Predicting Attendance at Peer-Assisted Study Sessions for Statistics: Role Identity and the

Theory of Planned Behavior

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Abstract

Using a prospective study of 77 1st-year psychology students' voluntary attendance at peer-assisted study sessions for statistics, the authors tested the addition of role identity to the theory of planned behavior. The authors used a revised set of role-identity items to capture both the personal aspects and the social aspects of role identity within a specific behavioral context. At the commencement of the semester, the authors assessed the students' attitudes, subjective norm, perceived behavioral control, role identity, and intention. The authors examined students' class attendance records 3 months later. Attitudes and perceived behavioral control predicted intention with intention as the sole predictor of attendance. Role identity also predicted intention, reflecting the importance of the student role identity in influencing decision making related to supplementary academic activities.

Keywords: class attendance, role identity, theory of planned behavior

As in other Westernized countries, in Australia the study of psychology has formed one of the success stories of postwar tertiary education (Franklin, Gibson, Merkel-Stoll, Neufelt, & Vergara-Yiu, 1996). The number of registered psychologists in Australia has increased from around 400 in 1956 (Franklin et al.) to 22,175 in 2004–2005 (Australian Institute of Health and Welfare, 2006). These numbers are set to increase further, with over 1200 students graduating with undergraduate psychology degrees from universities across Australia in 2005 (Graduate Careers Australia, 2006).

Despite the popularity of psychology as a course of study, much debate remains about what training in psychology should entail (e.g., Clough, 1993; Geffen, 1993; Gillam, 1994; Nixon, 1994; Sheehan, 1994). However, little argument exists about the need for psychologists to receive training in research methods and statistics. As with the requirements of the American Psychological Association (APA), the Australian Psychological Society (APS) stipulates that training in research methodology and statistical analysis is a key requirement for psychology courses' accreditation (APS, 1996). Therefore, statistics is one of the most prominent, yet disliked, courses for many psychology students (e.g., Lalonde & Gardner, 1993; Onwuegbuzie & Wilson, 2003).

Because of the psychology student's need to demonstrate competence in statistics to gain the degree, it is important for researchers to examine the factors that are predictive of student performance in this domain. Two factors related to university student performance are class attendance and participation in additional tutoring. Researchers have found that class attendance and student effort are predictive of student performance in statistics (e.g., Lalonde & Gardner, 1993; Lan, 1996; Rodgers, 2001; Rose, Hall, Bolen, & Webster, 1996; Tremblay, Gardner, & Heipel, 2000). However, few researchers have tried to predict students' attendance of main

academic classes and supplementary academic classes. Using Social Science Citation Index and PsycINFO, we recently searched the literature for articles published since 1992. Although there were several research articles about predicting academic performance that included class attendance as a predictor, only a few articles related to predicting class attendance, and no articles were about predicting supplementary class attendance. Further, we found that researchers focused primarily on demographic factors (e.g., gender; Sleigh, Ritzer, & Casey, 2002) and personality as predictors (Furnham, Chamorro-Premuzic, & McDougall, 2002; King, 1998) of class attendance rather than focusing on psychosocial factors such as attitudes (cf. Webb, Christian, & Armitage, 2007) as predictors. Thus, considering the paucity of research about predicting supplementary class attendance to facilitate learning in statistics courses, we designed the present study to examine the psychosocial predictors of 1st-year psychology students' attendance at peer-assisted study sessions for statistics.

In the present research, we were interested in the role that factors other than attitudes play in the prediction of behaviors related to successful academic achievement. Despite their positive beliefs about succeeding in statistics and performing behaviors that facilitate successful achievement, many students still fail to achieve passing grades (e.g., Lalonde & Gardner, 1993; Shultz & Koshino, 1998). Evidence of an inconsistency between people's beliefs and attitudes and their behavior is not limited to the domain of academic achievement, and the lack of support for the prediction of behavior from people's attitudes extends over many decades (see Fishbein & Ajzen, 1975; Wicker, 1969). Although students' attitudes may contribute to their decision to attend peer-assisted study sessions for statistics, it is evident from the low attitude–behavior correspondence that researchers have reported in the literature that other influences may play a role in decision making in this context. Thus, in the present study, we adopted a well-known

behavioral decision-making model—the theory of planned behavior (TPB)—to examine the impact of attitude and the additional influences of subjective norm, perceived behavioral control, and intention on attendance at peer-assisted study sessions for statistics.

