

When body positivity falls flat: Divergent effects of body acceptance messages that support vs. undermine basic psychological needs

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ABSTRACT

Although women now have access to messaging about body acceptance, the risks and benefits of such messaging are not well-researched. Using a self-determination theory framework, we contrasted need-supportive versus need-undermining messages about body acceptance. One message supported the basic psychological need for autonomy (i.e., personal agency to accept one's body); one targeted the basic need for body acceptance from others; and one used pressure to elicit body positivity – a need-undermining strategy. We contrasted these messages with one another and with a typical message of thinness idealization. In Experiments 1–4, we found that pressuring pro-body messages were more harmful to body image than messages that used autonomy support and acceptance from others. That is, they produced more pressure, less agency, and lower acceptance. Moreover, Experiments 2–4 showed that need-supportive messages increased state self-esteem from baseline, whereas pressuring body positivity did not. In Experiment 3 message-related self-perceptions mediated the effect of need-supportive messages on state self-esteem. In Experiment 4, need-supportive body acceptance messages reduced body shame and body surveillance, whereas pressure to be body positive did not – and this effect was mediated by body satisfaction induced by the message. We highlight the important difference between need-supportive and need-undermining body positivity.

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1. Introduction

Be comfortable with your body. Love yourself the way you are. Sentiments like these characterize body positive media and communication, and such well-intentioned messages appear to be a timely and welcomed reprieve from the widespread pressure to be thin. Yet, while these kinds of messages seem to endorse self-acceptance on the surface, we know very little about how they may vary in supporting (or undermining) a positive body image. In this research, we use self-determination theory – a leading theory of human motivation based on psychological needs (Ryan & Deci, 2000) – to design and test body positive communication that either supports psychological needs (i.e., for body autonomy and body acceptance) or undermines them (i.e., by using pressure to increase body positivity). We assess the impact of these messages on various body image outcomes – including pressure to be thin, pressure to feel body positive, feelings of empowerment and acceptance, self-esteem, and body objectification.

1.1. The emergence of body positivity in media and in research

A wealth of research demonstrates that Western media depictions of the thin ideal are inescapable (Ghaznavi & Taylor, 2015), unrealistic (Greenberg, Eastin, Hofschire, Lachlan & Brownell, 2003; Martins, Williams, Harrison & Ratan, 2009; Sypeck, Gray, Etnu, Ahrens, Mosimann & Wiseman, 2006), and can be harmful to body image and self-esteem when women have poor body image to begin with (Grabe & Hyde, 2006; Harper & Tiggemann, 2008; Ward, 2016). In response to thinness idealization in media, mainstream campaigns in the last decade have begun to promote body positive messages focused on body acceptance. These communications vary from corporate mass media campaigns like *Dove™ Real Beauty* and *Aerie Real* to the popular Instagram accounts #Loveyourbody or #bodypositivity. In popular and social media, *body positivity* involves rejection of unattainable, narrowly defined beauty ideals and messages, and instead promotes the appreciation of a diversity of body types and sizes (Cohen, Irwin, Newton-John & Slater, 2019; Cwynar-Horta, 2016; Tylka & Wood-Barcalow, 2015).

Of course, the body positivity movement did not originate on social media and in corporate advertisements. Rather, it began long before that, in the 1980s, as a movement among Black women living

in marginalized bodies (see “fat positivity” and “radical positivity”; Darwin & Miller, 2021). Today’s more conventional body positivity is derived from these roots. Driven in part by social privilege and corporate interests, mainstream body positivity has come to represent women who are mostly white and still relatively thin (Miller, 2016). For these reasons, it is important to explicitly acknowledge that the approach and methodology we use in the present work may not capture the more radical (and original) aspects of the body positivity movement, and instead reflect the migration of body positivity into the mainstream. Alongside these social movements, researchers have begun to evaluate the effects of body positive messages on body image outcomes. Although body image itself is relatively stable (Tiggemann, 2004) – with positive body image referring to a general mindset that allows for self-appreciation and the ability to reject the internalization of body expectations (Tylka & Wood-Barcalow, 2015), and negative body image denoting near-constant appearance-related dissatisfaction (Thompson & Heinberg, 1999) – image-related concern can nonetheless fluctuate based on situational exposure (Cash, Fleming, Alindogan, Steadman & Whitehead, 2002). Most research evaluating differences in state body image as a result of positivity messaging is encouraging, suggesting that body acceptance messaging produces more body satisfaction than the promotion of thinness (e.g., Cohen, Fardouly, Newton-John & Slater, 2019; Diedrichs & Lee, 2011; Tiggemann, Anderberg, & Brown, 2020). For instance, Cohen and colleagues (2019) recently examined women’s body satisfaction after exposure to Instagram accounts depicting body positivity, thinness idealization, and neutral controls (e.g., pictures of houseplants). They found that exposure to body positive posts – which encouraged women to accept their bodies at any size – produced more body satisfaction and body appreciation relative to the thin ideal.

1.1.1. Is body positivity always positive?

The burgeoning area of research on body positivity underscores the importance of body positive messaging as a whole; however, it does not distinguish between types of body positive messaging. Rather, researchers often compare a single body positive message centered on body acceptance to a comparison message, or else combine myriad messages (for example, by pulling different pro-body messages from Instagram) into an overall positivity condition without evaluating differences in content (e.g., Cohen et al., 2019). This practice prevents a clear understanding of the impact of different forms of body positive communication. For example, Tiggemann and colleagues (2020) found that although photographs of averaged sized bodies elicited more positive body image than images depicting thinness, the body positive slogans attached to the image had no additional effect on body image. However, because they combined various body positivity captions into a single body positivity variable rather than comparing different types of positive captions, it is unknown whether some body positivity captions were more beneficial than were others. Indeed, it may be the case that not all body positivity is helpful. Cohen and colleagues (2019) also showed that body-focused messaging, even if positive, produces more self-objectification than neutral non-body messaging. Relatedly, Betz and Ramsey (2017) found that although general body acceptance messages are helpful in boosting a positive body image, messages that promote a specific ideal – even if it’s a non-thin ideal (e.g., muscular or curvy) – can feel prescriptive and objectifying (see also Betz, Sabik, & Ramsey, 2019). Thus, there is a need to understand what kinds of body positive communications should (and should not) be used to promote positive body image and self-esteem.

We suggest here that when body positivity is forced or feels controlling, it can thwart feelings of agency and autonomy and therefore backfire. Research suggests that the pursuit of positive affect can be detrimental when it stifles and diminishes important negative feelings (Ford & Mauss, 2014). Moreover, placing emphasis

on positivity while ignoring negative feelings and experiences exerts a cost to authenticity and self-integration – or, the need to feel true to (and congruent with) oneself (Hodgins & Knee, 2002; Legault et al., 2017). After all, negative affect is informational and serves to signal when needs are frustrated. Recently, popular psychology has coined the term *toxic positivity* to refer to the expectation that people should experience positive emotions (e.g., satisfaction, gratitude, contentment, joy) and reject negative emotions (e.g., stress, doubt, frustration), which ignores or undermines genuine feelings of distress (e.g., Goodman, 2022). Much like with general ‘toxic positivity’, we suggest that many women experience ‘toxic body positivity’, where they are expected and pressured to show body confidence and acceptance, and failure to achieve body positivity is considered weakness.

To date, research has not yet assessed the impact of *different types* of body positive messaging on body image outcomes. Yet, as others have noted, positive body image and messaging about body acceptance can take a broad range of forms (e.g., Cohen et al., 2019; Tylka & Wood-Barcalow, 2015), and we suggest that some may be perceived as prescriptive by suggesting that an absence of body positivity denotes a personal flaw. It is therefore important to evaluate different body positive messages in a systematic and theory-driven way (e.g., see Cohen, Newton-John, & Slater, 2020). Our goal was to design communications that offer proof of concept that not all body positive messaging is beneficial. More broadly, we aim to offer the first steps toward informing and improving messaging on body positivity.

1.2. Self-determination theory as a foundation for messaging about body positivity

We designed and developed messages promoting body acceptance, using the basic psychological needs framework of Self-Determination Theory (SDT; Ryan & Deci, 2000, 2017). SDT specifies human beings’ innate and universal psychological needs for autonomy, relatedness, and competence. In this work, we focused on the two most well researched needs, which we deemed critical to authentic body positivity – autonomy and relatedness.

Autonomy denotes the need for choice, volition, and self-endorsement in thinking, being, and behavior. When individuals feel autonomous, they feel connected to their innermost values and desires, and experience agency and freedom from pressure. Autonomy underlies optimal motivation as well as psychological and physical health and wellness (Deci & Ryan, 2000; Ryan & Deci, 2000). At a trait level, autonomy links to positive body image and healthful eating behavior (Thøgersen-Ntoumani & Ntoumanis, 2007). The antithesis to autonomy is *control*. People feel controlled when they conform to external expectations while forsaking inner wants and preferences. Because controlled functioning is linked to poor self-esteem (Hodgins, Brown, & Carver, 2007) and ill-being (Vansteenkiste, Zhou, Lens & Soenens, 2005), we wondered whether the use of control to pressure women to accept their bodies would undercut positive body image in the moment. Much like the concept of toxic positivity, we suggest that pressure to be body positive urges women to feel positively about their bodies while stifling dissatisfaction – with the implication that one is at fault for failing to achieve body satisfaction.

