



## Happiness is medal-color blind: Happy people value silver and bronze medals more than unhappy people<sup>☆</sup>



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### HIGHLIGHTS

- Happy and unhappy people differently perceive relative values among Olympic medals (i.e., Gold, Silver, and Bronze).
- Happy people prefer the total-medal method (vs. the gold-first method) for the Olympic ranking more than unhappy people.
- Happy people perceive more values of silver and bronze medals in relation to a gold medal than unhappy people.
- The belief in the frequency-not-intensity principle mediates the effects of happiness on the relative values among medals.

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### ABSTRACT

The present research examined whether happy and unhappy people perceived the value of Olympic medals (i.e., Gold, Silver, and Bronze) differently. We hypothesized that, compared to unhappy people, happy people would perceive greater value for silver and bronze medals in relation to a gold medal because happy people habitually savor even small things more than unhappy people. In support of our argument, happy relative to unhappy participants preferred more the total-medal method (i.e., counting all medals, regardless of color) over the gold-first method (i.e., counting only gold medals) for the Olympic medal ranking (Study 1). In addition, happy people believed that smaller numbers of silvers and bronzes would be equal to one gold in value than unhappy people (Studies 2 and 3). Moreover, the belief about the frequency-not-intensity principle of happiness mediated the effects of happiness on the perception of the value of medals (Study 3).

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Happy and unhappy people construe and respond to their life events in systematically different ways (for a review, see Lyubomirsky, 2001). For example, happy, compared with unhappy people tend not only to perceive their life situations in more positive ways (DeNeve & Cooper, 1998; McCrae & Costa, 1986; Stones & Kozma, 1986), but also tend to interpret and remember their life events in a more favorable manner (Lyubomirsky & Tucker, 1998). There is a large body of research showing the distinct ways in which happy and unhappy people respond to personal life events (Kim, Hong, Choi, & Hicks, 2016; Lyubomirsky & Ross, 1997; Lyubomirsky & Ross, 1999; Raila, Scholl, & Gruber, 2015; Seidlitz & Diener, 1993; Seidlitz, Wyer, & Diener, 1997; Updegraff & Suh, 2007). Yet, little is known about how happy and unhappy people differently value societal events. In this research, we will investigate

whether and why happy and unhappy people perceive the value of societal events – Olympic medals (i.e., gold, silver, and bronze), differently. We hypothesize that since happy people appreciate little, positive events more, they will perceive greater value for silver and bronze medals in relation to a gold medal, compared to unhappy people.

Although the International Olympics Committee (IOC) (2014) proclaims, “The Olympic Games are a competition between athletes in individual or team events and not between countries...,” some, if not all, view one’s standing on the Olympic medal board as an indicator of national status. Furthermore, the global media and governments energetically employ various systems to figure out where their nation stands on the medal board, sometimes creating controversies. For example, during the 2008 Beijing Olympics, China garnered a staggering 51 gold medals, compared to the US’ 36, and claimed to be the global leader for their hosted games. However, the US amassed a total of 110 medals, whereas China only managed 100, and claimed that this placed them at the top of the medal board. Such a clash between the gold-first method and the total-medal method indicates that there is no consensus on the relative value of the medals. The gold-first and the total-medal methods

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involve different weight systems: the gold-first method is a 1-0-0 weight system, whereas the total-medal method is a 1-1-1 weight system. Given that there exists a controversy about the proper weights given to Olympic medals, an intriguing question arises: what are the factors that affect the relative weights that one gives to bronze, silver, and gold medals?

One factor is obviously self-interest. Individuals may prefer a particular weight-system that gives their country a higher place on the medal board. Another is more philosophical. The gold-first method conveys a “winning is everything” philosophy because it counts gold medals first and uses silver and bronze medals only as tiebreakers. The philosophy of the gold-first method is in stark contrast to that of the total-medal method, which values all medals equally. This philosophical difference leads us to speculate another potential factor affecting one’s perceived value of gold, silver, and bronze medals: one’s happiness. The reason underlying this seemingly provocative idea is a robust finding in happiness research that happy and unhappy people differ in valuing little things. Specifically, happy people tend to highly appreciate and derive happiness from little, positive things, whereas unhappy people rarely find happiness in little things. This difference between happy and unhappy people in the valuation of little things, we argue, will also be projected on their perceived value of Olympic medals; happy people will value silver and bronze medals more highly than unhappy people.

