

# Appearance-ideal internalization, body dissatisfaction, and suicidality among sexual minority men



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## ARTICLE INFO

### Article history:

Received 24 January 2021

Received in revised form 24 April 2021

Accepted 1 May 2021

Available online 21 May 2021

### Keywords:

Appearance-ideal internalization

Suicidality

Body dissatisfaction

Sexual minority men

## ABSTRACT

Sexual minority men (SMM) are disproportionately at risk for suicidality. Furthermore, SMM are at elevated risk for appearance-ideal internalization and body dissatisfaction, which are both associated with suicidality. Theoretical recommendations suggest including interaction terms between appearance-ideal internalization and body dissatisfaction when examining deleterious health outcomes. To test these interactions and examine whether appearance-ideal internalization or body dissatisfaction impart greater suicidality, the current study analyzed associations between specific forms of appearance-ideal internalization and suicidality among SMM, and whether body dissatisfaction moderated these associations. Participants were 171 SMM recruited for an eating disorder prevention program. Analyses examined the association between thin and muscular-ideal internalization with count of suicide risk, with body fat and muscularity dissatisfaction moderating these associations. Zero-inflated Poisson regressions revealed that the association between thin-ideal internalization and suicide risk was moderated by body fat dissatisfaction, such that thin-ideal internalization was associated with increased suicide risk at high levels of body fat dissatisfaction. Muscularity concerns were not significantly associated with suicidality, suggesting that thinness concerns may be more salient than muscularity for suicidality among SMM. Future research should replicate findings among larger SMM samples and extend the current design into non-SMM samples to examine if results generalize to other vulnerable populations.

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## 1. Introduction

Given the deleterious consequences of suicidal behavior, such as serious medical injury, stigmatization, and premature death (Sun, 2011), it is imperative to identify populations disproportionately at risk for suicidality (i.e., suicide plans, ideation, or attempts). One such population is sexual minority men (SMM; those who identify as non-heterosexual and/or report same-gender attraction/sexual behavior). Data from the 2011–2013 National Survey of Family Growth indicate that 3.9%–7.9% of men aged 18–44 years can be

classified as SMM (Copen, Chandra, & Febo-Vasquez, 2016). In a national probability sample of US adults, the lifetime prevalence rate for suicide plans among SMM was 21%, while the lifetime prevalence rate for suicide attempts among SMM was 12% (Paul et al., 2002). To explain these elevated rates of suicidal behavior, researchers must identify risk factors for suicidality among this vulnerable population.

Appearance-ideal internalization (i.e., establishing a culturally prescribed appearance-ideal as one's internal standard of attractiveness) and body dissatisfaction may represent risk factors for suicidality. It is unsurprising that these components of body image may represent potential risk factors for suicidality, given that body image has been reported as an important piece of individuals' self-concept, which, if evaluated negatively, can lead to distress/strong negative self-feelings (Cash, 2005). Notably, appearance-ideal internalization had an indirect effect on self-harm via body shame/surveillance, and depression among 160 US

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women (Erchull, Liss, & Lichiello, 2013), and thin-ideal internalization (one form of appearance-ideal internalization primarily concerned with thinness) was significantly associated with suicidal intent among 2537 adolescent girls in Mexico (Unikel, Von Holle, Bulik, & Ocampo, 2011). Furthermore, body dissatisfaction was significantly associated with suicidal ideation/attempts, in addition to being predictive of future suicide attempts among samples of US and Spanish adolescents (Crow, Eisenberg, Story, & Neumark-Sztainer, 2008; Rodriguez-Cano, Beato-Fernandez, & Belmonte Llauro, 2006). While appearance-ideal internalization's association with suicidality has not been investigated among SMM, body satisfaction was negatively correlated with suicidal ideation and plans among 252 sexual/gender minority adolescents (Smith, Wang, Carter, Fox, & Hooley, 2020). Importantly, body dissatisfaction and appearance-ideal internalization are theoretically related, in that if one internalizes an unrealistic appearance-ideal, failure to attain this ideal may culminate in body dissatisfaction (Cash, 2005). Therefore, research should consider examining the joint influence of appearance-ideal internalization and body dissatisfaction on suicidality.

