The Benefits of Benevolence: Basic Psychological Needs, Beneficence, and the Enhancement of Well-Being

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Abstract

Pro-social behaviors have been associated with enhanced well-being, but what psychological mechanisms explain this connection? Some theories suggest that beneficence—the sense of being able to give—inherently improves well-being, whereas evidence from self-determination theory (Weinstein & Ryan, 2010) shows that increases in well-being are mediated by satisfaction of innate psychological needs for autonomy, competence, and relatedness. Here we simultaneously assess these two explanations. Study 1 ($N = 335$) used a cross-sectional survey with an Internet sample to develop a measure to assess beneficence satisfaction. The next two cross-sectional Internet-sample studies tested mediators between pro-social behavior and general well-being (Study 2, $N = 332$) and situational peak moment well-being (Study 3, $N = 180$). A fourth study ($N = 85$) used a diary method with university students to assess daily fluctuations in well-being associated with needs and beneficence. It was shown across all studies that both the three psychological needs and beneficence satisfaction mediate the relations between pro-social actions and well-being, with all four factors emerging as independent predictors. Together, these studies underscore the role of autonomy, competence, and relatedness in explaining the well-being benefits of benevolence, and they also point to the independent role of beneficence as a source of human wellness.

A growing body of empirical work suggests that giving to others is beneficial for our own well-being. Volunteering (e.g., Meier & Stutzer, 2008; Piliavin & Siegl, 2007), acts of kindness (e.g., Alden & Trew, 2013; Sheldon, Boehm, & Lyubomirsky, 2009; Weinstein & Ryan, 2010), and spending money on others (e.g., Aknin, Barrington-Leigh, et al., 2013; Dunn, Aknin, & Norton, 2008) have all been shown to be linked to improved well-being. Aknin, Barrington-Leigh, et al. (2013) go so far as to suggest, based on their cross-cultural evidence, that emotional benefits derived from pro-social spending is a "psychological universal." Given these developments, it becomes crucial to ask *why* giving to others is beneficial for one's own well-being.

One way to explain such findings is to suggest that human beings are equipped with an inherent pro-social tendency that motivates and rewards us for benevolent acts (e.g., Brown & Brown, 2006; Hepach, Vaish, & Tomasello, 2012). For example, some research suggests that even toddlers are intrinsically motivated to act pro-socially (see Batson, Ahmad, & Lishner, 2009; Warneken & Tomasello, 2009). Recent evolutionary arguments have also emphasized the adaptive benefits of pro-social acts (at least toward those close to us; e.g., Brown & Brown, 2006; Fehr & Fischbacher, 2003). But these ultimate explana-tions need to be complemented with an understanding of the proximal psychological satisfactions that support such behaviors (Ryan & Hawley, in press). That is, even though pro-social acts are by definition not done for external rewards, they may be frequent within human behavior because they both feel good in a direct sense and add to a sense of wellness. Benevolent acts thus could be associated with some very basic psychological satisfactions that when realized lead to an increased sense of well-being.

Basic Psychological Need Satisfactions and Pro-Social Behavior

Applying self-determination theory (SDT; Deci & Ryan, 2000), Weinstein and Ryan (2010) argued that the well-being enhancement that typically follows from pro-social acts is mediated by the satisfaction of basic psychological needs for relatedness, competence, and autonomy. Specifically, they posited that benevolent

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acts satisfy the need for *competence*, insofar as one feels effective in helping; the need for *relatedness*, insofar as one feels more connected with others; and the need for *autonomy*, insofar as pro-social acts are volitional and autonomous. Indeed, Weinstein and Ryan showed that it was only when pro-social acts were autonomously motivated that any well-being benefits accrued, whereas controlled motives for helping did not result in enhanced wellness. Moreover, across multiple studies using varied methods, Weinstein and Ryan (2010) showed that autonomy, competence, and relatedness satisfactions mediated the wellness benefits derived from pro-social behavior, with all three needs having an independent contribution. Their results converge with a review by Dunn, Aknin, and Norton (2014, p. 44) on spending for others, who suggested that "the emotional benefits of prosocial spending are likely to be greatest when giving satisfies the needs for relatedness, competence, and autonomy."

A question in the current research is whether the direct satisfaction of beneficence—the simple pleasure in having contributed to others—might also help explain well-being enhancements above and beyond these other three psychological satisfactions. While pro-social behavior is about the objective pro-social acts people perform, beneficence is a subjective *feeling* or *evaluation* about the actor's personal sense of having done good things to others. Indeed, neurological evidence shows that decisions to act pro-socially activate the reward centers of the brain (Harbaugh, Mayr, & Burghart, 2007). Based on such findings, it could be suggested that the "warm glow of giving may be a fundamental component of human nature" (Dunn et al., 2014, p. 42). Feeling beneficent, understood here as a sense of having a positive impact on others, could thus be argued to be an inherent and direct source of enhanced feelings of wellness, in addition to the satisfactions associated with the autonomy, competence, and relatedness satisfactions identified within SDT.

Benevolence and Eudaimonia

Well-being benefits of benevolent giving are also important from the point of view of recently resurrected interest in *eudaimonia* (Deci & Ryan, 2008; Ryan & Deci, 2001; Ryff & Singer, 2008). Eudaimonia is a concept that refers to an intrinsically worthwhile way of living (Ryan, Curren, & Deci, 2013). Instead of being a certain type of psychological state, eudaimonia thus should be understood as a "good and fulfilling way of life, the ingredients of which contribute to happiness and thriving" (Ryan & Martela, in press). Research on eudaimonia is accordingly looking to identify ways of living that are virtuous and involve "pursuing the right ends" (Ryan, Huta, & Deci, 2008, p. 143). Both Aristotle (2012) and Waterman (1981) have suggested that eudaimonia inherently involves pro-social concerns as one of these right ends.

Research on life aspirations and goals has indeed shown that striving to give to others is beneficial for well-being (Kasser & Ryan, 1996; Niemiec, Ryan, & Deci, 2009). Yet more research is needed to understand *why* attainment of pro-social goals

improves our well-being. Evidence that there is something inherently satisfying about feeling beneficent would lend empirical support for the Aristotelian idea that being benevolent toward others is a part of a life well lived.

Present Studies

Given growing evidence of the well-being benefits of pro-social giving, our intent is to further examine the psychological mechanisms through which pro-social behavior leads to well-being. A main focus of the four studies in this article is on the feeling of beneficence per se, understood as a subjective sense of having a positive pro-social impact on others. Therefore, in the first study, we develop a brief measure for beneficence and test whether it mediates the relationship between pro-social behavior and well-being. In the subsequent three studies, we measure sense of beneficence alongside measuring satisfactions of autonomy, competence, and relatedness, in order to examine the independent effects of each on well-being following pro-social acts. Although Weinstein and Ryan (2010) have shown full mediation of wellness effects by these needs, they did not measure beneficence satisfaction itself. Thus, in Study 2, we conducted a cross-sectional analysis to investigate the connection between beneficence and general well-being while controlling for autonomy, competence, and relatedness. In Study 3, we investigated the same issue, focusing on momentary peak experiences by asking participants to think about their happiest moment in the last 2 weeks and to evaluate their well-being and need satisfaction during that moment. Finally, in Study 4, we utilized a daily diary design to look at daily fluctuations in well-being and how the three psychological need satisfactions and beneficence satisfaction influence it.

