

An Additional Antecedent of Empathic Concern: Valuing the Welfare of the Person in Need

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Two experiments examined the role of valuing the welfare of a person in need as an antecedent of empathic concern. Specifically, these experiments explored the relation of such valuing to a well-known antecedent—perspective taking. In Experiment 1, both perspective taking and valuing were manipulated, and each independently increased empathic concern, which, in turn, increased helping behavior. In Experiment 2, only valuing was manipulated. Manipulated valuing increased measured perspective taking and, in part as a result, increased empathic concern, which, in turn, increased helping. Valuing appears to be an important, largely overlooked, situational antecedent of feeling empathy for a person in need.

Keywords: empathy, empathic concern, valuing, perspective taking, helping

What leads us to feel more or less empathy for a person in need? That is, what are the situational antecedents of empathic concern? As an other-oriented emotional response elicited by and congruent with the perceived welfare of a person in need, empathic concern includes feelings of sympathy, compassion, tenderness, and the like (Batson, 1987, 1991). It also includes feelings of distress or sadness *for* the person (as distinct from direct personal distress or sadness elicited by witnessing the person's suffering—see Batson, Early, & Salvarani, 1997). These empathic feelings have been found to be a potent source of motivation to help relieve the empathy-inducing need (e.g., Dovidio, Allen, & Schroeder, 1990; see Batson, 1991; Eisenberg & Miller, 1987, for reviews).

Perspective Taking as an Antecedent of Empathic Concern

Since the classic experiments of Stotland (1969), perhaps the most plausible and prominent answer to the question of what leads us to feel more or less empathy for a person in need is *perspective taking*—actively imagining how the other is affected by his or her plight. Stotland (1969) provided experimental evidence that, com-

pared with individuals led to adopt an objective perspective when watching a person suffer, those led to imagine the person's feelings not only report more empathic concern but also show greater physiological response. Subsequently, in two experiments using misattribution of arousal techniques, Coke, Batson, and McDavis (1978) showed that the effects of an imagine-feelings perspective on motivation to help are a result of the increased empathic concern produced by adopting this perspective, not a result of cognitive or perceptual effects. These findings led Batson (1987, 1991) to propose two antecedents of empathic concern: (a) perceiving the other as in need and (b) adopting the other's perspective (i.e., imagining how the other is affected by his or her situation). In laboratory experiments over the past 30 years, perspective manipulations have frequently—and successfully—been used to evoke empathic feelings for someone in need (see Davis, 1994, pp. 117–119, for a partial review).

Another Antecedent: Valuing the Welfare of the Person in Need

It seems clear that adopting the perspective of a person in need is an important antecedent of empathic concern. However, we often encounter people in need in daily life without having been instructed to adopt their perspective, and we still feel empathy. In such situations, the relevant antecedents seem to be (a) perceiving the other as in need and (b) valuing the other's welfare. (See Batson, Shaw, & Oleson, 1992, for a similar view.)

Why propose valuing the other's welfare as an antecedent? When we value another's welfare—as occurs when we like, love, or feel protective toward the person—we are apt to think about how this person is affected by events in his or her life. We place positive value on events we think will bring the person pleasure, joy, satisfaction, safety, or relief. We place negative value on events we think will bring pain, sorrow, discontent, danger, or

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disappointment. Such valuing produces a lively response to events that affect this person's welfare, much as we might respond to events that affect our own welfare. It also produces vigilance. We are on the lookout for events that might affect this person's welfare. As a result, valuing the other leads us spontaneously to adopt his or her perspective. We are primed to imagine how this person thinks and feels about events because his or her pleasure and pain have become part of our own value structure.

It seems, then, that valuing the other's welfare and adopting the other's perspective are closely related and that both are antecedents of empathy. It also seems that, especially in the normal stream of behavior, valuing is the more relevant antecedent. Three considerations lead us to the latter suggestion.

First, it is possible for a person to adopt another's perspective—to actively imagine how the other thinks and feels about his or her situation (including a situation of need)—and still feel relatively little empathic concern. This can occur if one negatively values the other and his or her welfare. For example, Batson, Polycarpou et al. (1997) found that those led to adopt the perspective of a convicted murderer serving a life sentence reported more empathy for him than did those not led to adopt his perspective. At the same time, they reported far less empathy for him than has been reported in studies in which participants adopt the perspective of a stranger in need (see Batson, 1991, for a partial review). Presumably, a convicted murderer's welfare is valued less positively than that of the typical stranger.

Second, it is also possible to feel empathy for a person in need without actively adopting that person's perspective. Most people naturally place at least moderately positive value on the welfare of other people—even total strangers—unless there are grounds for devaluing the person (as in the case of the murderer just mentioned). Sociopaths may be a conspicuous exception to this rule, but they comprise only a small percentage of the population (Anderson, Bechara, Damasio, Tranel, & Damasio, 1999). As a result of this positive valuing, research participants provided with no perspective-taking instructions when learning about a stranger in need typically react much like those instructed to adopt the other's perspective (see Davis et al., 2004, although these researchers examined cognitive, not emotional, reactions). When faced with a stranger in clear need, it seems more accurate to say that instructions to adopt an objective perspective reduce empathy than to say that instructions to adopt the other's perspective increase empathy.

Third, Batson, Turk, Shaw, and Klein (1995, Experiments 3 and 4) found that perspective-taking instructions not only increased empathy for a stranger in need but also increased valuing of the stranger's welfare. Furthermore, they found that when participants who had been led to experience empathic concern (by providing them with false physiological feedback about their emotional response) learned that the stranger's need had been met, empathy decreased, but valuing of the stranger's welfare remained high. Consistent with the idea that valuing is an antecedent of empathic concern, Batson et al. (1995) suggested that participants in these experiments made a backward inference from awareness of their empathic feelings to valuing the stranger's welfare. Given these three considerations, we propose that in the normal stream of behavior, the two most relevant antecedents of empathic concern are (a) perceiving the other as in need and (b) valuing the other's welfare.

