

Needs and Subjective Well-Being Around the World

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Across a sample of 123 countries, we examined the association between the fulfillment of needs and subjective well-being (SWB), including life evaluation, positive feelings, and negative feelings. Need fulfillment was consistently associated with SWB across world regions. Life evaluation was most associated with fulfilling basic needs; positive feelings were most associated with social and respect needs; and negative feelings were most associated with basic, respect, and autonomy needs. Societal need fulfillment predicted SWB, particularly for life evaluation, beyond individuals' fulfillment of their own needs, indicating the desirability of living in a flourishing society. In addition, the associations of SWB with the fulfillment of specific needs were largely independent of whether other needs were fulfilled. These trends persisted when household income was taken into account. The emergent ordering of need fulfillment for psychosocial needs were fairly consistent across country conditions, but the fulfillment of basic and safety needs were contingent on country membership.

Keywords: universal needs, subjective well-being, societal context, ordering of needs, income

In the current study, we examined the association between need fulfillment and subjective well-being (SWB). For many years, the idea of universal needs was out of favor because it was widely believed that socialization uniquely shapes the causes of well-being for each person and in each culture. Furthermore, it was often assumed that people adapt to circumstances so that in the long run only temperament influences SWB. However, in recent years, there has been a resurgence of interest in universal influences on "happiness" that might derive from universal aspects of human nature (Konner, 2002). For instance, Howell and Howell (2008) suggested that the declining marginal utility of money might be due to the fact that income influences SWB primarily when it is associated with the fulfillment of basic physical needs. Kenrick, Griskevicius, Neuberg, and Schaller (2010) suggested that Maslow's (1954) list of needs might be derivable from evolutionary theory (see also Hill & Buss, 2007). These approaches are compatible with the idea that the respect of others, learning new things, and supportive social relationships are fundamental

universal needs that do not require secondary pairing with more basic needs to influence SWB.

Ryff and Keyes (1995) and Ryan and Deci (2000), like Maslow (1954) before them, proposed that there are universal human needs and that fulfillment of them is likely to enhance a person's feelings of well-being. These theorists suggest that there are psychological needs, such as for close social relationships, mastery, and autonomy, which are wired into humans, and therefore, fulfilling these needs should lead to higher SWB. Coming from a sociological tradition, Veenhoven and Ehrhardt (1995) argued for "livability theory," the idea that some societies have a higher quality of life because they have characteristics that are universally desirable for humans. Conversely, the anthropologist Edgerton (1992) argued that there are "sick societies" that do not produce happiness and health. What these views have in common is the idea that certain circumstances are required for high quality of life in all cultures and for all individuals. There are also likely individual and cultural differences in what people desire and find rewarding, but these can coexist with the universals.

The present research builds on the study by Diener, Ng, Harter, and Arora (2010) in which the focus was on the role of income in predicting SWB; specifically, basic and psychosocial need fulfillment was found to be a channel by which income raises life evaluation. Given the primacy of needs in SWB, we seek to probe further to differentiate the role of the various needs in SWB. There are a number of implications and questions that follow from the proposal that the level of SWB can be explained by the fulfillment of universal human needs:

1. If the needs are indeed universal, they should apply to all individuals in all cultures. Although, there are individual different theories of needs (e.g., Murray & Kluckhohn, 1948), the theories

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we test suggest that certain needs are universal in all humans and, therefore, should be related to SWB in all cultures.

2. Inherent in the idea of universal needs is that fulfillment explains some portion of variance in SWB. There are other influences on SWB, such as culture (Oishi, 2010; Triandis & Suh, 2002) and temperament (Lucas & Diener, 2008). However, if the needs are indeed built into people because they aid survival, it is likely that humans are constructed so as to experience the fulfillment of the needs as rewarding and the deprivation of them as punishing. An issue related to this is whether the deprivation of needs is synonymous with low SWB and whether the fulfillment of needs is associated with high SWB.

3. The needs should have a degree of independence from each other, with each making a contribution to SWB beyond the effects of the others. That is, regardless of whether other needs are met, each need will enhance well-being to some extent when it is fulfilled. The analogy of psychological needs to vitamins was drawn by Maslow (1954). Like vitamins, each of the needs is individually required, just as having much of one vitamin does not negate the need for other vitamins. All needs should independently contribute to SWB. Just because one has, for example, a large amount of food and safety, it does not follow that one's need for social support diminishes. On the other hand, it may be that the fulfillment of multiple needs exerts synergistic effects to enhance SWB. For instance, does the fulfillment of respect and social needs lead to higher SWB over and above what might be expected from each alone?

4. Another important question is whether the societal context influences the importance of need fulfillment on SWB. Seligman and Csikszentmihalyi (2000) suggested that one limitation of humanistic psychology was that it overemphasized individual well-being without giving enough attention to collective well-being. With this in mind, we examined whether there are any independent effects of societal need fulfillment on people's individual well-being. People's well-being might depend not only on their success but also on the well-being of those around them (Christakis & Fowler, 2009), and therefore, the need fulfillment of others might influence a person's well-being beyond the fulfillment of their own personal needs.

5. A final issue is whether needs are fulfilled in the order predicted by Maslow's (1954) motivational theory. Past researchers found mixed evidence for the needs emerging in the order suggested by Maslow (Hagerty, 1999; Rauschenberger, Schmitt, & Hunter, 1980; Wicker, Brown, Wiehe, Hagen, & Reed, 1993). Thus, we examined the patterns in which needs are fulfilled and the degree to which societal contexts moderate the emergent ordering.

The Gallup World Poll (GWP) included questions about six needs and three types of SWB. Because the GWP was so large and diverse, including the 123 countries used in this analysis that comprise the vast majority of the world's adult population, generalizable inferences about humanity can be drawn. We examined needs derived from the work of Maslow (1954), Deci and Ryan (2000), Ryff and Keyes (1995), and others such as De Charms (1968) and Csikszentmihalyi (1988):

- Basic needs for food and shelter
- Safety and security

- Social support and love
- Feeling respected and pride in activities
- Mastery
- Self-direction and autonomy

The needs we examined were dictated in part by the aforementioned theories of Maslow, Deci and Ryan, Ryff and Keyes, and Csikszentmihalyi and in part by the measures that were included in the GWP. We did not have a specific measure of self-acceptance, which is included in Ryff and Keyes's theory, but we did have measures of "felt proud" and "are respected" to reflect Ryff and Keyes's and Maslow's concept of being respected and feeling worthy of respect. Our mastery need measure included "doing what one does best" and "learning new things" and, thus, reflects both mastery and growth. Thus, we had measures of Deci and Ryan's needs and most of Maslow's and Ryff and Keyes's needs, although our measures do not map perfectly onto some categories. Nonetheless, our measures do reflect a broad and diverse set of needs, including basic, safety, and psychosocial needs. This analysis greatly expanded on the earlier study by Diener and colleagues (2010) by focusing on whether needs are necessary and sufficient for SWB across the world, the extent to which fulfilled needs produce independent or synergistic effects for SWB, whether societal fulfillment of needs leads to an increase in SWB beyond individual fulfillment of needs, and how needs are fulfilled in relation to one another.

