Measuring Basic Needs Fulfillment and Its Relation to Health and Wellbeing

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Abstract

Prior research proposed five basic needs: belonging, understanding, control, enhancing self, and trust (BUCET). Individually, each has been associated with physical and mental health. To date, basic psychosocial needs have been measured individually. These studies aim to validate a new, short and comprehensive measure of basic psychosocial needs, the Basic Needs Satisfaction Survey (BNSS), and demonstrate its association with physical and mental health. Study 1 confirmed previous EFA results for the BNSS and tested both convergent and predictive validity. Study 2 used CFA and examined divergent validity. Regression models investigated the role of the BNSS subscales as predictors of physical and mental health. Analyses from two studies demonstrated construct validity and predictive ability, providing evidence that the BNSS is reliable and valid and significantly related to both physical and mental health independent of socioeconomic status. Useful for predicting health outcomes, BNSS may be useful as a screener in medical settings.

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All living organisms require sunlight, water, oxygen (or carbon dioxide), nutrients, and a suitable habitat to live and grow. Beyond these well-established physiological needs, several basic psychosocial needs have been identified as requirements for human survival and wellbeing (Fiske, 2004), particularly for physical and mental health (e.g., Boehmer, Luszczynska, & Schwarzer, 2007; Hale, Hannum, & Espelage, 2005).

Basic needs refer to a set of innate and universal needs that must be fulfilled for optimal human functioning and development (Deci & Ryan, 1985). Maslow (1943) first introduced the concept, proposing that humans are motivated by five basic needs: physiological, safety, love, esteem, and self-actualization. Since Maslow's (1943) seminal work, others have proposed their own lists of basic needs. Deci and Ryan (1985) argued that humans are motivated by the need for autonomy, competence, and relatedness (self-determination theory). Ed Diener and colleagues (Diener, Emmons, Larsen, & Griffin, 1985) proposed that subjective wellbeing depends on the achievement of life satisfaction. More recently, Susan Fiske (2004) reviewed the social psychology literature and constructed a list of five "core social motives:" belonging, understanding, control, enhancing self, and sense of trust (BUCET list). Extensive previous research revealed relationships among the individual basic needs and both physical and mental health. A very brief review of some of this vast literature follows, using Fiske's BUCET list as a framework.

Belongingness

Belongingness refers to a need to form lasting supportive relationships with others (Fiske, 2004). Belongingness is associated with subjective wellbeing (Baumeister, 1991), and with both physical and mental health problems (Moak & Agrawal, 2010), predicts perceptions of health in women and physical symptoms of health in men (Hale et al., 2005), and improves outlook after

traumatic health events such as cancer diagnosis (Boehmer et al., 2007; Luszczynska, Mohamed, & Schwarzer, 2005; Schulz & Mohamed, 2004). Conversely, social isolation is a risk factor for morbidity from various conditions, even after controlling for biological risk (House, Robbins, & MetnerShould be Metzner, 1982).

Understanding

Understanding refers to a sense of life coherence and purpose (Fiske, 2004), is associated with psychological wellbeing (Zika & Chamberlain, 1992), and is protective against thoughts of suicide (Heisel & Flett, 2004). Purpose refers to having a personally-meaningful goal that is also of consequence to the rest of the world (Damon, Menon, & Bronk, 2003). Having a sense of purpose buffers widely against mortality, for example, with increased lifespan even after controlling for other factors of psychological and affective wellbeing (Hill & Turiano, 2014). Among adolescents, meaning in life protects against risky health behaviors, including drug use, sedative use, unsafe sex, lack of exercise, and lack of diet control (Brassai, Piko, & Steger, 2011). In healthcare settings, those with a coherent sense of life were more likely to adjust better psychologically following major medical experiences, such as cancer (Vehling et al., 2011) and bone marrow transplant (Johnson Vickberg et al., 2001).

Control

Control is the need to be able to influence the outcomes of life events (Fiske, 2004). Both the need for autonomy (i.e., being the source of one's own behavior) and the need for competence (i.e., feeling effective in one's interactions with others) identified by self-determination theory (Deci & Ryan, 1985) fall under this category. Low sense of control at work and at home is related to higher risk of developing depression and anxiety (Griffin, Fuhrer, Stansfeld, & Marmot, 2002). Those with less perceived control tend to rate themselves lower on health and show less preventative self-care, have less optimism about early treatment effectiveness, and have higher illness, bed confinement, and dependence on their doctors (Seeman & Seeman, 1983). Conversely, Taylor and Brown (1988) suggested that feeling in control may relate to better health, increased happiness, and longer life expectancy. In particular, perceived control predicts functional and physiological health (Infurna & Gerstorf, 2014).

Self-Enhancement

Self-enhancement refers to the need to feel good about oneself (self-esteem) and to be motivated by the possibility to improve oneself (self-enhancement; Fiske, 2004). High self-esteem (i.e., confidence in one's self-worth) is related to physical and mental health and, when lacking in adolescence, predicts health-compromising behaviors including problem eating and suicidal ideation (McGee & Williams, 2000). In adulthood, lack of self-esteem is related to poor cardiorespiratory health, high waist-to-hip ratios, and poor self-perceived health in adulthood (Trzesniewski, Donnellan, Moffitt, Robins, Poulton, & Caspi, 2006). Self-enhancement involves a sense of self-efficacy (i.e., belief in one's ability to succeed). High levels of self-efficacy in various domains (e.g., academic, physical, and overall) are related to a lack of depression (Ehrenberg, Cox, & Koopman, 1991) and to success with proactive health behaviors

including smoking reduction, weight control, increase in exercise, abstinence from alcohol, and effective use of contraceptives (Strecher, DeVellis, Becker, & Rosenstock, 1986).

Trust

Trust refers to a perception of benevolence from the world (Fiske, 2004). It is a general sense that life is trustworthy. This type of trust is related to interpersonal trust. High levels of interpersonal trust have been correlated with better self-rated health and longevity (Barefoot et al., 1998) whereas low levels are correlated with depression (Kim, Chung, Perry, Kawachi, & Subramanian, 2012).

There are several measures that individually assess each of these basic needs. However, to the authors' knowledge at the beginning of this project there were no single measures that comprehensively evaluate all identified psychosocial needs. Here, the aim was to develop a measure that combined Fiske's five BUCET variables and integratedshould be "integrate" additional needs identified by others: autonomy (Deci & Ryan, 1985), life satisfaction (Diener et al., 1985), and purpose (Damon et al., 2003; Staub, 2003). In two studies, a comprehensive measure was developed and validated to investigate the relation of comprehensive needs satisfaction to physical health and mental wellbeing.

