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# INTEGRATING MENTORING AND SOCIAL SUPPORT RESEARCH WITHIN THE CONTEXT OF STRESSFUL MEDICAL TRAINING

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To promote the integration of mentoring and social support research, we investigated their links to mental health and self-efficacy within the context of stressful medical training. In two studies, medical trainees (recipients) rated the mentoring quality and perceived supportiveness of clinical instructors. Study 1 revealed that support and psychosocial mentoring had very similar patterns of correlations with other constructs. Yet, support had distinct links to positive affect and self esteem whereas psychosocial mentoring had distinct links to self-efficacy. In contrast, support and career mentoring had different patterns of correlations with other constructs. Study 2 revealed that both support and mentoring strongly reflected the unique relationships among specific recipients and mentors, rather than the objective properties of mentors. We conclude that perceived support and psychosocial mentoring are highly similar constructs empirically, although each construct has some unique empirical qualities. Perceived support and career mentoring are much less similar.

Mentoring programs are common in organizations, as mentoring is widely believed to enhance recipients' skills, productivity, and commitment to organizations (Kram, 1983; Burke, 1984). Conceptually, mentoring appears to be very similar to social support. Yet, despite

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the apparent similarity of the two constructs, and despite previous calls for integration (McManus & Russell, 1997), the two literatures have developed mostly in isolation. The goal of the present research was to promote such an integration.[1]

The definitions of mentoring and social support are highly similar. Bowen's (1985) frequently cited definition is that "mentoring occurs when a senior person (the mentor) undertakes to provide information, advice, and emotional support for a junior person (the protégé) in a relationship lasting over an extended period of time and marked by substantial emotional commitment by both parties" (p. 31; see also Ensher & Murphy, 1997; Russell & Adams, 1997). House (1981; p. 39) defined social support as "an interpersonal transaction involving one or more of the following: (1) emotional concern (liking, love, empathy), (2) instrumental aid (goods and services), (3) information (about the environment), or (4) appraisal (information relevant to self-evaluation)." Other scholars have provided similar definitions (e.g., Cobb, 1976; Cutrona & Russell, 1990).

Descriptions of the key provisions of social support and mentoring reveal additional similarities. Cutrona and Russell (1990) described five provisions for social support: esteem support, emotional support, social integration, tangible aid, and informational support. Similarly, in mentoring, two basic provisions have been described as instrumental and emotional aid[2] (Kram, 1983; Noe, 1988). Instrumental aid (also called career mentoring) comprises coaching, sponsorship, exposure, or visibility for the recipient, information, protection, strategies to accomplish objectives, and challenging work assignments. Thus, instrumental aid in mentoring is analogous to the support provisions of tangible aid, informational aid, and social integration. Emotional aid (also called psychosocial mentoring) consists of role modeling, providing friendship, emotional support, counseling, positive regard, and empathy (Kram, 1983; Kram, 1985; Noe, 1988; Ensher & Murphy, 1997; Tenenbaum, Crosby, & Gliner, 2001; Sosik & Godshalk, 2000). Thus, the mentoring provision

1. We assume that social support is relevant to all mentoring relationships. When it is meaningful to describe a relationship in terms of mentoring (e.g., a dissertation advisor, manager, or big brother) it will also be meaningful to describe the relationship in terms of social support. However, mentoring might not apply to other relationships to which perceived support applies (e.g., romantic relationships).

2. Although both Scandura (1992) and Tenenbaum et al. (2001) provide evidence for three mentoring functions, most investigators distinguish between the two functions originally described by Kram (1983).

of emotional aid includes the social support provisions of esteem support and emotional support. In the present paper, we adopted Allen, Eby, Poteet, Lentz, and Lima's (2004) terminology of psychosocial mentoring and career mentoring to refer to emotional and instrumental mentoring aids, respectively.

The operational definitions of support and mentoring are also similar. Although there have been a range of assessment methods in both fields, social support has been most often operationalized as recipients' subjective judgments of the quality or availability of support from family and friends (Lakey & Cohen, 2007). For example, items from Cutrona and Russell's (1987) widely-used Social Provision Scale include "There is someone I could talk to about important decisions in my life" and "I have relationships where my competence and skill are recognized." Mentoring is also commonly operationalized as recipients' subjective judgments of mentoring quality (Dreher & Ash, 1990; Tenenbaum et al., 2001). Examples of items from Tenenbaum et al.'s (2001) measure include "to what extent has a mentor conveyed feelings of respect for you as an individual" and "to what extent has a mentor helped you finish assignments/tasks or meet deadlines that otherwise would have been difficult to complete?"

