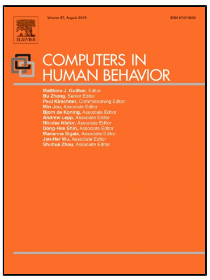
Accepted Manuscript



Comparing and Modeling via Social Media: The Social Influences of Fitspiration on Male Instagram Users' Work out Intention

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PII:	S0747-5632(19)30186-4
DOI:	10.1016/j.chb.2019.05.011
Reference:	CHB 6014
To appear in:	*Computers in Human Behavior*
Received Date:	03 January 2019
Accepted Date:	08 May 2019

Please cite this article as: Cheng-Ting Peng, Tai-Yee Wu, Yaxuan Chen, David J. Atkin, Comparing and Modeling via Social Media: The Social Influences of Fitspiration on Male Instagram Users' Work out Intention, *Computers in Human Behavior* (2019), doi: 10.1016/j.chb.2019.05.011

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Abstract

This study examines the effects of Instagram fitspiration images on male viewers' work out intention by integrating the processes of social comparison and social cognitive theory. The results from 1,428 Instagram users in Taiwan, with the directions of comparison (upward, lateral, and downward) manipulated, indicate that upward comparisons with attractive models would strengthen self-improvement motives related to working out. In addition, pleasant affective responses to the images and one's self-efficacy for working out were also significant predictors. However, model attractiveness revealed a negative, direct effect on work out intention, suggesting that a seemingly rewarding model behavior itself discourages viewer imitation. Implications are discussed to contribute the understanding about male audiences' reactions to the same-sex body images associated with physical training. The findings verifying both the psychological and behavioral impacts of social influence also help demonstrate a more comprehensive picture about promoting exercise as a positive outcome of fitspiration imagery exposure.

Keywords: Fitspiration, social comparison, self-improvement, social cognitive theory, self-efficacy, model attractiveness

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1. Introduction

The "fitspiration" trend, an amalgamation of fitness and inspiration popularized on social networking sites (SNSs), encourages posts and shares about one's exercise and healthy diet (Tiggemann & Zaccardo, 2018). In contrast to other types of bodily self-presentation online (e.g., digitally retouched selfies; Chua & Chang, 2016), fitspiration seeks to motivate the pursuit of a healthier lifestyle. Also, as exposure to SNS messages results not only from incidental browsing (e.g., Oeldorf-Hirsch, 2018), but also from user sharing and algorithm targeting (e.g., Aruguete & Calvo, 2018), the impacts of fitspiration imagery on the viewers tend to be greater and broader than that of traditional media content such as fitness magazines or video workouts.

Research has identified damaging effects on the fitspiration viewers' body image concerns, however. The evidence, including decreased body satisfaction and elevated negative mood (Prichard, McLachlan, Lavis, & Tiggemann, 2018; Tiggemann & Zaccardo, 2015), resembles the negative consequences prompted by idealized body image viewing (e.g., Stice & Shaw, 1994). Attributions can be made to the dynamic of social comparison that the viewers experienced (Crossman, 2017), and the visuals that still largely represent culturally-based ideal bodies and a sense of sexual objectification (Boepple, Ata, Rum, & Thompson, 2016). Social comparison describes the drive of self-evaluation, which compares an individual's own opinions and abilities with that of others when more objective references are not available (Festinger, 1954). The above findings on fitspiration generally verify the viewers' affective responses due to social comparison, but not enough attention has been paid to their motivations for comparison.

As the fitspiration imagery has both personal and social elements, it's important to consider user motivations in light of user comparisons with peer-users. Literature (e.g., Buunk, Collins,

Taylor, VanYperen, & Dakof, 1990) has pointed out the relationship between one's motivation (e.g., self-enhancement or self-improvement) and the direction of comparison (e.g., downward or upward). As a result, identifying the fitspiration image viewers' comparison motivations can enhance our understanding of their reactions.

In addition, only a relatively small number of studies have addressed male participants (e.g., Griffiths, Murray, Krug, & McLean, 2018; Palmer, 2015). While some past research demonstrates few gender differences regarding the negative effects of an idealized body shape in media on the viewers (e.g., Dakanalis et al., 2015; Franchina & Coco, 2018), some work draws a dissimilar conclusion. For instance, McCabe and Ricciardelli (2004) summarized a tendency for young male adults to subscribe to losing weight, while building up their muscle tone; this suggests that the pursuit of diet and exercise may differ from their female counterparts. Also, a meta-analysis (Blond, 2008) discovers sparse and conflicting results regarding the impact of idealized male bodies in advertising on the same-sex viewers' body esteem and satisfaction. Specifically, Humphreys and Paxton (2004) inferred that some viewers might be inspired and believe that they will achieve a similar body shape, whereas others felt that was unlikely. As contemporary cultural standards increasingly celebrate "beefcake" body images for young men (e.g., Chacon-Araya & Moncada-Jimenez, 2013), therefore, the influences of fitspiration imagery on men may also be diverse and warrant further investigation.

More importantly, our knowledge about whether the fitspiration phenomenon promotes a healthier life-style (e.g., heightened levels of exercise and working out) remains limited. Although the fitspiration photos of exercise did challenge some male viewers' attitude towards masculinity and body image perception when making comparisons, research (Palmer, 2015) also shows that some others employed the pictures as exemplars to improve their workouts. The relationships among the viewers' exposure, social comparison, and the behavioral reactions are

thus intriguing. Social cognitive theory emphasizes the human capacity for observational learning via behavioral modeling, in which individual's motivation and self-efficacy also play important roles (Bandura, 2009). As fitspiration content is intended to urge imitations, investigations applying the concepts of modeling not only help bridge the process of social comparison, but they can also help explicate potential behavioral influence with a stronger theoretical basis.

The present study examines the effects of Instagram fitspiration images on the male users' tendency to go work out by integrating social comparison and social cognitive theory. The viewers' motivations of social comparison and the subsequent affective responses are identified to further differentiate the influences on their willingness to go work out. Their self-efficacy and appraisal of the model image are also included in verifying the effects of fitspiration modeling. Study findings are expected to demonstrate a clearer process that explains the various social impacts on evaluating one's own physique, expanding our understanding of body image perception and modeling among men, in particular.

2. Literature Review

2.1. The dynamic of social comparison

In Festinger's (1954) theoretical formulation, social comparison refers to a subjective means of self-evaluation when objective standards are unavailable. Klein (1997) further demonstrated that even when objective benchmarks exist, they are sometimes less influential to one's judgments (e.g., life satisfaction; Emmons & Diener, 1985) than the results of comparisons with others. This indicates that one may still be engaged in social comparison regardless the presence of objective criteria. Social media has become the newest arena for social comparison. Evidence shows that social comparison is triggered by a variety of SNS content, such as user profiles (Vogel, Rose, Roberts, & Eckles, 2014), status updates (Nesi & Prinstein, 2015), and "likes" as

well as comments (Kim & Chock, 2015). Another such trigger includes one's general self-perception, as influenced by the use of social media (e.g., Gerson, Plagnol, & Corr, 2016). As the fitspiration messages are constantly posted and shared on SNSs, they also serve as references for the viewers' self-evaluation (e.g., Tiggemann & Zaccardo, 2015).

