Impression formation and management is a central process in human interactions (Berger & Calabrese, 1975). The Internet provides spaces in which individuals form impressions about others based on different types of cues available, such as user-generated cues (i.e., sources that a profile owner has a control over, such as posting photos and information about the self) and other-generated cues (i.e., cues on the target user’s profile that come from others, such as messages left by the profile owner’s friends; Walter, Van Der Heide, Hamel, & Shulman, 2009).

Research identified that individuals form impressions online about a target’s personal attributes, such as credibility, extraversion, and friendliness (Walter, Van Der Heide, Hamel, & Shulman, 2009; Walther, Van Der Heide, Kim, Westerman, & Tong, 2008). Even though a great deal of scholarly attention has been paid to how individuals form impressions of others’ personal attributes, less is known about online impression formation of others’ psychological characteristics, such as their level of self-esteem and life satisfaction. Examining how individuals evaluate another person’s psychological characteristics is an important topic of inquiry because such evaluations can have important implications for that person’s interpersonal and professional life (Strauss, 2005). For example,
those who are presumed to have low self-esteem might be evaluated less favorably in hiring situations (MacGregor, Cameron, & Holmes, 2010).

In examining online impression formation about others’ psychological characteristics, this study considers a specific context that involves “muscle talk” conversations. This study defines “muscle talk” as conversations regarding the desire or need to build muscle, muscle-building techniques, and opinions about one’s own muscles or the muscles of others. Evidence exists that boys and young men engage in this type of conversation (Engeln et al., 2013). Given that social networking sites (SNSs) are popular mediums of communication among young adults, including college students (Dhir & Tsai, 2016), muscle talk can take place on SNSs and thus will be the focus of this study.

To explore online impression formation in the muscle talk contexts, the current study examines a specific context in which a male profile owner engages in muscle talk on Facebook. Such a post typically includes a picture of the profile owner’s body as well as peers’ comments in response to the post. The current study aims to illuminate how individuals form impressions about a target based on his picture posted on Facebook. In particular, this study examines if observers form different impression as a function of the target’s body build type (e.g., a muscular, an average, or an overweight body). Peer-generated messages can be also an important source of information used to form impressions of a target online (Walther et al., 2008). This study examines how these two factors (the target’s body build and peer-generated comments) can impact the observers’ impression formation of the target’s self-esteem and life satisfaction. This study examines the aforementioned aspects from a cross-cultural perspective by comparing Asian Americans and Caucasian Americans. Asian Americans are one of the fastest growing minorities in the United States (Colby & Ortman, 2015). The effect of muscle talk and impression formation online might differ depending on the observers’ cultural background.

**Impression formation based on the profile owner’s body build.** Individuals often make assumptions of others’ characteristics based on their body build. Studies on male body stereotypes have reported that positive personality traits (e.g., attractive, happy, intelligent) were assigned to mesomorphic body types (i.e., well-proportioned body with low fat and high muscle mass). On the contrary, negative personality traits were assigned to endomorphic body types (round and soft body; Hemingston, Shim, & Choi, 2013; Namatame, Saito, & Sawamiya, 2016). Larger individuals are often stereotyped as lazy, less motivated, unfriendly, boring, sloppy, and lacking in self-discipline (Bento, White, & Zacur, 2012; O’Brien, Latner, Ebener, & Hunter, 2013). Negative attitudes toward overweight people are also reflected in the media (e.g., Puhl & Heuer, 2009). Overweight people are underrepresented and stigmatized in the media (e.g., Ata & Thompson, 2010). Larger male characters on American prime-time TV programs were depicted as being less helpful, having fewer interactions with romantic partners and friends, talking less often about dating, being less likely to date and have sex, and eating more often than underweight and normal weight males (Greenberg, Eastin, Hofschire, Lachlan, & Brownell, 2003).

Such weight stigma is often translated into the real world. Larger people commonly face discrimination in various settings, including educational, medical, and employment settings (Puhl & Heuer, 2009). Obese individuals are disadvantaged in terms of hiring decisions and performance evaluations (Rudolph, Wells, Weller, & Baltes, 2009). It is not surprising that experiences with weight stigma are consistently associated with poor mental health, including depressive symptoms (Bucchi, Eisenberg, Wall, Piran, & Neumark-Sztainer, 2014; Puhl & Brownell, 2006), low levels of self-esteem (Vartanian & Novak, 2011), and lower life satisfaction (Jackson, Beeken, & Wardle, 2015). Further, obese individuals tend to respond to weight bias by internalizing negative attitudes toward overweight and obese people, which is related to poor psychological function (Durso et al., 2012). Being a victim of prejudice and discrimination due to weight status might contribute to poor psychological

**Social networking websites**

Social networking websites allow users to publicly or semipublicly share information about themselves using a preformatted profile page and to maintain and display connections with other users (Boyd & Ellison, 2007). Facebook is among the most popular SNSs, especially among college students (Knight-McCord et al., 2016). Approximately 70% of adult Internet users (age 18 years or older) are on Facebook (Duggan et al., 2015) and over 88% of college students use Facebook (Sponcil & Gitimu, 2013). Facebook allows users to post information about the self, share photographs, and post and exchange messages with other users. Previous studies have demonstrated that individuals can and do form impressions of a person based on the person’s Facebook profile page (Tong, Van Der Heide, Langwell, & Walther, 2008). Observers formed impressions of an individual’s physical attractiveness based on photographs and messages his or her peers left on the profile owner’s “wall” (Walther et al., 2008).
outcomes above and beyond the contribution of the weight condition alone (Papadopoulos & Brennan, 2015). Regardless of whether overweight people actually possess certain psychological characteristics described earlier, one might, consciously or subconsciously, assume that they possess lower levels of self-esteem and life satisfaction because of their weight status and the weight bias and discrimination they experience.