Thus, in this research we test the basic difference between autonomy-supportive vs. controlling messages about body acceptance. We ask whether autonomous body acceptance can be activated in the moment to strengthen state self-evaluation, and in contrast, whether the common narrative that *directs* women to accept and be happy with their bodies may feel controlling and therefore fail to elicit positive body image. Because individuals are invariably influenced by the autonomy-supportive versus controlling aspects of their social environment (including peers, parents, teachers,

governments, societies, and media), messages have the capacity to bolster or thwart feelings of autonomy. That is, messages can empower people to be autonomous and authentic actors by emphasizing decision-making agency, choice, and cultivating inner resources, or they can coerce people toward a prescribed ideal using forceful tactics and pressuring language (Legault, Gutsell, & Inzlicht, 2011; Vansteenkiste, Ryan, & Soenens, 2020). We further suggest that, because the autonomy-support versus control framework underlies a broad subset of communication styles (Legate, Nguyen, Weinstein, Moller, & Legault, 2021; Legault, Gutsell, & Inzlicht, 2011; Vansteenkiste, Simons, Lens, Soenens & Matos, 2005; Weinstein, Vansteenkiste, & Paulmann, 2020), they are a useful platform from which to also understand body positive education more broadly.

When targeting body acceptance, the other relevant psychological need is *relatedness/acceptance* – that is, the need to feel cared for and to be understood and accepted authentically and unconditionally (Deci & Ryan, 2000; Ryan, 1995). Indeed, human beings have a fundamental need to belong and to be accepted by others (Baumeister & Leary, 1995), and satisfaction of this need for acceptance is related to a wide range of positive outcomes, including self-esteem (Heppner, Kernis, Nezelek, Foster, Lakey & Goldman, 2008), self-regulation (Niemic, & Ryan, 2009), and wellbeing (Deci & Ryan, 2000; Ryan & Deci, 2000). Applied to body acceptance, research suggests that individuals' belief that other people accept their appearance is critical to a positive body image (Avalos & Tylka, 2006; Tylka & Wood-Barcalow, 2015). Here, we offer a first experimental test of the momentary impact of a message conveying that others accept one's body. Given the importance of other people's acceptance of one's body, strategies for how to promote this perception are critical.

1.2.1. Targeting control, autonomy, and relatedness in body positive messaging

We adapt SDT to create body positive messaging that either uses control to direct women to feel body positive, or supports basic psychological needs by targeting autonomous body acceptance or body acceptance from others. Although past research suggests that most body positive content on social media aligns with theoretical definitions of positive body image (Cohen et al., 2019), there is also evidence to suggest that a substantial portion of body positive messages contain contradictory content emphasizing conditional body acceptance (Lazuka, Wick, Keel, P& Harriger, 2020). Thus there remains a need to understand whether body positivity can be classified into different types, with differing effects.

We aim to create a generative platform from which to develop more responsible and informed messaging about body acceptance, as well as to caution against controlling or toxic body positivity. We suggest that controlling body positivity messaging is problematic or even counterproductive because it increases feelings of pressure to accept one's body, as though it is something one *should* do in order to be fully functioning or happy. In contrast, autonomous body acceptance messaging should encourage genuine ownership and agency in accepting oneself and one's body (i.e., something one *wants* to do), regardless of shape or size or appearance. Thus, while the goal object in both cases is body acceptance, the underlying motivation is experienced as either controlled and pressured or freely self-driven. Similarly, while the objective and framing of each type of message focuses on body positivity and acceptance, the language and communication style is either controlling or autonomy-supportive. Finally, we theorized that messages about self- and body acceptance that satisfy the need for relatedness by promoting acceptance from others should facilitate positive state body image and self-esteem, in much the same way as the autonomy-inducing message, since both messages are expected to nurture

psychological needs. Thus, we compared need-undermining messages (i.e., controlling body positivity and traditional thinness expectations) to need-satisfying ones (i.e., autonomy and acceptance) and measured their impact on a range of negative and positive state-based body image outcomes.

2. The present studies

In order to emulate individuals' daily experiences of receiving multiple messages at a given time or setting, we used repeated measures designs in Experiments 1, 2, and 4 to expose all participants to all messages. In Experiment 3, we used a between groups design to compare messages across groups. Thus, in four experiments, we tested the effects of four messages (i.e., thinness idealization, controlling body positivity, autonomy support, and acceptance from others) on key outcomes related to the specific message: 1) feelings of pressure to be thin; 2) feelings of pressure to be body positive; 3) body empowerment; 4) feeling one's body is accepted by others; and 5) general ratings of how the message makes participants feel about themselves and their bodies (labelled 'self-perceptions in relation to the message' in the following results sections). In Experiments 2–4, we also included a broader state measure of self-esteem, to move beyond message-specific outcomes. We thus measured self-esteem at baseline, and after exposure to each message. In Experiment 4, we integrated objectification theory (Fredrickson, & Roberts, 1997) and assessed changes in objectified body consciousness, including state body shame and body surveillance, at baseline and after exposure to each message. Across studies, we expected the need-supportive body acceptance messages to elicit more positive and less negative body image outcomes than the need-undermining messages (i.e., controlling body acceptance message and the thin idealization message), and for the need-supportive messages to increase self-esteem and reduce body consciousness relative to the need-undermining messages. We also examined whether the effects of need-supportive messaging on self-esteem and body consciousness could be attributable to implications of the message itself. Thus, we examined the mediating role of message-related self-perceptions in the link between message type and self-esteem (Experiment 3), and the mediating role of message-induced body perceptions in the link between message type and body consciousness (Experiment 4).

3. Experiment 1: Assessing the impact of divergent body acceptance messages

Experiment 1 tested the validity of the new messages by verifying that they each targeted relevant body-related evaluations and perceptions. In particular, we expected the thin idealization message to target pressure to be thin; the controlling body positivity message to target pressure to be body positive; the autonomy supportive message to target autonomous body acceptance; and the acceptance from others message to target the perceptions that others accept one's body. Importantly, we also expected the need-supportive messages to produce more positive overall self- and body-evaluation than the need-undermining messages.

3.1. Method

3.1.1. Development of messaging stimuli

Messages were developed over approximately 24 sessions during the course of one year. We leveraged expert opinion on how to apply principles of autonomy, control, and relatedness to message content as well as conducted several small focus groups to clarify message content and semantics. We then pilot tested the first draft of

messages (N = 127) to detect problems with message crafting. Initial draft messages were randomly assigned to respondents. Based on this initial analysis, we again edited message semantics to more clearly communicate the target motivational construct, correct for message content overlap, and control for other systematic variance between messages that was not related to the desired content – in particular, we made the decision to keep the visual imagery constant across the messages. Thus, we controlled for visual content across the body positivity messages by using the same simple image of an average-sized model where only the motivational slogans differed. We reasoned that an average sized model was necessary to promote the narrative of body positivity at any size (rather than a typically thin model), but also to contextualize and orient the slogans toward the concept of body acceptance in general, and non-thin body acceptance in particular (although we also should acknowledge that this mainstream view of “average” does not capture more marginalized body sizes). For the thin ideal message, we used a similarly attractive and identically clothed but thin model. Although this attractiveness comparison was not verified through extensive pilot testing, it was agreed upon by the current authors and a team of undergraduate research students.

The thinness idealization message was borrowed from popular narratives that beauty is defined by a thin body. The message used a thin model and emphasized the importance of the thin ideal. The controlling body positivity message urged women to agree to accept their bodies using directive pressure often observed in advertising – emphasizing that women *should* or *must* accept themselves the way they are in order to be happy. Here, personal strength or happiness is made contingent upon attaining self-approval, and an inability to achieve body positivity is seen as a failure. In contrast, the autonomous body acceptance message targeted individual decision-making and agency in choosing to self-accept. That is, we constructed the message to communicate personal freedom, empowerment, and whole self-acceptance, rather than to suggest that self-worth is contingent upon a specific body type. Unlike the pressuring message, this message was crafted to emphasize self-determination in the process of true and unconditional self and body acceptance. We wanted to activate the notion that women have autonomy not just within themselves and their bodies, but also in their right to appreciate, value, and admire themselves regardless of society’s beauty standards. Finally, we designed the acceptance from others message to evoke women’s feelings of validation and support from others who accept their bodies as they are – which is a critical aspect of positive body image (Tylka & Wood-Barcalow, 2015). Although all messages used body-focused imagery, the need-supportive messages were designed to be more holistic or unconditional than the need-undermining messages. This decision reflects the importance of self-integration and whole-self-acceptance espoused by SDT (e.g., Hodgins & Knee, 2002). Thus, the need-supportive messages target body acceptance as an integrated piece of self-acceptance. We present finalized messages in Fig. 1.