STUDY 1

In this cross-sectional study, our aim was to validate a brief but psychometrically sound measure of beneficence satisfaction that could be applied across varied pro-social behaviors and contexts. To do so, we built upon a few prior studies that have attempted to measure perceived pro-social impact (e.g., Aknin, Dunn, Whillans, Grant, & Norton, 2013; Grant, 2008), but in a more context-specific way. To assess construct validity, we included other relevant measures that could be argued to be theoretically related to beneficence. As beneficence is about a sense of pro-social impact, it should be positively correlated with other-oriented personality traits such as agreeableness (John & Srivastava, 1999) and empathy (Davis, 1983). Similarly, we believed beneficence to be positively correlated with intrinsic aspirations, which are reflective of pro-social life goals (Kasser & Ryan, 1996). Finally, we predicted that beneficence satisfaction would be associated with feeling good in general (subjective well-being and vitality) and about oneself (self-esteem).

A second aim was to test the hypothesis that a sense of beneficence would mediate the relations between pro-social behavior

and subjective well-being and between vitality and self-esteem. If this were the case, it would provide initial support for the idea that a feeling of beneficence can indeed help account for the effects of pro-social behavior on wellness-relevant outcomes.

Method

Participants and Procedure. Participants were recruited through Amazon Mechanical Turk. A total of 388 people answered the survey, but some were omitted because of poor data quality (either they answered the whole questionnaire in less than 5 minutes, or they demonstrated a low score on an inattention scale; see Maniaci & Rogge, 2013). After eliminating these respondents, the final sample size was 335 (86.3%). Participants' mean age was 37 (range = 18–74), and 64% were women. The majority of the sample identified as Caucasian (76%), with the remainder composed of Asians (9%), African Americans (7%), Hispanics (5%), Native Americans (1%), and 2% who preferred not to say.

Measures

Pro-Social Behavior. To assess pro-social behavior, we used a six-item scale (Pavey, Greitemeyer, & Sparks, 2012; Rushton, Chrisjohn, & Fekken, 1981) that included items such as "I have given money to charity" and "I have gone out of my way to help a stranger in need." The participants were asked to rate the extent to which they had carried out these behaviors in the previous 2 weeks on a scale ranging from 1 (*never*) to 5 (*very often*). The reliability of this scale was .90.

Agreeableness. Agreeableness was measured with the Agreeableness scale from the Big Five Inventory (John & Srivastava, 1999). The nine-item scale asks participants to evaluate how well a certain characteristic applies to them (e.g., "Is helpful and unselfish with others"; "Is considerate and kind to almost everyone") on a scale ranging from 1 (*disagree strongly*) to 6 (*agree strongly*). Reliability was .78.

Empathy. Empathy was assessed with the Empathic Concern subscale from the Interpersonal Reactivity Index (Davis, 1983). Participants rate seven items (e.g., "I would describe myself as a pretty soft-hearted person"; "I often have tender, concerned feelings for people less fortunate than me") on a scale ranging from 1 (*does not describe me well*) to 5 (*describes me very well*). Reliability was .58.

Pro-Social Aspirations. Pro-social aspirations were assessed by the Community Involvement subscale of the Aspirations Index (Kasser & Ryan, 1996). Participants evaluated how important to them were five other-oriented goals (e.g., "To help others improve their lives"; "To help people in need") on a scale ranging from 1 (*not at all important*) to 7 (*very important*). The reliability of this scale was .90.

Vitality. Vitality was assessed with five items (e.g., "I feel alive and vital") from the Subjective Vitality Scale (SVS; Ryan & Frederick, 1997) identified by Bostic, Rubio, and Hood (2000) as the most internally consistent. These items were rated on a scale ranging from 1 (*not at all true*) to 7 (*very true*). Reliability was .88.

Self-Esteem. Self-esteem was measured with Rosenberg's (1965). Self-Esteem Scale, which consists of 10 items (e.g., "I take a positive attitude toward myself") evaluated on a scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The reliability of this scale was .93.

Subjective Well-Being. To assess participants' affect, we used the Positive Affect Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988), which measures positive (10 items; e.g., "interested," "enthusiastic") and negative (10 items; e.g., "nervous," "upset") affect separately using a scale ranging from 1 (*very slightly*) to 5 (*extremely*). The five-item Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) was used to assess life satisfaction (e.g., "I am satisfied with my life"), using a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Reliabilities were as follows: positive affect $\alpha = .90$, negative affect $\alpha = .91$, and satisfaction with life $\alpha = .94$. An aggregate subjective well-being score (SWB; $\alpha = .91$) was calculated by standardizing and summing life satisfaction scores with positive affect scores and subtracting the negative affect score from them (Diener & Lucas, 1999).

Results

Beneficence Item Selection and Reliability. Based on a review of the relevant literature, a pool of eight items was generated to assess beneficence. These items aimed to be face-valid and consistent with the definition of the construct. Instead of measuring actual behavior or listing a number of pro-social activities, as measures of pro-social behavior tend to do (e.g., Bushman & Anderson, 2009; Pavey et al., 2012), the beneficence items asked participants about their subjective feeling of having done good things for other people. All items were rated on a Likert scale ranging from 1 (*not at all true*) to 7 (*very true*). All standard deviations exceeded 1.0, indicating adequate variability. All skewness and kurtosis values were below 1.0. From these eight items, one item was removed that correlated so highly with another (.75) that it was deemed redundant (Clark & Watson, 1995). Then the next three with the lowest item-total correlations were eliminated. The remaining four items (see the appendix) had adequate reliability (Cronbach's $\alpha = .81$). We examined the data for gender and age differences and found that while gender was not associated with differences in beneficence satisfaction, older subjects experienced slightly more beneficence satisfaction than younger ones ($R^2 = 2.6\%$, $p = .0028$).

Table 1 Study 1: Means, Standard Deviations, and Zero-Order Correlations Between Study Variables and Beneficence

	M	SD	1	2	3	4	5	6	7
1. Beneficence	4.65	1.16	—						
2. Agreeableness	3.77	0.69	.43	—					
3. Empathy	3.62	0.56	.37	.56	—				
4. Pro-social aspirations	5.18	1.29	.47	.44	.51	—			
5. Vitality	4.09	1.39	.57	.38	.24	.26	—		
6. Self-esteem	3.01	0.68	.56	.42	.22	.18	.59	—	
7. Subjective well-being	4.12	2.56	.57	.40	.21	.21	.70	.75	—
8. Pro-social behavior	2.39	1.04	.34	.19	.20	.34	.27	.15	.22

Note. All correlations are significant on a 99% confidence level.