Although perceived support and perceived mentoring are very similar conceptually and operationally, the two literatures have focused on different questions.[3] The different foci make it difficult to determine whether perceived support and perceived mentoring are as similar empirically as their conceptual and operational similarities suggest. For example, mentoring research typically focuses on the correlates of mentoring satisfaction, including the role of gender and ethnicity (e.g., Ensher & Murphy, 1997; Sosik & Godshalk, 2000; Tenenbaum et al., 2001) as well as the link between mentoring satisfaction and work-related outcomes (e.g., Allen & Eby, 2003; Day & Allen, 2004; Lankau, Carlson, & Nielson, 2006; Sosik & Godshalk, 2000; Tenenbaum et al., 2001). In contrast, the vast majority of social support research has focused on links between perceived support and mental and physical health (Cohen & Wills, 1985; Sarason, Sarason, & Gurung, 2001; Uchino, 2004). A smaller body of research has

3. In the current article, we focus on research on mentoring among adults in professional and business contexts that has typically focused on work-related outcomes. There is also important mentoring research focusing on adolescents and children (e.g., big-brother; big-sister) that has typically focused on mental health-related outcomes (e.g., Grossman & Rhodes, 2002; Rhodes, Contrearas, & Mangelsdorf, 1994).

examined basic mechanisms, such as the extent to which perceived support reflects the personality of support recipients, the objectively supportive properties of providers, and the unique relationships among recipients and providers (Lakey, McCabe, Fisicaro, & Drew, 1996).

However, both social support and mentoring research have examined links to perceived similarity and self-efficacy, providing some basis for judging the extent to which perceived support and perceived mentoring share important empirical similarities.

Drawing from research on similarity and attraction (Berscheid & Walster, 1969; Byrne, 1971), scholars have found that mentor–recipient dyads that were similar in perceived attitudes, values, interests, and personality reported better perceived mentoring and learning (Allen & Eby, 2003) as well as greater mutual liking (Lankau, Riordan, & Thomas, 2005) than did less similar dyads. Likewise, support recipients perceive providers as more supportive when recipients see providers as similar to recipients in attitudes, values, and life experiences (Lakey et al., 2002) as well as age and background (Pillemer & Suiter, 1996). Thus, perceived similarity is important for both perceived mentoring quality and perceived support.

Perceived support and mentoring also have similar links to self-efficacy, the belief that one can successfully execute the behavior required to produce an outcome. Self-efficacy is linked to the initiation and persistence of goal-directed action (Bandura, 1977). Several studies have found links between perceived support and self-efficacy (Cutrona & Troutman 1986; Duncan & McAuley, 1993; Holahan & Holahan, 1987) and similar findings have been observed in mentoring (Hayes, 1998; Powers, Sowers, & Stevens, 1995).

The research reported here examined similarities and differences between perceived support and perceived psychosocial mentoring and between perceived support and perceived career mentoring by (a) estimating the correlation between perceived support and each mentoring construct, (b) comparing perceived support's and each mentoring construct's patterns of correlations with other constructs, and (c) examining the extent to which perceived support and each mentoring construct have unique links to the same constructs. Study 1 examined constructs that have previously been linked to either perceived support or mentoring. These constructs included positive and negative affect (Finch, 1998), self-esteem (Lakey & Scoboria, 2005), self-efficacy (Cutrona & Troutman, 1986; Hayes, 1998), and perceived provider similarity (Allen & Eby, 2003; Lakey et al.,

2002). We expected that perceived support and mentoring constructs would be highly correlated and would demonstrate similar patterns of correlations with other constructs. Study 2 examined the extent to which perceived mentoring reflected the characteristics of recipients, the objective properties of mentors as well as the unique relationships among recipients and mentors. Perceived support primarily reflects unique relationships (Lakey et al., 1996; Lakey, 2010) and thus we expected a similar pattern for perceived mentoring.

The studies presented here investigated support and mentoring among medical residents and fellows in specialty training. Advanced medical training is an especially appropriate context for studying both social support and mentoring because such training is highly stressful and emphasizes a high level of skill acquisition. Mentoring research has emphasized skill acquisition (Stajkovic & Luthans, 1998) and social support research has emphasized mental health under high stress circumstances (Cohen & Wills, 1985). Medical trainees experience stress stemming from overwork, lack of sleep, medical school debt, as well as balancing work and home life (Collier, McCue, Marshas, & Smith et al., 2002; Pashuram, Dhannani, Kirsh, & Cox, 2004; Martini, Arfken, Churchill, & Balon, 2004). Martini et al. (2004) reported burnout prevalence ranging from 40 to 75% in a study of residents from the same medical center from which the current studies' samples were drawn.

## STUDY 1

### METHOD

#### Participants

One hundred and four medical residents volunteered to participate. Residents are physicians who have completed four years of medical school and are in specialty training for a period of generally three to five years, where they rotate monthly through various teaching sites, such as hospitals and clinics, and may encounter the same faculty members during these rotations. Participants were from emergency medicine, internal medicine, obstetrics/gynecology, ophthalmology, and surgery. The study included residents from each year of their respective programs. There were 33 women, 68 men, and 3 who declined to report gender. The mean age was 30.6 years, ranging from 26 to 47. The ethnic breakdown was: 35.6% European

ancestry; 16.3% South Asian; 12.5% East Asian; 9.6% African-American; 5.8% Middle Eastern; 3.9% Latino/Latina or Mexican; 2.9% multiple race or other. Fourteen participants (13.5%) did not report ethnicity. All participants provided written informed consent and the study was approved by the university's Human Investigation Committee. Participants were eligible for one of three cash prizes of $50 in a random drawing. Subsequent to the study, three cash prizes were awarded.

Potential participants were invited by the department chair, co-chair, or the residency training director to attend a special meeting regarding a research study. The meeting places were near the residents' training sites, such as a hospital auditorium or conference room. The first author read from a script an invitation to participate in the study. Those who wished to participate stayed on-site to complete the surveys.