3.1.2. Sample size, participants, procedure, and design

Although research contrasting body positive messaging is as yet uncommon, effects of mainstream media messages on body-related concerns range considerably in magnitude (e.g., $d = 1.25$; Yamamiya, Cash, Melnyk, Posavac & Posavac, 2005; $d = 0.22$ Barlett, Vowels, & Saucier, 2008). Because we used a repeated measures design, we expected our effects to be somewhat larger than they would in a typical between groups designs – because individual-level noise is held constant. We conducted an a priori power calculation (i.e., power = 0.95) specifying a medium expected effect size ($d = 0.60$; Cohen, 1988) at $\alpha = 0.05$ for a single group fully repeated measures design with an expected correlation of $r = 0.70$ across measures. The

power analysis suggested that a sample size of $N = 50$ would be sufficient to detect moderate effects. We collected data from 100 undergraduate women from a small university in the Northeastern United States who completed the experiment online in their own time in the Spring of 2018 for partial course credit. In all studies here, participants were invited to complete a survey on their “reactions to body-related media”. We exposed all participants to all four messages in randomized order. Thus, we asked all participants to consider four different body-related messages (thin idealization, controlling body positivity, autonomous body acceptance, and acceptance from others), and recorded five message-related outcomes (described next). Participants viewed each message once, and could not move backwards through the message stimuli to view a previous message. Participants were prompted to consider each message carefully, and could control how long they spent on each message. To assess the possibility of cross-message contamination, we analyzed message order effects on each dependent variable. Results suggested that even though participants were exposed to each message condition, message order did not impact body image related outcomes (F values ranged from .00 to 1.90 and p values ranged from .170 to .999). Participants’ age ranged from 18 to 24 years (Mean = 18.81 years; SD = 1.15 years), and most were white (79% white; 6% Latine; 4% Black; 3% Biracial; 3% East Asian; 2% South Asian, and 1% Native or Indigenous American).

3.1.3. Measures

3.1.3.1. Manipulation checks: Pressure to be thin, pressure to be body positive, empowerment to accept one’s body, and body acceptance by others. In response to each message, we assessed novel and specific message-related responses using single items. These were developed specifically as a way to verify the manipulation of the message by mapping onto the targeted body-related end-states, including: a) perceived pressure to be thin (“To what extent does this message make you feel like you must be thin in order to be appreciated?”); b) pressure to be body positive (“To what extent does this message make you feel like you have to be satisfied with your body in order to be happy?”); c) body empowerment (“To what extent does this message empower you to accept your body as it is?”); and d) feeling body-accepted (“To what extent does this message make you feel like other people will accept your body’s imperfections?”). These checks were critical to ensure that each message stimulated body-specific acceptance, rather than some other related process. Each item used a 5 point scale ranging from 1 (not at all) to 5 (completely), and each was measured in response to each message (i.e., four times).

3.1.3.2. Self-perceptions in relation to the message. For a more general test of message-induced self-acceptance, we designed three items to target self-evaluation in direct response to the message (i.e., “This image makes me feel good about myself”; “This message reminds me that I am great just the way I am”; “This image makes me feel good about my uniqueness”). Items used a scale from 1 (disagree completely) to 7 (agree completely). Reliability was high within each trial (Cronbach α ranged from .90 to .94). We also measured body satisfaction in direct response to the message using a single item (i.e., “This image makes me feel good about my body”). These two measures were used to reveal differences in both broadly construed self-perceptions and body-specific evaluations in reaction to the message.

3.2. Results and discussion

All data are stored on the Open Science Framework [here](#). We did not detect any outliers and because responses were required after each message, there were no missing data. We conducted a one-way



Fig. 1. Experimental Messages Targeting Body Acceptance and Thinness Idealization.

repeated measures multivariate analysis of variance comparing feelings of pressure, empowerment, acceptance, and overall self- and body-evaluation in response to each message.¹ We present descriptive statistics for each outcome in Table 1. There was a large

¹ We also ran this analysis controlling for body mass index (BMI), which is expected to be related to body image. We combined the data from Experiments 1 and 2 for this purpose because these first 6 outcomes and BMI were measured in both experiments. BMI did not significantly predict message-related responses, $F(6, 139) = 1.99, p = .07$, partial $\eta^2 = .079$, and the multivariate effect of the interaction between BMI and message type was not significant ($F < 1$). This suggests BMI did not systematically affect reactions to different messages. We did not record BMI in Experiments 3 or 4.

multivariate effect, $F(18, 81) = 28.221, p < .0001$; Wilk's $\Lambda = 0.138$, partial $\eta^2 = .862$. In addition, all univariate effects were large and significant, including perceived pressure to be thin [$F(1,99) = 166.928, p < .0001$, partial $\eta^2 = .628$]; perceived pressure to be body positive [$F(1,99) = 38.654, p < .0001$, partial $\eta^2 = .283$]; feelings of body empowerment [$F(1,99) = 79.321, p < .0001$, partial $\eta^2 = .447$]; feeling body accepted [$F(1,99) = 74.325, p < .0001$, partial $\eta^2 = .431$]; self-evaluation in response to the message [$F(1,99) = 75.754, p < 0.0001$, partial $\eta^2 = .436$]; and body satisfaction in response to the message [$F(1,99) = 61.678, p < .0001$, partial $\eta^2 = .386$].

Table 1
Means and SDs for Each Outcome for Each Message (Experiments 1–4).

Outcome	Message	Mean (SD)			
		Study 1	Study 2	Study 3	Study 4
Pressure to be Thin	<i>Thin Ideal</i>	4.04 (1.03)	3.96 (1.23)	3.99 (1.24)	
	<i>Controlling</i>	2.09 (1.18)	2.22 (1.31)	1.72 (1.07)	
	<i>Autonomy</i>	1.63 (0.88)	1.68 (1.04)	1.72 (0.97)	
	<i>Others</i>	1.67 (0.86)	1.48 (0.74)	1.50 (0.90)	
Body Empowerment	<i>Thin Ideal</i>	1.94 (1.11)	1.46 (0.84)	1.65 (1.20)	
	<i>Controlling</i>	3.18 (1.31)	2.98 (1.35)	2.88 (1.20)	
	<i>Autonomy</i>	3.88 (0.98)	3.70 (1.18)	3.54 (1.19)	
	<i>Others</i>	3.77 (0.94)	3.88 (1.06)	3.63 (1.17)	
Feelings of Body Acceptance	<i>Thin Ideal</i>	1.80 (1.05)	1.48 (0.76)	1.65 (0.98)	
	<i>Controlling</i>	2.75 (1.10)	2.60 (1.16)	2.37 (1.18)	
	<i>Autonomy</i>	3.22 (1.06)	2.96 (1.09)	2.85 (1.13)	
	<i>Others</i>	3.77 (0.96)	3.80 (1.12)	3.69 (1.14)	
Pressure to be Body Positive	<i>Thin Ideal</i>	3.71 (1.36)	3.74 (1.19)	2.53 (0.91)	2.72 (0.81)
	<i>Controlling</i>	4.04 (1.24)	4.02 (1.35)	3.89 (0.89)	3.81 (0.86)
	<i>Autonomy</i>	2.75 (1.26)	2.88 (1.19)	2.99 (0.97)	3.30 (1.16)
	<i>Others</i>	2.57 (1.01)	2.52 (1.04)	2.81 (0.93)	2.86 (0.92)
Message-Related Self-Evaluation	<i>Thin Ideal</i>	2.65 (1.45)	2.42 (1.24)	2.15 (1.46)	2.48 (1.46)
	<i>Controlling</i>	4.12 (1.41)	3.59 (1.44)	3.38 (1.63)	3.99 (1.50)
	<i>Autonomy</i>	4.89 (1.33)	4.66 (1.28)	4.39 (1.51)	5.14 (1.24)
	<i>Others</i>	4.79 (1.24)	4.90 (1.26)	4.49 (1.54)	5.10 (1.19)
Message-Related Body Satisfaction	<i>Thin Ideal</i>	2.68 (1.55)	2.16 (1.25)	2.12 (1.43)	2.35 (1.47)
	<i>Controlling</i>	4.15 (1.53)	3.56 (1.47)	3.35 (1.75)	3.80 (1.61)
	<i>Autonomy</i>	4.78 (1.41)	4.44 (1.33)	4.20 (1.63)	4.80 (1.37)
	<i>Others</i>	4.74 (1.25)	4.48 (1.42)	4.28 (1.58)	4.73 (1.33)
Change in State Self-Esteem from Baseline	<i>Thin Ideal</i>		-0.05 (0.35)	-0.21 (0.47)	-0.16 (0.43)
	<i>Controlling</i>		0.06 (0.34)	-0.07 (0.49)	0.04 (0.41)
	<i>Autonomy</i>		0.14 (0.31)	0.64 (0.64)	0.17 (0.39)
	<i>Others</i>		0.15 (0.34)	0.69 (0.66)	0.21 (0.41)
Change in State Body Shame from Baseline	<i>Thin Ideal</i>				0.14 (1.03)
	<i>Controlling</i>				-0.42 (1.29)
	<i>Autonomy</i>				-0.98 (1.38)
	<i>Others</i>				-1.03 (1.35)
Change in State Body Surveillance from Baseline	<i>Thin Ideal</i>				0.28 (0.73)
	<i>Controlling</i>				-0.12 (1.01)
	<i>Autonomy</i>				-0.81 (1.21)
	<i>Others</i>				-0.74 (1.24)

Note. Theoretical range for the first four outcomes is 1–5; theoretical range for Self-Evaluation is 1–7; theoretical range for Self-Esteem is 1–4.

3.2.1. Feelings of pressure, empowerment, and acceptance

We investigated planned pairwise comparisons for each outcome using both univariate planned comparisons (to generate effect sizes) and a Bonferroni adjustment to account for multiple comparisons within each DV. Since we were comparing across four messages, there were six possible comparisons to make (i.e., $.05/6 = 0.008$). We present effects as significant when they are less than $p = .008$. See Fig. 2 for each outcome per message type.