Theories of Reasoned Action and Planned Behavior

Fishbein and Ajzen's theory of reasoned action (TRA; 1975) with its extension, the TPB (Ajzen, 1991; Ajzen & Madden, 1986) are two of the most pervasive of the attitude–behavior models. According to Fishbein and Ajzen, the immediate antecedent of any behavior is the intention to perform the behavior in question. The stronger a person's intention, the more likely it is that the behavior will be performed. People's intentions are determined by two independent factors: attitudes and subjective norm. A person's attitude refers to the degree to which he or she has a favorable or unfavorable evaluation of the behavior in question. Subjective norm is a social factor that reflects the extent to which a person perceives pressure from significant others to perform or not perform the behavior. As predictors, attitudes and subjective norm are considered to have only indirect effects on behavior through their effects on intentions. The relative importance of attitude and subjective norm as predictors of intentions varies as a function of the specific population and behavior under consideration (Fishbein & Ajzen, 1975). In addition, Fishbein and Ajzen argued that the determinants of attitudes and subjective norm have an underlying belief basis.

Given that the TRA was limited to the prediction of behaviors under volitional control, Ajzen (e.g., 1991; Ajzen & Madden, 1986) extended the model to enable prediction of behaviors that an individual may not be able to perform at will. Ajzen (1991) devised the TPB to incorporate perceptions of control over performance of behavior as an additional predictor. Ajzen considered perceived behavioral control as influencing behavior both directly and

indirectly through intentions. As with both attitude and subjective norm, Ajzen argued that the construct of perceived behavioral control is belief based. Researchers conducting meta-analyses in this domain have found support for the TPB model. For instance, in their meta-analysis, Armitage and Conner (2001a) found that the TPB accounted for an average of 39% of the variance in intentions and 27% of the variance in behavior.

Theory of Planned Behavior and the Prediction of Class Attendance

Researchers have used the TPB to successfully predict a wide range of attendance decisions for various types of behaviors including the decision to attend health checks or health clinics (Norman & Conner, 1996; Orbell & Hagger, 2006), breast cancer screenings (Drossaert, Boer, & Seydel, 2005), physical activity classes (Estabrooks & Carron, 1999; Lucidi, Grano, Barbaranelli, & Violan, 2006), and workplace health and safety courses (Sheeran & Silverman, 2003). Although some researchers have used specific TPB constructs such as attitudes (Gump, 2006), subjective norm (Fredricks & Dossett, 1983), and control factors (Van blerkom, 1992) to examine the constructs' influence on class attendance, fewer researchers have used the full TPB model in the prediction of class attendance. An exception is Ajzen and Madden (1986), who conducted a study that predicted class attendance among 169 undergraduate college students enrolled in a social psychology class. The researchers administered a questionnaire to students that assessed the standard TPB constructs of attitudes, subjective norm, perceived behavioral control, and intentions. The researchers then monitored class attendance over a period of 16 sessions (serving as the measure of behavior). Consistent with the specifications of the TPB model, attitudes, subjective norm, and perceived behavioral control were all significant predictors of students' intentions to attend class, which accounted for 68% of the variance. For behavior, intention was the only significant predictor, which accounted for 36% of the variation

in class attendance. (Perceived behavioral control did not emerge as a significant predictor of behavior directly.) Other researchers (e.g., Prislin & Kovrlija, 1992; Webb et al., 2007) have also tested the utility of the TPB in predicting class attendance, and have found differential impact of the TPB predictors, in conjunction with other factors (e.g., self-monitoring, personality), on intentions and behavior.

As researchers can infer from Ajzen and Madden's (1986) study on class attendance (and most studies using the TPB as a predictive model), a large proportion of variation in class attendance intentions and behavior is still unaccounted for. Ajzen (1991) stated that the TPB model can include additional predictors within the model if they can increase the model's predictive ability. Increasingly, TPB researchers have included in their studies an assessment of the potentially generative force of an individual's role identity. In the academic context, it is likely that the more students perceive performing a specific behavior as part of their role as a student, the more their role identity will influence academic decision making. Therefore, if students perceive attending peer-assisted study sessions as an important part of their role as a student, then they may be more likely to attend peer-assisted study sessions. To examine the effect of role identity on intentions to attend peer-assisted study sessions and on actual peer-assisted study session attendance, in the present study we included an assessment of role identity within the TPB model.