Several streams of research support the notion that happy people appreciate little, positive events more and perceive the greater value of them than unhappy people do. First, the literature on gratitude and savoring has repeatedly demonstrated that happiness comes from valuing ‘little things’ (Emmons & McCullough, 2003; Jose, Lim, & Bryant, 2012; Langston, 1994). The title of an influential paper on happiness nicely illustrates this point “Happiness is the frequency, not the intensity” (Diener, Sandvik, & Pavot, 1991). Relative to their unhappy counterparts, happy individuals are more likely to savor little, positive things and derive happiness from them (Bryant, 2003; Larsen & Ketelaar, 1991; Rusting & Larsen, 1998).

In addition, a recent finding from Tucker (2007) showed that happy people had a greater level of appreciation toward life events than unhappy people did. More importantly, this difference in levels of appreciation between happy and unhappy people was found to be more evident for weakly positive, common, and ordinary events. In other words, happy people tended to appreciate small, positive events (e.g., a smile from a stranger) more than did unhappy people.

Lastly, previous research has demonstrated that happiness is negatively correlated with maximizing (Schwartz et al., 2002). A maximizing strategy refers to a decision-making approach that involves selecting the best possible alternative. On the other hand, a satisfying strategy refers an approach in which an acceptable or “good enough” option is chosen (Simon, 1976). Maximizers tend to seek the single best option, whereas satisfiers are content with many “good enough” options. Thus, unhappy people (vs. happy people), who are known as maximizers (vs. satisfiers), are likely to overlook (vs. attend to) little, positive things and depreciate (vs. appreciate) them.

Taken together, these streams of research strongly indicate that happy people, compared to unhappy people, are more likely to endorse the frequency-not-intensity principle of happiness and appreciate small, positive events.

The gold-first method, or the 1-0-0 weight system, is clearly at odds with the frequency-not-intensity principle of happiness. According to the frequency principle, silver and bronze medals should not be ignored; instead, they should be actively savored to maximize one’s happiness. On the other hand, the total-medal method gives as much weight to silver and bronze medals as to gold. Thus, winning any medal, even a bronze, is equally worth celebrating, which is in accordance with the frequency principle of happiness. Simply put, happiness is likely to be medal-color blind. Based on the above reasoning, we predicted that happy, compared with unhappy people would prefer the total-medal method over the gold-first method because

happy people tend to value a silver or bronze medal more than unhappy people.

In Study 1, we tested whether happy participants, compared to unhappy participants, would indeed favor the total-medal method over the gold-first ranking method for the Olympic rankings. In Studies 2 & 3, we selected participants from two cultures (i.e., the US and Korea) and examined whether the perceived value (i.e., weight) of silver and bronze medals by happy participants would be greater than those by unhappy participants. Furthermore, we examined whether the belief in the frequency-not-intensity principle would indeed mediate the effect of happiness on perceptions regarding the relative value of each type of medal (Study 3).

## 1. Study 1

Study 1 tested the hypothesis that happy people prefer the total-medal method over the gold-first method, as compared to their unhappy counterparts.

### 1.1. Method

#### 1.1.1. Participants

One hundred and six undergraduate students (45.3% males) at a large university in Korea participated in Study 1 in return for partial course credit. Since no gender effect was found in all studies, it will not be discussed further. Using G\*Power software (Faul, Erdfelder, Lang, & Buchner, 2007), we estimated that we needed a sample of at least 84 to have adequate power ( $1-\beta > 0.80$ ) to detect medium-sized effects.

#### 1.1.2. Procedure

Participants completed the Subjective Happiness Scale in a large pre-test setting (SHS; Lyubomirsky & Lepper, 1999). Later, participants were given a brief description of the total-medal ranking and the gold-first ranking methods. The order of the methods in the description was counterbalanced. Subsequently, participants were asked, “Which is a better method for ranking countries in the Olympic medal race?” on an 8-point Likert scale. Scale anchors were labeled as “Total-medal ranking is a much better method,” and “Gold-first ranking is a much better method.” Labels on the end anchors were also counterbalanced.

### 1.2. Results

The mean rating was 4.39, which was not statistically different from 4.5, the median value of the 8-point scale where high scores indicated greater preference toward the total-medal method,  $t = -0.64$ , *ns*, suggesting that on average, participants did not have any preference between the two methods. Yet, as predicted, the SHS scores (Cronbach’s  $\alpha = 0.87$ ) were positively correlated with preference for the total-medal method,  $r = 0.22$ ,  $p = 0.025$ , supporting the idea that happy participants are less sensitive to medal colors and value silver and bronze medals more than unhappy participants do.