To better understand the nuanced associations between appearance-ideal internalization, body dissatisfaction, and their correlates, researchers have argued for the inclusion of interaction terms between these constructs (Karazsia, van Dulmen, Wong, & Crowther, 2013). Karazsia et al. (2013) posited that the consequences of body dissatisfaction are likely to be less deleterious if one dismisses an appearance-ideal compared to internalizing an appearance-ideal, given the lower salience of appearance amongst those with low internalization likely suggests that body dissatisfaction, should it occur, would not be as strongly associated with maladaptive behaviors. For these interactions, traditionally body dissatisfaction has been included as predictor and internalization has been included as moderator (Brady et al., 2019; Karazsia et al., 2013). However, due to existing literature on the association between appearance-ideal internalization and suicidality, and to better understand this association among SMM, testing body dissatisfaction as moderator may be warranted.

While SMM are at increased risk for suicidality (Blosnich, Nasuti, Mays, & Cochran, 2016; Paul et al., 2002), and appearance-ideal internalization is associated with suicidality, this association has yet to be examined amongst SMM, which is especially problematic given that appearance concerns for SMM are elevated compared to those of heterosexual men (He, Sun, Lin, & Fan, 2020). Therefore, the current study examined the associations between specific forms of appearance-ideal internalization (i.e., thin- and muscular-ideal) and suicide risk among a community sample of SMM. Furthermore, in an adaptation of Karazsia et al.'s (2013) model, specific forms of body dissatisfaction for SMM (i.e., body fat and muscularity; Calzo et al., 2015) were included as moderators of these associations to examine appearance-ideal internalization and body dissatisfaction's associations with suicidality in the context of one another. Body dissatisfaction may moderate the association of appearance-ideal internalization with suicide risk, such that if one internalizes an appearance-ideal and is simultaneously dissatisfied with their body, the discrepancy between the ideal and perceived appearance could result in marked psychological distress, strengthening the association between appearance-ideal internalization and suicidality.

Results may confirm appearance-ideal internalization/body dissatisfaction as risk factors for suicidality among SMM. Additionally, the current study may elucidate information as to whether specific forms of appearance-ideal internalization or body dissatisfaction impart greater suicidality among SMM (e.g., perhaps thinness concerns are significantly associated with suicidality rather than muscularity concerns). Lastly, should significant interactions between appearance-ideal internalization/body dissatisfaction be

discovered, this would suggest these constructs should be considered in conjunction with one another when examining health outcomes. If these constructs are confirmed as suicidality risk factors for SMM, this may establish targets for interventions meant to reduce suicidality among SMM, which is imperative given elevated rates of suicidality among this population. Comparative results between thinness/muscularity variables may also emphasize certain appearance-related targets to prioritize in these interventions, given the multiple specific appearance concerns that SMM endorse (Calzo et al., 2015). These considerations culminated in two hypotheses, both adapted from suggestions for creating interactions between body dissatisfaction and appearance-ideal internalization (Karazsia et al., 2013). First, we hypothesized an interaction between thin-ideal internalization and body fat dissatisfaction, such that thin-ideal internalization would be positively associated with suicide risk, and this association would be stronger when body fat dissatisfaction was high. Second, we hypothesized an interaction between muscular-ideal internalization and muscularity dissatisfaction, such that muscular-ideal internalization would be positively associated with suicide risk, and this association would be stronger when muscularity dissatisfaction was high. These associations are hypothesized to remain significant upon inclusion of theoretical/sociodemographic covariates, most notably depressive symptoms, which is a robust risk factor for suicidality (Kisch, Leino, & Silverman, 2005).

## 2. Methods

### 2.1. Participants and procedure

Participants were 171 SMM recruited to participate in an eating disorder prevention randomized controlled trial advertised as a body acceptance program. The average age of the sample was 24.78 years old ( $SD = 3.71$ ), with most participants identifying as gay (60.3%), Non-Hispanic/Latino (56.2%) and plurality White (39.2%) or other/mixed race (27.5%; Supplemental Table A). Based on previous recommendations (Ginersorolla, 2018) a sample size of 171 was powered = .80 to detect medium-large reversal interactive effects. The current study utilized data from the baseline time-point, which occurred before randomization. Recruitment methods included community advertisements, social media (e.g., Facebook, Instagram, Twitter), dating applications (e.g., Scruff, Grindr, Jack'd), and in-person outreach at bars. Inclusion criteria were as follows: (1) aged 18–35 years old, (2) identify as male (or trans-masculine), (3) identify as a sexual minority (i.e., gay, bisexual, or sexually attracted to men), and (4) self-reported body image concerns. After participants were deemed eligible through online/phone screens, they were invited into the lab for a 3-hour assessment composed of a battery of self-report questionnaires and several structured clinical interviews, led by trained clinicians. Upon completion of the baseline session, participants received a \$25 Amazon gift card. Informed consent was obtained prior to participation for all participants in the current study. All aspects of this study were approved by the San Diego State University Institutional Review Board. Please see the Supplemental document for additional methodological considerations in the current study.