Current Studies

Pilot Study

The purpose of the pilot study was to develop a comprehensive measure of the basic psychosocial needs and examine the factor structure of these items. After approval of study design and measures by the Institutional Review Board, a general population sample of 250 USA adults was recruited and paid through Amazon Mechanical Turk. Participants completed a survey online (through Qualtrics) in a single session after providing consent. With exclusions for incomplete surveys, the final sample included 239 participants (54.4% men; M_{age}= 32.46 ± 11.70 years; 78.2% White/European American; with yearly income well distributed).

Compiling eight basic needs as identified by other researchers, starting with Fiske's BUCET list, we created a pool of 24 items. Although Fiske's BUCET list is fairly comprehensive, several other basic needs have been identified by other scholars. We added these to the BUCET list. Edward Deci and Richard Ryan (1985) identified autonomy as part of developed self-determination theory, which is linked to healthy self-regulation and positive mental health (Ryan & Deci, 2006). We also added life satisfaction (Diener et al., 1985), a general subjective state of wellbeing which requires making cognitive judgments regarding the state of one's circumstances in comparison to the standard one sets for oneself. For eight identified basic needs, three items each (two positive and one negative) were included to assess: belonging, purpose, life satisfaction, autonomy, control, competence, self-enhancement, and trust.[1] Items were scored on a 5-point Likert-type scale (1 = "Strongly Disagree" to 5 = "Strongly Agree").

The 24 items were subjected to Principle Component Analysis using SPSS 19. To determine the final factor structure, we excluded items with factor loadings less than 0.4 unless the basic need was unrepresented, and excluded items with positive factor loadings greater than 0.2 on more than one factor. These were generous criteria for theoretical reasons of inclusivity. Two factors

were extracted and labeled Effectance, which reflects a fulfillment of basic psychosocial needs (α = .86; 11 items, e.g., “People care about me”) and Discouragement which reflects lack of or thwarting of basic psychosocial needs (α = .88; eight items, e.g., “My life is meaningless”). See Table 2.1 for factor loadings. We called the measure the Basic Needs Satisfaction Survey (BNSS).

Table 2.1
Basic Needs Satisfaction Survey Rotated Component Matrix

	Component		
	1	**2**	**Factor**
In key areas in my life I can make choices that matter. (Autonomy)	.771		E
People care about me. (Belonging)	.768		E
When necessary, I can find support that I need from others. (Trust)	.748		E
My life is satisfying. (Life satisfaction)	.747		N/A
I am unhappy with my life. (-Life satisfaction)		.449	D
I can shape my world (Control).	.714		E
My life is meaningless. (-Purpose)	−.710		D
I feel beaten down. (-Enhancing self)		.491	D
I feel like I don’t belong anywhere. (-Belonging)		.438	D
Even though I may feel down sometimes, I know that things will improve. (Life satisfaction)	.698		E
I trust that I can safely make my way in the world. (Trust)	.694		E
I have opportunities in my life to improve my skills and talents. (Enhancing self)	.685		E
I have the opportunity to improve myself day to day. (Enhancing self)	.685	.378	N/A
I feel like I have influence on those who are important in my life. (Control)	.669		E
When I need to, I have the ability to make choices. (Autonomy)	.668	.295	N/A
I feel boxed in with no freedom. (-Autonomy)		.417	D
Other people value my skills. (Competence)	.662		E
I have goals for my life. (Purpose)	.661		E
In key areas in my life, I feel incapable. (-Competence)		.475	D
I fit into at least in one social group. (Belonging)	.626		E
I feel like I have talents to share with others. (Competence)	.537	.229	N/A
There is nothing I can do to change my life. (-Control)		.289	D
The world is a mean place so I have to be careful. (-Trust)		.452	D
I feel like there is a higher purpose for my life. (Purpose)	.452	.238	N/A

Table 2.1
Basic Needs Satisfaction Survey Rotated Component Matrix

	Component		
	1	2	Factor

Note N = 239; Extraction method: Principal component analysis; Decisions were made based on theory and balance among basic needs. E = Effectance; D = Discouragement

Study 1

The purpose of Study 1 was to confirm the two-factor model and evaluate the psychometric properties of the BNSS. A confirmatory factor analysis was conducted to verify the results of the pilot study PCA. In the first study, we examined the validity of the measure in adequately measuring basic needs. We tested the measure against individual measures of each basic need. To assess whether the new measure could predict outcomes, we assessed physical and mental health. It was expected that existing measures of individual basic needs would correlate positively with Effectance and negatively with Discouragement and that measures evaluating thwarting, or absence of individual basic needs, would correlate positively with Discouragement and negatively with Effectance. Effectance was expected to correlate with physical health status (i.e., good health status) and mental wellbeing, while Discouragement to correlate with physical health behavior (i.e., visits to healthcare providers and use of medications) and mental illness, matching prior research showing that basic psychosocial needs correspond to these outcomes.

Method

Participants and General Procedure

After approval of study design and measures by the Institutional Review Board, a general population sample of 250 USA adults was recruited and paid through Amazon Mechanical Turk. Participants completed a 30-minute survey online (through Qualtrics) in a single session after consent. With exclusions for incomplete surveys, the final sample included 227 participants (40.1% men; M_{age}= 37.26, SD = 13.39 years; 84.1% White/European American, with yearly income well distributed).

Measures

All measures were self-report. Unless otherwise specified, mean scores were used in analysis. Cronbach's alphas are displayed in results section.

Basic Needs Satisfaction Survey

A confirmatory factor analysis was conducted in R, using the lavaan package (Rosseel, 2012), to validate the two factors extracted in the pilot study. Several fit indices suggested that the two-factor model was sufficient (CFI = 0.95, RMSEA = 0.07, SRMR= 0.05). Chi-squared was significant ($p < 0.01$) but given the other fit indices and the fact that chi-squared falsely punishes large sample sizes (i.e., N > 100), the model was still ruled a good fit. Cronbach's alpha

evaluated internal consistency of the items in each subscale: Effectance (n = 11; α = .91) and Discouragement (n = 8, α = .90).