The Present Research

The role of perceived need as an antecedent to empathic concern is obvious and uncontroversial, so we did not manipulate need in the present research. Instead, we focused on valuing and its relation to perspective taking. Specifically, we sought to go beyond measurement of valuing another's welfare (Batson et al., 1995) to experimental manipulation. Creating a clean experimental manipulation of valuing another's welfare proved challenging. Such valuing most obviously occurs in ongoing close relationships, such as friendships or family and love relationships. Close relationships involve prior and anticipated interaction, feelings of obligation, desires to show the other that one cares, and so on. These factors could easily affect reported empathic concern for and willingness to help the other. To avoid these obvious and serious confounds, we sought to induce positive or negative valuing of the welfare of a total stranger, a person with whom our research participants neither had nor anticipated any interaction.

The stranger we chose was a university student, Bryan Banks (actually fictitious). Running through traffic because he was late for class, Bryan had been hit by a car and seriously injured. The accident left him homebound and in danger of having to drop out of school. Some participants learned that Bryan was late and running because he had been waylaid by a lost and upset elderly woman, to whom he was nice. Others learned that on being waylaid, Bryan was not nice but nasty to the elderly woman. We reasoned that participants would value the welfare of the nice Bryan more than the nasty one.

We report two experiments in which participants read about and reacted to Bryan's plight. Each included the information about why Bryan was late, providing (insofar as we know) the first direct experimental manipulation of valuing another's welfare.

Experiment 1

Predictions

In Experiment 1, we manipulated both valuing (low, high) and perspective (objective, imagine) in a 2×2 design. Consistent with the results of past research (e.g., Batson, Polycarpou et al., 1997; Batson, Sager et al., 1997; Coke et al., 1978; Stotland, 1969), we predicted that participants instructed to imagine Bryan's feelings about his situation would report more empathic concern for him than would participants instructed to remain objective (Hypothesis 1). Second, consistent with our proposal that valuing the other's welfare is also an antecedent of empathy, we predicted that participants would report more empathic concern in the high-valuing condition than in the low (Hypothesis 2). Third, consistent with much past research (e.g., Coke et al., 1978; Krebs, 1975), we predicted that increased empathy for Bryan would be associated with willingness to help him (Hypothesis 3). Finally, we predicted that the four variables (manipulated perspective, manipulated valuing, empathic concern, and helping) would combine to produce a path model in which the perspective and valuing manipulations each affect empathy (Paths 1 and 2, respectively), which, in turn, affects helping (Path 3) (Hypothesis 4).

Method

Participants. Participants for Experiment 1 were 80 introductory psychology students (40 men, 40 women) at the University of

Kansas; they received partial credit toward a course requirement. Using a randomized block procedure, we assigned 20 participants (10 men, 10 women) to each of the four experimental conditions. On the basis of suspicion about the account of Bryan's accident expressed during debriefing, 5 additional students were excluded from the sample and replaced (1 man in the objective/low-valuing condition; 1 man and 1 woman in the objective/high-valuing condition; 1 woman in the imagine/low-valuing condition; and 1 man in the imagine/high-valuing condition).

Procedure. Participation was by individual appointment. Once seated in a research cubicle, participants were told that Dr. Edmonds of the Department of Psychology was conducting the study, in conjunction with the Office of Student Life (OSL). (Both Dr. Edmonds and the Office of Student Life were actually fictitious.) Participants were then left alone to read a typed introduction.

The introduction explained that students experiencing a wide range of difficulties contact the OSL for help; it also explained the ostensible purpose of the present study:

OSL wishes to know how typical the experiences of those students contacting the Office are of students at KU in general. Accordingly, among those students who have contacted the Office of Student Life with difficulties, 20 were asked to write personal accounts of what they had been through.

Participants were to be randomly assigned to read one of these accounts and assess the typicality of the experience. "In order to standardize the assessments, participants in this research are all asked to adopt the same reading perspective. This will ensure that each person understands the personal account in the same way."

Next, through a rigged random drawing, all participants were assigned to read Personal Account #4, written by Bryan Banks. Then, they were given a folder containing reading-perspective instructions. Participants were left alone to read the perspective instructions, read the account from that perspective, and, afterward, complete an emotional response scale. By delivering the perspective instructions and the personal account in folders that had been prepared in advance, the experimenter was able to remain unaware of each participant's perspective and valuing conditions until after all measures were taken.

Perspective manipulation. The reading-perspective instructions asked participants in the objective-perspective condition to "try to take an objective perspective toward what is described. Try not to get caught up in how the student facing this difficulty feels; just remain objective and detached." Participants in the imagine-perspective condition were asked to "try to imagine how the student facing this difficulty feels and how it is affecting his or her life. Do not worry about remembering everything that happened. Just concentrate on trying to imagine how the student feels." These instructions closely paralleled previous perspective manipulations (e.g., Batson, Sager et al., 1997).

Valuing manipulation. In his account, Bryan first described hurrying to a 9:30 class:

On the way up the hill, there was this old woman in the middle of the sidewalk. The weather was really bad that morning, and she was just standing there, holding a bag of groceries. She stopped me, and sort of wild-eyed and confused, she said she couldn't find her house. She seemed really upset.

In the low-valuing condition, participants then read:

I told her I had no idea where she lived. I asked her to get out of my way. But she didn't. She grabbed my arm and kept talking about being lost. She wouldn't let go of my arm. Didn't she understand I was in a hurry?! I asked her again to get out of the way, but she just began to cry. Finally, I jerked my arm free. She fell down, her grocery bag broke, and things spilled everywhere. I told her she got what she deserved, that she should be more careful. Then I took off.

In the high-valuing condition, participants instead read:

I asked if she remembered her address. Actually, she did, and I knew roughly where it was—about three blocks away. I told her not to worry, that I could take her there. It took a while to get her home because she couldn't walk very fast. However, as we got closer, she began to recognize the neighborhood and calm down a bit. When she saw her house, she seemed really relieved. Once I got her and her groceries inside, I said goodbye. Then I took off.

Bryan's need. In each valuing condition, the account continued:

I was really late for class now, so I started running. That's when it happened, just as I was cutting between two parked cars to cross the street. I got hit. I never saw the car, and the driver didn't see me. It all happened really fast.

Anyway, it was pretty bad. It broke both my legs and my left arm, and I got a fairly severe concussion. As you can guess, I didn't make it to class that day. In fact, I haven't been to class since. It's impossible because I can't really walk—or even use a wheelchair. The doctors say I won't be able to get back up on campus for at least another three weeks, maybe more. I'm trying to keep up with my classes and assignments the best I can, but it's really hard not being able to go to class or get up on campus. I'm really getting behind. If things don't get better, I think I'm going to have to drop out for this semester, which will really cause me problems in trying to get my degree on time. . . .

