

Subjective Well-Being's Association with Beneficial Behavioral Outcomes in Three Cultures

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Abstract

In two studies, we explored the association between components of subjective well-being (positive affect, negative affect, life satisfaction, and optimism) and behavioral outcomes in three cultures: The United States, South Korea, and Costa Rica. We found in both studies that subjective well-being was associated with six types of behaviors: 1. Health behaviors, 2. Prosocial behavior, 3. Expressing happiness, 4. Good citizenship behaviors, 5. Creativity, and 6. Active behaviors. Most of the associations were significantly above zero in all three nations, and the majority were not significantly different between nations. In terms of the components of subjective well-being that best predicted the outcomes, positive affect was consistently the strongest predictor of outcomes across the three cultures. We also found that current affect was a stronger predictor of desire to do the behaviors than was long-term affect in all three nations. The associations could not be explained by beliefs about the desirability and functionality of emotions. Sex, age, education, and income did not explain the associations. Although subjective well-being is associated with beneficial outcomes in all three cultures we studied, further research is required to understand why this is so, and in particular whether the causal arrow goes from subjective well-being to those behaviors, and when it moves in the reverse direction. Our findings show that many beneficial behaviors are associated with subjective well-being across several diverse cultures.

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Introduction

Subjective well-being (SWB) is consistently associated with various beneficial behavioral outcomes in studies conducted on western nations, primarily in the United States (Jovanović & Brdaric, 2012; Kim, Kubzansky, & Smith, 2015; Lyubomirsky, King, & Diener, 2005; Oishi, Diener, & Lucas, 2007). However, little research has examined whether these associations hold in populations outside of the United States. Our aim in this study is to test the association between several types of SWB and beneficial behavioral outcomes in three cultures: the United States, South Korea, and Costa Rica.

Subjective Well-being

Subjective well-being (SWB) is defined as an individual's evaluations across different aspects of life (Diener, 1984). These evaluations comprise two major dimensions – affective and cognitive. An affective evaluation comprises a person's feelings, moods, and emotions and includes both positive and negative affect. Positive affect includes the various feelings people experience when things are going well, while negative affect consist of the feelings people experience when things are not going well. As such, positive affect includes emotions such as joy, and contentment, while negative affect consists of emotions such as sadness, anger, and fear.

On the other hand, a cognitive evaluation of one's life involves a person's cognitive appraisal of his or her life. These appraisals may be based on a person's current situation, the person's past life, and expectations about the future (optimism).

Association between SWB and beneficial behavioral outcomes

In the United States, components of SWB have been consistently associated with various beneficial behavioral outcomes – behaviors that generally, benefit the individual and his or her group, are adaptive, foster health and prosperity and are valued by cultural norms. First, SWB can positively influence health behaviors (see Diener, Pressman, Hunter, & Delgado-García, 2017 for review). People high in life satisfaction (LS) are more likely to use preventive health services like obtaining a cholesterol test, or a mammogram x-ray (Kim et al., 2015) and were less likely to smoke and be overweight (Friedman & Ryff, 2012). Furthermore, higher PA is associated with lower levels of several immune and inflammatory markers (Brouwers et al., 2013; Uchino et al., 2018) and higher levels of cardiovascular health (Eichstaedt et al., 2015).

Second, SWB is associated with better social relationships. People high in life satisfaction (LS) are more likely to get married, have a child, and less likely to divorce (Luhmann, Hofmann, Eid, & Lucas, 2012). Furthermore, higher life satisfaction is associated with spending less time alone, more time talking to other people, and having more substantive conversations (Mehl, Vazire, Holleran, & Clark, 2010). Current positive moods are associated with better social relationships. For example, participants who were induced into a positive mood exhibited greater compassion, perspective-taking, and sympathy compared to participants in the negative mood condition (Nelson, 2009). They also feel more sociable and preferred social situations more compared to participants in a neutral or negative mood condition (Whelan & Zelenski, 2012).

Third, SWB is associated with higher creativity. People high in life satisfaction were more likely to report that they are creative and more likely to work in a creative environment (Dolan & Metcalfe, 2012). In addition, participants who were induced into a positive mood exhibited higher levels of creativity (Burroughs et al., 2004; Isen, 1999), and a 19-week

longitudinal study found that PA is predictive of creativity (Amabile, Barsade, Mueller, & Staw, 2005).

Fourth, SWB is associated with prosocial and good citizenship behaviors. Participants in the German Socio-Economic Panel Study who “felt happy” donated more money and blood (Priller & Schupp, 2011). In addition, Australians who volunteered more often also reported higher life satisfaction compared to non-volunteers (Pilkington, Windsor, & Crisp, 2012), while a longitudinal study examining Germans found that volunteering was associated with greater PA and lower NA (Müller, P. Ziegelmann, Simonson, Tesch-Roemer, & Huxhold, 2014). Finally, Kushlev, Drummond, Heintzelman, Tidwell, and Diener (2018) found that PA is positively associated with social action – people high in PA often behave in ways that work towards alleviating societal and global issues.

Variation in the Predictors of SWB across nations

Although little research has directly examined whether the associations between SWB and beneficial behavioral outcomes exist in populations outside of the United States, a substantial number of studies have found variation in the predictors of SWB across nations, suggesting that the association between SWB and beneficial behavioral outcomes may also differ depending on the nation we examine.

Nations high in SWB often demonstrate several objective characteristics (see Oishi, 2012 for a review). For example, they are often developed nations with relative high national income (Diener, Ng, Harter, & Arora, 2010a), often have effective, efficient governments (Helliwell, Huang, Grover, & Wang, 2014), and have progressive tax structures (Oishi, Schimmack, & Diener, 2012). Thus, whereas nations such as the United States and South Korea often report relatively high SWB, nations such as Somalia and Indonesia often report lower SWB.

Second, consistent findings demonstrate that individualistic countries, where people are oriented toward their personal goals and desires, and where they perceive the individual as the basic unit, such as the United States and Australia, often report higher SWB than collectivistic countries, who view the group as of primary importance and focus their attention on achieving group goals, such as Egypt and Japan (Diener & Diener, 1995), although there are exceptions. For example, Latin American countries such as Costa Rica often report higher SWB even though they are collectivistic cultures (Diener & Oishi, 2004; Tov & Diener, 2007).

Third, nations vary in their emotion norms. For example, although PA is found to be universally valued across different countries (Kuppens, Ceulemans, Timmerman, Diener, & Kim-Prieto, 2006), Tsai (2007) found that western cultures value High Arousal PA such as excitement and elation, whereas East Asian cultures value Low Activation PA such as calmness and serenity. In addition, cultures also differ in their beliefs about the relationship between PA and NA. While East Asians are more likely to believe that events or experiences that seemingly contradict each other can co-occur, European Americans tend to believe that mixed emotional events or experiences do not usually co-occur (Peng & Nisbett, 1999).

Importance of the present studies

The present studies are important for two reasons. First, they represent an initial investigation into whether the associations between SWB and beneficial behavioral outcomes are widespread, or if they are moderated by culture. Initial evidence that the association between SWB and beneficial behavioral outcomes could be moderated by culture was provided by Kitayama et al. (2015), who found that expression of anger was associated with lower immune and cardiovascular function in the United States, whereas it was associated with better immune and cardiovascular function in Japan. The authors suggested that cultural norms could explain

the divergent findings – whereas the expression of anger is an indication of the degree to which individuals are exposed to negative events in the United States, expression of anger is an indication of empowerment and entitlement in Japan. Such an explanation thus raises the possibility that the associations between SWB and beneficial outcomes are influenced by cultural norms and not necessarily to universal processes.

On the other hand, there could be universal processes in place to explain the associations between SWB and beneficial behavioral outcomes. For example, the Broaden and Build theory of positive emotions (Fredrickson, 2001) suggests that across cultures PA has a beneficial effect on individuals by broadening an individual's momentary thought-action repertoire that over time builds skills and resources. Thus, PA could lead individuals to be more attentive and active, resulting in better social skills and people being more outgoing and active.

Which of these two competing theories best explain the association between SWB and beneficial behavioral outcomes? On the one hand is the possibility that the connection between SWB and desirable outcomes is culture-specific, depending on factors such as how much positive emotions are valued and negative emotions devalued, and on what circumstances cause the emotions in different cultures. On the other hand, the associations might be relatively universal and cross-cultural because there are relatively consistent ways that moods and emotions affect behavior. Before we can compare the two possibilities, we need to understand what the associations between SWB and beneficial behavioral outcomes are and whether cultural variations exist in these associations. Only then, can we begin to understand why these patterns are found.

Beyond the conceptual question is a practical issue – will societies benefit if they have people who are higher rather than lower on SWB? If so, could we highlight these benefits so that

policymakers could enact better policies that are beneficial to their constituents? Furthermore, if cultural variations do exist in the associations between SWB and beneficial behavioral outcomes, our research has practical significance for individuals and policymakers in these nations by clarifying the outcomes that are associated with high SWB.

