

Perception of Teacher Support and Reaction Towards Questioning: Its Relation to Instrumental Help-seeking and Motivation to Learn

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The present study was conducted to determine the effects of students' perception of both teacher support and students' reaction to questioning on the instrumental help-seeking strategy used by students. The researchers also examined the relationships between these three variables and the motivational components of achievement goal theory. A self-report questionnaire was administered to 1558 undergraduate university students, and structural equation modeling (SEM) was used to explore relations between the variables. Overall, the fit of the base model was reasonably good. Results indicate that perception of teacher reaction had a direct and positive effect on students' instrumental help seeking, as well as indirect and positive effects on self-efficacy, and task value. Perception of teacher support had an indirect, positive effect on task value. Furthermore, results revealed that motivational components have important mediating effects on instrumental help-seeking.

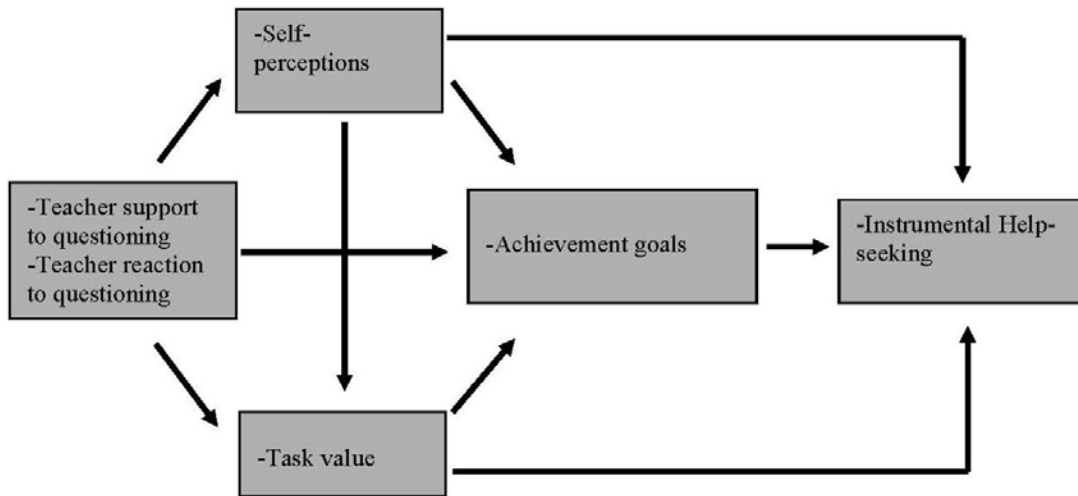
In predicting the success of university students, researchers often highlight the use of appropriate learning strategies and motivation as two important variables to consider. Specifically, these variables are important relative to their relation to the learning process and students' commitment towards achievement (Bandura, 1986; Pintrich & Schrauben, 1992; Zimmerman, 2000). This emphasis on motivation and learning strategies in the research on student success is consistent across the literature and is demonstrated in a number of studies (Bouffard, Boisvert, Vezeau, & Larouche, 1995; Eccles, Wigfield, & Schiefele, 1998; Midgley, 2002; Pintrich & Schunk, 2002). This vast body of research has offered both conceptual and empirical evidence to support that the proper use of learning strategies, including cognitive, metacognitive, affective, and self-regulatory processes, interacts with personal and contextual characteristics to predict students' motivation to learn and their level of academic success. In order to offer further support to this growing body of literature, this study explored the relationships between (a) the contextual characteristics of teacher support and teacher reaction to questioning, (b) students' motivation to learn, and (c) students' help seeking strategies. Specifically, the main purpose of this study was to determine the effects of undergraduate students' perception of teacher support and teacher reaction to questioning on help seeking strategies. As well, motivation was examined as a mediator of this relationship.

Several studies have previously examined contextual characteristics, focusing on students' perception of their instructors' behaviors, the instructors' attitudes towards student questioning, and the influence of these contextual variables on both

students' motivation and their use of learning strategies. To support this, there is now considerable evidence that students' questioning in the classroom, considered a form of academic help-seeking, can be a proactive learning strategy in that it denotes student involvement and self-regulation (Ames, 1983; Karabenick 2004; Newman, 1994). As students ask teachers for help, teachers can play a significant role in the development of students' classroom involvement and motivation. By their general attitude and their responses to questions, teachers can exert significant influence over whether and how effectively students use this learning strategy. It is for this reason that the present study explored teacher support and response to questioning in relation to student learning and motivation.

In the present study, a broad adaptation of a model proposed by Pintrich and Schrauben (1992) was used to explore different aspects of motivation that may help explain university students' help-seeking strategy. An overview of the model is shown in Figure 1. The hypothesized relationships between variables identified in the theoretical model are consistent with those identified and discussed in the literature review to follow. The model proposes that students' instrumental help-seeking is influenced by motivational components such as their achievement goals, their self-perceptions, and task value. Self-perceptions include control beliefs and self-efficacy for learning and performance; achievement goals consist of mastery-oriented goals, performance-approach, and performance-avoidance goals, whereas task value represents the degree of importance, or the utility students grant to a learning task. Teacher support and reaction was also included in the model as a variable with indirect influence on instrumental help-seeking strategy. This modification of

FIGURE 1
Anticipated Direct and Indirect Relations among Variables in the Theoretical Model Retained



the model is based on Karabenick's (2004) work that proposes that teacher behavior has a significant influence on the sources and nature of university students' help-seeking strategies.