Participants completed surveys assessing perceived support, mentoring, self-esteem, affect, self-efficacy, and similarity (in the order described) and were asked to think of an individual who had been a mentor to them. Instructions defined mentors as follows: "In answering the following questions, think about a faculty member in your clinical training (not necessarily Wayne State University), who has been a mentor to you. This individual might have given you advice regarding your career, helped you to understand a difficult subject matter, was assigned to you because of academic difficulty, spent time working on a project with you, coached you, or sponsored you for an award." As a reminder to think of the same mentor while responding to the questions, participants were asked to assign a two-digit number to their mentor, and to place this number on the top of each survey page. Participants were invited to decline to respond to the surveys if they could not think of a mentor. None of the participants declined to participate. The responses of one resident were deleted because the same pattern of answers was repeated throughout the response sheet. Missing responses accounted for less than 1% of the data.

**Measures**

*Perceived social support* was assessed using the source-specific, 12-item short form of the Social Provisions Scale (SPS; Cutrona & Russell, 1987), a widely used measure with established reliability and validity, which has been used successfully to rate the support-

iveness of specific individuals. The two items referring to opportunities for nurturance were not administered as these items seemed less relevant in a medical training context. We did not conduct subscale analyses because each subscale would have had only 2 items and because there is insufficient evidence that SPS subscales have incremental validity beyond other SPS subscales (Lakey & Cohen, 2007). In the present study, internal reliability was $\alpha = .84$.

*Perceived mentoring* was assessed using 19 items developed by Dreher and Ash (1990) as modified by Tenenbaum et al. (2001). Dreher and Ash's items were developed to assess the range of mentoring aids originally identified by Kram (1983, 1985) in a business context, and Tenenbaum et al. (2001) modified the items for use among graduate students. Tenenbaum et al. (2001) reported preliminary evidence for construct validation, identifying three conceptually important factors: psychosocial help, instrumental help, and networking. In the present study, the networking items loaded with the instrumental items in a principle components analysis, and the networking items were more strongly correlated with the instrumental items ($r = .73$) than with the psychosocial items ($r = .55$). Thus, to maintain the important distinction between career and psychosocial mentoring (Allen et al., 2004, 2006) we combined the networking and instrumental items into a career mentoring scale and the psychosocial help items into a psychosocial mentoring scale. Internal reliability for the two scales was $\alpha = .91$ for career mentoring and $\alpha = .90$ for psychosocial mentoring.

*Self-esteem* typically experienced while in the presence of the mentor was measured using the 20-item, Heatherton and Polivy (1991) State Self-Esteem Scale. The scale comprises three factor analytically-derived subscales of appearance, performance, and social self-esteem. The scale has been used successfully to assess self-esteem experienced when in the presence of specific individuals (Lakey & Scoboria, 2005). The present study eliminated the six questions associated with appearance self-esteem, which seemed less relevant in a medical training context. Internal reliability in the present study was $\alpha = .83$ for performance self-esteem and $\alpha = .81$ for social self-esteem.

*Participant affect* while interacting with the mentor was measured using the 20-item Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). Watson et al. (1988) reported appropriate test-retest reliabilities, factorial validity, and convergent validity with various measures of related constructs such as depression and

anxiety. Internal reliability in the present study was $\alpha = .94$ for positive affect and $\alpha = .89$ for negative affect. This scale has been used successfully in previous research to assess affect experienced when in the presence of specific individuals (Lakey & Scoboria, 2005).

*Self-efficacy* while interacting with the mentor was assessed using a modification of the Healthcare Teams Questionnaire (Marshall et al., 2003). We used 12 of the original 68 questions, modifying some to pertain to an individual rather than to a team. Items were chosen based on whether the questions pertained to mastery or competence, a task or goal and were nonredundant. The items were, "I was certain of my medical knowledge," "I put forth my best effort on tasks," "I was confident of my medical skills," "I could identify potential problems readily," "I was confident I could do an excellent job on assignments and tasks," "I willingly contributed solutions to resolve problems," "I had excellent patient care task-related skills," "I was confident I would do well on my work," "I thought I would do well on that day's patient care assignment," "I knew how to weigh the relative importance among different issues in making a decision," "I communicated in a manner to ensure mutual understanding," and "I clearly and accurately exchanged information." In the present study, internal reliability was $\alpha = .93$.

*Perceived similarity* to mentors was assessed with a 12-item scale used successfully by Lakey et al. (2002) in their study of perceived support and perceived similarity. Recipients rated mentors on their similarity to recipient in attitudes, values, interests, and personality. In the present study, the internal reliability was $\alpha = .89$.

