Altruistic Social Interest Behaviors Are Associated With Better Mental Health

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Objective: This study investigated whether altruistic social interest behaviors such as engaging in helping others were associated with better physical and mental health in a stratified random sample of 2016 members of the Presbyterian Church throughout the United States. **Methods:** Mailed questionnaires evaluated giving and receiving help, prayer activities, positive and negative religious coping, and self-reported physical and mental health. **Results:** Multivariate regression analysis revealed no association between giving or receiving help and physical functioning, although the sample was highly skewed toward high physical functioning. Both helping others and receiving help were significant predictors of mental health, after adjusting for age, gender, stressful life events, income, general health, positive and negative religious coping, and asking God for healing ($R^2 = .27$). Giving help was a more important predictor of better reported mental health than receiving help, and feeling overwhelmed by others' demands was an independent predictor of worse mental health in the adjusted model. Significant predictors of giving help included endorsing more prayer activities, higher satisfaction with prayer life, engaging in positive religious coping, age, female gender, and being a church elder. Frequency of prayer and negative religious coping were not related to giving help. **Conclusions:** Helping others is associated with higher levels of mental health, above and beyond the benefits of receiving help and other known psychospiritual, stress, and demographic factors. The links between these findings and response shift theory are discussed, and implications for clinical interventions and future research are described. **Key words:** social interest, altruism, social support, mental health, physical health, spirituality, stress, response shift.

INTRODUCTION

Although social interest and altruism are considered desirable personality traits and indeed are the cornerstone of mental health in Adlerian psychology (1), their impact on physical and psychosocial well-being has only recently been the focus of empirical investigation. Social interest can be defined as "a cooperative approach toward life and a striving for ideal community" (2) and reflects the "capacity to value the interests and welfare of others even when these have no personal utility" (3). Related to the psychoanalytic concept of generative altruism (4), these constructs reflect a pleasure in fostering the success or welfare of another. Recent work in the emerging discipline of positive psychology has identified altruism as an adaptive mental mechanism that is a mature psychological defense (5). Independent of education and social privilege, altruism can regulate people's perceptions of those internal and external realities they are powerless to change, and empower them to effect meaningful change (5). The present work investigates the effects on physical health and psychological well-being of altruism as reflected by social interest behaviors.

To date, empirical investigations of the benefit of social interest or altruism suggest that they are associated with better life adjustment (6, 7), perceived meaningfulness of life (8, 9) and marital adjustment (10), and less hopelessness (11) and depression (12). Additionally, social interest has been shown to be a predictor of physical health status (13) and a moderator of life stress (14). In general, helping behaviors that aid survival and material wealth for close relatives are considered more rational, ethical, and obligatory than helping behaviors aimed at nonfamily members (15). However, recent research on preventive behavioral interventions has identified altruism concern for others as a prevalent and salient motivator for engaging in safe sex to prevent human immunodeficiency virus transmission (16), suggesting that focusing on intimacy, affiliation, and altruism has population-level adaptive advantages over focusing on achievement and power. Both orientations have been called "equal and essential partners in human evolution and development" (17), although research comparing psychological well-being and life satisfaction in people with either orientation revealed no between-group differences (18). There is some speculation, however, that the health ramifications of the type A personality (19) are caused by a lack of social interest (1) that may result from not having obtained a sense of belonging, and developing instead an achievement-oriented egocentricity (20).

In religious communities, the social connections may be particularly effective stress buffers and stress deterrents (21). This effect may in part be a result of a tendency to use positive religious coping responses when one receives spiritual support from religious community members (22). The benefit of religion may also be a result of a tendency in religious community members to provide help to others. One large study of Japanese elderly found that greater involvement in religion was associated with helping others more frequently, and that older adults who more often provided assistance to others rated their health more favorably than people who were less involved in helping others (23). Krause et al. (23) suggested that helping others may explain at least part of the relationship between religious involvement and better self-reported health.

