

# Prosocial Behavior Leads to Happiness in a Small-Scale Rural Society

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Humans are extraordinarily prosocial, and research conducted primarily in North America indicates that giving to others is emotionally rewarding. To examine whether the hedonic benefits of giving represent a universal feature of human behavior, we extended upon previous cross-cultural examinations by investigating whether inhabitants of a small-scale, rural, and isolated village in Vanuatu, where villagers have little influence from urban, Western culture, survive on subsistence farming without electricity, and have minimal formal education, report or display emotional rewards from engaging in prosocial (vs. personally beneficial) behavior. In Study 1, adults were randomly assigned to purchase candy for either themselves or others and then reported their positive affect. Consistent with previous research, adults purchasing goods for others reported greater positive emotion than adults receiving resources for themselves. In Study 2, 2- to 5-year-old children received candy and were subsequently asked to engage in costly giving (sharing their own candy with a puppet) and non-costly giving (sharing the experimenter's candy with a puppet). Emotional expressions were video-recorded during the experiment and later coded for happiness. Consistent with previous research conducted in Canada, children displayed more happiness when giving treats away than when receiving treats themselves. Moreover, the emotional rewards of giving were largest when children engaged in costly (vs. non-costly) giving. Taken together, these findings indicate that the emotional rewards of giving are detectable in people living in diverse societies and support the possibility that the hedonic benefits of generosity are universal.

*Keywords:* pro-social behavior, well-being, happiness, generosity, psychological universal

To a far greater extent than any other species, humans help unrelated others even when doing so is personally costly. But why? Although numerous theories underscore the ultimate rewards of prosocial behavior for evolutionary fitness (reputational concerns, Bénabou & Tirole, 2006; kin selection, Hamilton, 1963; indirect reciprocity, Nowak, 2006; direct reciprocity, Trivers, 1971), an additional possibility is that humans give to others because giving feels good.

Indeed, a growing body of evidence supports the possibility that prosocial behavior promotes positive emotional rewards for the giver. Numerous correlational studies have documented a positive link between generous behaviors, such as offering time or money, and well-being. For instance, Borgonovi (2008) reported a positive relationship between volunteering and well-being across 29 states in America: the more people volunteered, the happier they reported being, even while accounting for a

number of demographic (e.g., age, marital status) and socioeconomic (e.g., income, education) factors. Moreover, the relationship between generous behavior and happiness is causal: North American university students randomly assigned to spend a small windfall on others were significantly happier at the end of the day than students assigned to spend money on themselves (Dunn, Aknin & Norton, 2008). The emotional benefits derived from giving can even be detected when givers have no direct contact with the beneficiary, and when experimenters are unaware of condition assignment, suggesting that happiness is not simply a result of building social relationships or anticipating social praise (Aknin, Fleerackers & Hamlin, 2014).

Even young children are motivated to help others in need (Hepach, Vaish & Tomasello, 2012; Warneken & Tomasello, 2006) and find giving rewarding. Twenty-two-month old toddlers given edible treats (e.g., teddy graham crackers) and subsequently asked to give some away were rated as happier when giving treats away than when receiving treats, regardless of whether the treats belonged to themselves or to an experimenter (Aknin, Hamlin & Dunn, 2012). In fact, toddlers were rated as happier when they gave away their own treat than when giving away a treat that belonged to the experimenter, suggesting that young children find giving to others rewarding even (or, especially) if it is personally costly. But is the warm glow of giving detected among adults and toddlers in North America a universal feature of human prosociality?

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Though these findings paint a promising portrait of the emotional rewards of engaging in prosocial behavior, research to date has been conducted almost exclusively in Western, educated, industrialized, rich and democratic (WEIRD) societies, whose people represent just 12% of the world's population (Henrich, Heine & Norenzayan, 2010a, 2010b). Although studies conducted in North America and other WEIRD populations are valuable in their own right, it may be problematic to use findings from WEIRD samples alone to draw conclusions about human beings in general. Indeed, it has recently been demonstrated that non-WEIRD populations respond differently than WEIRD populations in some common psychological tasks; for example, individuals from certain hunter-gatherer groups fail to show the Muller-Lyer visual illusion, traditionally considered to reflect universal characteristics of the visual system (McCauley & Henrich, 2006). More relevant to the domain of prosocial behavior, there is now evidence for considerable cross-cultural variation in humans' distributive and punitive tendencies during economic games (Henrich et al., 2010a). In these studies, prosocial responding (as measured by fair distributions, third-party punishment, etc.) has been shown to vary predictably with the level of market-integration and religiosity in a given society, suggesting that what have traditionally been considered universal forms of prosocial behavior vary considerably across cultures. Together, these findings highlight the importance of exploring whether and how phenomena observed in WEIRD populations generalize to humanity more broadly.

To address the possibility that the relationship between happiness and giving previously demonstrated in North American adults is a phenomenon of a WEIRD environment, Aknin and colleagues (2013) examined the relationship between financial generosity and well-being in adults from both Western and non-Western and rich and poor countries including Canada, India, South Africa, and Uganda. Results replicated earlier findings demonstrating that spending money on others led to greater happiness than spending money on oneself, suggesting that deriving emotional rewards from giving might represent a psychological universal, or "core mental attributes shared by humans everywhere" (Norenzayan & Heine, 2005, p. 763). Importantly, however, several of these studies used university student populations and adults recruited via an online marketplace. Thus, because these samples had access to formal education and/or the Internet, it is possible that participants were at least somewhat WEIRD: They were presumably (a) influenced by Western culture and ideals, (b) relatively wealthy within their societies, (c) raised in more urban and less-collective living environments, (d) living among a large population, and (e) living in societies with high levels of marketplace integration. Therefore, it currently remains unclear whether the cross-cultural similarity in happiness from giving observed by Aknin and colleagues (2013) reflects the existence of a universal mechanism that encourages prosociality, or rather stems from various experiences shared with individuals in the Western world.