## RESULTS

Our first steps in examining the similarities among perceived support, psychosocial mentoring, and career mentoring were simply to examine each mentoring construct's correlation with perceived support (Table 1). Perceived support was significantly correlated with both psychosocial mentoring and career mentoring but the correlation between perceived support and psychosocial mentoring was significantly stronger than the correlation between perceived support and career mentoring ($T_2 = 2.16$, $p < .05$; Steiger, 1980). Because measurement error suppresses correlations, the correlations between perceived support and mentoring were likely underestimated. Thus, to obtain a better estimate of the extent to which per-

**TABLE 1. Intercorrelations, Means, and Standard Deviations for Study 1 Variables**

| | PSS | PM | CM | SE-Perf | SE-Soc | PA | NA | MSE | Sim | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PSS | | .74** | .39** | .45** | .28** | .47** | -.16† | .24** | .60** | 3.81 | .62 |
| PM | | | .58** | .29** | .08 | .39** | -.18† | .37** | .63** | 3.97 | .70 |
| CM | | | | .05 | -.05 | .18 | .14 | .28** | . 44** | 3.28 | .88 |
| SE-Perf | | | | | .68** | .29** | -.16† | .31** | .16 | 3.64 | .68 |
| SE-Soc | | | | | | .23* | -.28** | .15 | .15 | 3.10 | .77 |
| PA | | | | | | | -.34** | .07 | .18 | 3.43 | .94 |
| NA | | | | | | | | .10 | -.15 | 1.78 | .83 |
| MSE | | | | | | | | | .23* | 4.06 | .55 |
| Sim | | | | | | | | | | 3.33 | .64 |

*Note*. PSS = provider supportiveness; PM = perceived psychosocial mentoring; CM= perceived career mentoring; SE-Perf = recipients' performance self-esteem; SE-Soc = recipients' social self-esteem; PA = recipients' positive affect; NA = recipients' negative affect; MSE = recipients' medical self-efficacy; Sim = recipients' perception of provider similarity; S.D. = standard deviation. Means and standard deviations are based on average scores per item in which 1 = strongly disagree and 5 = strongly agree.
†$p \leq .10$; *$p \leq .05$; **$p \leq .01$

ceived support and mentoring are the same construct, we corrected each correlation for measurement error using the formula presented in Nunally (1978). The corrected correlation between perceived support and psychosocial mentoring was $r = .85$; indicating that the constructs shared 72% of their variance. The corrected correlation for perceived support and career mentoring was $r = .45$; indicating that 20% of their variance was shared.

Next, we compared the pattern of correlations observed for perceived support with the pattern observed for both psychosocial and career mentoring (Table 1). Recipients who rated their mentors as more supportive perceived their mentors as more similar to recipients, reported greater performance and social self esteem, greater medical self efficacy, higher positive affect and marginally less negative affect than did recipients who rated their mentors as less supportive. Psychosocial mentoring displayed the same pattern of correlations as did perceived support, with the exception of social self-esteem. For psychosocial mentoring, recipients who rated their mentors more favorably, perceived their mentors as more similar to recipients, reported greater performance (but not social) self-esteem, greater medical self-efficacy, higher positive affect, and marginally less negative affect than did recipients who rated their mentors less favorably. Career mentoring's pattern of correlations was less similar to perceived support's and psychosocial mentoring's patterns. For career mentoring, recipients who rated their mentors more favorably perceived their mentors as more similar to recipients and reported higher medical self-efficacy than did recipients who rated their mentors less favorably. Career mentoring was not significantly related to the affect or self-esteem variables.

Next, we tested whether the correlations between other constructs and perceived support, psychosocial mentoring and career mentoring differed significantly. There were no significant differences between psychosocial mentoring's and perceived support's correlations with positive affect, negative affect, medical self-efficacy, and similarity. The correlations between perceived support and performance self-esteem (Steiger's $T_2 = 2.52$, $p < .05$) and social self-esteem (Steiger's $T_2 = 2.97$, $p < .01$) were significantly greater than the correlations between psychosocial mentoring and performance and social self-esteem.

In contrast, career mentoring had weaker correlations than did perceived support with positive affect (Steiger's $T_2 = 2.86$, $p < .01$), negative affect (Steiger's $T_2 = -2.87$, $p < .01$), and both performance

**TABLE 2. Multiple Regression Analyses Comparing Perceived Support and Psychosocial or Career Mentoring With Simultaneous Entry in Predicting Comparison Constructs From Study 1**

| Variable | β | *t* |
|---|---|---|
| **Predicting Positive Affect** | | |
| Perceived support | .39 | 3.04* |
| Psychosocial mentoring | .10 | 0.75 |
| **Predicting Medical Self-Efficacy** | | |
| Perceived support | -.07 | -0.48 |
| Psychosocial mentoring | .41 | 3.03* |
| **Predicting Medical Self-Efficacy** | | |
| Perceived support | .15 | 1.49 |
| Career mentoring | .22 | 2.15* |
| **Predicting Perceived Similarity** | | |
| Perceived support | .29 | 2.59* |
| Psychosocial mentoring | .42 | 3.84* |
| **Predicting Perceived Similarity** | | |
| Perceived support | .50 | 6.01* |
| Career mentoring | .25 | 3.00* |
| **Predicting Performance Self-Esteem** | | |
| Perceived support | .52 | 3.99* |
| Psychosocial mentoring | -.09 | -0.71 |

*Note.* *$p \leq .05$.

(Steiger's $T_2 = 4.03$, $p < .01$) and social self-esteem (Steiger's $T_2 = 3.12$, $p = .01$). The correlations between career mentoring and self-efficacy as well as similarity were not significantly different from perceived support's correlations with these constructs.