Less is known about how a target’s body build can impact individuals’ impressions of the target in the context of SNSs. Though limited, available research among young women has demonstrated that an overweight female profile owner was evaluated as possessing poorer psychological well-being than an underweight counterpart (Taniguchi & Lee, 2015). It is reasonable to expect similar patterns of weight bias to be observed among men. Overweight males might be evaluated as having poorer self-esteem and lower life satisfaction than average-sized males. Muscular males might be perceived as possessing greater levels of self-esteem and life satisfaction than average-size males because the former possess bodies that society favors. Therefore, the following hypothesis is formulated:

**H1:** An overweight profile owner will be perceived as having the lowest levels of self-esteem (H1a) and life satisfaction (H1b), followed by an average profile owner and a muscular profile owner.

**Impression formation based on peers’ comments.** Besides the profile owner’s body build, comments he receives from his peers can be an important source of information that observers use when forming impressions about the profile owner. Previous research has demonstrated that peer-generated comments on Facebook affect observers’ impressions of the target person (Walther et al., 2008, 2009). Walther et al.’s (2008) experimental study demonstrated that comments left by the profile owner’s peers had a significant influence on the observers’ ratings of the social attractiveness and credibility of the profile owner. Walther et al. (2009) further found that peer-generated statements predicted the observers’ judgments of the profile owner’s extraversion.

Because muscularity is central to a man’s body image (Cafri & Thompson, 2004), muscle talk can revolve around a man’s desire to build muscle and is motivated by his peers’ comments. Such comments from peers can be muscle promoting (encouragement to build muscle) or muscle discouraging (discouragement to build muscle). Peers’ comments, depending on their content, can have a different effect on the impression formation of observers in regard to the target’s self-esteem and life satisfaction. There are at least two opposing predictions regarding such effects. The first prediction is that a profile owner receiving muscle-discouraging comments from peers will be perceived as having higher levels of self-esteem and life satisfaction than a profile owner receiving muscle-promoting comments. This is because muscle-promoting messages can be viewed as disconfirming since they imply that the receiver of the message is not worthy and valuable and is, therefore, in need of change. Muscle-discouraging messages, on the other hand, might be seen as confirming, implying that he does not have to alter his body because he is worthy and valuable enough as he is. Confirming messages show that individuals are endorsed, acknowledged, and recognized as valuable by others (Cisna & Sieburg, 2006). Confirming messages have been reported to be beneficial to the receivers’ self-esteem (Dailey, 2009). Individuals might assume that those who receive confirming comments from peers would benefit from such comments and, thus, experience higher levels of self-esteem and life satisfaction.

Literature on the nature of males’ body-related conversations leads to another prediction that opposes the previous one. Women’s body-related talk generally centers around negatively talking about their own bodies, often involving a woman insisting she is fat while denying her peer is fat (Engeln et al., 2013). In contrast, when men share their body concerns or complaints with their peers, such concerns and complaints are often validated by their peers (e.g., peers agreeing with a man that he needs to build more muscle or lose weight; Engeln et al., 2013). If agreeing with a peer’s body concerns is normative among men, muscle-promoting messages might not be seen negatively. Responding with encouragement to build muscle to a peer expressing his desire to build muscle might even be seen as a form of empathy rather than a form of criticism. If this is the case, discouragement of muscle building might be seen negatively because it does not comply with the expectation. Given that there are two opposing predictions, the following research question has been posited:

**RQ1:** How, if at all, do the comments of the profile owner’s peers impact the observers’ impressions of the profile owner’s self-esteem (RQ1a) and life satisfaction (RQ1b)?

**Differences in impression formation between Asian Americans and European Americans.** The aforementioned process of forming an impression of the target’s self-esteem and life satisfaction might be different depending on the observers’ cultural backgrounds. Western societies have long placed emphasis on fitness and muscularity as a measure of masculinity, as suggested by ancient Greek and Roman artwork (Pope, Phillips, & Olivardia, 2000; Yang, Gray, & Pope, 2005). However, for some Asian societies, such as China, muscularity is a less central measure of masculinity relative to Western societies (Louie, 2002; Louie & Low,
Concerned with and influenced by the responses of his peers. Asian Americans may assume that the target is also con-

In the context of the current study, others think and say. In the context of the current study, be more attentive to surrounding contexts, including what

Lehman, Markus, & Kitayama, 1999). Due to such inter-

ties in the United States. Before taking part in this online

In general, those with East Asian cultural contexts tend to construe the self as collectivistic, relational, and interdependent in relation to those around them (Heine, Lehman, Markus, & Kitayama, 1999). Due to such inter-

dependent construal of the self, Asian Americans might be more attentive to surrounding contexts, including what others think and say. In the context of the current study, Asian Americans may assume that the target is also concerned with and influenced by the responses of his peers. In contrast, European Americans tend to possess independent self-construals and their conception of self tends to be that of a bounded entity that is relatively separate from surrounding contexts (Markus & Kitayama, 1991). This could suggest that European Americans are more likely than Asian Americans to assume that individuals, in general, are not as concerned with or influenced by others’ comments. If this were the case, the effect of peer-generated messages on the perceived psychological states of the profile owner (as explicated in RQ1) might be more salient among Asian Americans than among European Americans.

The opposing prediction is that the impact of peer-generated messages on perceived self-esteem and life satisfaction of the profile owner might be less pronounced among Asian Americans than their European counterparts. Saving face is an important aspect of Asian culture (Ting-Toomey & Kurogi, 1998), and literature suggests that Asian Americans have strong face concerns (Zane & Yeh, 2002). Asian Americans might perceive their peers’ muscle-discouraging comments as a reflection of their peers’ desires to be polite and not to threaten the target’s face rather than as the true acceptance of the target’s body as it is. Asian Americans may assume that the profile owner, who is aware of the true intentions of such muscle-discouraging comments, would not be so influenced by these comments.