Empathic concern for Bryan. After reading the personal account, participants completed the emotional response scale, on which they indicated how much they felt each of 16 emotions toward the person whose account they read (1 = *not at all*, 7 = *extremely*). The list included 6 emotions that have been used in much previous research to assess feelings of empathic concern: *sympathetic*, *softhearted*, *warm*, *compassionate*, *tender*, and *moved* (see Batson, 1987, 1991, for reviews). We did not attempt to measure vicarious personal distress because previous research has shown that, unlike the direct personal distress evoked by observing someone in physical pain, distress reported in response to relatively remote, chronic need (such as Bryan's) is empathic distress for the victim (Batson, Early, & Salvarani, 1997).

Opportunity to help Bryan. After participants completed the emotional response scale, the experimenter returned with an envelope addressed "To Participants Reading Bryan Banks' Personal Account" and explained that it contained a letter from Dr. Edmonds, the professor in charge of the research. Participants were left alone to read the letter.

In his letter, Dr. Edmonds first thanked participants for taking part in the study. He then explained that it had occurred to him that some of the participants reading Bryan Banks' personal account might wish to assist Bryan. To check about this possibility, Dr. Edmonds had contacted Bryan. Initially, Bryan had been reluctant to ask for help, but because he was confronted with a situation that

might involve having to drop out of school, he at last agreed. Dr. Edmonds explained that what Bryan needed was some of the participant's time. Bryan could read the assignments for his classes at home, but he needed to get the information that was conveyed in class. Because Bryan did not have a computer at home, he could not receive e-mail or read what his instructors posted on the Web. Students in each of Bryan's five classes had agreed to let the OSL copy their notes for Bryan. However, OSL was badly short-staffed, and someone was needed to pick up the notes from these students and take them to the office each week.

Thus, your task, if you agree to help, would be to arrange to get the notes, deliver them to the Office of Student Life, wait while they are copied, and then return the notes to their owners. Handling the notes for a week should take from 1–2 hours of your time.

Dr. Edmonds concluded: "Your participation in this study in no way obligates you to volunteer to help Bryan. I just want to give you a chance to do so if you wish."

Volunteering to help Bryan. Included with the letter was a brief form on which participants could indicate whether they wished to help Bryan. To ensure the anonymity of those not wishing to help, participants put their name on the form only if they volunteered. In addition, they were provided a small envelope addressed to Dr. Edmonds in which to seal the form whether or not they volunteered.

Manipulation checks. After participants read the letter and placed the response form in the envelope, the experimenter returned, gave participants a reaction questionnaire, and left them alone to complete it. Consistent with the cover story, this questionnaire assessed reactions to the personal account. Among the questions were (a) one designed to assess perception of Bryan's need, "How great do you perceive this student's need to be?" (1 = *not at all*, 7 = *very great*), and (b) five designed to check the manipulations.

Two questions checked the valuing manipulation: "How much did you find yourself caring about the welfare of the student whose personal account you read?" (1 = *not at all*, 7 = *very much*) and "How likable did you find the student whose personal account you read?" (1 = *not at all*, 7 = *extremely*). The first of these questions was designed to tap the care-for-welfare component of valuing another's welfare (Batson et al., 1995); the second, to tap the sentiment component (Heider, 1958). In order to assess whether any effects of our valuing manipulation were simply an artifact of

perceived fairness (deservingness) of Bryan's plight, we also asked: "Do you feel this student's situation is fair?" (1 = *not at all fair*, 7 = *very fair*). Finally, two questions checked the effectiveness of the perspective manipulation: "While reading, to what extent did you imagine how the student facing this difficulty felt?" and "While reading, to what extent did you remain objective about what happened?" (1 = *not at all*, 7 = *very much* for each question).

Debriefing. Once participants completed the reaction questionnaire, they were fully and carefully debriefed, thanked for their time, and excused.

Results

Perception of Bryan's need. As can be seen in the first row of Table 1, Bryan was perceived to be in clear need in the objective/high-valuing, imagine/low-valuing, and imagine/high-valuing conditions ($M_s = 5.85, 5.75,$ and $6.25,$ respectively, on the 1–7 scale). However, in the objective/low-valuing condition, participants rated Bryan's need lower ($M = 4.80$), although still above the midpoint (4) of the scale, overall $F(3, 76) = 5.55, p < .002$. This variation introduced the possibility of checking the assumption that perceived need is an antecedent of empathy—along with manipulated perspective taking and valuing. (There were no reliable effects of gender, either main effects or interactions, on this or any other measure reported for Experiment 1. Therefore, we have omitted gender as a factor. For simplicity, all statistical tests are reported two-tailed, even for directional predictions.)

Effectiveness of the valuing manipulation. To check the effectiveness of the valuing manipulation, we created a valuing index by averaging responses to the care and liking items on the reaction questionnaire (Cronbach's $\alpha = .84$). A 2 (perspective) \times 2 (valuing) analysis of variance (ANOVA) revealed that participants in the high-valuing conditions scored higher on this index ($M = 5.38$ on the 1–7 scale) than did participants in the low-valuing conditions ($M = 3.28$), $F(1, 75) = 55.22, p < .0005$. (One participant in the objective/high-valuing condition failed to answer the liking question.) There was also a main effect for perspective ($M_s = 3.92$ and 4.70 in the objective and imagine conditions, respectively), $F(1, 75) = 7.01, p < .02$, possibly reflecting the same backward inference reported by Batson et al. (1995). Given that there was no interaction ($F < 1.0$), and given that the difference between the low- and high-valuing conditions was highly significant in both the objective- and imagine-perspective conditions (both $t_s > 4.90$,

Table 1
Means of Measures in Each Experimental Condition in Experiment 1

Measure	Experimental condition			
	Objective/ Low valuing	Objective/ High valuing	Imagine/ Low valuing	Imagine/ High valuing
Perceived need	4.80	5.85	5.75	6.25
Manipulation checks				
Valuing index	2.85	5.05	3.70	5.70
Perspective index	-2.15	-1.85	1.10	1.80
Empathy	2.33	3.26	3.22	4.58
Helping	0.30	0.25	0.30	0.65

Note. $n = 20$ (10 men, 10 women) in each experimental condition.