In addition to health benefits, helping others may bring a psychosocial benefit to the helper. A 2-year follow-up of patients with multiple sclerosis providing a supportive ear to others was associated with three to seven times the benefit in quality-of-life outcomes (eg, role performance, self-efficacy, coping ability, well-being) among those giving as compared with receiving help (24). The effects were particularly pronounced in aspects of subjective well-being such as purpose in life, self-acceptance, and personal growth. Qualitative interviews exploring these effects revealed that by helping others,

the patients were able to reframe their own suffering, derive a stronger sense of meaning in life, and feel a stronger awareness of the existence of a higher power (24). That is, their suffering became a vehicle for helping others (24). Research on the beneficial effects of volunteerism has also suggested that the psychological and physical benefits of volunteer work among the elderly may be a result of the feeling of continuity, involvement, and usefulness (25, 26), and a status-bearing role (27). Thus, in concert with the well documented beneficial effects of receiving social support, the practice of helping others seems to be beneficial. There is a substantial literature that suggests that overdoing a prosocial behavior like helping others can have significant psychological and physical costs (28–31) and that having some balance in the giving and taking of help may be very important.

Thus, there is a growing literature that suggests that altruism or social interest behaviors may have adaptive advantages for the helper. To our knowledge, however, no research has yet addressed whether helping others is more beneficial than receiving help. Further, because social interest behaviors are encouraged in religious communities, it would be worthwhile to investigate whether a marginal benefit of helping others is detectable even in a sample that is more likely than the average population to engage in helping others. The present work sought to evaluate whether helping others was more beneficial than receiving help in a secondary analysis of a large sample of Presbyterian Church members, elders (ie, lay leaders), and pastors. Another aim of the present work was to investigate the additional impact of being overloaded or having a balance of helping others and receiving help. Finally, if helping others was predictive of better quality-of-life outcomes, the present work sought to identify characteristics related to a higher probability of engaging in such altruistic social interest behaviors.

METHODS
Sample

Members and elders were drawn in a two-stage process in 1996. *Elders* were lay leaders in the church who invested time and energy into a variety of religious tasks, from assistance in religious services and program planning to membership recruitment and building maintenance (32). They were likely to define themselves by other occupational roles and their positions in the church (32). In the two-stage sampling process, 425 congregations were selected from a population of 11,361 by proportional sampling to give equal representation to congregations of different sizes. For selection of members, the individual congregations were asked to compile a numbered alphabetical list of names of members. The researchers generated seven random numbers for each congregation to correspond to the names of members. The congregations were asked to send the names and addresses of those identified members to the researchers. Seventy-three percent of congregations sent in names, yielding a total of 2163 names, and these people were sent the background survey. Sixty-three percent of members returned the background survey (1360 members, 1314 elders) and were then sent the 1997 survey questionnaire. According to the Presbytery, 1360 members were sent the 1997 questionnaire, and 1025 (75%) returned completed forms; 997 (73%) had complete data for analysis herein. Elders were drawn from the same list of sampled churches, but the names of the elders were obtained from the national offices. Four or five elders from each of the 425 congregations were randomly drawn, resulting in 1759 elders, of whom 1314 (75%) returned the first background survey and were sent the 1997 questionnaire. According to the Presbytery, 1034

(79%) returned the questionnaire; 1019 (78%) had complete data for analysis. This study examines the second questionnaire in the series, administered in 1997. Questionnaires were mailed to the members' homes and were returned by mail to the Research Services Department of the Presbyterian Church in Louisville, Kentucky. Consent was attained by a completed, returned questionnaire.

Measures

Altruistic social interest was operationalized as giving help to others by summing answers to two Likert-scaled questions that asked how often the person had "made others feel loved and cared for" and "listened to others' concerns." Receiving help was operationalized by summing answers to two questions that asked how often the "congregation made me feel loved and cared for" and "congregation listened to you talk about private concerns." The responses for each of these questions were 1) never, 2) once a while, 3) fairly often, and 4) very often. Higher summary scores reflecting receiving or giving more help. The balance between giving help and receiving help was evaluated using a ratio of the two summative scores (balance), and feeling overwhelmed by others' demand (overload) was evaluated by summing answers to two questions that asked how often the congregation "made too many demands on you" and "has been critical of you and the things you have done." Higher overload scores reflected feeling more overwhelmed.