Help-Seeking Strategy

Researchers often distinguish between two different help-seeking patterns: one is referred to as *instrumental*, or *adaptive*, wherein students look to decrease the subsequent need for assistance by asking a clarifying question; the other help-seeking pattern is referred to as *executive*, or *expedient*, whereby the help-seeker attempts to avoid work by asking others for answers to problems (Butler, 1998; Nelson-Le Gall, 1981, 1985; Newman, 2000). Some authors indicate that help-seeking is generally subject to the same influences as other learning strategies, such as motivational components, self-beliefs, and study habits (Karabenick, 1998; Newman, 2000). However, Karabenick (2004) cautions that because the process of seeking help is inherently social, social features of the learning context are more relevant for this type of learning strategy than they would be for more cognitive or metacognitive strategies, such as rehearsal or effort regulation. Therefore, the way teachers respond to requests for assistance is considered a crucial social determinant of the extent to which students voluntarily seek help in classrooms (Karabenick & Sharma, 1994).

Research has thus identified the importance of teachers' behavior in the help-seeking behavior of

students. However, more recently several researchers have begun to explore classroom instructor behavior and the tone of student-teacher interpersonal interactions relative to students' motivation and self-regulated learning (Freeman & Anderman, 2005; Kerksen-Griep, 2001; Plecha, 2002; Seung, Schallert, & Lemonnier, 2004). In other words, recent research has identified the importance of the quality of student teacher relationships. These authors stress the importance of creating a classroom climate that promotes students' effort, improvement, and mastery of content. This research has also suggested that instructors encourage students to initiate interactions and allow for the establishment of a constructive relationship between themselves and the teacher. In addition, by their control over classroom activity and their responses to questions, teachers can create a classroom goal structure that is task mastery-oriented. Teachers can also design classroom activities and/or respond to questions in ways that encourage student questioning, thereby enhancing students' help-seeking strategies.

As with previous research on college students (e.g. Barron & Harackiewicz, 2001; Elliot & Church, 1997; Karabenick, 2004; Pintrich, Zusho, Schiefele, & Pekrun, 2001), the present study examined how students' perceptions of their teacher support and reaction to questioning influence students' motivation to learn and their use of academic help-seeking strategies. These relationships were explored from the perspective of achievement goal theory.

Achievement Goal Theory

Sociocognitive theories of learning often link motivation, cognition, and self-regulation (e.g. Pintrich & Schunk, 1996; Pintrich & Zusho, 2002; Snow, Corno, & Jackson, 1996; Zimmerman & Schunk, 2001). Out of these theories, achievement goal theory has emerged as one of the most prominent social cognitive theories of motivation (Pintrich & Schunk, 2002). A number of studies conducted on learning outcomes over the last 20 years have documented the essential role of achievement goals as predictors of adaptive learning behavior (for reviews see Ames, 1992; Dweck, 1990; Elliot, 1999). Furthermore, achievement goals are widely recognized as important constructs in understanding the behavior of students in higher educational settings (Church, Elliot, & Gable, 2001; Harackiewicz, Barron, Tauer & Elliot, 2002; Mattern, 2005).

Initially, achievement goal theory purported that there are two primary goals or reasons why students engage in achievement behavior. These goals were 1) mastery and 2) performance (Dweck & Legget, 1988). A mastery goal is characterized by the development of competence relative to a specific task and reflects a focus on the individuals' learning and understanding. By contrast, a performance goal reflects an individual's focus on demonstrating his or her ability or competence. The difference between the two goals then is the focus, such that mastery goals center on developing competence, whereas performance goals center on the demonstration of competence.

Although this two dimensional model is useful in separating individuals' orientation towards a goal, recent research has begun to highlight the limitations of such a model. For example, Elliot and his colleagues (Elliot, 1997; Elliot & Church, 1997; Elliot & Harackiewicz, 1996) challenged the two dimensional model and proposed instead a trichotomous goal framework. This three dimensional model includes both mastery and performance goals; however, it divides performance into performance-approach (an approach goal focused on attaining normative competence) and performance-avoidance goals (an avoidance goal focused on avoiding normative incompetence). Studies using this newer model have explored the differential effects of the two types of performance goals. Results from these studies have demonstrated that indeed there was a difference between the two types, such that performance goals had deleterious effects only when college students focused on avoiding showing their low abilities, as opposed to embracing and allowing for the demonstration of their low abilities (Harackiewicz, Barron & Elliot, 1998).