Participants experienced the most pressure to be thin when exposed to the thin idealization message – this pressure was significantly higher than for all other messages, including controlling body positivity [$F(1,99) = 166.923, p < .0001, \text{partial } \eta^2 = .628$]; autonomous body acceptance [$F(1,99) = 357.098, p < .0001, \text{partial } \eta^2 = .783$]; and acceptance from others [$F(1,99) = 327.012, p < .0001, \text{partial } \eta^2 = .769$]. More interestingly, when participants viewed the controlling body positivity message, they experienced greater pressure to be thin than when they viewed the autonomous body acceptance message [$F(1,99) = 14.266, p < .0001, \text{partial } \eta^2 = .126$] and the acceptance from others message [$F(1,99) = 14.292, p < .0001, \text{partial } \eta^2 = .127$]. The autonomous body acceptance and acceptance from others messages produced similarly low levels of pressure to be thin [$F(1,99) = 0.176, p = .675, \text{partial } \eta^2 = .002$]. The controlling body positivity message produced the greatest pressure to be body positive – eliciting significantly greater pressure than the autonomous body acceptance message [$F(1,99) = 60.790, p < .0001, \text{partial } \eta^2 = .487$] and the acceptance from others message [$F(1,99) = 93.083, p < .0001, \text{partial } \eta^2 = .318$]. This finding is important because it shows that although both the controlling and autonomy-supportive messages focused on self-acceptance, the controlling message

elicited more pressure to self-accept. Both the autonomy-supportive and the acceptance from others message elicited comparably low levels of pressure to be body positive [$F(1,99) = 2.046, p = .156, \text{partial } \eta^2 = .020$] – and these levels were significantly lower than in the thin idealization condition, $F(1,99) = 28.125, p < .0001, \text{partial } \eta^2 = .221$ (for autonomy support) and $F(1,99) = 45.794, p < .0001, \text{partial } \eta^2 = .318$ (for other acceptance).

The autonomous body acceptance and acceptance from others messages produced the most empowerment to accept one's body, followed by the controlling body positivity and the thin idealization message. That is, autonomous body acceptance elicited more feelings of body empowerment than the controlling message [$F(1,99) = 28.847, p < .0001, \text{partial } \eta^2 = .226$] and the thin ideal message [$F(1,99) = 205.129, p < .0001, \text{partial } \eta^2 = .674$]. And the same pattern unfolded for the acceptance from others message, $F(1,99) = 14.865, p < .0001, \text{partial } \eta^2 = .132$ (vs. controlling message); $F(1,99) = 157.366, p < .0001, \text{partial } \eta^2 = .616$ (vs. thin ideal message). Autonomous body acceptance and acceptance from others were not different from one another, $F(1,99) = 1.053, p = .307, \text{partial } \eta^2 = .011$. Participants felt less empowered to accept their bodies after viewing the thin idealization message compared to the controlling message, $F(1,99) = 56.714, p < .0001, \text{partial } \eta^2 = .364$.

Not surprisingly, participants felt their bodies were most accepted by others after exposure to the acceptance from others message, followed by the autonomous body acceptance message, then the controlling body positivity message, and finally the thin idealization message. Specifically, acceptance from others produced more feelings of acceptance than the autonomy message [$F(1,99) = 18.678, p < .0001, \text{partial } \eta^2 = .160$], the controlling message [F

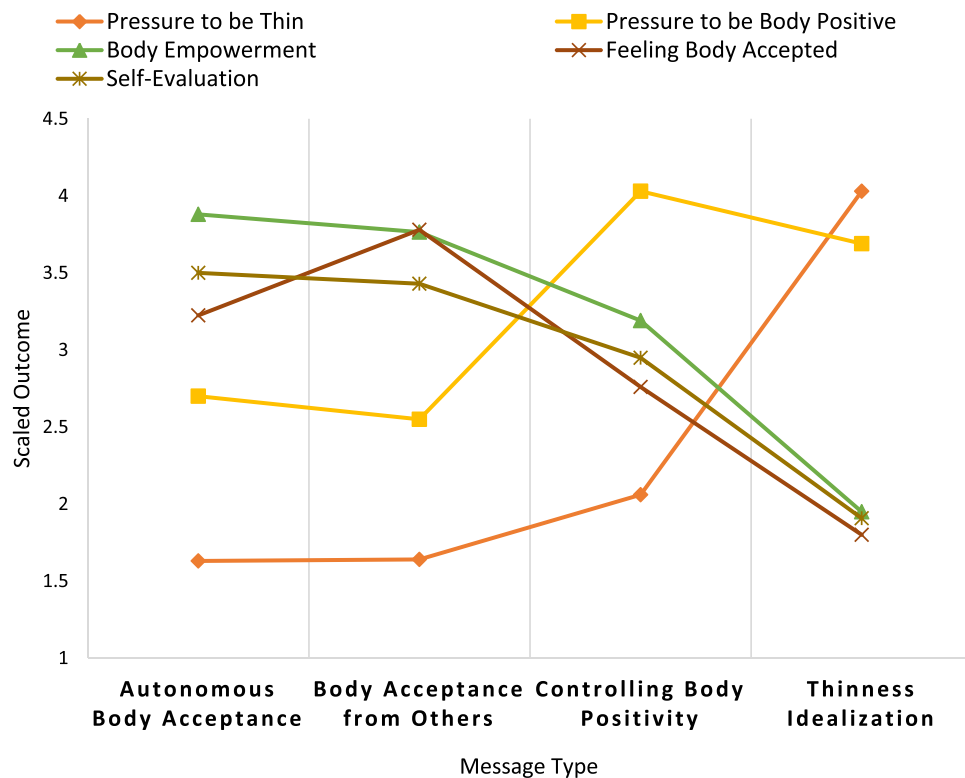


Fig. 2. Differences in Body Image Outcomes as a Function of Message Type (Experiment 1).

(1,99) = 54.302, $p < .0001$, partial $\eta^2 = .357$], and the thin ideal message [F (1,99) = 187.353, $p < .0001$, partial $\eta^2 = .657$]. The autonomy message elicited greater acceptance than the controlling message [F (1,99) = 14.886, $p < .0001$, partial $\eta^2 = .131$] and the thin ideal message [F (1,99) = 99.310, $p < .0001$, partial $\eta^2 = .501$]. And the controlling message generated more acceptance than the thin ideal message, [F (1,99) = 41.727, $p < .0001$, partial $\eta^2 = .297$].

3.2.2. Message-related self- and body-perceptions

Participants' self-evaluation in relation to the message was equally high in the autonomous body acceptance and acceptance from others conditions ($F < 1$, $p = .462$). Autonomous body acceptance produced higher self-evaluation than did controlling body positivity [F (1,99) = 26.970, $p < .0001$, partial $\eta^2 = .214$] and thin idealization [F (1,99) = 190.276, $p < .0001$, partial $\eta^2 = .658$]. Similarly, acceptance from others elicited more positive self-evaluation than did controlling positivity [F (1,99) = 13.532, $p < .0001$, partial $\eta^2 = .121$] and thin idealization [F (1,99) = 133.889, $p < .0001$, partial $\eta^2 = .577$]. Self-evaluation was lower in the thin ideal condition than in the controlling condition, $F (1,99) = 64.332$, $p < .0001$, partial $\eta^2 = .394$. For message-induced body satisfaction, the autonomy supportive message elicited higher body satisfaction than did the controlling message [F (1,99) = 12.704, $p = .001$, partial $\eta^2 = .114$] and thin idealization [F (1,99) = 146.002, $p < .0001$, partial $\eta^2 = .596$]. Similarly, acceptance from others elicited more body satisfaction than did controlling body positivity [F (1,99) = 10.341, $p = .002$, partial $\eta^2 = .095$] and thinness idealization [F (1,99) = 125.736, $p < .0001$, partial $\eta^2 = .562$]. Finally, body satisfaction was lower in the thin ideal condition than in the controlling condition, $F (1,99) = 53.899$, $p < .0001$, partial $\eta^2 = .353$.

Results of Experiment 1 showed that the need-supportive versus need-undermining messages targeted body evaluations in different ways. That is, the autonomy supportive and acceptance from others messages produced similar effects on most outcomes, including more empowerment to accept one's body and higher perceptions

that others will accept one's body, relative to the controlling and thinness messages. Instead, controlling body positivity most strongly predicted pressure to be body positive; whereas, unsurprisingly, thinness idealization produced the most pressure to be thin. Although these preliminary results suggest there is an important distinction between need-supportive and need-undermining body positivity, Experiment 1 did not use any previously validated state measures to address body image related outcomes. We address this in Experiment 2.

4. Experiment 2: Impact on state self-esteem

Experiment 2 extended Experiment 1 in two ways. First, we sought to validate Experiment 1 using a cross-national sample. Thus, while Experiment 1 used a sample of undergraduate American women with a mean age between 18 and 19 years, Experiment 2 used an online participant pool in the UK to capture greater age variance (within the 18–30 year range) and also to offer some degree of cross-national generalization of message differences. Secondly, we also measured the impact of each message on *changes in state self-esteem*. Thus, rather than simply assessing differences in explicit reactions to the messages as in Experiment 1, Experiment 2 moved beyond message-specific outcomes to ascertain whether the different messages would affect changes in self-evaluation more broadly. For this reason, we measured state self-esteem before exposure to any messages, and then again after each message.

4.1. Method

4.1.1. Sample size, participants, procedure, and design

For our power analysis, we used the average effect size from Experiment 1 ($d = 0.60$). Results suggested a single group repeated measures design (power = 0.95; $\alpha = 0.05$) would require a sample size of $N = 50$ participants. Using the Prolific Academic platform, we collected data from 52 British women aged 18–30 years

(Mean = 23.875 years; SD = 3.443 years) during the summer of 2018. Most were white (73% white; 8% South Asian; 4% Black; 4% Biracial; 4% East Asian; and 7% did not respond). We again used a fully repeated measures design to expose all participants to all messages in counterbalanced order. In addition to measuring state self-esteem at baseline and after each message, we retained all original variables from Experiment 1 – including pressure to be thin, pressure to be body positive, empowerment to accept one's body, feeling that others will accept one's body, and message related self and body perceptions.