Role Identity

According to identity theorists (Stryker, 1987), people have distinct components of self for each of the role positions that they occupy in society. For example, a woman's role identities may include the fact that she is a mother, a wife, a daughter, a social worker, or a blood donor. Identity theorists consider the self to be a collection of identities that reflects the roles that a

person occupies in the social structure. Identity theorists also conceptualize a role identity as a set of behavioral tendencies. Engaging in role-identity congruent behaviors serves to confirm and validate a person's status as a role member (Hogg, Terry, & White, 1995). Callero (1985) argued that role identities link social structure to individual action. According to identity theorists, a role identity is a set of expectations prescribing behavior that others consider appropriate (Simon, 1997. Researchers have provided evidence to suggest that role identity adds significantly to the prediction of behavioral intentions and behavior within the TRA and the TPB (e.g., Biddle, Bank, & Slavings, 1987; Charng, Piliavin, & Callero, 1988; Conner & McMillan, 1999; Sparks & Guthrie, 1998; Sparks & Shepherd, 1992; Terry, Hogg, & White, 1999). Researchers have found support for the addition of role identity across a variety of behavioral domains including college retention decisions (Biddle et al., 1987), blood donation (Armitage & Conner, 2001b), voting behavior (Granberg & Holmberg, 1990), and household recycling (Terry et al., 1999).

Despite these findings, researchers have argued that the conceptualization of role identity may not be sufficiently clear within the TRA and the TPB. For example, Eagly and Chaiken (1993) argued that role identity could be subsumed under attitudes. However, many researchers have found role-identity effects that are independent of attitude in the prediction of behavioral intentions (see Charng et al., 1988; Sparks & Shepherd, 1992; Theodorakis, 1994). Some researchers also have expressed a concern that measures of role identity are measures of past behavior or may involve a moral component. However, strong evidence supports the distinction between role identity and past behavior (see Sparks & Shepherd, 1992; Terry et al., 1999) and the independence of role identity from moral norms (see Sparks & Guthrie, 1998). Fishbein (1997) argued that some measures of role identity may be interpreted as measures of behavioral

intentions. However, researchers have demonstrated that role identity can independently predict behavior after controlling for intentions (see Theodorakis, 1994).

We argue that a further criticism can be leveled against the items used to measure role identity. A person's role identities prescribe action based on the roles that the person occupies in society (e.g., Callero, 1985; Stryker, 1987). Therefore, researchers should use items that measure role identity that clearly reflect the social role and specific behavior of interest. Some researchers who have used measures of role identity have not included a reference to a social role in these measures, and their wording of the items has been behaviorally nonspecific. Researchers have used measures of role identity that were based on items developed by Charng et al. (1988). In a study examining household recycling, Terry et al. (1999) assessed role identity by using items that included the following: "To engage in household recycling is an important part of who I am." In general, researchers using these items have provided support for the inclusion of role-identity considerations in the prediction of behavior (e.g., Evans & Norman, 1998; Granberg & Holmberg, 1990; Sparks & Shepherd, 1992; Terry et al.; Theodorakis, 1994). However, perhaps by not referencing an aggregate social group and by using the phrase "who I am," researchers using such items are wording their measures to reflect the personal end of the interpersonal-intergroup continuum more than the group end. In fact, Terry et al. stated that the items currently used in this field to measure role identity are "strongly focused on self-definition and hence could be regarded as indicators of personal identity" (p. 20). However, according to Tajfel (1981), role identity lies somewhere in the middle of the interpersonal-intergroup continuum, a position supported by Thoits and Virshup (1997). If the items that researchers use to measure role identity reflect personal factors more than a balance between personal and social

identity factors, this bias may challenge the conclusions that researchers draw from previous studies examining role-identity influences in behavioral decision making.