In addition, recent studies have examined the effectiveness of conceptualizing achievement goal

theory based on a three dimensional structure. For instance, Harackiewicz, Barron, and Elliot (1998) examined studies in which researchers tested the independent effects of mastery and performance-approach goals. These authors noted that performance goals were both conceptually and empirically independent of mastery goals and that these goals do not necessarily have a reciprocal relationship (e.g. positive mastery goal effects do not necessarily imply negative performance goal effects). Moreover, Barron and Harackiewicz (2001) found that both goals can promote important educational outcomes and suggest that students who endorse both mastery and performance-approach goals will be most likely to attain success in college. In addition, researchers have more recently acknowledged that learners often have multiple goals (Barron & Harackiewicz, 2001; Mattern, 2005). Empirical data shows that, although the magnitude of both mastery and performance goals can be different, goals may co-exist in a learner and simultaneously exert their unique effects on learning. For example, a student can pursue high mastery goals in order to develop and improve his knowledge and at the same time be concerned about his grades due to their importance for admission to graduate school or a grant application. These results demonstrate the unique structures inherent in each of the goal orientations and argue for the importance of this model that accounts for both.

Using the three dimensional model, studies have begun to explore the effects of the three different goals on student outcomes. These studies have revealed that mastery goals have been linked to a number of positive processes and outcomes, such as deep processing of information, the long-term retention of information, students' effort, persistence, and affect in the face of a challenge while studying, as well as absorption in study material, self-regulated learning, and a willingness to seek help with schoolwork (Church, Elliot & Gable, 2001; Elliot & Church, 1997; Elliot & Harackiewicz, 1996; Middleton & Midgley, 1997). This indicates that mastery goals often have positive effects on student learning and development.

As for the outcomes of having performance goals, the research has shown that different outcomes occur as a function of the type of performance goals used, that is, performance-approach versus performance-avoidance. Performance-approach goals have been shown to lead to numerous positive and a few negative processes and outcomes. The positive outcomes linked to performance-approach goals are effort and persistence while studying, higher levels of aspiration, absorption during task engagement, and challenge-related affect (Elliot & Church, 1997; Elliot & Harackiewicz, 1996; Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Middleton & Midgley, 1997).

However, performance-approach goals have also been linked to negative consequences, such as test anxiety, use of shallow learning strategies, and an unwillingness to seek help with schoolwork (Elliot, McGregor, & Gable, 1999; Middleton & Midgley, 1997). By contrast, performance-avoidance goals have been linked to far fewer positive outcomes and a multitude of negative processes and outcomes that include low interest in tasks, low self-determination, threat-related affect and distraction while studying, procrastination, anxiety prior to and during evaluation, poor retention of information, poor performance, and unwillingness to seek help with schoolwork (Elliot & Church, 1997; Elliot & Harackiewicz, 1996; Middleton & Midgley, 1997). Taken together, these findings provide further support for the trichotomous framework and the differential effects of each goal on student success.

Goal Orientation and Help-Seeking Strategy

Research has consistently reported relationships between goal orientation and help-seeking patterns of students. In other words, research has identified the importance of investigating the effects of goal orientation on students' level of help-seeking. Indeed, studies have shown that students who adopt mastery goals are more likely to engage in instrumental help-seeking, whereas those who adopt performance-approach goals either avoid seeking help or seek immediate or expedient help. (Arbreton, 1998; Butler & Neuman, 1995; Karabenick, 1998, 2004; Ryan & Pintrich, 1997). This suggests that students with a mastery goal orientation are likely to feel more comfortable and willing to ask for help, while students who tend to have more performance-approach orientations are less likely to engage in seeking help and working through a problem on their own. In fact, research has actually indicated that performance goal orientation and instrumental help-seeking are often unrelated (Arbreton, 1998; Ryan & Pintrich, 1997). One study, conducted by Newman (1998), did find a relationship between performance-approach goals and instrumental help-seeking, but the direction of the effect depended on the classroom environment, such that the classrooms that stressed learning (positive) led to more instrumental help-seeking, while those classrooms that focused more on performance (negative) resulted in fewer students using instrumental help-seeking. This finding suggests that the classroom environment is an important factor to consider when exploring the relationship between performance goal orientation and help-seeking.

Teacher Support of Questioning and Help-Seeking Strategy

Another important aspect of achievement goal theory is the consideration of how various structures in the classroom environment are thought to influence students' motivation. Such structures include the nature of the tasks used, the way in which students are recognized and evaluated, and the authority structure of the classroom. These, together with teachers' instructional practices, are related to students' adoption of mastery and performance goals (Anderman, Patrick, Huda, & Linnenbrink, 2002; Patrick, Anderman, Ryan, Edelin, & Midgley, 2001). Karabenick and his collaborators (Karabenick, 2004; Karabenick & Knapp, 1991; Karabenick & Sharma, 1994) examined the role of undergraduates' perceptions of teacher support of student questioning and students' goal orientation as predictors of academic help-seeking. Results of this study indicated that perceived teacher support of student questioning had significant and consistent relationships with students' motivational tendencies and strategy use. In addition, a bidirectional relationship was found between these two variables. For instance, students who were more intrinsically motivated, highly valued course material, were more self-confident, or who had more achievement-oriented control beliefs, perceived their teachers as being more supportive of student questioning (Karabenick & Sharma, 1994). Conversely, students who were more threatened by seeking help perceived their teachers as being less supportive. These studies highlight the importance of examining the theoretical relationships between student variables, such as goal orientation, on students' perceptions of teacher behavior. However, one study found that threat appears not to be related to college students' self-reported help-seeking from formal sources, such as the teacher (Karabenick & Knapp, 1991), suggesting that the perceived benefits of seeking help can lead to adaptive help-seeking behaviors.