However, some might argue that the bipolar scale, in which the total-method and the gold-first methods were anchored at both ends, is not appropriate for measuring individuals’ preference for the Olympic ranking methods. In particular, the bipolar scale does not allow us to examine whether happy, compared with unhappy people favor the total-medal method more, or like the gold-medal method less.<sup>1</sup> In order to address this concern, we recruited a separate sample of 100 U.S. residents (54.5% males) through Amazon’s Mechanical Turk (Mturk). Participants followed the same procedure as in Study 1, except for an important modification. They responded to the questions, “How good is the gold-first method for ranking countries on the Olympics

<sup>1</sup> We thank an anonymous reviewer for raising this issue.

medal board?" ( $M = 4.79, SD = 1.40$ ) and "How good is the total-medal method for ranking countries on the Olympics medal board?" ( $M = 5.15, SD = 1.17$ ) respectively, on a 7-point Likert scale (1: not at all; 7: very much). The order of the two questions was counterbalanced. There was a marginally significant difference between the average scores of the gold-first method preference and those of the total-medal method preference,  $t = 1.71, p = 0.091$ , suggesting that the U.S. participants slightly favored the total-medal method. Importantly, consistent with our finding that we observed in the Korean sample, the SHS scores were significantly and positively correlated with the preference for the total-medal method,  $r = 0.22, p = 0.022$ , but were negatively, although not significantly, related with the preference for the gold-first method,  $r = -0.11, p = 0.250$ . This pattern of correlations suggests that the result of Study 1 was not an artifact due to the bipolar scale. Compared to unhappy participants, happy participants valued the total-medal method more positively, but they did not necessarily value the gold-first method less. In addition, the SHS scores had a significant positive relationship with relative preference for the total-method over the gold-first method, which was calculated by subtracting the gold-first preference from the total-medal method preference,  $r = 0.20, p = 0.038$ .

## 2. Study 2

In Study 2, we aim to replicate the finding of Study 1 in a more direct way. Specifically, we asked participants to give their own weights to gold, silver, and bronze medals. Our hypothesis was that the weights given to silver and bronze medals by happy participants would be greater than those given by unhappy participants.

### 2.1. Method

#### 2.1.1. Participants

A total of 160 undergraduate students (52.5% males) at a large university in Korea participated in Study 2 in exchange for course credit. Using G\*Power software and the effect size from Study 1, we estimated that we would need approximately 160 participants (0.80 power).

#### 2.1.2. Procedure

Participants completed a survey packet in a classroom, in which they were asked three questions: "How many silver medals are equal to one gold medal in the Olympic games? (Silver-to-Gold)"; "How many bronze medals are equal to one gold medal in the Olympic games? (Bronze-to-Gold)"; and "How many bronze medals are equal to one silver medal in the Olympic games? (Bronze-to-Silver)"

To generalize the finding of Study 1 beyond the SHS, Study 2 measured participants' happiness with the Satisfaction with Life Scale as well (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). Cronbach's alphas were 0.83 and 0.79 for SHS and SWLS, respectively.

### 2.2. Results

We expected negative correlations between happiness and the three weight questions, such that the numbers of silver and bronze medals equal to a gold medal and the number of bronze medals equal to a silver medal would be smaller for happy than for unhappy participants. Our expectation was confirmed: the correlation coefficients for Silver-to-Gold, Bronze-to-Gold, and Bronze-to-Silver were  $-0.24, -0.26$ , and  $-0.22$  (all  $ps < 0.01$ ) for SHS and  $-0.32, -0.31$ , and  $-0.24$  (all  $ps < 0.01$ ) for SWLS, respectively. Study 2 clearly supports our hypothesis that happy people would value silver and bronze medals more highly than unhappy people. (See Table 1.)

**Table 1**

Correlations between happiness measurement scores and Silver-to-Gold, Bronze-to-Gold, and Bronze-to-Silver ratio in Studies 2 and 3.

	M (SD)	SHS	SWLS
Study 2 (Korean participants)			
Silver-to-Gold	3.91 (7.51)	−0.24**	−0.32**
Bronze-to-Gold	8.93 (14.08)	−0.26**	−0.31**
Bronze-to-Silver	3.38 (4.43)	−0.22**	−0.24**
Study 3 (U.S. participants)			
Silver-to-Gold	3.04 (3.56)	−0.20**	−0.14*
Bronze-to-Gold	6.96 (9.08)	−0.21**	−0.16*
Bronze-to-Silver	2.98 (2.35)	−0.16*	−0.15*

Note. SHS = Subjective Happiness Scale; SWLS = Satisfaction With Life Scale.