To improve the validity of role-identity items in this domain, we proposed a revised measure based on items developed by Godin et al. (1996). Godin et al. examined the cross-cultural validity of three decision-making models (TRA, TPB, and Triandis' theory of interpersonal behavior) in the prediction of condom use among participants in Latin American, English-speaking Caribbean, and South Asian communities. The researchers used a combined model that incorporated constructs from the TPB and Triandis' theory of interpersonal behavior, which included a measure of role beliefs, to determine condom use intentions and behavior within each community. The researchers adjusted the measure of role beliefs for Latin American, English-speaking Caribbean, and South Asian participants to capture perceptions of appropriate role behavior within each community. Godin et al. found that role beliefs contributed significantly to the prediction of intentions across all three communities and concluded that a measure of role beliefs should be incorporated to increase the predictive ability of the TPB model.

We argue that Godin et al. (1996) used items that reflect role identity more closely than other measures by making explicit reference to a social role (e.g., being a Latin American person) and a specific behavioral context (e.g., using a condom each time you have sex with a new partner). An example of a full item includes the following: "Generally speaking, it is appropriate for a Latin American person to use a condom each time he has sex with a new partner." However, Godin et al. used items that referred only to the appropriateness of a behavior for a role occupant, in general, rather than the actor's perception of the appropriateness of the behavior for his or her own role-related decision making. Therefore, we used a revised measure

of role identity in the present study to try to capture the balance between the personal and social aspects of role identity.

We chose items that used Godin et al.'s (1996) reference to a specific social role (i.e., being a psychology student) and that also referred to a specific behavioral context. However, it is important that, to capture self-perceptions (as in Terry et al., 1999), we worded items for a more personalized reference to the role for the actors themselves rather than for role occupants in general. For example, one item asked, "To what extent do you think that attending every peer-assisted study session for first year statistics this semester is a significant part of *your* role as a student enrolled in Bachelor of Social Science (Psychology)?" We proposed that our new measure of role identity, which we used in the present study, would more accurately reflect conceptualizations of role identity by encompassing a balance of personal and social factors. We expected that role identity would independently predict behavioral intentions within the TPB.

The Present Study

Therefore, our aim in the present study was to test the basic premises of the TPB and examine the impact of role identity on behavioral intentions by using revised items proposed to comprise a balance of personal and social aspects related to role perceptions. The behavior that we investigated was student attendance at peer-facilitated statistics study sessions. We monitored attendance at sessions designed to supplement existing statistics lectures and tutorials through the process of group discussion and activities. Trained upper-level undergraduate students facilitated these voluntary sessions, which researchers and practitioners have referred to broadly in the literature as *supplementary instruction* (e.g., Blanc & Martin, 1994). In relation to the specifications of the TPB model, we hypothesized the following:

Hypothesis 1 (H_1): Intention to attend peer-assisted study sessions would be influenced by students' (a) attitudes towards attending peer-assisted study sessions, (b) subjective norm, and (c) perceived behavioral control.

H_2: Intention to attend peer-assisted study sessions and perceived behavioral control would predict peer-assisted study session attendance.

In relation to the inclusion of role identity in the TPB, we hypothesized the following:

H_3: The more that students considered attending peer-assisted study sessions to be an important aspect of their role as a student, the stronger their intentions to attend peer-assisted study sessions would be.

Method

We obtained approval to conduct the present study from the university research ethics committee and used a prospective design. Prior to the commencement of the voluntary peer-assisted study session program, 1st-year undergraduate students enrolled in psychology courses completed a questionnaire that assessed their attitudes, subjective norm, perceived behavioral control, intentions, and role identity in relation to attendance at every peer-assisted study session for 1st-year statistics during the semester. After a 3-month time lapse—a full academic semester during which students could be faced with the decision to attend peer-assisted study sessions— we matched respondents' student numbers with peer-assisted study session attendance records (coded by student number only) to obtain a measure of attendance behavior.

Participants

Participants were 77 first-year psychology undergraduates (15 men, 62 women; *M* age = 27.3 years, *SD* = 11.3 years) enrolled in a Bachelor of Social Science (Psychology) program at a

major university in Brisbane, Australia. This sample accounted for more than half (57%) of the students enrolled in the statistics unit, and the participants in the study gained course credit.