In addition, not only has research demonstrated that specific instructional characteristics can influence students' achievement goals, but studies have also shown that various aspects of the social-relational environment of classrooms have been related to students' self-confidence and self-efficacy beliefs (Plecha, 2002; Rugutt, Ellet, & Culross, 1998). For instance, when students feel more efficacious, they are more likely to use strategies like help-seeking to regulate their learning. The close relationship between self-efficacy beliefs and the use of adaptive strategies has been studied and confirmed (Karabenick & Sharma, 1994; Pintrich & DeGroot, 1990; Pintrich & Schrauben, 1992). Essentially, these studies have shown that

students who are more likely to seek instrumental help show higher levels of both self-efficacy beliefs and task value. Additionally, these students also demonstrate a higher tendency towards a mastery goal orientation (Arberton, 1998; Karabenick, 2001; Newman, 2000; Ryan & Pintrich, 1997). Moreover, previous research using students' self-reported perceptions of motivation and learning strategies show associations between teachers' promotion of a mutually respectful classroom environment and academic self-efficacy and self-regulated learning, such that the more respectful the classroom, the higher the students perceived their own self-efficacy and self-regulated learning (Ryan & Patrick, 2001).

Present Study

Research examining the associations between students' help-seeking strategy and preferred sources of help has consistently demonstrated that students with a mastery goal orientation prefer formal sources rather than informal sources of help. In other words, they prefer for the source of help to have a higher level of expertise. Conversely, expedient help-seeking is usually sought in order to minimize effort (by obtaining the answer to a problem rather than making use of more time-consuming explanations). Consequently, the students looking for more expedient help possess a stronger preference for performance-approach goals (Newman, 1998). These students also prefer seeking help from informal sources (Karabenick, 2004). Finally, the pursuit of performance-avoidance goals is often portrayed as fundamentally aversive and threatening, is posited to elicit few if any positive consequences, and, therefore, many researchers do not include this variable in their studies (e.g. Pintrich, 1999; Midgley, Kaplan, & Middleton, 2001).

With this in mind, it is important to point out a few differences in the way we assessed components of help-seeking strategy in this study. First, given its social nature and because we believe it bears greater pedagogical value, we chose to focus specifically on perception of instructors' support and reaction to student question asking and the influence of this perception on students' instrumental help-seeking. Therefore, unlike previous research, the conceptual and operational definition of help-seeking strategy in the present study exclusively considered student classroom questions addressed to formal sources. Student questions to informal sources were not examined.

Second, a particularly problematic feature of earlier research is the way in which help-seeking indicators were assessed. For example, rather than asking students for what purpose and from whom they sought help, they were asked what they would do contingently (Karabenick, 2004; Newman, 1994). These measures of

students' intentions to seek help contained statements in conditional form, asking students to rate why they would seek help (if they did) and from whom. Although it appears that studying students' intention to seek help can provide some valuable information on the sources and the nature of help seeking, we believe that in order to investigate variables that predict such behavior, actual help-seeking behavior, and not its likelihood, must be examined. In order to address this limitation, participants in the present study were asked to report their actual help-seeking behavior and not an eventual intention of such behavior.

Third, although earlier work has studied teacher support defined as a more general attitude towards student questions, little attention has been given to teachers' more specific behavior. In response to Karabenick's (2004) assertion, the current study will address more specific teacher behavior, particularly expressions of support and teachers' reactions that work to encourage the effective use of questioning in the classroom (e.g., opportunity and quality of responses). Hence, in the study reported here, we included perception of instructor's general attitude towards questioning as well as their reactions to student questioning in terms of verbal and non-verbal behavior. For example, we included behavior like praise for a good question and looking directly at a student when he/she asks a question. We hypothesized that the way teachers act and respond to their students' questions is particularly salient in the formulation of the students' impressions of their teachers.

Finally, although the literature has consistently laid claim to the importance of both students' goal orientations and help-seeking strategies in students' academic success, these constructs have yet to be extensively explored in relation to one another. The little work that has been conducted in this area suggests that goal orientations and help-seeking strategies are related (e.g., Karabenick, 1998; Karabenick & Sharma, 1994; Newman, 2000), but additional research is needed to further understand how these constructs are related to, or influence, one another.

Building on previous research that has examined associations between goal orientations, teacher support of questioning, and help-seeking strategy, the researchers examined the relations among these three constructs in the present study. More specifically, this research was based on three main goals:

- 1) To determine direct and indirect effects of student perceptions of teacher reactions and support of questioning on students' self-reported instrumental help-seeking strategies.
- 2) To explore the relationships between student perceptions of teacher reaction and support of questioning and the various motivational

components of learning (i.e., self-efficacy, task value, mastery goal, and performance goal)

- 3) To explore how the four motivational components are related to one another and how each component is related to students' help-seeking strategies.