Convergent Validity. To assess convergent validity, correlations between beneficence and other criterion-related variables were calculated (see Table 1). As expected, beneficence was positively and significantly correlated with agreeableness, empathy, pro-social aspirations, vitality, self-esteem, and subjective well-being, supporting its validity.

Mediation by Beneficence. To test our hypothesis that the experience of beneficence would mediate the relation between pro-social behavior and subjective well-being, we used the PROCESS macro in SPSS (Hayes 2013, Model 4) with pro-social behavior as the independent variable, beneficence as the mediator, and SWB as the dependent variable. This analysis revealed that the path from pro-social behavior to beneficence was significant ($\beta = .336$, $SE = .0516$, $p < .001$), and the path from beneficence to SWB was also significant ($\beta = .568$, $SE = .0479$, $p < .001$). However, the direct path from pro-social behavior to SWB was reduced to nonsignificance ($\beta = .0263$, $SE = .0478$, $p = .583$). Bootstrapping with 1,000 samples revealed that the mediation model was significant, with a 95% confidence interval (CI) excluding zero [.137, .253]. A similar mediation model was tested for both vitality and self-esteem, producing similar evidence of full mediation through sense of beneficence.

Interpretation

The Brief Beneficence Satisfaction Scale had satisfactory psychometric properties and demonstrated convergent validity by being moderately related to agreeableness, empathy, pro-social (community) aspirations, vitality, self-esteem, and subjective well-being. Results also showed that beneficence satisfaction fully mediated the relation between pro-social behavior and subjective well-being, as well as vitality and self-esteem outcomes. This gave support for the idea that pro-social behavior would lead to a sense of beneficence, which in turn can account for the well-being effects of pro-social giving.

Given the cross-sectional and preliminary nature of this study, a number of alternative hypotheses remain plausible. In Study 2, we further test the robustness of this effect by also examining the potential mediational role of other psychological satisfactions, notably the three basic psychological needs found by Weinstein and Ryan (2010) to mediate relations between pro-social behavior and well-being outcomes.

STUDY 2

To provide a more comprehensive test of the effect of beneficence on well-being, Study 2 assessed the interrelations between beneficence satisfaction; psychological need satisfactions concerning autonomy, competence, and relatedness; and subjective well-being. We predicted that beneficence satisfaction would correlate positively with the three psychological need satisfactions, as well as with well-being. More crucially, we had two contrasting hypotheses: First, it could be predicted that the three psychological needs would fully mediate the relationship between beneficence and well-being. In contrast, it could also be that beneficence's effect on well-being would remain significant even when controlling for the satisfaction of the three needs for autonomy, competence, and relatedness, indicating that this experience of contributing to others has some additional direct contribution to well-being.

Method

Participants and Procedure. Participants were recruited through Amazon Mechanical Turk. Of the 374 people answering the survey, 42 were omitted using the same criteria applied in Study 1, leaving a final sample of 332 (88.8%). Mean age was 38 (range = 18–76), and 62% were women. The majority identified as Caucasian (73%); the rest was composed of Asians (10%), African Americans (7%), Hispanics (7%), Native Americans (0.3%), and 3% who preferred not to say.

Measures

Subjective Well-Being. SWB was assessed as in Study 1 using the PANAS (Watson et al., 1988) and SWLS (Diener et al., 1985). Reliabilities were as follows: positive affect $\alpha = .91$, negative affect $\alpha = .94$, satisfaction with life $\alpha = .93$, and aggregate subjective well-being $\alpha = .91$.

Table 2 Study 2: Confirmatory Factor Analysis for a Four-Factor Solution Showing Regression Weights and Factor Intercorrelations

Item	Autonomy	Competence	Relatedness	Beneficence
I feel a sense of choice and freedom in the things I undertake.	.730			
I feel that my decisions reflect what I really want.	.719			
I feel my choices express who I really am.	.808			
I feel I have been doing what really interests me.	.694			
I feel confident that I can do things well.		.919		
I feel capable at what I do.		.811		
I feel competent to achieve my goals.		.914		
I feel I can successfully complete difficult tasks.		.696		
I feel that the people I care about also care about me.			.748	
I feel connected with people who care for me and for whom I care.			.911	
I feel close and connected with other people who are important to me.			.884	
I experience a warm feeling with the people I spend time with.			.647	
I feel that my actions have a positive impact on the people around me.				.890
The things I do contribute to the betterment of society.				.567
In general my influence in the lives of other people is positive.				.831
I have been able to improve the welfare of other people.				.633

	Competence	Relatedness	Beneficence
Autonomy	.783 [.737, .821]	.597 [.522, .662]	.797 [.754, .833]
Competence		.529 [.446, .602]	.742 [.689, .786]
Relatedness			.747 [.695, .791]

Note. Standardized regression weights of the items on their corresponding factors.
Note. Standardized factor intercorrelations with 95% confidence intervals.

Basic Psychological Need Satisfactions. For satisfaction of SDT's three basic needs for autonomy, competence, and relatedness, the satisfaction items from the Basic Need Satisfaction and Frustration Scales (Chen et al., 2015) were used. The scale includes four items measuring satisfaction of each of the three needs—for example, "I feel my choices express who I really am" for autonomy (α = .82), "I feel capable at what I do" for competence (α = .90), and "I feel connected with people who care for me, and for whom I care" for relatedness (α = .87). Items are rated on a scale ranging from 1 (*not at all true*) to 7 (*very true*). The Need Frustration subscales were not used.

Beneficence. For sense of beneficence, we used the scale developed in Study 1 (α = .83).

Pro-Social Behavior. For pro-social behavior, the same scale was used as in Study 1 (α = .91).

Results and Discussion

Factor Analysis. Before the main analyses, we conducted a principal-component analysis of the 12 need satisfaction variables and four beneficence variables to see whether beneficence was psychometrically independent of the other three needs. Examination of the scree plot showed that the four-factor solution was the one explaining the largest amount of total variance while retaining individual factors that all had significant explanatory power (0.14, 0.14, 0.16 and 0.16), even though its eigen-value (0.94) was slightly below the conventionally used standard of 1.0. It was nevertheless preferred, as it was able to explain more total variance than a three-factor solution (0.56 vs. 0.59), and as all four factors were theoretically meaningful and able to explain a significant amount of proportional variance (all proportional variances > 0.14). Confirmatory factor analysis with the proposed four-factor solution using maximum likelihood estimates showed adequate fit, χ^2 = 296.902, $p < .001$, NFI = .917, CFI = .943, RMSEA = .078, 95% CI [.068, .089]; see Table 2 for regression weights and intercorrelations between factors. We further wanted to examine the separateness of beneficence from pro-social behavior by comparing two CFA models: one with five factors (autonomy, competence, relatedness, beneficence, and prosocial behavior) and the other with beneficence and pro-social behavior merged into one factor resulting in four factors. A comparison of the fitness indicators showed that the model where beneficence and pro-social behavior were separate (χ^2 = 622.502, NFI = .881, CFI = .915, RMSEA = .080) was a clearly better fit compared to the model where they were merged into the same factor (χ^2 = 1305.304, NFI = .750, CFI = .779, RMSEA = .128).