The current investigation builds upon this earlier work by examining the emotional rewards of generosity in remote, small-scale rural villages on Tanna Island in Vanuatu, a small island nation in the South Pacific. In these villages, life is notably non-WEIRD, and inhabitants live in ways that more resemble the practices of our human ancestors. They survive on subsistence-based living—eating a plant-based diet filled with foods farmed in a large community garden or grown wild in nearby areas—and

reside in homes built from local, natural materials including earth floors and bamboo, sugarcane, or palm walls. Because the villages are inland and there is no running water, locals drink rainwater collected in the one functional water tank. Homes have no electricity, and there are no televisions, sharply limiting villager's access to Western or urban cultures. Traditional forms of learning are practiced and there is little emphasis on formal education. Most villagers rarely travel to the main island of Efate because travel consists of expensive airfare or long trip by boat. As such, this population diverges from previously studied populations in that they have minimal influence from Western culture (and even outright rejection of Western customs in "Kastom" villages), monetary scarcity, a rural, interdependent lifestyle, small population size, and very little marketplace integration. Because these dimensions have been shown to shape human culture and psychology (Henrich et al., 2001; Henrich, Ensimger, et al., 2010), the current examination offers a particularly strong test of the generalizability of earlier findings.

In the current studies, we explore whether prosocial behavior leads to emotional gains in both adults and 2- to 5-year-old Tannese children, using two methodologies previously validated in Western contexts with similar age groups (e.g., Aknin et al., 2012, 2013). In Study 1, adults were provided with the opportunity to purchase candy for either themselves or others before reporting their positive and negative affect. In Study 2, young children between the ages of 2–5 years were given candy and then asked to share some of their own or the experimenter's candies with a third-party while their emotional expressions were captured on videotape and later coded for happiness. If the emotional benefits of giving are detectable among adults and children in this small-scale, rural society, this would provide additional support for the possibility that people from diverse cultural contexts find generosity rewarding.

## Study 1

### Methods

Twenty-six adults living in small island villages on Tanna Island, Vanuatu ( $M_{age} = 45$ ; 15 women) participated in this study in exchange for 100 Vatu (approximately 1 US dollar), or about half a day's wage. Adults were recruited by word of mouth. This sample size reflects the total number of adults that we were able to recruit during our time in the village; there was no stopping rule other than participant availability. The study was conducted in a quiet local dwelling in the village. The experimenter was a local female adult, trained by the first author and blind to the experimental hypothesis. Because literacy was variable among participants, materials were administered verbally in Bislama, a linking language understood and spoken by most adults on Tanna Island. Materials were back-translated to ensure accurate translation (i.e., documents were translated from English to Bislama by one research assistant and then translated from Bislama to English by a second research assistant who had not seen or heard the intended information).

Adults were asked to report their current happiness and hunger on a 3-point scale (Do you feel happy right now? Do you feel hungry right now? 1 = not at all; 2 = a little; 3 = yes); hunger was included as a filler question. Next, adults were told that they had

earned an additional 100 Vatu, presented in the form of a 100 Vatu voucher, for their participation in the experiment (making their total earnings 200 Vatu). Adults were given the 100 Vatu voucher and asked to put the voucher away in their possession (e.g., put it in their pocket, if applicable) to encourage ownership of it. The researcher explained that the voucher was worth 100 Vatu so that participants who could not read were aware of its value. Then, adults were told that they could use their additional 100 Vatu voucher to purchase candy, a rare commodity in the village. Participants were shown the candy (cookies and lollipops) and were informed that it was valued at 200 Vatu, but that it would cost only their 100 Vatu voucher. Adults were randomly assigned to either the personal spending condition ( $n = 13$ ) in which they were informed they could purchase candy for themselves, or the prosocial spending condition ( $n = 13$ ), in which they were informed they could purchase candy for friends or family. Adults in both conditions were given the option of selecting between cookies, lollipops, or both, and made their selection by informing the research assistant who immediately handed the items to the participant. Adults in both conditions were also informed that they could opt out of purchasing candy, and instead redeem the voucher for 100 Vatu in cash for themselves approximately one week later. Participants were offered this opportunity to opt out of buying candy so that those in the prosocial spending condition would not feel forced to engage in a generous act, as past research has shown that the emotional benefits of giving are eliminated when people feel forced to give (Weinstein & Ryan, 2010). The 1-week time delay was included to subtly discourage participants from selecting the cash option (see Akinin et al., 2013, for a similar method). No one in the prosocial condition opted to take the cash for themselves, but three adults in the personal condition spending condition did; adults who selected the cash value in the personal spending condition were included in analyses because participants received a form of self gain. Results remain unchanged if these individuals are excluded.<sup>1</sup>

After making a purchasing decision, adults reported their current positive and negative affect (specifically: happiness, pride, strength, sadness, and anger<sup>2</sup>) on a 1–11 scale. In consultation with an expert in cross-cultural research, we decided to collect ratings using an image of a ladder rather than a verbal or written assessment of affect to clearly convey the linear nature of the scale; local research assistants indicated that this method was appropriate for respondents in the village. Specifically, participants were shown a picture of a wooden ladder with 11 rungs total and were informed that higher rungs on the ladder indicate a lot of an emotion, whereas lower rungs indicate very little of an emotion. Participants were instructed to point to the rung on the ladder that best expressed their current level of a given affect variable.

