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Social support moderates the relationship between stressors and task performance through self-

efficacy

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Abstract

This study examined the relationship between social support and objective task performance in a field setting. A sample of 197 participants, mean age 23.13 years (SD 3.56) completed measures of stressors, social support, and self-efficacy prior to performance. Moderated hierarchical regression analysis revealed significant ($p < .05$) main effects for stressors ($R^2 = .12$) and social support ($\Delta R^2 = .14$) in relation to performance, in the hypothesized directions. A significant interaction ($\Delta R^2 = .06$) suggested that social support moderated (buffered) the relationship between stressors and task performance. Moderated mediation analysis demonstrated that social support was associated with increases in self-efficacy, and self-efficacy was associated with enhanced performance, but that this effect was only salient at moderate to high levels of stressors.

Social support moderates the relationship between stressors and task performance through self-efficacy

Although social support has been variously defined (Veiel & Baumann, 1992), considerable evidence suggests that individuals who perceive their relationships as supportive experience favorable outcomes (Cohen & Wills, 1985). Social support is a key variable in research on mental health and well-being (for a review, see, e.g., Cohen, Underwood, & Gottlieb, 2000), and relationships have been observed between support and physiological processes (Uchino, Cacioppo, & Kiecolt-Glaser, 1996), as well as physical disease and mortality (Cohen, 1988).

Social support may also influence task performance. Sarason and Sarason (1986) demonstrated that experimentally provided social support was associated with improvements in the performance of participants working on cognitive tasks, in particular for those with low assessed support. More recently, social support has been empirically linked to aspects of performance using participants from several different work sectors (e.g., AbuAlRub, 2004; Bakker, Demerouti, & Verbeke, 2004; Madjar, Oldham, & Pratt, 2002; Park, Wilson, & Lee, 2004). For example, in a study of hospital employees, Park et al. found that high social support was associated with high supervisor-rated job performance. The evidence linking social support to performance is still relatively scarce, however. The question of whether and how social support might be related to performance has therefore been largely neglected.

At the same time, understanding the links between social support and performance could be useful in understanding more fully the link between social support and well-being. Demands, constraints, and stressors are negatively related to well-being and decrease people's ability to perform well in many different environments (Woodman & Hardy, 2001; Wright & Cropanzano, 1998). The often highly-pressurized, visible, time-framed, and public nature of performance may

therefore offer an excellent vehicle for examining the moderating (stress-buffering) role of social support. With this in mind, the present study examined the relationship between social support and objective task performance using a sample of participants in a naturalistic setting that was important to them.

If social support were associated with improved task performance, it would be important to identify potential mechanisms underpinning this relationship (Cohen, 1988; Cohen, Gottlieb, & Underwood, 2000; Lakey & Cohen, 2000; Saltzman & Holahan, 2002; Schwarzer & Leppin, 1991; Thoits, 1995). Indeed, although the conditions under which (or *when*) social support is related to outcomes (main and moderator effects) are well documented (e.g., see Lakey & Cohen, 2000), there remains a lack of empirical evidence for the specific psychological mechanisms through which (or *how*) social support operates. Theoretically, social support may lead to a host of positive cognitive, emotional, behavioral, and physiological states, which in turn lead to better outcomes (Cohen, Gottlieb, & Underwood, 2000). In this regard, self-efficacy (Bandura, 1997) may be a key cognitive mediator of the relationship between social support and outcomes. Self-efficacy has been examined as a mediator of the relationship between social support and a variety of health promoting behaviors and psychological outcomes (e.g., Duncan & McAuley, 1993; Major, Cozzarelli, Sciacchitano, Cooper, & Testa, 1990; Saltzman & Holahan, 2002). Defined as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3), self-efficacy is also considered to be a key variable for enhancing *all* aspects of human performance (Druckman, 2004). In the present study, we expected that participants' social support would be positively related to their beliefs in their capabilities to perform well. This in turn would be related to enhanced task performance.

Researchers (Cohen & Wills, 1985; Major et al., 1990; Sarason, Pierce, & Sarason, 1990) have also speculated that the moderating function of social support might operate through

enhancement of self-efficacy. In the present study, moderating would imply that at low levels of

stressors, level of social support would be relatively unimportant. However, at high levels of

stressors, only those participants with high levels of social support would maintain their

performance level. Given this moderating function, it was also possible to speculate that any

mediating impact of self-efficacy would be more likely at higher levels of stressors. A joint

examination of the moderating relationship between social support and task performance with

the potential mediating relationship of self-efficacy would be a valuable contribution to previous

research into the social support and self-efficacy relationship.