We examined each of the six needs in relation to three types of SWB—life evaluations, positive feelings, and negative feelings. Because recent scholarship suggested that types of SWB are separable, distinct (Kahneman, 1999; Lucas, Diener, & Suh, 1996), and differentially related to factors such as income (Diener et al., 2010), it is plausible that the needs might have different associations with different types of SWB. Maslow (1954) proposed that the fulfillment of universal needs would lead to both health and "happiness." We have come to understand that "happiness" is in fact composed of discrete elements. Life evaluation, positive feelings, and negative feelings form clearly separable factors in self-report, informant reports, and experience sampling (Lucas, Diener, & Suh, 1996). Thus, it is possible that the fulfillment of certain needs is more strongly associated with some types of "happiness" than with others. For instance, there seems to be a close connection between social relationships and extraversion, on one hand, and positive feelings, on the other (Bradburn, 1969; Lucas, Diener, Grob, Suh, & Shao, 2000), and a lesser relation between negative feelings and sociability. Similarly, one might hypothesize that feeling unsafe could produce negative emotions but that being safe might not produce long-lasting positive feelings.

Summary of Research

We assessed the relation of needs with SWB in each of eight sociocultural regions of the world—from Europe to Africa to Latin America. The GWP included rural and poor populations that have been underrepresented in past studies of SWB. Our goal was to examine the association of six needs with each of the three types of SWB, with representative samples across the major regions of the world, with the aim of answering several questions: What are

the associations of need fulfillment with SWB, and how general are these associations across cultures? Is the deprivation or fulfillment of needs linked to low and high SWB, respectively? Is the association of specific needs with SWB dependent on the fulfillment of other needs? Is there any influence on SWB of societal need fulfillment beyond individual need fulfillment? Finally, are needs typically fulfilled in the order described by Maslow?

Method

Sample

The Gallup Organization conducted surveys of 155 countries, across the years 2005–2010, aimed at representing 95% of the world's population. Representative sampling of the entire adult population within each nation was undertaken. In wealthy nations, this was achieved through telephone surveys based on random-digit dialing, and in poorer nations in which telephones are less ubiquitous, this was accomplished by door-to-door interviews, with residences selected from geographical primary sampling units of household clusters (The Gallup Organization, 2009). Respondents within households were selected based on either the latest birthday or the Kish grid method. Up to three contacts per household, at different times of day, were used. A few regions of certain nations were not sampled due to safety concerns.

In 123 nations, the GWP included the relevant need and SWB items. The nations we examined included representation from 66% of the world's population. Within each country, analyses were conducted on individuals who responded to need and SWB items. Altogether, 60,865 individuals were asked the relevant survey items, with a mean of 494 respondents in each country. Out of these 60,865 individuals, 41,933 individuals were asked about their household income.

The interviewers were individuals from each nation and were trained in interviewing techniques. Several features of the survey were designed to make responding easier for those not familiar with questionnaires, for example, simple yes–no responding to many items. The Gallup Organization has many decades of experience conducting surveys in diverse regions of the world. See the following website for methodological details on the sampling and measures: <http://www.gallup.com/se/128147/Worldwide-Research-Methodology.aspx>

World Regions

In order to examine the universality of our findings across cultures, we divided nations into eight cultural regions that are similar to those used in the *CIA Factbook*, an authoritative source of world information. Societies within each region are not identical but share common features in terms of history, economic development, language root, religion, and so forth. Our eight regions were (a) Africa, (b) East and South Asia, (c) former Soviet Union nations, including Eastern Europe, (d) Latin America, (e) Middle East, (f) Northern Europe and Anglo nations, (g) Southeast Asia, and (h) Southern Europe.

Measures

Translation. In each nation, bilingual speakers translated the survey into one or more widespread languages. The translations were then reviewed by second bilingual speakers, who recom-

mended refinements. Because of the very large number of different languages used in the surveys, it is unlikely that language differences created the systematic patterns of finding, although it is possible that they introduced random measurement error that reduced the size of correlations we found. In many cross-cultural studies that employ a small number of nations, translation can represent a systematic contaminant because translation differences could produce what appear to be cultural differences. However, with hundreds of translations used across over 100 nations, this concern is greatly reduced. Indeed, recent analyses of emotion terms of various translations across the world revealed pan-cultural dimensions (Tay, Diener, Drasgow, & Vermunt, 2011).

SWB. Both cognitive and affective components of SWB (Diener, 1984, 2000) were assessed, which Kahneman (1999) has called remembered versus experienced well-being. A global life evaluation measure (Cantril Self-Anchoring Striving Scale; Cantril, 1965) asked respondents to evaluate their current life on a ladder scale, with steps ranging from 0 (*worst possible life*) to 10 (*best possible life*). Positive and negative feelings were assessed by aggregating items that tapped feelings experienced a lot in the previous day, on a dichotomous scale format (1 = *yes*, 0 = *no*). Positive items included “smile/laugh” and “enjoyment”; negative items included “worry,” “sadness,” “depression,” and “anger.” Cronbach's alpha reliabilities for positive and negative emotions were .58 and .65, respectively. The reliabilities appear to be acceptable, given the dichotomous scale format and the short scale lengths.

Needs. Basic needs for food and shelter were satisfied when in the past 12 months a respondent (a) had enough money for food, (b) had enough money for shelter, and (c) did not go hungry. Safety and security needs were met when individuals (a) felt safe walking alone, (b) did not have money and/or property stolen during the past 12 months (from either them or their family members), and (c) were not assaulted during the past 12 months. Similarly, social support and love were met when the respondents indicated that they (a) experienced love yesterday and (b) have others they can count on for help in an emergency. Respect and pride in activities were fulfilled for respondents who (a) felt they were treated with respect and (b) were proud of something. Mastery was met when an individual (a) had the experience of learning something and (b) did what she or he does best at work. Finally, coding for self-direction and autonomy was based on two variables: whether individuals could (a) choose how their time was spent and (b) whether they experienced freedom in life. In the following analyses and results, these variables are labeled, respectively, as “basic,” “safety,” “social,” “respect,” “mastery,” and “autonomy.” Needs were operationally defined as met (1) or unmet (0) through combinations of surveyed items, all of which were answered on a dichotomous yes–no scale. A need was scored as fulfilled (1) only if all items pertaining to that need were answered affirmatively and otherwise was scored as unfulfilled (0).