Mental and physical health was measured by the Short Form 36 Health Survey, developed from the Medical Outcomes Study (33). This widely used instrument has extensive evidence for its reliability and criterion validity from various patient and nonpatient populations across cultures (34–39). The physical and mental health scores generated by this measure have possible ranges of 0 to 100.

Positive and negative religious coping was measured by the religion coping measure, the Brief RCOPE (40), which contains positive coping statements (eg, life as part of spiritual force; God as partner; God for strength and guidance; tried to find the lesson; tried to give strength to others) and negative coping statements (eg, God was punishing me; God had abandoned me; questioned God's existence; expressed anger at God). Positive and negative coping scores were created using principal component analysis. Eleven types of prayer were listed for members to rate according to frequency of use. Stressful events measured included death of a family member, major financial loss, major illness or injury, major disagreement with family members, major disagreement with close friend, and "any other major problem or challenge." A count of these events was an event summary score. Demographic characteristics captured included age, gender, marital status, race, education, employment status, and income.

Statistical Analysis

The present work used bivariate and multivariate linear regression and nested models with likelihood ratio tests (41) to examine how giving vs. receiving help was associated with self-reported physical functioning and mental health and to identify predictors of helping others. The distributions of both physical functioning and mental health scores were highly skewed in the entire sample. For the physical functioning scores, 31% of the respondents had a perfect score (ie, 100), and 64% had physical functioning scores of 90 or more. No transformation would provide symmetric or Gaussian distributions with this type of grouped data. To model physical functioning, we created a dichotomized variable breaking the sample into respondents with scores of less than 90 and greater than or equal to 90. In addition, we performed a "survival-like" analysis as suggested by Dudley et al. (42).

Models investigating mental health adjusted for the significant predictors that were identified in previous work performed by our group using the same data set. This work suggested that better mental health was associated with higher levels of reported positive religious coping, lower levels of reported negative religious coping, and reporting that one had asked God for healing, after adjusting for age, gender, income, general health, and a summative index of stressful events (R^2 = .26). This summative index included those events that exhibited some variability in the sample, specifically financial loss, disagreement with a family member, and disagreement with a close friend.

A cubic transformation of mental health scores provided a symmetric distribution. This value was then standardized by subtracting the mean and

dividing by the standard deviation. This result provided an interpretation of regression coefficients in terms of the standard deviation of the transformed value. The relationship between age and mental health was best fit by a cubic function, such that self-reported mental health was lowest at approximately age 25 years and peaked at approximately age 75 years. Between age 25 and 75 years, mental health seemed to increase. Because of this curvilinear relationship, three age-related parameters were included in the model (ie, age, age squared [age^2], and age cubed [age^3]).

After examination of unadjusted association of factors with the outcomes, model building for linear and logistic regression was performed with the emphasis on the adjusted association of the primary factors of giving help, receiving help, and overload. We eliminated factors with low variability and provided some variable reduction with the use of coping scores. We first estimated a model without the primary factors. We used backward elimination to create the initial model. We examined factors eliminated —in particular, ones associated in an unadjusted fashion —to determine what adjustment eliminated them and to determine that it made clinical sense. With this best model, we tested the addition of our primary factors using a likelihood ratio test. We realize that this selection process based on p values may result in biased estimates, and strict inferential interpretation of p values may not be appropriate given the multiple premodel testing and selection (43). We considered the full model with all factors. In each case, the primary factor remained significant, and the coefficient estimate was not different by more than 5%. We investigated the primary factors separately and then combined all in the model. When there was moderate correlation between factors, we used conditional regression analysis to investigate the associations. This analysis is suggested by the coplots by Cleveland (44).