Belongingness

Belongingness was assessed using two subscales from the Berlin Social Support Scale (Schulz & Schwarzer, 2003): Perceived Emotional Support (four items, e.g., “There are some people who truly like me”) and Perceived Instrumental Support (four items, e.g., “When I am worried, there is someone who helps me”), using a 4-point Likert-type response scale (1 = Strongly Disagree, 4 = Strongly Agree).

Understanding

Understanding was assessed with three measures: (a) The Life Engagement Test (Scheirer et al., 2006) has six items (e.g., “To me the things I do are all worthwhile;” 1 = Strongly Disagree, 5 = Strongly Agree); (b) The Meaning in Life Questionnaire (Steger, Frazier, Oishi, & Kaler, 2006) has five items (e.g., “I understand my life’s meaning;” 1 = Absolutely Untrue, 7 = Absolutely True); (c) The Satisfaction with Life Scale (Diener et al., 1985) has five items (e.g., “In most ways my life is close to my ideal;” 1 = Strongly Disagree, 7 = Strongly Agree).

Control

Autonomy, competence, and control in life were assessed to represent control: (a) The Autonomy subscale from the Sociotropy Autonomy Scale (Bieling, Beck, & Brown, 2000) assessesAdd "which" before "assesses" Independent Goal Attainment (eight items, e.g., “If a goal is important to me I will pursue it even if it may make other people uncomfortable;” 1 = Strongly Disagree, 5 = Strongly Agree); (b) The Competence Scale from the International Personality Item Pool (IPIP; Goldberg et al., 2006; 10 items, e.g., “I come up with good solutions;” 1 = Strongly Disagree, 5 = Strongly Agree); (c) Control was measured using two subscales from the Spheres of Control Scale (Paulhus & Van Selst, 1990): Personal Control (10 items, e.g., “I can usually achieve what I want if I work hard for it”) and Interpersonal Control (10 items, e.g., “I have no trouble making and keeping friends”) with a 7-point Likert-type scale (1 = Disagree, 7 = Agree).

Self-Enhancement

The Core Actualization factor of the Brief Index of Self-Actualization measured self-enhancement (Sumerlin & Brundrick, 1996; 10 items, e.g., “I am still learning;” 1 = Strongly Disagree, 5 = Strongly Agree).

Trust

The Trust scale was used from the Cattell’s 16 Personality Factor questionnaire (Cattell, 1956; n = 10 items, e.g., “I think that all will be well;” 1 = Strongly Disagree, 5 = Strongly Agree).

Health Measures

Health was assessed in terms of physical and mental health.

Physical Health Status

Physical health status was measured using seven basic health items, all using Likert-type scales. Three items assessed health in the last month (e.g., “In the past month I have felt physically

unwell;" 1 = Almost Never, 5 = Almost Always), one item rating their current health (1 = Bad, 5 = Excellent), one item reporting health history (1 = I have more than one major disease for which I take medication, 7 = It has always been excellent), and one item each comparing current health status to previous health status and to the health status to those of others their age (1 = Worse, 3 = Better). Since these seven items used differing scale points, each item was standardized, and a mean score was computed using z scores to form a "physical health status" score ($\alpha = .82$) with higher scores indicating better health status.

Physical Health Behavior

Five items assessed negative impacts of health; one item each regarding the frequency of clinic visits (1 = Never, 6 = More than once a month), hospitalizations in the past year (1 = No, 3 = Yes, 3 or more times), prescription drug usage (1 = none, 5 = eleven or more), and over the counter medication usage (1 = I almost never use nonprescription medications, 3 = I use a lot of nonprescription medications), and one item reporting perception of health status preventing participation in desired activity (1 = not at all, 3 = to a great extent). Since these five items were on different scales, each item was standardized, and a mean score was computed using z scores to form a "Physical health behavior" score ($\alpha = .68$) with higher scores indicating more frequent health-related behavior.

Mental Health

Mental health was measured with the Inventory of Depression and Anxiety Symptoms (IDAS; Watson, Clark, & Tellegen, 1988; Watson et al., 2008). Participants rated the extent to which they experienced various feelings, sensations, or problems (e.g., "I felt depressed") in the past two weeks (1 = Not at all, 5 = Extremely) for 11 subscales: General Depression, Anxiety, Dysphoria, Ill Temperament, Lassitude, Insomnia, Appetite Loss, Appetite Gain, Panic, Traumatic Intrusions, and Wellbeing. Suicidality was excluded due to IRB restrictions.

Results and Discussion

Unless otherwise noted, all analyses were conducted using SPSS Statistical Analysis Software. Summarizes of means, standard deviations, and ranges are displayed in Table 2.2 and correlations, and Cronbach's alphas are shown in Table 2.3.

Table 2.2
Means, standard deviations, and ranges for study 1 variables

Construct	**Mean (SD)**	**Minimum**	**Maximum**
Effectance	3.94 (0.60)	1.75	5.00
Discouragement	2.34 (0.85)	1.00	4.57
Existing measures of basic needs			
Emotional support	3.09 (0.73)	1.00	4.00
Instrumental support	3.13 (0.75)	1.00	4.00
Life engagement	3.79 (0.85)	1.00	5.00
Presence of life meaning	4.77 (1.47)	1.00	7.00

Table 2.2
Means, standard deviations, and ranges for study 1 variables

Construct	Mean (SD)	Minimum	Maximum
Satisfaction with life	4.41 (1.65)	1.00	7.00
Independent goal attainment	3.92 (0.57)	1.88	5.00
Competence	3.69 (0.76)	1.10	5.00
Personal control	4.98 (0.96)	2.40	7.00
Interpersonal control	4.63 (1.06)	1.3	7.00
Self-actualization	3.82 (0.68)	1.10	5.00
Trust	3.42 (0.80)	1.00	5.00
Physical and mental health			
Physical health status	0.00 (0.75)	−1.93	1.46
Physical health behavior	0.00 (0.61)	−0.74	1.98
Depression	2.01 (0.72)	1.00	4.28
Anxiety	1.76 (0.91)	1.00	5.00
Dysphoria	1.82 (0.81)	1.00	4.70
Ill temperament	1.54 (0.71)	1.00	4.80
Lassitude	1.98 (0.84)	1.00	4.50
Insomnia	1.96 (0.83)	1.00	4.33
Appetite loss	1.55 (0.78)	1.00	5.00
Appetite gain	1.91 (0.90)	1.00	5.00
Panic	1.43 (0.61)	1.00	4.00
Traumatic intrusions	1.67 (0.87)	1.00	5.00
Wellbeing	2.92 (0.92)	1.00	5.00
Note N = 227			