European Americans, on the other hand, tend to use more open and direct communicators (Park & Kim, 2008) and are less concerned with face than Asian Americans are (Zane & Yeh, 2002). European Americans might perceive their peers’ muscle-discouraging comments as a reflection of the true acceptance of the target’s body. European Americans may assume that the receiver, who assumes the authenticity of the peers’ comments, might be more influenced by these comments. Based on the two contradicting possibilities above, the following research question is developed:

RQ3: How, if at all, does cultural background moderate the impact of peer-generated messages on the observers’ assumptions about self-esteem (RQ3a) and life satisfaction (RQ3b)?

Method

Participants

After the study procedures were approved by the Human Studies Programs of the University of Hawai’i at Manoa and the University of Texas at Austin, males (N = 508, age M = 20.41, SD = 2.55, range = 18–41) were recruited from communication courses at these universities in the United States. Before taking part in this online
study, participants had to click a checkbox indicating that they agreed to conditions in the informed consent form. Demographically, participants were 58% Asian (n = 295) and 42% Caucasian (n = 213) and all reported their nationality as American. All participants were asked to report their height and weight. The mean score of the body mass index (BMI) of participants was 24.03 (SD = 3.77, range = 15.06–44.93). According to the standard set by the World Health Organization (2006), 79% of the participants (n = 401) were within a normal range of BMI (18.5–25.59), 17% (n = 86) were overweight or obese, 3% (n = 15) were underweight, and 1% (n = 6) did not report their weight and/or height.

**Design**

This is an online experimental study with a 3 (body size of a profile owner: muscular, average, and overweight) \( \times \) 2 (message: promotion and discouragement of muscle building) \( \times \) 2 (participant cultural background: Asian and Caucasian) between-subject design. Because Facebook is the most popular SNS in the United States (Adler, 2017), it is a potential place where young individuals exchange and witness appearance-related conversations. Facebook was used as a medium of muscle talk exchange. Participants were randomly assigned to one of the six conditions. After viewing mockup Facebook pages online, participants were asked to fill out an online questionnaire accessing various psychological variables.

**Stimuli**

Stimuli were mockup Facebook pages of an imaginary college male student named “John Taylor.” Mockup pages contained two factors: (a) the picture of the profile owner’s body (muscular, average, or overweight), and (b) messages from peers (muscle promoting or discouraging), producing six conditions in total (please see Appendix A, B and C, for examples). A muscular, an average, and an overweight body in the pictures were from the same male, who anonymously posted his body change online. Since men tend to focus on the waist up—including arms, chest, and shoulders (McCabe & Ricciardelli, 2004)—the profile picture included only the upper part of the body without the face. Because the stimulus image included only the upper body without his face, the profile owner’s racial/ethnic background was not clearly identifiable to participants. This method was intended to minimize the potential effect of participants’ preference for a certain ethnicity.

Regardless of the body type of the profile owner, the picture was accompanied by his wall post expressing his desire to gain more muscle (“I wanna build more muscle!”). Each condition had comments allegedly left by his peers as a reply to the original comments. These comments were either muscular promoting or discouraging. Muscle-promoting messages included, “Eat protein before and after your weight training!” and “My trainer is great. Would you like to work out with me?” Examples of muscle-discouraging comments are, “No need! Why are people so obsessed with muscles?” and “Not everybody thinks a lot of muscle looks sexy, just saying.” Abbreviated words were used to reflect the colloquial language common in online posts.

**Measures**

For means and standard deviations of the main variables, please see Table 1.

**Manipulation check.** Participants responded to three statements regarding the profile owner’s body shape using 5-point Likert scales ranging from 1 = *strongly disagree* to 5 = *strongly agree*. An example item is “I think John is muscular.”

**Perception of others’ self-esteem.** To measure participants’ perceptions of the profile owner’s self-esteem, the Rosenberg self-esteem scale (RSES; Rosenberg, 1965) was slightly modified. Participants responded to 10 statements regarding the profile owner’s general feelings about himself (e.g., “On the whole, John is satisfied with himself”) with 5-point Likert scales ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Reliability (Cronbach’s \( \alpha \)) was .79.

**Perception of others’ life satisfaction.** The first four items of the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) were used to access participants’ perceptions of the profile owner’s life satisfaction. Participants responded to each item (e.g., “John is satisfied with his life”) using 5-point Likert scales ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Reliability (Cronbach’s \( \alpha \)) was .79.

**Data Analysis**

The data were analyzed using SPSS version 24. The effects of the profile owner’s body size, the messages, and participants’ cultural background on outcome variables were evaluated using a three-way analysis of variance (ANOVA) between-subject design. When significant differences were detected \( (p < .05) \), a Scheffe post hoc test was utilized. Effect size for each factor was evaluated by eta-squared (\( \eta^2 \)).
Results

Manipulation Check

Participants reported perceiving the degree of muscularity differently among the three body types, $F(2, 501) = 315.21, p < .001$. Participants reported that a muscular body was more muscular ($M = 3.96, SD = 0.72$) than an average body ($M = 2.56, SD = 1.01$) and an average body more muscular than an overweight body ($M = 1.71, SD = 0.70$). Similarly, participants reported perceiving that an average body ($M = 3.06, SD = 0.95$) and an overweight body ($M = 3.33, SD = 0.85$) needed to be toned to a greater degree than a muscular body ($M = 2.46, SD = 0.72$), $F(2, 501) = 54.79, p < .001$.