2.1.1. Comparison directions and motivations

Scholars have also identified different directions of social comparison, including upward, downward, and lateral/similarity comparisons (e.g., Buunk et al., 1990; Felicio & Miller, 1994; Steil & Hay, 1997). Specifically, upward comparison occurs when individuals compare themselves with people possessing superior attributes, thereby placing themselves at an inferior position. On the contrary, downward comparison illustrates that individuals compare themselves with those who are inferior to them, thereby establishing a relatively advantageous position for themselves. In addition, lateral comparison describes the situations where individuals make comparisons with counterparts who have similar attributes. Although relatively few studies focus on lateral comparisons, this direction essentially reflects Festinger's (1954) original argument (i.e., Corollary III A) theorizing that, among all possible targets that can be compared, people tend to choose the ones whose ability or opinion is closest to themselves.

Moreover, the directions of social comparison are found to be associated with different motivations. Upward comparison, for instance, reflects the motivation for self-improvement that drives people to emulate a better-off other (Wheeler, 1966; Wood, 1989). Researchers (e.g., Berger, 1977; Ybema & Buunk, 1993) explain that individuals are more likely to seek information from and affiliate with those role models in order to adjust and improve their own performances. Downward comparison, on the other hand, generally indicates one's motivation for self-enhancement in reacting to misfortune or perceived threats (Buunk et al., 1990; Wills, 1981; Taylor, Wood, & Lichtman, 1983). Findings have shown that comparing oneself with the

disadvantaged others helps that person preserve self-esteem (e.g., Brickman & Bulman, 1977) and prevent his/her subjective well-being from suffering (e.g., Wills, 1981). Furthermore, lateral comparison is also related to self-enhancement, but this relationship largely depends on the issue of comparison (Wood, 1989). That is, when the issue accentuates one's undesirable qualities, self-enhancement tends to occur in the comparison with a similar other, such that one's flaws may be perceived as less serious. Yet, this association is not likely to appear when the issue of comparison focuses on one's favorable characteristics.

2.1.2. Social comparison and fitspiration

Research applying social comparison to the fitspiration phenomenon generally identifies damaging effects on the viewers' body image concerns, similar to those resulting from exposure to other types of SNS images (e.g., profile photos; Meier & Gray, 2014) and the use of social media (e.g., social grooming behaviors; Kim & Chock, 2015). However, the motivations for comparison remain unclear. Some studies (e.g., Fardouly & Vartanian, 2015; Tiggemann & Zaccardo, 2015) operationalize social comparison as a unidimensional tendency and only focus on one's level of likelihood to compare with others. Other work (e.g., Meier & Gray, 2014) regards social comparison as an outcome variable, paying little attention to exploring the reasons for comparison.

Moreover, while numerous studies in other contexts (e.g., Taylor et al., 1983; Wheeler, 1966) treat motivations as a determinant of the directions of social comparison, one's motivations are likely influenced by the comparison directions. As the exposure to fitspiration photos on social media is usually random and unexpected, the users are more likely to be engaged in comparing themselves with the photo models and then resulting in either self-improvement or self-enhancement. The prediction of comparison directions on motivations, although less commonly argued, receives support from Halliwell, Dittmar, and Orsborn's (2007)

experiment regarding British mens' exposure to muscular male models in advertisements. Their findings demonstrate greater motivation for self-enhancement, post-exposure, for those who expressed a higher level of intention for exercise to increase strength and muscularity.

Here we verify and extend the aforementioned social comparison dynamic to the online fitspiration phenomenon, particularly as it relates to motivations for self enhancement and self-improvement. Based on the literature and theory reviewed above, this study posits that:

H1a: Compared to lateral and downward social comparisons, upward social comparison will promote the highest level of the motivation for self-improvement.

H1b: Compared to lateral and downward social comparisons, upward social comparison will promote the lowest level of the motivation for self-enhancement.

Furthermore, we assume that the conceptual dynamics outlined above would work in both directions, governing upward social comparisons as well. More formally:

H2a: Compared to lateral and upward social comparisons, downward social comparison will promote the highest level of the motivation for self-enhancement.

H2b: Compared to lateral and upward social comparisons, downward social comparison will promote the lowest level of the motivation for self-improvement.

Also, because the relationships between lateral comparison and the motivations for self-enhancement and self-improvement vary by context (e.g., Wood, 1989), our understanding of which remains limited, the following research question is proposed:

RQ1: Compared to upward and downward social comparisons, what levels of the motivations for self-improvement and self-enhancement will lateral comparison predict?

2.1.3. Affective responses

Buunk et al. (1990) pointed out that a given direction of social comparison does not always predict a certain affective response (i.e., positive or negative), raising attention to the influences

of other factors in the dynamic of social comparison. For example, moderators such as self-esteem (Crocker & Schwartz, 1985) and likelihood of future improvement (Brickman & Bulman, 1977) have been found to affect the magnitude and direction of the prediction.

In addition, Mussweiler, Rüter, and Epstude (2004) identified the mechanisms of assimilation and contrast, further explicating the process of social comparison. Specifically, the assimilation effect occurs when individuals identify similarities between themselves and their peers and thus generate a sense of identification. Conversely, the contrast effect refers to the response triggered when individuals distinguish themselves from others through the recognition of differences. Buunk and Ybema (1997) argued that the contrast and assimilation effects resulting from comparisons between oneself and the others are the deciding factor in whether the results are positive or negative. Evidence reveals that positive emotions are more likely to occur when an individual develops a higher self-evaluation from either upward comparison for the purpose of assimilation (e.g., Ybema & Buunk, 1993) or downward comparison for contrast effect (e.g., Wills, 1981). By contrast, negative emotions tend to be the result of a lower self-evaluation affected by either upward comparison for a contrast effect (e.g., Collins, 1996) or downward comparison for an assimilation effect (e.g., Tesser, Millar, & Moore, 1988).

In the present context, self-improvement motivation suggests a stimulation desire developed by the Instagram viewers who identify the body image of the model in the fitspiration photos. Therefore, their sense of self-worth tends to be elevated, triggering more positive, or, pleasant affective responses. On the other hand, the motivation for self-enhancement resembles the contrast effect in order to preserve one's self-worth, which may subsequently generate more negative affective responses. Accordingly, the following hypotheses posit:

H3: Motivation for self-improvement will be positively related to pleasant affective response.

H4: Motivation for self-enhancement will be negatively related to pleasant affective response.

2.2. The process of social cognitive theory

The extant fitspiration studies applying social comparison focus on the viewers' psychological consequences or affective responses, although this theory draws implications about the behavioral impacts of comparison as Festinger (1954) argued that opinions and abilities, which this theory emphasizes that individuals evaluate, both affect behavior. To expand our understanding of the behavioral reactions of viewing fitspiration imagery on Instagram, this study also applies the insights from social cognitive theory. This theory stresses the human capability for observational learning (Bandura, 2009), which facilitates an individual's development of new knowledge and skills by imitating others in one's immediate or symbolic (e.g., via media content) environment.

2.2.1. Motivations

Bandura (2009) refers to the process of behavioral imitation as "modeling," which consists of four sequential stages, namely attention, retention, production, and motivation. Motivation is the key that determines one's willingness to perform what has been learned, and can be categorized as self-produced, direct, and vicarious (e.g., Bandura & Walters, 1977). The self-produced motivations describe individuals' self-evaluations of the activities they learned, in order to decide the ones they tend to actually pursue (Bandura, 2009). As the motivations for self-improvement and self-enhancement represent two types of self-evaluation identified in the process of social comparison, they can therefore serve as a theoretical crux that connects social cognitive theory. In particular, behavioral modeling is likely to occur to those who compare themselves with a superior other under the motivation for self-improvement (Wood, 1989). Self-enhancement, on the other hand, may discourage one's tendency for behavioral modeling, since

it motivates one to remain the contrast between oneself and the compared other. Thus, based on the research and theory reviewed above, this study proposes the following:

H5: Motivation for self-improvement will be positively related to work out intention.