RESULTS

Characteristics of Study Subjects

The original sample included 2055 members and elders who completed a baseline questionnaire regarding prayer activities, religious coping, health and well-being, and sociodemographic characteristics. Thirty-nine subjects with missing values of mental health or physical functioning were excluded. This exclusion left 997 members and 1019 elders for this analysis. Participants were predominately white, married, employed, and educated (Table 1). The average age was 56 years. Approximately 85% of participants had annual income greater than $30,000. Subjects missing demographic data did not have a significantly different mental health score from those with demographic information.

Descriptive Statistics of Predictor and Dependent Variables

Descriptive statistics of the variables used to predict the physical functioning and mental health scores are shown in Table 2. Participants in this study tended to have high physical functioning and mental health scores (median = 95 and 84; mean = 85.3 and 78.5, SD = 19.8 and 14.6, respectively). Before participating in the study, 8% of subjects suffered major financial loss, 16.3% had a major disagreement with a family member, and 5.62% had a major disagreement with a friend. Most participants did not encounter any of the stressful events studied, and the average sum of these events was 0.44 (SD = 0.69), with 66% reporting no events. Approximately 70% of the sample reported having asked God for healing for themselves, and the majority of participants believed that the congregation made them feel loved "very often" and listened to them talk about their private concerns "once in a while" or "fairly often" (receiving help mean = 5.8, SD = 1.6). Partic-

TABLE 1. Demographic characteristics of study sample (N = 2016)

Variable	N (%)
Group	
Member	997 (49.5)
Elder	1019 (50.6)
Gender	
Female	1121 (56.6)
Male	860 (43.4)
Marital status	
Married	1021 (80.4)
Not married	249 (19.6)
Race	
White	1223 (95.3)
Other	61 (4.8)
Education	
High school or less	179 (14.0)
Some college	270 (21.1)
College degree or more	833 (65.0)
Employment status	
Employed full time	618 (48.3)
Employed part time	119 (9.3)
Retired/unemployed	405 (31.6)
Other	138 (10.8)
Income level	
Less than $30,000	180 (15.1)
$30,000 to $60,000	358 (30.0)
$60,000 to $90,000	274 (23.0)
$90,000 or greater	381 (32.0)
Mean age, y (SD)	56.07 (15.5)
Range of age in years	13–98

ipants reported giving help slightly less often (mean = 5.7, SD = 1.5), although receiving and giving help were moderately correlated ($r = .68$, $p < .001$), and the mean ratio of receiving and getting help (balance) was 1.01 (SD = .27). A small percentage of participants believed that the congregation made too many demands, and was critical "fairly often" or "very often" (12% and 4%, respectively; overload mean = 3.1, SD = 1.2).

Relationship of Giving Help vs. Receiving Help to Reported Physical Functioning

In the bivariate analysis, we found that giving help, receiving help, positive religious coping, negative religious coping, age, and gender were significantly associated with reported physical function. In contrast, balance, race or ethnicity, and level of education were not significantly associated with reported physical function. In the final multivariate model, age and gender remained significantly associated with physical function; all other unadjusted associations were caused by the association of these factors with age or gender. Older people and females reported lower physical functioning in this sample.

Relationship of Giving Help vs. Receiving Help to Reported Mental Health

In the bivariate analysis, we found that receiving help was significantly associated with better mental health ($t = 5.3$,

TABLE 2. Descriptive statistics of predictors and dependent variables

	Mean (SD) or N (%)
Mental health score	78.48 (14.58)
Physical functioning score	85.30 (19.75)
Overall health: N (%) very good or excellent	1344 (66.9)
Stressful events in past year: N endorsing (%)	
Suffered major financial loss	176 (8.8)
Someone in family died	208 (10.4)
Major disagreement with family	365 (18.3)
Major disagreement with friend	139 (7.0)
Sum of above: mean (SD)	0.44 (0.69)
Asking God for healing for self: N endorsing (%)	1334 (70.8)
Receiving help: N endorsing fairly or very often (%)	
Congregation made you feel loved and cared for	1614 (82.1)
Congregation listened to you talk about private concerns	877 (48.0)
Receiving help score (sum [SD] of two receiving help items)	5.77 (1.59)
Giving help: N endorsing fairly or very often (%)	
You made others feel loved and cared for	1343 (68.5)
You listened to others' concerns	1202 (61.3)
Giving help score (sum [SD] of two giving help items)	5.65 (1.53)
Balance of helping behaviors (giving help/receiving help)	1.01 (0.27)
Overload: N endorsing fairly or very often (%)	
Congregation made too many demands on you	231 (11.8)
Congregation has been critical of you and the things you have done	85 (4.4)
Overload (sum [SD] of two items)	3.11 (1.16)