$ps < .0005$), we concluded that our valuing manipulation was effective. (See Row 2 of Table 1 for means on the valuing index.)

Effectiveness of the perspective manipulation. Ratings of how much participants concentrated on (a) imagining Bryan’s feelings and on (b) remaining objective indicated that our perspective manipulation was also effective. To provide a single index of perspective, we subtracted scores on the remain-objective item from scores on the imagine-feelings item. Participants in the imagine-perspective conditions scored higher on this index ($M = 1.45$) than did participants in the objective-perspective conditions ($M = -2.00$), $F(1, 76) = 56.88, p < .0005$. Neither the valuing main effect nor the interaction approached significance ($F_s < 1.20$). (See Row 3 of Table 1 for means on the perspective index.)

Perspective taking and valuing as antecedents of empathic concern. Paralleling past research (see Batson, 1987, 1991, for reviews), we created an index of empathic concern by averaging participants’ responses to the six empathy adjectives: *sympathetic, compassionate, softhearted, warm, tender, and moved* (Cronbach’s $\alpha = .90$; see Row 4 of Table 1 for means). As had been found in much past research using other need situations and procedures, participants in the imagine-perspective conditions reported feeling more empathy for Bryan ($M = 3.90$ on the 1–7 scale) than did participants in the objective-perspective conditions ($M = 2.79$), $F(1, 76) = 15.24, p < .0005$. Moreover, across conditions, scores on the perspective index correlated positively with scores on the empathy index, $r(78) = .49, p < .0005$. It seemed clear that perspective taking was an antecedent of empathic concern for Bryan, supporting Hypothesis 1.

There was also clear evidence that valuing was an antecedent of empathic concern, supporting Hypothesis 2. Participants in the high-valuing conditions reported feeling more empathy for Bryan ($M = 3.92$) than did participants in the low-valuing conditions ($M = 2.77$), $F(1, 76) = 16.41, p < .0005$. Moreover, across conditions, participants’ scores on the valuing index correlated positively with scores on the empathy index, $r(77) = .75, p < .0005$.

There was no evidence that the perspective and valuing manipulations interacted ($F < 1.0$); each appeared to have an independent effect on empathy. Nor could these effects be attributed to the perceived fairness (deservingness) of Bryan’s situation. Each main effect remained strong after covarying ratings of perceived fairness (both $F_s > 10.00, ps < .002$). Furthermore, the effects on empathy of the perspective and valuing manipulations were not simply a function of their effect on perceived need. The main effects of perspective and valuing both remained highly significant after covarying perceived need ($F_s > 8.00, ps < .01$).

Perceived need as an antecedent. Consistent with the assumption that perceived need is also an antecedent of empathic concern, ratings of Bryan’s need were positively correlated with scores on the empathy index, $r(78) = .56, p < .0005$. Taken as a whole, then, results supported the proposal that perceived need, perspective taking, and valuing (when the latter two are manipulated independently) were all three antecedents of empathy.

Association between empathy and helping. To assess willingness to help Bryan, participants were asked whether they wished to collect class notes for him, which would take several hours per week. The proportion helping in each experimental condition appears in the last row of Table 1. Replicating the empathy–

helping relationship found frequently in past research, and supporting Hypothesis 3, the point biserial correlation between empathic concern and willingness to help was positive across conditions, $r_{pb}(78) = .33, p < .003$.

Testing the predicted path model. To test the path model predicted by Hypothesis 4, we conducted a path analysis on the basis of maximum-likelihood structural equation modeling using EQS (Bentler, 1980, 1989). Means, standard deviations, and correlations of the four variables in this path model are reported in Table 2. As predicted, the model that best fit the covariance matrix was a model with three paths. The perspective and valuing manipulations each affected empathy (Paths 1 and 2), and empathy, in turn, affected helping (Path 3). This model was a clear improvement over the null model, difference in $\chi^2(3, N = 80) = 36.35, p < .0005$, and not significantly different from the saturated model, $\chi^2(3, N = 80) = 0.90, p > .80$, root-mean-square error of approximation (RMSEA) = .00. The comparative fit index (CFI) was 1.00, well above the recommended minimum of .90, and the Lagrange multiplier test indicated that no more complex model could significantly improve the fit. Betas for Paths 1, 2, and 3 (.38, .39, and .33, respectively) were all significant ($z_s = 3.97, 4.11, and 3.09$, respectively; all $ps < .002$). This path analysis provided clear support for Hypothesis 4.

Given the variation across conditions in perceived need, we also tested more complex path models that included perceived need as an antecedent of empathy. The model that best fit the covariance matrix of all five variables (perspective, valuing, need, empathy, and helping) was a model with six paths. The perspective and valuing manipulations each affected perceived need (Paths 1 and 2); the perspective manipulation, valuing manipulation, and perceived need each affected empathy (Paths 3, 4, and 5); and empathy affected helping (Path 6). This model was a clear improvement over the null model, difference in $\chi^2(6, N = 80) = 67.49, p < .0005$, and not significantly different from the saturated model, $\chi^2(4, N = 80) = 4.33, p > .36$, RMSEA = .04. The CFI was above .99, and the Lagrange multiplier test indicated that no more complex model could significantly improve the fit. Betas for all six paths (.27, .31, .27, .27, .40 and .33, respectively) were significant ($z_s = 2.62, 3.01, 3.01, 2.95, 4.30, and 3.09$, respec-

Table 2
Means, Standard Deviations, and Correlations of Variables in Path Analysis in Experiment 1

Variable	M	SD	Correlations			
			1	2	3	4
1. Perspective	1.50	.50	—	.00	.38***	.21
2. Valuing	1.50	.50		—	.39***	.16
3. Empathy	3.35	1.49			—	.33**
4. Helping	0.38	0.49				—

Note. $N = 80$ (10 men, 10 women in each experimental condition). Perspective was manipulated and coded 1 (objective) and 2 (imagine). Valuing was manipulated orthogonally and coded 1 (low valuing) and 2 (high valuing). Empathy was measured by averaging responses (1–7 scale) to the six empathy adjectives (*sympathetic, softhearted, warm, compassionate, tender, and moved*). Helping was coded dichotomously, 0 (*no help*) and 1 (*help*).
* $p < .05$. ** $p < .01$. *** $p < .001$.

tively; all $ps < .01$). This path analysis was quite consistent with the proposal that perceived need, perspective taking, and valuing (when the latter two variables are manipulated) are each antecedents of empathic concern, which, in turn, produces motivation to help.