The affect items were chosen from one of the most frequently used affect measures (the Positive and Negative Affect Schedule; Watson, Clark & Tellegen, 1988) and/or for relevance to the research question (i.e., “happiness”) in consultation with an expert in cross-cultural research. In addition, to gain a thorough understanding of how our participants understood the positive and negative affect terms a Tannese research assistant provided a definition of each term and examples of when the emotion might be experienced. The research assistant explained the affect terms as follows: *Happiness* was defined as “happy” or “pleasure,” an emotion that may be prompted by community, social connection,

and enjoyable experiences (e.g., dancing, marriage, or gathering at the Nakamal- the village gathering spot). *Strong* was defined as “brave” or “a person with courage,” an emotion that may be prompted by completing a task or achieving a goal. Consistent with research on the two facets of the pride expression (e.g., authentic and hubristic pride; Tracy & Robins, 2007a, 2007b), *Pride* was defined as both “proud” and “show-off,” an emotion that occurred when people feel proud because they or their close others achieved important things that others have not, such as receiving a scholarship to study overseas. *Sadness* was defined as “no good” or “bad,” an emotion that someone would experience when a fellow villager dies or if they are missing something important to them. Finally, *Anger* was defined as “angry,” an emotion someone may experience if someone had stolen from them or their house was burned down by their family member as a result of land dispute.

Consistent with previous research (e.g., Dunn et al., 2008), the positive items happiness, pride, and strength were correlated and so were averaged to form an index of positive affect ( $\alpha = .56$ ); sadness and anger were not correlated and therefore were retained separately. Finally, adults reported their gender and year of birth.

## Results

Adults randomly assigned to buy candy for others reported higher levels of positive affect ( $M = 9.67$ ,  $SE = .21$ ) than adults assigned to buy candy for themselves ( $M = 8.51$ ,  $SE = .44$ ),  $t(24) = 2.383$ ,  $p < .03$  (two-tailed),  $d = .93$  (see Figure 1). Results remained relatively unchanged when baseline levels of happiness were added as a covariate,  $F(1, 23) = 4.364$ ,  $p < .05$  (two-tailed), partial  $\eta^2 = .16$  and were similar for men and women; when gender was added as a between subjects factor, neither the main effect of gender nor the interaction of Gender  $\times$  Condition was significant ( $F_s < 2.0$ ,  $p_s > .20$ ).

To explore whether these results are similar in direction and magnitude to previous research conducted in Canada and South Africa, we combined data from the present study with those collected by Akinin and colleagues (2013) into one data set. We analyzed positive affect reports standardized within each sample using a 2 (condition)  $\times$  3 (society) analysis of variance and found a significant main effect of condition,  $F(1, 217) = 15.609$ ,  $p < .001$  (two-tailed), partial  $\eta^2 = .07$ , such that participants who bought candy for someone else reported higher levels of positive affect than those who bought candy for themselves. Importantly, there was no interaction by society,  $F < .50$ ,  $p > .60$ , indicating that the emotional rewards of prosocial spending did not differ across sample. Thus, these findings replicate previous research conducted in South Africa and Canada using a similar experimen-

<sup>1</sup> The results of Study 1 remain the same when the three participants who opted to take the cash voucher instead of buying candy for themselves are removed from analyses,  $t(21) = 2.550$ ,  $p < .02$ ,  $d = 1.02$ .

<sup>2</sup> Participants were also asked to report their current level of excitement using the same 11-step ladder, but this item was removed from the composite positive affect score because back-translation of the term used in Bislama did not translate to “excitement” and because participant ratings on this item did not correlate with other positive affect items. Adding this question to the positive affect composite does not alter the findings of Study 1; participants purchasing treats for others were significantly happier ( $M = 9.731$ ,  $SE = .17$ ) than participants purchasing treats for themselves ( $M = 8.872$ ,  $SE = .33$ ),  $t(17.83) = 2.312$ ,  $p = .033$  (two-tailed),  $d = .91$ .

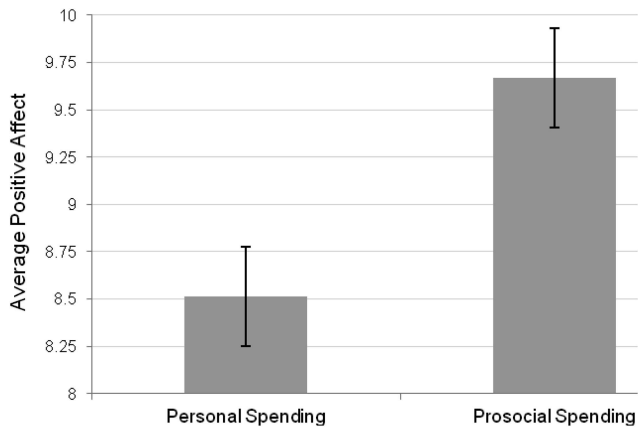


Figure 1. Average positive affect reported by adults in the personal and prosocial spending conditions in Study 1. Error bars display standard error of the mean.

tal design in a small-scale, rural society, and add to the growing body of evidence indicating that people throughout the world experience hedonic benefits from engaging in prosocial actions.