$p < .0001$, $R^2 = .014$), a relationship that was maintained after adjusting for the sociodemographic, health-related, and religious coping covariates. A likelihood ratio test comparing models with and without receiving help revealed that the two models were significantly different, and receiving help was a significant contributor to predicting mental health ($\chi^2(1) = 5.48$, $p < .01$). The addition of this variable to the full model did not change the association of the other predictors in the model, with the largest change being a 10% decrease in the positive coping coefficient.

In the bivariate analysis, we found that giving help was significantly associated with better mental health ($t = 7.49$, $p < .0001$, $R^2 = .028$), and that this relationship was maintained after adjusting for the sociodemographic, health-related, and religious coping covariates ($R^2 = 26\%$). Adding giving help to the model did not appreciably change the association of the other predictors in the model, although the positive religious coping coefficient decreased in magnitude by 20%. A likelihood ratio test comparing the full model with and without giving help revealed that the two models were different and that giving help contributed to predicting mental health.($\chi^2(1) = 12.9$, $p < .001$).

In both the bivariate and multivariate analyses, balance was not significantly associated with mental health. In contrast, overload was significantly associated with worse mental health in both the bivariate ($t = -6.21$, $p < .0001$, $R^2 = .019$) and multivariate analyses ($R^2 = .26$, $p < .0001$). Because giving help, receiving help, and overload were significant predictors of mental health, we tested a model with all three variables, after adjusting for covariates. Receiving help was no longer significant in this model, reflecting the moderate correlation between giving and receiving help in this sample ($r = .68$, $p < .00001$). Adding overload to the full model did not appreciably change the magnitude of the coefficients for the other predictors but did increase the magnitude of the coefficient for overload (from $-.09$ to $-.11$), suggesting that the negative influence of feeling overwhelmed by others' demands was stronger after adjusting for simply giving or receiving help. A likelihood-ratio test revealed that overload was a significant contributor to the model predicting mental health ($\chi^2(1) = 22.3$, $p < .001$). We thus removed the receiving help score from the model, arriving at a final model (Table 3) that demonstrated that giving help and overload were significantly associated with mental health score, independent of demographics, prayer activities, and prayerful coping. Giving help was associated with better mental health, whereas reported overload was associated with worse mental health. An examination of the model residuals revealed a symmetrical distribution, suggesting that the final model predicting mental health is appropriate.

These analyses suggested that giving help was a more important predictor of reported mental health than receiving help. Given the moderate association between the two variables ($r = .68$), we investigated whether this selection of variables in the final model was a statistical artifact or was meaningful and could thus be interpreted. Accordingly, conditional regression analysis was performed, looking at the association of one score of mental health within each level of the other score. This analysis revealed that the association of mental health was stronger with the giving help score than the receiving help score, and confirmed that the greater importance of giving help is not a statistical artifact caused by

TABLE 3.   Model predicting mental health ($N = 1632$)

Variable	Coefficient	Standard error	$p > |t|$	95% Confidence interval
Age	−.089	.026	.001	(−.138, −.039)
Age^2	.002	.0005	<.001	(.0009, .003)
Age^3	−.00001	.000006	.001	(−.00002, −.000005)
Suffer from major events	−.167	.032	<.001	(−.229, −.105)
General health at baseline	.258	.024	<.001	(.211, .305)
Positive coping score	.115	.026	<.001	(.064, .165)
Negative coping score	−.232	.028	<.001	(−.287, −.177)
Asking God healing for self	−.120	.048	.013	(−.215, −.026)
Gender—male (referent female)	.176	.044	<.001	(.090, .262)
Giving help score	.072	.015	<.001	(.042, .101)
Overload	−.113	.019	<.001	(−.150, −.076)
Constant	2.610	0.209	<.001	(2.199, 3.020)

$F = 55.77$, $p < .0001$, and $R^2 = .2732$.

shared variance but rather reflects a substantial difference in the patterns of association.