Preliminary Analysis. Table 3 presents the means, standard deviations, and intercorrelations of subjective well-being, need satisfaction measures, beneficence, and pro-social behavior. As in previous research (e.g., Ryan, Bernstein, & Brown, 2010), the three needs for autonomy, competence, and relatedness were correlated positively with each other and with well-being. As

Table 3 Studies 2–3: Means, Standard Deviations, and Intercorrelations of Study Variables

	M	SD	1	2	3	4	5	6
Study 2								
1. Autonomy	4.52	1.30	—					
2. Competence	5.05	1.31	.68	—				
3. Relatedness	5.22	1.27	.55	.50	—			
4. Beneficence	4.51	1.23	.65	.63	.63	—		
5. SWB	4.28	2.57	.71	.69	.54	.63	—	
6. Prosocial behavior	2.44	1.11	.24	.30	.18	.41	.29	—
Study 3								
1. Autonomy	5.35	1.31	—					
2. Competence	4.35	1.42	.29	—				
3. Relatedness	5.44	1.81	.28	−.03*	—			
4. Beneficence	4.15	1.73	.31	.29	.46	—		
5. Situational well-being	6.64	1.45	.38	.33	.32	.38	—	

Note. SWB = subjective well-being. Correlation marked with * was nonsignificant.
All other correlations were significant at the $p < .05$ level or greater.

regards beneficence, it was similarly correlated positively with both the psychological needs and well-being. It is also worth noting that the positive correlations of beneficence were in the same range as the correlations of the three psychological needs. Initial analysis showed that there were no significant gender differences in any of the studied variables, so gender was not considered further.

Primary Analysis. We first conducted a mediation analysis to see whether beneficence would mediate the relations between pro-social behavior and well-being. Following the procedures of Study 1 and again using the PROCESS macro Model 4, we established that the path from pro-social behavior to beneficence was significant ($β = .410$, $SE = .0502$, $p < .001$), and the path from beneficence to SWB was also significant ($β = .613$, $SE = .0469$, $p < .001$). As in Study 1, the direct path from pro-social behavior to SWB was reduced to nonsignificance ($β = .0415$, $SE = .0469$, $p = .377$). Bootstrapping with 1,000 samples revealed that the mediation model was significant, with a 95% CI excluding zero [.186, .337].

Our main interest was to look at whether beneficence has a direct effect on well-being independently of the SDT's three basic psychological needs. To test this hypothesis, we conducted two regression analyses using SWB as the dependent variable (DV). In Step 1, the three measures of need satisfaction were regressed on the DV, with the beneficence score entered in Step 2 as a further independent factor. The regression analysis showed that autonomy, competence, and relatedness had standardized coefficients of .382 [.283, .481], .353 [.257, .449], and .155 [.0702, .239], respectively (all $ps < .001$) in Step 1, $F(3, 328) = 198$, $p < .001$, $R^2 = 0.60$. These results replicate past research on the independent effect of the three needs on SWB (e.g., Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Ryan et al., 2010). In Step 2, when beneficence was added, $F(4, 327) = 201$, $p < .001$, $R^2 = 0.61$, the standardized coefficients for autonomy, competence, relatedness, and beneficence were, in turn, .342

[.239, .444], $p < .001$; .315 [.216, 414], $p < .001$; .106 [.0146, .197], $p = .0230$; and .143 [.0392, .247], $p = .0071$. The change in total variance explained, $ΔR^2 = .01$, was statistically significant, $F(1, 327) = 7.4$, $p = .007$.

Mediation by Psychological Needs. To test whether the three psychological needs would mediate the relations between beneficence and well-being, we used PROCESS macro Model 6, which conducts a mediation analysis for multiple mediators (Hayes, 2013). The results showed that the paths from beneficence to autonomy ($β = .650$, $SE = .0418$, $p < .001$), competence ($β = .326$, $SE = .0502$, $p < .001$), and relatedness ($β = .445$, $SE = .0579$, $p < .001$) were all significant. As already shown above, the paths from autonomy, competence, and relatedness to SWB were all significant. The direct path from beneficence to SWB remained significant ($β = .143$, $SE = .0527$, $p < .007$). The bootstrapping for indirect effects showed that the total indirect effect, 95% CI [.386, .609], as well as the indirect effects through autonomy [.150, .328] and competence [.055, .168] were significant, but the indirect effect through relatedness was not significant [−.0014, .107].

Interpretation

The results of this study replicated previous research on independent effects of the three needs for autonomy, competence, and relatedness on subjective well-being (e.g., Ryan et al., 2010). They also replicated the findings from Study 1 by showing that beneficence fully mediated the relations between pro-social behavior and SWB. As regards the positive correlation between beneficence and SWB, it was partially mediated by the three psychological needs. We also tested for individual indirect effects through mediators, and the results showed that autonomy and competence were significant individual mediators. Satisfaction of the needs for autonomy and competence thus seems to play some role in explaining the well-being

benefits derived from feeling beneficent, as predicted by self-determination theory (Weinstein & Ryan, 2010). However, the mediation was not full, as beneficence satisfaction was shown to have some independent effect on well-being not accounted for by the satisfaction of the three needs. When autonomy, competence, relatedness, and beneficence were simultaneously regressed on SWB, all four variables remained significant independent predictors. Additionally, the increase in total variance explained when beneficence was added to the model was small but statistically significant. Results thus supported the hypothesis that the sense of beneficence can be an independent predictor of well-being over and above these basic psychological need satisfactions. Together, the four variables explained 61% of the total variance in subjective well-being.

STUDY 3

In addition to general well-being, many researchers have pointed out the importance and relative independence of situational in-the-moment well-being from this more global evaluation (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Wirtz, Kruger, Scollon, & Diener, 2003). Different time frames can lead to different conclusions about how certain factors influence well-being, as reviewed by Schwartz, Kahneman, and Xu (2009). They even argue that different forms of information processing are used to answer questions on different time levels: When reporting on a "specific *recent episode*, people can draw on episodic memory," whereas "*global* reports of past feelings are based on semantic knowledge" (Schwartz et al., 2009, p. 159; emphasis in the original). Furthermore, especially moments of "peak affect intensity" have been shown to play an important role in wellness (Fredrickson, 2000; Fredrickson & Kahneman, 1993).

Accordingly, in Study 3, the aim was to determine whether beneficence would emerge as an independent predictor of well-being in especially happy situations. In particular, participants were asked to recall "the single happiest event" from the last 2 weeks. First, they were asked to note in a few sentences what the event was and then answer a survey based on how they felt during that moment. The aim was to replicate findings by Sheldon, Elliot, Kim, and Kasser (2001), who showed that autonomy, competence, and relatedness predicted well-being experienced during "most satisfying events," while adding beneficence as a fourth predictor of well-being. Once again, we had two hypotheses: First, we predicted that the three psychological needs would mediate partially or fully the relations between beneficence and well-being in these peak happiness moments. Second, we also tested the prediction that beneficence could emerge as an independent and significant fourth predictor of well-being experienced during especially happy events.