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

## 3. Study 3

Study 3 had two goals. One was to generalize the finding of Study 2 to other cultures. Participants in Study 2 were recruited from a college in Korea, where the gold-first method in Olympic ranking is adopted, and the national level of happiness is below average across countries (Diener, 2000; Helliwell, Layard, & Sachs, 2012). Hence, it is possible that the finding of Study 2 would hold only among those countries in which the gold-first method is adopted and/or the level of happiness is low. Therefore, in Study 3, we recruited participants from a nation in which the total-medal method is adopted and the average level of happiness is higher than that of Korea, that is, the United States.

The other goal is more crucial. Studies 1 and 2 assumed without empirical testing that valuing little things would be responsible for the findings of Studies 1 and 2. Hence, Study 3 directly tested whether the belief in the frequency-not-intensity principle of happiness mediated the effect of one's happiness level on the relative weights of gold, silver and bronze medals.

### 3.1. Method

#### 3.1.1. Participants

Two hundred and thirty U.S. residents, ranging in age from 18 to 66 ( $M_{age} = 32.45, 62.9\%$  males), were recruited through Amazon's Mturk. They received US \$1.00 in exchange for their participation. Participants were composed of 18 African Americans, 13 Hispanics, 178 Caucasians, 15 Asians, and 6 individuals of other racial backgrounds. The exact number of participants was not predetermined, but we tried to recruit at least 200 participants. Online recruitment was stopped on the day when the expected sample was obtained. Post hoc analyses showed that our sample size was adequate to achieve 0.80 power and to detect the mediation effect of the belief in the frequency-not-intensity principle of happiness (Fritz & MacKinnon, 2007).

#### 3.1.2. Procedure

Participants completed all questionnaires online. They followed the same procedure as that in Study 2, with one exception: items measuring participants' belief in the frequency-not-intensity principle were added. Participants were asked to respond from 1 (strongly disagree) to 7 (strongly agree) with respect to four statements indicative of using the frequency principle in the pursuit of happiness: "I can enjoy and savor little, positive things as much as big positive things"; "Small, but frequent positive experiences make me happier than big, but infrequent positive experience"; "Several little, positive experiences cannot bring me as much happiness as one big, positive experience can [reverse coded]"; and "I overlook small things that occur frequently and fail to derive happiness from them [reverse coded]." Responses for these items were averaged (Cronbach's  $\alpha = 0.72$ ).

### 3.2. Result

Correlational analyses yielded results identical to those of Study 2. Happy participants gave more weight to silver and bronze medals in relation to a gold medal than did unhappy participants; the correlational coefficients of Silver-to-Gold, Bronze-to-Gold, and Bronze-to-Silver were  $-0.20$ ,  $-0.20$ , and  $-0.16$  (all  $ps < 0.05$ ) for SHS (Cronbach's  $\alpha = 0.91$ ), and  $-0.14$ ,  $-0.14$ , and  $-0.15$  (all  $ps < 0.05$ ) for SWLS (Cronbach's  $\alpha = 0.93$ ), respectively. (See Table 1.)

Next, we examined whether the belief in the frequency-not-intensity principle mediated the effect of one's happiness on the relative value of the medals. To this end, we conducted bootstrap analyses (Hayes, 2013, model 4) with the sample size set to 5000. A 95% confidence interval (CI) that does not include 0 is evidence of mediation (Hayes, 2009). As expected, the happiness measures were positively and significantly related with the frequency-not-intensity belief, for SHS,  $b = 0.30$ ,  $SE = 0.05$ ,  $p < 0.001$ ; for SWLS,  $b = 0.15$ ,  $SE = 0.04$ ,  $p < 0.001$ . Moreover, the effect of happiness on the relative weights of the medals (the average of standardized Silver-to-Gold, Bronze-to-Gold, and Bronze-to-Silver, Cronbach's  $\alpha = 0.85$ ) was mediated by the belief in the frequency-not-intensity principle, for SHS,  $b = -0.06$ ,  $SE = 0.05$ , 95% CI:  $-0.194$  to  $-0.004$ ; for SWLS,  $b = -0.03$ ,  $SE = 0.03$ , 95% CI:  $-0.127$  to  $-0.002$ . Additionally, mediation analyses were separately conducted for Silver-to-Gold, Bronze-to-Gold, and Bronze-to-Silver. The results showed that the significant indirect effects of SHS and SWLS were found on all relative values of medals, except for the SHS on Bronze-to-Silver,  $b = -0.08$ ,  $SE = 0.05$ , 95% CI:  $-0.209$  to  $0.0011$ .