Results

The means and standard deviations for both individual- and country-level data are presented in Table 1. As can be seen, there is large variability between individuals in the fulfillment of needs and in SWB, as well as substantial variability among nations. It is important to note that there are no ceiling or floor effects on any of the variables.

Table 1
Means and Standard Deviations for Individual and Societal Data

Measure	Individuals		Countries	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
SWB				
Life evaluation	5.59	2.10	5.57	1.07
Positive feelings	0.75	0.36	0.74	0.09
Negative feelings	0.21	0.28	0.21	0.05
Needs				
Basic	0.67	0.47	0.66	0.21
Safety	0.53	0.50	0.54	0.15
Social	0.62	0.48	0.62	0.15
Respect	0.61	0.49	0.61	0.13
Mastery	0.49	0.50	0.48	0.13
Autonomy	0.52	0.50	0.50	0.14
Log household income	3.85	0.63	3.89	0.49

Note. SWB = subjective well-being.

The Effects of Needs on SWB

Correlations and Hierarchical Regressions of Needs and SWB

Table 2 presents the zero-order correlations for the world and eight cultural regions among the six universal needs, log-income,

and three SWB variables. An analysis of relative importance was conducted to assess the proportional contribution of each need to the variance accounted for in predicting SWB (Grömping, 2006). The relative weights shown in Table 3 take into account dependence on the order of entry in the regression by averaging over all possible orders (Kruskal, 1987). The rows in Table 3 present the

Table 2
Zero-Order Correlations of Needs and Subjective Well-Being for the World and Cultural Regions

Region	Measure						
	Basic	Safety	Social	Respect	Mastery	Autonomy	Log income
Life evaluation							
World (<i>N</i> = 60,854)	0.31	0.08	0.18	0.11	0.15	0.12	0.40
Africa (<i>N</i> = 14,748)	0.25	0.04	0.15	0.12	0.14	0.08	0.26
East & South Asia (<i>N</i> = 5,223)	0.27	0.03	0.16	0.15	0.19	0.20	0.43
Former Soviet Union (<i>N</i> = 10,125)	0.23	0.05	0.17	0.12	0.16	0.13	0.28
Latin America (<i>N</i> = 13,020)	0.24	0.02	0.13	0.09	0.14	0.09	0.19
Middle East (<i>N</i> = 3,293)	0.19	0.17	0.19	0.13	0.19	0.21	0.12
Northern Europe/Anglo (<i>N</i> = 6,035)	0.15	0.09	0.15	0.12	0.14	0.10	0.19
South East Asia (<i>N</i> = 5,601)	0.25	0.06	0.04	0.02	0.06	0.04	0.26
Southern Europe (<i>N</i> = 2,809)	0.15	0.05	0.16	0.11	0.13	0.12	0.13
Positive feelings							
World	0.12	0.06	0.29	0.36	0.29	0.26	0.10
Africa	0.13	0.07	0.31	0.40	0.28	0.24	0.13
East & South Asia	0.17	0.04	0.28	0.29	0.26	0.29	0.22
Former Soviet Union	0.13	0.08	0.31	0.36	0.28	0.26	0.18
Latin America	0.12	0.05	0.23	0.38	0.28	0.25	0.13
Middle East	0.15	0.11	0.28	0.36	0.31	0.27	0.23
Northern Europe/Anglo	0.03	0.04	0.24	0.21	0.18	0.16	0.18
South East Asia	0.02	0.03	0.24	0.32	0.28	0.25	0.05
Southern Europe	0.10	0.06	0.29	0.32	0.26	0.23	0.22
Negative feelings							
World	-0.17	-0.11	-0.14	-0.20	-0.14	-0.18	-0.07
Africa	-0.19	-0.11	-0.24	-0.28	-0.20	-0.19	-0.11
East & South Asia	-0.18	-0.07	-0.12	-0.13	-0.10	-0.19	-0.12
Former Soviet Union	-0.13	-0.09	-0.11	-0.22	-0.15	-0.17	-0.03
Latin America	-0.20	-0.10	-0.14	-0.21	-0.16	-0.17	-0.10
Middle East	-0.24	-0.21	-0.21	-0.24	-0.22	-0.24	-0.10
Northern Europe/Anglo	-0.12	-0.13	-0.04	-0.10	-0.07	-0.16	-0.09
South East Asia	-0.18	-0.11	-0.03	-0.13	-0.08	-0.11	-0.07
Southern Europe	-0.18	-0.15	-0.09	-0.16	-0.12	-0.21	-0.06

Table 3
Relative Importance of Needs and Variance Accounted for in World and Cultural Regions

