also increase long-term vulnerability especially in terms of weight cycling (Polivy &

Herman, 2002). Future work could also focus more intensely on the unwarranted nature of blame

and the costs of such blame for the self and others. Second, although a strength of a

compensatory message is that it encourages and empowers individuals without criticizing or

blaming them for their role in their current state, there is also undue pressure on the individual to

find a solution. Within a weight context, the solution most often stressed is dieting—a strategy

that rarely works and one that fails to account for the significant role of external factors (Mann,

Tomiyama, Westling, Lew, Samuels, & Chatman, 2007). Thus, future work should examine if

the incremental-compensatory message can be strengthened by emphasizing solutions that

incorporate social support, respect, and understanding. Additionally, a plethora of data

demonstrate that once people are higher body weight, the likelihood of becoming thinner is very

small (e.g., Fildes et al., 2015). Indeed, the line between giving an individual a sense of self-

efficacy and control in their life but at the same time not making them feel weak-willed for not

trying harder to lose weight is a very fine one. In summary, additional work is needed that continues to examine both the potential costs and benefits of an incremental-compensatory message using longitudinal approaches.

Conclusions

The strong theoretical grounding combined with the initial empirical findings can pave the way for additional research aimed at addressing national and international public health priorities (Klein, Shepperd, Suls, Rothman, & Croyle, 2014). At present, much obesity-related rhetoric, including public health messages, places the blame for excess weight on people's unhealthy behavioral choices. A message that stresses the importance of exercising more and eating less implies that weight can be managed through hard work and effort but also leads to the belief that failures of weight management are due to individuals' weak-willed character. However, past attempts to change this messaging have resulted in other potentially counterproductive communications. For example, the American Medical Association (AMA) decided to label obesity a disease and this, too, had important and unintended implications for health-related attitudes and behavior (Hoyt, Burnette, & Auster-Gussman, 2014). In the current work, we seek to contribute to the discourse on psychological implications of weight-based public health messages by gaining a better understanding of how beliefs and messages about the changeable vs. fixed nature of weight may contribute to weight stigma in expected ways (more changeable, more onset blame, more stigma) and potentially unexpected ways (more changeable, more offset efficacy, less stigma). The current work is also the first to examine an incremental-compensatory message that might reduce the weight stigma that can result from the standard weight modification messages that stress behavioral changes. However, more work is needed that replicates effects and addresses potential limitations. We hope our initial work merging an

implicit theory perspective with an onset and offset attribution approach serves as a theoretically

grounded platform for such explorations.

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Table 1

Scale Means, Standard Deviations, and Correlations
Study 1

	M	*SD*	1	2	3	4
1. Implicit theories	4.78	.86				
2. Onset responsibility	7.40	1.63	.36***			
3. Offset efficacy	4.12	.84	.55***	.32***		
4. Body shame	2.46	1.04	-.12	.09	-.38***	
5. BMI	27.24	6.88	-.04	.21***	-.19**	.28***

$**=p \leq .01$ $***= p \leq .001$

Table 2

Scale Means, Standard Deviations, and Correlations Study 2

	M	*SD*	1	2	3	4	5
1. Implicit theories	4.67	1.03					
2. Onset responsibility	.00[a]	.76	.43***				
3. Offset efficacy	4.06	.87	.55***	.25***			
4. Body shame	2.38	1.05	-.15**	.05	-.40***		
5. AFA	2.10	1.10	-.07	.15*	-.17**	.02	
6. BMI	27.37	7.50	-.12*	.04	-.22***	.42***	-.15**

[a] denotes standardized score; $*= p \leq .05$ $**=p \leq .01$ $***= p \leq .001$

Figure 1. Multiple mediator model predicting body shame. *p*=.05* p < .01** p < .001***
Study 2 coefficients are in parentheses and compare the incremental-standard condition
to the entity condition, controlling for the compensatory condition.