Measures

The target behavior examined in this study was "attending every peer-assisted study session for 1st-year statistics this semester." We used Ajzen's (1991) guidelines to construct the standard TPB items of attitude, subjective norm, perceived behavioral control, intentions, and behavior. We used negative wording for approximately half of the items for each measure to reduce the effects of response bias. The means, standard deviations, and Cronbach's (1951) alpha coefficients for each of the study's variables are presented in Table 1.

Intention. We used two items to assess the strength of intention to attend peer-assisted study sessions. Participants responded to each item on a 7-point Likert-type scale (e.g., ranging from 1 [definitely plan not to] to 7 [definitely plan to] for the question "Do you intend to attend every peer-assisted study session for 1st-year statistics this semester?").We averaged the two items to create an intention scale, which was reliable ($\alpha = .93$).

Attitude. We measured attitudes towards peer-assisted study session attendance by asking students to indicate their attitude toward their attending every peer-assisted study session for 1st-year statistics on a series of five semantic differential scales that ranged, e.g., from 1 (*unpleasant*) to 7 (*pleasant)* or from 1 (*harmful)* to 7 (*beneficial*). We averaged the five items to create an attitude scale, which was reliable ($\alpha = .87$).

Subjective norm. We used two items, measured on 7-point Likert scales, to assess perceived pressure to attend every peer-assisted study session for 1st-year statistics (e.g., ranging from 1 [approve] to 7 [disapprove] for the question "If I attend every peer-assisted study session

for 1st-year statistics this semester most people who are important to me would…"). We averaged the two items for the measure of subjective norm ($\alpha = .85$).

Perceived behavioral control. We measured the degree of control that students believed they had over engaging in the target behavior, using three items scored on 7-point Likert-type scales (e.g., ranging from 1 [not at all] to 7 [a great deal] for the question "How much do you feel that whether you attend every peer-assisted study session for 1st-year statistics this semester is beyond your control?"). We averaged the three items to create a perceived behavioral control scale, which had a slightly low reliability coefficient ($\alpha = .69$).

Role identity. We devised five items to measure student role-identity beliefs in relation to performing the target behavior. We used these items, which we adapted from Godin et al. (1996), to assess the extent to which attending peer-assisted study sessions for 1st-year statistics was an important component of the respondents' role identity as students enrolled in the Bachelor of Social Science (Psychology) program. The items were the following: (a) "To what extent do you think that attending every peer-assisted study session for 1st-year statistics this semester is a significant part of your role as a student enrolled in Bachelor of Social Science (Psychology)?"; (b) "Generally speaking, I think it is appropriate for me as a student enrolled in Bachelor of Social Science (Psychology) to attend every peer assisted study session for 1st-year statistics this semester"; (c) "Thinking of myself as a student enrolled in Bachelor of Social Science (Psychology), it is not important for me to attend every peer assisted study session for 1st-year statistics this semester"; (d) "For me, attending every peer-assisted study session for 1st-year statistics this semester will not assist in fulfilling my role as a student enrolled in Bachelor of Social Science (Psychology)"; and (e) "As a student enrolled in Bachelor of Social Science (Psychology), I think it is important for me to attend every peer assisted study session for 1st-year

statistics this semester." All items were scored on a Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree)* except item (a), which was scored on a Likert-type scale ranging from 1 (*very unimportant*) to 7 (*very important*). We averaged the five items to create a role-identity scale, which was reliable ($\alpha = .86$).

Behavior. At the end of the academic semester, 3 months after administration of the main questionnaire, we matched students' peer-assisted study session attendance behavior (recorded at each session) with their questionnaires. Student identification numbers were the only identifiers that we used to make the match. We coded peer-assisted study session attendance behavior, out of a possible total of 10 sessions, on a continuous scale that represented the number of sessions attended and ranged from 0 (*did not attend any sessions*) to 10 (*attended all 10 sessions*).

Procedure

Participants completed the main and follow-up questionnaires in groups of 20 students at most. The researcher explained (a) the purpose of the questionnaire (b) that students' involvement was voluntary, and (c) that all responses were confidential.