### 2.2. Measures

#### 2.2.1. Appearance-ideal internalization

Thin- and Muscular-ideal internalization were measured using the "Internalization: Thin/Low Body Fat" and "Internalization: Muscular/Athletic" subscales of the Sociocultural Attitudes Towards Appearance Questionnaire 4-Revised (SATAQ-4R; Schaefer, Harriger, Heinberg, Soderberg, & Thompson, 2017).

The 28-item male version of the SATAQ-4R was administered to participants, with a 5-point Likert scale ranging from *definitely disagree* to *definitely agree*, with higher scores indicating greater thin/muscular-ideal internalization. The SATAQ-4R is validated for use with SMM (Convertino, Gonzales, Malcarne, & Blashill, 2019), and has shown acceptable construct validity/internal consistency (Schaefer et al., 2017). Internal consistency was  $\alpha = .88$  for the Internalization: Thin/Low Body Fat subscale and  $\alpha = .90$  for the Internalization: Muscular/Athletic subscale.

2.2.2. *Body dissatisfaction*

Body dissatisfaction was measured using the Low Body Fat and Muscularity subscales of a 15-item revised version of the Male Body Attitudes Scale (MBAS-R; Ryan, Morrison, Roddy, & McCutcheon, 2011; Tylka, Bergeron, & Schwartz, 2005). Items were scored on a six-point scale ranging from 1 (*never*) to 6 (*always*), with higher scores indicating greater body dissatisfaction. The original MBAS is validated for use with gay men (Blashill & Vander Wal, 2009), and the MBAS-R has shown high test-retest reliability/construct validity (Ryan et al., 2011). Internal consistency was  $\alpha = .91$  for the Low Body fat subscale, and  $\alpha = .89$  for the Muscularity subscale.

2.2.3. *Suicidality*

Suicidality was measured using the Suicide module of the MINI International Neuropsychiatric Interview (MINI; Sheehan et al., 1998), a structured clinical interview assessing DSM-IV axis I disorders. This module contains six items, five which assess past month suicidal thoughts/behaviors, and one which assesses lifetime suicidal behavior, all rated with binary (*yes, no*) response options. Items are ascribed points, which can be summed to create a suicide risk count score, ranging from 0 to 33, with higher scores indicating greater suicide risk. This score is predictive of future self-harm behavior, in addition to being able to discriminate between participants who did/did not engage in a future suicide attempt (Katz et al., 2019; Roaldset, Linaker, & Bjørkly, 2012).

2.2.4. *Depressive symptoms*

Depressive symptoms were measured using the Depression subscale of the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995). Items were scored on a four-point scale ranging from 0 (*did not apply to me at all*) to 3 (*applied to me very much, or most of the time*). The DASS has shown strong discriminant validity and construct validity (Antony, Bieling, Cox, Enns, & Swinson, 1998). Internal consistency in the current study was  $\alpha = .96$ .

2.2.5. *Socio-demographic variables*

Demographic information, including age, race, ethnicity, sexual orientation, education level, relationship status, and income were collected.

2.3. *Statistical analyses*

Primary analyses examined the associations between thin- and muscular-ideal internalization with count of suicide risk, with body fat and muscularity dissatisfaction moderating these associations. A series of unadjusted and adjusted zero-inflated Poisson regressions were employed. For interested readers, please consult Schaumberg et al. (2018) for a tutorial on zero-inflated Poisson models within eating disorder/body image research. Unadjusted models included focal predictors and their interactions, while adjusted models also included relevant covariates. Incident risk ratios (IRR), odds ratios (OR), 95% confidence intervals (CI), and *p*-values are reported. Upon discovery of significant interactions, predictors were mean-centered and simple slopes were tested at  $\pm 1$  SD of the moderator.