Method

Overview

Data were collected between the eighth and twelfth week of the fall 2003 and winter 2004 semesters. A self-reported questionnaire was administered once to every student in each classroom and took approximately 15 minutes to complete. It was completed during students' class time, which helped maximize the number of participants. Since this study involves students' perceptions of self and of their teachers, and given that students were met in different classes, they were instructed to fill out the questionnaire focusing on the specific course they were in at the time of completing the questionnaires. All participants were assured total confidentiality of their responses and were told that only the researchers would have access to the data.

Participants

Participants were obtained from 32 classes in a variety of disciplines at two large Canadian, public, French-speaking universities located in the province of Quebec. This was an opportunity sample that included 1558 undergraduate university students with an overall 52% female ratio. Participation was voluntary, and approximately half of the classes sampled were in the humanities with others from the social sciences and education disciplines.

Measures

A questionnaire aimed at assessing students' perception of their teachers' support and reaction towards questioning, as well as of students' perception of their own help-seeking was developed for the purpose of this study. Several self-reported attitudes scales from different sources were used to constitute the questionnaire. Students were instructed to respond to the items on a five-point Likert type scale ranging from 1 (not at all true of me) to 5 (very true of me). Reliability and consistency (Cronbach's alpha) values reported are for the French version, the version used for the purpose of this study. Instrument validation was assured. This was conducted firstly by a two-way translation executed by two independent

translators, and afterwards by three experts in the field who validated the French version. This validation was conducted prior to the pilot test of the questionnaire, which was distributed to 50 students. Responses from the pilot tested version of the scale were not included in any of the statistical analyses.

Motivational components. Twenty items from the *Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1991)* were used to account for the following variables: self-efficacy beliefs ($\alpha = .93$), task value ($\alpha = .90$), mastery goals ($\alpha = .74$), and performance-approach goals ($\alpha = .70$). The self efficacy subscale is made up of four items, such as "I am confident I can understand the most complex material presented by the instructor in this course." The task value subscale contains four items, such as, "It is important for me to learn the course material in this class." Four items comprise the mastery goals subscale, such as, "In a class like this, I prefer course material that really challenges me so I can learn new things." Finally, the performance-approach goals subscale consists of four items, such as "Getting a good grade in this class is the most satisfying thing for me right now." The MSLQ does not measure performance-avoidance goals; therefore, this construct was not included in this study.

Teacher support and reaction to questions. This section of the questionnaire consists of two distinct scales; the first measures students' perception of teachers' attitudes toward their questions. The second looks at students' perception of teachers' behavior to questions. A French version of the *Perceived Teacher Support of Questioning (PTSQ; Karabenick & Sharma, 1994)* was used to measure students' perception of teacher support of student questioning ($\alpha = .79$). The PTSQ comprises five items, two of which are worded in the supportive direction and indicate a positive attitude toward questions (e.g., "Your teacher tells students to interrupt him whenever they have a question."), and three of which are formulated in the nonsupportive direction, indicating a negative attitude toward questions (e.g., "Your teacher doesn't stop for questions once he begins talking."). Scores for these questions are reversed.

The four items ($\alpha = .80$) aimed at assessing perceptions of teacher's reaction to questions were adapted from existing questionnaires (Christensen, Curley, Marquez, & Menzel, 1995; Fritschner, 2000; Menzel & Carrel, 1999; Nunn, 1996). This scale includes verbal and non-verbal behavior, such as "In class, the instructor asks you to elaborate on a response to a question" (verbal), and "In class, the instructor looks at you when you ask a question" (nonverbal). Students were also instructed

TABLE 1
Items Factor Loadings from a Principal Axis Factoring with Oblimin Rotation

| Items | Factor | | | | | | |
|-------|-----------------|------------------|---------------|-------------------|------------|---------------|--------------|
| | Teacher support | Teacher reaction | Mastery goals | Performance goals | Task value | Self-efficacy | Help seeking |
| V2 | .77 | | | | | | |
| V4 | .75 | | | | | | |
| V12 | .74 | | | | | | |
| V6 | .72 | | | | | | |
| V8 | .62 | | | | | | |
| V17 | | .77 | | | | | |
| V14 | | .69 | | | | | |
| V5 | | .68 | | | | | |
| V16 | | .60 | | | | | |
| V18 | | | .82 | | | | |
| V25 | | | .77 | | | | |
| V40 | | | .63 | | | | |
| V42 | | | | .83 | | | |
| V27 | | | | .75 | | | |
| V37 | | | | .65 | | | |
| V33 | | | | | .86 | | |
| V50 | | | | | .85 | | |
| V23 | | | | | .77 | | |
| V29 | | | | | .77 | | |
| V39 | | | | | | .85 | |
| V32 | | | | | | .84 | |
| V22 | | | | | | .83 | |
| V47 | | | | | | .74 | |
| V45 | | | | | | | .82 |
| V20 | | | | | | | .78 |
| V28 | | | | | | | .78 |
| V24 | | | | | | | .76 |
| V38 | | | | | | | .72 |
| V26 | | | | | | | .70 |

to respond to the items on a five point Likert scale ranging from 1 (*entirely false*) to 5 (*entirely true*).