Table 2.3
Study 1 correlations and Cronbach's alphas for BNSS subscales and existing measures of basic needs

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Effectance	(.91)												
2. Discouragement	−.68**	(.90)											
3. Emotional support	.73**	−.64**	(.91)										

Table 2.2
Means, standard deviations, and ranges for study 1 variables

Construct				Mean (SD)			Minimum			Maximum			
4. Instrumental support	.73**	−.62**	.91**	(.91)									
5. Life engagement	.65**	−.75**	.58**	.58**	(.89)								
6. Presence of life meaning	.55**	−.63**	.53**	.53**	.73**	(.92)							
7. Satisfaction with life	.54**	−.69**	.55**	.54**	.61**	.60**	(.92)						
8. Independent goal attainment	.42**	−.29**	.27**	.24**	.40**	.28**	.19**	(.85)					
9. Competence	.58**	−.69**	.49**	.45**	.71**	.59**	.58**	.49**	(.90)				
10. Personal control	.61**	−.67**	.51**	.51**	.69**	.53**	.56**	.47**	.76**	(.82)			
11. Interpersonal control	.61**	−.66**	.59**	.55**	.59**	.59**	.56**	.38**	.66**	.65**	(.86)		
12. Self-actualization	.72**	−.74**	.64**	.63**	.76**	.65**	.64**	.49**	.76**	.77**	.65**	(.85)	
13. Trust	.46**	−.46**	.43**	.44**	.34**	.35**	.38**	.13	.34**	.32**	.51**	.43**	(.93)

Note N = 227. *p < 0.05, **p < 0.01. Cronbach's alphas appear on the diagonaladd at the end "in parentheses"

Convergent Validity

To measure convergent validity, Pearson correlations among the BNSS subscales and existing measures of individual basic needs were examined. See Table 2.3. Correlations were in expected directions for each subscale, positive for Effectance and negative for Discouragement, providing evidence of convergent validity.

Predicting Health Outcomes

To the validity of BNSS in predicting health outcomes, Pearson correlations between BNSS subscales and physical and mental health were examined. See Table 2.4.

Effectance was correlated positively with physical health status and mental wellbeing and negatively with physical health behavior and symptoms of mental illness. Conversely, Discouragement was correlated negatively with physical health status and mental wellbeing

and positively with physical health behavior and mental illness.

Discouragement was most strongly correlated with depression, and Effectance was most strongly correlated with wellbeing. These correlations support previous findings that satisfaction of each basic need, individually, related to physical and mental health (see prior review). Furthermore, these findings suggest that comprehensive need satisfaction can be used as a predictor of health and wellbeing outcomes.

Table 2.4
Study 1 correlations and Cronbach's alphas for BNSS subscales (effectance, discouragement) and measures of physical and mental health

Variable	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1. Effectance	(.91)														
2. Discouragement	−.68**	(.90)													
3. Physical health status	.24**	−.36**	(.80)												
4. Physical health behavior	−.17**	.20**	−.66**	(.59)											
5. Depression	−.51**	.71**	−.51**	.35**	(.92)										
6. Anxiety	−.40**	.53**	−.34**	.23**	.78**	(.89)									
7. Dysphoria	−.49**	.70**	−.45**	.30**	.96**	.81**	(.92)								
8. Ill temperament	−.39**	.46**	−.27**	.23**	.66**	.58**	.68**	(.87)							
9. Lassitude	−.33**	.52**	−.45**	.35**	.81**	.67**	.75**	.56**	(.85)						
10. Insomnia	−.22**	.38**	−.34**	.27**	.71**	.55**	.61**	.49**	.60**	(.86)					
11. Appetite loss	−.29**	.33**	−.15**	.16**	.54**	.38**	.48**	.44**	.37**	.50**	(.88)				
12. Appetite gain	−.22**	.29**	−.18**	.13**	.42**	.46**	.47**	.35**	.48**	.30**	.03**	(.76)			

Table 2.4
Study 1 correlations and Cronbach's alphas for BNSS subscales (effectance, discouragement) and measures of physical and mental health

Variable	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
13. Panic	−.39**	.46**	−.32**	.26**	.74**	.72**	.75**	.67**	.62**	.62**	.55**	.41**	(.89)		
14. Traumatic intrusions	−.38**	.52**	−.35**	.28**	.78**	.67**	.78**	.61**	.63**	.57**	.53**	.30**	.69**	(.88)	
15. Wellbeing	.61**	−.70**	.39**	−.16**	−.56**	−.32**	−.48**	−.22**	−.38**	−.27**	−.08**	−.15**	−.23**	−.30**	(.89)
Note N = 227. *p < 0.05, **p < 0.01. Physical health status and behavior were calculated by standardizing seven and five items, respectively. Cronbach's alphas appear on the diagonal															

The first study provided convergent evidence for the validation and usefulness of the BNSS subscales. In the next study, we wanted to compare the power of the BNSS subscales in predicting health outcomes.

Study 2

The purpose of Study 2 was to further examine convergent validity with measures that evaluate thwarting of, or lack of, individual basic needs, as well as to establishadd "to" before "establish" divergent validity. The aim was also to further investigate the role of basic needs satisfaction as a predictor of physical health and mental wellbeing beyond demographics (i.e., age, sex, ethnicity, income, and social status) by usingno comment hierarchical linear regression.

Method

Participants and General Procedure
Following the same approval and design procedures as in Study 1, a general population sample of 350 USA adults was recruited and paid through Amazon Mechanical Turk. Participation took about 40 min on average. Thirty-seven participants with incomplete data and a single univariate outlier were excluded, resulting in a final sample of 312 participants (47.1% men; $M_{age} = 37.90$, SD = 12.26 years; 80.8% White/European American; with yearly income well distributed).

Measures
Again, all measures were self-report. Unless otherwise specified, composite scores were created by averaging the items. Reliability estimates are included in the results section.

Basic Needs Satisfaction Survey

We used the BNSS measure confirmed in Study 1 but shortened its two subscales, Effectance (n = 9; α = .88) and Discouragement (n = 7; α = .88).