Purpose of the present studies

The current studies have several major purposes:

1. The association between SWB and various beneficial behavioral outcomes seem to apply broadly within the United States. However, little research has investigated whether the associations hold in other cultures. Some research has been conducted on outcomes such as social relationships, but no systematic work has examined the outcomes across diverse cultures. To examine this question, we selected samples from three cultures that differ in a number of ways: the United States, South Korea, and Costa Rica. These three cultures were selected with the intention that each culture differed from the remaining two on one of three characteristics: Income, Self-construal, and SWB. An overview of the similarities and differences of the three characteristics between the three cultures is presented in Table 1. Past studies usually have examined a single outcome, while we examined five different behavioral outcomes and assessed each category of outcomes with multiple items covering different specific behaviors.

2. Related to the first purpose, we also examined whether income and other factors such as age, sex, and education can account for the associations. In statistically controlling these factors we can determine whether it is these third variables that might account for why SWB predicts certain behavioral incomes. For example, it could be that income raises both SWB and increases the likelihood of the outcome behaviors and is thus responsible for the associations between them.

3. We also addressed which component of SWB best predict various outcomes – Life Satisfaction, Positive Affect, Negative Affect, or Optimism? Prior studies have largely examined each component of SWB in isolation, without a systematic examination of their joint influence. Thus, we do not know how these components might together and separately predict outcomes. In the current studies, we explored the degree to which joint variance shared by the four components of SWB is predictive and whether the components of SWB uniquely predict outcomes. This is important because currently we do not have deep insight into whether the outcomes relate to life satisfaction and the types of SWB influence it, or directly to positive affect, to an absence of negative affect, or to optimism. Understanding this is an important first step in understanding why the outcomes are associated with SWB.

4. Another purpose is to examine more fully whether it is momentary affect driving the findings, or if there is something unique about long-term SWB that goes beyond the effects of simply being in a good mood more often. For example, if people high in long-term PA are high in prosocial activity, we need to examine whether it is because they are in a good mood more often, thereby making prosocial behavior more likely more of the time, whether it is because people high in PA over time develop skills, resources, and attitudes conducive to these behaviors regardless of their current mood, as predicted by the Broaden and Build model (Fredrickson, 2001), or whether people high in PA do not have to divert energy and cognitive resources to coping, or other long-term processes. Understanding this will help us begin to unravel why the associations occur. By examining the effects of momentary affect, it can not only shed light on the underlying psychological processes but also help rule out some potential confounds. For example, if momentary affect predicts the outcomes beyond long-term SWB, then it is less likely that the association between SWB and beneficial behavioral outcomes could be explained

through confounds such as higher income or better marriage because these factors might be most likely to affect long-term SWB, and have little additional effect on current mood. If short-term moods predict outcome behaviors beyond long-term moods this would suggest that confounding long-term factors such as income are probably not the entire basis of the connections.

5. Finally, our studies explore whether the desirability and functionality of PA and NA moderate the association between SWB and beneficial behavioral outcomes, based on Kitayama et al. (2015) suggestion that the desirability of affect could drive associations differently in different cultures. Perhaps affect could only motivate people to behave in positive ways only if they value the affect and only if they think the affect is functional and appropriate in the context in which they find themselves.

Overview of studies

Across two studies with large sample sizes, we tested the association between the components of SWB and beneficial behavioral outcomes in three cultures: The United States, South Korea, and Costa Rica. In both studies, we controlled possible confounds such as gender, age, income, and education, as well as examining whether the desirability and functionality of affect moderated the associations in each culture. In Study 1 participants from the United States, South Korea, and Costa Rica completed an online questionnaire in their native language, including scales to measure each component of SWB, questions that measured the frequency in which they engage in different behaviors, questions that measured the desirability and functionality of affect, as well as demographic questions. Correlation and regression analyzes were performed to examine and compare the association between the components of SWB and beneficial behavioral outcomes in each culture. In Study 2, we replicated the findings in Study 1

with a similar but larger sample and examined whether current mood or long-term SWB better predicted beneficial behavioral outcomes in the three cultures.

Methodological Strengths

Our studies have several methodological strengths. First, we examine the associations cross-culturally with three cultures in both studies, with relatively large sample sizes across all six samples. Second, we replicate the findings from our first study and extend them in the second study. Third, our samples are fairly diverse within each culture, varying on education, income, sex, and age. Fourth, whenever possible we assessed each outcome variable with multiple items to be able to summate different behaviors in each category and to achieve adequate reliability for our measures.

Definition of “Outcomes”

Although our use of the word “outcomes” implies that SWB causes these beneficial outcomes, our studies do not address causality. The evidence for the causal direction implied by our use of the word “outcomes” is provided by other studies that used experimental, longitudinal, and experience-sampling designs (see Diener, Lucas, & Oishi, 2017 ,for review). Thus, the aim of the present studies is not to establish causality, but instead to examine whether the associations between SWB and these behaviors are generalizable across cultures and to examine which components of SWB demonstrate the strongest associations with these behaviors.

Study 1

In Study 1, we tested the associations between components of SWB and five categories of beneficial outcomes in three cultures. We also tested whether gender, age, and income influence the associations within each culture.

Methods

Samples. Participants were recruited through Qualtrics Panels. Participants had to be residing in the country of interest, either the United States (US), South Korea (KR), or Costa Rica (CR) to be eligible to participate in the study and completed the study online on their computers in exchange for compensation according to their Panels membership with Qualtrics. The questionnaire was administered in their native language – English for the United States, Korean for South Korea, and Spanish for Costa Rica. In total, 663 participants completed the study. Prior to further analyses, 102 participants were excluded from the study for not following instructions and answering in very unlikely patterns, leaving us with 561 participants of which 181 participants were residing in the United States ($M_{\text{age}} = 42$, 18% male, $M_{\text{income}} = 27,000$ USD), 191 from South Korea ($M_{\text{age}} = 42$, 55% male, $M_{\text{income}} = 37,000$ USD), and 189 from Costa Rica ($M_{\text{age}} = 36$, 53% male, $M_{\text{income}} = 9,700$ USD).

Subjective Well-Being Variables. Four components of SWB were measured: Positive Affect (PA), Negative Affect (NA), Life Satisfaction (LS), and Optimism.

Positive and Negative Affect. PA and NA were assessed using an abbreviated six-item version of the Scale of Positive and Negative Experiences (SPANE; Diener et al., 2010b). Participants rated how often they experience three positive feelings (positive, joyful, and contented) and three negative feelings (negative, sad, and angry) along a 5-point Likert scale where 1 = Not at all and 5 = Always. PA and NA were computed as the summation of the three positive and negative items. In the South Korean sample, however, “contentment” did not correlate in the expected direction with the other PA items ($\alpha = -.186$), while “negative” did not correlate in the expected direction with the other NA items ($\alpha = -.040$). Therefore, we dropped the contentment and negative item from our measure of PA and NA and ended up with a 2-item measure for both PA (positive and joyful) and NA (sad and angry). Reliability statistics for the 2-

item PA and NA measures were fairly strong across all cultures, ranging between .54 to .86 ($M_\alpha = .72$). Table 2a summarizes the reliability statistics for PA, NA, and LS across the three samples.

Life Satisfaction. Life satisfaction was assessed using the five-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). Participants responded to each item using a seven-point scale (1 = strongly disagree, 7 = strongly agree) according to how they felt generally. Some example items were “In most ways, my life is close to my ideal”, and “I am satisfied with my life”. The five items were summed to create a composite measure of life satisfaction. Reliability statistics for the SWLS were strong across all cultures, ranging between .85 to .91 ($M_\alpha = .89$).

Optimism. Optimism was assessed using a one-item measure (“I am very optimistic about my future”), rated along a 7-point scale (1 = strongly disagree, 7 = strongly agree).

Outcomes Variables. Five categories of positive behavioral outcomes were assessed using 22 items: Health behaviors, Prosocial behaviors, Expressing happiness behaviors, Social capital behaviors, and Creativity. For each item, participants rated the frequency in which they engage in the behavior using a five-point Likert scale where 1 = Never and 5 = Almost always. Health behaviors consisted of nine items: Exercising, Avoiding red meat, Eating junk food (reverse-coded), Smoking (reverse-coded), Going for an annual medical check-up, Going for an annual dental check-up, Wearing seatbelts, Driving with lights on, and eating vitamins. Prosocial behaviors consisted of six items: Expressing kindness, Giving compliments to others, Expressing gratitude, Helping and supporting others, Being a helpful person, and Holding the door for others. Expressing happiness behaviors consisted of two items: Smiling and Laughing. Social

capital behaviors consisted of four items: Voting, Donating money, Donating things other than money, and Volunteering, while Creativity is a one-item measure.

Composite variables for each category of behaviors were formed by averaging the items. Reliability statistics for the composite outcome behaviors were fairly strong across all cultures, ranging between .43 and .90 ($M_\alpha = .72$). In addition, a confirmatory factor analysis conducted post-hoc confirmed that the items under each category variable consisted of a single factor. Table 2b summarizes the reliability statistics for the outcome variables across the three samples.

Additional Measures. Participants also completed other measures including the desirability and functionality of both PA and NA as well as demographic variables.