**Table 1**  
Summary of Associations in the Adjusted Zero Inflated Poisson Regression Model.

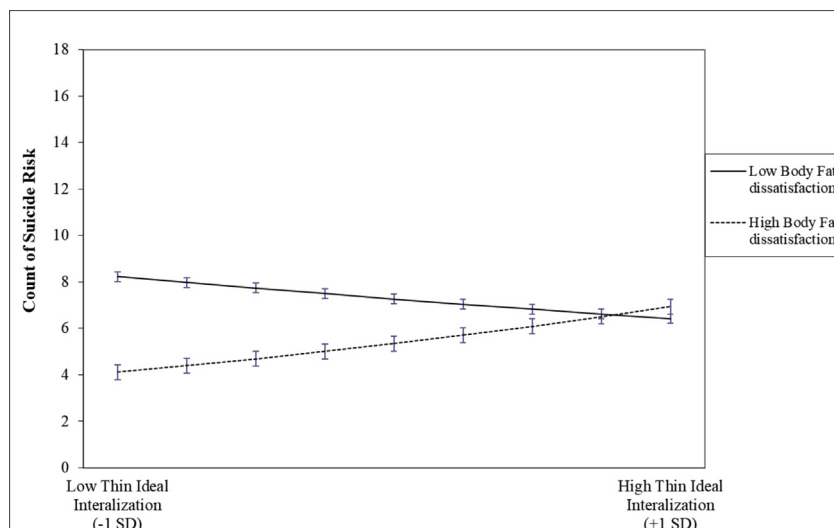
Variable	OR	95% CI
<b>Zero-inflated Logit Model</b>		
Thin-ideal internalization	1.42	[0.54, 3.76]
Muscular-ideal internalization	0.71	[0.20, 2.50]
Body fat dissatisfaction	0.89	[0.39, 2.00]
Muscularity dissatisfaction	0.60	[0.01, 3.16]
Thin-ideal internalization X body fat dissatisfaction	0.98	[0.76, 1.26]
Muscular-ideal internalization X muscular dissatisfaction	1.13	[0.67, 1.71]
Depressive symptoms	0.42***	[0.25, 0.68]
BMI	1.00	[0.94, 1.07]
Employment status	0.83	[0.36, 1.93]
Relationship status	1.27	[0.58, 2.96]
Age	1.10	[0.99, 1.22]
Income	1.41	[0.60, 3.34]
Ethnicity	0.84	[0.36, 1.85]
Sexual Orientation	0.91	[0.42, 1.96]
Race	0.98	[0.45, 2.10]
Education	0.83	[0.37, 1.88]
<b>Variable</b>		
<b>IRR</b>		
<b>95% CI</b>		
<b>Count Model</b>		
Thin-ideal internalization	0.70*	[0.52, 0.95]
Muscular-ideal internalization	0.80	[0.63, 1.00]
Body fat dissatisfaction	0.61***	[0.49, 0.77]
Muscularity dissatisfaction	1.08	[0.60, 1.94]
Thin-ideal internalization X body fat dissatisfaction	1.13**	[1.05, 1.21]
Muscular-ideal internalization X muscular dissatisfaction	1.03	[0.88, 1.19]
Depressive symptoms	1.41***	[1.19, 1.67]
BMI	1.13	[0.83, 1.57]
Employment status	1.14	[0.86, 1.47]
Relationship status	1.02	[0.78, 1.32]
Age	1.03	[0.99, 1.06]
Income	0.79	[0.61, 1.02]
Ethnicity	0.83	[0.63, 1.10]
Sexual Orientation	0.96	[0.79, 1.21]
Race	0.95	[0.71, 1.26]
Education	1.13	[0.82, 1.57]

Note. Analytic sample of 171; OR=odds ratio; IRR=Incident Rate Ratios; \**p* < .05, \*\**p* < .01, \*\*\**p* < .001; Relationship status was coded as 0 for “Single” and 1 for “Not single”, Employment status was coded as 0 for “Currently employed” and 1 for “Not currently employed”; Income was coded as 0 for “\$0 - \$19,999,” and 1 for “\$20,000+”; Ethnicity was coded as 0 for “Not Hispanic/Latino” and 1 for “Hispanic/Latino”; Sexual orientation was coded as 0 for “Gay” and 1 for “Bisexual or Other”; Race was coded as 0 for “White” and 1 for “Non-White”; Education was coded as 0 for “No college degree” and 1 for “College degree.”

Multivariate normality was confirmed via QQ-Plots/Shapiro-Wilk’s W test. No variables displayed excessive collinearity. No multivariate outliers were detected using the Mahalanobis distance test, but the suicide risk count score contained three univariate outliers +3 SD from its mean, which were winsorized to the next non-outlier value (Lien & Balakrishnan, 2005). Available item analysis was utilized for the zero-inflated Poisson models, which is an acceptable solution for dealing with smaller amounts of item-level missing data (i.e., less than 10%; Parent, 2013). 7.6% of all items were missing in the adjusted model. Data were missing completely at random.