Perception of the Profile Owner’s Self-esteem

A 3 (body size of a profile owner) × 2 (message) × 2 (participant cultural background) ANOVA showed a significant main effect of body size, $F(2, 491) = 19.84, p < .001, \eta^2 = 0.02$. H1a stated that an overweight profile owner would be perceived as having the lowest self-esteem, followed by an average profile owner and a muscular profile owner. Post hoc tests using Scheffe’s method showed that a muscular profile owner ($M = 3.22, SD = 0.53$) was seen as having significantly higher self-esteem than an average profile owner ($M = 3.01, SD = 0.48$), $p < .01$, as well as an overweight profile owner ($M = 2.91, SD = 0.43$), $p < .05$. There was a nonsignificant difference in perceived self-esteem between average and overweight profile owners, $p = .31$. H1a was partially supported.

RQ1a asked how the comments of the profile owner’s peers influence the observers’ rating of the profile owner’s self-esteem. There was a significant main effect of messages, $F(1, 491) = 10.46, p < .01, \eta^2 = 0.00$. A profile owner who received muscle-promoting messages was perceived as having significantly higher self-esteem ($M = 3.11, SD = 0.48$) than a profile owner who received muscle-discouraging messages ($M = 2.98, SD = 0.46$). RQ2a posed a question regarding an interaction effect

| Cultural background | Body size | Message | Self-esteem | life satisfaction |
|---------------------|----------|---------|-------------|------------------|
|                     |          |         | $M$        | $SD$ | $M$  | $SD$ |
| Asian American      | Muscular (n = 92) | Muscle encouraging (n = 37) | 3.37 | 0.54 | 3.00 | 0.48 |
|                     | Muscle discouraging (n = 55) | 3.15 | 0.54 | 3.00 | 0.66 |
|                     | Total    | 3.24    | 0.55 | 3.00 | 0.59 |
|                     | Average (n = 101) | Muscle encouraging (n = 58) | 3.08 | 0.42 | 2.80 | 0.64 |
|                     | Muscle discouraging (n = 43) | 2.92 | 0.39 | 2.78 | 0.46 |
|                     | Total    | 3.01    | 0.42 | 2.79 | 0.57 |
|                     | Overweight (n = 99) | Muscle encouraging (n = 48) | 3.04 | 0.45 | 2.77 | 0.64 |
|                     | Muscle discouraging (n = 51) | 2.85 | 0.36 | 2.70 | 0.59 |
|                     | Total    | 2.93    | 0.42 | 2.73 | 0.61 |
| Caucasian American  | Muscular (n = 70) | Muscle encouraging (n = 41) | 3.21 | 0.45 | 3.13 | 0.50 |
|                     | Muscle discouraging (n = 29) | 3.15 | 0.60 | 2.80 | 0.65 |
|                     | Total    | 3.19    | 0.52 | 2.99 | 0.59 |
|                     | Average (n = 69) | Muscle encouraging (n = 30) | 3.06 | 0.44 | 2.63 | 0.68 |
|                     | Muscle discouraging (n = 39) | 2.95 | 0.38 | 2.70 | 0.66 |
|                     | Total    | 3.00    | 0.40 | 2.67 | 0.67 |
|                     | Overweight (n = 73) | Muscle encouraging (n = 39) | 2.90 | 0.50 | 2.49 | 0.54 |
|                     | Muscle discouraging (n = 34) | 2.84 | 0.41 | 2.53 | 0.50 |
|                     | Total    | 2.87    | 0.46 | 2.51 | 0.52 |
|                     | Total (n = 162) | Muscle encouraging (n = 107) | 3.22 | 0.53 | 3.00 | 0.59 |
|                     | Average (n = 170) | 3.01 | 0.41 | 2.74 | 0.61 |
|                     | Overweight (n = 172) | 2.91 | 0.43 | 2.63 | 0.56 |
|                     | Total (n = 253) | Muscle encouraging (n = 204) | 3.11 | 0.48 | 2.81 | 0.62 |
|                     | Muscle discouraging (n = 251) | 2.98 | 0.46 | 2.77 | 0.61 |
|                     | Total (n = 254) | Asian American (n = 292) | 3.06 | 0.48 | 2.72 | 0.62 |
|                     | Caucasian American (n = 212) | 3.02 | 0.48 | 2.84 | 0.60 |
|                     | Total    | 3.04    | 0.48 | 2.79 | 0.61 |

Note. Different subscripts indicate significant difference based on post hoc comparisons using the Scheffe test at $p < .05$. 

Table 1. Means and Standard Deviations. 


between body size and cultural background. There was a nonsignificant interaction effect, $F(2, 491) = 0.40$, $p = .67$, $\eta^2 = 0.00$. RQ3a asked if cultural background moderates the effect of messages. Again, the interaction between messages and cultural background was nonsignificant, $F(1, 491) = 1.75$, $p = .19$, $\eta^2 = 0.00$.

**Perception of the Profile Owner’s Life Satisfaction**

A 3 (body size of a profile owner) × 2 (message) × 2 (cultural background) ANOVA showed a significant main effect of cultural background, $F(1, 492) = 5.71$, $p < .05$, $\eta^2 = 0.00$. Compared to Caucasians ($M = 2.72$, $SD = 0.62$), Asian participants ($M = 2.84$, $SD = 0.60$) reported perceiving the profile owner as having greater life satisfaction. There was also a significant main effect of body size, $F(2, 491) = 15.44$, $p < .001$, $\eta^2 = 0.02$. To test H1b, which predicted that an overweight profile owner would be perceived as having the lowest life satisfaction, followed by an average profile owner and a muscular profile owner, post hoc tests using Scheffe’s method were conducted. The results showed that a muscular profile owner ($M = 3.00$, $SD = 0.59$) was perceived as having significantly higher life satisfaction than an average profile owner ($M = 2.74$, $SD = 0.61$) and an overweight profile owner ($M = 2.64$, $SD = 0.58$). The difference in perceived life satisfaction between an average and an overweight profile owner was nonsignificant, $p = .26$. Therefore, H1b was partially supported.