Individuals are often required to infer the extent of their capabilities through various

sources of self-efficacy information from interactions in their social environment, through direct

statements, advice, and reassurance from supportive others about their ability (Duncan &

McAuley, 1993). Social support may indeed influence self-efficacy through each of the four

channels of performance accomplishments, vicarious experience, verbal persuasion, and

physiological response (e.g., Bandura, 1997). It may be, therefore, that in stressful situations

social support promotes self-efficacy through reminders of one's previous accomplishments.

Supportive others may relate stories of their own or others' accomplishments, thereby enhancing

efficacy beliefs through vicarious experience. Verbal persuasion and reassurance from

supportive others may also influence self-efficacy, and supportive others may even reduce

adverse physiological response through distraction or by suggesting effective coping strategies.

Hypothesis 1: Stressors will be associated with worse task performance.

Hypothesis 2: Social support will be associated with better task performance.

Hypothesis 3: Social support will moderate (buffer) the relationship between stressors

and task performance.

Hypothesis 4: At higher levels of stressors, self-efficacy will mediate the relationship between social support and task performance.

Method

Participants

The participants in this study were a sample of 197 male British amateur golfers, mean age 23.13 years (SD 3.56), with handicaps ranging from +2 to 4. The golf handicap system runs from "+" numbers (the best players) through "0" to "28" (the poorest players). Numbers in each handicap band were as follows: +2 ($n = 6$); +1 ($n = 16$); 0 ($n = 37$); 1 ($n = 48$); 2 ($n = 42$); 3 ($n = 26$); 4 ($n = 22$).

Procedures

The study was approved by an institutional ethics committee blind review, and participants provided informed consent. Recruitment of participants was opportunistic (convenience sample) but spread across various golf courses in the United Kingdom during the practice period preceding major competitions. Participants completed measures of social support, stressors, and self-efficacy in the practice period; after competitions, participants' competition scores were recorded. Competitions were held over a maximum of two days, ranging from one to four rounds of golf.

Measures

Social support. Prior to model testing in this study, we constructed and refined the measurement of the key social support variables. The purpose of this was to ensure situation-specific and accurate measurement of social support, not to develop and validate a scale. This strategy follows two recommendations from the social support literature: a) social support measures should be relevant to the situational context in which they are being used, and b) social support researchers should write new items to capture specific aspects of the support needs of the

target population (Bianco & Eklund, 2001; Wills & Shinar, 2000). This is akin to the

measurement strategy within self-efficacy research (Bandura, 1997), for which it has been

argued a "one-measure-fits-all" approach has only limited explanatory and predictive value.

Measurement in the present study was guided by the insights of high-level performers regarding

their experiences of social support (Rees & Hardy, 2000).

Social support was assessed using a 15-item self-report questionnaire designed for this

study to assess perceived support. The measure asked respondents, "In the past week, to what

extent has someone . . . ," with response options ranging on a 5-point scale from 1 (not at all) to

5 (a lot). The 15 items represented the dimensions of emotional, esteem, informational, and

tangible support identified by Rees and Hardy (cf. Cutrona & Russell, 1990). Sample items

included "helped take your mind off things" (emotional), "encouraged you" (esteem), "given you

constructive criticism" (informational), and "helped to set up sessions in practice" (tangible).

Prior to data collection, the study authors and one other researcher from a separate institution

scrutinized the items making up each scale. Another two independent researchers within the

study authors' institution (one psychologist and one sociologist) correctly assigned 100% of the

items to their social support dimensions. All the items (and all other items in this study) were

also scrutinized for relevance and representativeness by one golf teaching professional and five

amateur golfers. Confirmatory factor analysis (Jöreskog & Sörbom, 1993) of the four-factor

model using the data in the present study revealed a good model fit (cf. Hu & Bentler, 1999:

$\chi^2(84) = 142.81$, $p = .00$; RMSEA = .06; SRMR = .05; CFI = .95; NNFI = .94), and Cronbach's

alpha internal reliability coefficients for the four subscales ranged from .77 to .79. Correlations

between the social support dimensions ranged from moderate ($r = .41$, $p < .05$) to high ($r = .69$, p