Method

Participants and Procedure. Participants were recruited through Amazon Mechanical Turk. From the original 261

answers, those with an inattention scale score of 20 or more were eliminated (see Maniaci & Rogge, 2013), leaving 180 participants (69%). The large number of participants not finishing the survey might reflect the fact that the survey was longer than those usually used in MTurk, as it included measures being used for a separate study. The mean age was 38 (range = 18–70), and 56% were women. The majority identified as Caucasian (82%), with the rest being Hispanic (5.5%), Asian (5.0%), African American (3.9%), Native American (0.6%), and 2.2% preferring not to say.

Measures

Situational Subjective Well-Being. As in Studies 1 and 2, we drew on the PANAS and four items from the SWLS, though here we asked participants to evaluate how much they felt these feelings and emotions during the happy event. The reliability for these measures was as follows: positive affect $\alpha = .87$, negative affect $\alpha = .84$, and situational satisfaction $\alpha = .67$. An aggregate situational well-being score was also calculated ($\alpha = .81$) by standardizing and adding situational satisfaction scores with positive affect scores and subtracting the negative affect score (cf. Diener & Lucas, 1999).

Basic Psychological Need Satisfactions. Satisfaction of autonomy, competence, and relatedness was measured with three items each (Sheldon et al., 2001), rated on a scale ranging from 1 (*not at all true*) to 7 (*very true*). The items started with the prompt "During this event I felt. . .," and examples included "free to do things my own way" for autonomy, "very capable in what I did" for competence, and "a strong sense of intimacy with the people I spent time with" for relatedness. For beneficence, to balance item length with the Sheldon et al. scales, we used three of the four items from Study 1. Reliabilities (α) were autonomy = .76, competence = .61, relatedness = .93, and beneficence = .84.

Results and Discussion

Preliminary Analysis. Table 3 presents the means, standard deviations, and correlations of the need satisfaction measures, beneficence, and well-being. As in Study 2, all three needs and beneficence were positively correlated with well-being and with each other, with the exception of a nonsignificant correlation between competence and relatedness in the happy event. Initial analyses also showed that there was one significant gender difference in the variables. Specifically, women ($M = 17.1$) experienced more relatedness satisfaction than men ($M = 15. 4$) during their happiest moments ($t = 2.14$ $p = .0337$). When gender was added as a control variable to the regression model in the main analysis, all four needs remained significant predictors of well-being, and gender did not have any significant independent effect on well-being.

Independent Effects on Well-Being. To test the two contrasting hypotheses, we examined whether beneficence would

have a direct effect on well-being independent of the three psychological needs. For this, we conducted a hierarchical regression analysis, using situational well-being as the dependent variable (DV). In Step 1, the DV was regressed on the three measures of need satisfaction, with beneficence score being entered in Step 2. In Step 1, $F(3, 176) = 21$, $p < .001$, $R^2 = 0.26$, autonomy, competence, and relatedness had standardized coefficients of .228, 95% CI [.0877, .368], $p = .00159$; .267, 95% CI [.133, .402], $p < .001$; and .266, 95% CI [.131, .400], $p < .001$, respectively. In Step 2, when beneficence was added, $F(4, 175) = 17$, $p < .001$, $R^2 = 0.28$, the standardized coefficients for autonomy, competence, relatedness, and beneficence were, in turn, .211, 95% CI [.0707, .351], $p = .00342$; .226, 95% CI [.0862, .366], $p = .00169$; .198, 95% CI [.0488, .347], $p = .00959$; and .154, 95% CI [.00074, .307], $p = .0489$. The change in total variance explained, $\Delta R^2 = .02$, was statistically significant, $F(1, 175) = 3.99$, $p = .047$.

Mediation Through Need Satisfaction. We also tested whether need satisfaction would mediate the relations between beneficence satisfaction and well-being using the same procedure as in Study 2 and the PROCESS macro Model 6. The analysis showed that the paths from beneficence to autonomy ($\beta = .312$, $SE = .0712$, $p < .001$), competence ($\beta = .218$, $SE = .0739$, $p = .0036$), and relatedness ($\beta = .463$, $SE = .0691$, $p < .001$) were all significant. Additionally, the paths from autonomy, competence, and relatedness to SWB were also all significant, as shown in the regression analysis above. The direct path from beneficence to SWB remained significant ($\beta = .154$, $SE = .0777$, $p < .0489$). The bootstrapping for indirect effects showed that the total indirect effect, 95% CI [.112, 341], was significant, and that the indirect effects through autonomy [.026, .132], competence [.011, .104], and relatedness [.029, .168] were all significant.

Interpretation

This study used a different time frame and different measures of need satisfaction and well-being, and yet results largely replicated the results from Study 2. When the three psychological needs and beneficence were simultaneously regressed on situational well-being, they all emerged as statistically significant independent predictors. At the same time, the three psychological needs partially mediated the relationship between beneficence and situational well-being, with all three needs as independently significant mediators, as predicted by self-determination theory. However, as mediation was only partial, this indicates that there was some unique connection between beneficence and situational well-being unaccounted for by the three psychological needs. Thus, the results suggest that even when considering just our happiest moments, feelings of beneficence play an important role.

STUDY 4

In Study 2, we examined global need satisfaction and well-being, and in Study 3, we examined situational well-being during a peak happiness experience. In Study 4, we change the focus to within-person variance in well-being and need satisfaction. Specifically, in Study 4, we used a daily diary method to examine whether changes in sense of beneficence have an independent effect in predicting daily fluctuations in well-being. For 10 sequential evenings, participants rated their well-being and need satisfaction during the past day. This research aimed to replicate the previous findings that have shown that day-to-day satisfaction of the three needs for autonomy, competence, and relatedness predicted daily fluctuations in well-being (e.g., Reis et al., 2000; Ryan et al., 2010), but in this case, beneficence was added as a fourth predictor of well-being to see whether it has an independent effect on well-being and whether all three previously established needs remained as significant predictors of well-being. Once again, we had two hypotheses: We predicted that need satisfaction would mediate the relationship between beneficence and well-being. Yet we also predicted that beneficence could have an independent effect on well-being.

Method

Participants and Procedure. Participants were 89 university students aged between 18 and 24 ($M = 19.9$), of whom 66% were female. The majority of the sample identified as Asian (44%) or Caucasian (38%), with the remainder composed of African Americans (7%), Hispanics (7%), Pacific Islanders (1%), and 4% who preferred not to say. Results from four participants were omitted from the final analysis, either for answering fewer than seven of the daily surveys or because of poor data quality (repeated answers), so the final sample size was 85. To take part in the study, students registered through an online system in exchange for extra credit. Three days before the study, participants filled out an online prestudy survey that evaluated their trait-level need satisfaction. During the primary study, on 10 consecutive days participants were given the survey link through email at 6 p.m. and asked to complete it before the end of the day.