RQ1b asked how the messages of the profile owner’s peers impact the observers’ impressions of the profile owner’s life satisfaction. The results showed a nonsignificant main effect of the messages, $F(1, 492) = 0.94$, $p = .33$, $\eta^2 = 0.00$. RQ2b asked if and how cultural background moderates the impact of body size on life satisfaction. A nonsignificant interaction between cultural background and body size was found, $F(2, 492) = 1.03$, $p = .36$, $\eta^2 = 0.00$. RQ3b asked if cultural background moderates the effect of the messages on life satisfaction. There was a nonsignificant interaction effect between cultural background and messages, $F(1, 492) = 0.14$, $p = .71$, $\eta^2 = 0.00$.

**Discussion**

Using Facebook as a medium of communication, this study investigated how a muscle talker’s body build and peer-generated messages impact observers’ impression formation of his self-esteem and life satisfaction from a cross-cultural perspective. Even though there is ample evidence demonstrating weight bias in the domain of personal attributes, such as laziness (Bento et al., 2012), little is known about weight bias in the domain of psychological characteristics. The current results add a novel finding to weight bias literature: Individuals indeed assume that muscular males possess greater self-esteem and life satisfaction than average or overweight males. The current study demonstrates that peer-generated messages also influence how observers perceive the target’s self-esteem.

**Effect of Body Build on Impression Formation**

This study found that the body build of a muscle talker influenced the observer’s evaluation of his self-esteem and life satisfaction. A muscular target was judged as having higher levels of self-esteem and life satisfaction than a target with an average or overweight body. This is consistent with previous research by Taniguchi and Lee (2015), which demonstrated that Korean females evaluated an overweight female target as possessing lower self-esteem than a thin counterpart. Given that muscular bodies are depicted as ideal for males in Western societies (Ricciardelli, Clow, & White, 2010), it makes sense that observers assumed that muscular targets would feel positively about both themselves (high self-esteem) and their lives (life satisfaction). Observers might have also assumed that a muscular male enjoys favorable treatment from others, leading them to believe that he possesses higher levels of self-esteem and life satisfaction.

There was no difference in perceived self-esteem and life satisfaction between a normal weight target and an overweight target. One potential reason for this nonsignificant finding is minimal manipulation. Even though manipulation was successful, an overweight target might not have been seen as large enough to elicit the expected effects with this one-time observation. Considering the prevalence of obesity and being overweight in the United States (Ogden, Carroll, Fryar, & Flegal, 2015), the overweight target might not have been perceived as large enough. If the overweight target had been created to represent an even larger body, this study might have observed expected differences in perceived self-esteem and life satisfaction between an average and an overweight target.

**Effect of Peer-Generated Messages on Impression Formation**

This study also showed that peer-generated messages did in fact influence how observers formed impressions about the target’s self-esteem. Compared to the target who received muscle-discouraging messages from his peers, the target who received muscle-promoting messages was perceived as possessing higher self-esteem. This finding
aligns with the previous results that female observers formed a more positive psychological impression (e.g., higher self-esteem) of a female target expressing her desire for weight loss when she received thinness-encouraging messages from peers than when she received thinness-discouraging messages (Taniguchi & Lee, 2015).

There are a few interpretations as to why the target who received muscle-promoting messages was seen as having higher self-esteem than the target who received muscle-discouraging messages. First, when a male expresses his desire to build muscle, it is normative to validate his body concerns and complaints rather than to deny them (Engeln et al., 2013). Validating friend’s muscle-related concerns and supporting his desires so that he can attain what he wants might be perceived as a sign of empathy, which is an important component of a successful friendship (Chow, Ruhl, & Buhrmester, 2013). Observers may have thought that the target was surrounded by empathic peers and, therefore, had a higher level of self-esteem. In contrast, observers might have assumed that the target who received muscle-discouraging message did not have empathetic friendships and, therefore, had poor self-esteem.

Building on self-determination theory (SDT; Deci & Ryan, 1985), muscle-promoting messages might have been perceived as highly autonomy supportive. Autonomy support refers to behaviors that nurture one’s sense of self-determination and has consistently been associated with well-being in general (Ryan & Deci, 2001). Because muscle-promoting messages acknowledge the target’s feelings and concerns, support his initiative to build muscle, and provide relevant information and options/strategies for him to build muscle, observers might have thought that the target was surrounded by friends who were highly autonomy supportive of his motivation. By contrast, muscle-discouraging messages could be seen as somewhat controlling, in that they aimed to change the target’s attitude so that he would not engage in muscle-building behaviors. Based on their personal experiences, observers might have, knowingly or unknowingly, recognized the benefit of autonomy support on psychological function. They might have assumed that the target receiving muscle-promoting messages had high levels of self-esteem and life satisfaction.

Cultural Differences

Observers’ cultural backgrounds did not moderate the impact of body build or peer messages on perceived self-esteem and life satisfaction. One reason for this result might be related to the nature of the Asian American sample in this study. The current study used Asian Americans in the United States, rather than Asian nationals residing in Asian societies. Some Asian Americans in this study might have been acculturated into mainstream American culture. If this study were to be replicated using Asians residing in Asian countries, the moderating role of cultural background may have been observed as intended.

A main effect of cultural background on perceived life satisfaction was observed: Asian Americans, in general, assumed that the target has a higher level of life satisfaction than their Caucasian counterparts did. This pattern is similar to a previous study in which Asians (Japanese living in Japan) reported perceiving the target on Facebook as having a higher level of psychological well-being than Americans did (Taniguchi & Lee, 2015). One potential interpretation of why Asian Americans assumed a higher level of life satisfaction in the target than European Americans did may be related to cultural differences in attitudes toward social support seeking. Research demonstrates that Asian Americans are less likely to seek support than their Caucasian counterparts (Leong & Lau, 2001). Given the relative rarity of support seeking among Asian Americans, Asian observers might have perceived the target’s willingness and ability to openly express his appearance-related concerns and desires in a way that successfully elicits responses from peers as an indicator of a person who is comfortable being himself. This may have led Asian observers to assume that the target had a higher level of life satisfaction than their European counterparts assumed.