Results

Descriptive Analysis of Peer-Assisted Study Session Attendance

Our examination of the peer-assisted study session attendance records identified that few students attended all 10 sessions (7%) and that many students chose not to attend at all (43%). On average, students attended 3.26 peer-assisted study sessions ($SD = 3.63$). Prior to hypothesis testing, we examined the study's variables for any violations to the assumptions for multivariate analysis, including normality. Our examination of the predictors of intention, attitude, subjective norm, perceived behavioral control, role identity, and the outcome measure of attendance behavior, revealed substantial skew for the constructs (negative skew for the predictors and

positive skew for the outcome measure). Because transformation changed the pattern of results substantially, we performed all subsequent analyses by using the transformed variables, with the predictor variables being reflected before and after logarithmic transformation, and with the outcome measure undergoing standard logarithmic transformation to preserve the original direction of the data.

The bivariate correlations for the variables in the study's analyses are reported in Table 2. All of the predictors correlated highly with behavioral intentions, with attitude and role identity as the strongest correlates of intention. Intention emerged as the strongest correlate of peer-assisted study session attendance behavior. Role identity was correlated highly with attitudes. However, our examination of the collinearity statistics suggested that the role-identity variable did not exceed parameters for inclusion as an independent variable (tolerance = .540), and the regression was performed so that there were no reports of any problems due to singularity or other problems related to multicollinearity. (In addition, the standard error for the role-identity variable did not seem unduly large.) Although students' academic performance was not the focus of the present study, it is noteworthy that such peer-assisted study session attendance significantly correlated with overall performance (i.e., grade) for the unit ($r = .36$, $p < .001$).

Analytic Approach

We performed a hierarchical regression to test H_1 and H_3. We entered into the equation the following: in Step 1, attitude, subjective norm, and perceived behavioral control; in Step 2, role identity. We conducted a second hierarchical regression to test H_2. We entered into the equation the following: In Step 1, intention and perceived behavioral control; in Step 2, attitude, subjective norm, and role identity.

Role Identity, the Theory of Planned Behavior, and Peer-Assisted Study Session Attendance

Analysis predicting behavioral intentions. We performed a hierarchical regression analysis that predicted behavioral intentions for peer-assisted study session attendance to determine whether—in addition to attitudes subjective norm, and perceived behavioral control—role identity emerged as a significant predictor of behavioral intentions. In accord with TPB guidelines (Ajzen, 1991), we entered components of the TPB (attitude, subjective norm, perceived behavioral control) in Step 1 of the regression analysis and entered role identity in Step 2.

As shown in Table 3, the components of the TPB accounted for 53% of the variance of behavioral intentions in Step 1, which we found to be significant, $F(3,70) = 26.26$, $p < .001$. The entry of the Step 2 variables added significantly to the prediction of behavioral intentions through the inclusion of role identity by accounting for a further 9% of behavioral intentions, $F(1,69) = 15.65$, $p < .001$. After all variables were entered into the analysis, attitude, perceived behavioral control, and role identity were the significant predictors of behavioral intentions, supporting H_3 and partially supporting H_1. However, contrary to H_1, subjective norm did not emerge as a significant predictor of behavioral intentions.

Analysis predicting behavior. We conducted a hierarchical regression analysis predicting peer-assisted study session attendance to determine if intention and perceived behavioral control were significant predictors of behavior. In accord with TPB guidelines (Ajzen, 1991), we entered the variables predicting behavior into the regression analysis in the following order: (a) intentions and perceived behavioral control, (b) attitude, subjective norm, and role identity. As shown in Table 3, Step 1 of the analysis emerged as significant, accounting for 17% of the variance in behavior, $F(2,70) = 7.31$, $p < .001$. Addition of the Step 2 variables was not significant, $F(3, 67) = 1.11$, $p = .35$. After all variables were entered into the equation, we found

intention to be a significant predictor of behavior, providing some support for H_2. However, contrary to H_2, perceived behavioral control did not emerge as a significant predictor of behavior.

Discussion

In the present study, we sought to assess the efficacy of the TPB by incorporating a revised measure of role identity. We achieved this aim by examining the impact of role identity in the prediction of student attendance at peer-assisted study sessions for 1st-year statistics. Results indicated some support for the TPB in that attitude and perceived behavioral control predicted intention, and intention predicted attendance behavior. In addition, the revised measure of role identity exerted a significant independent effect on behavioral intention after we controlled for the components of the TPB.