As a previous examination demonstrated that being prosocial makes young children happy as early as 22 months of age (Aknin et al., 2012), in Study 2 we explored the emotional benefits of giving and receiving among young children from the same village in Vanuatu. Children were provided with several pieces of candy and subsequently asked to share some of their candy with a puppet. Children's facial reactions to receiving and providing treats were captured on video and later coded for happiness. This investigation provides a convergent test of the emotional rewards of giving in Vanuatu with a different sample (children instead of adults) and different paradigm—using a within-subjects design and distinct dependent variable (smiling instead of self-reported affect).

## Study 2

### Methods

Twenty children from the same small-scale, rural villages on Tanna Island in Vanuatu (14 boys,  $X_{\text{age}} =$  approximately 2 years and 1 month, age range = 2 years 4 months–4 years 8 months)<sup>3</sup> participated in this experiment. A sample size of 20 children was determined in advance, as consistent with previous research utilizing the same paradigm (Aknin et al., 2012), to provide enough statistical power to detect a medium to large effect. Children were recruited by word of mouth at a village meeting and through the local childcare facility. The current sample included a wider age range than previously studied by Aknin and colleagues (2012) because the villages had an insufficient number of toddlers between 22 to 24 months. The experiment was conducted in the local village language. Translation accuracy was ensured through back-translations as in Study 1. Children sat on a caregiver's lap throughout the study.

**Warm-up.** The warm-up phase was designed to familiarize children with the testing situation, to introduce them to puppets, and to show them that puppets enjoyed eating treats (fruit-flavored candies). Each child was introduced to a plush dog puppet and

encouraged to wave at or touch him. The experimenter told the child that the puppet liked eating candies. Next, the experimenter gave the child and puppet their own empty bowl; the puppet's bowl had a false bottom that was used to create the illusion that the dog could eat. The experimenter then gave a candy to the puppet and then to the child while saying "Look! I'm going to give one of these candies to Dog, and I'm going to give one of these candies to you!" The dog "ate" the treat placed in its bowl by leaning its head in the bowl, making eating noises ("mmmm!" and "yum yum yum!"), and pushing the candy through the false bottom. The experimenter then placed a third "common" bowl with two additional candies next to the child's bowl and said "Now it's your turn! Do you want to give Dog a candy from this?" while pointing to the "common" bowl. Once the child did so, the dog puppet "ate" his candy just as when the experimenter gave him one. The research assistant then said, "Do you want to eat your candy too?," indicating that the final candy was for the child.

**Testing.** After the warm up, children participated in a five-part testing phase identical to that used in Aknin, Hamlin, and Dunn (2012). In Phase 1, children were introduced to a new puppet ("Monkey"), encouraged to wave at or to touch Monkey and were told Monkey liked candies. This phase allowed children to interact with the puppet if they wished. The experimenter then said, "Both you and Monkey have no candies right now." In Phase 2, the experimenter then "found" eight candies and said "Oh look! I found some more candies. I'm going to give them all to you" and poured them into the child's bowl, providing the child with valuable resources. The next three phases (Phases 3–5) were presented in counterbalanced order. In Phase 3, the experimenter "found" another candy (hidden in opaque bowls on the side of the table) and gave it to the puppet after saying, "Oh look! I found one more candy. I'm going to give it to Monkey!" This phase allowed the child to see the puppet receive a treat but did not require the child to interact with the puppet or to forfeit any of his or her own resources. In Phase 4, the experimenter "found" another candy and asked the child to give it to Monkey by saying "Oh look! I found one more candy. Will you give it to Monkey?" In Phase 5, the experimenter asked the child to give one of his or her candies to Monkey by saying "I do not see any more candies. Will you give one of your candies to Monkey?" Phase 4 was designed to provide an instance of non-costly giving because the child was provided with a candy to give to Monkey; Phase 5 was designed to provide an instance of costly giving, whereby giving to Monkey involved a personal sacrifice. Monkey's reaction to receiving candies was always the same: He pushed the treat through the false bottom of the bowl with his nose and excitedly said "yum yum yum!" If children hesitated to engage in any of the requested actions, the experimenter asked again and provided prompts if necessary. Afterward, all children were presented with a final candy and asked, "Do you want to take this candy for you? Or would you like to give this candy to Monkey?"

Children were videotaped during all phases. Emotional expressions were later coded from videos for happiness by four coders

<sup>3</sup> The age of six children in Vanuatu was estimated because parents did not have a copy of their child's birth certificate (if the child was born in a hospital) and/or could not remember their child's birthday. If this was the case, age was estimated based on peers and parents' recollections of their child's birth in comparison to other village members.