In order to understand the findings of Studies 2 and 3 more clearly, we combined Studies 2 and 3, median-split the participants based on each happiness measure, and compared their mean numbers of silver and bronze medals equal to a gold medal. For SHS (SWLS), one gold medal was equal to 2.68 (2.73) silver medals and 6.00 (6.35) bronze medals for happy participants, but it was 4.14 (4.20) silver medals and 9.57 (9.48) bronze medals for unhappy participants. In addition, one silver medal equaled 2.63 (2.70) bronze medals for happy participants, but 3.66 (3.68) bronze medals for unhappy participants.<sup>2</sup>

### 4. General discussion

There is remarkable consensus in the literature that happy and unhappy people differ in the ways they derive happiness (Diener & Seligman, 2002; Lyubomirsky, 2001; Robinson & Martin, 2008). For example, happy people find social bonds rewarding, whereas unhappy people find money comforting (Csikszentmihalyi, 1999; Diener, Ng, Harter, & Arora, 2010; Kahneman & Deaton, 2010; Myers, 2000; Sul, Kim, & Choi, 2012). Happy people celebrate their own good performance, while unhappy people find comfort from others' failure (Kim et al., 2016; Lyubomirsky & Ross, 1997). The research most relevant to the present study concerns the ways happy and unhappy people value the frequency vs. intensity of positive experiences. Happy people savor little things that occur frequently, whereas unhappy people strive for intense experiences that rarely occur. The current research demonstrates that this little-versus-big things contrast between happy and unhappy people emerges, even with respect to perceptions of Olympic medal values. Happy people are more inclined to endorse the total-medal method than unhappy people (Study 1) and are likely to value silver and bronze medals more than unhappy people (Studies 2 and 3).

It is noteworthy that the effect of happiness on perceived values of Olympic medals was observed across different cultures. The present

research demonstrated that the effect occurred not only in Korea, in which the gold-first method is adopted, but also in the U.S., in which the total-medal method is adopted. Testing generalizability across cultures is not the only merit of the present study. We uncovered a psychological mechanism for our finding. Specifically, we demonstrated that happy and unhappy people differed in beliefs about the frequency-not-intensity principle of happiness, and that it mediated the effect of one's happiness on perceptions of relative values among medals.

Although our findings demonstrated that the frequency-not-intensity principle of happiness mediated the positive relationship between one's happiness and the perceived relative value among medals, an important question still remains: why do happy people appreciate little things more than unhappy people do? This question is beyond the scope of the current research. However, previous research offers a clue. People under positive affect tend to categorize a broad range of stimuli more *inclusively* into a given group than their counterparts under neutral affect (Isen & Daubman, 1984; Isen, Niedenthal, & Cantor, 1992). This finding implies that happy people, compared to unhappy people, tend to group gold, silver, and bronze medals together into an inclusive category ("achievement") and treat them equally. Conversely, unhappy individuals might discriminate among the medals more and group them separately into three hierarchically distinct categories of gold, silver, and bronze medals.

Our work extends the current understanding of the consequences of happiness to the realm of perceptions involving societal value. Since Lyubomirsky, King, and Diener (2005)'s systematic review emerged, positive psychology research has started to consider happiness as an antecedent, and not just a consequence. Moreover, this area of research has repeatedly demonstrated that happiness is an important predictor of a broad range of psychological processes and behaviors (de Vries, Holland, Chenier, Starr, & Winkielman, 2010; Flavin & Keane, 2012; Guven, 2012; Mogilner, Aaker, & Kamvar, 2012; Sul et al., 2012; Zhong & Mitchell, 2012). However, the effect of one's happiness on the perceived value of societal events has yet to be acknowledged in the literature. Our studies suggest that one's happiness affects the way one perceives and appreciates "achievements" or "successes" in a society. It would be interesting to examine whether happiness affects how other important social values, such as justice and fairness, are defined.

Happy actors are less discouraged than unhappy actors by superior performers in a task (Lyubomirsky & Ross, 1997). Likewise, our study shows that happy spectators are less likely to devalue silver and bronze medals in relation to gold medals than unhappy spectators. Hence, happiness is medal-color blind.

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<sup>2</sup> Although it was not of our primary interest, we compared the average weights of silver and bronze medals between Americans and Koreans. The results showed that Americans (for Silver-to-Gold, 3.04:1; for Bronze-to-Gold, 6.96:1) gave greater weights to silver and bronze medals than did Koreans (for Silver-to-Gold, 3.92:1; for Bronze-to-Gold, 8.93:1), although the difference did not reach a significant level,  $F_s > 2.35$ ,  $ps < 0.130$ , which is compatible with the fact that the national level of happiness is higher in the U.S. than in Korea.

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