4.1.2. Messaging stimuli and outcome measures

All stimuli and outcome measures were the same as in Experiment 1 except for the addition of state self-esteem adapted from Heatherton and Polivy (1991), Rosenberg (1965), and Robins, Hendin, & Trzesniewski, 2001. From those measures, we used the seven items that were most relevant to the current stimuli, including “Right now, I feel like I'm no good at all”; “I feel like I'm a failure right now” and; “Right now I feel that I am a person of worth, at least on an equal basis as others” (reversed-scored). Items relating to task performance, e.g., “I feel concerned about my performance right now” were not used because they were not relevant to the present study. Participants rated items on a scale from 1 (Strongly Disagree) to 4 (Strongly Agree). We administered this scale before we presented any of the messages, and then after each (counterbalanced) message. Internal consistency for the self-esteem measure within each condition was good (alphas ranged from .873 to .906).

4.2. Results and discussion

4.2.1. Direct replication of Experiment 1

Once again there were no outliers. There were however some missing data points. These were few and judged to be missing at random, resulting in a loss of two cases. We again compared feelings of pressure, empowerment, acceptance, and self-perceptions in response to each message using a repeated measures MANOVA. Results for the first six outcomes replicated the findings from Experiment 1, with all expected effects being large, significant, and in the expected direction (see Table 1 again for descriptive statistics). Because the multivariate, univariate, and pairwise effects were extremely similar (and similarly robust) to those found in Experiment 1, we include them in the OSF [supplemental material](#).

4.2.2. Changes in state self-esteem

To measure changes in self-esteem, we conducted a one-way repeated measures ANOVA on state self-esteem as measured at five time points – before message exposure and directly after each message (presented in counterbalanced order).² Our goal was to compare baseline self-esteem to state self-esteem after each message. Changes in self-esteem relative to baseline are presented in Fig. 3.

The overall repeated measures ANOVA was significant [$F(1,49) = 17.367$, $p < .0001$, partial $\eta^2 = .258$], suggesting self-esteem changed as a result of message exposure. We inspected comparisons to baseline using a univariate approach as well as a Bonferroni correction for multiple comparisons (i.e., four comparisons to baseline

resulting in $p = .012$). Results revealed that baseline self-esteem did not change after exposure to the thin ideal message [$F(1,49) = 0.966$, $p = .330$, partial $\eta^2 = .019$], nor the controlling body positivity message [$F(1,49) = 1.716$, $p = .196$, partial $\eta^2 = .033$]. However, self-esteem increased from baseline after viewing the autonomous body acceptance message [$F(1,49) = 10.293$, $p = .002$, partial $\eta^2 = .165$] and after viewing the acceptance from others message [$F(1,49) = 10.253$, $p = .002$, partial $\eta^2 = .170$].

In sum, Experiment 2 replicated the message-related effects on body perceptions observed in Experiment 1 and also showed that need-supportive body positivity increases state self-esteem, whereas need-undermining body positivity does not.

5. Experiment 3: A validation using independent groups

Given the within-person effects in Experiments 1 and 2, we wondered whether different pro-body messages would elicit differences in body image outcomes *between* groups of participants. We therefore replicated the same protocol as Experiment 2, but used an independent groups design – in order to circumvent any demand characteristics associated with viewing all messages. In addition, we also tested whether message-related self-perceptions might account for any message effects on self-esteem.

5.1. Method

5.1.1. Sample size, participants, procedure, and design

We conducted a power calculation specifying a smaller effect size (Cohen's $d = 0.40$; Cohen, 1988) than in Experiments 1 and 2, due to the nature of the independent groups design. We ascertained that $N = 360$ ($\alpha = 0.05$; power = 0.90) would be required to detect a small to medium effect across four independent groups. Data were collected from 420 American women in the summer of 2020 using the online platform Prolific.co. However, 19 of these participants started but did not finish the experiment, resulting in 401 complete cases.

Participants' age ranged from 18 to 32 years ($M = 24.230$; $SD = 3.789$), and the sample was much more representative of the general American population. That is, half the respondents were white, 12% were East Asian, 11% were Black, 10% were Latine, 4% were South Asian, 3% were biracial, 1% were Native American or Indigenous, less than 1% were mid-Eastern, and 5% chose not to report on their ethnocultural background. Participants first completed a baseline measure of state self-esteem and then messages were randomized across participants before they completed various outcome measures. The experiment took about 8 min to complete and participants were each compensated \$2.00USD.

5.1.2. Messaging stimuli and outcome measures

All stimuli and outcome measures were the same as in Experiment 2, except that we expanded the pressure to be body positive measure to four items, both to further develop the emerging construct and to calculate its measurement reliability. This measure included the following items: “To what extent does this message make you feel like you HAVE TO be satisfied with your body in order to be happy?”; “To what extent does this message make you feel like you are supposed to be satisfied with how you look?”; “To what extent does this message make you feel like you should not complain about how you look?”; and “To what extent does this message make you feel like you don't have the right to be unhappy with your appearance?”. Internal consistency was $\alpha = 0.814$ and an exploratory factor analysis with direct oblimin rotation suggested all items loaded onto a single factor explaining 64.44% of total item variance. Individual items' factor loadings ranged from .718 to .835, demonstrating good measurement structure. As before, internal consistency was excellent for the message-based self-evaluation

² We also ran the self-esteem analysis controlling for BMI. Not surprisingly, BMI was robustly and negatively linked to self-esteem overall, across messages, $F(1,46) = 14.896$, $p < .001$, partial $\eta^2 = .245$. However, it did not interact with message type in affecting self-esteem, $F(4,43) = 1.864$, $\Lambda = 0.852$, $p = .134$. More importantly, the overall pattern of pairwise message comparisons did not change. We also looked at the correlations between BMI and each measure of self-esteem after each message and at baseline. BMI was similarly and negatively related to self-esteem across messaging conditions (r s ranged from -0.42 to -0.52). This suggests BMI did not influence the messaging results.

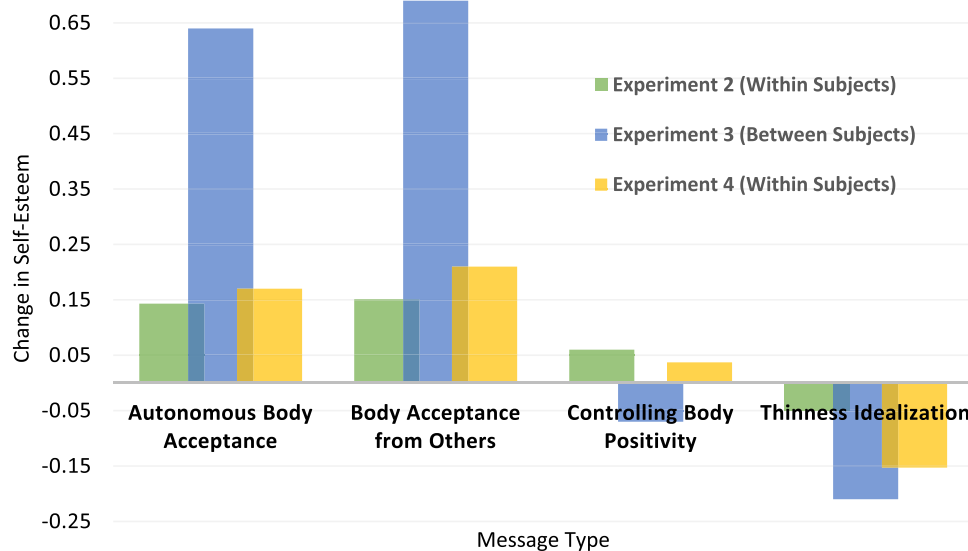


Fig. 3. Changes in Self-Esteem from Baseline to Post-Message (Experiments 2, 3, & 4).

measure ($\alpha = 0.944$). Reliability of the state self-esteem measure was $\alpha = 0.902$ (baseline) and $\alpha = 0.869$ (post-message).

5.2. Results and discussion

5.2.1. Manipulation checks: Feelings of pressure, empowerment, and acceptance

No multivariate outliers were detected, and as previously noted, 19 incomplete cases were omitted from analysis. We again compared feelings of pressure, body empowerment, and body acceptance in response to each message. Scores for all message-related outcomes were assessed in a between-groups MANOVA. Overall, messages elicited large differences in perceived pressure to be thin, $F(3,392) = 127.950$, $p < .0001$, partial $\eta^2 = .495$; pressure to be body positive, $F(3,392) = 40.348$, $p < .0001$, partial $\eta^2 = .236$, feelings of empowerment, $F(3,392) = 59.414$, $p < .0001$, partial $\eta^2 = .313$, and acceptance from others, $F(3,392) = 59.983$, $p < .0001$, partial $\eta^2 = .315$. Analysis of pairwise comparisons revealed that participants exposed to the thin ideal message experienced more pressure to be thin than those in the other conditions [$F(1,199) = 192.918$, $p < .0001$, partial $\eta^2 = .492$ for pressure to be body positive; $F(1,198) = 207.006$, $p < .0001$, partial $\eta^2 = .511$ for autonomous body acceptance; and $F(1,201) = 269.297$, $p < .0001$, partial $\eta^2 = .573$ for acceptance from others]. Those in the controlling body positivity condition experienced more pressure to be body positive than all other conditions [$F(1,199) = 115.662$, $p < .0001$, partial $\eta^2 = .368$ for thinness idealization; $F(1,191) = 45.940$, $p < .0001$, partial $\eta^2 = .194$ for autonomy; and $F(1,194) = 69.382$, $p < .0001$, partial $\eta^2 = .263$ for acceptance from others].