Next, we examined the extent to which perceived support and psychosocial mentoring, as well as perceived support and career mentoring, had unique links to the same constructs. When both support and a mentoring variable had significant correlations with a construct, we conducted multiple regression analyses in which both support and mentoring were entered simultaneously in the prediction of the construct. Neither age, gender, nor ethnicity was significantly linked to perceived support, psychosocial or career mentoring, and so these were not included as covariates. As displayed in Table 2, perceived support uniquely predicted positive affect and performance self-esteem whereas psychosocial mentoring did not. Instead, psychosocial mentoring uniquely predicted medical self-efficacy whereas perceived support did not. Both perceived support and psychosocial mentoring uniquely predicted perceived mentor

similarity. Similarly, career mentoring and perceived support each uniquely predicted perceived mentor similarity. Career mentoring uniquely predicted medical self-efficacy whereas perceived support did not.

Finally, we ran the same multiple regression analyses with both mentoring constructs and perceived support entered simultaneously in the same equation. As before, only perceived support uniquely predicted positive affect and only perceived support uniquely predicted performance self-esteem. Yet, when both mentoring constructs were entered along with perceived support in predicting medical self efficacy, only psychosocial mentoring (ß = .35; $p < .05$) was a unique predictor. When all three constructs were used to predict perceived mentor similarity, both perceived support (ß = .30; $p < .05$) and psychosocial mentoring (ß = .34; $p < .05$) were unique predictors.

## DISCUSSION

Study 1 provides initial evidence that within a mentoring context, perceived support and psychosocial mentoring are very similar constructs, whereas perceived support and career mentoring are much less similar. For perceived support and psychosocial mentoring, the correlation between them was very strong, and their correlations with comparison constructs were very similar as only two of six correlations were significantly different. Despite these similarities, psychosocial mentoring retained unique links to medical self-efficacy and perceived similarity, whereas perceived support retained unique links to positive affect, performance, self-esteem and perceived similarity. Only perceived support was linked significantly to social self esteem. In contrast, career mentoring was only significantly linked to medical self-efficacy and perceived similarity and was unrelated to the mental health related constructs of positive affect, negative affect, performance and social self-esteem. Career mentoring was uniquely linked to medical self-efficacy and perceived similarity beyond perceived support, but not beyond psychosocial mentoring. To our knowledge, this is the first empirical examination of similarities and differences among perceived support, psychosocial mentoring, and career mentoring.

A key similarity among perceived support, psychosocial mentoring, and career mentoring was their very strong links to perceived

mentor similarity. These results are consistent with previous reports that greater similarity among mentoring dyads is linked to higher relationship quality (Allen & Eby, 2003), greater liking (Tsui & O'Reilly, 1989; Lankau et al., 2005) and the provision of more psychosocial (Lankau et al., 2005) and career development mentoring (Godshalk & Sosik, 2003). Study 1's findings are also consistent with previous reports that perceived support and perceived provider similarity are very closely linked (Lakey et al., 2002; Pillemer & Suiter, 1996). These findings extend previous work in mentoring to a medical training context. Thus, better perceived mentoring might emerge if residents were matched to mentors who were similar to residents in attitudes, values, personality, and life experiences.

A key difference between perceived support and both psychosocial and career mentoring was that perceived support was more closely linked to mental health-related constructs. Perceived support was significantly more strongly related to both performance and social self-esteem than was psychosocial mentoring. Perceived support had unique associations with positive affect and performance self-esteem, whereas psychosocial mentoring did not. Only perceived support was related significantly to social self-esteem. Career mentoring was not significantly linked with any of the affect or esteem variables. Perceived support's stronger links to mental health is consistent with the primary focus of the social support literature. These findings might indicate that a mentor's perceived supportiveness conveys that a mentor cares about the recipient as a person in addition to a professional context, whereas perceived mentoring conveys a more narrow belief that the mentor cares about the recipient primarily in a professional context. Finally, that we observed only 1 of 4 possible links between mentoring and self-esteem fits with previous, inconclusive evidence regarding mentoring and self-esteem (Frecknall & Luks, 1992; Koberg, Boss, & Goodman, 1998; Seibert, 1999).

A second key difference between mentoring and perceived support was that psychosocial mentoring had unique links beyond perceived support to medical self-efficacy. These findings fit the conception of mentoring relationships as primarily geared toward helping recipients acquire knowledge and skill, whereas supportive relationships are geared toward helping recipients maintain mental health. The links between mentoring and self-efficacy are consistent with the results of other studies (Hayes, 1998; Powers et al., 1995) and suggest that one way that mentoring might improve profes-

sional skill is through promoting self-efficacy. To our knowledge, Study 1 is the first documentation of these links in an empirical study of a medical training context.

Finally, the primary goal of this research was to stimulate the integration of research on perceived support and mentoring. Study 1 suggested that perceived support and psychosocial mentoring are highly similar. If so, then it should be possible to derive new predictions for both perceived support and psychosocial mentoring by drawing from each construct's unique literature. For example, recent research has indicated that perceived support primarily reflects the unique relationships among recipients and providers, rather than the personality of recipients, or the objective supportiveness of providers. If psychosocial mentoring and perceived support are highly similar, then we would predict that psychosocial mentoring also will primarily reflect unique relationships. In contrast, Study 1 suggested that career mentoring is less similar to perceived support and therefore career mentoring might not be primarily relational.