$< .05$). Correlations of this magnitude have been noted with other social support measures (see,

e.g., Brookings & Bolton, 1988). Indeed, Cohen and Wills (1985) noted that although social

support may be broken down into specific dimensions conceptually, in naturalistic settings the dimensions are not usually independent. These correlations lend support to averaging across the subscales to create a total support score, which was used for all subsequent analyses. Although some researchers favor the use of more differentiated measures (e.g., Cohen & McKay, 1984; Cutrona & Russell, 1990; Veiel, 1992), Viswesvaran, Sanchez, and Fisher (1999) advocated the use of aggregate measures in order to best illustrate how social support functions. In this study, we employed aggregate measures of social support and stressors (see below). This helps to reduce the risk of Type 1 errors, as well as aiding clarity. The Cronbach's alpha internal reliability coefficient for this total social support score was .82.

Stressors. Cohen, Kessler, and Underwood-Gordon (1997) highlighted three broad approaches used by researchers to measure stress. Each approach focuses upon different components of the stress process from situational demands to outcomes (e.g., performance). The environmental approach focuses upon situational demands; the psychological approach focuses upon subjective stress appraisals; and the biological approach focuses upon stress responses. The present study assessed situational demands (stressors) faced by high-level golfers. The following three perceived stressors were chosen for their particular relevance to golf, an individual and highly technical sport: "technical problems with your game," "competition pressure," and "personal problems." Both technical problems with your game and competition pressure were assessed in a previous study into the impact of social support upon self-reported sport performance (Rees & Hardy, 2004). The stressor, personal problems, was included in light of the comments of golf tour professionals in McCaffrey and Orlick (1989), who indicated that their personal life strongly affected how they played. This same observation has been made in psychological consultancy work with golfers by the authors of the present study. The measure asked respondents, "Bearing the upcoming competition in mind, please indicate to what extent

you have encountered these stressors over the past week . . . ," with response options ranging on a 5-point scale from 1 (not at all) to 5 (a lot). Although these stressor items were chosen to assess different sources of stress, they were averaged to create a total score for stressors. They were not, however, intended to form a single-factor scale. This process served to reduce the number of models to be tested and aided clarity, but should not be interpreted as evidence that the stressors measure the same underlying construct.

Self-efficacy. In relation to the up-coming competition, participants completed a 6-item measure of self-efficacy, written for this study. In deriving the self-efficacy items, reference was made to Bandura (1997) and Bandura's (2005) Guide for Constructing Self-Efficacy Scales. Similar to the construction of the social support scales, the measure was first constructed and scrutinized for content and face validity by the study authors and two other psychologists. To this end, these researchers drew upon their combined consultancy experience of more than 40 years working with performers such as those in the present study. Items were preceded by the statement, "With reference to today's performance, how confident are you in your ability to . . . ," with response options ranging from 1 (not at all confident) to 5 (completely confident). The items were: hit the ball well, putt well, swing well, execute shots, maintain your natural tempo, and trust your swing. The Cronbach's alpha internal reliability coefficient for this measure in the present study was .81. Though traditional measures of self-efficacy separate self-efficacy level and strength, research has demonstrated that Likert-type measures, such as the one in this study, have similar reliability, equivalent levels of predictive validity, and similar factor structures to the more traditional methods (e.g., Maurer & Andrews, 2000; Maurer & Pierce, 1998), and a number of studies have successfully used such methods (e.g., Chen, Gully, Whiteman, & Kilcullen, 2000; Herman & Betz, 2006; Richard, Diefendorff, & Martin, 2006; Wang & Netemeyer, 2002).

Task performance. A competition outcome index of golf performance (GPI) was used as the dependent variable. Initially, golfers' nett competition scores were calculated as number of shots taken minus handicap. Because various competitions were used, on different courses, on different days, and with differing weather conditions, a procedure was also employed to standardize nett scores across these conditions: This was nett scores minus a value for Competition Scratch Score (CSS). The Standard Scratch Score (SSS) is a standard score allotted to an 18-hole golf course, and is the score that a scratch player (zero handicap) would be expected to return in ideal conditions over a measured course; it may differ from the par of the course. The CSS is the adjustment that may be necessary to the SSS to take account of weather and course conditions; it is the SSS after it has been adjusted due to current playing conditions[1]. GPI is nett scores minus CSS. For this study, lower scores for GPI represent fewer shots taken; lower scores for GPI therefore represent better performance. As competitors completed between one and four rounds of golf, scores relative to CSS were averaged across the rounds, to give the equivalent of a one-round score. To demonstrate the calculation of GPI, let us consider one player as an example. Player A shot 77 in a competition. Player A had a handicap of 3, and therefore his nett score was 74 (77 − 3). The CSS for the competition was 72. Player A's GPI would be calculated by subtracting 72 (the CSS) from 74 (nett score), which would give a GPI of +2.