Those exposed to the autonomy message experienced more body empowerment than in the thin ideal condition [$F(1,198) = 124.310$, $p < .0001$, partial $\eta^2 = .386$] and pressure to be body positive condition [$F(1,191) = 14.981$, $p < .0001$, partial $\eta^2 = .073$], but similar levels of empowerment as those exposed to the acceptance from others message ($F < 1$, $p = .663$). Finally, those in the acceptance from others condition perceived more body acceptance than those in the thin ideal [$F(1,201) = 185.759$, $p < .0001$, partial $\eta^2 = .480$], pressure to be body positive [$F(1,194) = 63.304$, $p < .0001$, partial $\eta^2 = .246$], and autonomy supportive conditions [$F(1,193) = 26.168$, $p < .0001$, partial $\eta^2 = .119$].

5.2.2. Self-perceptions in response to the message

Message type had an overall effect on self-evaluation in response to the message, $F(3,392) = 51.202$, $p < .0001$, partial $\eta^2 = .282$, and body satisfaction in relation to the message, $F(3,392) = 39.847$, $p < .0001$, partial $\eta^2 = .234$. Specifically, relative to all other conditions, the thin ideal message made participants feel worse about themselves [compared to pressure to be body positive: $F(1,199) = 31.581$, $p < .0001$, partial $\eta^2 = .137$; compared to autonomy support: $F(1,198) = 113.624$, $p < .0001$, partial $\eta^2 = .365$; and compared to acceptance from others: $F(1,201) = 123.512$, $p < .0001$, partial $\eta^2 = .381$], and their bodies [compared to pressure to be body positive: $F(1,199) = 29.795$, $p < .0001$, partial $\eta^2 = .130$; compared to autonomy support: $F(1,198) = 91.809$, $p < .0001$, partial $\eta^2 = .317$; and compared to acceptance from others: $F(1,201) = 104.221$, $p < .0001$, partial $\eta^2 = .341$]. Relative to the need-supportive messages, those receiving the pressure to be body positive message felt worse about themselves [compared to autonomy support: $F(1,191) = 20.185$, $p < .0001$, partial $\eta^2 = .096$; compared to acceptance from others: $F(1,194) = 24.216$, $p < .0001$, partial $\eta^2 = .111$] and their bodies [compared to autonomy support: $F(1,191) = 12.091$, $p = .001$, partial $\eta^2 = .060$; compared to acceptance from others: $F(1,194) = 15.295$, $p < .0001$, partial $\eta^2 = .073$]. Finally, those exposed to the autonomy and acceptance messages experienced similar levels of self- and body appreciation (both F s < 1).

5.2.3. Changes in state self-esteem

As in Experiment 2, we assessed changes in state self-esteem from pre- to post-message (see Fig. 3). Changes in self-esteem scores were compared across message groups using a mixed factorial ANOVA. Results demonstrated that within-group changes in state self-esteem differed as a function of between-group message type, $F(3,397) = 67.987$, $p < .0001$, partial $\eta^2 = .339$. More specifically, state self-esteem dropped from baseline after viewing the thin idealization message, $F(1,103) = 20.525$, $p < .0001$, partial $\eta^2 = .166$ and stayed the same after viewing the controlling body positivity message, $F(1,97) = 1.793$, $p = .184$, partial $\eta^2 = .018$. In contrast, state self-esteem significantly increased after exposure to the autonomy supportive, $F(1,97) = 96.926$, $p < .0001$, partial $\eta^2 = .500$, and acceptance from others messages, $F(1,100) = 112.864$, $p < .0001$, partial $\eta^2 = .530$. We should also note that post-message self-esteem was lower for participants exposed to the pressure to be body positive message

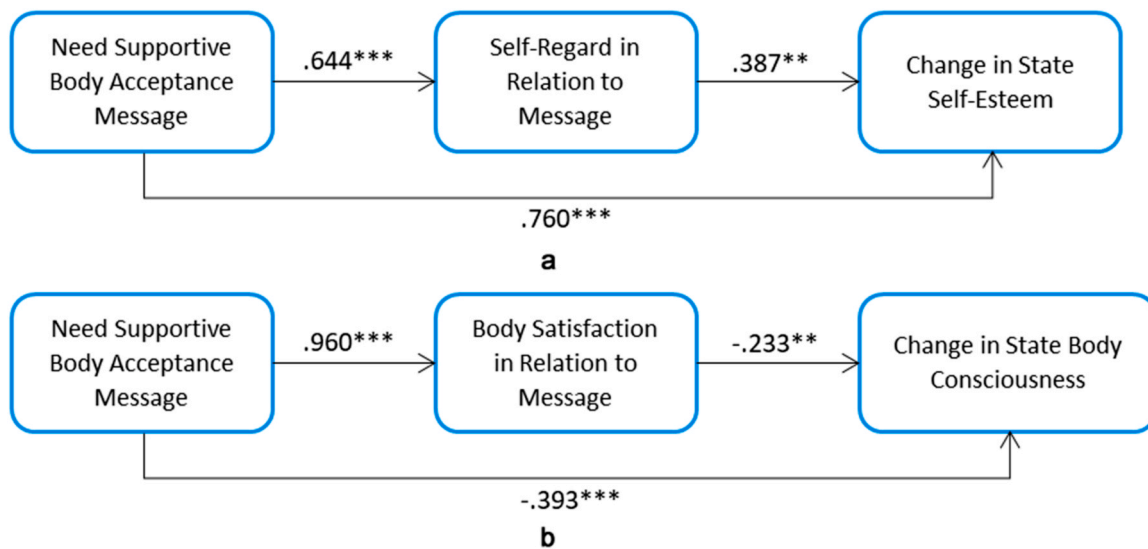


Fig. 4. Message-Based Self-Perceptions Mediate the Effect of Need-Supportive Messages on Self-Esteem and Body Consciousness.

than those in the two need-supportive message conditions (both $p < 0.0001$). These results corroborate findings from Experiment 2, but using a between-groups design and analysis.

5.2.3.1. Does message-related self-evaluation mediate the effect of message type on self-esteem? We examined whether the impact of the message on self-perceptions could explain why state self-esteem changed from baseline. Although it might seem tautological to test the mediating effect of message-based perceptions on self-esteem, in fact it allows us to assert whether the state effects are attributable to the message effects. Thus, whereas the self-evaluation effect is a reaction to the message (This message makes me feel...), the self-esteem effect is a more general state change (I currently feel...). We tested for the mediating effect of message-induced self-evaluation on the link between need-supportive (vs. controlling) messaging and changes in self-esteem from before to after presentation of the message. To increase the rigor of the analysis and to strictly compare the need-supportive versus controlling body positivity messages, we excluded the most harmful thin ideal message condition so as not to inflate message differences. In this way, we could make comparisons between the two types of body positivity messages – one that is controlling and the others that are need-supportive. As shown in Fig. 4a, results using SPSS PROCESS (model 4) on 5000 bootstrap samples revealed that need-supportive messages, when compared to the pressure to be body positive message, increased message-related self-evaluation, $B = 1.059$ ($SE = 0.195$), 95% CI [.676, 1.443], $t(292) = 5.441$, $p < .0001$, which in turn predicted an increase in state self-esteem, $B = 0.161$ ($SE = 0.049$), 95% CI [.065, .256], $t(292) = 3.306$, $p = .001$. Moreover, positive self-evaluation based on the message mediated increases in state self-esteem from baseline to post-message [indirect effect: $B = 0.170$ ($SE = 0.064$), 95% CI [.676, 1.443]. These results help to show that message-related self-perceptions explain why the need-supportive messages boosted self-esteem relative to the controlling body positivity message.

6. Experiment 4: Effects on objectified body consciousness

Girls and women routinely live their lives as sexual objects. Objectification theory (Fredrickson & Roberts, 1997) describes the lived experience of girls and women who are socialized, as a result of this sexual objectification, to adopt an observer's view of themselves. This internalization of observers' perspectives of the body is referred

to as self-objectification, or the chronic surveillance of the body's outward appearance to others (Fredrickson & Roberts, 1997). Objectification research has shown that sexual objectification often links to mental health problems (Moradi & Huang, 2008). In Experiment 4, we extended Experiments 1–3 by examining the effect of messaging on self-objectified body consciousness (i.e., the general tendency to view oneself as an object to be looked at and evaluated by others). In particular, we measured the effect of message type on body surveillance, which entails viewing the body as an outside observer; and body shame, which refers to feelings of shame and embarrassment when the body does not conform to size and form expectations. Although these constructs are usually measured as traits (and link to poor self-esteem, disordered eating, and depression; McKinley & Hyde, 1996; Hyde, Mezulis, & Abramson, 2008), here we use previously validated state measures (Calogero & Jost, 2011; Tiggemann & Andrew, 2012). Thus, using a repeated measures design for a single group of young women, we measured state self-esteem, state body surveillance, and state body shame at baseline, and then again after exposure to each message. This experiment allowed us to examine changes in body objectification specifically, beyond broader changes in state self-esteem. We wondered whether reflecting on the need-satisfying body positive messages would protect against body consciousness (i.e., elicit less body surveillance and body shame), relative to the need-thwarting messages. To complement the mediation analyses in Experiment 3 and also verify that effects on body consciousness are due to message-related perceptions, we also tested whether body satisfaction in response to the message might mediate the effect of message type on objectified body consciousness.