H6: Motivation for self-enhancement will be negatively related to work out intention.

2.2.2. Model attractiveness

Similar to the vicarious learning from mass media that has raised scholarly attention for decades (e.g., Farrar, 2006), the fitspiration phenomenon encourages social media viewers' imitation of others' healthy behaviors demonstrated by photos and posts, rather than through direct observations. However, both the direct and vicarious motivations for modeling emphasize individual outcome expectations. That is, individuals tend to imitate a modeled behavior when it results in desired or rewarding consequences, but reject the behavior that leads to adverse outcomes or punishment; model characteristics such as status, competence, and attractiveness are also presumed to be influential to behavioral modeling (Bandura, 2009). In the fitspiration-related content, the physical attractiveness of the models is itself a manifest type of the rewarding outcome. According to previous content analyses (Boepple et al., 2016; Tiggemann & Zaccardo, 2018), the body images of thin (female) or muscular (male) physiques are a primary representation of fitness. Therefore, model attractiveness in Instagram imagery is likely to be rewarding, motivating the viewers to pursue exercise to improve their physique. To more formally incorporate attractiveness into the proposed theoretical process integrating social comparison and social learning, this study hypothesizes:

H7: Upward social comparison will be positively related to perceived model attractiveness.

H8: Downward social comparison will be negatively related to perceived model attractiveness.

H9: Perceived model attractiveness will be positively related to motivation for self-

improvement.

H10: Perceived model attractiveness will be negatively related to motivation for self-enhancement.

H11: Perceived model attractiveness will be positively related to work out intention.

Moreover, because the literature explaining the relationships among one's perception of the model in comparison (perceived model attractiveness), affective responses, and behavioral outcome (work out willingness) is relatively limited, the following research questions are posed:

RQ2: Is pleasant affective response related to work out intention?

RQ3: Is perceived model attractiveness related to pleasant affective response?

2.2.3. Self-efficacy

Self-efficacy refers to one's self-beliefs in successfully executing required abilities to carry out a certain action (e.g., Bandura, 2009). Wood and Bandura (1989) emphasized the crucial role of self-efficacy in the human motivation–behavior mechanism. The influences of self-efficacy can be demonstrated in the following three respects (Bandura & Walters, 1977). First, when it comes to one's decision to confront a problem, people with high self-efficacy are more likely to respond to challenges, whereas those with low self-efficacy tend to escape from such challenges. Also, in terms of amount of effort exerted, individuals with high self-efficacy invest more effort than do their counterparts with low self-efficacy. Moreover, with regard to the level of persistence, individuals with high self-efficacy are more persistent than are those with low self-efficacy.

Empirical studies have substantiated a positive prediction of self-efficacy for exercise on exercise-related habits and behaviors both in the United States (e.g., Anderson-Bill, Winett, & Wojcik, 2011; Dam, Roy, Atkin, & Rogers, 2018) and Taiwan (e.g., Hsieh & Yeh, 2008). In addition, an individual with a higher level of self-efficacy for exercise should also feel more

confidence when engaging in comparisons with others regarding physical fitness, indicating a more positive psychological state. The following hypotheses are thus posited:

H12: Self-efficacy for working out will be positively related to pleasant affective response.

H13: Self-efficacy for working out will be positively related to work out intention.

A proposed model encompassing the research hypotheses and questions is demonstrated in Figure 1.

3. Method

This study conducted an online experiment using SurveyCake.com, which offers built-in data privacy and security protection, as the platform for data collection. A total number of 1,587 Taiwanese male volunteers were recruited from four popular SNSs in Taiwan (i.e., Instagram, Facebook, Dcard.com, and Ptt BBS) between May 31st and June 14th, 2018. The willing respondents first read the research announcement at their own pace and proceeded to access the online questionnaire once they agreed to participate in this study. A raffle for ten free movie tickets was offered as incentive for participation. Responses from non-Instagramers and those found to be incomplete and failing the manipulation check were eliminated, resulting the final sample size N = 1,428. About three-quarters of the participants were under 30 years of age (20 years and below: 10.4%; 21-25 years: 39.0%; 26-30 years: 25.6%). The highest education level among the majority was college (67.6%), followed by graduate school (28.2%).

3.1. Research design and procedure

This study manipulated the directions of social comparison, including upward, downward, and lateral comparison. Because no information about participant body shape could be acquired before data collection, this study employed two steps for the experimental condition assignment. First, three simulated Instagram accounts were created as stimuli, each demonstrating eight selfies of the same male model working out at the gym. The three models were intentionally

selected to represent three different body shapes: muscular, normal, and under-fit. Also, to prevent any unwanted influences on the participants because of the models' look, the photos were taken without the models' faces. The scenes of the gym and the postures of the models in the photos across the three conditions were otherwise arranged to be as similar as possible (see Appendix A). A pilot study ($N = 51$) of the photos subjected to analysis of variance (ANOVA) indicated a significant difference in physical fitness among these three models: $F(2, 48) = 72.87$, $p < .001$. An additional post-hoc test using a Scheffe approach also confirmed the individual categories of body shape that each model represented. In this current study, the participants were randomly assigned to be exposed to one of the three simulated Instagram accounts with the workout photos (Muscular: n = 467; normal: n = 476; under-fit: n = 485).

Next, the participants were asked to rate whether the model in their condition had a level of physical fitness better, about the same, or worse, compared to themselves. Later, during the analysis, those who rated a better body shape of the model were re-categorized into the condition of upward comparison (n = 408; 28.6%), whereas the respondents who rated the opposite were placed in the downward comparison condition (n = 775; 54.3%). The lateral comparison included 17.2% of the participants (n = 245) who thought the model and themselves had a similar level of physical fitness.

After treatment, the participants completed several items as part of a manipulation check. They were then asked a series of questions measuring their motivations for self-improvement and self-enhancement, perceived model attractiveness, pleasant affective response, self-efficacy for working out, and willingness to go work out. The questionnaire ended with several demographic questions and the ones regarding the participants' work out habit and active Instagram usage.

3.2. Measurement

Measures of the predictor and outcome variables were adapted from well-developed scales and specified for this research topic or generated on the basis of literature. **Motivation for self-improvement** consisted of two items based on the rationale of Bunnk et al. (1990) and Wood (1989). Similarly, **motivation for self-enhancement** included three items generated on the basis of Wood (1989). **Perceived model attractiveness** was measured by four items adapted from the established scales for perceived source attractiveness (e.g., Ohanian, 1990). Also, **pleasant affective response** consisted of seven items adapted from Watson, Clark, and Tellegen's (1988) Positive and Negative Affect Scale (PANAS) with all items of negative affection later reverse coded. In addition, **self-efficacy for working out** was measured by six items adapted from previous studies (Becker & Stuifbergen, 2004; Kao, 2002). Finally, **work out intention** consists of four self-generated items to measure the participants' willingness to go work out after being exposed to the stimulus. All of the above measures were followed by the same 7-point Likert scale, ranging from totally disagree (1) to totally agree (7).