Discussion

Results of Experiment 1 provided support for each of the four hypotheses. Supporting Hypotheses 1 and 2, we found evidence that the two experimental manipulations, perspective and valuing, each independently affected empathy. Supporting Hypothesis 3, empathy was associated with increased helping. Supporting Hypothesis 4, the path model implied by these relations fit the data quite well. At the same time, relatively low perceived need in the objective/low-valuing condition introduced sufficient variation in perceptions of need that it was possible to test a more complex path model that included three antecedents of empathy—need, perspective taking, and valuing. This model also received support.

Experiment 1 provided the first direct experimental evidence that valuing the other's welfare is an antecedent of empathic concern. However, because Experiment 1 included a perspective manipulation, it could not test the claim that in the absence of perspective instructions, valuing the other's welfare not only serves as an antecedent of empathy but also that it does so at least in part because it induces spontaneous perspective taking. Nor could Experiment 1 test the claim that people given no information on which to base a value judgment will place at least moderate value on the welfare of a stranger in need. Experiment 2 was designed to provide data relevant to these claims.

Experiment 2

Experiment 2 used much the same procedure as Experiment 1, except that there was no manipulation of perspective. As in Experiment 1, we manipulated valuing of Bryan's welfare by providing information on why he was late and running when he got hit by the car. Some participants learned that Bryan's lateness involved being nasty to the lost and confused elderly woman (low valuing); some learned that it involved being nice to her (high valuing). In addition, we included a third condition in which participants received no information about why Bryan was late (no information).

Predictions

In Experiment 2, we predicted that, relative to participants in the low-valuing condition, participants in the high-valuing condition would be more likely to report on the perspective index that they imagined Bryan's feelings rather than remained objective (Hypothesis 1a). We predicted that participants in the no-information condition would do the same (Hypothesis 1b). Second, we predicted that participants in the high-valuing and no-information conditions would report more empathic concern for Bryan than would participants in the low-valuing condition (Hypotheses 2a and 2b). Third, we predicted that increased empathy for Bryan would be associated with increased willingness to help him (Hypothesis 3). Finally, we predicted that the four variables—valuing (manipulated), perspective (measured), empathic concern, and

helping—would combine to produce a path model in which the valuing manipulation affects perspective (Path 1), which, in turn, affects empathy (Path 2), which, in turn, affects helping (Path 3) (Hypothesis 4).

Method

Participants. Participants for Experiment 2 were 60 introductory psychology students (30 men, 30 women) at the University of Kansas; they received partial credit toward a course requirement. Using a randomized block procedure, we planned to assign 20 participants (10 men, 10 women) to each of the three experimental conditions. However, a blocking error resulted in there being 19 participants (9 men, 10 women) in the low-valuing condition and 21 participants (11 men, 10 women) in the no-information condition. On the basis of suspicion about the account expressed during debriefing, 2 additional students (both women) were excluded from the sample and replaced (1 each in the high-valuing and no-information conditions).

Procedure. The procedure in the low- and high-valuing conditions of Experiment 2 was the same as in Experiment 1, except for no mention of a reading perspective. In the no-information condition, there was again no mention of reading perspective. There was also no mention in the personal account of the encounter with the old woman. Immediately after Bryan said he was hurrying to get to his 9:30 class, he said he was really late and so started running. This was followed by exactly the same account of the accident and its aftermath as in the other two conditions.

Measures. Measures of empathy and helping were the same as in Experiment 1 and were taken in the same order. Because the perspective index was a dependent measure in Experiment 2 rather than a manipulation check, the final reaction questionnaire was modified so that the two perspective questions appeared at the beginning rather than at the end. After an initial question about how typical Bryan's need was of difficulties faced by Kansas University students (consistent with the cover story), participants were asked: "While reading, to what extent did you remain objective and detached toward what was described?" "While reading, to what extent did you imagine how the student facing this difficulty felt and how it is affecting his or her life?" (1 = *not at all*, 7 = *very much* for each question). Then came the question about Bryan's need, the care and liking questions used to check the valuing manipulation (the liking question was the same as in Experiment 1, but the care question was worded more precisely: "How much do you care whether the student whose personal account you read is able to overcome this difficulty?"), and the fairness question (all with 1–7 response scales). After completing the reaction questionnaire, all participants were debriefed as in Experiment 1.

Results

Perception of Bryan's need. Response to the need item on the reaction questionnaire indicated that Bryan was perceived to be in clear need in each of the three experimental conditions of Experiment 2. As can be seen in the first row of Table 3, perceived need was lower in the low-valuing condition ($M = 5.47$) than in the high-valuing and no-information conditions ($M_s = 6.25$ and 6.33 , respectively), overall $F(2, 57) = 4.38, p < .02$. However, even in the low-valuing condition, perceived need was well above the

Table 3
Means of Measures in Each Experimental Condition in
Experiment 2

Measure	Experimental condition		
	Low valuing (<i>n</i> = 19)	High valuing (<i>n</i> = 20)	No information (<i>n</i> = 21)
Perceived need	5.47	6.25	6.33
Valuing index	3.67	5.40	5.16
Perspective index	0.47	2.05	2.14
Empathy	2.55	4.54	3.96
Helping	0.11	0.50	0.33

midpoint of the scale (4), so we did not expect low-perceived need to inhibit empathy in Experiment 2 as it had in Experiment 1.

Effectiveness of the valuing manipulation. Once again, we created a valuing index by averaging responses to the care and liking items on the reaction questionnaire (Cronbach's $\alpha = .73$). Participants in the high-valuing and no-information conditions scored higher on this index ($M_s = 5.40$ and 5.17 , respectively, on the 1–7 scale) than did participants in the low-valuing condition ($M = 3.67$), $F(2, 54) = 14.07$, $p < .0005$. (Gender was included as a factor in this analysis—see next paragraph.) Pairwise comparisons revealed that the mean in the low-valuing condition was significantly lower than the mean in either of the other two conditions (both $t_s > 4.00$, $p_s < .0005$), whereas the means of the high-valuing and no-information conditions did not differ ($t < 1.0$). (See Row 2 of Table 3 for means.)