Measure	World	Africa	East & South Asia	Former Soviet Union	Latin America	Middle East	Northern Europe/Anglo	South East Asia	Southern Europe
Life evaluation									
Basic	.63 [.24]	.62 [.34]	.44 [.16]	.46 [.23]	.61 [.43]	.23 [.23]	.27 [.18]	.88 [.30]	.30 [.11]
Safety	.03 [.01]	.01 [.01]	.00 [.00]	.01 [.02]	.00 [.00]	.14 [.05]	.08 [.07]	.04 [.01]	.02 [.02]
Social	.16 [.08]	.16 [.12]	.12 [.06]	.21 [.11]	.15 [.10]	.19 [.30]	.23 [.17]	.02 [.06]	.28 [.11]
Respect	.04 [.02]	.07 [.04]	.08 [.04]	.06 [.04]	.04 [.04]	.05 [.08]	.13 [.08]	.00 [.00]	.09 [.03]
Mastery	.09 [.05]	.11 [.07]	.16 [.07]	.15 [.08]	.14 [.10]	.16 [.18]	.20 [.14]	.04 [.04]	.18 [.09]
Autonomy	.06 [.04]	.03 [.04]	.20 [.10]	.11 [.09]	.06 [.05]	.23 [.09]	.09 [.11]	.01 [.07]	.13 [.06]
Log income	[.55]	[.38]	[.58]	[.43]	[.27]	[.08]	[.24]	[.52]	[.59]
Total R^2	.13 [.22]	.09 [.12]	.13 [.24]	.09 [.14]	.08 [.09]	.10 [.08]	.07 [.11]	.07 [.10]	.06 [.14]
Positive emotions									
Basic	.03 [.03]	.03 [.04]	.08 [.08]	.03 [.03]	.03 [.04]	.05 [.04]	.00 [.00]	.00 [.04]	.03 [.02]
Safety	.01 [.01]	.01 [.01]	.00 [.00]	.01 [.01]	.01 [.01]	.02 [.02]	.01 [.01]	.00 [.01]	.01 [.03]
Social	.24 [.23]	.25 [.23]	.25 [.24]	.27 [.27]	.16 [.14]	.19 [.17]	.40 [.36]	.23 [.26]	.30 [.26]
Respect	.36 [.37]	.44 [.45]	.23 [.20]	.35 [.34]	.44 [.44]	.37 [.42]	.26 [.25]	.34 [.38]	.32 [.29]
Mastery	.18 [.19]	.15 [.16]	.16 [.13]	.17 [.17]	.19 [.20]	.21 [.22]	.17 [.18]	.22 [.20]	.18 [.17]
Autonomy	.17 [.16]	.12 [.11]	.27 [.27]	.18 [.17]	.17 [.18]	.16 [.11]	.16 [.19]	.20 [.10]	.17 [.18]
Log income	[.02]	[.01]	[.07]	[.02]	[.00]	[.03]	[.01]	[.00]	[.05]
Total R^2	.23 [.23]	.24 [.25]	.21 [.20]	.24 [.24]	.22 [.21]	.21 [.19]	.12 [.13]	.18 [.13]	.20 [.21]
Negative emotions									
Basic	.23 [.21]	.14 [.14]	.34 [.31]	.13 [.10]	.30 [.28]	.22 [.23]	.21 [.14]	.48 [.53]	.25 [.25]
Safety	.09 [.08]	.04 [.04]	.04 [.02]	.06 [.04]	.06 [.07]	.17 [.19]	.24 [.22]	.16 [.07]	.19 [.20]
Social	.11 [.12]	.25 [.23]	.12 [.13]	.07 [.05]	.10 [.11]	.13 [.10]	.01 [.01]	.00 [.00]	.03 [.04]
Respect	.25 [.27]	.31 [.33]	.11 [.09]	.38 [.41]	.26 [.44]	.19 [.21]	.13 [.14]	.18 [.19]	.16 [.19]
Mastery	.09 [.10]	.12 [.12]	.05 [.02]	.12 [.13]	.11 [.12]	.11 [.09]	.04 [.03]	.06 [.03]	.06 [.07]
Autonomy	.22 [.21]	.14 [.12]	.35 [.34]	.25 [.26]	.16 [.14]	.17 [.15]	.38 [.37]	.12 [.12]	.31 [.24]
Log income	[.02]	[.03]	[.08]	[.00]	[.04]	[.03]	[.10]	[.05]	[.01]
Total R^2	.10 [.10]	.15 [.16]	.08 [.08]	.09 [.09]	.11 [.11]	.16 [.14]	.06 [.06]	.06 [.06]	.11 [.12]

Note. Total R^2 represents the total amount of variance accounted for in the dependent subjective well-being. Relative importance values are calculated such that all values sum to 1.00, representing the proportional contribution. Shaded values show consistently large relative importance values across world regions. Numbers without brackets show the relative importance of needs alone. Numbers in brackets show the relative importance of both needs and income.

amounts of the explainable variance accounted for by each need, whereas the total R^2 rows show in each region the total amount of variance in all variability that the needs taken in combination explain. It should be remembered that random measurement errors are likely to result in smaller percentages of variance explained than would be true if the underlying true scores could be measured. It is important to note that the fulfillment of needs was positively related to higher SWB across all world regions.

In general, the fulfillment of needs taken in combination substantially contributed to different aspects of SWB, accounting in the world for 10% to 23% of the total variance. Basic needs were the strongest predictor of life evaluations; respect and social needs were the strongest predictor of positive feelings; and basic, respect, and autonomy needs were the strongest predictor of negative feelings. Table 3 shows that in the world, fulfilling needs accounted for 13% of the total variance in life evaluations, and of this explained variance, 63% was due to basic needs. Needs explained even more of positive feelings, 23%, but in this case basic needs were not an important predictor. Instead, social and respect needs were much stronger (accounting for 24% and 36% of the explained variance, respectively).

When income was taken into account, the importance of the needs for each SWB type persisted. For life evaluations, basic needs remained the strongest predictor. Nevertheless, the proportion of variance accounted for by basic needs decreased substan-

tially from 63% to 24% of the explained variance, whereas household income accounted for about 55% of the explained variance. This implies that a substantial part of the variance between basic needs and life evaluations is attributable to income; higher income is associated with life evaluations in part through the fulfillment of basic needs (Diener et al., 2010). On the other hand, the inclusion of income did not increase the variance accounted for in positive and negative emotions. Further, income did not reduce the variance accounted for by needs predicting emotions. On some occasions, the total variance accounted for when income was included was smaller than when it was excluded. This was because not all respondents had income information, and only a subset of the original data was used when income was included in the analysis. It is important to note that the subsample results were consistent with the full sample, so that the variance accounted for was similar for positive and negative emotions.

Universality of the Need-SWB Association

In Tables 2 and 3, we see that the correlations were fairly uniform across cultures. Basic needs consistently predicted life evaluation across all cultural regions, whereas the measure of safety was a relatively weak predictor of all forms of SWB across regions. The results show consistency across the world in that basic needs were important to life evaluation; social and respect

were important to positive feelings; and basic, respect, and autonomy were important to negative feelings, in all world regions.

Deprivation and Fulfillment of Needs

In Table 4 we present analyses related to the deprivation and fulfillment of needs for the three types of SWB. The focus is on whether lack of needs leads to low SWB and whether fulfilling all of one's needs leads to high SWB. The low-need fulfillment group was defined as those who did not have all needs fulfilled, and the high need group comprised those for whom all six needs were fulfilled. The reasoning behind the percentage of respondents figure we present is that if needs are fundamentally important for SWB, a lack of need fulfillment should virtually always lead to low SWB. On the other hand, is the fulfillment of all six needs sufficient for high SWB? If so, people who have all their needs fulfilled will virtually always experience high SWB. We do not expect these to be absolute patterns because of measurement error and other factors such as genetic effects on SWB. Nonetheless, a pattern substantially conforming to the one we describe here would point to the significance of needs. As can be seen in the table, the three SWB variables showed different patterns.