Thwarting Measures

Belongingness
The Interpersonal Needs Questionnaire (Van Orden, Cukrowicz, Witte, & Joiner, 2012) evaluates thwarted belongingness (10 items, e.g., "I feel unwelcome in most social situations;" 1 = Absolutely untrue, 7 = Absolutely True).

Understanding
The Purpose in Life Test (Crumbaugh, 1968) measured individuals' experience of meaning and purpose in life (20 items, e.g., "In life I have…"), using a 5-point Likert-type scale. The response scale varied for each question (e.g., "In life I have…" 1 = No goals or aims, 5 = Clear goals and aims). Low scores indicate a lack of life understanding.

Control
The Mastery Scale (Pearlin & Schooler, 1978) assessed perceived lack of control (six items, e.g., "I have little control over the things that happen to me"), using a 4-point Likert-type scale (1 = Strongly Agree, 4 = Strongly Disagree). Low scores indicate perceived lack of control.

Self-Enhancement
The revised-negative version of the Rosenberg Self Esteem Scale (Greenberger, Chen, Dmitrieva, & Farruggia, 2003) evaluated lack of self enhancement (10 items, e.g., "At times I think I am no good at all;" 1 = Strongly Disagree, 6 = Strongly Agree).

Trust
To measure interpersonal distrust, the Distrust subscale of the International Personality Item Pool (Goldberg et al., 2006; 10 items, e.g., "I distrust people;" 1 = Very inaccurate, 5 = Very accurate) was used.

Divergent Measures
These measures were selected based on the prediction that they would measure something distinct from basic psychosocial needs.

Basic Economic Needs
Participants rated their financial situation in terms of their ability to meet basic needs, using a 5-point Likert-type scale (1 = We often lack enough money for basic needs, 5 = We have far enough money both for basic needs and for our desires).

Social Desirability
Social desirability was evaluated using the shortened Marlowe–Crowne Social Desirability Scale (Crowne & Marlow, 1964; eight items, e.g., "Are you quick to admit making a mistake?") with a 3-point Likert-type response scale (1 = No, 2 = Don't know, 3 = Yes).

Personality
The HEXACO-60 (Ashton & Lee, 2009) measures six major dimensions of personality, the big-five (Emotionality, Extraversion, Agreeableness, Conscientiousness and Openness) plus

Honesty/Humility (e.g., “I would never accept a bribe, even if it were very large;” 10 items each; 1 = Strongly Disagree, 5 = Strongly Agree).

Physical and Mental Health

The basic physical health questions from Study 1 were used. For mental health, two subscales with the strongest correlations from Study 1 were used: Wellbeing and General Depression (i.e., without suicidality items) (IDAS; Watson et al., 2008).

Control Variables

Control variables used were sex, age, ethnicity (single-items), and socioeconomic status. Socioeconomic status was measured in terms of income and social status (i.e., education and occupation). A single item was used to assess the range of income that best matcheschange to "matched" the participant’s annual household income on a 6-point Likert-type scale (1 = less than $15,000, 6 = over $100,000). Social status (i.e., educational attainment and occupational prestige; not social class) was assessed using the Barratt Simplified Measure of Social Status (Barratt, 2006). Participants were asked to answer two questions about themselves, their parents, and their spouse (if married) regarding education and occupation. An overall social status score was computed following Barratt’s (2006) scoring guidelines, weighting education to occupation with a ratio of 3:5.

Results and Discussion

Unless otherwise noted, all analyses were conducted using SPSS Statistical Analysis Software. See Table 2.5 for means, standard deviations and ranges. See Table 2.6 for correlations.

Table 2.5
Means, standard deviations, and ranges for study 2 variables

Variable	**Mean (SD)**	**Minimum**	**Maximum**
Effectance	3.94 (0.61)	1.13	5.00
Discouragement	2.29 (0.83)	1.00	5.00
Basic needs thwarting			
Thwarted belonging	2.87 (1.33)	1.00	7.00
Purpose in life	3.40 (0.71)	1.15	4.65
Mastery	2.70 (0.50)	1.00	4.00
Lack of self esteem	2.40 (1.28)	1.00	6.00
Distrust	2.77 (0.82)	1.00	5.00
Divergent measures			
Effectance	3.94 (0.61)	1.13	5.00
Discouragement	2.29 (0.83)	1.00	5.00
Economic basic needs	3.16 (0.92)	1.00	5.00
Social desirability	2.16 (0.57)	1.00	3.00

Table 2.5
Means, standard deviations, and ranges for study 2 variables

Variable	Mean (SD)	Minimum	Maximum
Honesty and humility	3.39 (0.71)	1.20	5.00
Emotionality	3.10 (0.66)	1.00	5.00
Extraversion	3.17 (0.80)	1.00	5.00
Agreeableness	3.30 (0.57)	1.40	5.00
Conscientiousness	3.73 (0.57)	1.50	5.00
Openness to experience	3.64 (0.65)	1.20	5.00
Physical and mental health			
Physical health status	0.00 (0.76)	−2.12	1.35
Physical health behavior	0.00 (0.66)	−0.72	2.26
Depression	2.08 (0.51)	1.39	3.78
Wellbeing	2.86 (0.98)	1.00	5.00
Note N = 312			

Table 2.6
Study 2 correlations for BNSS subscales and existing measures of basic needs thwarting

Variable	1	2	3	4	5	6	7
1. Effectance	(.88)						
2. Discouragement	−.74**	(.88)					
3. Thwarted belonging	−.73**	.72**	(.94)				
4. Purpose in life	.72**	−.79**	−.71**	(.95)			
5. Mastery	.42**	−.58**	−.50**	.56**	(.88)		
6. Lack of self esteem	−.68**	.78**	.69**	−.75**	−.52**	(.95)	
7. Distrust	−.35**	.43**	.42**	−.37**	−.24**	.35**	(.92)
Note N = 312. *p < 0.05, **p < 0.01							

Convergent Validity

To further measure convergent validity, Pearson correlations among the BNSS subscales and existing measures of basic needs thwarting were examined. See Table 2.6. As expected, measures selected to assess the lack of, or thwarting of, a given basic need (Cronbach alphas ranging from .88 to .95) correlated with Discouragement positively and with Effectance negatively (with the exception of the mastery and purpose in life scales, for which a low score indicate basic needs thwarting). Correlations were significant ($p < .05$) with absolute values from $r = .35$ to $r = .73$ for Effectance, and $r = .43$ to $r = .79$ for Discouragement. These results further support the convergent validity of the BNSS.