<center>Results</center>

Means, standard deviations, and intercorrelations for all scales used in this study are in Table 1.

The Relationships between Stressors, Social Support, their Product and GPI

Moderated hierarchical regression analysis (Jaccard, Turrisi, & Wan, 1990) was used to examine the relationships between stressors, social support, their product and GPI. The

independent variables were entered in a three-step process, corresponding with the testing of the

moderating model (Baron & Kenny, 1986; Cohen & Wills, 1985). First, the stressors were

entered. Second, social support was entered. Third, the product of the stressors and social support

(the interaction term, relating to whether social support has moderated the relationship between

stressors and GPI) was entered. The significance of increments in explained variance in GPI over

and above the variance accounted for by those variables already entered into the equation, as

well as the sign of the regression coefficients (with 95% confidence intervals: *CI*s), was then

assessed at each step. In line with Jaccard et al.'s recommendations, the independent variables

were standardized prior to entry. Assumptions for regression analyses were tested and satisfied.

There were just six standardized residuals greater than 1.96 in absolute value, with none greater

than 2.58. The assumption of no multicollinearity was satisfied: intercorrelations between

independent variables were not greater than .8, variance inflation factor (VIF) values were below

10, average VIF values were not substantially greater than 1, and tolerance values were above .2

(Stevens, 1996). The value for the Durban-Watson statistic (2.05) was within the accepted range

of above 1 and below 3, satisfying the assumption of independent errors. The residuals were

normally distributed, and were randomly and evenly distributed at each level of the predictor,

satisfying the assumptions of homoscedasticity, normally distributed errors, and linearity.

There was a significant main effect for stressors in relation to GPI (R^2 = .12, b = .73, $p <$

.001, 95% *CI*: {.45, 1.02}). Over and above the variance explained by stressors, there was a

significant main effect for social support in relation to GPI *(ΔR^2 = .14, b = -.85, p < .001, 95%*

CI: {-1.13, -.58}). Both these effects were in the hypothesized directions: Stressors were

associated with increases in GPI, and social support was associated with decreases in GPI.

Hypotheses 1 and 2 were therefore supported. There was a significant interaction *(ΔR^2 = .06, b =*

-.63*, p* < .001, 95% *CI*: {-.93, -.34}). Post-hoc probing of the significant interaction (Aiken &
West, 1991) demonstrated that this interaction was consistent with a moderating (buffering)
explanation: At low levels of stressors, level of social support was relatively unimportant; at high
levels of stressors, however, only those participants with high levels of social support maintained
their performance level. Hypothesis 3 was therefore supported. A further simple slopes analysis
(Aiken & West, 1991; Johnson & Neyman, 1936) provided further evidence of this effect (Figure
1). The plot of this analysis demonstrates the values of social support at which the relationship
between stressors and GPI significantly differed from zero: at levels of social support less than
.59*SD*s above the mean. The detrimental relationship between stressors and GPI was therefore
apparent with moderate to low levels of social support.[2]

The Relationship between Social Support and GPI through Self-Efficacy at Levels of Stressors

Given the significant moderator effect, the premise of Hypothesis 4 was that self-efficacy
would mediate the relationship between social support and task performance, but *only* at higher
levels of stressors. To test this hypothesis, we followed the guidelines of and employed the
analytic methods outlined in Preacher, Rucker, and Hayes (2007) for addressing moderated
mediation hypotheses. Because the strategy in the present study was to first examine social
support as a moderator of the relationship between stressors and GPI, a subsequent test of the
mediating impact of self-efficacy could be termed mediated moderation (Baron & Kenny, 1986).
As Muller, Judd, and Yzerbyt (2005) noted, however, despite conceptual differences, both
mediated moderation and moderated mediation rely on the same analytic models, and "the
distinction between the two processes can become more a matter of theoretical preference than
anything else" (p. 862). Given the nature of the moderating model, that the impact of social
support differs dependent on level of stressors, the most appropriate strategy would be to probe
more closely any mediating effect at differing levels of stressors. This is moderated mediation.[3]

This does not contradict more traditional approaches to tests of mediation (e.g., Baron & Kenny, 1986). In fact, the approach of Preacher et al. is to test the significance of the mediating effect at *several* values of the moderator, affording the opportunity to determine the exact point at which this effect becomes significant - each of those tests is identical to more traditional mediation analyses.