Exploratory factor analyses reveal that teachers' support of student questioning, which reflects a more general attitude, and teachers' reaction to student questioning, which reflects behavior addressed to a specific student, are two distinct concepts (see Table 1).

Help-seeking strategy. One scale of the *Test of Sources and Indicators of School Motivation (TSISM;* Barbeau, 1994, in its French version) was used to assess students' help-seeking strategy. The scale is comprised of six items, three of which are worded positively ("I raise my hand when I have a question."), and three of which are formulated negatively ("I rarely ask questions in class, even when I do not understand."). Again, the negatively formulated questions were reverse scored ($\alpha = .72$).

Data Analysis

To assess the coherence and independence of the scales, we began the analyses with a Principal Axis Factoring with Oblimin rotation with Kaiser Normalization. This process was conducted on the full sample using SPSS 13 for Windows. Seven factors

were extracted with eigenvalues ranging from 1.48 to 4.07 (see Table 1 for item loadings). Among the 35 items from the initial questionnaire, two were discarded following this process because of values lower than .4. Also, perceived control beliefs was discarded from the analyses as part of the items related to this factor cross loaded on two factors with values higher than .4, while the other part of the items did not load high enough to be retained. The final results indicate good internal validity of the measures.

With respect to this study's goals, structural equation modeling (SEM) was used to explore relations between (a) perception of teacher support and reaction to questioning, (b) students' help-seeking strategy, and (c) motivational components across students. SEM procedures provide a useful way to examine how multiple, related constructs interact with and impact one another (Hoyle, 1995). All SEM analyses were conducted with AMOS 4.0 using maximum likelihood estimation. As recommended by Hoyle (1995) and Hu and Bentler (1999), the goodness-of-fit of the models were assessed using chi-square, as well as several other indices of fit, such as, root mean square error of approximation (RMSEA), the Tucker-Lewis Index (TLI), and the Comparative Fit Index (CFI). Although

TABLE 2
Indices of Fit for Base and Final Structural Models

| Model | χ^2 | df | RMSEA | TLI | CFI |
|--------------------------|----------|-----|-------|-----|-----|
| Model 1 (base model) | 3871.9 | 336 | .07 | .81 | .84 |
| Model 2 (final model) | 2677.3 | 314 | .06 | .84 | .86 |

exact fit to the model would be indicated by RMSEA = 0, by convention, there is also good model fit if RMSEA is less than or equal to .05. The model provides an adequate fit if RMSEA is less than or equal to 0.8. More recently, Hu and Bentler (1999) have suggested $RMSEA \leq .06$ as the cutoff for a good model fit. As in OLS regression, the standardized regression coefficients (β) are used to compare the relative importance of the independent variables. The interpretation is similar to regression: if a standardized regression coefficient is 2.0, then the latent dependent will increase by 2.0 standard units for each unit increase in the latent independent.

Results

Overall, the fit of the base model was reasonably good, as is shown by the various fit indices ($\chi^2 = 3871.9$; RMSEA = .07, TLI = .81, CFI = .84). The direct relation between perception of teacher support and reaction on mastery and performance goals demonstrated non-significance. Therefore for parsimony, we eliminated this relationship from the model, resulting in a more simplified model. This resulted in a small gain of fit ($\chi^2 = 2677.3$; RMSEA = .06, TLI = .84, CFI = .86). Considering the improvement, we decided to retain the revised model as final. For purpose of clarity, the various fit indices of both models are also given in Table 2.

Figure 2 presents the significant structural weights when estimated freely with standardized maximum-likelihood parameter. The single-headed arrows (\rightarrow) have standardized factor loadings next to them. All factor loadings in this model were statistically significant at the .05 level, indicating the convergent validity of the indicators. The curved, double-headed arrow has correlation coefficients next to it and indicates the estimated intercorrelation between the two exogenous latent variables. This correlation was statistically significant at the .05 level.

We first examine the direct and indirect effects of student perception of teacher support and reaction to questions on instrumental help-seeking strategy (see Figure 2). Perception of teacher reaction had a direct effect ($\beta = .20$) on instrumental help seeking, as well as indirect effects on self-efficacy ($\beta = .25$) and task value ($\beta = .17$). Perception of teacher support on the other hand only had an indirect effect on task value ($\beta = .09$).

Moreover, there were no statistically significant direct effects of perception of teacher support and perception of teacher reaction on achievement goals, whether mastery or performance oriented. The effect of perception of teacher support on achievement goals was mediated by task value, while the effect of perception of teacher reaction on achievement goals was mediated by both task value and self-efficacy.