(average  $\alpha = .90$ ; range = 83–95). Three coders were from Canada and one was native to the region in Vanuatu; the coder from Vanuatu was included to confirm that Canadian coders could reliably identify facial expressions of happiness of children in Vanuatu. Coders were kept blind to experimental hypotheses and the Canadian coders watched audio-free video clips displaying only the child's face in each phase; these precautions were taken to ensure that contextual cues did not sway happiness ratings. All coders were instructed to code the child's emotional response to each action on a seven point Likert scale ranging from 1 (*extremely unhappy*) to 7 (*extremely happy*); the four coders' ratings for each phase were averaged together.<sup>4</sup>

## Results

Using two-tailed paired samples *t*-tests, we investigated the emotional rewards of giving and receiving. Specifically, using each child as their own control, we looked at within-participant differences in happiness displayed as children received treats from the experimenter and gave their own treat to Monkey. Children displayed significantly more happiness when engaging in costly giving—providing their own candy to Monkey ( $M = 5.24$ ,  $SE = .18$ )—than when they received candies themselves ( $M = 4.53$ ,  $SE = .23$ ),  $t(16) = 3.747$ ,  $p < .005$ ,  $d = .83$  (see Figure 2).<sup>5</sup> Similarly, children displayed more happiness when they engaged in a non-costly act of giving—provided the experimenter's candy to Monkey ( $M = 4.88$ ,  $SE = .20$ )—versus received candies from the experimenter,  $t(17) = 2.415$ ,  $p < .05$ ,  $d = .46$ . Finally, consistent with previous research conducted with toddlers under 2 years in Canada (Aknin et al., 2012), engaging in costly giving was more rewarding than engaging in non-costly giving: children displayed more happiness when giving their own candy to Monkey than when giving an identical candy provided by the experimenter to Monkey,  $t(15) = 2.511$ ,  $p < .03$ ,  $d = .30$ .

We examined prosocial tendencies by looking at what children chose to do with the final candy offered at the end of the experimental session. Two-thirds (13 out of 20) of children opted to give

the final candy to Monkey, whereas one third (7 out of 20) children took the candy for themselves. Although more children selected the prosocial option, choosing to give the last candy away rather than keep it for themselves, this difference was not significant;  $\chi^2 = 1.800$ ,  $p = .18$  (two-tailed). The tendency to give the final candy to Monkey was not associated with age or gender ( $r_s < .15$ ,  $p_s > .35$ ).

To explore whether these findings are similar in direction and magnitude to previous research conducted in North America, we combined data from the current investigation with previous research conducted by Aknin and colleagues (2012) into one data set and ran repeated measures analyses using sample as a between-subjects variable. Analyses revealed that children in both samples were rated as happier after sharing treats—either their own,  $F(1, 35) = 27.465$ ,  $p < .001$  (two-tailed), partial  $\eta^2 = .44$ , or the experimenter's,  $F(1, 36) = 7.010$ ,  $p < .02$  (two-tailed), partial  $\eta^2 = .16$ —than they were receiving treats themselves, with no interaction by sample,  $F_s < 1.1$ ,  $p_s > .30$ . Moreover, children in both samples were rated as happier after engaging in costly giving than non-costly giving,  $F(1, 34) = 31.373$ ,  $p < .001$  (two-tailed), partial  $\eta^2 = .48$ . The only significant difference between the happiness ratings between past research in Canada and the current research in Vanuatu was that Canadian children displayed larger happiness boosts for costly versus non-costly giving than did Vanuatuan children, as captured by the significant interaction between costly versus non-costly giving and sample,  $F(1, 34) = 8.218$ ,  $p < .01$  (two-tailed), partial  $\eta^2 = .20$ . This difference could be due to any number of differences between the two studies, including the difference in age of participants, culture, and the desirability of resource that children were asked to share. Nonetheless, children in both investigations displayed more happiness when giving than receiving and when engaging in costly (vs. non-costly) giving, suggesting that the emotional rewards of prosocial behavior can be detected in children from diverse populations.

## General Discussion

The findings reported here suggest that both adults and young children from an isolated, rural village in Vanuatu experience greater emotional rewards from engaging in an act of generosity than from engaging in an act that benefits themselves. Specifically, in Study 1 we found that similar to adults previously tested in North America and elsewhere, adults in Vanuatu reported greater happiness after using money to purchase a gift for someone else than after using money to purchase a gift for themselves. Notably, the emotional benefits of giving were detectable despite the fact that adults from Vanuatu were gifting a relatively rare and desirable commodity equivalent to a day's wage. Similarly, in Study 2, young children displayed more happiness when giving a candy away than when receiving candies themselves. Critically, the emo-

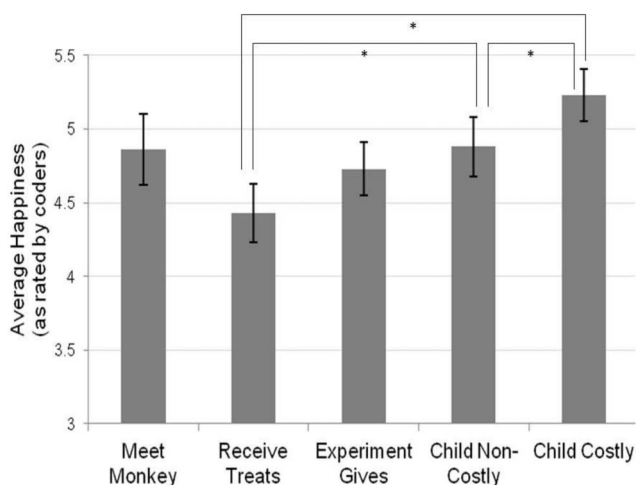


Figure 2. Average happiness ratings as reported by coders across the five phases in Study 2. Error bars display standard error of the mean. \* Indicates  $p < .05$ .

<sup>4</sup> When ratings from only the Canadian (context-free) coders are used, results are as follows: costly giving versus receiving,  $t(16) = 2.725$ ,  $p < .02$ ,  $d = .65$ ; non-costly giving versus receiving,  $t(18) = 1.789$ ,  $p = .091$ ,  $d = .26$ ; costly giving versus non-costly giving,  $t(16) = 2.148$ ,  $p < .05$ ,  $d = .38$ .