Implications

First, even though some interventions against weight bias have been created (Gloor & Puhl, 2016; O’Brien, Puhl, Latner, Mir & Hunter, 2010), the results of this study further call for intervention and prevention programs against weight bias. It would be meaningful to devise a program to reduce the likelihood that overweight and obese people are assumed to possess poor psychological characteristics. There is a stigma of low self-esteem that can lead to discrimination against those who are believed to possess low self-esteem (Cameron, Stinson, Hoplock, Hole, & Schellenberg, 2016; MacGregor et al., 2010). Possessing low self-esteem is often considered a “deal breaker” when forming a new romantic relationship (Jonason, Garcia, Webster, Li, & Fisher, 2015). Given these real-life implications, further initiatives are needed to curtail negative bias based on an individual’s body size.

Second, observers in this study were exposed to the target’s profile page only for a short period of time (less than 1 min), and yet it was enough for the observers to from impressions about the target. In reality, individuals
are exposed to Facebook much longer and more frequently. About 70% of Facebook users check the site daily and 45% do so several times a day (Duggan & Smith, 2013). Further, Asian Americans have been reported to check Facebook more frequently than European Americans (Charmaraman, Chan, Chen, Richer, & Ramanudom, 2018). This implies that the effect of the target’s body build and peer-generated messages on impression formation might be even greater in real life, particularly for Asian Americans. Given the prevalence of social networking websites, it is not uncommon for employers to engage in cybervetting—the practice of viewing SNSs to obtain information about job applicants or to monitor current employees (Berkelaar & Buzzanell, 2015). It is advisable that users be aware that the images and peer-generated comments posted on their SNSs can impact how their current and potential employers form impressions about their self-esteem and life satisfaction.

Limitations and Future Research

This research involves several limitations. First, this study treated Asian Americans as a single category, rather than differentiating each ethnic group constituting the Asian American category (e.g., Chinese, Filipino, Japanese, Vietnamese). Research demonstrates that there is heterogeneity within the glossing label of “Asian Americans.” In terms of body size, Filipino American men tend to have higher BMIs than Vietnamese American men (Lauderdale & Rathouz, 2000). Larger individuals might not be perceived as negatively by Filipino Americans because such bodies are relatively more normative. Future research might benefit from examining if there are any differences among various Asian American groups in terms of the effect of body build on impression formation online.

This study did not examine how observers perceived the peers’ comments. As speculated earlier, muscle-encouraging comments might have been perceived as more empathetic, validating, and/or autonomy supportive than muscle-discouraging comments. It is useful for future research to investigate observers’ perceptions of peers’ messages based on relevant theoretical frameworks, such as SDT (Deci & Ryan, 1985).

Future research should also examine if and how individual characteristics of observers impact the impression formation process online in muscle talk contexts. For instance, the strength of weight stigma is influenced by such individual factors as one’s own weight status (Schwartz, Vartanian, Nosek, & Brownell, 2006) and weight locus of control, which refers to the degree to which individuals believe they have control over their weight (Elison & Çiftçi, 2015). Such individual factors might interact with not only the effect of body build but also the content of the comments. For example, when observers hold external weight locus of control (a belief that weight is largely a result of external factors that are beyond one’s control), they might perceive peer-generated messages discouraging muscle building—and thus accepting the target’s current body build—as more conducive to the target’s self-esteem and life satisfaction. Identifying potential individual characteristics that moderate the impact of muscle talk would deepen understanding of weight bias and the impression formation process.

The current study focused on impression formation in the context of muscle talk where a target expresses his body concerns. Future research might benefit from examining impression formation in the context of “body positive” talk. The body positive movement refers to an initiative that aims to challenge the dominant norm of the ideal body and instead promote self-acceptance of bodies of any size, shape, or appearance. Such a movement is gaining momentum on various social media platforms, such as Instagram, especially among females (Cwynar-Horta, 2016). Even though it is considerably less common, such a movement has slowly started to become accepted among some male users (Montgomery, 2016). Given this, there is a potential likelihood that users see other users’ pictures accompanied by body-accepting messages posted on SNSs. It would be interesting to examine how a target’s body-accepting comments might interact with the role of his body build in observers’ impression formation processes. For instance, observers’ impressions toward an overweight target might differ depending on whether the target expresses body acceptance or body concerns.

Conclusion

This study represents the first research on impression formation in the context of muscle talk on Facebook. The results confirmed the existence of weight bias as well bias against a person who received peer messages discouraging him from building muscle. Additional research that further examines the impression formation of individuals with various body builds accompanied by various appearance-related messages on Facebook and other SNSs will help to further understanding of addressing and hopefully redressing negative bias and discrimination associated with body build.
Appendix A. Stimulus material: Sample Facebook profile mock-up for a muscular profile owner and messages encouraging muscle building.

Appendix B. Stimulus material: Sample Facebook profile mock-up for an average-weight profile owner and messages encouraging muscle building.
Appendix C. Stimulus material: Sample Facebook profile mock-up for an overweight profile owner and messages discouraging muscle building.

Declaration of Conflicting Interests
The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding
The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the Core University Program for Korean Studies through the Ministry of Education of the Republic of the Korea and Korean Studies Promotion Service of the Academy of Korean Studies (AKS-2015-OLU-2250005) and the National Research Foundation (NRF) of Korea (NRF-2018R1D1A1B07049693).