It appears that need fulfillment was an important basis for high life evaluation because 82% of respondents with low need fulfillment indicated an evaluation at or below the neutral point of the scale, and virtually no respondents indicated high life evaluations. However, having all needs fulfilled was insufficient for high life evaluations because only 14% of those with high need fulfillment fell into the top categories, and one-third of those with their needs met fell in the low life evaluation categories. People require all to be needs to be fulfilled for higher evaluation of life, but it is not enough—additional factors are relevant.

The pattern for positive feelings suggested a tight link between needs and positive feelings. More than half of the people with low need fulfillment reported no positive feelings. In contrast, those with high need fulfillment almost always reported positive feelings. The pattern for negative feelings suggested that the fulfillment of needs was related to less negative emotions. Almost one in four respondents with low need fulfillment reported no negative feelings, whereas of those with complete need fulfillment, most

reported no negative feelings. Some caution is warranted, however, in that the direction of causality could move in either direction, for example, from feelings to perceiving that one is respected, can count on others, and learned something new yesterday.

Independence of Effects of Needs on SWB

The effects of needs on SWB might be synergistic, interchangeable, or relatively independent. If synergistic, the fulfillment of a given need would have greater force in affecting SWB if other needs are fulfilled. Dominance, in which a need has an effect only after lower needs are fulfilled, is a more exacting form of synergy. If interchangeable, the fulfillment of one need would lead to a lower impact of other needs. If independent, each need would have a relatively consistent impact regardless of the fulfillment of other needs. These possibilities were tested by analyzing the interactions of needs in their association with SWB.

Using a random intercept model in a multilevel modeling framework, we examined whether the interaction terms accounted for variance beyond the main effects of needs. Individual-level need variables were entered first in a stepwise fashion in the following order: basic, safety, social, respect, mastery, and autonomy. This ordering was dictated partly by the hierarchy proposed by Maslow, while also serving the purpose of illuminating the general effects of psychosocial needs beyond physiological needs. Then, all 15 individual-level two-way need interactions were included in the model. Next, country needs were added in the same order. At the final step, all 36 two-way cross-level interactions were added. The incremental variance accounted for, technically known as proportion reduction in prediction error variance, was computed following the formulas from Snijders and Bosker (1999).

As shown in Table 5, the individual-level interactions accounted for relatively little incremental variance at either the individual level or the country level. The main effects of need fulfillment at the individual-level accounted for a substantial proportion of the variance. The regression coefficients showed that all individual-level needs were positively associated with SWB. The variance accounted for by individual-level needs in life evaluations and positive feelings was 27% but was lower in negative feelings at 12%. Only for positive and negative feelings did the interaction between individual-level needs for individuals account for an additional 1% of the variance. Nevertheless, the interaction effects were substantially smaller than the main effects, given that 15 individual-level interaction terms were included. This suggests that individual-level needs were primarily additive in their associations with SWB.

The importance of the individual-level needs also correspond to our relative importance analysis in Table 3. The stepwise procedure shows that individual-level basic needs are important to life evaluations and negative feelings, accounting for about 25% and 6% of the variance, respectively. Similarly, social and respect needs are important for positive emotions, beyond basic needs, accounting for about 7% and 9% of the variance, respectively. For negative emotions, respect also accounted for an additional 3% of the variance beyond basic needs. We note that taking into account the multilevel structure of the data allowed us to account for more variance in SWB, compared with the results in Table 2.

Table 5 also shows that the country-level interactions and cross-level interactions accounted for no incremental variance with the

Table 4
Deprivation and Fulfillment of Needs

Measure	Percentage of respondents	
	No needs met (<i>N</i> = 1,730)	All needs met (<i>N</i> = 5,385)
Life evaluation		
Neutral and lower (0–5)	82	32
High (9–10)	1	14
Positive feelings		
Low: No positive feelings reported	53	1
High: Both positive feelings reported	17	89
Negative feelings		
Very high: 2–4 negative feelings	54	9
Low: No negative feelings	25	73

Note. Cell numbers indicate percentages.

Table 5
Incremental Variance Accounted for by Need Interactions in Subjective Well-Being

Need entered	Life evaluation	Positive emotions	Negative emotions
Individual level			
Basic	.25 [.24]	.07 [.07]	.06 [.06]
Safety	.00 [.00]	.00 [.00]	.01 [.01]
Social	.02 [.02]	.07 [.07]	.01 [.01]
Respect	.00 [.00]	.09 [.09]	.03 [.03]
Mastery	.00 [.00]	.02 [.02]	.00 [.00]
Autonomy	.00 [.00]	.02 [.02]	.01 [.02]
Log income (country centered)	.00 [.00]	.00 [.00]	.00 [.00]
15 two-way interactions	.00 [.00]	.01 [.01]	.01 [.00]
Country level			
Basic	.10 [.10]	.00 [.00]	.00 [.00]
Safety	.00 [.00]	.00 [.00]	.00 [.00]
Social	.01 [.01]	.00 [.00]	.00 [.00]
Respect	.00 [.00]	.00 [.00]	.00 [.00]
Mastery	.01 [.01]	.00 [.00]	.00 [.00]
Autonomy	.00 [.00]	.00 [.00]	.00 [.00]
Log income	.01 [.01]	.01 [.01]	.00 [.00]
15 two-way interactions	.02 [.03]	.00 [.00]	.00 [.01]
Cross level: 36 two-way interactions			
	.00 [.00]	.00 [.00]	.00 [.00]

Note. To estimate incremental variance of country needs, need variables were uncentered (grand mean centering produced equivalent results). Needs were entered in a stepwise fashion in the following order: Basic, Safety, Social, Respect, Mastery, and Autonomy. Country-level need variables were entered after individual-level need variables and then cross-level interactions were entered. Numbers without brackets show the variance accounted for by needs alone. Numbers in brackets show the variance accounted for by both needs and income.

exception of life evaluation. Even in that instance, the incremental variance accounted for by all 15 two-way country-level interactions was about 2%. This value was substantially smaller than the main effects of need fulfillment, which accounted for about 39% of the variance. Overall, needs were substantial predictors of SWB, but the interaction of need fulfillment was a very minor predictor of SWB, indicating relatively large independence of the needs in affecting well-being.