<sup>5</sup> A reduced sample size is reported when children did not complete the requested action (three children did not give their own treat) or their facial expression could not be seen clearly (e.g., hand blocking their mouth or face moved out of video for several seconds).

tional rewards of giving were greater when children gave their own candy away as opposed to an identical treat that did not belong to them.

These findings support the possibility that the emotional rewards of giving may be a universal feature of human behavior. Although detecting the warm glow of giving in Vanuatu does not provide conclusive evidence for a psychological universal, these findings add to the growing body of research demonstrating the emotional benefits of prosocial behavior can be detected in various countries and cultures throughout the world (Aknin et al., 2013). These findings also beg the question of what ontogenetic and/or phylogenetic mechanisms support the link between prosociality and positive affect. First, it is possible that humans everywhere socialize their offspring to be helpful members of society and, in turn, children learn to apply these same principles of generosity to others (Eisenberg & Mussen, 1989) via norms of prosociality (Silk & House, 2011). Because very young children in Vanuatu and North America already demonstrate these effects, this socialization process may take place extremely early in human development (e.g., Dahl, *in press*). Alternatively or in addition, it is possible that humans evolved to find giving to others rewarding. Several evolutionary theorists have argued that cooperation has allowed humans to thrive (Darwin, 1871/1982; Henrich & Henrich, 2006; Tomasello, 2009; Wilson, 1975); perhaps positive emotion serves as a proximate mechanism for promoting cooperation by attenuating the sting of engaging in costly prosocial acts. These mechanisms are not mutually exclusive: It may be that universal socialization processes serve to accentuate an evolved mechanism.

Although we were able to conduct two controlled experiments in a remote, rural, non-Western village, both studies have limitations. For instance, in Study 1, materials were administered verbally and as such the local experimenter was not blind to condition, making it possible that the experimenter swayed participants' emotional responses. We argue that this is unlikely because the local experimenter followed a script and was not informed of the experimental hypothesis. In addition, the number of participants in Study 1 is on the low end of acceptable sample sizes (Simmons, Nelson & Simonsohn, 2011). We argue that this concern is minimized for at least two reasons. First, the large effect size detected here is consistent with previous research (Aknin et al., 2013), which suggests that our results reflect a robust relationship between generous spending and well-being. Second, all adults in the village available during the testing period were included in our examination, meaning that we did not artificially restrict our sample or stop data collection upon attaining favorable results. As others have pointed out (Norenzayan & Heine, 2005), studying behavior in remote locations may require moderation of some research standards, including large samples, in service of the larger search for generalizability that helps to put theories of human behavior on more solid ground.

An alternative explanation for the findings from Study 1 is that participants in the personal spending condition may have worried about receiving negative evaluations and treatment from fellow villagers after receiving candy for themselves, whereas participants in the prosocial spending condition may have anticipated social praise. Although this alternative explanation is possible, previous work suggests that even anonymous prosocial behavior can be emotionally rewarding, suggesting that happiness does not solely result from anticipating praise (Aknin et al., 2013, 2014). In

addition, we did not detect differences in the two negative affect items—anger and sadness—between conditions. If participants in the personal condition were concerned about the social consequences of receiving an item that benefitted themselves, this likely would have manifested in a between-condition difference in one or both of these items. As such, we argue that our results reflect the benefits of engaging in prosocial behavior, rather than anticipating praise or sanction.

In addition, it is important to note that we did not follow adults in Study 1 as they left the testing site to confirm that candy was distributed in line with either their assigned personal or prosocial directions. Although this methodological feature is consistent with previous work (e.g., Aknin, Dunn, Sandstrom & Norton, 2013; Dunn et al., 2008), several outcomes suggest that participants adhered to instructions. First, although not asked or required, many participants in the personal condition decided to eat some or all of their candy while in the testing room, confirming the candy was for themselves. Second, several of the participants in the prosocial condition spontaneously mentioned who they would give the candy to, with the most frequent targets being their immediate family, such as their spouse or children. Finally, had participants decided to ignore their assigned purchasing directions, we should not have been able to detect the predicted differences in well-being between across conditions.

In interpreting the results of Study 2, it is important to note that it is unclear how children in Vanuatu understood their interaction with our puppet recipient. Although we opted to use a puppet to maximize methodological similarity with previous research performed in North America (e.g., Aknin et al., 2012) in which most children are very familiar with inanimate toys and willing to treat puppets as interaction partners (Rakoczy & Tomasello, 2006), puppets do not exist in rural Tanna. Therefore, it is possible that children's reactions were influenced by this novel experience. However, the data suggest that extreme responses due to novelty were not solely responsible for the observed results. Specifically, if seeing or interacting with the puppet had led children to become either very afraid or very excited, we would have expected either floor or ceiling effects in happiness ratings across all phases of the study that included interactions with monkey, as opposed to the within-participant phase differences in happiness that were observed. Indeed, that children in Vanuatu and Canada showed similar responses to giving and receiving treats despite differences in the novelty of the interaction suggests there is a robust relationship between happiness and giving.

On a related note, it is possible that children were particularly excited when Monkey "ate" his treats, and that this led children to display happiness, as opposed to the act of sharing itself. While it is possible that actively giving treats led children to smile more than did passively receiving treats this does not explain why children smiled more when giving identical treats to Monkey from their own (costly giving) and the experimenter's (non-costly giving) supply. Indeed, that children smile more when engaging in costly versus non-costly giving suggests that it is prosocial behavior in particular, and not social interaction, seeing Monkey express happiness while eating a candy, nor the act of moving a candy that drives children's positive responses following prosociality.