ORCID iD
Hye Eun Lee https://orcid.org/0000-0002-7043-3640

References
Adler, E. (2016, July 7). Social media engagement: The surprising facts about how much time people spend on the major social networks. Business Insider. Retrieved from http://www.businessinsider.com/social-media-engagement-statistics-2013-12
Ata, R. N., & Thompson, J. K. (2010). Weight bias in the media: A review of recent research. Obesity Facts, 3, 41–46.
Bento, R. F., White, L. F., & Zacur, S. R. (2012). The stigma of obesity and discrimination in performance appraisal: A theoretical model. The International Journal of Human Resource Management, 23(15), 3196–3224.
Berger, C., & Calabrese, R. (1975). Some explorations in initial interaction and beyond: Toward a developmental theory of interpersonal communication. Human Communication Research, 1, 99–112.
Berkelaar, B. L., & Buzzanell, P. M. (2015). Online employment screening and digital career capital: Exploring employers’ use of online information for personnel selection. Management Communication Quarterly, 29, 84–113.
Boyd, D., & Ellison, N. B. (2007). Social networking sites: Definition, history, and scholarship. Journal of Computer-Mediated Communication, 13, 210–230.
Bucchianeri, M. M., Eisenberg, M. E., Wall, M. M., Piran, N., & Neumark-Sztainer, D. (2014). Multiple types of harassment: Associations with emotional well-being and unhealthy behaviors in adolescents. Journal of Adolescent Health, 54(6), 724–729.
Cafri, G., & Thompson, J. K. (2004). Measuring male body image: A review of the current methodology. Psychology of Men & Masculinity, 5, 18–29.
Cameron, J. J., Stinson, D. A., Hoplock, L., Hole, C., & Schellenberg, J. (2016). The robust self-esteem proxy: Impressions of self-esteem inform judgments of personality and social value. Self and Identity, 15(5), 561–578.
Charmaraman, L., Chan, H. B., Chen, S., Richer, A., & Ramanudom, B. (2018). Asian American social media use: From cyber dependence and cyber harassment to saving face. Asian American Journal of Psychology, 9, 72–86.
Chow, C. M., Ruhl, H., & Buhrmester, D. (2013). The mediating role of interpersonal competence between adolescents’ empathy and friendship quality: A dyadic approach. *Journal of Adolescence, 36*, 191–200.

Cissna, K. N., & Sieburg, E. (2006). Patterns of interactional confirmation and disconfirmation. In J. Stewart (Ed.), *Bridges not walls: A book about interpersonal communication* (pp. 429–438). Boston: McGraw-Hill.

Colby, S., & Ortmann, J. (2015). Projections of the size and composition of the US population: 2014 to 2060. *US Census Bureau*. Retrieved from https://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf

Cwynar-Horta, J. (2016). The commodification of the body among adolescents and young adults. *Telematics and Informatics, 34*(4), 350–364.

Dienert, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71–75.

Duggan, M., Ellison, N. B., Lampe, C., Lenhart, A., Madden, M., Rainie, L., & Smith, A. (2015). Social media update 2014: While Facebook remains the most popular site, other platforms see higher rates of growth. Washington, DC: Pew Research Center. Retrieved from http://www.pewinternet.org/files/2015/01/PI_SocialMediaUpdate20144.pdf

Duggan, M., & Smith, A. (2013). Social media update 2013: 42% of online adults use multiple social networking sites, but Facebook remains the platform of choice. Washington, DC: Pew Research Center. Retrieved from http://www.pewinternet.org/2013/12/30/social-media-update-2013/

Durso, L. E., Latner, J. D., White, M. A., Masheb, R. M., Blomquist, K. K., Morgan, P. T., & Grilo, C. M. (2012). Internalized weight bias in obese patients with binge eating disorder: Associations with eating disturbances and psychological functioning. *International Journal of Eating Disorders, 45*, 423–427.

Elson, Z. M., & Çiftçi, A. (2015). Digesting antifat attitudes: Locus of control and social dominance orientation. *Translational Issues in Psychological Science, 1*(3), 262–270.

Engeln, R., Sladek, M. R., & Waldron, H. (2013). Body talk among college men: Content, correlates, and effects. *Body Image, 10*(3), 300–308.

Gloer, J. L., & Puhl, R. M. (2016). Empathy and perspective-taking: Examination and comparison of strategies to reduce weight stigma. *Stigma and Health, 1*(4), 269–279.

Greenberg, B. S., Eastin, M., Hofschire, L., Luchlan, K., & Brownell, K. D. (2003). Portrayals of overweight and obese individuals on commercial television. *American Journal of Public Health, 93*(8), 1342–1348.

Heine, S. J., Lehman, D. R., Markus, H. R., & Kitayama, S. (1999). Is there a universal need for positive self-regard? *Psychological Review, 106*(4), 766–794.

Hemingston, D., Shim, A., & Choi, H. S. (2013). Does a professor’s somatotype influence perceptions of their intelligence from exercise science students? *Journal of Sports Science, 1*, 46–51.

Jackson, S. E., Beeken, R. J., & Wardle, J. (2015). Obesity, perceived weight discrimination, and psychological well-being in older adults in England. *Obesity, 23*(5), 1105–1111.

Jonason, P. K., Garcia, J. R., Webster, G. D., Li, N. P., & Fisher, H. E. (2015). Relationship deal breakers: Traits people avoid in potential mates. *Personality and Social Psychology Bulletin, 41*(12), 1697–1711.

Knight-McCord, J., Cleary, D., Grant, N., Herron, A., Lacey, T., Livingston, T., & Emanuel, R. (2016). What social media sites do college students use most? *Journal of Undergraduate Ethnic Minority Psychology, 2*, 21–26.

Lauderdale, D. S., & Rathouz, P. J. (2000). Body mass index in a US national sample of Asian Americans: Effects of nativity, years since immigration and socioeconomic status. *International Journal of Obesity, 24*(9), 1188–1194.

Leong, F. T., & Lau, A. S. (2001). Barriers to providing effective mental health services to Asian Americans. *Mental Health Services Research, 3*(4), 201–214.