Desirability and Functionality of PA and NA. Desirability of PA was assessed through rating the desirability of three positive emotions: Happiness, Contentment and Excitement along a seven-point scale (1 = Not at all beneficial, 7 = Always beneficial) while desirability of NA was assessed through rating the desirability of two negative emotions: Sadness and Anger. On the other hand, functionality of PA was assessed through rating how functional two positive emotions were: Joy and Contentment along a seven-point scale (1 = Not at all functional, 7 = Always functional), while functionality of NA was assessed through rating the functionality of three negative emotions: Anger, Worry, and Sadness. Composite variables for the desirability and functionality of PA and NA were formed by averaging the items. Reliability statistics for the desirability and functionality of PA and NA were strong across all cultures, ranging between .70 to .89 ($M_\alpha = .82$). Table 2c summarizes the reliability statistics for the desirability and functionality of PA and NA across the three samples.

Demographic variables. Participants also reported their gender, age, income and place of residence. While gender and place of residence were multiple-choice questions, age and income

were free-response questions. In addition, participants reported their income using their nation's base currency: Dollars for the United States, Won for South Korea, and Colones for Costa Rica, which were log-transformed for use in our data analyzes.

Results

Mean differences in levels of SWB. Multiple one-way ANOVAs conducted to examine whether the three cultures differed from each other in the components of SWB revealed a significant difference in Positive Affect ($F(2,558) = 54.63, p < .001$), Life Satisfaction ($F(2,558) = 57.66, p < .001$), and Optimism ($F(2,558) = 64.10, p < .001$) between the three cultures. However, there was no significant difference in Negative Affect across the cultures, $F(2,558) = 0.02, p = .982$.

Participants in the United States reported higher levels of PA ($M_{us} = 7.14, SD_{us} = 1.64$; $M_{kr} = 6.74, SD_{kr} = 1.47$; $d = 0.26$), LS ($M_{us} = 20.35, SD_{us} = 7.94$; $M_{kr} = 17.91, SD_{kr} = 6.40$; $d = 0.34$) and optimism ($M_{us} = 4.71, SD_{us} = 1.72$; $M_{kr} = 4.32, SD_{kr} = 1.49$; $d = 0.24$) than participants from South Korea. However, participants in Costa Rica reported the highest levels of PA ($M_{cr} = 8.24, SD_{cr} = 1.21$), LS ($M_{cr} = 25.33, SD_{cr} = 6.13$), and optimism ($M_{cr} = 5.97, SD_{cr} = 1.20$) surpassing the levels of PA, LS, and optimism reported by participants from both South Korea ($d_{PA} = 1.11$; $d_{LS} = 1.18$; $d_{optimism} = 1.22$) and the United States ($d_{PA} = 0.76$; $d_{LS} = 0.70$; $d_{optimism} = 0.85$).

Mean differences in desirability and functionality of PA and NA. We also conducted multiple one-way ANOVAs to examine whether the three cultures differed from each other in the desirability and functionality of PA and NA. We found that there was a difference in the desirability of PA ($F(2,558) = 169.48, p < .001$) and NA ($F(2,558) = 36.35, p < .001$) as well as

the functionality of PA ($F(2,558) = 29.03, p < .001$) and NA ($F(2,558) = 98.99, p < .001$) between the three cultures, suggesting that the three cultures valued PA and NA differently.

For positive affect, Costa Ricans reported that PA was more beneficial than Americans ($d = 0.65$), who in turn rated PA as more beneficial than South Koreans ($d = 1.09$) ($M_{cr} = 6.52, SD_{cr} = 0.58; M_{us} = 5.99, SD_{us} = 1.00; M_{kr} = 4.94, SD_{kr} = 0.92$). On the other hand, South Koreans rated PA higher in functionality than Americans ($d = 0.65$) and Costa Ricans ($d = 0.75$), while there were no differences in the functionality of PA among Americans and Costa Ricans ($M_{kr} = 4.39, SD_{kr} = 0.80; M_{us} = 4.99, SD_{us} = 1.04; M_{cr} = 5.03, SD_{cr} = 0.90$). For negative affect, South Koreans rated NA as more beneficial than Americans ($d = 0.79$) and Costa Ricans ($d = 0.75$), while there were no differences in the desirability of NA among Americans and Costa Ricans ($M_{kr} = 3.76, SD_{kr} = 1.29; M_{us} = 2.69, SD_{us} = 1.43; M_{cr} = 2.75, SD_{cr} = 1.39$). However, Costa Ricans rated NA as being more functional than Americans ($d = 0.28$), who in turn rated NA as more functional than South Koreans ($d = 1.04$) ($M_{cr} = 5.36, SD_{cr} = 0.72; M_{us} = 5.14, SD_{us} = 0.84; M_{kr} = 4.31, SD_{kr} = 0.75$).

Correlations between SWB and behavioral outcomes. To test the associations between SWB and the outcomes, we computed the correlations between each component of SWB and each outcome across the three cultures. The results are shown in Table 3. If culture differences exist in the associations between SWB and behavioral outcomes, we expect to see differential correlation patterns that vary across cultures. If not, we expect to see consistent correlation patterns across cultures.

Across all three cultures, positive affect, life satisfaction, and optimism were significantly positively correlated with almost all of the outcomes, while negative affect was significantly negatively correlated with the same outcomes. The correlations remain significant even after

controlling for age, gender, and income, suggesting that the associations are not explained by the differences in these variables. In addition, the correlations remain significant even after further controlling for the desirability and functionality of PA and NA, suggesting that cultural differences in the valuation of affect do not influence the correlations between SWB and the outcomes. These results indicate broad associations between different forms of SWB and a variety of different beneficial behaviors

Testing the differences in the magnitude of correlation coefficients between cultures.

Although there appear to be no cultural differences in the directionality of the association between the components of SWB and behavioral outcomes, could cultural differences be observed in the magnitude of the correlation coefficients between components of SWB and behavioral outcomes? To test the hypothesis, we first transformed all correlation coefficients using the Fisher r -to- z transformation before comparing the transformed correlation coefficients in each culture against each other to determine whether the correlation coefficients in each culture were significantly different from the correlation coefficients in the other two cultures. The results remain similar even after controlling for age, gender, income, and the desirability and functionality of PA and NA. Thus, we report the uncontrolled findings in Table 4.

Overall, the correlation coefficients between the components of SWB and the outcomes are largely not significantly different from each other across all comparisons between cultures, suggesting that there are few if any cultural differences in the magnitude of the correlation coefficients between components of SWB and behavioral outcomes. The only significant pattern was observed in the comparison between the United States and in Costa Rica, where the correlations between expressing happiness behaviors and all components of SWB were

significantly higher in the United States than Costa Rica, suggesting that cultural differences in how people express happiness may be associated differentially with SWB across cultures.

However, the findings taken together thus far suggest that there are few cultural differences in the associations between SWB and behavioral outcomes.

Regressions predicting outcomes from the components of SWB. To examine which component of SWB best predicts the various outcomes, we simultaneously entered the four components of SWB (Positive Affect, Negative Affect, Life Satisfaction, and Optimism) into a linear regression model predicting each of the five outcomes. The component of SWB that best predict each outcome could be determined by comparing the standardized betas for each component of SWB on each outcome variable, akin to comparing effect sizes, such that the component with the largest significant standardized beta is the component of SWB that best predicts the outcome. In addition, by comparing the standardized betas for each component of SWB across cultures, we could determine if there are cultural differences in the components of SWB that best predict the outcomes. If cultural differences exist, then the components of SWB that will best predict outcomes will vary across cultures. Else, the same component of SWB should best predict outcomes uniformly across cultures.

Table 5 summarizes the standardized betas for each component of SWB on each outcome variable across the three cultures. The results remain significant even after controlling for age, gender, and income, and the desirability and functionality of PA and NA, thus we reported the uncontrolled analyzes. In the United States, PA is the strongest predictor of three out of five outcomes, NA is the strongest predictor of one outcome, while LS and Optimism hardly predicted any of the outcomes in the presence of the other predictors. In South Korea, PA predicted two outcomes, although it is not the best predictor of any outcomes. Instead, LS is the

strongest predictor of outcomes, predicting four out of five outcomes, while NA and Optimism do not predict any of the outcomes. In Costa Rica, PA predicted three outcomes, while NA and Optimism predicted two outcomes, but LS is by far the strongest and the best predictor of outcomes, predicting four out of five outcomes. These results suggest that there are cultural differences in the component of SWB that best predict each outcome. While PA is the best predictor of a majority of the outcomes in the United States, LS is by far the better predictor of outcomes in both South Korea and Costa Rica.

Although the components of SWB that best predict outcomes vary across cultures, there appears to be some evidence that PA is a universal predictor of outcomes. While it is not the strongest predictor of outcomes in South Korea and Costa Rica, PA is a significant predictor of several outcomes in the two cultures. For example, PA predicted prosocial and expressing happiness behaviors in both cultures. PA also further predicted creativity in Costa Rica. In addition, the magnitude of the standardized betas for PA in both cultures was not much smaller than the magnitude of the standardized betas for LS, suggesting that PA may be driving the associations between SWB and outcomes as much as LS.