A confirmatory factor analysis (CFA) on the measurement model was also conducted. The results demonstrated a relatively good model fit: $\chi^2 = 1384.36$, $df = 264$, CMIN/DF = 5.24, $p < .001$; CFI = .967; RMSEA = .055. The items of each measure and its mean (M), standard deviation (SD), and reliability Cronbach's α values are presented in Appendix B.

In addition, the participants' age was used as a control variable. Moreover, three aspects of their work out habit were measured: work out frequency per week ($M = 3.35$, $SD = 1.66$), duration per time ($M = 2.87$, $SD = 1.28$), and level of intensity per time (7-point Likert scale; $M = 5.11$, $SD = .95$). The aspects were then calculated by employing the formula advocated by Fox (1987, p. 94) as the index of the participants' work out habit: Activity = Frequency x (mean intensity + mean duration). The index value ranges from 0 to 78, with the $Median = 27$, $M = 27.91$, and $SD = 15.42$.

Furthermore, the participants' active use of the following feature on Instagram (M = 5.01, SD = 2.22) was measured by two items (i.e., *I follow the Instagram users who go work out*; *I follow the Instagram users who go weight training*), whereas their active use of the posting feature (M = 2.56, SD = 2.31) included: *I post my photos of my workout on Instagram*; and *I post my photos of weight training on Instagram*. All of the items were followed the 7-point Likert scale ranging from totally disagree (1) to totally agree (7).

3.3. Validity tests

Further procedures testing the convergent and discriminant validity of the measurement model were employed. The results demonstrated that that the composite reliability (CR) and average variance extracted (AVE) of each construct met the common principles (i.e., CR > .70, AVE > .50, and CR > AVE) recommended in the literature (e.g., Fornell & Larcker, 1981; Hair, Black, Babin, Anderson, & Tatham, 2006), indicating satisfactory convergent validity for the measures. Similarly, adequate discriminant validity for the measures was also obtained following Fornell and Larcker's (1981) recommendations, as the maximum shared variance (MSV) of each construct was less than its AVE, and its square root of AVE was greater than the inter-construct correlations with the other constructs. The results are presented as Table 1.

3.4. Common method bias check

To assess the common method biases (CMB) that potentially occur to the observed covariation among different constructs due to the use of single measurement method, such as self-report questionnaires (Podsakoff, MacKenzie, & Podsakoff, 2012), this study adopted two approaches. First, the Harman's single-factor test was applied by conducting an exploratory factor analysis (EFA) on all of the items in the measurement model to estimate the shared variance. The rotation method was set to "none" and the extract factor solution was constrained to be one factor (Gaskin, 2016a). The results indicated that the single factor accounted for

29.33% of shard variance among the items, below the threshold of 50% (Cyr, Head, Lim, & Stibe, 2018), suggesting that the effect of CMB was less concerning.

Next, unmeasured latent method factor technique was employed by adding a common latent factor to the measurement model with all of the items loaded on that latent factor, in addition to their own constructs (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). A CFA on the measurement model with the common latent factor was then conducted, and the fit indices of the model ($\chi^2 = 780.47$, $df = 238$, CMIN/DF = 3.28, $p < .001$; CFI = .984; RMSEA = .040) were compared with that of the original measurement model. By entering the chi-square values and the degrees of freedom of the two models into the Excel StatTools developed by Gaskin (2016b), the results demonstrated a significant difference, indicating some substantial common method variance shared by the constructs. Yet, further comparisons of the observed variance of the same items between the common latent model and the original measurement model revealed rather minimal changes (0.1 to 4%). Only two items showed an apparent increase of 17% and 27% variance, respectively, in the common latent factor model. On the other hand, the random error variance of the two items in the common latent factor model remained very large (81% and 73%, respectively). The random error variance of the other items also ranged from 3% to 67%, suggesting that the variance in the measurement model resulting from CMB was relatively small in general. Therefore, aligning with the literature (e.g., Choi & Chen, 2007; MacKenzie, Podsakoff, & Fetter, 1993), the method effects of the measurement were less likely to be a serious issue in this study.

3.5. Manipulation check and collinearity test

This study manipulated the respondents' directions of social comparison by inquiring how, compared to themselves, they would rate the male model to which they were exposed. Specific comparative criteria included level of physical fitness better (upward condition), about the same

(lateral condition), or worse (downward condition). Prior to this inquiry, two questions were presented to check its effectiveness. The viewers were asked to rate the levels of physical fitness of the model (item 1) and themselves (item 2) with a 7-point Likert scale, ranging from totally unfit (1) to totally fit (7). Next, the item 1 was subtracted by item 2, resulting in a continuum that indicated one's physical fitness, ranging from "extremely inferior to the model" (-6) to "extremely superior to the model" (+6). An ANOVA test revealed a significant difference among the three directions of comparison, F (2, 1425) = 1912.96, $p < .001$, $\eta^2 = .73$ (upward: M = -2.40, SD = 1.28; lateral: M = -.08, SD = .90; downward: M = 2.21, SD = 1.30). Post hoc tests using a Scheffe approach also showed significant differences between each direction of comparison. Therefore, the manipulation succeeded.

To investigate potential multicollinearity among the predictor variables, a linear regression test using SPSS 22 with the function of collinearity diagnostics was performed. The results indicated that none of the predictors demonstrated a variance inflation factor (VIF) value over 2.77. Collinearity is thus not deemed to be a concern.

4. Results

This study employed covariance-based structural equation modeling (CB-SEM) with maximum likelihood (ML) as the estimation procedure to verify the proposed research model. Hair, Ringle, and Sarstedt (2011) summarized several advantages of utilizing the approach of CB-SEM in comparison with other approaches (e.g., partial least square SEM, PLS-SEM). For instance, CB-SEM is more suitable for theory testing and confirmation, which reflects the major goal of this study. Also, the CB-SEM models can be evaluated with a global set of goodness-of-fit indices. Additionally, no issue regarding the sufficiency of the sample size for ML estimation seems to occur, as this study obtains a fairly large sample (N = 1,428) that exceeds the suggested minimum of 200 cases (Boomsma & Hoogland, 2001; Reinartz, Haenlein, & Henseler, 2009).

Before conducting the SEM, the directions of social comparison were dummy coded and restructured as two variables: "upward comparison" (upward = 1, lateral and downward = 0) and "downward comparison" (downward = 1, lateral and upward = 0). Second, the control variables—including age, work out habit, active use of Instagram following, and active use of Instagram posting—were also added in the model as covariates. The proposed model using AMOS 25.0 revealed a relatively good model fit: $\chi^2 = 76.60$, $df = 18$, CMIN/DF = 4.26, $p < .001$; CFI = .991; RMSEA = .048. However, two paths that associated motivation for self-enhancement with pleasant affective response ($\beta = -.01$, $p = .870$) and with work out intention ($\beta = .02$, $p = .510$) turned out to be not significant (see Figure 2).

Hypothesis 1 predicted that upward social comparison will predict (H1a) the highest level of motivation for self-improvement and (H1b) the lowest level of motivation for self-enhancement. Also, H2 postulated that downward social comparison will predict (a) the highest level of the motivation for self-enhancement and (b) the lowest level the motivation for self-improvement. The SEM model demonstrated that all of the relevant paths reached significance with the correct directions, such that upward comparison was positively related with self-improvement ($\beta = .22$, $p < .001$) and negatively related with self-enhancement ($\beta = -.26$, $p < .001$), whereas downward social comparison was positively related to self-enhancement ($\beta = .40$, $p < .001$) and negatively related to self-improvement ($\beta = -.19$, $p < .001$).