## STUDY 2

Study 2 examined the extent to which perceived support and mentoring reflected the characteristics of recipients, the objective properties of mentors as well as the unique relationships among recipients and mentors. When subsets of recipients all rate the same mentors, Generalizability (G) Theory (Cronbach, Gleser, Nanda, & Rajaratnam, 1972) and the Social Relations Model (SRM; Kenny, 1994) can estimate the relative strength of the influences of recipients, mentors, and relationships on perceived support, psychosocial mentoring, and career mentoring. As applied in Study 2, G/SRM approaches define recipient influences as mean differences among recipients, averaged across mentors. For example, Recipient 1 might see both Mentors A and B as more effective than does Recipient 2. Mentor influences reflect interrater agreement among recipients that some mentors are more effective than others. For example, recipients might agree that Mentor A is more effective than Mentor B. Insofar as interrater agreement indexes objective reality, mentor influences reflect the extent to which some mentors are objectively better than other mentors. Relational influences reflect the extent to which recipients systematically disagree about the relative effectiveness of the same mentors. These influences reflect recipi-

ents' personal tastes in mentoring. For example, Recipient 1 might prefer Mentor A to Mentor B because Recipient 1 prefers Mentor A's Socratic style to Mentor B's didactic style; yet Recipient 2 might display the opposite preference. Phrased differently, relational influences indicate the extent to which perceived mentoring reflects unique matches between specific recipients and mentors. In this example, Mentor A is the better match for Recipient 1 whereas Mentor B is the better match for Recipient 2.

Several G/SRM studies have been conducted on perceived social support with consistent, yet initially surprising results (Branje, van Aken, & van Lieshout, 2002; Lakey et al., 1996). In a recent meta analysis, Lakey (2010) estimated that approximately 25 - 30% of perceived support reflected recipient influences, approximately 5 – 10% reflected the objectively supportive properties of providers (analogous to mentor influences), and about 65% reflected the unique relationships among providers and recipients. If psychosocial mentoring and perceived support reflect very similar constructs, the two should show similar patterns of findings in a G study. Career mentoring might display a different pattern as it was less similar to perceived support than was psychosocial mentoring in Study 1.

To our knowledge, mentoring theory and research does not make a clear prediction about the extent to which perceived mentoring should reflect recipient, mentor, and relational influences. However, mentoring is commonly described as though it reflects the objective properties of mentors. For example, Lee, Dennis, and Campbell (2007), writing in *Nature,* described top science mentors as having qualities such as enthusiasm, sensitivity, and unselfishness. Although not explicitly stated, the authors seemed to imply that these qualities were objective features of mentors. Yet, based on the relative strength of mentor and relational influences in perceived support research (Lakey, 2010) and given the similarity of perceived support and psychosocial mentoring in Study 1, we expected that psychosocial mentoring would also show strong relational influences and weak mentor influences.

## METHOD

### Participants

Participants were physicians who were in medical fellowship training following completion of residency training. Fellowship pro-

grams were the obstetrical subspecialty of maternal-fetal medicine and the internal medicine subspecialties of gastroenterology, infectious diseases, nephrology, and pulmonary medicine. These fellowship programs are typically three years in length, and fellows who participated represented each year of training. At the time of the study, fellows had been in the program for at least eleven months. The participants included six fellows each from four programs and seven fellows from one program, for a total of 31 participants from five programs. Participants were 20 women, 9 men, and 2 who declined to indicate their gender. The mean age was 33.0 years (range 29 to 42). The ethnic breakdown was: 32.3% South Asian ancestry; 12.9% Middle Eastern; 9.7% African-American; 6.5% East Asian; 6.5% European; and 3.2% Latino/Latina or Mexican. Twenty-nine percent of participants did not indicate their ethnicity. None of Study 2 participants were in Study 1. Eighty percent of providers were male. Eighty percent of providers were of European ancestry and 20% were of East Asian or South Asian ancestry

## PROCEDURE

Prior to the study, the directors of the participating fellowship programs identified three faculty members who served as mentors for all fellows. To estimate mentor and relational influences in a G study, it is important that at least a subset of participants rate the same mentors. Fellowship programs offer numerous opportunities for a trainee to interact one-on-one with faculty members in a mentoring relationship. The numbers of trainees and faculty in the fellowship programs studied were relatively small: typically two to three new fellows a year for a three-year training period, except for pulmonary medicine, for which there were six new fellows a year. Programs typically had about 12 faculty members. Within a program, all fellows rated the same three faculty mentors and thus analyses were based on a total of 15 faculty mentors. Participants were asked to rate each mentor (specified by name) on perceived support, psychosocial and career mentoring using the same social support and mentoring scales used in Study 1. The order of the measures was counterbalanced, as was the order in which faculty names were presented.

Potential participants were invited by the division head or fellowship training director to attend a special meeting regarding a

research study. The meeting sites were located in places such as the division's conference room, the fellows' office area, or an auditorium. The first author read from a script an invitation to participate in the study. Those who wished to participate stayed on-site to complete the surveys.

To determine the extent to which recipients perceived faculty members as providing mentoring aids, participants completed six items derived from Bowen's (1985) description of mentoring provisions. Of the 93 recipient—mentor dyads (31 recipients rating 3 mentors) 84% of mentors were rated as providing at least one of the mentoring provisions. We retained dyads for analysis even when no mentoring provisions were reported because excluding dyads with very low mentoring or support scores would underestimate mentor and relational influences, as these influences reflect differences among mentors and recipient—mentor dyads. The two questions that elicited the highest number of agree or strongly agree responses per provider were "has helped me understand a difficult subject matter" (57%) and "has given me advice regarding my career" (49%).