Predictors of Giving Help

Because giving help was such a salient predictor of mental health, we sought to understand what sociodemographic, prayer activities, and religious coping behaviors were associated with this construct. Table 4 presents unadjusted associations between possible predictors and giving help. All of the prayer activities, satisfaction with prayer life, positive and negative religious coping, age, and gender were associated with giving help. In contrast, frequency of Sunday worship, race or ethnicity, and level of education were not associated with giving help. Because each of the prayer activities was associated in a similar fashion, we created a summary score based on a principal component analysis (45) (eigenvalue = 2.7) for use in the multivariate model. This analytic method for data reduction creates a score based on linear combinations

of observed variables to represent the largest amount of variance in the data (45). In the multivariate model, prayer activities, satisfaction with prayer life, positive religious coping, age, female gender, and being a church elder were significant predictors of giving help, whereas frequency of prayer and negative religious coping dropped out of the model (Table 5). The effects of each predictor tended to diminish in the full model, suggesting that there is some association among the different factors. In a similar model looking at predicting balance, only prayer activity and female gender were positively associated (data not shown).

DISCUSSION

Our findings suggest that helping others is associated with higher levels of mental health, above and beyond the benefits of receiving help and other known psychospiritual, stress, and demographic factors. These findings are particularly notable because the sample studied was quite physically and mentally

TABLE 4.   Bivariate analysis examining factors predicting giving help

Variable	Coefficent	Standard error	$p > |t|$
Prayer activities			
Read Bible privately	.238	.015	<.001
Read Bible with family or friends	.250	.016	<.001
Attend Bible study groups with other than family or friends	.233	.016	<.001
Pray with one or more people	.219	.015	<.001
Participate in church social events	.362	.021	<.001
Prayer activity score	.095	.004	<.001
Frequency of prayer	.452	.031	<.001
Satisfaction with prayer life	.306	.041	<.001
Positive coping	.614	.037	<.001
Negative coping	−.147	.047	.002
Age	.016	.002	<.001
Gender—female (referent male)	.451	.069	<.001
Group—elder (referent member)	.702	.067	<.001
Frequency of attending Sunday worship	.038	.036	.297
Race—white (referent others)	−.049	.201	.807
Education			
Some college	.073	.151	.630
College graduate	.150	.144	.296
Advanced degree	.063	.136	.645

TABLE 5. Estimated coefficients, standard errors, two tailed *p* values, and 95% confidence intervals for the model predicting giving help ($N = 1633$)

Variable	Coeficent	Standard error	$p > |t|$	95% Confidence interval
Prayer activities	.072	.005	<.001	(.062, .082)
Satisfaction with prayer life	.147	.039	<.001	(.070, .224)
Positive coping	.233	.041	<.001	(.153, .314)
Age	.011	.002	<.001	(.006, .015)
Gender—female	.355	.068	<.001	(.223, .489)
Group—elder	.465	.068	<.001	(.332, .598)
Constant	2.610	.209	<.001	(2.199, 3.020)

$F = 111.79$, $p < .0001$, and $R^2 = .292$.

healthy, and thus may have had less of the requisite variability for demonstrating such relationships. The mental health dimension investigated in this work was composed of the anxiety and depression that plagues most people, rather than more pathological mental illness. Thus, our findings would likely have implications for helping clinically normal people experiencing the vicissitudes of adult life (eg, bereavement, work-related or family-related strains or stressors).