When household income was included in the analyses, the increment in variance accounted for was very small, ranging from 0 to 1%. In this analysis, needs are entered before household income. Therefore, once needs are taken into account, income does not account for much more variance in predicting SWB. This suggests that the fulfillment of needs is more proximal to SWB than income.

Societal Need Fulfillment

A person's SWB might depend not only on his or her personal circumstances but also on the lives of other people in that society and the general circumstances of the society. For instance, wealthier countries may have better infrastructure and medical care and, hence, afford a certain quality of life for most individuals living there, regardless of their personal incomes. Thus, higher standards of living for all citizens may provide additional positive effects beyond individual need fulfillment. Or, it may be that fulfillment of needs in others brings about SWB vicariously. The intraclass correlations for life evaluation, positive emotions, and negative emotions were .24, .06, and .04, respectively. The intraclass correlation represents the proportion of variance attributable to country-level conditions. Overall, this shows that there is substantial variability in life evaluation (24%) between countries, which

could potentially be explained by country-level needs, but less variability of positive and negative feelings may be attributable to country-level needs.

As shown in Table 6, the main effects of country-level needs were substantial for life evaluation but not for positive and negative feelings. At the country level, nations that have fulfilled the basic needs of citizens tend to have higher life evaluations. What this means is that a person with a certain level of need fulfillment will have a higher life evaluation if living in a society with high need fulfillment than a person with identical personal need fulfillment living in a society in which needs are not as frequently fulfilled. By contrast, positive and negative feelings appear to be tied to individual-level conditions rather than country-level conditions.

Emergent Ordering of Needs

To investigate the ordering of needs hypothesized by Maslow (1954), item response theory (IRT) was employed. If the needs are fulfilled in order, we would expect that the need item response functions (IRFs), which denote the probability of fulfilling a specific need across the latent continuum, would lie uniformly one after another (i.e., no crossovers). In this study, we applied a multilevel IRT (ML-IRT) model implemented in Latent Gold 4.0 (Vermunt & Magidson, 2005b; Vermunt, 2008) given by

$$\text{logit}[P(y_{ijk} = 1 | \theta_{jk}, \gamma_k)] = \beta_{0i} + \beta_{1i}\theta_{jk} + \beta_{2i}\gamma_k. \quad (1)$$

This equation denotes that the probability of an individual j in country k fulfilling need i is dependent on the overall individual-level and country-level need fulfillment denoted by θ_{jk} and γ_k , respectively. A higher positive value on the need intercept (β_{0i})

Table 6
Need Item Parameter Estimates and Standard Errors for the Multilevel Item Response Theory Analysis

Measure	Ease of endorsement	Individual effect		Country effect	
		Nonstandardized	Standardized loadings	Nonstandardized	Standardized loadings
Basic	1.01 (0.02)	0.46 (0.01)	0.19	0.57 (0.01)	0.19
Safety	0.20 (0.01)	0.18 (0.01)	0.09	0.26 (0.01)	0.12
Social	0.60 (0.01)	0.77 (0.01)	0.33	0.08 (0.01)	0.02
Respect	0.73 (0.02)	2.08 (0.04)	0.61	-0.19 (0.01)	-0.02
Mastery	-0.01 (0.01)	1.98 (0.04)	0.60	-0.12 (0.01)	-0.01
Autonomy	0.09 (0.01)	0.72 (0.01)	0.32	0.00 (0.01)	0.00

Note. Standard errors are in parentheses.

represents how easily needs are endorsed. Further, individual- and country-level need slopes are given by β_{1i} and β_{2i} , respectively. Analogous to factor loadings, the slope parameters show the degree to which needs are associated with individual-level or country-level need-fulfillment conditions. Larger values of β_{1i} indicate that a need is tied strongly to individual-level conditions, whereas larger values of β_{2i} indicate a stronger relation to country-level conditions.

The standardized slope estimates (i.e., loadings; Vermunt & Magidson, 2005a) in Table 6 reveal that country-level conditions are tied to the fulfillment of basic (.19) and safety needs (.12), but individual-level conditions are tied more strongly to the fulfillment of psychological needs, as evident from the high individual-level standardized slope estimates ranging from .33 to .61.

On the basis of the item parameter estimates, we plotted the need IRFs in the top half of Figure 1, representing countries with an average fulfillment (i.e., $\gamma_k = 0$). Because the x -axis in Figure 1 is related to the total need fulfillment (θ_{jk}), the IRFs are informative because they illustrate which needs are more likely to be met first as a function of total need fulfillment. The motivational prediction would be that fulfillment of each need would begin after the lower needs were fulfilled, moving each IRF progressively to the right. As can be seen in the top half of Figure 1, basic and safety needs were the most likely of the needs to be fulfilled at a low level of total need fulfillment. However, they showed gradual slopes, and there were crossovers with the other psychological needs. Individuals with very high levels of fulfilled needs (i.e., $\theta_{jk} > 1$) sometimes tended to have psychological needs fulfilled even before basic and safety needs. In part, the fulfillment of basic and safety needs is attributable to country-level conditions, which lie beyond individual control. In contrast, psychological needs have a similar ordering across country-level conditions. Social needs were more likely to be endorsed before autonomy, followed by mastery, which was most likely to be fulfilled after the person had met most other needs. The needs emerged to some degree in an order that would be suggested by Maslow's ordering, especially for individuals who have lower total needs fulfilled (i.e., $\theta_{jk} < 0$).

From Figure 1, it appears that the slopes between social and autonomy along with respect and mastery are similar. However, fitting a model that constrained these pairs of slopes as equal produced a significantly worse fit than the unconstrained model based on the log-likelihood difference ($p < .001$). This implies that the slopes are significantly differentiated. From Table 6, the

individual slope estimate for social was higher than autonomy, and respect was higher than mastery. Therefore, as individual needs are fulfilled, fulfillment of social needs rises more quickly than autonomy. Similarly, respect is attained more readily than mastery. This suggests Maslow's ordering, in which the fulfillment of lower and higher psychosocial needs have a widening gap—lower needs are fulfilled faster relative to higher needs.

The bottom half of Figure 1 shows that country membership also affects the probability of need fulfillment, particularly for basic and safety needs. In a country with high need fulfillment ($\gamma_k = 2$), even citizens who do not have most psychosocial needs fulfilled have a reasonable chance of having their basic and safety needs fulfilled. By contrast, a country with low need fulfillment ($\gamma_k = -2$) has substantially lower probabilities of individuals having their basic and safety needs fulfilled. Therefore, although the emergent ordering of psychosocial needs are consistent across countries, the fulfillment of basic and safety needs are highly contingent on country membership.