In Table 2 there are two multiple regression models: The first displays the path coefficients for the mediator model (with self-efficacy as the dependent variable); the second displays the path coefficients for the dependent variable model (with GPI as the dependent variable). As can be seen from the mediator model, the interaction term (social support x stressors) was significantly associated with the mediator (self-efficacy) ($b = .17, p < .01$). As can be seen from the dependent variable model, the mediator (self-efficacy) was significantly associated with the dependent variable (GPI) ($b = -.97, p < .01$). Table 2 also displays the *conditional indirect effect* at three values of the stressors: one standard deviation below the mean (-1), the mean (0), and one standard deviation above the mean (1). The conditional indirect effect refers to the indirect (i.e., mediated by self-efficacy) relationship between social support and GPI at conditional values of stressors (the moderator). As can be seen, at lower levels of stressors (stressors = -1) there was no indirect relationship between social support and GPI. At the mean (stressors = 0) and one standard deviation above the mean (stressors = 1), however, the indirect relationships between social support and GPI were significant.[4] Following normal-theory significance tests, bootstrapped confidence intervals are routinely recommended (Preacher et al., 2007). With 5000 resamples, setting stressors to -1 yielded a bootstrap 95% bias corrected and accelerated confidence interval (BCa *CI*) of {-.20, .10} (not listed in Table 2). Because this interval contained 0, the conditional indirect effect at stressors = -1 was not significantly different from zero at $\alpha = .05$. Repeating this procedure for stressors = 0 and 1 yielded 95% BCa

*CI*s of {-.34, -.09} and {-.60, -.08}, respectively. Because neither of these intervals contained zero, the conditional indirect effect at stressors = 0 and 1 was significantly different from zero. Thus, bootstrapping corroborated the results of the normal-theory tests. Overall, the signs of the path coefficients and the conditional indirect effect were consistent with the interpretation that social support was associated with increases in self-efficacy, and self-efficacy was associated with lower GPI scores, but that this effect was only significant at moderate to high levels of stressors. Table 2 also displays the conditional indirect effect at a selection of further values of the stressors within the range of the data, from which it can be seen that the indirect relationship between social support and GPI was found to be significant for any value of stressors above -.52*SD*s. In Figure 2, this conditional indirect effect is plotted along with an accompanying 95% confidence band, and a region of significance. This analysis of mediation therefore provides some support for Hypothesis 4.

Discussion

The results of this study suggest that the relationship between social support and objective task performance is positive: There was evidence for social support operating as a main effect and a moderator of the relationship between stressors and task performance. Consistent with a moderating (buffering) explanation, at low levels of stressors, level of social support was relatively unimportant. However, at high levels of stressors, only those participants with high levels of social support maintained their performance level. This therefore provided evidence of *when* the protective effect of support became salient. Additionally, the analysis of simple slopes demonstrated that the negative relationship between stressors and task performance was primarily apparent for participants with moderate to low levels of social support.

Although the potential for social support to act as a moderator is well documented (e.g., see Lakey & Cohen, 2000), the findings of the moderating functions of social support are

equivocal (Krause, 1995). The detection of a significant moderating effect for social support in the present study may have been optimized through employing context-specific assessments of stressors and social support, and by ensuring that these assessments were comparable in their level of specificity. Evans (1985) noted that significant moderator effects are notoriously difficult to detect, and McClelland and Judd (1993) highlighted a number of statistical factors that contribute to the difficulty in finding significant interactions in field studies, compared with experimental studies. In general, effect sizes for interactions are small (Chaplin, 1991). The hypothesized moderating interaction in the present study, accounting for 6% of the variance in performance, is therefore notable. There is evidence that the moderating effects of social support account on average for between 4% and 7% of the variance in a range of outcomes (e.g., Cohen & Hoberman, 1983; Dorman & Zapf, 1999; Frese, 1999; Rees & Hardy, 2004). The present sample size of 197 was sufficiently powerful (at power = .80) to detect effects of 4% or greater, and the ratio of participants to independent variables ($\approx$ 66:1) was well above acceptable limits (Stevens, 1996; Tabachnick & Fidell, 1996).