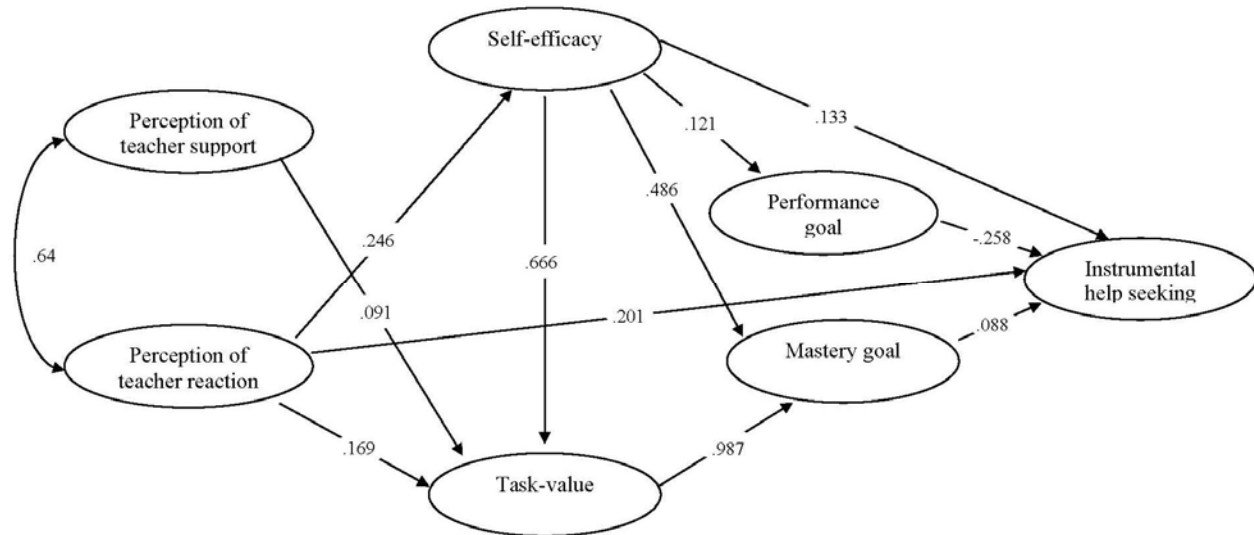
Other important effects in the model were found for self-efficacy, task value, and achievement goals on instrumental help-seeking. First, self-efficacy exerted a significant direct effect ($\beta = .13$) on instrumental help-seeking, as well as various indirect effects on mastery goal ($\beta = .49$), performance goal ($\beta = .12$), and task value ($\beta = .67$). Second, task value solely exerted an indirect effect ($\beta = .99$) on mastery goal. Finally, mastery goal had a positive, direct effect ($\beta = .09$) on the outcome variable, whereas performance goal had a negative, direct effect ($\beta = -.26$).

Discussion

The main purpose of the present study was to determine the direct and indirect effects of students' perception of teacher support and reaction to questioning on help seeking strategy. We also wanted to examine the relationships between the aforementioned variables and several other variables, namely motivational components and help-seeking strategy. Regarding the initial objective of this study, results confirm the usefulness of our modified model in order to predict the outcome variable, instrumental help-seeking. Indeed, both exogenous variables of the model (perception of teacher support and perception of teacher reaction to questioning) were linked in important ways to student motivation components that mediated the effects of the former over instrumental help-seeking. This is consistent with prior studies that affirm that students are more likely to use strategies that characterize self-regulated learning when they perceive more support from instructors (Karabenick & Sharma, 1994, Newman, 1994).

Although all motivation components measured in this study were affected, it is important to mention that each exogenous variable showed a distinctive path. For instance, the effect of perception of teacher support on instrumental help-seeking differs in some way from that reported by previous studies. The influence of

FIGURE 2
Final Structural Equation Model for Instrumental Help Seeking



Note. $p < .05$

perception of teacher support was only mediated by task value. Task value, for its part, exerts a very strong direct effect on mastery goal orientation, which in turn, directly predicts instrumental help-seeking. We also found no evidence of a direct path between students' perception of teacher support to questions and achievement goals. We believe this to be the most noteworthy discrepancy between ours and results from earlier studies. These previous studies had hypothesized direct effects between these two variables (Karabenick & Sharma, 1994). This unanticipated result can partially be explained by the fact that our study asked students to report actual help-seeking behavior rather than rely on report of hypothetical behavior. This disparity might also be attributable to important class size differences between our sample and that of the previous study. In Karabenick and Sharma's study, enrollments varied between 229 and 450 students, while in our study enrollments varied between 13 and 59 students. It is possible that group dynamics, as a result of large differences in group size, have an impact on students' perception of teacher support. For instance, a larger class size may increase the importance for students of having more teacher support. This may be especially important in light of our finding relative to the role of teacher support on students' achievement goal orientation.

Results from this study also demonstrated that achievement goals exerted different direct effects on help-seeking strategy. Indeed, mastery goals positively influenced instrumental help-seeking, whereas

performance goals had a negative influence. These results indicate that students who pursue high performance goals tend to avoid seeking instrumental help during class time. This last finding challenges both Arbreton's (1998) and Ryan and Pintrich's (1997), claim that these two variables are unrelated. Our results are closer to the findings reported by Newman (1998). He observed an inverse relation between performance goal and instrumental help-seeking when classroom conditions stressed performance rather than learning. Drawing from this finding, it might indicate that participants in our sample were in classes that represented a rather competitive academic context. Whatever the case, our findings support theoreticians who have proposed that mastery and performance goals have independent effects on help-seeking behavior, and that university students can pursue a multitude of goals (Barron & Harackiewicz, 2001; Harackiewicz, 1998).