Additional analyses of covariance (ANCOVA), including the same control variables, further revealed significant differences among the three directions of social comparison in the motivations for self-improvement and self-enhancement. Specifically, the individuals in the upward comparison condition indicated the highest level of self-improvement ($M = 5.10$, $SD = 1.40$), followed by those who in the lateral comparison ($M = 3.28$, $SD = 1.48$) and the downward comparison condition ($M = 1.81$, $SD = 1.19$): $F(2, 1421) = 759.88$, $p < .001$, partial $\eta^2 = .52$. Per

the self-enhancement motivation, participants in the downward comparison condition indicated the highest scores (M = 5.46, SD = 1.15), followed by those in the lateral comparison condition (M = 3.90, SD = 1.24) and the upward comparison (M = 2.74, SD = 1.12): F (2, 1421) = 653.53, $p < .001$, partial $\eta^2 = .48$. Post hoc tests using the Scheffe method also reveal significant differences between each condition involving comparison. These findings confirmed that H1a, H1b, H2a and H2b were all supported.

With regard to the relationships between motivations and pleasant affective responses, H3 was supported, as the model indicated that motivation for self-improvement significantly predicted greater pleasant affective response ($\beta = .10$, $p = .019$). Hypothesis 4 proposed a negative prediction of motivation for self-enhancement on pleasant affective response. Although the results showed a negative relationship, the effect size was negligible ($\beta = -.01$, $p = .870$). Thus, H4 failed to garner support.

Moreover, H5 stated that motivation for self-improvement will positively predict work out intention. This hypothesis was supported, as the model demonstrated that the positive relationship ($\beta = .10$, $p = .004$) was significant. However, H6, motivation for self-enhancement will be negatively related to work out intention, was not supported. The path indicated a fairly weak, positive relationship between self-enhancement and willingness to go work out, and failed to attain significance ($\beta = .02$, $p = .510$).

In addition, to test the influences on perceived model attractiveness, H7 predicted that upward social comparison will be positively related to perceived model attractiveness. The prediction found support, as the positive relationship was significant ($\beta = .41$, $p < .001$). Also, H8 stated that downward social comparison will be negatively related to perceived model attractiveness. The negative relationship was also found to be significant ($\beta = -.35$, $p < .001$), supporting H8. Furthermore, H9 queries the positive prediction of perceived model attractiveness

on motivation for self-improvement. The positive relationship also attained significance ($\beta = .51$, $p < .001$), supporting H9. Hypothesis 10, on the contrary, proposed that perceived model attractiveness will be negatively related to motivation for self-enhancement. The results demonstrated a weak but significant negative relationship, as predicted ($\beta = -.13$, $p < .001$). Therefore, H10 gained support.

To predict the effect of perceived model attractiveness, H11 postulated that perceived model attractiveness will be positively related to work out intention. Although this path reached significance in the model, it turned out that perceived model attractiveness negatively predicted willingness to go work out ($\beta = -.12$, $p < .001$). Hypothesis 11 thus failed to be supported.

The next set of hypotheses focused on the effects of self-efficacy on one's affective responses and work out intention. Hypothesis 12 proposed that self-efficacy for working out will be positively related to pleasant affective response. The positive relationship was found to be significant ($\beta = .12$, $p < .001$), confirming H12. Moreover, H13 predicted that self-efficacy for working out will be positively related to work out intention. The positive prediction also reached significance ($\beta = .34$, $p < .001$). Therefore, H13 was supported. Table 2 summarizes the above results of hypothesis testing.

Furthermore, RQ1 explored the levels of the motivations for self-improvement and self-enhancement predicted by lateral comparison. The ANCOVA testing H1 and H2 indicated that the respondents in the lateral comparison condition expressed moderate levels of both motivations, relative to those who were in the upward and downward comparison conditions. Research Question 2 queried the relationship involving pleasant affective response and to work out intention. The results showed that expressing a higher level of positive emotion after viewing the fitspiration photo would significantly encourage one's willingness to go work out ($\beta = .10$, $p < .001$). Finally, RQ3 queried the relationship between perceived model attractiveness and

pleasant affective response. The SEM model indicated that, when the model of the fitspiration photos is perceived as more attractive, the viewers tend to express significantly more positive affective responses ($\beta = .11$, $p = .008$).

5. Discussion

The present study set out to contribute to the health communication literature by expanding our understanding of how one's willingness to go work out is affected by the exposure to fitspiration imagery on social media. As a body of literature concerning the fitspiration phenomenon has scrutinized the impacts on female audiences (e.g., Prichard et al., 2018; Tiggemann & Zaccardo, 2015), this study contributes to our understanding about male audiences' reactions to the same-sex body images associated with physical training. Moreover, the findings verify both the psychological and behavioral impacts of social influence, demonstrating a more comprehensive picture about promoting exercise as a positive outcome of fitspiration photo viewing that remains less explored (e.g., Chasler, 2016; Palmer, 2015).

5.1. Theoretical implications

Given the placement of this investigation at the juncture between social psychology, communication and health sciences, an investigation utilizing personal affective variables comprising "Fitspiration" to work out seemed in order. The integrative framework employed here was innovative in its application, using upward and downward model comparison variables as determinants of motives for working out. These, in concert with more conventional, positive affection and self-efficacy-based measures, provided a robust explanatory model predicting work out behaviors. Evidence found in support of the fitspiration phenomenon also helps bridge extant literature, involving offline as well as mediated health contexts, by explicating constructive uses and effects of social media imagery on their viewers' health behaviors.

On balance, study findings support the assumption derived from comparison theory (e.g., Buunk et al., 1990; Festinger, 1954), that upward comparisons with attractive models would strengthen self-improvement motives related to working out. The results indicated that seeing those who with more desirable physiques inspired one to emulate those models with the intent to advance his physical fitness in the future, replicating Halliwell et al.'s (2007) finding regarding self-improvement motivations with British men. The positive predictive role played by self-improvement motives also appears to be consistent with past work linking personal achievement motives to health app use (e.g., Dam et al., 2018; Masters & Ogles, 1995).

Although numerous studies tend to regard the directions of comparison as the result of motivations (e.g., Taylor et al., 1983; Wheeler, 1966), in the context of social media, the users do not always actively seek targets for comparisons. Rather, they are constantly prompted to compare with others via SNS content (e.g., profiles and photos; Vogel et al., 2014) and metrics (e.g., number of Facebook friends) to which they are exposed (Chou & Edge, 2012). By manipulating one's exposure to the photos of model whose body image was superior, inferior, or similar to oneself, this study (a) faithfully represents social comparisons on SNSs and (b) further validates the corresponding motivations of self-evaluation caused by such comparisons.

Moreover, the results also identified motivations as a crucial role that harnesses both the processes of social comparison and social learning. To explain the fitspiration viewers' affective responses to social comparison, the motivation for self-improvement to evoked more positive emotions, consistent with Buunk et al. (1990). This finding indicates that the effect of assimilation encouraging the viewers to pursue more physical fitness is perceived as favorable. Those viewers who revealed more pleasant affective responses were likely to have generated a sense of identity through comparison with the model and envisioned that they could obtain similar work out results. The amount of variance explained for work out behavior, approaching

40%, compares favorably with that found in other studies of exercise, leisure or mHealth (e.g., Dam et al., 2018). The support for a wide-ranging set propositions introduced here suggests, in conceptual terms, that placing the affective variable between the comparison variables and criterion work out measures made sense and was theoretically justified.