Because of the wide age difference between participants in Studies 1 and 2, we assessed the happiness consequences of prosocial behavior using quite different methodologies. Consistent

with a large number of studies exploring predictors of well-being (e.g., Emmons & McCullough, 2003; Lyubomirsky, Sheldon & Schkade, 2005; Nelson, Kushlev, English, Dunn & Lyubomirsky, 2013), adults' happiness was assessed via self-report, whereas children's facial expressions were captured on videotape and later coded for happiness by a team of trained coders. Although we assumed that both measures assess the same underlying happiness construct, they may not do so in equivalent ways. For instance, although classic research on emotion demonstrates that people tend to smile when they are happy (Ekman, Friesen & Ancoli, 1980), smiling is not the only indicator of happiness (i.e., people can be happy when they are not smiling), nor is happiness the only reason people smile (e.g., nervous laughter; see Ekman & Friesen, 1982). That said, past research has demonstrated that naïve coder ratings correlate highly ( $r > .95$ ) with validated measures of emotion coding, including Baby FACS (Oster, 2003), suggesting that coders could have been able to accurately assess children's happiness.

Although adults in the prosocial condition were able to select their beneficiary, children in Study 2 were repeatedly asked to share with an unfamiliar puppet. To the extent that children believed that Monkey was an independent being, these findings demonstrate the emotional rewards of giving to an unknown target who may not reciprocate in the future. However, if children believed that they were giving treats to the female experimenter, participants may have enjoyed giving because they thought the researcher would reciprocate their kind act in the future. Interestingly, however, expectations of reciprocation do not appear to fully explain the emotional rewards of giving (Aknin et al., 2013, 2014), suggesting that even if the latter were true, giving treats should still be rewarding if the recipient is unlikely to return the favor.

More broadly, this cross-cultural investigation adds to the larger initiative to consider whether findings initially demonstrated within WEIRD societies replicate in non-WEIRD populations (Henrich et al., 2010; Norenzayan & Heine, 2005). Despite the numerous differences between the initial Canadian participants and those assessed here, the results were quite similar, suggesting not only that the emotional rewards of generosity may be shared by humans around the world, but that initial investigations conducted in WEIRD samples can unearth psychological universals. Indeed, the larger message is not that investigations conducted in WEIRD samples cannot reveal phenomena that may be universal to all humans, but rather that claims of universality should be explored with cross-cultural investigation, such as this examination conducted in Vanuatu.

In conclusion, this work adds to the growing body of research demonstrating the hedonic rewards of prosocial behavior. Detecting the emotional payoffs of generosity (vs. self gain) in both an adult and child sample from a remote, non-Western society supports the claim that humans around the world find giving rewarding and provides firmer grounds for conclusions of human behavior.

## References

- Aknin, L. B., Barrington-Leigh, C. P., Dunn, E. W., Helliwell, J. F., Burns, J., Biswas-Diener, R., . . . Norton, M. I. (2013). Prosocial spending and well-being: Cross-cultural evidence for a psychological universal. *Journal of Personality and Social Psychology*, *104*, 635–652. <http://dx.doi.org/10.1037/a0031578>
- Aknin, L. B., Dunn, E. W., Sandstrom, G. M., & Norton, M. I. (2013). Does social connection turn good deeds into good feelings?: The value of putting the “social” in prosocial spending. *International Journal of Happiness and Development*, *1*, 155–171. <http://dx.doi.org/10.1504/IJHD.2013.055643>
- Aknin, L. B., Fleerackers, A. L., & Hamlin, J. K. (2014). Can third-party observers detect the emotional rewards of generous spending? *The Journal of Positive Psychology*, *9*, 198–203. <http://dx.doi.org/10.1080/17439760.2014.888578>
- Aknin, L. B., Hamlin, J. K., & Dunn, E. W. (2012). Giving leads to happiness in young children. *PLoS ONE*, *7*(6), e39211. <http://dx.doi.org/10.1371/journal.pone.0039211>
- Bénabou, R., & Tirole, J. (2006). Incentives and prosocial behavior. *The American Economic Review*, *96*, 1652–1678. <http://dx.doi.org/10.1257/aer.96.5.1652>
- Borgonovi, F. (2008). Doing well by doing good. The relationship between formal volunteering and self-reported health and happiness. *Social Science & Medicine*, *66*, 2321–2334. <http://dx.doi.org/10.1016/j.socscimed.2008.01.011>
- Dahl, A. (in press). The developing social context of infant helping in two U.S. samples. *Child Development*. <http://dx.doi.org/10.1111/cdev.12361>
- Darwin, C. (1982). *The descent of man, and selection in relation to sex*. Princeton, NJ: Princeton University Press. (Original work published 1871)
- Dunn, E. W., Aknin, L. B., & Norton, M. I. (2008). Spending money on others promotes happiness. *Science*, *319*, 1687–1688. <http://dx.doi.org/10.1126/science.1150952>
- Eisenberg, N., & Mussen, P. H. (Eds.). (1989). *The roots of prosocial behavior in children*. Cambridge, UK: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511571121>
- Ekman, P., Friesen, W. V., & Ancoli, S. (1980). Facial signs of emotional experience. *Journal of Personality and Social Psychology*, *39*, 1125–1134. <http://dx.doi.org/10.1037/h0077722>
- Ekman, P., & Friesen, W. V. (1982). Felt, false, and miserable smiles. *Journal of Nonverbal Behavior*, *6*, 238–252. <http://dx.doi.org/10.1007/BF00987191>
- Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology*, *84*, 377–389.
- Hamilton, W. D. (1963). The evolution of altruistic behavior. *American Naturalist*, *97*, 354–356. <http://dx.doi.org/10.1086/497114>
- Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H., & McElreath, R. (2001). In search of homo economicus: Behavioral experiments in 15 small-scale societies. *The American Economic Review*, *91*, 73–78. <http://dx.doi.org/10.1257/aer.91.2.73>
- Henrich, J., Ensminger, J., McElreath, R., Barr, A., Barrett, C., Bolyanatz, A., . . . Ziker, J. (2010). Markets, religion, community size, and the evolution of fairness and punishment. *Science*, *327*, 1480–1484. <http://dx.doi.org/10.1126/science.1182238>
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010a). The weirdest people in the world? *Behavioral and Brain Sciences*, *33*, 61–83. <http://dx.doi.org/10.1017/S0140525X0999152X>
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010b). Most people are not WEIRD. *Nature*, *466*, 29. <http://dx.doi.org/10.1038/466029a>
- Henrich, J., & Henrich, N. (2006). Culture, evolution and the puzzle of human cooperation. *Cognitive Systems Research*, *7*, 220–245. <http://dx.doi.org/10.1016/j.cogsys.2005.11.010>
- Hepach, R., Vaish, A., & Tomasello, M. (2012). Young children are intrinsically motivated to see others helped. *Psychological Science*, *23*, 967–972. <http://dx.doi.org/10.1177/0956797612440571>