3. Results

Scale means and bivariate correlations for all included variables are presented in Supplemental Table B. Table 1 displays results of the adjusted zero-inflated Poisson regression. Results were equivalent across the unadjusted and adjusted models; thus, only results of the adjusted model are presented below (see Supplemental Table C for unadjusted model results). In the zero-inflated logit model, the only significant variable was depressive symptoms (OR = 0.42, 95% CI = [0.25, 0.68], *p* < .001), indicating that a one-point increase in



**Fig. 1.** Graph of interaction between thin-ideal internalization and body fat dissatisfaction predicting count of suicide risk in the adjusted model.

depressive symptoms was associated with a 58% decrease in odds of being in the 'certain zero' group. When examining the count model, both thin-ideal internalization (IRR = 0.70, 95% CI = [0.52, 0.95],  $p = .019$ ) and body fat dissatisfaction (IRR = 0.61, 95% CI = [0.49, 0.77],  $p < .001$ ) were significantly negatively associated with count of suicide risk (e.g., IRR values less than one). However, these effects were qualified by a significant positive interaction between thin-ideal internalization and body fat dissatisfaction (IRR = 1.13, 95% CI = [1.05, 1.21],  $p = .001$ ). At one SD above the mean of body fat dissatisfaction, one-point increases in thin-ideal internalization were associated with a 21% increase in the incidence rate for count of suicide risk (IRR = 1.21,  $p = .006$ ). However, at one SD below the mean of body fat dissatisfaction, the association of thin-ideal internalization with count of suicide risk was not statistically significant (IRR = 0.92,  $p = .280$ ; Fig. 1). Notably, neither muscular-ideal internalization (IRR = 0.80, 95% CI = [0.63, 1.00],  $p = .346$ ) or muscular dissatisfaction (IRR = 1.08, 95% CI = [0.60, 1.94],  $p = .802$ ) were significantly associated with count of suicide risk. Furthermore, the interaction between muscular-ideal internalization and muscular dissatisfaction was not significantly associated with count of suicide risk (IRR = 1.03, 95% CI = [0.88, 1.19],  $p = .734$ ).

#### 4. Discussion

The current study explored the associations between appearance-ideal internalization, body dissatisfaction, their interactions, and count of suicide risk among a community sample of SMM. Results showed a significant interaction between thin-ideal internalization and body fat dissatisfaction, such that at high levels of body fat dissatisfaction, thin-ideal internalization was significantly positively associated with count of suicide risk. Therefore, hypothesis one was supported. The current study provides preliminary evidence that thin-ideal internalization may be differentially associated with suicide risk at various levels of body fat dissatisfaction, and that both constructs may be risk factors for suicidality among SMM.

Muscular-ideal internalization, muscularity dissatisfaction, and their interaction were not significantly associated with suicide risk. Thus, hypothesis two was not supported. Notably, muscular-ideal internalization showed a restricted range/negative skew, which may explain these findings. Alternatively, results may suggest that thinness concerns are more salient than muscularity concerns in predicting suicide risk among SMM, which may be due to perceived pressures from targeted media/potential partners to be

lean, above being muscular. Indeed, models in magazines targeted for gay men were significantly leaner than models in magazines targeted for heterosexual men, but not significantly more muscular (Lanzieri & Cook, 2013). Furthermore, college-aged gay men believed that partners prefer a leaner (but not more muscular) body than what they desired for themselves (Smith, Hawkeswood, Bodell, & Joiner, 2011). Future research among SMM should include measures of thinness/muscularity to confirm if certain patterns of psychopathology are predicted by thinness vs muscularity concerns.

The significant interaction found between thin-ideal internalization and body fat dissatisfaction in the count model provides preliminary evidence for an adaptation of Karazsia et al.'s (2013) model and suggests that interactions composed of appearance-ideal internalization and body dissatisfaction could be utilized with either component acting as moderator. Results may suggest that the association between appearance-ideal internalization and suicidality is potentially more complex than previously reported. For example, past research found that appearance-ideal internalization is associated with suicidality (Erchull et al., 2013; Unikel et al., 2011). Results also revealed a significant association between thin-ideal internalization and suicide risk; however, inclusion of the interaction terms changed the patterns of these associations. Therefore, testing this direct association may not provide an accurate depiction of the association between internalization and suicidality. However, replication is needed before definitive claims about the relationship between appearance-ideal internalization and suicidality are made.