In addition, self-improvement also positively predicts work out intention, further demonstrating the viewers' behavioral tendency for physical training as a result of upward comparison. This motivational effect not only expands our understanding of the potential of fitspiration, but it also reflects the influence of modeling introduced by social cognitive theory. That is, perceived model attractiveness was substantiated as a positive indicator that increases the viewer motivation for imitation.

These findings also extend leisure motivations from media and general mHealth applications to Fitspiration and work out contexts generally. Importantly, the linkage found between fitness motivations, working out and related social media use here is consistent with the work of early mass media researchers, suggesting that media users were aware of their media use and that media use was goal driven (e.g., Katz, Blumler, & Gurevitch, 1974). Here, as with media use, one's behavior is predicted by the strength of their underlying motivations to engage in a given behavior (e.g., Rubin, 2009).

Moving beyond personal use and other motivations, support for the model's predictions concerning perceived model attractiveness was less consistent. In particular, perceived model attractiveness revealed a direct but negative effect on work out intention, contradicting our hypothesis of a positive relationship between these two variables. This result is intriguing, given that a seemingly rewarding model behavior itself does not encourage viewer imitation. In other words, the "fitspiration" photos are less inspiring. However, in light of the intervening roles of

motivation for self-improvement and pleasant affective responses under consideration here, model attractiveness tends to be more inspiring.

These findings can also be tied to the supported hypotheses (e.g., H12 and H13), which accentuate the positive influence of self-efficacy for working out on one's pleasant affective responses and work out intention. The viewer's motivation, post-viewing emotion, and their capability are thus three keys that realize "fitspiration." Previous research demonstrates that fitness-idealized images (as opposed to thin-ideal images) did not motivate viewers to increase their exercise activity (Robinson et al., 2017). The present findings thus elucidate a wider range of factors, following the exposure to fitspiration imagery, that contribute to the viewers' work out likelihood. Implications could be drawn for the health interventions using fitspiration imagery to put greater emphasis on the aspects of pleasure, enjoyableness, and self-realization of a given health behavior, along with model physical fitness. These affective and efficacious cues are likely to amplify the perceived positivity of the promoted behavior as well as boost the viewers' self-confidence. The fact that those who are more motivated feel more efficacious about working out, in particular, also confirms a raft of work underscoring the concept's importance in explaining mHealth behaviors (e.g., Dam et al., 2018). This would leave intrinsic work out motivations, like those explored here, as the primary explanatory factors.

5.2. Limitations and future directions

An important limitation of this study involves the purposive sampling method employed here. Although the sample consists of 1,428 respondents recruited from different online platforms, the representativeness of Taiwanese Instagram male users may still be overestimated. To recap, about three-quarters of participants were under 30 years of age, limiting the generalization of study findings to young Taiwanese males. Although accessible statistics in 2015 suggested that the major populations of Instagram active users in Taiwan are below 30

years of age (Lo, 2015), the platform has grown rapidly in recent years, claiming more than one billion monthly active users worldwide by 2018 (Statista, 2019). Thus, increasing adoptions may occur among older generations (e.g., 30-49 years) in Taiwan. This mirrors the leveling of sociodemographic difference with mHealth platforms in the U.S. (Smith & Anderson, 2018), which is consistent with a normalization dynamic (Dam et al., 2018) as fitspiration becomes more widely diffused. Later research should extend this work to more diverse populations with regard to age, which would also help capture a wider variety of such user demographic attributes as occupation and health condition.

In addition, this study only examined the individuals' work out intention as the results of social influences drawn by fitspiration photos. As social cognitive theory helps identify the actual behavioral consequences of vicarious modeling and self-efficacy (e.g., Anderson-Bill et al., 2011; Stacey, James, Chapman, Courneya, & Lubans, 2015), future studies should further measure the viewers' post-viewing work out performance to more accurately verify the effects of modeling. Stimuli applying tutorial work out videos may also enhance a higher level of realism than the still Instagram photos for the viewers' fitspiration exposure, the results of which may further corroborate current study findings.

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Figure 1. Proposed Model.

Note. RQ1 is not shown in the model.

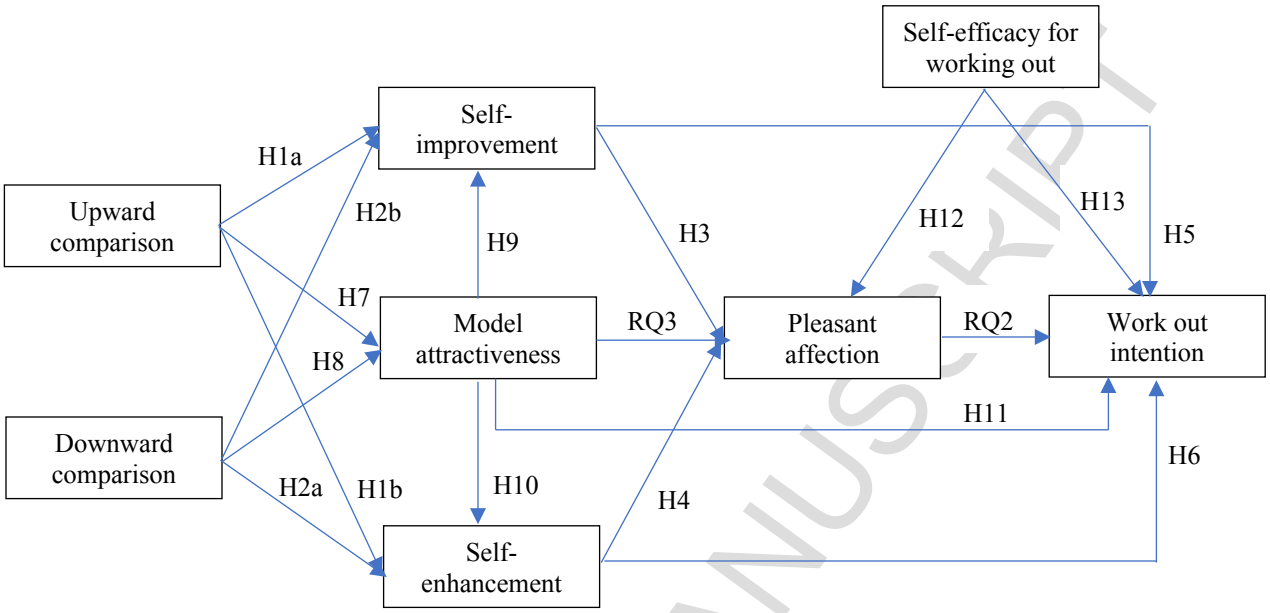
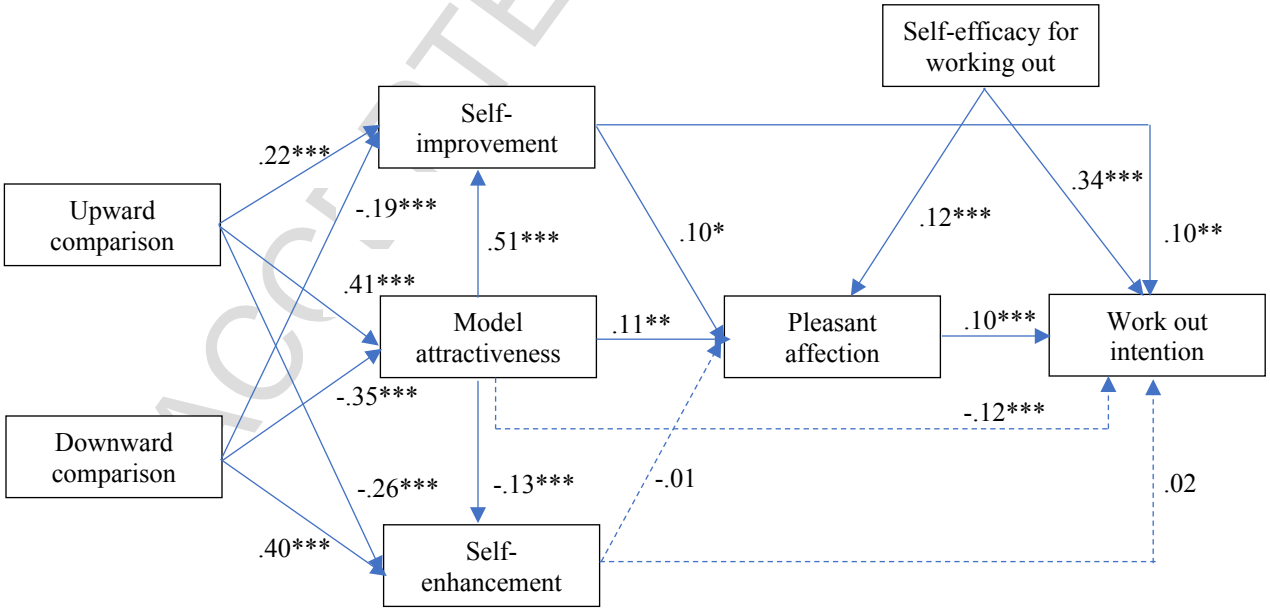