6.1. Method

6.1.1. Sample size, participants, procedure, and design

We used the same power estimation as in Experiments 1 and 2, sampling a total of 52 female undergraduate students in the Northeastern US for partial course credit. Participants' age ranged from 18 to 21 ($M = 18.69$; $SD = 0.99$, and were 76.5% white; 9.6% Latine; 5.8% Black; 3.8% Biracial; 1.9% East Asian and 1.9% Mid-Eastern. Participants completed the experiment in the spring of 2021. Again we used a repeated measures design to expose all participants to all messages and we assessed state self-esteem, and state body consciousness (i.e., shame and surveillance) before

exposure to any messages, and after each message. Messages were presented in counterbalanced order and there were no order effects (p s ranged from .091 to .955 across all main outcomes).

6.1.2. Messaging stimuli and outcome measures

We retained identical messaging stimuli as in Experiments 1–3, but tested effects on 1) the revised pressure to be body positive measure (α ranged from .755 to .778 across conditions); 2) message-related self-perceptions including self-evaluation (α ranged from .897 to .932) and body satisfaction; and changes in state self-esteem (α ranged from .805 to .846). Additionally, we assessed state body shame adapted from Calogero and Jost (2011) and state body surveillance adapted from Tiggemann and Andrew (2012). Our body shame items included: “At the moment, I feel ashamed because I’m not the size I should be;” “At the moment, I feel bad about my weight;” “Right now, I feel like I should be trying harder to look my best;” and “Right now, I feel like something is wrong with my body” (4 items; α ranged from .908 to .940 across conditions). Our body surveillance items included: “Right now, I am thinking about how I look” and; “At the moment, I feel self-conscious about my body” (2 items; α ranged from .716 to .816 across conditions).

6.2. Results and discussion

No outliers were detected and missing data points were few and random (resulting in elimination of one to two cases, depending on which outcomes were analyzed). Once again, a repeated measures MANOVA showed a multivariate effect of message type on pressure to be body positive, and message-related self-evaluation and body satisfaction, $F(9,42) = 19.497$, $p < .0001$; Wilk’s $\Lambda = 0.193$, partial $\eta^2 = .807$. A second repeated measures MANOVA showed a multivariate effect of message type on changes in state self-esteem, body shame, and body surveillance, $F(12,37) = 4.384$, $p < .0001$; Wilk’s $\Lambda = 0.413$, partial $\eta^2 = .587$.

6.2.1. Pressure to be body positive

We observed an overall univariate effect of message type on pressure to be body positive, $F(1,50) = 17.781$, $p < .0001$, partial $\eta^2 = .262$. Analysis of planned comparisons showed that the controlling body positivity message produced the most pressure to be body positive – more so than the thin ideal message, $F(1,51) = 51.655$, $p < .0001$, partial $\eta^2 = .503$; the autonomy supportive message, $F(1,51) = 8.775$, $p = .005$, partial $\eta^2 = .262$; and the acceptance from others message, $F(1,50) = 36.179$, $p < .0001$, partial $\eta^2 = .420$.

6.2.2. Message-related self-perceptions

Message type exerted a large overall effect on self-evaluation in response to the message, $F(1,50) = 73.315$, $p < .0001$, partial $\eta^2 = .595$. Specifically, self-evaluation was highest in the autonomy-supportive and acceptance from others conditions (and these were not different from each other, $F < 1$, $p = .847$, partial $\eta^2 = .001$). That is, the autonomy supportive message produced higher self-evaluation than did thinness idealization, $F(1,51) = 123.693$, $p < .0001$, partial $\eta^2 = .708$; and controlling body positivity, $F(1,51) = 33.984$, $p < .0001$, partial $\eta^2 = .400$. Similarly, acceptance from others elicited more positive self-evaluation than did thinness idealization, $F(1,50) = 144.626$, $p < .0001$, partial $\eta^2 = .743$, or controlling body positivity, $F(1,50) = 36.397$, $p < .0001$, partial $\eta^2 = .421$. Finally, self-evaluation was lower in the thin ideal condition than in the controlling body positivity condition, $F(1,51) = 43.325$, $p < .0001$, partial $\eta^2 = .459$. For body satisfaction in relation to the message, there was again a large overall effect of message type, $F(1,51) = 52.021$, $p < .0001$, partial $\eta^2 = .510$. Pairwise comparisons showed that body satisfaction was highest in response to the autonomy supportive and acceptance from others messages – and these were not different from each

other, $F < 1$, $p = .678$, partial $\eta^2 = .003$. Specifically, the autonomy supportive message produced higher body satisfaction than did thinness idealization, $F(1,51) = 90.936$, $p < .0001$, partial $\eta^2 = .641$; and controlling body positivity, $F(1,51) = 25.772$, $p < .0001$, partial $\eta^2 = .336$. Similarly, acceptance from others elicited more body satisfaction than did thinness idealization, $F(1,50) = 102.585$, $p < .0001$, partial $\eta^2 = 0.672$, or controlling positivity, $F(1,50) = 20.887$, $p < .0001$, partial $\eta^2 = .295$. Finally, body satisfaction was lower in the thin ideal condition than in the controlling body positivity condition, $F(1,51) = 31.100$, $p < .0001$, partial $\eta^2 = .379$.

6.2.3. Changes in state self-esteem

Changes in self-esteem relative to baseline are presented in Fig. 3. Again, we inspected comparisons to baseline using a univariate approach as well as a Bonferroni correction for multiple comparisons ($p = .012$). Results revealed that baseline self-esteem dropped somewhat after exposure to the thin ideal message, $F(1,51) = 6.477$, $p = .014$, partial $\eta^2 = .113$, and self-esteem remained unchanged after exposure to the controlling positivity message, $F < 1$, $p = .542$, partial $\eta^2 = .007$. However, as in Experiments 2 and 3, self-esteem increased from baseline after viewing the autonomy supportive message, $F(1,50) = 8.657$, $p = .005$, partial $\eta^2 = .148$; and after viewing the acceptance from others message, $F(1,49) = 12.000$, $p = .001$, partial $\eta^2 = .197$.

6.2.4. Changes in body shame and body surveillance

We examined changes in body shame and body surveillance at baseline and after presentation of each message (please see mean differences in Table 1). Results revealed that, relative to baseline, shame did not change significantly after exposure to thin ideal message, $F(1,51) = 1.026$, $p = .316$, partial $\eta^2 = .020$, nor the controlling body positivity message, $F(1,51) = 5.613$, $p = .022$, partial $\eta^2 = .099$. However, body shame decreased from baseline after exposure to the autonomy supportive message, $F(1,50) = -23.405$, $p < .0001$, partial $\eta^2 = .319$; and after exposure to the acceptance from others message, $F(1,49) = -30.809$, $p < .0001$, partial $\eta^2 = .386$. A similar pattern emerged for body surveillance. That is, body surveillance increased after exposure to thin ideal message, $F(1,51) = 7.579$, $p = .008$, partial $\eta^2 = .129$, and did not change after exposure to the controlling body positivity message, $F < 1$, $p = .376$, partial $\eta^2 = .015$. However, body surveillance decreased significantly from baseline after exposure to the autonomy supportive message, $F(1,50) = -23.241$, $p < .0001$, partial $\eta^2 = .317$; and after viewing the acceptance from others message, $F(1,49) = -16.585$, $p < .0001$, partial $\eta^2 = .253$.

6.2.4.1. Does message-related body satisfaction mediate the effect of message type on objectified body consciousness?

We tested whether changes in body consciousness from baseline to post-message differed as a function of need-supportive versus controlling messages, and whether this difference could be explained by message-induced body satisfaction. To test for the mediating effect of message-based responses on the degree of change in body consciousness, we used MEMORE (Montoya & Hayes, 2017), a procedure that estimates total, direct, and indirect effects in a repeated measures design based on path analysis. As in Experiment 3, we contrasted the two need-supportive conditions (collapsed and dummy-coded) against the controlling body positivity message, to increase the granularity and stringency of the comparison. We also used an overall compute of the objectified body consciousness outcome by averaging the body shame and body surveillance measures within each condition. As before, the need-supportive messages reduced body consciousness overall, relative to the controlling body positivity message, $B = -0.616$ ($SE = 0.108$), 95% CI $[-0.833, -0.399]$, $t(49) = -5.704$, $p < .0001$. They also increased message related body satisfaction, $B = 0.960$ ($SE = 0.179$), 95% CI $[.601,$

1.320], $t(49) = 5.366$, $p < .0001$, which in turn predicted a reduction in body consciousness, $B = -0.233$ ($SE = 0.084$), 95% CI $[-0.403, -0.063]$, $t(47) = -2.757$, $p = .008$. We used 5000 bootstrapped samples to generate confidence intervals around the indirect effect through message-related perceptions. The indirect effect was reliably different than zero, $B = -0.244$ ($SE = 0.101$), 95% CI $[-0.444, -0.052]$, suggesting message-induced body satisfaction explained why the need-supportive messages reduced body consciousness.