The moderated mediation analysis provided evidence of how social support was related to task performance. This analysis revealed that social support was associated with high levels of self-efficacy, and self-efficacy was associated with better performance scores. This effect was, however, most salient at moderate to high levels of stressors. Moderated mediation therefore permitted the joint examination of both *when* (i.e., at moderate to high levels of stressors) and *how* (i.e., through self-efficacy) social support was associated with performance (cf. Frone, 1999). It would appear that, similar to the moderating (buffering) effect, when stressors were relatively high, social support was associated with higher performance through its positive relationship with self-efficacy. As noted earlier, in making self-efficacy judgments, people may weigh and integrate self-efficacy information from sources in their social network (Duncan &

McAuley, 1993). In the present study, participants had higher levels of self-efficacy and

maintained higher performance levels when they perceived that they had had someone there for

them, to help take their mind off things (emotional support), to encourage them and boost their

confidence (esteem support), to give them constructive criticism and technical advice

(informational support), and to help to set up sessions in practice (tangible support). This study

therefore adds to the literature suggesting that self-efficacy may be a mediator of the relationship

between social support and adaptive outcomes (Duncan & McAuley, 1993; Major et al., 1990;

Saltzman & Holahan, 2002). That this mediational role was examined across levels of stressors is

an extension of this previous work, and further aids understanding of potential cognitive

mechanisms underpinning the relationships of social support with outcomes. Given the key role

of self-efficacy for enhancing all aspects of human performance (Druckman, 2004), further study

in relation to performance is also warranted.

Although the main effect relationship between social support and task performance

should be interpreted in light of the significant moderating effect, the proportion of variance

explained by the main effect (ΔR^2 = .14: a medium effect size, cf. Cohen, 1992) was greater than

the fairly modest effect sizes observed in two recent meta-analyses of the relationship between

anxiety and performance (Craft, Magyar, Becker, & Feltz, 2003; Woodman & Hardy, 2003). We

make this point, because anxiety is considered a key variable in relation to performance that has

been extensively studied. On the other hand, research on social support in relation to objective

task performance is rare, even in the context of sport. The results of the present study offer a very

powerful indication of the impact social support may have in relation to actual performance.

Two strengths of the present study are the use of participants in a naturalistic competitive

setting that was important to them, and the assessment of objective task performance, which

helps to guard against the risk of potential confounders (Barrera, 1986). The use of a competitive

sport context therefore provided an excellent vehicle for examining social support in relation to

actual performance. Against the backdrop of these strengths, the use of a non-experimental,

cross-sectional research design precludes any causal inferences. Indeed, although the mediation

analysis implied a causal chain from social support to self-efficacy to performance, a stronger

design would have employed assessments of all variables across three time points. Despite the

difficulties inherent in gaining access to performers even at one data point, such a strategy should

be pursued in future research. One further potential concern with the self-report measures of

stressors, social support, and self-efficacy is that any empirical demonstration of a relationship

between two variables could be attributed, at least in part, to shared method variance.

In conclusion, the present study has provided an insight into the potential for social

support to be positively associated with objective task performance, both directly and by

moderating the relationship between stressors and performance, and through its association with

enhanced self-efficacy. To further develop understanding, future studies should consider

prospective/longitudinal studies, in order to more clearly elucidate the causal chain linking

support to performance. Lakey and Cohen (2000) have outlined how attention should be focused

on the mechanisms underpinning effects of social support, and additional mechanisms should be

explored that may well in turn lead to better performance.

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[1] The CSS is a standard measure that is used throughout Great Britain to adjust the handicaps of golfers after they have played in a competition. It is calculated by the host golf club using the scores returned in the competition, based on a standard formula developed by the Council of National Unions (http://www.congu.com/faqDetail2.asp?id=149).

[2] Additional analyses using the four social support subscales revealed no differential relationships between individual subscales and performance, and no difference in the predictive utility of individual subscales in comparison with the aggregate social support scale. We have therefore only reported results for the aggregate social support score.