Figure 2. Model Results.

Note. Control variables and their paths are not shown in this model. The paths with dash lines indicate those that fail to support the hypotheses.



*$p < .05$; **$p < .01$; ***$p < .001$.

Table 1

Results of Validity Tests.

Construct	CR	AVE	MSV	1	2	3	4	5	6
1. Self-improvement	0.86	0.75	0.71	**0.87**	--	--	--	--	--
2. Self-enhancement	0.88	0.72	0.49	-0.70	**0.85**	--	--	--	--
3. Model attractiveness	0.96	0.87	0.71	0.84	-0.61	**0.93**	--	--	--
4. Pleasant affection	0.84	0.51	0.04	-0.08	0.5	-0.08	**0.93**	--	--
5. Self-efficacy, working out	0.92	0.65	0.28	-0.21	0.29	-0.15	0.14	**0.81**	--
6. Work out intention	0.94	0.81	0.28	-0.13	0.21	-0.14	0.19	0.53	**0.90**

Note. CR= composite reliability; AVE = average variance extracted; MSV = maximum shared variance. The fifth to tenth columns from left demonstrate the inter-construct correlations of the six constructs with the diagonal values in bold indicating each construct's square root of AVE.

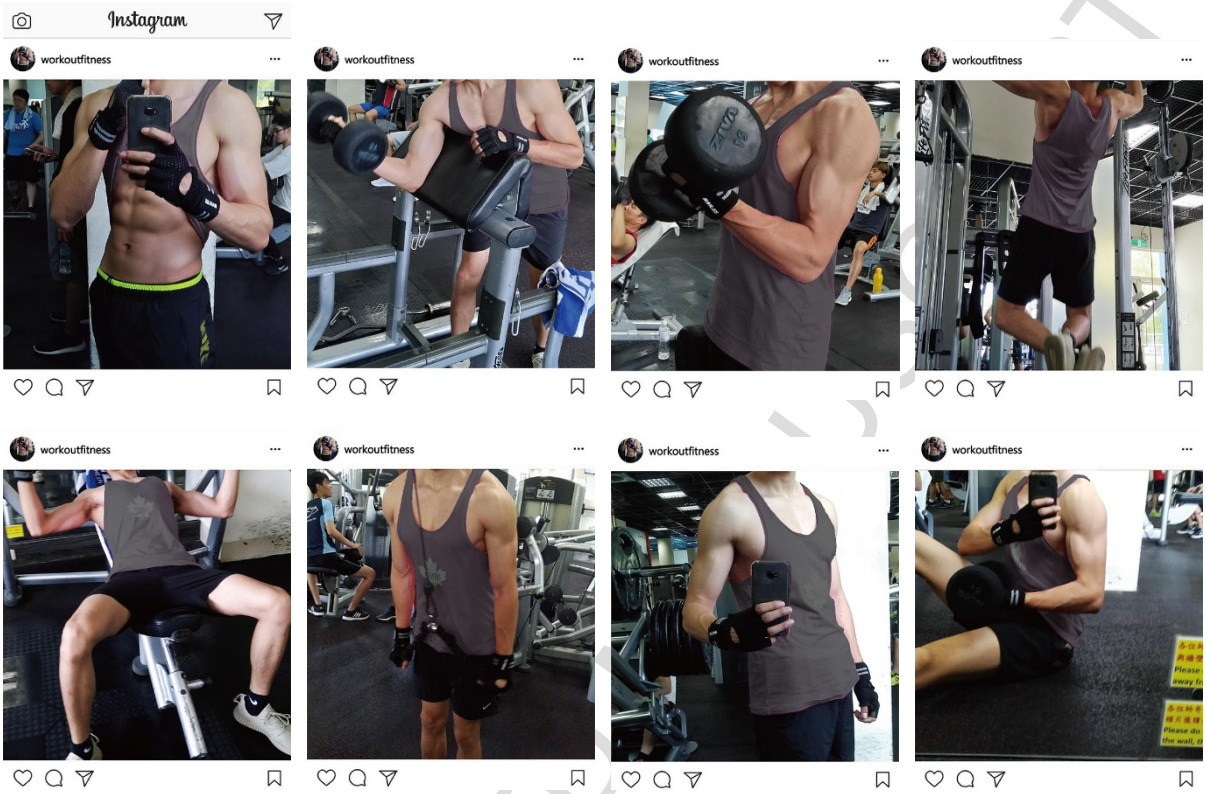
Table 2

Results of Hypothesis Testing.