Variance associated with each component of SWB. Besides examining the standardized betas for each component of SWB on each outcome variable across the three cultures, we also conducted a dominance analyses on all components of SWB for each outcome to determine the strength of each component of SWB on each outcome. Dominance analysis is a procedure that compares the relative importance of predictors in multiple regression models by examining the R square values for all possible subset models to determine which predictor is the most important (i.e., dominant) in predicting the outcomes (Budescu, 1993). The higher the proportion of unique variance associated with each component of SWB, the stronger the

component is in explaining the association the SWB and outcomes. To conduct the dominance analyses, we first modeled all possible combinations of multiple regression models between the four components of SWB and each outcome ($n = 15$ models for each outcome). Next, we compared the standardized betas for each component of SWB in each model against each other to determine the proportion of explained variance attributed to each component of SWB. Then, we computed the percentage of explained variance attributed to each component of SWB by dividing the proportion of explained variance attributed to each component of SWB against the proportion of total explained variance.

We summarize the results of the dominance analyzes in Table 6. Across three nations and five outcomes, the components of SWB accounted for varying amounts of R^2 change, ranging from 9% for Social Capital in the United States to 53% for Expressing Happiness in the United States ($M_{R^2} = 21\%$). Consistent with our previous analyzes, PA is the strongest predictor for a majority of the outcomes in United States, accounting for the highest proportion of variance among the components of SWB, LS accounted for the highest proportion of variance for a majority of the outcomes in South Korea and Costa Rica, while NA and Optimism often have little unique variance in all three cultures, suggesting that the variance associated with NA and Optimism is often accounted for by other components of SWB. In addition, although LS accounted for the highest proportion of unique variance in South Korea and Costa Rica, in both cultures, PA also accounted for a significant proportion of unique variance in several outcomes. Taken together, the results suggest that although cultural differences exist in the component of SWB that best predict each outcome, there is also evidence that PA may be a widespread predictor of outcomes.

Discussion

In Study 1, we found little evidence for cultural differences in the associations between SWB and behavioral outcomes. When examining correlations coefficients, we found that across all three cultures, not only is SWB significantly correlated with several behavioral outcomes, the magnitude of the correlation coefficients between the components of SWB and the outcomes are not significantly different across cultures, suggesting that there may not be substantial cultural differences in the associations between SWB and the behavioral outcomes we assessed. Furthermore, across three cultures, PA often accounted for a significant proportion of unique variance in several outcomes, suggesting that PA may be a universal predictor of outcomes. However, cultural differences emerged when we examined the component of SWB that best predicted the outcomes such that while PA is the strongest predictor of outcomes in the United States, LS is the strongest predictor of outcomes in South Korea and Costa Rica. These results are neither moderated by differences in age, gender, and income, nor by differences in desirability and functionality of PA and NA, suggesting that these associations may be driven by broad substantive factors.

Although we found interesting results in Study 1, it also raised further. First, because no prior studies have examined a number of associations between SWB and beneficial behavioral outcomes across three cultures, we replicated our findings in Study 1 using separate samples. Second, we investigated why the items in the abbreviated SPANE (Diener et al., 2010b) used in Study 1 did not cluster as expected in the South Korean samples, and whether our two item PA and NA measure is a strong proxy for actual PA and NA. Third, Study 1 found evidence that PA may be a universal predictor of outcomes, we would like to further investigate whether momentary affect or long-term affect drives these association? We address these questions in Study 2.

Study 2

In Study 2, we replicate the findings from Study 1 with a new sample and with improved measures of both affect and outcomes, to broaden the base of the findings. In addition, we extend Study 1 by examining whether momentary affect or general affect drive the association between affect and outcomes.

Methods

Samples. Similar to Study 1, participants were recruited through Qualtrics Panels and had to be residing in the country of interest, either United States (US), South Korea (KR), or Costa Rica (CR) to be eligible to participate in the study. Participants completed the study online, in their native language, on their computers in exchange for compensation according to their Panel membership with Qualtrics. In total, 708 participants completed the study, but 27 participants were excluded from the study prior to data analyzes for failure to follow instructions and suspicious appearing data. Our final sample consisted of 681 participants, of which 226 were from the United States ($M_{\text{age}} = 48$, 26.5% male, 32.3% completed college, $M_{\text{income}} = 39,000$ USD), 224 from South Korea ($M_{\text{age}} = 32$, 41.5% male, 58.9% completed college, $M_{\text{income}} = 27,000$ USD), and 231 from Costa Rica ($M_{\text{age}} = 36$, 58% male, 41.6% completed college, $M_{\text{income}} = 8,800$ USD).

Subjective Well-Being Variables. The same components of SWB were measured, although in Study 2, we measured not only general affect, but momentary affect too, resulting in six variables: Momentary Positive Affect, Momentary Negative Affect, General Positive Affect, General Negative Affect, Life Satisfaction, and Optimism.

Momentary Positive and Negative Affect. Instead of using an abbreviated six-item version of the SPANE (SPANE; Diener et al., 2010b), we used the full 12-item version instead.

For momentary affect, participants rated how often they experience six positive (positive, good, pleasant, happy, joyful, and contented) and six negative feelings (negative, bad, unpleasant, sad, afraid, and angry) right now along a 5-point Likert scale where 1 = Not at all and 5 = Always. Momentary PA was computed as the sum of the six positive items, while momentary NA was computed as the sum of the six negative items. Reliability statistics for momentary PA and NA was excellent across all cultures, ranging between .86 to .94 ($M_\alpha = .91$). Table 7a summarizes the reliability statistics for all SWB measures across the three samples.

General Positive and Negative Affect. Similar to momentary affect, general affect was measured using the full 12-item version of the SPANE. Instead of rating how often they experience six positive and negative items right now, participants rated how often they experience these feelings in general. General PA was computed as the sum of the six positive items, while general NA consisted of the six negative items. Reliability statistics for general PA and NA was excellent across all cultures, ranging between .80 and .91 ($M_\alpha = .85$).

Life Satisfaction and Optimism. Life satisfaction and optimism were assessed in the same way as Study 1, using the five-item Satisfaction with Life Scale (SWLS; Diener et al., 1985) for LS and a one-item measure for optimism. Reliability statistics for the SWLS were strong across all cultures, ranging between .85 to .91 ($M_\alpha = .88$).

Outcome Variables. Six categories of positive behavioral outcomes were assessed using 21 items. All five behavioral categories from Study 1 were adopted: Health behaviors, Prosocial behaviors, Expressing happiness, Social capital, and Creativity. In addition, we wanted to investigate the associations for an additional behavioral category in this study: Active behaviors. To broaden our measurement, instead of asking participants to rate the frequency they engage in

these behaviors as in Study 1, participants rated how much they feel like engaging in the behaviors using a five-point Likert scale where 1 = Not much and 5 = A great deal.

Besides adding an additional behavioral category, we also modified the items that comprised each category based on the item loadings and correlations we observed in Study 1. We removed items that were not loading tightly with the others in Study 1 and added new ones that we thought might load more highly. As such, Health behaviors consisted of seven items: Exercising, Doing risky activities (reverse-coded), Eating junk food (reverse-coded), Smoking (reverse-coded), Going for an annual medical check-up, Going for an annual dental check-up, and taking vitamins. Prosocial behaviors consisted of five items: Giving compliments to others, Expressing gratitude, Helping and supporting others, Saying nice things, and Doing kind acts. Expressing happiness remained unchanged, consisting of two items: Smiling and Laughing. Social capital behaviors consisted of three items: Donating money, Donating things other than money, and Volunteering. Creativity behaviors consisted of two items: Being creative, and being novel, while Active behaviors consisted of two items: Being energetic and being active.

Composite variables for each category of behaviors were formed by averaging the items. Most reliability statistics for the composite outcome behaviors were relatively strong across all cultures, ranging between .47 and .94 ($M_\alpha = .81$). Post-hoc confirmatory factor analyses confirmed that the items under each category variable consisted of a single factor. Table 6b summarizes the reliability statistics for the outcome variables across the three samples.

Additional Measures. Similar to Study 1, participants also completed additional measures of the desirability and functionality of both PA and NA, as well as demographic variables.

Desirability and Functionality of PA and NA. As in Study 1, desirability of PA and NA were assessed through rating the desirability of three positive and two negative emotions. Functionality of PA and NA was also assessed as it was in Study 1, through rating the functionality of two positive and three negative emotions. Composite variables for the desirability and functionality of PA and NA were formed by averaging the items. Reliability statistics for the desirability and functionality of PA and NA ranged between .32 and .79 ($M_{\alpha} = .61$). Table 6c summarizes the reliability statistics for the desirability and functionality of PA and NA across the three samples.

Demographic variables. Participants also reported their gender, age, educational level, income and place of residence. While gender, education level, and place of residence were multiple-choice questions, age and income were free-response questions. In addition, participants reported their income in their nation's currency which were log-transformed for use in our data analyzes.

Results

Mean differences in levels of SWB. Multiple one-way ANOVAs conducted to examine whether the three cultures differed from each other in the mean levels of the components of SWB found a significant difference in Momentary Positive Affect ($F(2,678) = 53.10, p < .001$), Momentary Negative Affect ($F(2,678) = 71.69, p < .001$), General Positive Affect ($F(2,678) = 66.35, p < .001$), General Negative Affect ($F(2,678) = 114.62, p < .001$), Life Satisfaction ($F(2,678) = 49.38, p < .001$), and Optimism ($F(2,678) = 55.21, p < .001$) between the three cultures.