There was also a significant effect of gender on scores on the valuing index. Women reported more valuing of Bryan's welfare ($M = 5.07$) than did men ($M = 4.47$), $F(1, 54) = 4.70$, $p < .04$. However, this gender difference did not qualify the effect of the valuing manipulation on the valuing index; the interaction was not significant. We concluded that, once again, our valuing manipulation was effective. We also concluded that, as expected, participants provided with no explicit information on which to base a value judgment placed moderately positive value on Bryan's welfare.

Effect of the valuing manipulation on perspective. To provide a perspective index, we once again subtracted each participant's score on the remain-objective item from his or her score on the imagine-feelings item. As predicted by Hypotheses 1a and 1b, scores on this perspective index were higher in the high-valuing and no-information conditions ($M_s = 2.05$ and 2.14 , respectively) than in the low-valuing condition ($M = 0.47$), $F(2, 54) = 3.58$, $p < .04$. (Again, gender was included as a factor in this analysis—see next paragraph.) Pairwise comparisons revealed that, as predicted, the mean in the low-valuing condition was significantly lower than the mean in either of the other two conditions (both $t_s > 2.20$, $p_s < .04$), whereas the means of the high-valuing and no-information conditions did not differ ($t < 1.0$). (See Row 3 of Table 3 for means.)

There was also a significant effect of gender on scores on the perspective index. Women reported a greater tendency to adopt Bryan's perspective ($M = 2.37$) than men ($M = 0.80$), $F(1, 54) = 7.60$, $p < .01$. However, this gender difference did not qualify the effect of the valuing manipulation on perspective taking; the

interaction was not significant. Nor could these effects be attributed to the perceived fairness (deservingness) of Bryan's situation. After covarying fairness, all reported significant effects remained significant.

Valuing as an antecedent of empathic concern. In Experiment 2, we used the same index of empathic concern as in Experiment 1 (Cronbach's $\alpha = .92$; see Row 4 of Table 3 for means). Supporting Hypotheses 2a and 2b, participants in the high-valuing and no-information conditions reported feeling more empathy for Bryan ($M_s = 4.54$ and 3.96 , respectively) than did participants in the low-valuing condition ($M = 2.55$), $F(2, 54) = 15.95$, $p < .0005$. (Again, gender was included as a factor—see next paragraph.) Pairwise comparisons revealed that, as predicted, the mean in the low-valuing condition was significantly lower than the mean in either of the other two conditions (both $t_s > 3.00$, $p_s < .001$), whereas the means of the high-valuing and no-information conditions were not reliably different ($p > .10$).

There was also a significant gender effect on empathic concern. Women reported substantially more empathy for Bryan ($M = 4.18$) than did men ($M = 3.24$), $F(1, 54) = 10.94$, $p < .005$. Furthermore, although the pattern of differences in empathy across the three experimental conditions was much the same for both genders, the differences were greater for women, producing a significant Valuing \times Gender interaction, $F(2, 54) = 5.42$, $p < .01$. This interaction was primarily due to women reporting considerably more empathy ($M = 5.58$) than men ($M = 3.50$) in the high-valuing condition, $t(54) = 4.14$, $p < .0005$. (Comments during debriefing suggested that some men thought that the nice Bryan was a little too nice.) Given that the pattern of empathy scores and the correlations reported below were much the same for both men and women, this one interaction involving gender did not seem problematic. Again, after covarying fairness, all reported significant effects remained significant.

Association between perspective taking and empathy. Across conditions, participants' scores on the perspective measure were highly positively correlated with scores on the empathic concern index, $r(58) = .59$, $p < .0005$. This correlation was entirely consistent with our assumption that in the absence of a perspective manipulation, a valuing manipulation would affect spontaneous perspective taking, which would, in turn, affect empathy.

Association between empathy and helping. Replicating the empathy–helping relationship found in past research (including Experiment 1), and supporting Hypothesis 3, the point biserial correlation between participants' scores on the empathic concern index and helping was positive across conditions, $r_{pb}(58) = .54$, $p < .0005$.

Testing the predicted path model. To test the path model predicted by Hypothesis 4, we again used EQS (Bentler, 1980, 1989). For the path analysis, we restricted our attention to the 39 participants in the low- and high-valuing conditions because for them, the predicted model could be most clearly tested. (Tests of a model that included all 60 participants and contrasted the high-valuing and no-information conditions combined against the low-valuing condition produced very similar results.) Two possible models were consistent with Hypothesis 4, one that specified complete mediation and one that specified partial mediation. Means, standard deviations, and correlations of the four variables in these two models are reported in Table 4.

Table 4
Means, Standard Deviations, and Correlations of Variables in Path Analysis in Experiment 2

Variable	<i>M</i>	<i>SD</i>	Correlations			
			1	2	3	4
1. Valuing	1.51	.51	—	.34*	.61***	.43**
2. Perspective	1.28	2.33		—	.62***	.31
3. Empathy	3.57	1.66			—	.65***
4. Helping	0.31	0.47				—

Note. $N = 39$ (9 men and 10 women in the low-valuing condition; 10 men and 10 women in the high-valuing condition). Valuing was manipulated and coded 1 (low valuing) and 2 (high valuing). Perspective was measured by subtracting response to the remain-objective item from response to the imagine-feelings item. Empathy was measured by averaging responses (1–7 scale) to the six empathy adjectives (*sympathetic, softhearted, warm, compassionate, tender, and moved*). Helping was coded dichotomously, 0 (*no help*) and 1 (*help*).

* $p < .05$. ** $p < .01$. *** $p < .001$.

First, we tested the model for complete mediation. This model specified that the valuing manipulation would affect scores on the perspective measure (Path 1), which, in turn, would affect empathy (Path 2), which, in turn, would affect helping (Path 3). The three-path complete-mediation model did not provide a good fit to the covariance matrix; it differed significantly from the saturated model, $\chi^2(3, N = 39) = 13.91, p > .005$, RMSEA = .31. The Lagrange multiplier test indicated that an additional path—one directly from the valuing manipulation to empathy (Path 4)—was needed. This was the model for partial mediation.

EQS indicated that the four-path partial-mediation model was a good fit. It was a clear improvement over the null model, difference in $\chi^2(4, N = 39) = 57.01, p < .0005$, and not significantly different from the saturated model, $\chi^2(2, N = 39) = 1.15, p > .50$, RMSEA = .00. The CFI was 1.00, well above the recommended minimum of .90, and the Lagrange multiplier test indicated that no more complex model could significantly improve the fit. Betas for Paths 1, 2, 3, and 4 (.34, .47, .65, and .45, respectively) were all significant (z s = 2.25, 4.05, 5.33, and 3.89, respectively; all p s < .025).