Louie, K. (2002). *Theorizing Chinese masculinity: Society and gender in China*. Cambridge, UK: Cambridge University Press.

Louie, K., & Low, M. (Eds.). (2005). *Asian masculinities: The meaning and practice of manhood in China and Japan*. London, UK: Routledge Curzon.

MacGregor, J. C. D., Cameron, J. J., & Holmes, J. G. (2010, February). *Discriminating against people with low self-esteem: Are LSEs each others’ worst enemy?* Poster presented at the annual meeting of the Society for Personality and Social Psychology, Las Vegas, NV.

Markus, H. R., & Kitayama, S. (1991). Cultural variation in the self-concept. In G. R. Goethals & J. Strauss (Eds.), *Multidisciplinary perspectives on the self* (pp. 18–48). New York, NY: Springer-Verlag.

McCabe, M. P., & Ricciardelli, L. A. (2004). Body image dissatisfaction among males across the lifespan: A review of past literature. *Journal of Psychosomatic Research, 56*(6), 675–685.

Montgomery, A. (2016). My curves have no bounds: Plus-size men and sibling contributions to adolescent psychosocial adjustment. *Western Journal of Communication, 73*(3), 273–299.

Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality, 19*(2), 109–134.

Dhir, A., & Tsai, C. C. (2016). Understanding the relationship between intensity and gratifications of Facebook use among adolescents and young adults. *Telematics and Informatics, 34*(4), 350–364.
Ogden, C. L., Carroll, M. D., Fryar, C. D., & Flegal, K. M. (2015). Prevalence of obesity among adults and youth: United States, 2011–2014. *NCHS Data Brief, 219*, 1–8.

Papadopoulos, S., & Brennan, L. (2015). Correlates of weight stigma in adults with overweight and obesity: A systematic literature review. *Obesity, 23*(9), 1743–1760.

Palaniappan, L. P., Wong, E. C., Shin, J. J., Fortmann, S. P., & Lauderdale, D. S. (2011). Asian Americans have greater prevalence of metabolic syndrome despite lower body mass index. *International Journal of Obesity, 35*(3), 393–400.

Park, Y. S., & Kim, B. S. (2008). Asian and European American cultural values and communication styles among Asian American and European American college students. *Cultural Diversity and Ethnic Minority Psychology, 14*, 47–56.

Pope, H., Phillips, K. A., & Olivardia, R. (2000). *The Adonis complex: The secret crisis of male body obsession.* New York, NY: Free Press.

Rosenberg, M. (1965). *Society and the adolescent self-image.* Princeton, NJ: Princeton University Press.

Puhl, R. M., & Brownell, K. D. (2006). The influence of one’s own body weight on implicit and explicit anti-fat bias. *Obesity, 14*(10), 1802–1815.

Rudolph, C. W., Wells, C. L., Weller, M. D., & Baltes, B. B. (2009). A meta-analysis of empirical studies of weight-based bias in the workplace. *Journal of Vocational Behavior, 74*, 1–10.

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*, 141–166.

Schwartz, M. B., Vartanian, L. R., Nosek, B. A., & Brownell, K. D. (2006). The influence of one’s own body weight on implicit and explicit anti-fat bias. *Obesity, 14*(3), 440–447.

Sponcil, M., & Gitimu, P. (2013). Use of social media by college students: Relationship to communication and self-concept. *Journal of Technology Research, 4*, 1–13.

Strauss, J. P. (2005). Multi-source perspectives of self-esteem, performance ratings, and source agreement. *Journal of Managerial Psychology, 20*(6), 464–482.

Taniguchi, E., & Lee, H. E. (2015). Individuals’ perception of others’ self-esteem and psychological well-being: Role of body size and peers’ comments. *The Social Science Journal, 52*(2), 217–228.

Ting-Toomey, S., & Kurogi, A. (1998). Facework competence in inter-cultural conflict: An updated face-negotiation theory. *International Journal of Intercultural Relations, 22*(2), 187–225.

Tong, S. T., Van Der Heide, B., Langwell, L., & Walther, J. B. (2008). Too much of a good thing? The relationship between number of friends and interpersonal impressions on Facebook. *Journal of Computer-Mediated Communication, 13*(3), 531–549.

Vartanian, L. R., & Novak, S. A. (2011). Internalized societal attitudes moderate the impact of weight stigma on avoidance of exercise. *Obesity, 19*(4), 757–762.

Walther, J. B., Van Der Heide, B., Hamel, L. M., & Shulman, H. C. (2009). Self-generated versus other-generated statements and impressions in computer-mediated communication: A test of warranting theory using Facebook. *Communication Research, 36*(2), 229–253.

Walther, J. B., Van Der Heide, B., Kim, S., Westerman, D., & Tong, S. T. (2008). The role of friends’ behavior on evaluations of individuals’ Facebook profiles: Are we known by the company we keep? *Human Communication Research, 34*, 28–49.

Wang, Y., & Beydoun, M. A. (2007). The obesity epidemic in the United States—gender, age, socioeconomic, racial/ethnic, and geographic characteristics: A systematic review and meta-regression analysis. *Epidemiologic Reviews, 29*, 6–28.

World Health Organization (WHO). (2006). *Global database on body mass index.* Geneva: WHO. Retrieved May 5, 2018, from http://apps.who.int/bmi/index.jsp?introPage=intro_3.html

Yang, C. J., Gray, P., & Pope, H. G. (2005). Male body image in Taiwan versus the West: Yanggang Zhiqi meets the Adonis complex. *American Journal of Psychiatry, 162*(2), 263–269.

Zane, N. W. S., & Yeh, M. (2002). The use of culturally-based variables in assessment: Studies on loss of face. In K. S. Kurasaki, S. Okazaki, & S. Sue (Eds.), *Asian American mental health: Assessment theories and methods* (pp. 123–140). New York, NY: Kluwer Academic/Plenum Press Publishers.