Participants in the United States reported higher levels of momentary PA ($M_{us} = 21.64, SD_{us} = 5.89; M_{kr} = 18.44, SD_{kr} = 5.39; d = 0.57$), general PA ($M_{us} = 22.92, SD_{us} = 3.60; M_{kr} =$

20.36, $SD_{kr} = 4.09$; $d = 0.66$), LS ($M_{us} = 22.69$, $SD_{us} = 6.77$; $M_{kr} = 18.10$, $SD_{kr} = 6.73$; $d = 0.68$) and optimism ($M_{us} = 5.21$, $SD_{us} = 1.49$; $M_{kr} = 4.35$, $SD_{kr} = 1.54$; $d = 0.57$) than participants from South Korea. However, as in Study 1, participants in Costa Rica reported the highest levels of momentary PA ($M_{cr} = 23.60$, $SD_{cr} = 4.84$), general PA ($M_{cr} = 24.23$, $SD_{cr} = 3.18$), LS ($M_{cr} = 24.05$, $SD_{cr} = 6.51$), and optimism ($M_{cr} = 5.80$, $SD_{cr} = 1.41$) surpassing the levels of PA, LS, and optimism reported by participants from South Korea ($d_{momentaryPA} = 1.01$; $d_{generalPA} = 1.06$; $d_{LS} = 0.90$; $d_{optimism} = 0.98$) and the United States ($d_{momentaryPA} = 0.36$; $d_{generalPA} = 0.39$; $d_{LS} = 0.20$; $d_{optimism} = 0.41$). For NA, participants from South Korea reported higher levels of both momentary ($M_{kr} = 13.84$, $SD_{kr} = 5.58$) and general NA ($M_{kr} = 18.66$, $SD_{kr} = 3.82$) compared to participants from the United States ($d_{momentaryNA} = 0.96$; $d_{generalNA} = 1.12$) and Costa Rica ($d_{momentaryNA} = 0.88$; $d_{generalNA} = 1.31$), while participants from the United States and Costa Rica did not significantly differ from each other on momentary ($M_{us} = 9.00$, $SD_{us} = 4.49$; $M_{cr} = 9.65$, $SD_{cr} = 3.75$) and general NA ($M_{us} = 14.43$, $SD_{us} = 3.74$; $M_{cr} = 14.00$, $SD_{cr} = 3.27$).

Mean differences in desirability and functionality of PA and NA. We also conducted multiple one-way ANOVAs to examine whether the three cultures differed from each other in the desirability and functionality of PA and NA. We found that there were differences in the desirability of PA ($F(2,678) = 80.11$, $p < .001$), NA ($F(2,678) = 109.04$, $p < .001$), and in the functionality of NA ($F(2,678) = 47.54$, $p < .001$) between the three cultures. However, there were no differences in the functionality of PA between the three cultures ($F(2,678) = 1.34$, $p = .261$).

For positive affect, South Koreans rated PA as less beneficial than both Americans ($d = 0.93$) and Costa Ricans ($d = 0.62$) ($M_{kr} = 5.40$, $SD_{kr} = 0.82$), while Americans and Costa Ricans rated PA as equally beneficial ($M_{us} = 6.13$, $SD_{us} = 0.72$, $d = 0.93$; $M_{cr} = 5.91$, $SD_{cr} = 0.82$). For

negative affect, South Koreans rated NA as more beneficial ($M_{kr} = 3.37$, $SD_{kr} = 1.42$) and functional ($M_{kr} = 2.94$, $SD_{kr} = 1.03$) than Costa Ricans ($d_{beneficial} = 1.00$; $d_{functional} = 0.54$), who in turn rated NA as more beneficial ($M_{cr} = 2.09$, $SD_{cr} = 1.13$; $M_{us} = 1.84$, $SD_{us} = 0.95$) and functional ($M_{cr} = 2.40$, $SD_{cr} = 0.96$; $M_{us} = 2.04$, $SD_{us} = 0.94$) than Americans ($d_{beneficial} = 0.24$; $d_{functional} = 0.38$).

Correlations between SWB and beneficial behavioral outcomes. We computed the correlations between each component of SWB and each outcome across the three cultures (Table 8) to replicate the results we found in Study 1, suggesting that there are no cultural differences in the associations between SWB and beneficial behavioral outcomes.

As expected, across all three cultures, momentary positive affect, general positive affect, life satisfaction, and optimism were significantly positively correlated with almost all of the outcomes. Momentary and general negative affect were significantly negatively correlated with several outcomes and is trending in the expected direction for the non-significant outcomes across three cultures, suggesting that there are not cultural differences in the associations between SWB and the outcomes we studied. The correlations remained significant controlling for age, gender, education, and income. In addition, the correlations remained significant after further controlling for the desirability and functionality of PA and NA. Taken together, these findings largely replicate our results in Study 1 and provide further evidence that there are not large cultural differences in the associations between SWB and behavioral outcomes.

Testing the differences in the magnitude of correlation coefficients between cultures. Similar to Study 1, we transformed the correlation coefficients using the Fisher r -to- z transformation before comparing the transformed correlation coefficients in each culture against

each other to determine whether the correlation coefficients in each culture were significantly different from the correlation coefficients in the other two cultures.

Because the results remain similar even after controlling for age, gender, education, income, and the desirability and functionality of PA and NA, we report the uncontrolled findings in Table 9. Similar to the results in Study 1, the correlation coefficients between the components of SWB and the outcomes are mostly not significantly different across all comparisons between cultures. The only significant pattern was observed in the expressing happiness behavior outcome where the correlations between components of SWB and expressing happiness behavior are significantly smaller in South Korea than the United States and Costa Rica, suggesting that for participants in South Korea, behaviors expressing happiness are less associated with SWB than for participants in the United States or Costa Rica. These findings are essentially identical to our finding in Study 1 and provide further evidence that there are few cultural differences in the associations between SWB and behavioral outcomes.

Testing the differences in the correlation coefficients between studies. As an explicit test to determine whether the correlations in Study 1 are replicated in Study 2, we transformed the correlation coefficients from both studies using the Fisher r -to- z transformation before comparing the correlation coefficients reported in both studies against each other. Since Study 1 only examined long-term affect, we only compared long-term affect in Study 2 against the long-term affect in Study 1. If we successfully replicate the results, we hypothesize that the correlation coefficients obtained in both studies should not significantly differ from each other.

As seen in Table 10, the differences in the correlation coefficients across the two studies are mostly not significant, suggesting that we successfully replicated the correlation coefficients reported in Study 1. The only consistent difference was observed in the correlations between life

satisfaction and the outcomes in South Korea where the correlations are significantly stronger in Study 1 than Study 2.

Regressions predicting outcomes from the types of SWB. Similar to Study 1, we simultaneously entered the four components of SWB (General PA, General NA, Life Satisfaction, and Optimism) into a linear regression model predicting each of the six outcomes. Table 11 summarizes the standardized betas for each component of SWB on each outcome variable across the three cultures. The results remain largely similar after controlling for age, gender, income, education, and the desirability and functionality of PA and NA, and thus we report the uncontrolled analyzes.

When entered together in a linear regression model, general PA is often the strongest predictor of outcomes across three cultures, while the other components of SWB hardly added to the models. In the United States, general PA predicted every outcome except social capital. In South Korea, general PA predicted prosocial and active behaviors, while in Costa Rica, general PA predicted every outcome except health and active behaviors. Across three cultures, general NA, LS, and optimism do not add to the models, except optimism in the United States and Costa Rica, which added to the models for expressing happiness and active behaviors respectively. Study 2 provides further evidence that PA is a universal predictor of outcomes because PA is almost always the only significant predictor of outcomes across all three cultures.

Variance associated with momentary versus general affect. Is momentary or general affect driving the association between affect and beneficial behavioral outcomes? To examine this question, for each country, we conducted dominance analyses on each outcome where we modeled all possible combinations of multiple regression models between the six components of SWB (momentary PA, momentary NA, general PA, general NA, LS, and optimism) and each

outcome ($n = 63$ models for each outcome). Next, similar to Study 1, we compared the standardized betas for each component of SWB in each model against each other to determine the proportion of explained variance attributed to each component of SWB. Then, we computed the percentage of explained variance attributed to each component of SWB by dividing the proportion of explained variance attributed to each component of SWB against the proportion of total explained variance. If momentary affect is driving the associations between affect and outcomes, then momentary PA and NA should account for a significant percentage of total explained variance.

Table 12 summarizes the dominance analyses we conducted. Across three nations and six outcomes, the components of SWB accounted for varying amounts of R^2 change, ranging from 9% for Creativity in South Korea to 49% for Expressing Happiness in the United States ($M_{R^2} = 17\%$). Across all three nations, momentary PA accounted for the highest percentage of variance in all of the outcomes, and consistently outweighed the percentage of variance accounted for by momentary NA, suggesting that momentary PA is a major driver of the associations between affect and beneficial outcomes. At the same time, while general PA and NA also accounted for a percentage of unique variance for the outcomes across three cultures, the proportion of variance explained by general PA and NA is often lower than the proportion of variance explained by momentary affect. Taken together, the consistency of momentary PA as the strongest driver of the associations between affect and beneficial outcomes across all three cultures provides further evidence that PA, in particular, momentary PA, is a strong predictor of outcomes.