Divergent Validity

To measure divergent validity, correlations were examined among BNSS subscales and scales expected to measure constructs distinct from basic needs satisfaction: basic economic needs, social desirability, and personality traits (see Table 2.7). Although the BNSS subscales were significantly related to each of these constructs, they were only weakly correlated (i.e., $r < 0.4$) with most. The exceptions were extraversion, agreeableness and conscientiousness which were moderately correlated (i.e., $0.4 < r < 0.7$) with at least one of the BNSS subscales. It is not surprising that these constructs were still significantly related to basic needs satisfaction, given that basic psychosocial needs are fundamental and universal and are, therefore, expected to be related to a wide variety of outcomes. In particular, it makes sense that the BNSS subscales would be more highly correlated with extraversion, agreeableness, and conscientiousness because when one feels good, one is more likely to engage with others, which these three dimensions of personality measure (Aghababaei & Arji, 2014). These results, therefore, still provide some evidence of divergent validity.

Table 2.7
Study 2 correlations and Cronbach's alphas for BNSS subscales (effectance, discouragement) and divergent measures

Construct	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1. Effectance	(.88)									
2. Discouragement	−.71**	(.88)								
3. Economic basic needs	.24**	−.35**	–							
4. Social desirability	.18**	−.29**	.07	(.75)						
5. Honesty and humility	.15*	−.36**	.11	.41**	(.81)					
6. Emotionality	−.13	.21**	−.14*	−.07	<.01	(.78)				
7. Extraversion	.67**	−.67**	.20**	.22**	.11	−.30**	(.90)			
8. Agreeableness	.33**	−.39**	.12	.51**	.52**	−.09	.37**	(.81)		
9. Conscientiousness	.38**	−.40**	.11	.24**	.41**	−.05	.25**	.28**	(.77)	
10. Openness to experience	.24**	−.07	−.11	.01	−.01	.00	.17*	.16*	.27**	(.79)

Note N = 312. *p < 0.05, **p < 0.01. Cronbach's alphas appear on the diagonal. Economic basic needs is a single item

Basic Needs and Physical and Mental Health in Adulthood

To measure the relationship among basic needs and physical and mental health in adulthood, Pearson correlations among the BNSS subscales and physical health status and behavior, mental wellbeing, and depression were examined. See Table 2.8. Correlations were significant ($p < 0.05$) and absolute values ranged from $r = .19$ to $r = .60$ for Effectance, and $r = .29$ to $r = .67$ for

Discouragement, in expected directions. Findings were similar to Study 1, providing a replication. Greater basic needs satisfaction contemporaneously was significantly positively correlated with good health status and wellbeing and negative correlated with health behavior and depression. These results suggest that the lack of basic needs contributes to a stressful life experience which impacts health outcomes.

Table 2.8
Study 2 correlations and Cronbach's alphas for BNSS subscales (effectance, discouragement) and health/wellbeing outcomes

Construct	**1**	**2**	**3**	**4**	**5**	**6**
1. Effectance	(.88)					
2. Discouragement	−.74**	(.88)				
3. Physical health status	.33**	−.44**	(.82)			
4. Physical health behavior	−.19**	.29**	−.64**	(.68)		
5. Depression	−.41**	.60**	−.53**	.43**	(.83)	
6. Wellbeing	.60**	−.67**	−.44**	−.24**	−.41**	(.95)

Note N = 312. *p < 0.05, **p < 0.01. Cronbach's alphas appear on the diagonal. Physical health status and behavior were calculated by standardizing and combining seven and five items, respectively

Those with higher scores on Effectance also had significantly higher scores on honesty/humility (r = .15), extraversion (r = .67), agreeableness (r = .33), conscientiousness (r = .38), openness to experience (r = .24). Higher Effectance scores were also positively correlated with social desirability (r = .18), suggesting that this measure may tap into positive attitudes. In contrast, higher scores on Discouragement were negatively correlated with honesty/humility (r = −.36), extraversion (r = −.67), agreeableness (r = −.39), and conscientiousness (r = −.40), as well as with social desirability (r = −.29). Higher Discouragement scores were correlated positively with emotionality (r = .33). That social desirability went in the same direction as basic needs satisfaction suggest that those with satisfaction may see life in a rosier, more relaxed manner, which facilitates cooperation that extraversion, agreeableness, conscientiousness, openness reflect. The only contrary finding to this speculation is that openness was unrelated to Discouragement.

To further explore these findings, a series of hierarchical regressions were conducted to investigate which BNSS subscale accounted for greater variance in predicting physical and mental health and whether this effect was beyond that due to control variables. To examine which subscale accounted for greater variance in predicting an outcome, we included Effectance and Discouragement in the first model. Then to assess whether the subscales still accounted for variance beyond control variables (i.e., sex, age, ethnicity, income, and social status), control variables were added in subsequent models. Hierarchical regressions were separately conducted for physical health behavior, physical health status (Table 2.9), depression, and wellbeing (Table 2.10).

Table 2.9
Hierarchical regression models predicting physical health status and behavior

Physical health status						
Model	**b**	**SE**	**β**	**R^2 (adjusted)**	**R^2 change**	**F change**
Model 1				.19 (.19)	.19	36.36**
Effectance	.02	.10	.02			
Discouragement	−.39	.07	−.42**			
Model 2				.24 (.22)	.04	4.42**
Effectance	.01	.09	.01			
Discouragement	−.39	.07	−.43**			
Sex	−.16	.08	−.10*			
Age	−.01	<.01	−.15**			
Income	.05	<.01	.10			
Social status	<.01	.03	−.02			
Model 3				.25 (.23)	.01	4.10*
Effectance	.02	.09	.01			
Discouragement	−.36	.07	−.40**			
Sex	−.19	.08	−.12*			
Age	−.01	<.01	−.16*			
Income	.06	.03	.11*			
Social status	<.01	<.01	−.02			
Social desirability	.14	.07	.11*			
Physical health behavioThis title should be in same format as the title at the top of the table. They represent two different models.r						
Model 1				.09 (.08)	.09	14.26**
Effectance	.06	.09	.05			
Discouragement	.26	.06	.33**			
Model 2				.13 (.11)	.04	3.78**
Effectance	.06	.09	.06			
Discouragement	.26	.06	.33**			
Sex	.18	.07	.14*			
Age	.01	<.01	.13*			
Income	−.04	.03	−.08			
Social status	<.01	<.01	.01			
Model 3				.13 (.11)	<.01	.56