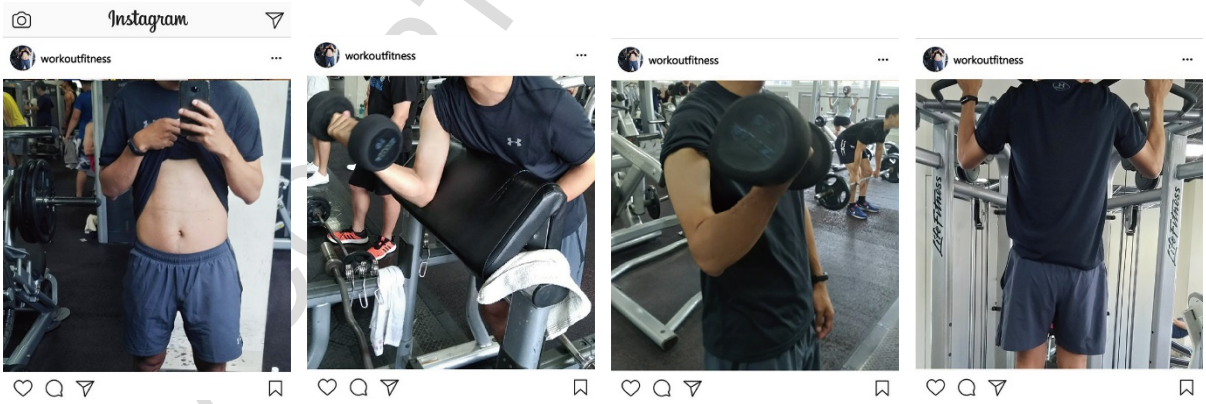
Hypotheses	Support
H1a: Compared to lateral and downward social comparisons, upward social comparison will promote the highest level of the motivation for self-improvement.	Yes
H1b: Compared to lateral and downward social comparisons, upward social comparison will promote the lowest level of the motivation for self-enhancement.	Yes
H2a: Compared to lateral and upward social comparisons, downward social comparison will promote the highest level of the motivation for self-enhancement.	Yes
H2b: Compared to lateral and upward social comparisons, downward social comparison will promote the lowest level of the motivation for self-improvement.	Yes
H3: Motivation for self-improvement will be positively related to pleasant affective response.	Yes
H4: Motivation for self-enhancement will be negatively related to pleasant affective response.	No
H5: Motivation for self-improvement will be positively related to work out intention.	Yes
H6: Motivation for self-enhancement will be negatively related to work out intention.	No
H7: Upward social comparison will be positively related to perceived model attractiveness.	Yes
H8: Downward social comparison will be negatively related to perceived model attractiveness.	Yes
H9: Perceived model attractiveness will be positively related to motivation for self-improvement.	Yes
H10: Perceived model attractiveness will be negatively related to motivation for self-enhancement.	Yes
H11: Perceived model attractiveness will be positively related to work out intention.	No
H12: Self-efficacy for working out will be positively related to pleasant affective response.	Yes
H13: Self-efficacy for working out will be positively related to work out intention.	Yes

Appendix A: Research Stimuli

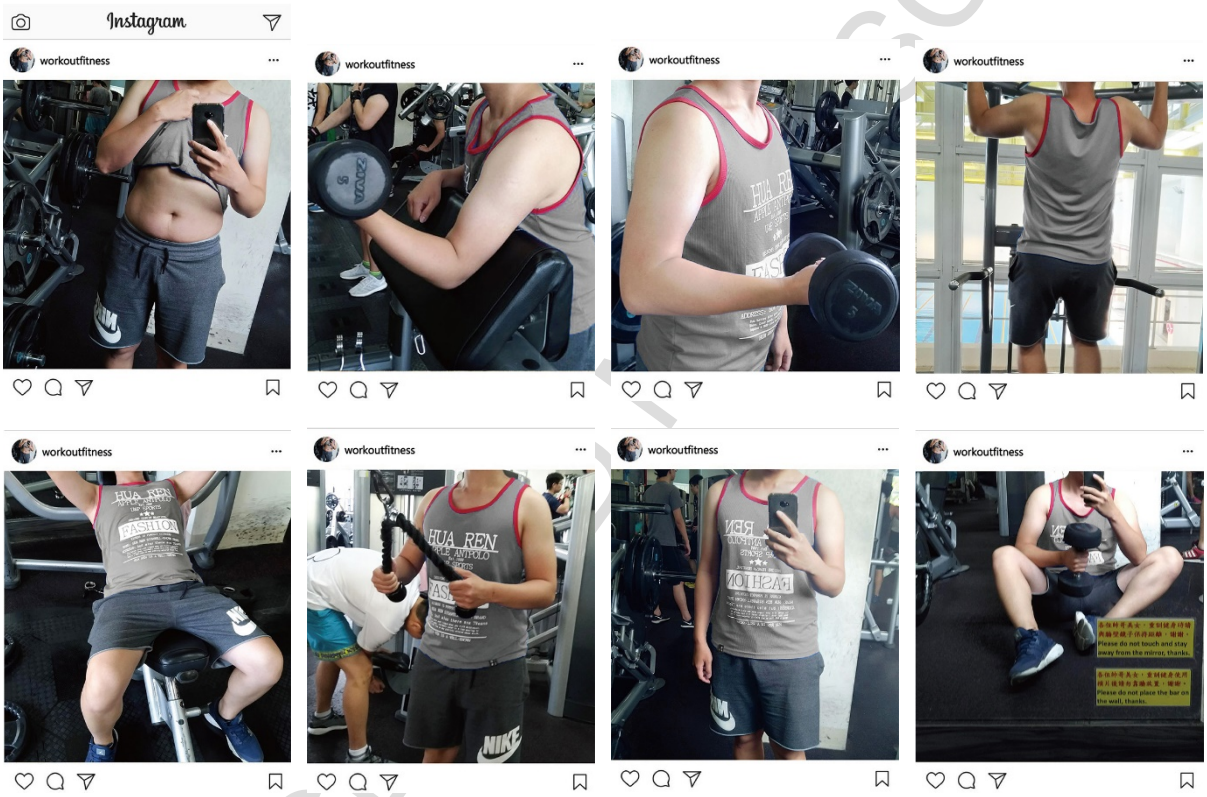
A.1. Muscular Condition



A.2. Normal Condition



A.3. Under-fit Condition



Appendix B:

Items, Means, Standard Deviations, and Reliability tests of the Key Measures

Measures and Items	*M*	*SD*	α
Motivation for self-improvement	3.01	1.94	.86
1. I think the body shape of the male in the Instagram photos is my goal to attain.			
2. It is possible that my body shape will be just like the male's in the Instagram photos if I work out hard.			
Motivation for self-enhancement	4.41	1.66	.91
1. I think I am in better shape physically compared to the male in the Instagram photos.			
2. The body shape of the male in the Instagram photos makes me think that mine is good enough.			
3. The body shape of the male in the Instagram photos makes me more confident in my physique.			
Perceived model attractiveness	3.26	1.64	.97
1. In my opinion, the body shape of the male in the Instagram photos looks great.			
2. The male in the Instagram photos has a muscular physique.			
3. The body shape of the male in the Instagram photos is attractive.			
4. The male in the Instagram photos has an appealing body physique.			
Pleasant affective response	4.92	1.03	.82
I feel _____ after viewing the male's body image from the Instagram photos.			
1. determined			
2. inspired			
3. distressed			
4. ashamed			
5. nervous			
6. upset			
7. guilty			
Self-efficacy for working out	5.21	1.29	.91
I fit workouts in my regular routine even when _____			
1. I lack the time.			
2. there are no convenient facilities.			
3. I lack the help from the work out professionals.			
4. the weather is bad.			
5. my job interferes with work out responsibilities.			
6. some other things are more interesting than working out.			
Work out intention	6.31	.91	.92
1. It is worthwhile for me to go work out.			
2. I would like to go work out and build up my body shape.			
3. I intend to go work out and improve my physique.			
4. I am thinking of going to work out in a short time.			

N = 1,428

Highlights

The viewer's motivation, post-viewing emotion and self-efficacy define fitspiration.

Upward comparisons with attractive models motivate self-improvement via workouts.

Self-improvement motives and self-efficacy positively predict work out intention.

Model attractiveness has a direct but negative effect on work out intention.

Post-viewing emotion mitigates the negative impact of model attractiveness.