Data were analyzed as a [(Recipients x Mentors) nested within Program] x Items design, with 31 recipients, 15 mentors, and 5 residency programs. Each recipient represented a level of the Recipients factor and each faculty mentor represented a level of the Mentors factor. Recipients and mentors were nested within programs and items were fully crossed with recipients, mentors, and programs. Each of the perceived support and mentoring items was combined into one of 2 aggregates (odd and even-numbered items) to simplify the design and reduce measurement error. Items and mentors were within-subjects factors and recipients and groups were between-subjects factors. All factors were random. As G studies typically have one observation per cell, the highest order interaction (Recipient x Provider nested within Group x Item in the current study) served as the error term (Kenny, 1994). Variance estimates were obtained through the variance components routine of SPSS, version 14.0 (2005), using restricted maximum likelihood estimation.

## RESULTS

Variance components, 95% confidence intervals, and proportion of variance explained are displayed on Table 3. Effects involving items

**TABLE 3. Variance Components for Social Support and Mentoring from Study 2**

| Source | Variance Component | Standard Error[a] | 95% Confidence Interval[a] | Proportion of Variance Explained[b] |
|---|---|---|---|---|
| **Perceived Social Support** | | | | |
| Recipients | .10 | .10 | -.10 to .30 | .08 |
| Mentors | .10 | .09 | -.08 to .28 | .08 |
| Relationships | .56 | .12 | .33 to .80 | .47* |
| **Psychosocial Mentoring** | | | | |
| Recipients | .31 | .17 | -.02 to .63 | .24 |
| Mentors | .03 | .08 | -.13 to .18 | .02 |
| Relationships | .79 | .17 | .46 to 1.12 | .62* |
| **Career Mentoring** | | | | |
| Recipients | .60 | .20 | .20 to 1.00 | .50* |
| Mentors | .10 | .07 | -.05 to .24 | .08 |
| Relationships | .36 | .08 | .20 to .52 | .30* |

*Note.* [a] Refers to Variance components. [b] Proportion of variance explained was calculated by dividing the variance component for a given effect by the total variance. Total variance was the sum of all variance components, including those presented in Table 3, as well as those not shown here, i.e., Programs, Programs x Item, Recipients (within Programs) x Items, Mentors (within Programs) x Items and Recipients x Mentors (within Programs) x Items. *$p < .05$.

and programs are not reported in order to simplify the presentation, and because effects involving items typically are interpreted as measurement error. Details of effects involving items are available upon request.

As displayed on Table 3, relational influences for perceived support were very strong and statistically significant. Recipient and mentor influences were small and not significant. Psychosocial mentoring displayed nearly an identical pattern as relational influences were very strong and statistically significant. Mentor influences were small and not significant. Phrased differently, there was very little agreement among recipients regarding which mentors provided better or worse psychosocial mentoring. Recipient influences were small and nonsignificant. As suggested by the results for Study 1, career mentoring displayed a different pattern of findings than did perceived support and psychosocial mentoring. Both recipient and relational influences were strong and significant. Mentor influences were small and not significant.

## DISCUSSION

Study 2 demonstrated the utility of integrating support and mentoring research by importing hypotheses and research methods from perceived support research to mentoring research. G/SRM research has indicated that perceived support primarily reflects the unique relationships among recipients and providers, and reflects the objectively supportive properties of providers to only a small degree (Branje et al., 2002; Lakey, 2010; Lakey et al., 1996). Consistent with Study 1, psychosocial mentoring and perceived support displayed very similar patterns. Very little of psychosocial mentoring reflected the objective features of mentors. Instead, perceived psychosocial mentoring primarily reflected the unique relationships among recipients and mentors. Career mentoring differed from support and psychosocial mentoring in that career mentoring had very strong recipient influences —stronger than has been observed in studies of perceived support. Yet, like perceived support and psychosocial mentoring, career mentoring reflected little in the way of the objective properties of mentors. Instead, career mentoring was similar to perceived support and psychosocial mentoring in that career mentoring had strong and significant relational influences.

The small and nonsignificant mentor influences on both psychosocial and career mentoring might surprise some readers, as mentoring quality is commonly described as an objective feature of mentors that can be easily trained and adopted (Lee et al., 2007). Yet, like perceived support, there was very little interrater agreement among recipients about which mentors were better or worse. Therefore, a mentor who is effective for one recipient might not be effective for another recipient. Thus, if our findings are replicated by other investigators, it would suggest that training mentors to be more uniformly effective for all trainees might be of limited utility.

We should note that Study 2 was underpowered for detecting very small mentor influences. Yet, to our knowledge, samples of the size used in the current study do not bias downward the estimation of the variance components themselves. Confidence in our estimates of mentor influences for psychosocial (.02) and career mentoring (.08) is increased by the fact that our estimate of mentor influences for perceived support (.08) in the current sample was nearly identical to a recent meta analytic estimate of provider (i.e., mentor) influences for perceived support (i.e., .07; Lakey, 2010). Thus, given

that our estimate of mentor influences for perceived support in the current study was highly accurate, we suspect that our estimates of mentor influences for career and psychosocial mentoring were likely accurate as well.