Aknin, L. B., Barrington-Leigh, C. P., Dunn, E. W., Helliwell, J. F., Burns, J., Biswas-Diener, R., . . . Norton, M. I. (2013). Prosocial spending and well-being: Cross-cultural evidence for a psychological universal. *Journal of Personality and Social Psychology*, *104*, 635–652. <http://dx.doi.org/10.1037/a0031578>

- Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology, 9*, 111–131. <http://dx.doi.org/10.1037/1089-2680.9.2.111>
- McCauley, R., & Henrich, J. (2006). Susceptibility to the Muller-Lyer Illusion, Theory-Neutral Observation, and the diachronic penetrability of the Visual Input System. *Philosophical Psychology, 19*, 1–23. <http://dx.doi.org/10.1080/09515080500462347>
- Nelson, S. K., Kushlev, K., English, T., Dunn, E. W., & Lyubomirsky, S. (2013). In defense of parenthood: Children are associated with more joy than misery. *Psychological Science, 24*, 3–10. <http://dx.doi.org/10.1177/0956797612447798>
- Norenzayan, A., & Heine, S. J. (2005). Psychological universals: What are they and how can we know? *Psychological Bulletin, 131*, 763–784. <http://dx.doi.org/10.1037/0033-2909.131.5.763>
- Nowak, M. A. (2006). Five rules for the evolution of cooperation. *Science, 314*, 1560–1563. <http://dx.doi.org/10.1126/science.1133755>
- Oster, H. (2003). Emotion in the infant's face: Insights from the study of infants with facial anomalies. *Annals of the New York Academy of Sciences, 1000*, 197–204. <http://dx.doi.org/10.1196/annals.1280.024>
- Rakoczy, H., & Tomasello, M. (2006). Two-year-olds grasp the intentional structure of pretense acts. *Developmental Science, 9*, 557–564. <http://dx.doi.org/10.1111/j.1467-7687.2006.00533.x>
- Silk, J. B., & House, B. R. (2011). Evolutionary foundations of human prosocial sentiments. *Proceedings of the National Academy of Sciences, USA, 108*(Suppl 2), 10910–10917. <http://dx.doi.org/10.1073/pnas.11100305108>
- Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science, 22*, 1359–1366. <http://dx.doi.org/10.1177/0956797611417632>
- Tomasello, M. (2009). The question of chimpanzee culture. In B. Galef & K. Laland (Eds.), *The question of animal culture* (pp. 198–221). Cambridge, MA: Academic Press.
- Tracy, J. L., & Robins, R. W. (2007a). Emerging insights into the nature and function of pride. *Current Directions in Psychological Science, 16*, 147–150. <http://dx.doi.org/10.1111/j.1467-8721.2007.00493.x>
- Tracy, J. L., & Robins, R. W. (2007b). The psychological structure of pride: A tale of two facets. *Journal of Personality and Social Psychology, 92*, 506–525. <http://dx.doi.org/10.1037/0022-3514.92.3.506>
- Trivers, R. L. (1971). The evolution of reciprocal altruism. *The Quarterly Review of Biology, 46*, 35–37. <http://dx.doi.org/10.1086/406755>
- Warneken, F., & Tomasello, M. (2006). Altruistic helping in human infants and young chimpanzees. *Science, 311*, 1301–1303. <http://dx.doi.org/10.1126/science.1121448>
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063–1070. <http://dx.doi.org/10.1037/0022-3514.54.6.1063>
- Weinstein, N., & Ryan, R. M. (2010). When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Personality and Social Psychology, 98*, 222–244. <http://dx.doi.org/10.1037/a0016984>
- Wilson, D. S. (1975). A theory of group selection. *Proceedings of the National Academy of Sciences, USA, 72*, 143–146. <http://dx.doi.org/10.1073/pnas.72.1.143>

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