We purposely measured perspective after empathy and helping in each experiment because we were concerned that measuring it earlier might introduce experimental demand (Orne, 1962). Measuring it after these other measures could, however, introduce a different problem in Experiment 2. Rather than following the predicted order, the causal order might follow the order of measures: Valuing might affect empathy (Path 1), which might affect helping (Path 2), which might affect perspective (Path 3). To check this possibility, we used EQS to test a model with these three paths. This model did not provide a good fit to the data, differing significantly from the saturated model, $\chi^2(3, N = 39) = 15.85, p > .005$, RMSEA = .34, CFI = .75. Failure of this model indicated that even though measured last, perspective scores were not simply inferred from the preceding measures. Perspective entered the causal path where predicted.

The four-path partial-mediation model provided support for the basic claim of Hypothesis 4: induced valuing leads to spontaneous perspective taking, which, in turn, leads to empathy, which, in turn, leads to helping. At the same time, it indicated that the valuing–empathy relation was not fully mediated by perspective. Similar to what we found in Experiment 1, the valuing manipulation also affected empathy independent of its effect on perspective

taking. We could think of two possible reasons for this independent effect, one methodological and one theoretical. First, participants may have had some difficulty accurately reporting the degree to which they adopted a particular perspective while reading Bryan's account. It is not something one is often asked to do. Second, participants may not have needed to actively imagine how the valued Bryan felt in order to experience empathy. Already vigilant for his welfare, it may have occurred naturally.

Discussion

Results of Experiment 2 provided support for each of the four hypotheses—with a couple of qualifiers. Supporting Hypotheses 1a and 1b, experimentally inducing participants to place relatively low value on the welfare of a person in need made them less likely to spontaneously take that person's perspective (vs. remain objective) than did either experimentally inducing high valuing or providing no explicit information on which to base a value judgment. Supporting Hypotheses 2a, 2b, and 3, higher valuing of Bryan's welfare led to increased empathic concern, and that increased empathy, in turn, was associated with increased helping. The effect of the valuing manipulation on empathy was, however, qualified by an interaction with gender. The pattern of differences was the same for both men and women, but it was considerably stronger for women.

Supporting Hypothesis 4, path analysis revealed significant paths from the valuing manipulation (low vs. high) to spontaneous perspective taking, from perspective taking to empathy, and from empathy to helping. Path analysis also revealed that the mediation was only partial. There was a path from the valuing manipulation directly to empathy, unmediated by perspective taking.

General Discussion

Valuing Another's Welfare as an Antecedent of Empathic Concern

Overall, results of our two experiments—the first to directly manipulate valuing another's welfare—support the idea that such valuing is an important situational antecedent of empathic concern. In each experiment, our manipulation of valuing (low, high) had a strong, clear effect; participants reported considerably more em-

pathy for the Bryan whose welfare they valued. Nor could this effect be attributed to differences in perceived fairness (deservingness) or to differences in perceived need (even though there was evidence that with identical injuries and difficulties, the nasty Bryan was perceived to be in less need—unless, as in the imagine condition of Experiment 1, participants were asked to imagine his feelings).

It is important to note that our valuing manipulation was designed to induce intrinsic not extrinsic valuing of Bryan’s welfare. Bryan had not previously benefited or harmed our participants in any way. And they had no reason to anticipate any interaction with him in the future—even if they chose to help him. Moreover, at the point that empathic concern was measured, participants were not aware that they would have an opportunity to help Bryan at all. The manipulation was designed to lead participants to place low or high value on Bryan’s welfare in the absence of benefits or costs to self, prior or anticipated. This it seemed to do.

Our valuing manipulation focused on Bryan’s character, suggesting that he was either nice or nasty. In future research, it would be desirable to explore other ways to manipulate valuing of another’s welfare. For example, it may be possible to present the other as more or less vulnerable to possible need (e.g., a child vs. an adult—see Batson, Lishner, Cook, & Sawyer, 2005), or to have the other be someone with whom one has previously interacted cooperatively rather than competitively.

Two Other Antecedents: Perceived Need and Perspective Taking

Our two experiments provided evidence for two other situational antecedents of empathic concern. First, perceived need is an obvious antecedent of empathy felt for a person in need. Experiment 1 had sufficient variation in perceived need that it was possible to check this obvious assumption, and support was found. Second, both experiments provided evidence that, as suggested long ago by Stotland (1969) and by Coke et al. (1978), perspective taking is an antecedent of empathic concern. In Experiment 1, perspective was manipulated and, as expected, participants instructed to imagine Bryan’s feelings reported more empathy for him than did participants instructed to remain objective. In Experiment 2, perspective was measured not manipulated. Again, it was an important antecedent.

At the outset, we suggested that at least in the normal stream of behavior, valuing another’s welfare spontaneously induces perspective taking. We also suggested that this spontaneous perspective taking, at least in part, mediates the effect of valuing on empathic concern. These suggestions imply that if, as in Experiment 2, valuing is manipulated and perspective taking measured, then valuing will affect perspective taking, which will, in turn, affect empathy. Path analysis supported each of these suggestions. Path analysis also indicated that the valuing manipulation had a direct effect on empathy not mediated by perspective.

A New Model of the Antecedents of Empathic Concern

Batson (1987, Figure 1, p. 84) proposed a model depicting two situational antecedents of empathy felt for someone in need: (a) perception of the other as in need and (b) adoption of the perspective of the other. In contrast, Batson et al. (1992) proposed that

empathic concern arises when (a) another person’s welfare is valued terminally, not as an instrumental means to self-benefit; and (b) that person is perceived to be in need. Our conceptual analysis and research suggest that these two proposals are both true and, furthermore, that they can and should be integrated.