Theory of Planned Behavior

Before testing the addition of role identity to the TPB, we examined the basic premises of the TPB. Overall, we found general support for the predictions of the TPB. The revised TPB variables accounted for a large proportion (62%) of the variance in the prediction of intention but only a small proportion (21%) of the variance in the prediction of behavior. In partial support of H_1, attitude and perceived behavioral control predicted intentions to attend peer-assisted study sessions. Students were more likely to intend to attend peer-assisted study sessions if they had positive attitudes towards peer-assisted study sessions and believed that they had control over attending peer-assisted study sessions. Contrary to H_1, but consistent with much previous TPB research (see Ajzen, 1991), subjective norm was not predictive of behavioral intentions. The perceived pressure from important others in relation to performing the behavior had little impact on students' intentions to attend peer-assisted study sessions. This finding reflects the growing

criticism of the subjective norm component as a limited representation of social influences on behavior and reinforces the need for a reconceptualization of the role of norms in the TPB (see Terry & Hogg, 1996; Terry et al., 1999).

In relation to the prediction of peer-assisted study session attendance behavior, we found that intentions predicted peer-assisted study session attendance (H_2) and that students were more likely to attend peer-assisted study sessions if they intended to do so. However, contrary to H_2, perceived behavioral control did not emerge as a significant predictor of behavior. Ajzen and Madden (1986) also found that perceived behavioral control failed to predict class attendance directly (see also. Webb et al., 2007). Because the participants in the present study were 1st-year students, peer-assisted study session attendance may have been a new and unknown behavior. The fact that there may have been little knowledge about the behavior may explain the failure of perceived behavioral control to predict peer-assisted study session attendance, because estimates of control may have been unstable. As a sample of 1st-year university students, the participants had limited exposure to the behavior, which also may explain the smaller proportion of variance in behavior in the present study that we accounted for.

Role Identity

For the revised TPB model (H_3), role identity was an independent predictor of behavioral intentions after we controlled for the components of the planned behavior model. The more respondents considered attending peer-assisted study sessions to be an important part of their own role as a psychology student, the more likely the respondents were to intend to attend peer-assisted study sessions. The finding that role identity was predictive of behavioral intentions is consistent with previous research (e.g., Biddle et al., 1987; Charng et al., 1988; Sparks & Guthrie, 1998; Sparks & Shepherd, 1992; Terry et al., 1999).

Support for the impact of role identity in the prediction of behavioral intentions is of particular importance because of the use of a revised role-identity scale. As stated previously, the majority of researchers investigating the influence of role identity within the attitude–behavior relationship have adapted scales developed by Charng et al. (1988). These scales appear problematic when compared with other conceptualizations of role identity (see Tajfel, 1981; Thoits & Virshup, 1997) because of an apparent bias of items towards the personal end of the interpersonal–intergroup continuum. Similar to Godin et al.'s (1996) study, in the present study, we used a scale designed to reflect definitions of role identity more closely by making explicit reference to a social role and a specific behavioral context to assess perceptions of appropriateness of role-related behaviors as the basis of self-definition. However, to ensure a balance between the personal and social aspects of role identity, the items in the present research included a personalized reference to the role for the actors themselves rather than for role occupants in general. Future researchers should continue to refine the role-identity items, aiming to establish a measure that most accurately reflects the role–person-merger concept inherent in the notion of the role construct and a measure that represents a balance in relation to the continuum of personal identities versus social identities.

Applied Implications

We can suggest a number of applied implications based on the present study. The fact that attitudes were predictive of intentions provides the basis for the development of advertising to encourage students to attend peer-assisted study sessions and other supplementary teaching sessions by encouraging a favorable overall evaluation of the sessions in promotional materials. Educators could encourage a favorable overall evaluation by highlighting the positive aspects of attending peer-assisted study sessions such as learning statistics in a relaxed environment for

students who find studying statistics to be stressful. Also, educators could advertise sessions to appeal to those students who are achievement oriented by focusing on the benefits of obtaining greater knowledge of statistics and getting better grades in statistics. In addition to endorsing the benefits of attending the scheme, educators could downplay the potentially negative aspects of session attendance—such as spending more time at the university and putting in extra effort—and should encourage students to view the benefits of receiving better grades as outweighing the costs of extra time or effort expended.