Person-Level Need Satisfaction Measures. These measures were collected from participants in the prestudy. For satisfaction of the three needs for autonomy, competence, and relatedness, the same Basic Need Satisfaction and Frustration scales (Chen et al., 2015) were used as in Study 2. For beneficence, the four-item scale from Study 1 was used. Reliabilities (α) were as follows: autonomy = .86, competence = .90, relatedness = .82, and beneficence = .84.

Day-Level Measures. The following measures were collected from participants on each of the 10 days, rated to reflect their experiences throughout the day.

Table 4 Study 4: Descriptive Statistics and Zero-Order Correlations Between Day-Level Variables

	M	SD	Pos.	Vital.	Auto.	Comp.	Rela.	Bene.
Positive affect	16.9	5.1	—	.74	.67	.59	.66	.66
Vitality	19.0	6.7		—	.74	.71	.59	.69
Autonomy	4.6	1.2			—	.61	.60	.64
Competence	4.0	1.4				—	.47	.71
Relatedness	4.5	1.3					—	.65
Beneficence	4.1	1.4						—

Note. All correlations were significant at the $p < .01$ level or greater.

Well-Being. Daily well-being was assessed in this study using two different measures. For positive affect, the modified Differential Emotions Scale (mDES; Fredrickson, 2013; Fredrickson, Tugade, Waugh, & Larkin, 2003) was used. It is a widely used scale (e.g., Cohn et al., 2009) that aims to encompass a broader range of positive emotions than traditionally used scales, such as the PANAS. It asks participants to "indicate the greatest amount that you've experienced each of the following feelings today" and includes 10 different feelings (e.g., joyful, glad, or happy *and* inspired, uplifted, or elevated) evaluated on a scale ranging from 0 (*not at all*) to 4 (*extremely*). For vitality, the same Subjective Vitality Scale (SVS; Ryan & Frederick, 1997) that was utilized in Study 1 was used, with participants asked to rate how well the items described "your experience today." The reliabilities for these measures were as follows: positive affect $\alpha = .93$ and vitality $\alpha = .92$.

Basic Psychological Need Satisfaction. To assess satisfaction of the three needs for autonomy, competence, and relatedness, the Balanced Measure of Psychological Needs scale (BMPN; Sheldon & Hilpert, 2012) was used. It included three items to assess each of the three needs (e.g., "I was free to do things my own way" for autonomy, "I took on and mastered hard challenges" for competence, and "I felt close and connected with other people who are important to me" for relatedness), evaluated on scale ranging from 1 (*not at all true*) to 7 (*very true*). Reliabilities were as follows: autonomy $\alpha = .84$, competence $\alpha = .90$, and relatedness $\alpha = .92$.

Beneficence. Beneficence was assessed using three of the items used in Study 3, evaluated on a scale ranging from 1 (*not at all true*) to 7 (*very true*). Reliability (α) was .91.

Results

Plan of Analysis. Because this study included multiple time points nested within persons, a multilevel modeling approach was adapted (Bryk & Raudenbush, 1992). This allowed us to consider day-level data (Level 1) nested within person-level data (Level 2). Following Bryk and Raudenbush (1992), all day-level variables were centered on the individuals' means; this way, they represented the daily deviation from each person's mean experiences. All person-level variables, in turn, were centered on sample means to represent the individual's relative standing within the group compared to other persons. Table 4 provides descriptive statistics and correlations for the person-level variables.

First, we conducted unconditional models to assess intraclass correlation (ICC) to see whether sufficient variance is present within person to continue with the analysis. Second, we constructed a model to test the effects of daily need satisfaction on two well-being indicators: positive affect and vitality. In a third model, we added as control variables gender, trait-level psychological need satisfaction, and whether it was the weekend because previous studies have shown that well-being varies systematically between weekdays and the weekend (Ryan et al., 2010). To control for autocorrelations in the longitudinal data (Marco & Suls, 1993; Reis et al., 2000), a first-order autoregressive covariance structure for Level 1 residuals was chosen (Goldstein, Healy, & Rasbash, 1994). This covariance structure treats observations that are closer in time as more highly correlated than observations further apart. Following Sadikaj, Moskowitz, and Zuroff (2011), this model was then compared to a random-intercept model that assumes no covariance between observations. The deviance test statistic was used to examine which of these two models provided a better fit. Results showed that the first-order autoregressive covariance structure had a better fit, and accordingly, it was adopted for the primary analysis.

The Effects of Basic Psychological Needs on Well-Being
Positive Affect. Results from the baseline ICC model showed that 51.8% of the variance in positive affect was at the within-person level, and 48.2% was at the between-persons level. Results for the third model, which included the control variables, are shown in Table 5. As can be seen, daily satisfaction of autonomy, competence, relatedness, and beneficence all predicted daily fluctuations in positive affect, even when controlling for each other and for trait-level need satisfaction, gender, and weekend effect. Daily autonomy predicted increased positive affect (ß = .646, 95% CI [.480, .811], $p < .001$), as did competence (ß = .256, 95% CI [.141, .371], $p < .001$), relatedness (ß = .674, 95% CI [.541, .808], $p < .001$), and beneficence (ß = .146, 95% CI [.00806, .284], $p = .038$). Gender emerged as a significant predictor, with men experiencing more positive

Table 5 Study 4: Results from Multiple-Level Model That Included All Control Variables

Variable	Positive Affect		Vitality	
	ß	*p*	ß	*p*
Daily autonomy	.646	<.001	.706	<.001
Daily competence	.256	<.001	.379	<.001
Daily relatedness	.675	<.001	.277	<.001
Daily beneficence	.146	.038	.171	.001
Gender	2.6	.005	1.8	.018
Weekend	.75	.067	.13	.650
Trait-level autonomy	.168	.265	.327	.011
Trait-level competence	−.108	.441	.059	.619
Trait-level relatedness	−.055	.717	−.268	.038
Trait-level beneficence	.852	<.001	.631	<.001

affect, and thus we tested for interaction effects between gender and the three needs and beneficence. None of these interaction effects were statistically significant.

Vitality. Of the variance in vitality, 47.8% was at the within-person level, and 52.2% was at the between-persons level. The results of the third model are shown in Table 5. Similar to positive affect, daily satisfaction of all three needs and beneficence predicted daily fluctuations in vitality, even when controlling for each other and for trait-level beneficence and need satisfaction, gender, and weekend effect. Daily autonomy predicted increased vitality (ß = .706, 95% CI [.587, .825], $p < .001$), as did competence (ß = .379, 95% CI [.296, .461], $p < .001$), relatedness (ß = .277, 95% CI [.181, .373], $p < .001$), and beneficence (ß = .171, 95% CI [.072, .271], $p = .001$). Gender again emerged as a significant predictor, with men experiencing more vitality. We tested for interaction effects between gender and the three day-level needs and beneficence. None of these interaction effects were statistically significant.