The order that Maslow proposed was, he thought, "soft" or "instinctoid" (in contrast to instinctive), in that it influenced behavior but did not determine it. The IRT analysis indicates support for this approach, in that there was a tendency, but not a strong one, to fulfill the needs in a specific order. Our measures only approximate Maslow's needs and do not map perfectly to them. Furthermore, they are measured with some error, though we attempt to take this into account with our latent variable model. Thus, it is noteworthy that the basic and safety needs were most likely to be fulfilled at low levels of total need fulfillment. Conversely, respect and mastery were likely to be fulfilled only at moderate to high levels of need fulfillment. However, the shallow slope for basic and safety needs indicate that people sometimes fulfill "psychosocial" needs even when "lower" needs remain unmet, in part due to societal conditions. For example, respect is frequently fulfilled even when safety needs are not met. Because basic need fulfillment is strongly influenced by a person's society, and the psychosocial needs appear to be more an individual affair, people in poor nations may achieve the psychosocial needs before they have their basic needs fully met. This is perhaps why even some very poor individuals report positive SWB (Biswas-Diener & Diener, 2001; Biswas-Diener, Vittersø, & Diener, 2005). Although our findings indicate what occurs when needs are fulfilled, they do not completely address the motivational issues of needs pro-

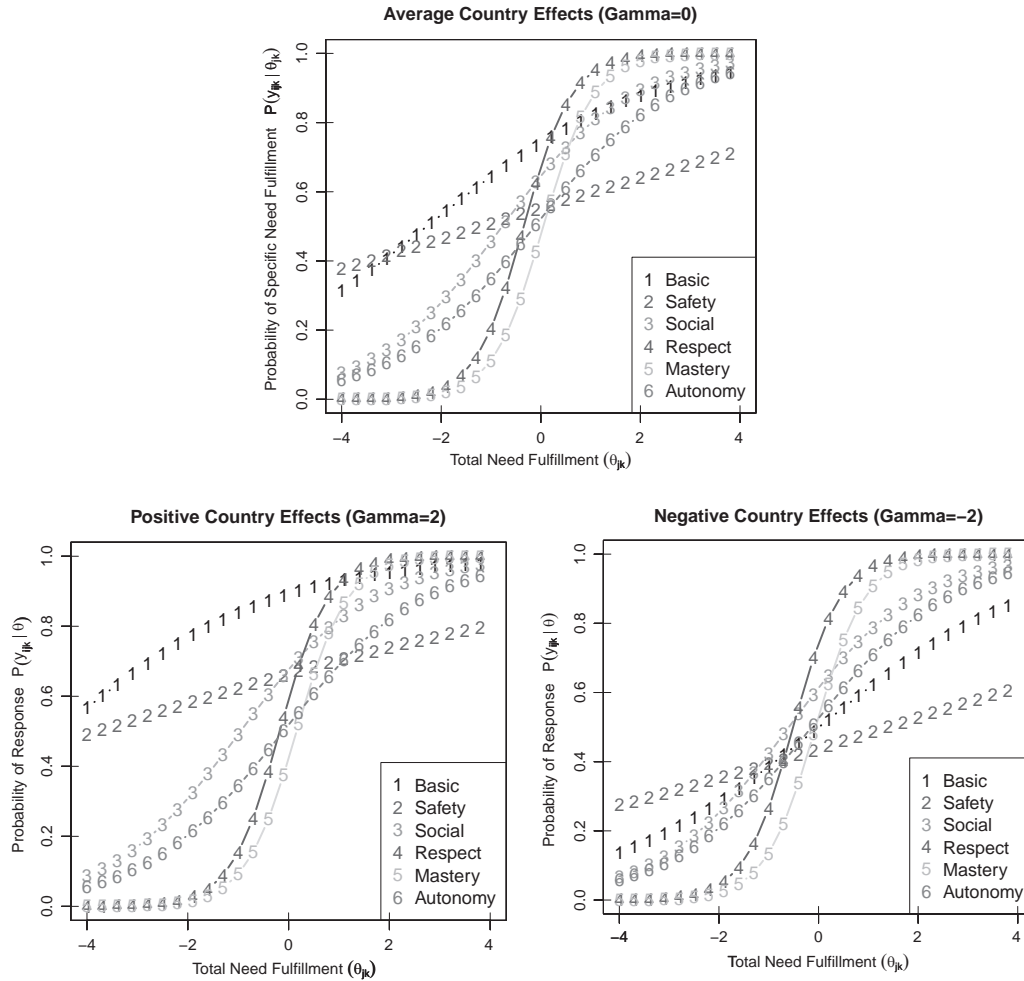


Figure 1. Item response functions of six needs.

posed by Maslow. People’s motivations may differ from actual need fulfillment owing to the circumstances in which they live.

In sum, we found that “lower” needs like basic and safety needs were tied relatively strongly to country effects. Citizens who live in countries in which people have most of their needs met will tend to have basic and safety needs fulfilled, compared with citizens in other countries. This in turn affects life evaluations as observed in Table 5. In contrast, country effects are not as strong on psychosocial needs because these are related to more unique individual situations.

Discussion

Several conclusions can be drawn from our findings. First, there are universal need predictors of well-being. After taking into account the effects of needs on SWB, income accounted for virtually no additional variation (see Table 5), suggesting a close proximity between needs to SWB. Furthermore, there are different correlates of different types of SWB, with psychosocial needs, specifically social and respect, most strongly related to positive feelings and respect and autonomy most related to negative feel-

ings; basic needs are strongly related to life evaluations and negative feelings. These patterns replicate across world regions. Across cultural regions, the three needs of the self-determination theory (Ryan & Deci, 2000)—social relationships, autonomy, and mastery—are most highly associated with positive and negative feelings, whereas the correlations with life evaluation, although consistent with the theory, were smaller. Although our findings suggest some pan-cultural universals in terms of needs and SWB, they do not preclude the possibility that cultures might emphasize some needs more than others, with this leading to certain differences in the patterns of relations of needs to SWB (e.g., Oishi, Diener, Lucas, & Suh, 1999).