The fact that perceived behavioral control emerged as a significant predictor of behavioral intentions suggests that educators should encourage students to perceive that session attendance is in students' control. A focus on goal-setting and time-management techniques may facilitate students' perceptions that it is their responsibility to prioritize session attendance above other commitments. In addition, educators should stress how easy it is to attend the sessions by emphasizing the convenience of campus-based peer-assisted study sessions, especially if efforts are made to conduct the sessions on the same days and at times close to other scheduled classes. Last, directly appealing to an individual's role as a student and the associated importance of attending study sessions may be useful for educators in strengthening students' intentions to participate in study session events. Future researchers should use both correlational and experimental paradigms to examine these applied implications of the research, isolating specific strategies (e.g., a focus on perceptions of control) to identify the most useful approaches to encouraging supplementary session attendance.

Strengths and Limitations

Despite the strengths of the present study such as the use of a prospective design and an objective assessment of behavior, we note a number of methodological issues. First, the sample

size was small and may not have represented all undergraduate psychology students. However, we were limited in the number of topics (please replace "topics" with "courses") that offered supplementary study sessions (for which class attendance could be monitored explicitly). Second, the likely limited exposure of 1st-year students to the behavior may have affected their responses. The students may have overestimated their beliefs and intentions related to attending the supplementary sessions (explaining the skewed distributions) given their lack of exposure to the scheme. Future researchers should assess the impact of the revised role-identity measure in the context of other behaviors, especially more familiar ones. In addition, researchers examining attitudes toward performing less familiar behaviors should consider measuring constructs at different points in time to account for people's changes in familiarity with the attitude object. A final limitation is the slightly low reliability demonstrated in the perceived behavioral control scale. However, other researchers have reported similar problems with low inter-item reliability for their measures of the perceived behavioral control construct (e.g., Raats, Shepherd, & Sparks, 1995).

In summary, in the present study, we provided some support for the TPB in the prediction of supplementary study session attendance. In addition, we found support for the inclusion of a revised measure of role identity in predicting behavioral intentions. Future researchers should continue to focus on ensuring that the measurement of role identity reflects a balance between personal and social aspects. The findings of the present research have implications for encouraging students to attend optional study sessions, particularly for those areas of study perceived by some students as challenging. Highlighting the importance of class attendance as part of the role of student may be useful for educators in strengthening students' willingness to participate in supplementary study sessions.

Author Notes

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Table 1

Descriptive Analysis of Measurement for Peer Assisted Study Session Attendance: Means, Standard Deviations, and

Alpha Coefficients

Variable	*M*	*SD*	α
Behavioral intention	5.72	1.82	.93
Attitude	5.84	1.09	.87
Subjective norm	6.06	1.15	.85
Perceived behavioral control	5.75	1.21	.69
Role identity	5.48	1.42	.86
Peer assisted study session attendance	3.26	3.63	a

Note. a = one item only. All constructs were measured on 7-point scales except for Peer assisted study session

attendance which was scored from 0 to 10.

Table 2

Bivariate Correlations Amongst the Study's Variables for Peer Assisted Study Session Attendance

Variable	1	2	3	4	5	6
1. Behavioral intention						
2. Attitude	.66***					
3. Subjective norm	.47***	.52***				
4. Perceived behavioral control	.37**	.17	.18			
5. Role identity	.67***	.65***	.49***	.10		
6. Peer assisted study session attendance	.41***	.22*	.27*	.22*	.16	

*p < .05, **p <.01, ***p <.001

Table 3

Hierarchical Regression Analyses Predicting Behavioral Intention and Behavior for Peer Assisted Study Session

Attendance

Step	Predictor	B	$SE\ B$	β	R^2	ΔR^2
Intention						
1	Attitude	.50	.15	.34**	.53	.53***
	Subjective norm	.05	.12	.04		
	Perceived behavioral control	.39	.11	.27**		
2	Role identity	.50	.13	.40***	.62	.09***
Behavior						
1	Intention	.74	.25	.51**	.17	.17**
	Perceived behavioral control	.07	.24	.04		
2	Attitude	-.14	.34	-.07	.21	.04
	Subjective norm	.31	.24	.17		
	Role identity	-.40	.29	-.23		

*p <.05, **p <.01, ***p <.001