Like perceived support, perceived mentoring appears to reflect the unique relationships among specific mentors and recipients, or phrased differently, the unique matches between specific recipients and mentors. This finding is similar to a recent report of strong relational influences in perceived teaching effectiveness (Gross, Lakey, Edinger, Orehek, & Heffron, 2009). The possibility of relational influences in mentoring has been intimated in mentoring research for some time, as many studies have investigated the extent to which same gender or same ethnicity dyads were more effective than mixed gender or ethnicity dyads (Ensher & Murphy, 1997; Sosik & Godshalk, 2000). An important question is, to what extent does sorting mentors and recipients by gender and ethnicity adequately capture the very strong relational influences observed in the present study? Gender and ethnicity might lack the precision needed for detecting the strong relational influences observed in Study 2, in that sorting mentors and recipients into these categories assumes implicitly that all differences among mentors and recipients are captured by gender or ethnicity. Phrased differently, studying relational influences by gender or ethnicity assumes that all people of a given gender or ethnicity are functionally equivalent with regard to mentoring. In contrast, relational influences as detected in G/SRM methods treat each individual recipient and mentor as distinct individuals.

Although there were very strong recipient influences on career mentoring, the current study was not designed to detect the mechanisms for these influences. For social support, it is well established that perceivers differ in cognitive biases whereby some perceivers are generous in judging providers' supportiveness, and other perceivers are stingy (Lakey & Cassady, 1990). A similar cognitive mechanism might have been operating in the current study. Behavioral mechanisms are also possible, whereby some recipients might elicit better mentoring from most mentors than do other recipients. However, to our knowledge, such behavioral mechanisms have not yet been demonstrated for either perceived support or mentoring (Lakey, 2010).

It is also possible that the very large recipient influences on career mentoring are specific to academic medical environments. In subspecialty medical training, mentors may not necessarily be kind

or patient and indeed may provide feedback that is constructive but negative, because of the high levels of skill and knowledge that must be demonstrated by the recipient on an ongoing basis. This environment might magnify pre-existing differences among recipients in sensitivity to criticism or rejection (Pietrzak, Downey, & Ayduk, 2005), leading to larger recipient effects than would be observed in a different setting. However, it is not clear why such a process would be observed for career mentoring, but not for psychosocial mentoring or perceived support.

## GENERAL DISCUSSION

The current studies promote the integration of research on perceived support and mentoring by examining the extent to which perceived support and mentoring had similar empirical properties. Perceived support and psychosocial mentoring were highly similar. The two constructs were very highly correlated, displayed very similar patterns of correlations with other constructs, and displayed very similar patterns of recipient, mentor, and relational influences. Nonetheless, the two constructs were not redundant. Psychosocial mentoring had unique links to medical self-efficacy and perceived support had unique links to positive affect and self-esteem. Career mentoring and perceived support were less strongly correlated than support and psychosocial mentoring, and career mentoring was unrelated to mental health-related constructs. Career mentoring was uniquely linked to medical self-efficacy beyond perceived support (but not beyond psychosocial mentoring) and had strong recipient influences, whereas perceived support did not.

Given the similarity between perceived support and psychosocial mentoring, we would predict that the kinds of positive career outcomes obtained for psychosocial mentoring (Allen et al., 2004) would also be observed for perceived support. We would also predict that common findings in perceived support research would generalize to psychosocial mentoring. Study 2 provided an example of the approach to integration that we advocate. Perceived support research was the basis for the prediction that psychosocial mentoring would be primarily relational, as well as for the methods used to test this hypothesis. Of course, one cannot assume that findings always will generalize across the two literatures. For example, Study 1 suggested that perceived support's links to mental health

might not be as strong for mentoring, and that mentoring's links to career-related self-efficacy might not generalize to perceived support. Further, the extent to which findings for perceived support will generalize to mentoring likely also depends upon the type of mentoring construct, as perceived support and career mentoring were less similar in the present studies than were perceived support and psychosocial mentoring.

Before closing, it is important to note some of the limitations of this research. First, all of our data were self-reported and thus independent observers might not have agreed with recipients' reports. Second, Study 1 did not include measures of stress and so it was not possible to test whether perceived support's and psychosocial mentoring's links to affect and self esteem reflected stress buffering effects (Cohen & Wills, 1985). Third, Study 2 asked recipients to rate the same three faculty members, and recipients might not have had true mentoring relationships with the same three faculty members. If so, the results from Study 2 should be interpreted conservatively. Fourth, Study 2 was underpowered for detecting the very weak provider effects typically observed for perceived support (Lakey, 2010). Fifth, although the physician samples used in the present studies are unique in the mentoring and social support literatures, the results of our studies might not generalize to other samples of recipients.

To conclude, the present studies demonstrated the potential utility of the integration between social support and mentoring research. Conceptual similarities between support and mentoring suggested Study 1, which showed very close similarities between perceived support and psychosocial mentoring. These empirical similarities suggested that well-established findings within social support might generalize to mentoring research and vice versa. Testing this prediction, Study 2 found that (like perceived support) perceived mentoring was primarily a reflection of unique relationships among recipients and mentors, rather than the objective features of mentors. Thus, training programs designed to help mentors become more objectively effective might be of limited utility. Instead, as has been suggested for social support interventions (Lakey, 2010), it might be more effective to match specific recipients with specific mentors such that effective mentoring relationships naturally emerge. We look forward to further productive integration between the social support and mentoring literatures.

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