The integrated model of situational antecedents of empathic concern that we propose appears in Figure 1. In the normal stream of behavior, the two most relevant antecedents of empathy felt for another in need are (a) perceiving the other as in need and (b) valuing the other’s welfare. A third antecedent, (c) adopting the other’s perspective, lies on the path from valuing to empathy. Because it is more proximal than valuing, perspective taking can lead to empathy even in the absence of prior valuing (as long as there is not prior antipathy). However, valuing the other’s welfare can lead to empathy in the absence of explicit instructions to adopt the other’s perspective. When the other’s welfare is valued, perspective taking occurs spontaneously and, at least in part, mediates the effect of valuing on empathy. As seen in both experiments, there may also be an effect of valuing that is not mediated by perspective taking (at least not the active, effortful perspective taking measured by our self-report assessment). To reflect this effect, we have included a direct path from valuing to empathy in Figure 1, a path that bypasses perspective taking. However, because it is not yet clear whether this direct path reflects an important psychological process or only a methodological artifact, the arrow is dashed.

Implications

Much research suggests that empathic concern is capable of producing powerful prosocial—even altruistic—motivation (see Batson, 1991; Dovidio, Piliavin, Schroeder, & Penner, 2006; Eisenberg & Miller, 1987; Miller & Eisenberg, 1988, for partial reviews). Recognition of the role of valuing as an antecedent suggests that empathic concern—and the prosocial motivation it produces—can be increased if we can increase valuing of others’ welfare. Such valuing may be increased through strategies designed to reduce prejudice; to improve attitudes toward out-groups; or to produce more positive, cooperative social interactions. Typically, cognitive processes are assumed to mediate the beneficial effects of such strategies. The effects are attributed to reduced stereotyping, more inclusive self-categorization, and so on. Our analysis suggests that emotional processes may mediate at

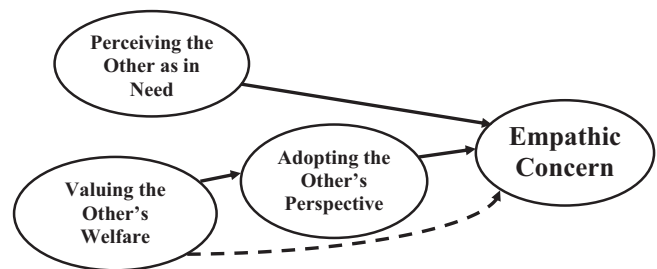


Figure 1. New model of the antecedents of empathy felt for another person in need. Because it is not yet clear whether the direct path from valuing to empathy reflects an important psychological process or only a methodological artifact.

least some of these effects. Benefits may occur because we feel for those we care for.

References

- Anderson, S. W., Bechara, A., Damasio, H., Tranel, D., & Damasio, A. R. (1999). Impairment of social and moral behavior related to early damage in human prefrontal cortex. *Nature Neuroscience*, 2, 1032–1037.
- Batson, C. D. (1987). Prosocial motivation: Is it ever truly altruistic? In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 20, pp. 65–122). New York: Academic Press.
- Batson, C. D. (1991). *The altruism question: Toward a social-psychological answer*. Hillsdale, NJ: Erlbaum.
- Batson, C. D., Early, S., & Salvarani, G. (1997). Perspective taking: Imagining how another feels versus how you would feel. *Personality and Social Psychology Bulletin*, 22, 751–758.
- Batson, C. D., Lishner, D. A., Cook, J., & Sawyer, S. (2005). Similarity and nurturance: Two possible sources of empathy for strangers. *Basic and Applied Social Psychology*, 27, 15–25.
- Batson, C. D., Polycarpou, M. P., Harmon-Jones, E., Imhoff, H. J., Mitchener, E. C., Bednar, L. L., et al. (1997). Empathy and attitudes: Can feeling for a member of a stigmatized group improve feelings toward the group? *Journal of Personality and Social Psychology*, 72, 105–118.
- Batson, C. D., Sager, K., Garst, E., Kang, M., Rubchinsky, K., & Dawson, K. (1997). Is empathy due to self-other merging? *Journal of Personality and Social Psychology*, 73, 495–509.
- Batson, C. D., Shaw, L. L., & Oleson, K. C. (1992). Differentiating affect, mood, and emotion: Toward functionally based conceptual distinctions. In M. S. Clark (Ed.), *Emotion: Review of personality and social psychology* (Vol. 13, pp. 294–326). Newbury Park, CA: Sage.
- Batson, C. D., Turk, C. L., Shaw, L. L., & Klein, T. R. (1995). Information function of empathic emotion: Learning that we value the other's welfare. *Journal of Personality and Social Psychology*, 68, 300–313.
- Bentler, P. M. (1980). Multivariate analysis with latent variables: Causal modeling. *Annual Review of Psychology*, 31, 419–456.
- Bentler, P. M. (1989). *EQS structural equations modeling manual*. Los Angeles: BMDP.
- Coke, J. S., Batson, C. D., & McDavis, K. (1978). Empathic mediation of helping: A two-stage model. *Journal of Personality and Social Psychology*, 36, 752–766.
- Davis, M. H. (1994). *Empathy: A social psychological approach*. Madison, WI: Brown & Benchmark.
- Davis, M. H., Soderlund, T., Cole, J., Gadol, E., Kute, M., Myers, M., & Wiehing, J. (2004). Cognitions associated with attempts to empathize: How do we imagine the perspective of another? *Personality and Social Psychology Bulletin*, 30, 1625–1635.
- Dovidio, J. F., Allen, J. L., & Schroeder, D. A. (1990). The specificity of empathy-induced helping: Evidence for altruistic motivation. *Journal of Personality and Social Psychology*, 59, 249–260.
- Dovidio, J. F., Piliavin, J. A., Schroeder, D. A., & Penner, L. A. (2006). *The social psychology of prosocial behavior*. Mahwah, NJ: Erlbaum.
- Eisenberg, N., & Miller, P. A. (1987). Empathy and prosocial behavior. *Psychological Bulletin*, 101, 91–119.
- Heider, F. (1958). *The psychology of interpersonal relations*. New York: Wiley.
- Krebs, D. (1975). Empathy and altruism. *Journal of Personality and Social Psychology*, 32, 1134–1146.
- Miller, P. A., & Eisenberg, N. (1988). The relation of empathy to aggressive and externalizing/antisocial behavior. *Psychological Bulletin*, 103, 324–344.
- Orne, M. (1962). On the social psychology of the psychological experiment: With particular reference to demand characteristics and their implications. *American Psychologist*, 17, 776–783.
- Stotland, E. (1969). Exploratory investigations of empathy. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 4, pp. 271–313). New York: Academic Press.

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