Mediation Analysis. To test whether satisfaction of the basic psychological needs would mediate the relations between beneficence and both well-being indicators, we followed Krull and MacKinnon's (2001) multilevel regression procedure for assessing mediated relations. For simplicity, we used a combined need satisfaction variable calculated by adding together the satisfaction of the three needs. Gender and weekend effect were used as control variables. We first calculated the relations between predictor (beneficence) and outcome (positive affect), which was significant (ß = .64, $SE = .041, p < .001$). Next, we examined the relations between predictor (beneficence) and mediator (combined need satisfaction). This was also significant (ß = .57, $SE = .018, p < .001$). Finally, we calculated the effect of beneficence and combined need satisfaction on positive affect, when they were simultaneously entered into the model. Results showed that both beneficence (ß = .10, $SE = .051$, $p = .046$) and combined need satisfaction (ß = .97, $SE = .067$, $p < .001$) emerged as significant, indicating partial mediation.

The Sobel test for indirect effects confirmed the presence of indirect effects ($z = 13.1, p < .001$).

Similar mediation analysis was conducted using vitality as the dependent variable. The relation between predictor (beneficence) and outcome (vitality) was significant (ß = .91, $SE = .045, p < .001$). The relation between predictor and mediator was already shown above. When we calculated the simultaneous effect of beneficence (ß = .18, $SE = .051, p < .001$) and combined need satisfaction (ß = 1.32, $SE = .067, p < .001$) on vitality, both were significant, indicating partial mediation. The Sobel test for indirect effects was significant ($z = 16.7$, $p < .001$).

Interpretation

Study 4 replicated the primary findings of Studies 2 and 3 using a study design that focused on predicting within-subjects fluctuations in well-being. More precisely, the study showed that need satisfaction mediated the relations between beneficence and both positive affect and vitality. However, the mediation was not full, and the study showed that daily changes in beneficence, in addition to changes in autonomy, competence, and relatedness, have an independent effect on both daily fluctuations in positive affect and daily fluctuations in vitality. This replicates the results of previous studies that have shown that autonomy, competence, and relatedness predict daily well-being (Reis et al., 2000; Ryan et al., 2010), but it adds a fourth predictor, beneficence. This shows that in addition to predicting general well-being and situational well-being in peak moments, beneficence has significant and independent short-term effects on changes in daily well-being.

GENERAL DISCUSSION

The purpose of the present series of studies was to affirm and extend research showing the strong importance of human benevolence on well-being and happiness, as well as to examine more closely why pro-social or benevolent behavior feels good and enhances well-being. Existing research has shown that benevolent giving is indeed important for well-being (e.g., Aknin, Barrington-Leigh, et al., 2013; Harbaugh et al., 2007), but little research had focused on the question of *why* benevolent giving leads to well-being.

Toward that end, we developed a brief scale to assess beneficence satisfaction, or the feeling that one has been benevolent. This was to capture what has been called the immediate "warm glow" attending acts of kindness (Andreoni, 1990). In Studies 1 and 2, we showed that this sense of beneficence fully mediated the relations between pro-social behavior and well-being. In addition, we wanted to see if this direct experiential satisfaction might independently impact well-being when controlling for the three psychological need satisfactions associated with autonomy, competence, and relatedness as specified in self-determination theory. Weinstein and Ryan (2010) previously

demonstrated that these basic need satisfactions mediate the relations of pro-social actions and wellness outcomes. In addition, other studies also explain this increase in well-being by increases in feelings of autonomy (Gebauer, Riketta, Broemer, & Maio, 2008; Weinstein & Ryan, 2010), competence (Aknin, Dunn, Whillans, et al., 2013), or relatedness (Aknin, Dunn, Sandstrom, & Norton, 2013; Aknin, Sandstrom, Dunn, & Norton, 2011).

Accordingly, our first general hypothesis was that the positive well-being benefits of pro-social behavior are at least partially explained by an increased sense of autonomy, competence, and relatedness. In general, all present studies supported this hypothesis. In Studies 2, 3, and 4, a mediation analysis showed that the connection between a sense of beneficence and well-being indeed was partially mediated by a sense of autonomy, competence, and relatedness. This result held true whether we measured general subjective well-being (Study 2), situational well-being during a particularly happy moment (Study 3), or daily fluctuations in well-being (Study 4). These studies thus replicated the results from Weinstein and Ryan (2010). More generally, results from Studies 2, 3, and 4 replicated previous research on basic psychological needs (e.g., Reis et al., 2000) by showing that autonomy, competence, and relatedness emerge as independent predictors of general well-being (Study 2), situational well-being during peak moments (Study 3), and daily fluctuations in well-being (Study 4).

At the same time, in Studies 2, 3, and 4, beneficence satisfaction remained an independent and statistically significant predictor of well-being even when controlling for autonomy, competence, and relatedness. This lends support for the second main hypothesis, according to which there would be unique well-being benefits to be derived from a sense of beneficence. In Study 2, when autonomy, competence, relatedness, and beneficence were simultaneously regressed on subjective well-being, the results showed that all four needs had significant and independent effects on well-being. Together, they were able to explain a significant amount of variance (61%). In Study 3, the results showed that beneficence as well as the three psychological needs correlated positively with situational well-being during a particularly happy moment, and when the four predictors were simultaneously regressed with situational well-being as the dependent variable, they all four emerged as statistically significant predictors. In Study 4, multilevel modeling was used to assess what predicts daily fluctuations in positive affect and vitality. Here too results showed that autonomy, competence, relatedness, and beneficence all emerged as significant independent predictors, even when controlling for each other, trait-level need satisfaction, gender, and weekend effect. Studies 2–4 together thus show that the sense of beneficence involves some well-being benefits not accounted for by the three psychological needs.

In accordance with recent calls for meta-analytic thinking (Cumming, 2014), we conducted a small meta-analysis of the effects of the four need satisfactions on well-being across Studies 2, 3 and 4. All three studies similarly examined how the four need satisfactions influence well-being when controlling for

each other. Note that the time frame as well as the measure of well-being used varied across the studies: Study 2 used SWB, Study 3 used situational well-being, and Study 4 used positive affect. Thus, the results of this meta-analysis are merely suggestive. For the purpose of the meta-analysis, we calculated Cohen's *d* effect sizes of the variables. Using ESCI software, we then calculated the overall effect size for each variable, using a random effects model and an unbiased estimate for *d*, as recommended by Cumming (2012, 2014). Based on these results, the overall effect size for autonomy was .587 [0.410, 0.765], for competence .516 [.325, .707], for relatedness .457 [.198, .717], and for beneficence .273 [.181, .365]. These results underscore the robustness of the finding that all four need satisfactions have an independent effect on subjective well-being.

This research makes a number of contributions to current research on benevolent giving and pro-social behavior. First, it aims to move the conversation from asking *whether* pro-social behavior is beneficial to well-being to asking *why* pro-social behavior is beneficial. In this spirit, we developed a new scale to assess the degree to which people experience beneficence, understood as a sense of having a positive, pro-social impact. This scale demonstrated adequate psychometric properties and divergent and convergent validity across the studies.