Discussion

In Study 2, we replicated the findings from Study 1 even though we used slightly different measures of both affect and outcomes. As with Study 1, there were not significant

cultural differences in the associations between SWB and beneficial behavioral outcomes. Across all three cultures, there were significant correlations between the components of SWB and beneficial outcomes, even after controlling for age, gender, education, income, and the desirability and functionality of PA and NA, suggesting that the associations between SWB and beneficial outcomes are cross-culturally consistent. Furthermore, there were few cultural differences in the magnitude of the associations between SWB and the outcomes in both studies, and the differences in the correlation coefficients across the two studies were largely not significant, thus successfully replicating the findings of Study 1 and providing further evidence that these the associations between SWB and beneficial outcomes are at best somewhat cross-culturally consistent. However, not all the findings in Study 1 were replicated. While Study 1 found cultural differences in the component of SWB that best predict each outcome, Study 2 found that general PA is the strongest predictor of outcomes across all three cultures.

Besides replicating the findings in Study 1, we also extended Study 1 by examining whether momentary affect or general affect drove the association between affect and outcomes. By examining the proportion of unique variance associated with momentary versus general affect, we found that across all three cultures momentary PA significantly accounted for the highest proportion of unique variance in a majority of the outcomes, above and beyond the proportion of unique variance associated with general PA and NA. This suggest that not only is momentary PA the major driver of the associations between affect and beneficial outcomes, but that PA is a strong predictor of outcomes.

Why might a person's positive affect at the moment predict how they act in general more than their positive affect in general? It could be that how a person feels at the moment is critical to the behaviors we measured, and these behaviors may be less due to long-term levels of well-

being. More research will be required to investigate further why current affect is a better predictor than long-term affect.

General Discussion

Our current studies produced five key findings. First, our two studies present, to our knowledge, the best initial evidence that the associations between SWB and the behavioral outcomes are culturally widespread. In both studies, the correlations between SWB and various outcomes across three cultures were almost all significant and were consistently in the expected direction – positive affect, life satisfaction, and optimism were positively correlated with almost all of the beneficial outcomes, while negative affect was significantly, inversely correlated with the outcomes as well. Furthermore, most of the correlation coefficients do not differ significantly between the three cultures in both studies, with the only exception being the correlations between the components of SWB and expressing happiness behaviors, where correlations were significantly stronger in the United States in Study 1 and significantly weaker in South Korea in Study 2. Our findings indicate that not only are the associations widespread, the strength of the associations between SWB and the various outcomes are also somewhat consistent across cultures.

Second, the associations found between SWB and our outcomes could not be explained by third variables such as age, gender, income, and in Study 2, education. In both studies, after controlling these factors, most correlation coefficients were still significant, and remain in the expected direction. Furthermore, the patterns in the difference of the correlation coefficients between the three cultures appear similar in both studies, suggesting that the third variables did not influence outcomes in each culture differently.

Third, when considering how the various components of SWB influence the outcome behaviors, negative affect and optimism only have predictive variance for the outcomes that are shared with the other components of SWB; they consistently do not predict beyond them. On the other hand, positive affect consistently predicted beyond the other components of SWB across all three cultures, accounting for the highest proportion of unique variance that is not shared with other components of SWB. However, the results for life satisfaction were more mixed. While Study 1 found that life satisfaction consistently predicted beyond the other components of SWB in South Korea and Costa Rica, life satisfaction did not predict beyond the other components of SWB in any culture in Study 2. Because we obtained contrasting results from both studies, we are hesitant to draw firm conclusions regarding the predictive variance of life satisfaction on the outcome behaviors and await further research to clarify the extent in which life satisfaction influences the outcome behaviors beyond the other three components of SWB.

Fourth, we addressed whether the associations of SWB with the outcomes are driven by momentary affect, suggesting that people high in SWB are in a good mood more often and therefore have a greater likelihood of performing behaviors that result from positive moods, or whether the associations are driven by long-term affect, suggesting that people who are generally in a good mood have characteristics they develop in the long-run that is responsible for the differences in behavior. We found that momentary affect added to the prediction of the outcomes beyond general SWB, while general affect did not, suggesting that the effects of SWB on the outcomes are because people high in SWB are more often in a positive mood. Our findings are consistent with the results found in a longitudinal study examining military personnel, where current affect that year predicted work performance in army personnel, but long-term affect from several years before did not add to that prediction (Vie, Steward, & Diener, 2018). Although

both studies found initial evidence that the effects of SWB on the outcomes are driven by people being in a good mood more often, firm conclusions about the effects of current affect versus general SWB must await further research.

Fifth, although the three cultures differ significantly from each other on the desirability and functionality of both PA and NA, the patterns of associations between SWB and behavioral outcomes did not change significantly after controlling for the desirability and functionality of both PA and NA. This suggests that the associations between SWB and the outcomes could not be explained by differences in the desirability and functionality of PA and NA within cultures.

Although our studies provided initial evidence that the associations between SWB and beneficial behavioral outcomes are widespread, our studies left questions unanswered. Future research examining the associations between SWB and beneficial behavioral outcomes between cultures should investigate several issues: First, future studies should add SWB and outcome measures that are not based solely upon the self-report of the participants, which could be colored by their moods and subject to response biases. For example, future studies could use informant reports or experience sampling methods to examine SWB and measure actual behavior as outcomes. In the case of health behaviors, for example, future studies could use electronic measures of exercise and vital signs obtained from wearables such as Fitbits and smartwatches.

Second, future studies could examine other nations that are distinct from the nations we examined, to extend the generality of our findings. For example, future studies could extend our results to the Middle East or less developed nations within Africa.

Third, future studies should go beyond the cross-sectional design of our studies and employ experimental and longitudinal methodologies to examine causality. For example, future studies could experimentally manipulate mood or create SWB interventions to examine whether

such manipulations and interventions result in more frequent positive behaviors. In addition, large-scale interventions where SWB is altered over time, such as ENHANCE (Kushlev et al., 2017), are required to examine the effects of long-term SWB on beneficial outcomes.

Fourth, we suspect that many of the behaviors we assessed and SWB have a bi-directional causal connection. For instance, prosocial behaviors may arise from SWB in some instances but also can lead to them. Similarly, exercises might both lead to and follow from positive feelings. Therefore, future studies should attempt to identify and explain the circumstances in which the causal arrow runs one way from situations where the causal arrow runs the other direction.

Fifth, future studies should attempt to further examine the variables that mediate or moderate these associations. While we found that several demographic variables, as well as the desirability and functionality of affect, did not influence the associations between SWB and beneficial outcomes, we have yet to thoroughly examine what these mediators or moderators are. It seems likely that SWB might be associated with good outcomes only in some life circumstances, but perhaps not all of them. For example, these associations may be found where conditions are relatively benign, but not when they are dangerous or resources are very scarce.

Overall, our studies demonstrated that SWB seems to be consistently associated with beneficial outcomes in three cultures. These findings are important because they suggest that being above neutral on SWB may be the default in humans because, given their resources and intelligence, certain approach behaviors that enhance adaptation result when there is an absence of immediate danger. For example, people may be led by their moods to close and supportive relationships with others and the positive mood offset support this unless there are compelling

reasons not to do so. Positive moods may be the default offset in humans because the social behavior and active participation they induce in activities may generally be beneficial.

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Table 1

Similarities and differences between cultures

Culture	Income	Self construal	SWB
United States	High	Independent	High
South Korea	High	nterdependent	Low
Costa Rica	Low	nterdependent	High

Table 2a

Study 1 - Reliability Statistics for components of SWB

	N of items	Cronbach's Alpha (α)		
		United States	South Korea	Costa Rica
Positive Affect	2	.862	.772	.711
Negative Affect	2	.723	.691	.541
Life Satisfaction	5	.920	.910	.846

Table 2b

Study 1 - Reliability Statistics for beneficial behavioral outcomes

	N of items	Cronbach's Alpha (α)		
		United States	South Korea	Costa Rica
Health Behaviors	9	.641	.469	.429
Prosocial Behaviors	6	.892	.784	.771
Expressing Happiness	2	.884	.819	.903
Social Capital	4	.738	.639	.613
Creativity	1	NA	NA	NA

Table 2c

Study 1 - Reliability Statistics for the desirability and functionality of affect

	N of items	Cronbach's Alpha (α)		
		United States	South Korea	Costa Rica
Desirability of PA	3	.787	.707	.844
Desirability of NA	2	.888	.855	.838
Functionality of PA	2	.810	.878	.800
Functionality of NA	3	.885	.831	.695