[3] Preacher et al. (2007) also used the term "analysis of conditional indirect effects," referring to the indirect (i.e., mediated) effect of an independent variable on a dependent variable at conditional values of a moderator.

[4] Note that in the dependent variable model, the relationship between the interaction term and GPI is significant, implying partial mediation (Baron & Kenny, 1986), and not full mediation. In other words, mediation is still present in this model, but the mediator (self-efficacy) has not explained *all* of the effect of the moderated relationship between social support and GPI. The significant conditional indirect effects (with any values of stressors greater than -.52SDs) imply that, with the addition of self-efficacy, the magnitude of the path coefficient from the interaction term to GPI has significantly reduced, but there is no requirement that this path coefficient should become nonsignificant.

Table 1

Means, SD, and Intercorrelations of Stressors, Social Support, and GPI

	Mean	SD	1	2	3
1. Stressors	2.80	.75			
2. Social support	2.82	.65	.03		
3. Self-efficacy	3.35	.67	-.16*	.30**	
4. GPI	1.21	2.39	.35**	-.36**	-.46**

Note. N = 197. *   denotes correlation significant at .05 level (2-tailed)
               ** denotes correlation significant at .01 level (2-tailed)

Table 2

Conditional Indirect Effect of Social Support in relation to GPI through Self-Efficacy

Predictor	Mediator variable model (DV = self-efficacy)			
	B	SE	t	p
Constant	3.35	.04	76.23	.00
Social support	.20	.04	4.55	.00
Stressors	-.09	.05	-1.85	.07
Social support x stressors	.17	.05	3.51	.00
	Dependent variable model (DV = GPI)			
	B	SE	z	p
Constant	4.40	.74	5.98	.00
Self-efficacy	-.97	.22	-4.49	.00
Social support	-.66	.14	-4.70	.00
Stressors	.65	.14	4.68	.00
Social support x stressors	-.47	.15	-3.16	.00
	Conditional effects at stressors = *mean* +/- 1*SD* (DV = GPI)			
Stressors	$(a_1 + a_3W)b_1$	SE	z	p
-1.00	-.03	.07	-.53	.59
.00	-.19	.06	-3.14	.00
1.00	-.35	.10	-3.50	.00
	Conditional effects at range of values of stressors (DV = GPI)			
Stressors	$(a_1 + a_3W)b_1$	SE	z	p
-2.35	.19	.13	1.46	.14
-1.18	-.00	.07	-.05	.96
-.52	-.11	.06	-1.96	.05
-.47	-.12	.06	-2.09	.04
-.24	-.16	.06	-2.72	.01
.23	-.23	.07	-3.39	.00

Note. $N = 197$. The conditional indirect effect is calculated by $(a_1 + a_3W)b_1$, where a_1 is the path from social support to self-efficacy (from mediator variable model), a_3 is the path from the interaction of social support and stressors to self-efficacy (from mediator variable model), W is stressors, and b_1 is the path from self-efficacy to GPI (from dependent variable model). For clarity, this is a truncated version of the output: Only a selection of the range of values of stressors (in SD units) is shown.

Figure Captions

Figure 1. Test of simple slopes for the interaction of social support and stressors in relation to GPI, with 95% confidence bands. The horizontal line denotes a marginal effect of zero. The vertical line represents the boundary of the region of significance. The y-axis denotes the marginal effect on GPI: the relationship between stressors and GPI at varying levels of social support. For example, at low levels of social support (1SD below the mean), a one-unit increase in stressors would be associated with a performance deterioration of ≈ 1.5 shots (i.e., GPI increases by ≈ 1.5). Overall, the plot demonstrates that with moderate to low levels of social support (< .59*SD*s), stressors were associated with poorer performance.

Figure 2. The indirect (i.e., mediated by self-efficacy) relationship between social support and GPI at levels of stressors, with 95% confidence bands. The horizontal line denotes an indirect effect of zero. The vertical line represents the boundary of the region of significance. The y-axis denotes the conditional indirect effect: the indirect (mediated by self-efficacy) relationship between social support and GPI at varying levels of stressors. For example, with high levels of stressors (1SD above the mean), a one-unit increase in social support would, through self-efficacy, be associated with a performance improvement of .35 shots (i.e., GPI reduces by .35). Overall, the plot demonstrates that with moderate to high levels of stressors (> -.52*SD*s), social support was associated with better performance through self-efficacy.