Table 2.9
Hierarchical regression models predicting physical health status and behavior

Physical health status						
Model	**b**	**SE**	**β**	**R^2 (adjusted)**	**R^2 change**	**F change**
Effectance	.06	.09	.06			
Discouragement	.27	.06	.34**			
Sex	.17	.07	.13*			
Age	.01	<.01	.12*			
Income	−.03	.03	−.08			
Social status	<.01	<.01	.01			
Social desirability	.05	.07	.04			
Note N = 312. *p < 0.05, **p < 0.01						

Table 2.10
Hierarchical regression models predicting wellbeing and depression

Wellbeing						
Model	**b**	**SE**	**β**	**R^2 (adjusted)**	**R^2 change**	**F change**
Model 1				.48 (.48)	.48	141.80**
Effectance	.38	.10	.23**			
Discouragement	−.59	.08	−.50**			
Model 2				.48 (.47)	<.01	.35
Effectance	.37	.10	.23**			
Discouragement	−.60	.07	−.51**			
Sex	.01	.08	<.01			
Age	<.01	<.01	−.03			
Income	<.01	.03	<.01			
Social status	<.01	<.01	−.03			
Model 3				.49 (.48)	.01	7.46**
Effectance	.38	.10	.24**			
Discouragement	−.57	.07	−.48**			
Sex	−.04	.08	−.02			
Age	<.01	<.01	−.04			
Income	<.01	.03	<.01			
Social status	<.0	<.01	−.03			
Social desirability	.20	.08	.12**			
Depression						

Table 2.9
Hierarchical regression models predicting physical health status and behavior

Physical health status						
Model	**b**	**SE**	**β**	**R^2 (adjusted)**	**R^2 change**	**F change**
Model 1				.36 (.36)	.36	87.97**
Effectance history	.06	.06	.07			
Discouragement	.40	.04	.65**			
Model 2				.39 (.37)	.02	2.93*
Effectance	.05	.06	.06			
Discouragement	.39	.04	.64**			
Sex	.13	.05	.13**			
Age	<.01	<.01	−.08			
Income	−.02	.02	−.05			
Social status	<.01	<.01	.01			
Model 3				.39 (.38)	<.01	3.59
Effectance	.04	.06	.05			
Discouragement	.38	.04	.62**			
Sex	.15	.05	.14**			
Age	<.01	<.01	−.07			
Income	−.02	.02	−.06			
Social status	<.01	<.01	.01			
Social desirability	−.08	.04	−.09			
Note N = 312. *p < 0.05, **p < 0.01						

In the regression predicting physical health status, although Effectance had been significantly correlated with each of the physical and mental health outcomes, Discouragement consumed the variance for physical health status, accounting for 19% of the variance, whereas Effectance was not a significant predictor (see Table 2.9). When adding the demographic control variables in model 2, age contributed to variance explained (22%). Age was negatively related to physical health status, suggesting that those who were older reported a poorer physical health status. Last, adding social desirability also significantly added to the variance explained (23%), and social desirability was positively related to reporting physical health status. When all variables were included, Discouragement was still the strongest predictor of physical health status, which can be seen by the standardized beta. This suggests that when an individual felt like their current needs were not fulfilled, they were likely to pooreradd "report" before "physical" physical health status, and this effect was above and beyond that found by demographic factors that often contribute to health outcomes.

In the regression predicting physical health behavior, again Discouragement consumed the variance for physical health behavior, accounting for 8% of the variance, whereas Effectance was not a significant predictor (see Table 2.9). When adding the demographic control variables in model 2, sex and age contributed to variance explained (11%). Age was positively related to physical health behavior, suggesting that those who were older reported more frequent physical health behaviors. Sex was related such that women reported more frequent physical health behaviors. Last, adding social desirability did not significantly add to the variance explained. When all variables were included, Discouragement was still the strongest predictor of physical health behavior, which can be seen by the standardized beta. This suggests that when an individual felt like their current needs were not fulfilled, they were likely to report more instances of physical health behaviors including hospital visits and medications, and this effect was above and beyond that found by demographic factors that often contribute to health outcomes.

In the regression predicting wellbeing, both Effectance and Discouragement significantly contributed to variance for wellbeing (48%; see Table 2.10). None of the demographic control variables added in model 2 were significant and the variance explained whenshould be "went" down slightly. In model 3, adding social desirability added to the variance explained (48%). When all variables were included, Discouragement was still the strongest predictor of wellbeing, which can be seen by examining the standardized beta. This suggests that when an individual felt like their current needs were not fulfilled, they were less likely to have high scores on wellbeing, and this effect was above and beyond that found by examining demographic factors that often contribute to mental health outcomes.

In the regression predicting depression, although both Effectance and Discouragement were significantly correlated to depression, only Discouragement significantly contributed to variance for depression (36%; see Table 2.10). When adding demographics in model 2, only sex significantly contributed to variance explained (37%), with women reporting higher depression. Last, adding social desirability did not significantly add to the variance explained. When all variables were included, Discouragement was still the strongest predictor of depression, which can be seen by examining the standardized beta. This suggests that when an individual felt like their current needs were not fulfilled, they were likely to report higher depression, and this effect was above and beyond that found by examining demographic factors that often contribute to mental health outcomes.

Although Effectance was significantly correlated with each of the physical and mental health outcomes, Discouragement consumed the variance for all outcome variables save wellbeing , whereas Effectance remained significantly predictive. Discouragement remained significant for all four health outcomes even after considering demographic variables and social desirability. Sex was a significant predictor of physical health (good and poor) as well as depression (women worse off).

Age was a significant predictor for physical health, with higher age associated with lower positive health and higher negative health. Social desirability explained variance in physical health status and wellbeing, but not poor physical health or depression, suggesting that when people feel good (i.e., high Effectance), they may have a rosier outlook on their wellbeing (“

Pollyanna effect;" Boucher & Osgood, 1969). Alternatively, it might be more socially desirable to report good physical and mental health.