Second, our results show that four key experiential satisfactions substantially explain why pro-social behavior is associated with enhanced well-being. The evidence showed that the three basic psychological needs proposed by self-determination theory—autonomy, competence, and relatedness (Deci & Ryan, 2000)—have a role in explaining the well-being benefits of a sense of pro-social impact. In this sense, the present research gives empirical support for Dunn and colleagues' (2014, p. 43) suggestion that pro-social behavior is "most likely to produce happiness" under conditions that satisfy these three needs. It also broadens the findings of Weinstein and Ryan (2010). While they looked specifically at helping, the present research looks at the broader notion of a sense of beneficence and shows that even its effects on well-being are partially explained by satisfaction of the three psychological needs.

At the same time, the present research introduces a fourth predictor, beneficence satisfaction per se, showing that it predicts unique variance in well-being beyond the three psychological needs both in specific pro-social situations and in day-to-day well-being. This is an important result from the point of view of research on pro-social behavior and well-being. Previous research has mostly suffered from not controlling for other potential explanations for well-being benefits. For example, any study involving face-to-face interaction with the benefactor could improve well-being, not because of pro-social giving, but because it satisfies a need for relatedness or even approval. The present research shows that the sense of beneficence itself can affect well-being, even when face-to-face interactions do not occur, and when relatedness and other psychological needs are controlled for. It thus provides more direct evidence that it is the sense of pro-social giving itself that can improve our well-being.

Beneficence and the Existing Psychological Needs

Although well-being benefits of beneficence were partially explained by sense of autonomy, competence, and relatedness, the present results showed that when beneficence satisfaction was added to the mix, it also had an independent effect on well-being across the studies. From the point of view of self-determination theory, this opens up the question of how to account for these findings. Could beneficence even be a separate psychological need on par with autonomy, competence, and relatedness?

Within research on psychological needs, there has been an ongoing openness to examine the possibility of alternative psychological needs beyond those for autonomy, competence, and relatedness (Deci & Ryan, 2000; Ryan & Deci, 2000).

Although some additional candidates have been proposed and tested (e.g., see Sheldon et al., 2001), beneficence has notably not been among these candidates. Ryan and Deci (2004, p. 22) argue that, among other characteristics, "to qualify as a need, a motivating force must have a direct relation to well-being." The present results show that beneficence indeed predicts unique variance in well-being, even when controlling for the three established needs. It is thus fair to say that beneficence as a candidate need has passed one crucial test for a potential psychological need.

At this point, however, it is premature to make any conclusions based on this, as establishing something to be a psychological need would require a much wider line of evidence than what is possible to examine here. For example, Baumeister and Leary (1995) suggest that there are nine criteria for identifying basic psychological needs, and Deci and Ryan (2000) similarly identify a number of necessary criteria. Among other things, one should be able to show how the candidate need elicits goal-oriented behavior designed to satisfy it; demonstrate how it affects humans across cultures, developmental epochs, and social contexts; show how it affects cognitive processing; and preferably give a plausible evolutionary rationale for the existence of the need. Having a positive effect on well-being independent of other established needs is therefore a necessary, but by far not a sufficient, condition for a basic psychological need. Therefore, although the present article raises the question about beneficence as a *candidate* psychological need, establishing its nature as a basic need is a task for the future. The present article has merely opened up the question, and we call for more research on the topic to see whether there indeed is something unique about beneficence.

The current research also has relevance to research on eudaimonia (Deci & Ryan, 2008; Ryff & Singer, 2008), which aims to identify the ways of living that are inherently good for humans. The present research provides some support for the Aristotelian idea that friendliness and goodwill toward others indeed are good for the person performing these acts. The current research is also relevant to evolutionary psychology, which attempts to understand both the potential selective advantages of pro-social actions and the emergence of proximal supports needed to promote behaviors that would have yielded these advantages (Ryan & Hawley, in press). It is noteworthy that even in early development, children seem to show intrinsic satisfaction in acting pro-socially and helpfully (Warneken & Tomasello, 2008). Because acts of kindness and a tendency for benevolence can impact both reciprocal altruism (Trivers, 1971) and possibly (though more controversially) group or multilevel selective processes (e.g., Nowak, Tarnita, & Wilson, 2010), the positive feelings associated with feeling beneficent may have emerged to directly support such behaviors. Understanding the proximal supports for adaptive behaviors may contribute to scientific consilience by helping better connect more immediate psychological dynamics and the ultimate causes of human behavioral patterns.

LIMITATIONS AND FUTURE RESEARCH

There are a number of limitations to the present research that need to be taken into account when interpreting and generalizing the results. First, all studies were cross-sectional, and thus one should be wary of making any causal inferences. Future research studies that would use experimental designs to establish causality are needed. This is especially crucial for the testing of mediation effects. Second, all the participants were from the United States and were recruited either from college populations or from adult Amazon MTurk users. Even though the latter sample taps into a wider range of age and educational backgrounds, it is also a selective population with certain limitations (see Buhrmester, Kwang, & Gosling, 2011). This calls for future research that would replicate the present results utilizing a wider variety of samples and especially involving participants from other countries and cultural backgrounds. Third, the studies utilized self-reported variables that focused on psychological well-being and mood. To overcome the inherent shortcomings of self-reporting, it would be important to conduct research that uses behavioral or neurological measures of outcome variables. Finally, all of the work here looked at short-term effects, and thus both longer-term outcomes and longitudinal studies are warranted.

CONCLUSION

Adam Smith (1759, p. 1), most famous for promoting capitalism, already entertained the idea that "there are evidently some principles" in human nature that "interest him in the fortune of others . . . though he derives nothing from it except the pleasure of seeing it."

Other famous supporters of the idea that being able to give to others is crucial for human well-being include Aristotle, John Stuart Mill, and Buddha. As empirical research showing the positive impact of pro-social behavior has proliferated in recent years, it becomes timely to ask why pro-social behavior is good for well-being. The present research aimed to contribute to this

discussion by showing that there are four factors that seem to explain why giving feels good: As predicted by self-determination theory, the senses of autonomy, competence, and relatedness are increased when people are able to give, and they explain a large part of the well-being benefits of pro-social giving. At the same time, just the sense of being able to have a pro-social impact, what we call beneficence, also seems to be able to explain why pro-social behavior feels good. Understanding what makes pro-social behavior feel good makes it possible to design future opportunities for benevolent giving to be more satisfying and thus make people more prone to give in the future. Helping people find inherently satisfying ways to give to and help others could in turn be a step toward what philosophers call a life well lived.

Declaration of Conflicting Interests

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APPENDIX

Beneficence Scale to Assess Sense of Pro-Social Impact

1. I feel that my actions have a positive impact on the people around me.
2. The things I do contribute to the betterment of society.
3. I have been able to improve the welfare of other people.
4. In general, my influence in the lives of other people is positive.