One of the most salient findings from the present study is the central role played by the perception of teacher reaction in concomitance with self-efficacy, which exerts a mediating effect on task value, on mastery and performance goal orientation, as well as on instrumental help-seeking. This finding parallels previous work by Plecha (2002), Rugutt, Ellet, and Culross (1998), and Ryan and Patrick (2001). These authors found that when students feel more efficacious, they are more likely to use strategies, such as help-seeking, to regulate their learning. Similarly, our data strongly suggest that teachers should seek to increase students' self-efficacy beliefs by promoting a mutually

respectful classroom environment. This can be done by explicitly indicating the importance and value of the material, thereby encouraging students to develop a more mastery goal orientation. Therefore, students who perceive their teacher's reaction to questioning in a positive manner are more likely to seek instrumental help, show higher levels of self-efficacy beliefs and task value, as well as being more mastery goal oriented (Arbreton, 1998; Karabenick, 2001; Newman, 2000; Ryan & Pintrich, 1997). Teachers can thus play a crucial role in the goal orientation of their students. In addition, this finding confirms, and offers further empirical support for, the relationships between beliefs, values, and goals and their complementary nature (Karabenick & Sharma, 1994; Pintrich, 1992; Pintrich & DeGroot, 1990).

Another interesting finding from the present study was that student perception of teacher reaction to questioning had a direct effect on instrumental help-seeking strategy. This finding is in line with researchers who have emphasized the importance of including more specific teacher behavior in relation to student achievement and success. In particular, these researchers have identified the importance of teachers' verbal and non-verbal behaviors that encourage the effective use of questioning in the classroom (Karabenick, 2004). Although this is one of the first studies to consider the impact of perception of specific teacher's reaction to questioning on students' help-seeking strategies, our results provide empirical evidence for the idea that social features of the learning context are essential social determinants of whether students voluntarily seek help in classrooms. The importance of statements addressed to the whole classroom that signify support and receptiveness for student questioning can also be inferred; however, more importantly, the way in which a teacher responds to a specific student question has significant consequences for students' self beliefs, their expectations, and eventually on their level of instrumental help-seeking. In other words, students not only need to hear that questions are welcomed during class time in order for them to seek help, but they also need to experience positive reactions from the teacher when they do ask a question.

In light of that, it seems that instrumental help-seeking is closely tied to teachers' verbal and non-verbal behaviors that explicitly demonstrate a positive reaction to each individual during class time. This offers confirmation for the ecological validity of the variable within the model. Moreover, these results confirm the distinct nature of the two teacher variables: teacher support and teacher response to questions.

In summary, the results of this study are encouraging because they suggest that teacher classroom behavior can affect college students'

motivation as well as their use of effective learning strategies. What is more, the results provide empirical evidence to support the importance of considering both motivational components and teacher behavior (i.e., perception of teacher support and reaction to questioning) in our model of instrumental help-seeking. In addition, our results demonstrate the effectiveness of studying the relationship among these variables from the perspective of achievement goal theory. For instance, students' instrumental help-seeking strategy is closely tied to mastery goal orientation, self-efficacy beliefs, and task value. At the same time, perception of teacher support and reaction to questioning both exert an important, but mainly indirect effect on achievement goals and instrumental help-seeking. Moreover, our results lead us to believe that explicit, positive teacher verbal and non-verbal behavior has a greater influence on undergraduate students' motivation and self-regulated learning strategies, particularly for their instrumental help-seeking.

Although our results demonstrate interesting and pertinent findings, there are several limitations of this study. First, all the variables were measured with a self-report instrument. Self-reports can be used effectively to measure student perceptions of teacher behavior and motivation components (e.g., Barron & Harackiewicz, 2001; Ramsden, 2003); however, the results would be more robust if corroborated by other measures, such as interviews or behavioral measures that offer different perspectives on the same construct (Garner & Alexander, 1989, Zimmerman & Pons, 1986). Second, other factors not included in this study may be implicated in student instrumental help-seeking strategy. For example, students' unwillingness to ask questions during class may reflect their compliance with informal classroom norms and peer pressure phenomena. Moreover, the nature of the course taken, whether the course was compulsory or an elective, as well as other classroom characteristics (e.g., group size, multiethnic composition of the class) may affect students' tendency to ask questions. Third, this study only included instructors who choose lecturing as their main pedagogical method. Therefore, future research may benefit from including various pedagogical methods in order to measure their unique effects on student motivation components and help-seeking strategy. Finally, it would also be useful to pursue the same objectives but include measures of student academic success and the impact help-seeking strategy has on student learning and perseverance.

With regard to the generalizability of the results of the present study, it is important to stress that the use of learning strategies, such as instrumental help-seeking, has been shown to be independent of student gender, age, or socio-economic background (Karabenick & Sharma, 1994). However, according to Ramsden

(2003), students' perception of the context of learning is closely related to their approaches to learning and learning outcomes. In this regard, students respond and react to the situation they perceive, which is quite different to that defined by teachers or researchers. Thus, instructors and researchers must be made aware of the importance of finding out about their students' perception of the course.

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