The act of giving to someone else is a way of operationalizing Erikson's (46) concept of *generativity*, which refers to behaviors that contribute to family, society, and succeeding generations (47) by being willing to share with another person, guiding others, and establishing a priority of needs that recognizes both the self and others (48). We found that people who were more likely to help others were older and female and tended to be church elders; they also practiced more prayer activities, reported more satisfaction with prayer life, and engaged in positive religious coping. These findings suggest that role expectations and a positive belief system underlie and reinforce altruistic social interest behaviors. For example, elders, females, older people, and more religious people would all have social role expectations of giving to others. These role expectations would likely be reinforced by a positive belief system, as reflected by positive religious coping, engaging in more prayer activities, and being satisfied with one's prayer life.

The act of giving to someone else may have mental health benefits because the very nature of focusing outside the self counters the self-focused nature of anxiety or depression. Schwartz and Sendor (24) propose that the process resulting from altruistic practice facilitates adaptation via response shift phenomena—that is, changes in internal standards, values, or conceptualization of quality of life (49). They suggest that an outer-directed role allows one to disengage from previous patterns of self-reference, and thereby facilitates an openness to changing internal standards, values, and concept definition (ie, response shift phenomena). These shifts are purported to lead to a renewed perspective on one's life circumstances, such as one's illness, stressors, or personal loss (24). Alternative explanations could be that people who are functioning well psychologically are better able and hence more likely to give help, rather than the reverse; or that altruism and psy-

chological health share a common cause, such as being influenced by the same set of genes.

Although our findings suggest that people who help others experience better mental health, our findings also suggest that giving beyond one's own resources is associated with worse reported mental health. We found that feeling overwhelmed by others' demands had a stronger negative relationship with mental health than helping others had a positive one. A post hoc analysis revealed that giving help and overload had a small but statistically significant correlation ($r = .20$, $p < .00001$), and there was no interaction between the two variables in predicting mental health, suggesting that the effects were additive. This pattern is reminiscent of the dysfunction of cancer cells: reproduction is a necessary and beneficial activity unless it lacks self-regulatory limits, and then it becomes pathological and threatens the viability of the organism. Because giving and receiving help tended to go in tandem in our sample (ie, the mean balance score was 1.01 and the correlation between the scores was .68), it is clear that feeling overwhelmed by others' demands is not simply a question of giving more than one receives, but rather reflects a qualitative difference in the constructs. Past research on earlier Presbyterian Panel data revealed that elders and clergy were more likely both to benefit from social support and to suffer from feeling overwhelmed by others' demands (22), suggesting that a leadership role in one's religious or spiritual community can have significant costs.

The limitations of the present work should be noted so that future research can build on our findings and rectify these limitations. First, our findings are necessarily limited by the cross-sectional design, so we are unable to evaluate whether helping others leads to better mental health, or vice versa. We were unable to test causal hypotheses of this nature in the present data because, although 2-year follow-up data were available on the outcomes of interest, the sample was remarkably stable, and thus, there was little change in physical or mental health (42). This lack of variability made it statistically impossible to predict change and thus to test causal hypotheses about the benefits of helping others. Second, the present work is a secondary analysis of the construct of altruistic social interest, so our operationalization was created post hoc and is not an ideal measure of altruism. Third, our sample

consisted of volunteers from the Presbyterian Church, so the external validity of our findings would need to be tested among people not so closely identified with a religion. However, this sample was skewed toward high levels of mental health, so detecting such an effect despite the relatively high mental health of the sample suggests that the effect is not simply a result of being better off psychologically.

Although there is a large body of research on the benefits of receiving social support, the benefits of helping others are relatively unexplored. Future observational research could build on the present work by investigating the predictive significance of helping others and identifying cues for excessive or exhaustive altruism. Intervention research may develop interventions that facilitate a person's involvement with altruistic social interest behaviors directed at peers who are experiencing a particular stressor (eg, bereavement) and evaluate whether altruistic practice buffers the person from psychological distress or somatic symptoms. It is our hope that this work will stimulate and encourage future research on the benefits of altruistic social interest.

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