Our findings suggest that the deprivation and fulfillment of needs is closely linked to low and high positive feelings, respectively. Whereas a lack of needs may not produce high negative feelings, the fulfillment of needs can reduce negative feelings. The lack of needs leads to low life evaluations, but its fulfillment is not sufficient for high life evaluations. Although the association between needs and SWB might seem small in terms of the size of the zero-order correlations, it should be noted that the correlations are

likely reduced by measurement error. Furthermore, correlations of this size can show very sizable mean differences at the extremes and amount to very large effects when applied to billions of people in the world.

Second, our analyses reveal that as hypothesized by Maslow (1954), people tend to achieve basic and safety needs before other needs. However, fulfilling the various needs has relatively independent effects on SWB. For example, a person can gain well-being by meeting psychosocial needs regardless of whether his or her basic needs are fully met.

Third, the society in which one lives has strong associations with whether a person's basic and safety needs are met, but a more modest relation with whether one's psychosocial needs are met. Because nations strongly influence people's basic needs but more modestly influence their psychosocial needs, this helps explain why life evaluations—which are linked to basic needs—are more dependent on one's society, whereas positive feelings are more dependent on personal factors. On the other hand, negative feelings are influenced by both societal and individual conditions.

Implications of Findings

There are a number of important implications of our findings for improving SWB and quality of life. One implication of our findings is that balance in life is desirable; this follows from the fact that each of the needs makes separable contributions to SWB. Sirgy and Wu (2009) suggested that the "balanced life" is, other things being equal, a more desirable one, and Diener, Ng, and Tov (2008) supported this hypothesis with the finding that many resources, including hours of social time, show declining marginal utility just as money does. Thus, because people need to fulfill a variety of needs, it is likely that a mix of daily activities that includes mastery, social relationships, and the meeting of physical needs is required for optimal SWB.

Another implication of our findings is that need fulfillment needs to be achieved at the societal level, not simply at the individual level. Although Maslow focused on individuals, we found that there are societal effects as well. It helps one's SWB if others in one's nation have their needs fulfilled. For instance, it is important to a person's life evaluations if others in the society have their basic needs met, beyond an individual's fulfillment of his or her own needs. Country-level need fulfillment, especially country basic need fulfillment, had a sizeable association with life evaluations. The findings indicate that improving individual life must include improving societies.

On the basis of the pattern of our findings, we suggest that attempts to improve quality of life should be based both on fulfilling needs and on enhancing SWB, consistent with the assessment and intervention approach taken by Frisch (2004) and the recommendations for sustainable increases in SWB offered by Sheldon and Lyubomirsky (2007). Similarly, Ryan and Deci (2000) and Ryff and Keyes (1995) maintained that psychological well-being must include consideration of whether needs are met, not just SWB.

Limitations of the Study and Future Research

An important conceptual task for the future is to integrate need theories with what is now known about neuroscience,

emotions, and motivation. Our knowledge of neuroscience has grown rapidly, and theories such as that of Panksepp (1998) can provide insights for a theory of SWB. At the same time, neuroscience findings have not been used to develop theories of long-term SWB and thus can benefit from the types of insights offered by need theorists. Similarly, need and evolutionary theories can be better integrated, as proposed by Kenrick, Griskevicius, Neuberg, and Schaller (2010). On the basis of neuroscience and evolutionary theories, we should be able to develop more sophisticated theories in connection with the various types of SWB. Our findings indicate the desirability of an integration of these evolution and neuroscience approaches with needs and SWB, in part because they suggest that some connections are universal across the globe.

Although the sample is a notable strength of our study, there are limitations as well to the methods we used. Because our data are cross-sectional, we cannot be certain of causal direction. People higher in SWB might be more likely, for example, to have a prosperous social life rather than a supportive social life leading unidirectionally to high SWB. We suspect that many of the associations we uncovered have bidirectional causality. Because of experimental, quasiexperimental, and longitudinal studies, a strong case can be made that the needs we examined do in fact cause increases in SWB. For instance, when social isolation is experimentally manipulated, feelings of well-being are affected (e.g., Gonsalkorale & Williams, 2007; Smith & Williams, 2004). Nonetheless, more research on the causal effects of need fulfillment on SWB in various cultures is required.

Another issue is whether our findings might have arisen because of measurement artifacts affecting the self-report scales. Many of the patterns we uncovered were intricate and cannot be explained simply by broad response artifacts such as social desirability or acquiescence. In addition, many artifacts would reduce associations rather than produce the patterns we found. The measures used in the Gallup's world survey were undoubtedly less than optimal in terms of reliability, owing to the need for brevity and simplicity in a large survey of this type conducted across cultures. With better measures, we expect that the associations we found would have been stronger.

Our laboratory has conducted a number of studies on artifacts in the cross-cultural assessment of SWB (e.g., see Diener, 2009), but it is difficult to imagine how artifacts would have created the pattern we found. In most cases, artifacts and differences in translation would add measurement error but not produce the pattern of findings we uncovered. The differences in findings between positive feelings, negative feelings, and life evaluations cannot be explained by simple response sets. However, a general positive versus negative response tendency could create associations among measures of some of the needs and SWB, and thus more objective measures of need fulfillment should be collected in future research. Some questions such as those about having income, being assaulted, or going hungry appear to be less susceptible to biases, compared with more subjective questions such as feelings of mastery or autonomy. Thus, it would be desirable in future research to have additional measures of both needs and SWB that do not depend on self-report survey items.

Take-Home Message

Need theories hypothesize that there are universal needs and that they are not substitutable for each other. Supporting this, we found evidence of universality and also substantial independence in the effects of the needs on SWB. We also observed that the needs tend to be achieved in a certain order but that the order in which they are achieved does not strongly influence their effects on SWB. Motivational prepotency does not mean that fulfilling needs “out of order” is necessarily less fulfilling. Thus, humans can derive “happiness” from simultaneously working on a number of needs regardless of the fulfillment of other needs. This might be why people in impoverished nations, with only modest control over whether their basic needs are fulfilled, can nevertheless find a measure of well-being through social relationships and other psychological needs over which they have more control.

We also found that societal need fulfillment—particularly of basic needs—has effects independent of an individual’s personal need fulfillment, so that it is beneficial to live in a society with others who have their needs fulfilled. Improving one’s own life is not enough; society-wide improvement is also required. Societies have a substantial influence on whether basic and safety needs are fulfilled, whereas individual factors are more associated with whether psychosocial needs are fulfilled.

Across diverse regions of the world, it appears that basic needs are important for life evaluations, whereas social and respect needs are important for positive feelings. The experience of negative feelings is more related to whether basic needs, respect, and autonomy are met.

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