The current findings should be interpreted with the following limitations in mind. Data were cross-sectional, preventing analyses of temporal ordering of effects. Participants were SMM who self-reported body image concerns and consented to enroll in a two-year randomized controlled trial, which may limit generalizability of results outside this population. There was limited count data to analyze lifetime suicide attempts as an outcome, however, the count of suicide risk has been found to prospectively predict future suicide attempts (Katz et al., 2019; Roaldset et al., 2012). Furthermore, several scales that were utilized have not been validated in SMM (e.g., MBAS-R, MINI suicide module, and the DASS). Additionally, the current study had a modest sample size, and did not utilize adjustments for multiple comparisons for various tests of significance, potentially leading to concerns about our statistical power to detect reported effects, wide and potentially unstable confidence intervals, as well as the possibility of



spurious results. Therefore, future research must replicate these results among larger samples of SMM while utilizing corrections for multiple comparisons to confirm the novel findings of the current study and assuage concerns about statistical power/spurious results. Lastly, gender was not accounted for in the analyses, which may be problematic given that gender minority individuals are at higher risk for suicidality than cisgender individuals (Horwitz et al., 2020). Although trans-masculine individuals were included, there was limited count to include gender as a covariate. Future research should include gender conformity in discussions of appearance concerns/body image and suicidality.

Important avenues for future research were illuminated by the current study. Longitudinal designs are needed to test the prospective associations of appearance-ideal internalization/body dissatisfaction with suicidality among SMM. Furthermore, mechanisms underlying the associations between appearance-ideal internalization, body dissatisfaction, and suicidality are unclear; thus, future research should test theoretically informed mediators of the current model (e.g., body shame, body avoidance, emotion dysregulation, etc.). Additionally, future research should investigate the associations of appearance-ideal internalization/body dissatisfaction and suicidality while controlling for variables relevant for SMM, such as sexual minority stress or social exclusion from the gay community (Meyer, Russell, Hammack, Frost, & Wilson, 2021; Pachankis et al., 2020). Lastly, the impact of ethnic/racial minority identity should be tested in future studies examining the current model of suicidality among SMM. Individuals with multiple minority statuses, such as race/ethnicity in addition to sexual minority status may perceive appearance-ideals through lenses distinct from leanness/muscularity, such as the ‘whiteness’ of appearance-ideals, which may strengthen the association between suicide risk and appearance-ideal internalization/body dissatisfaction among this intersectional population.

The current results may impart certain clinical implications. Specifically, results may provide implications for dissonance-based eating disorder prevention interventions (e.g., the *Body Project*). In a pilot of the *PRIDE Body Project* among 87 gay men, reductions in body-ideal internalization significantly mediated decreases in bulimic symptoms, emphasizing the role appearance-ideal internalization plays in various health outcomes (Brown & Keel, 2015). Interventions like the *Body Project* may indirectly reduce suicidality by this concurrent reduction of internalization. Indeed, a dissonance-based intervention to reduce appearance-ideal internalization decreased the likelihood of non-suicidal self-injury at a follow-up post session (Kennedy et al., 2019). Therefore, dissonance-based eating disorder prevention interventions such as the *Body Project* may demonstrate increased clinical utility via their efficacy in reducing deleterious health behaviors outside of their targeted outcomes.

In conclusion, the current study discovered a significant interaction between appearance-ideal internalization and body dissatisfaction in the association with suicide risk among SMM. At high levels of body fat dissatisfaction, the association between thin-ideal internalization and suicide risk was positive and significant. Results provide preliminary evidence that body dissatisfaction may moderate associations between appearance-ideal internalization and negative health outcomes, such as suicidality.

#### Author statement

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**Aaron J. Blashill:** Conceptualization, Methodology, Writing—Review and Editing, Data Curation, Supervision, Project Administration, Resources, Funding Acquisition.

#### Declaration of Competing Interest

The authors have no conflicts of interest to disclose.

#### Acknowledgments

Research reported in this publication was supported by the National Institutes of Health under award number R01MD012698.

#### Appendix A. Supplementary Materials

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.bodyim.2021.05.002>.

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<sup>1</sup> [dataset] Due to the sensitive nature of the questions asked in this study, survey respondents were assured raw data would remain confidential and would not be shared.

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