Experiment 4 showed that need-supportive body positivity reduces body shame and body surveillance, whereas controlling body positivity and thinness idealization do not. It is particularly noteworthy that these reductions in body objectification were due to characteristics of the messages that boosted body satisfaction.

7. General discussion

Using Self-Determination Theory's framework on psychological needs, we developed and compared different types of body positive messages – one using pressure to be body positive; one promoting personal autonomy to self-accept; and one underscoring body acceptance by others. We compared these messages to one another and to a thinness idealization message. Results across four experiments supported our hypothesis; need-supportive messages (i.e., targeting autonomy and relatedness) produced more positive body image outcomes and less negative body image outcomes, relative to controlling body positivity messaging and thinness idealization.

In particular, we found that the autonomous body acceptance message and the acceptance from others message elicited more feelings of body empowerment and acceptance from others than the controlling body positivity and thinness idealization messages. Thus, autonomy-supportive and relatedness messaging elicited their targeted effects – i.e., to bolster autonomous body acceptance and feelings of body acceptance from others. In terms of targeted negative effects, the controlling body positivity message generated more feelings of pressure to be body positive relative to the need-supportive messages – this pressure was comparable to the thinness idealization message. Not surprisingly, the thinness message produced the most pressure to be thin.

Beyond these message-targeted outcomes, all four experiments showed that the autonomy-supportive and acceptance from others messages produced more positive self-evaluation and body satisfaction in relation to the message, compared to the controlling body positivity and thinness idealization messages. Additionally, Experiments 2–4 demonstrated that both the autonomous acceptance and acceptance from others messages increased self-esteem from baseline, whereas as thinness idealization and controlling body positivity did not. The same pattern emerged in Experiment 4 for body objectification, where the need-supportive messages reduced body shame and body surveillance, but controlling body positivity and thinness idealization did not.

We also showed that the positive effects of need-supportive messaging on self-esteem and body objectification were indeed driven by self-perceptions induced by the messages. When the messages made participants feel good about themselves, state self-esteem increased from baseline. When the messages made participants feel good about their bodies, state body shame and body surveillance decreased from baseline. These findings lend support to the assumption that changes in self-esteem and body consciousness are caused by features of the messages, and that need-supportive versus need-undermining messages target general perceptions of self and body in divergent ways. Importantly, because our results show categorically that the more holistic need-supportive messages promote more feelings of body empowerment, a greater sense that others accept their bodies, less body shame and body monitoring, in addition to greater self-esteem, it can be concluded

that more global or holistic self-acceptance messaging does indeed target the body specifically.

7.1. Theoretical and practical contributions

This work provides a first empirical response to the question of whether some forms of body positive communication are more beneficial than others. By applying self-determination theory, we find here that body positive messaging can be diverse, with distinct impacts. This is important because previous research on the benefits of body positivity has tended to package all body positive messaging together – usually to suggest that it is better than thinness idealization (e.g., Betz & Ramsey, 2017; Betz et al., 2019; Cohen et al., 2019; Diedrichs & Lee, 2011). However, this might not always be the case; although we found that the thinness idealization message was generally most harmful, we also found that, in some cases (i.e., in terms of feelings of pressure, body consciousness, and self-esteem), controlling positive messaging was no more helpful than thinness messaging. Thus, this work highlights the importance of examining the consequences of different body positive messages; even when messages are positive in tone and appear to promote body acceptance on the surface, they may nonetheless exert pressure and be counterproductive to positive body image – much like thinness idealization can be. This research counters the idea that body positive text and captions are unimportant (e.g., see Tiggeman et al., 2020); by holding the visual imagery constant across messaging conditions, we show that motivationally meaningful differences in captions elicit large differences in message-related responses. It is noteworthy that the present set of results are robust – showing mostly large effect sizes and consistency in pattern and direction across samples (i.e., both US and UK, both student and non-student) and experimental designs (i.e., within and between subjects).

We highlight the usefulness of a theory-driven approach to better inform how body positive communication should be disseminated. Beyond media messaging, we suggest that autonomy supportive body positivity is crucial in education, mental health, and development – much like in other health-related fields, which convincingly demonstrate across meta-analyses the importance of supporting psychological needs in general, and autonomy in particular, in order to promote health and wellbeing (Gillison, Rouse, Standage, Sebire & Ryan, 2019; Ng et al., 2012; Ntoumanis et al., 2020). We also contribute more broadly to the burgeoning field of autonomous versus controlling message framing. Recent research has suggested that public health messages that used an autonomy-supportive communication style generated more willingness to comply with social distancing guidelines during the COVID-19 pandemic (Legate, Nguyen, Weinstein, Moller, & Legault, 2021). Similarly, communication that supported autonomous motivation to save electricity and water caused students to conserve 20% more energy and resources than those who did not receive the communication (Legault et al., 2020), and brochures emphasizing autonomy in the pursuit of egalitarian ideals produced less prejudice than neutral and controlling messages (Legault et al., 2011). Here, we extend this important line of messaging research to body positive communication.

Perhaps the major contribution of this research is the leveraging of motivation theory to create brief slogans that differentially affect body image and self-esteem. This reduction or “boiling-down” of theoretically complex communication based on the enhancement and frustration of psychological needs is a novel test of self-determination theory in the public messaging domain. The notion that we can target both unconditional and contingent self-acceptance through brief need-supportive versus need-thwarting messaging is important and useful not just in media marketing and advertising, but also in public health and service broadcasting, education, and parenting. Words (and wording) truly matter.

7.2. Considerations, limitations, & future studies

The two need-supportive messages produced similar effects. This is unsurprising given SDT research suggesting that while psychological needs are distinct, they operate to facilitate optimal growth and functioning in similar ways, and share variance in predicting well-being (e.g., Martela & Sheldon, 2019; Vansteenkiste, Ryan, & Soenens; 2020). Yet, the distinguishing effects of messages about body autonomy versus body acceptance from others requires more examination. Our findings suggest they are each supportive of positive body image, but their unique effects are not known.

We also recognize that, although all messages use body-focused imagery and elicited direct impacts on body image outcomes, our need-supportive slogans invoke a more holistic or ‘whole self’ acceptance rather than body acceptance alone. This whole self approach is aligned with research on psychological needs, which emphasizes unconditional self-regard and the importance of integrating all parts of self rather than compartmentalization (e.g., Hodgins & Knee, 2002; Majstorović, Legault, & Green-Demers, 2008). Indeed, for those with unconditional self-acceptance, unconditional body acceptance may be implied (and vice versa). We believe the current findings are important in showing that messaging about self and other acceptance in general is *inclusive of* body acceptance in particular. Indeed, need-supportive messages increased *both* self and body esteem. Nonetheless, our experimental stimuli do not disentangle the effects of need-supportive body acceptance messages from need-supportive self-acceptance messages. Research is needed to further understand if and how these are different.

Perhaps the most important limitation of this work concerns generalizability to other racial, ethnic, and cultural groups of women besides the predominately white women sampled and depicted in our images. Our messaging stimuli featured white models and thus reflect the mainstream conceptualization of body positivity (Darwin & Miller, 2021). We used these stimuli in order to be constant across the three body positive messages and also to match the general demographics of our expected sample. However, it should be noted that 30% of our participants across all four experiments were non-white. It is crucial for follow-up studies to determine whether the effect of need-supportive body acceptance messaging generalizes to other groups of women and other types of bodies.

Also, although we use different methodologies to corroborate our findings, we note that the effects shown here are likely short-lived. Because previous work has suggested that repeated exposure to the thin ideal can continually decrease body satisfaction (Knobloch-Westerwick & Crane, 2012), we suggest that follow up work should assess repeated exposure to need-supportive body positive messaging over time – to determine whether it has lasting benefits for body image and self-esteem.

Finally, we acknowledge that our messages do not rely precisely on the most typical and simplistic forms of body positive slogans (seen online, for instance). However, researchers have noted that some popular forms of body positivity may be pressuring and contribute to body objectification (Betz & Ramsey, 2017), and thus we have reflected both pressuring and supportive communication styles. Although our messages are crafted based on translation of motivation theory rather than borrowed directly from advertising or social media, we believe this to be an empirical advantage which can be harnessed to inform and improve body positive communication in the future. Just as importantly, our messaging echoes the style of need-based messaging that has proven invaluable in health (Gillison et al., 2019) and education (Guay, Ratelle, & Chanal, 2008) more broadly. With the current findings as foundation, future research might attempt to further understand body positive messaging and communication from a self-determination perspective.

Conclusion

Although it is critical to promote body positivity and counter the underrepresentation of diverse body sizes, our results demonstrate that not all body positive communication styles have positive effects. Rather, to promote positive body image and self-esteem and reduce negative body image, body acceptance messages must support psychological needs. When body positive messages reinforce body acceptance from others and encourage women to accept their bodies on their own terms, self-esteem is bolstered and body shame is reduced. In contrast, simply telling women that they *should* or *ought* to be body positive does not ameliorate body image, and can even be counterproductive by increasing perceived pressure. We provide novel evidence that basic psychological needs theory can be applied to public health messaging about body image, but more importantly, we offer an initial framework for the improvement of body positive messaging to facilitate women’s health and wellness.

CRedit authorship contribution statement

Lisa Legault: Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing, Supervision.
Anise Sago: Conceptualization, Methodology.

Conflict of Interest

We have no conflicts of interest. All data are stored at OSF here. The work described has been carried out in accordance with The Code of Ethics of the World Medical Association and approved by the host institution’s ethics review board. Informed consent was obtained for all experimentation with human subjects. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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