Table 3
Study 1 - Correlation between components of SWB and outcome variables

United States									
	1	2	3	4	5	6	7	8	9
1. Positive Affect	—								
2. Negative Affect	-.479**	—							
3. Life Satisfaction	.661**	-.541**	—						
4. Optimism	.659**	-.513**	.765**	—					
5. Health Behaviors	.205**	-.290**	.288**	.254**	—				
6. Prosocial Behaviors	.320**	-.161*	.146*	.222**	.209**	—			
7. Expressing Happiness	.636**	-.407**	.603**	.578**	.303**	.480**	—		
8. Social Capital	.220**	-.197**	.214**	.135	.475**	.323**	.155*	—	
9. Creativity	.400**	-.177*	.249**	.257**	.158*	.412**	.389**	.197**	—
South Korea									
	1	2	3	4	5	6	7	8	9
1. Positive Affect	—								
2. Negative Affect	-.405**	—							
3. Life Satisfaction	.586**	-.490**	—						
4. Optimism	.598**	-.359**	.624**	—					
5. Health Behaviors	.304**	-.166*	.316**	.279**	—				
6. Prosocial Behaviors	.473**	-.238**	.493**	.397**	.359**	—			
7. Expressing Happiness	.519**	-.214**	.517**	.463**	.236**	.631**	—		
8. Social Capital	.262**	-.232**	.393**	.303**	.498**	.525**	.287**	—	
9. Creativity	.374**	-.182*	.435**	.402**	.408**	.468**	.383**	.454**	—
Costa Rica									
	1	2	3	4	5	6	7	8	9
1. Positive Affect	—								
2. Negative Affect	-.231**	—							
3. Life Satisfaction	.468**	-.334**	—						
4. Optimism	.534**	-.310**	.548**	—					
5. Health Behaviors	.135	-.246**	.312**	.064	—				
6. Prosocial Behaviors	.392**	-.307**	.420**	.445**	.176*	—			
7. Expressing Happiness	.387**	-.201**	.396**	.311**	-.003	.470**	—		
8. Social Capital	.227**	-.177*	.323**	.244**	.291**	.572**	.302**	—	
9. Creativity	.334**	-.117	.149*	.201**	.142	.321**	.250**	.244**	—

Note. ** indicates $p < 0.01$, * indicates $p < .05$. All tests are two-tailed.

Table 4
Study 1 - Testing the differences between correlation coefficients

United States vs South Korea									
	1	2	3	4	5	6	7	8	9
1. Positive Affect	—								
2. Negative Affect	-.074	—							
3. Life Satisfaction	.075	-.051	—						
4. Optimism	.061	-.154	.141**	—					
5. Health Behaviors	-.099	-.124	-.028	-.025	—				
6. Prosocial Behaviors	-.153	.077	-.347**	-.175	-.150	—			
7. Expressing Happiness	.117	-.193*	.086	.115	.067	-.151*	—		
8. Social Capital	-.042	.035	-.179	-.168	-.023	-.202*	-.132	—	
9. Creativity	.026	.005	-.186*	-.145	-.250**	-.056	.006	-.257**	—
United States vs Costa Rica									
	1	2	3	4	5	6	7	8	9
1. Positive Affect	—								
2. Negative Affect	-.248**	—							
3. Life Satisfaction	.193**	-.207**	—						
4. Optimism	.125	-.203*	.217**	—					
5. Health Behaviors	.070	-.044	-.024	.190	—				
6. Prosocial Behaviors	-.072	.146	-.274**	-.223*	.033	—			
7. Expressing Happiness	.249**	-.206*	.207**	.267**	.306**	.010	—		
8. Social Capital	-.007	-.020	-.109	-.109	.184*	-.249*	-.147	—	
9. Creativity	.066	-.060	.100	.056	.016	.091	.139	-.047	—
South Korea vs Costa Rica									
	1	2	3	4	5	6	7	8	9
1. Positive Affect	—								
2. Negative Affect	-.174	—							
3. Life Satisfaction	.118	-.156	—						
4. Optimism	.064	-.049	.076	—					
5. Health Behaviors	.169	.080	.004	.215*	—				
6. Prosocial Behaviors	.081	.069	.073	-.048	.183	—			
7. Expressing Happiness	.132	-.013	.121	.152	.239*	.161	—		
8. Social Capital	.035	-.055	.070	.059	.207*	-.047	-.015	—	
9. Creativity	.040	-.065	.286**	.201*	.266**	.147	.133	.210*	—

Note. Correlation coefficients were assessed whether they were significantly different from one other after transforming the coefficients using the Fisher *r*-to-*z* transformation. The magnitude of the difference between correlation coefficients are shown in the table for easy interpretation.

** indicates $p < 0.01$, * indicates $p < .05$. All tests are two-tailed.

Table 5
 Study 1 - Standardized betas (β) for each component of SWB on each outcome variable when entered together in a regression

	United States			South Korea			Costa Rica					
	PA	NA	LS	Optimism	PA	NA	LS	Optimism	PA	NA	LS	Optimism
Health Behaviors	-.027	-.188*	.168	.047	.156	.015	.185	.076	.041	-.185**	.343**	-.204*
Prosocial Behaviors	.355*	-.038	-.205	.126	.273**	.050	.328**	.048	.160*	-.143*	.178*	.217**
Expressing Happiness	.379**	-.031	.232**	.135	.304**	.107	.314**	.124	.242**	-.053	.248**	.029
Social Capital	.158	-.110	.168	-.154	.010	-.044	.311**	.087	.072	-.064	.237**	.056
Creativity	.420**	.013	-.028	.009	.134	.073	.286**	.170	.322**	-.044	-.035	.034

Note. ** indicates $p < 0.01$, * indicates $p < .05$. All tests are two-tailed.

Table 6

Study 1 - Summary of dominance analyses: Percentage of explained variance accounted for by each component of SWB

	United States				South Korea				Costa Rica			
	PA	NA	SWLS	Optimism	PA	NA	SWLS	Optimism	PA	NA	SWLS	Optimism
Health Behaviors	11%	38%	31%	20%	33%	7%	37%	24%	6%	30%	51%	12%
Prosocial Behaviors	63%	8%	11%	19%	35%	6%	40%	19%	22%	19%	28%	31%
Expressing Happiness	37%	10%	28%	24%	36%	5%	35%	23%	33%	13%	38%	17%
Social Capital	33%	25%	30%	12%	14%	12%	52%	22%	16%	18%	46%	20%
Creativity	67%	6%	13%	14%	25%	5%	40%	30%	57%	14%	14%	16%

Table 7a

Study 2 - Reliability Statistics for components of SWB

	N of items	Cronbach's Alpha (α)		
		United States	South Korea	Costa Rica
Momentary PA	6	.937	.938	.929
Momentary NA	6	.919	.906	.856
General PA	6	.890	.909	.820
General NA	6	.846	.806	.804
Life Satisfaction	5	.871	.913	.851

Table 7b

Study 2 - Reliability Statistics for beneficial behavioral outcomes

	N of items	Cronbach's Alpha (α)		
		United States	South Korea	Costa Rica
Health Behaviors	7	.468	.570	.331
Prosocial Behaviors	5	.943	.911	.877
Expressing Happiness	2	.935	.931	.908
Social Capital	3	.869	.843	.866
Creativity	2	.860	.863	.711
Active	2	.944	.772	.888

Table 7c

Study 2 - Reliability Statistics for the desirability and functionality of affect

	N of items	Cronbach's Alpha (α)		
		United States	South Korea	Costa Rica
Desirability of PA	3	.443	.498	.501
Desirability of NA	2	.770	.789	.733
Functionality of PA	2	.601	.649	.324
Functionality of NA	3	.782	.638	.556

Table 8
 Study 2 - Correlation between components of SWB and outcome variables

United States												
	1	2	3	4	5	6	7	8	9	10	11	12
1. General PA	—											
2. General NA	-.652**	—										
3. Life Satisfaction	.630**	-.514**	—									
4. Optimism	.532**	-.391**	.613**	—								
5. Momentary PA	.784**	-.605**	.586**	.517**	—							
6. Momentary NA	-.485**	.656**	-.408**	-.316**	-.463**	—						
7. Health Behaviors	.315**	-.228**	.238**	.264**	.341**	-.092	—					
8. Prosocial Behaviors	.362**	-.224**	.269**	.253**	.475**	-.036	.265**	—				
9. Expressing Happiness	.598**	-.448**	.428**	.445**	.664**	-.275**	.385**	.700**	—			
10. Social Capital	.191**	-.185**	.247**	.208**	.301**	-.026	.244**	.591**	.435**	—		
11. Creativity	.220**	-.046	.105	.183**	.305**	.091	.290**	.637**	.508**	.507**	—	
12. Active	.321**	-.187**	.235**	.265**	.367**	-.019	.385**	.572**	.588**	.417**	.619**	—
South Korea												
	1	2	3	4	5	6	7	8	9	10	11	12
1. General PA	—											
2. General NA	-.347**	—										
3. Life Satisfaction	.609**	-.450**	—									
4. Optimism	.526**	-.323**	.610**	—								
5. Momentary PA	.708**	-.413**	.664**	.548**	—							
6. Momentary NA	-.287**	.535**	-.250**	-.229**	-.143*	—						
7. Health Behaviors	.193**	-.210**	.254**	.190**	.275**	-.208**	—					
8. Prosocial Behaviors	.270**	-.141*	.231**	.193**	.368**	-.126	.481**	—				
9. Expressing Happiness	.219**	-.065	.211**	.159*	.308**	-.072	.380**	.758**	—			
10. Social Capital	.138*	-.078	.155*	.191**	.274**	-.022	.376**	.618**	.531**	—		
11. Creativity	.135*	-.011	.135*	.087	.226**	-.015	.199**	.487**	.459**	.476**	—	
12. Active	.239**	-.109	.224**	.152*	.319**	-.096	.347**	.467**	.453**	.418**	.691**	—
Costa Rica												
	1	2	3	4	5	6	7	8	9	10	11	12
1. General PA	—											
2. General NA	-.514**	—										
3. Life Satisfaction	.583**	-.320**	—									
4. Optimism	.438**	-.320**	.645**	—								
5. Momentary PA	.689**	-.436**	.562**	.439**	—							
6. Momentary NA	-.412**	.514**	-.345**	-.375**	-.528**	—						
7. Health Behaviors	.177**	-.126	.091	.078	.175**	-.025	—					
8. Prosocial Behaviors	.442**	-.311**	.277**	.277**	.541**	-.226**	.292**	—				
9. Expressing Happiness	.543**	-.350**	.397**	.309**	.684**	-.351**	.295**	.694**	—			
10. Social Capital	.391**	-.300**	.225**	.238**	.408**	-.143*	.295**	.665**	.540**	—		
11. Creativity	.241**	-.114	.138*	.190**	.248**	.034	.205**	.430**	.338**	.556**	—	
12. Active	.254**	-.127	.246**	.268**	.326**	-.124	.280**	.426**	.381**	.405**	.587**	—

Note. ** indicates $p < 0.01$, * indicates $p < .05$. All tests are two-tailed.