Income was only an explanatory factor for physical health status when social desirability was also included in the model, and social status was not predictive in any model. This suggests that perhaps basic needs satisfaction may be a better predictor of both physical and mental health than socioeconomics, despite the copious literature discussing the socioeconomic gradient in health (e.g., Adler & Ostrove, 1999; Adler et al., 1994). It is also of note that in the physical health and depression regressions, the explained variance did significantly increase when adding the demographic variables, but this effect was not seen in the wellbeing model. This perhaps suggests that the most robust factor contributing to mental wellbeing is basic psychosocial need fulfillment. Furthermore, these findings support the recent literature suggesting that psychosocial resources may be important predictors of health independent of SES-related stress (Matthews, Gallo, & Taylor, 2010).

General Discussion

The purpose of the current studies was to validate a short, comprehensive measure of basic psychosocial needs satisfaction. Convergent validity was assessed using a battery of measures that evaluated each separate basic need. The role of basic needs satisfaction as a predictor of both physical and mental health was also investigated. Participants completed measures assessing physical and mental health.

Results from two studies demonstrated reliability and validity of the BNSS, with its two subscales performing in opposite manners. Discouragement predicted both physical and mental health; it was positively associated with physical health behavior and depression and negatively with physical health status and wellbeing, suggesting that lack of basic psychosocial needs, or basic needs thwarting, predicts negative health outcomes. However, for wellbeing both subscales were predictive, suggesting that lack of discouragement is not enough for flourishing, but a sense of effectance is also required. These findings align with the World Health Organization's (1948) definition of health as "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity" and conform to prior research (Vansteenkiste & Ryan, 2013). Furthermore, the BNSS predicted health outcomes independent of socioeconomic status, which has been clearly associated with both physical and mental health (Adler & Ostrove, 1999; Adler et al., 1994), supporting previous suggestions that psychosocial resources could be predictors of health on their own (Matthews et al., 2010).

Given the role of the BNSS as a significant predictor of health, there may be potential to use the BNSS and related basic needs theory to improve health behavior and promote mental wellbeing in clinical contexts. Many studies have already demonstrated the utility of assessing basic needs for treatment interventions (e.g., self-determination theory; Markland, Ryan, Tobin, & Rollnick, 2005; Ng et al., 2012; Sheldon, Williams, & Joiner, 2008). A new measure of psychological well-being called the Comprehensive Inventory of Thriving (CIT) has yielded similar findings regarding the relationship with physical and mental health (Su, Tay, & Diener, 2014). Enhanced autonomous motivation and perceived competence, for example, have been shown to promote glycemic control (Williams, McGregor, Zeldman, Freedman, & Deci, 2004), lower plaque and

gingivitis (Halvari & Halvari, 2006), and increase smoking cessation (Williams et al., 2006). Self-determination may also be related to mental health issues such as anxiety, eating, mood, and personality disorders (Sheldon et al., 2008). Given these findings, it may be worthwhile to use the short, comprehensive BNSS scale as a quick screen in a waiting room where results could be used to identify overall psychosocial need deficiencies that may be contributing to health issues. Subsequently, more detailed analyses could be conducted and interventions designed to remedy deficiencies.

Limitations and Future Directions

The study had several limitations. First, the BNSS needchange to "needs" further development as it appears that shorter scales change to "a shortened scale"might work just as well, as shown in study 1should be "2". Second, all studies used cross-sectional, convenience samples, so causation cannot be determined. A longitudinal study is needed to determine the direction of effects. Data were collected from the United States, so more diverse samples are needed. Also, because the data collected was self-reported, it is impossible to know for sure that the respondents were accurate and honest with their answers. Ideally, in future studies, accurate independent health records could be accessed to determine self-report accuracy. Future studies may also investigate whether certain life events predict basic needs satisfaction and explore the role of basic psychosocial needs fulfillment as a potential mediator between life events and health outcomes. For example, psychosocial needs may explain, at least partially, the mechanism underlying the relationship between childhood experiences and adult health.

Conclusion

A comprehensive basic needs satisfaction measure fills a gap in basic needs studies by providing a short self-report measure that evaluates the status of all five basic psychosocial needs outlined in Fiske's (2004) BUCET list. Such a measure has the potential to be applied to a wide array of psychological contexts in the future since basic needs are integral to human behavior and development. A comprehensive measure may be a useful tool for predicting not only physical and mental health but also other important life outcomes such as moral capacities. Interestingly, each of the BUCET basic needs is fundamental in early life when the body and brain are being shaped. In the next chapter, we examine whether the timing of basic needs fulfillment is critical for long-term wellbeing. Specifically, we examine basic needs fulfillment in childhood and its relation to adult wellbeing.

Appendix 2.1: Basic Needs Satisfaction Scale (BNSS)

Please indicate the extent to which you agree or disagree with each of the following statements.

	Strongly disagree (1)	**Disagree (2)**	**Neither agree nor disagree (3)**	**Agree (4)**	**Strongly agree (5)**
1. People care about me	❍	❍	❍	❍	❍
2. I fit into at least one social group	❍	❍	❍	❍	❍

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
3. I feel like I have influence on those who are important in my life	❍	❍	❍	❍	❍
4. I can shape my world	❍	❍	❍	❍	❍
5. Other people value my skills	❍	❍	❍	❍	❍
6. In key areas in my life I can make choices that matter	❍	❍	❍	❍	❍
7. I trust that I can safely make my way in the world	❍	❍	❍	❍	❍
8. When necessary, I can find support that I need from others	❍	❍	❍	❍	❍
9. I have goals for my life	❍	❍	❍	❍	❍
10. I have opportunities in my life to improve my skills and talents	❍	❍	❍	❍	❍
11. Even though I may feel down sometimes, I know that things will improve	❍	❍	❍	❍	❍
12. I feel like I don’t belong anywhere	❍	❍	❍	❍	❍
13. There is nothing I can do to change my life	❍	❍	❍	❍	❍
14. In key areas in my life, I feel incapable	❍	❍	❍	❍	❍
15. I feel boxed in with no freedom	❍	❍	❍	❍	❍
16. The world is a mean place so I have to be careful	❍	❍	❍	❍	❍
17. My life is meaningless	❍	❍	❍	❍	❍
18. I feel beaten down	❍	❍	❍	❍	❍
19. I am unhappy with my life	❍	❍	❍	❍	❍
SCORING					
BNSS Effectance: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11					
BNSS Discouragement: 12, 13, 14, 15, 16, 17, 18, 19					

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ENDNOTE

[1] purpose and life satisfaction comprising the BUCET variable “understanding” and control, competence, and autonomy comprising the BUCET variable “control.”