Table 9
 Study 2 - Testing the differences between correlation coefficients

United States vs South Korea												
	1	2	3	4	5	6	7	8	9	10	11	12
1. General PA	—											
2. General NA	-.305**	—										
3. Life Satisfaction	.021	-.064	—									
4. Optimism	.006	-.068	.003	—								
5. Momentary PA	.076	-.192**	-.078	-.031	—							
6. Momentary NA	-.198**	.121*	-.158	-.087	-.320**	—						
7. Health Behaviors	.122	-.018	-.016	.074	.066	.116	—					
8. Prosocial Behaviors	.092	-.083	.038	.060	.107	.090	-.216**	—				
9. Expressing Happiness	.379**	-.383**	.217**	.286**	.356**	-.203*	.005	-.058	—			
10. Social Capital	.053	-.107	.092	.017	.027	-.004	-.132	-.027	-.096	—		
11. Creativity	.085	-.035	-.03	.096	.079	.106	.091	.150*	.049	.031	—	
12. Active	.082	-.078	.011	.113	.048	.077	.038	.105	.135*	-.001	-.072	—

United States vs Costa Rica												
	1	2	3	4	5	6	7	8	9	10	11	12
1. General PA	—											
2. General NA	-.138*	—										
3. Life Satisfaction	.047	-.194**	—									
4. Optimism	.094	-.071	-.032	—								
5. Momentary PA	.095*	-.169**	.024	.078	—							
6. Momentary NA	-.073	.142*	-.063	.059	.065	—						
7. Health Behaviors	.138	-.102	.147	.186*	.166	-.067	—					
8. Prosocial Behaviors	-.08	.087	-.008	-.024	-.066	.190*	-.027	—				
9. Expressing Happiness	.054	-.098	.031	.136	-.020	.076	.09	.006	—			
10. Social Capital	-.200*	.115	.022	-.030	-.107	.117	-.051	-.074	-.105	—		
11. Creativity	-.021	.068	-.033	-.007	.057	.057	.085	.207**	.170*	-.049	—	
12. Active	.067	-.06	-.011	-.003	.041	.105	.105	.146*	.207**	.012	.032	—

South Korea vs Costa Rica												
	1	2	3	4	5	6	7	8	9	10	11	12
1. General PA	—											
2. General NA	.167*	—										
3. Life Satisfaction	.026	-.130	—									
4. Optimism	.088	-.003	-.035	—								
5. Momentary PA	.019	.023	.102	.109	—							
6. Momentary NA	.125	.021	.095	.146	.385**	—						
7. Health Behaviors	.016	-.084	.163	.112	.100	-.183*	—					
8. Prosocial Behaviors	-.172*	.170	-.046	-.084	-.173*	.100	.189*	—				
9. Expressing Happiness	-.324**	.285**	-.186*	-.150**	-.376*	.279**	.085	.064	—			
10. Social Capital	-.253**	.222**	-.070	-.047	-.134	.121	.081	-.047	-.009	—		
11. Creativity	-.106	.103	-.003	-.103	-.022	-.049	-.006	.057	.121	-.080	—	
12. Active	-.015	.018	-.022	-.116	-.007	.028	.067	.041	.072	.013	.104	—

Note. Correlation coefficients were assessed whether they were significantly different from one other after transforming the coefficients using the Fisher r-to-z transformation. The magnitude of the difference between correlation coefficients are shown in the table for easy interpretation.

** indicates $p < .01$, * indicates $p < .05$. All tests are two-tailed.

Table 10

Replication - Testing the differences between correlation coefficients obtained in both studies

United States									
	1	2	3	4	5	6	7	8	9
1. Positive Affect	—								
2. Negative Affect	.173**	—							
3. Life Satisfaction	.031	-.027	—						
4. Optimism	.127*	-.122	.152**	—					
5. Health Behaviors	-.110	-.062	.050	-.010	—				
6. Prosocial Behaviors	-.042	.063	-.123	-.031	-.056	—			
7. Expressing Happiness	.038	.041	.175*	.133	-.082	-.220**	—		
8. Social Capital	.029	-.012	-.033	-.073	.231**	-.268**	-.280**	—	
9. Creativity	.180*	-.131	.144	.074	-.132	-.225**	-.119	-.310**	—
South Korea									
	1	2	3	4	5	6	7	8	9
1. Positive Affect	—								
2. Negative Affect	-.058	—							
3. Life Satisfaction	-.023	-.040	—						
4. Optimism	.072	-.036	.014	—					
5. Health Behaviors	.111	.044	.062	.089	—				
6. Prosocial Behaviors	.203*	-.097	.262**	.204	-.122	—			
7. Expressing Happiness	.300**	-.149	.306**	.304**	-.144	-.127**	—		
8. Social Capital	.124	-.154	.238**	.112	.122	-.093	-.244**	—	
9. Creativity	.239**	-.171	.300**	.315**	.209*	-.019	-.076	-.022	—
Costa Rica									
	1	2	3	4	5	6	7	8	9
1. Positive Affect	—								
2. Negative Affect	.283**	—							
3. Life Satisfaction	-.115	-.014	—						
4. Optimism	.096	.010	-.097	—					
5. Health Behaviors	-.042	-.120	.221*	-.014	—				
6. Prosocial Behaviors	-.050	.004	.143	.168*	-.116	—			
7. Expressing Happiness	-.156*	.149	-.001	.002	-.298**	-.224**	—		
8. Social Capital	-.164	.123	.098	.006	-.004	-.093	-.238**	—	
9. Creativity	.093	-.003	.011	.011	-.063	-.109	-.088	-.312**	—

Note. Correlation coefficients were assessed whether they were significantly different from one other after transforming the coefficients using the Fisher r-to-z transformation. The magnitude of the difference between correlation coefficients in study 1 and study 2 are shown in the table for easy interpretation.

Table 11

Study 2 - Standardized betas (β) for each component of SWB on each outcome variable when entered together in a regression

	United States			South Korea			Costa Rica					
	General PA	General NA	LS	Optimism	General PA	General NA	LS	Optimism	General PA	General NA	LS	Optimism
Health Behaviors	.226*	-.030	-.001	.133	.038	-.115	.157	.038	.164	-.048	-.023	.006
Prosocial Behaviors	.319**	.033	.040	.071	.195*	-.026	.080	.034	.365**	-.101	-.038	.109
Expressing Happiness	.454**	-.090	-.012	.175**	.146	.052	.136	.016	.424**	-.090	.102	.028
Social Capital	-.001	-.070	.161	.082	.034	.002	.046	.146	.323**	-.123	-.067	.100
Creativity	.312**	.165	-.091	.138	.096	.070	.115	-.011	.243**	.030	-.092	.153
Active	.282**	.050	0	.135	.168*	.005	.134	-.017	.165	.029	.045	.176*

Note. ** indicates $p < 0.01$, * indicates $p < .05$. All tests are two-tailed.

Table 12

Study 1 - Summary of dominance analyses: Percentage of explained variance accounted for by each component of SWB

	United States						South Korea						Costa Rica					
	PA		SWLS		Optimism		PA		SWLS		Optimism		PA		SWLS		Optimism	
	PA	NA	SWLS	NA	Optimism	NA	SWLS	PA	NA	SWLS	NA	Optimism	PA	NA	SWLS	NA	Optimism	
Health Behaviors	56%	4%	16%	24%	24%	37%	26%	25%	11%	11%	21%	41%	24%	21%	14%			
Prosocial Behaviors	71%	8%	11%	9%	9%	70%	6%	15%	10%	10%	12%	66%	11%	12%	11%			
Expressing Happiness	63%	6%	14%	17%	17%	69%	2%	19%	9%	9%	14%	66%	12%	14%	8%			
Social Capital	52%	9%	25%	14%	14%	65%	2%	14%	20%	20%	14%	59%	12%	14%	14%			
Creativity	60%	23%	5%	12%	12%	77%	0%	16%	7%	7%	13%	41%	26%	13%	20%			
Active	59%	9%	13%	19%	19%	68%	4%	20%	8%	8%	20%	41%	14%	20%	25%			