Relationships between self-processes and group processes with friends and acquaintances

José Hanham
University of New South Wales
John McCormick
University of Wollongong

This preliminary study explored relationships between key self-processes, specifically, independent vs. interdependent self-construal and self-efficacy, with students' attitudes toward group work with friends and acquaintances. The sample comprised 188 students from two Independent high schools in metropolitan Sydney, Australia. Data were collected using a self-report questionnaire, and analysed using exploratory factor analysis and multiple regression analysis. Of the two sets of self-beliefs, self-construal and self-efficacy, the latter was more strongly related to students' attitudes toward cooperation. Furthermore, there was support for a "flow-on" effect in which self-efficacy developed in the friendship context generalised to the acquaintance context.

Introduction

The issue of whether to group students with friends or acquaintances is one that is often faced by teachers when they decide to employ group-based tasks (Mitchell, Reilly, Bramwell, Solonsky, & Lilly, 2004), but is surprisingly under-researched (Hanham & McCormick, 2007). The aim of this study was to investigate how certain key self-processes were related to students' attitudes toward working in friendship and acquaintance groups. The self-processes that are of particular interest here are independent vs. interdependent self-construal (Markus & Kitayama, 1991) and self-efficacy for group processes (Eby & Dobbins, 1997; Tasa, Taggar, & Seijts, 2007). The primary reason for focusing specifically on these self-processes are the relatively strong empirical findings in organisational settings which have identified these variables as key predictors of cooperation in work teams (Eby & Dobbins, 1997; Oetzel, 2001). Investigating how these variables operate in the school context, may provide us with some new, valuable insights into the cognitive-motivational factors that have an impact on how students approach group work with friends and acquaintances.

Independent vs. interdependent self-construal

Most people possess self-schemas in which they define self as unique, autonomous and separate from others (independent self-construal), while also possessing self-schemas in which self is defined in terms of interconnectedness with others in specific group contexts (interdependent self-construal) (Markus & Kitayama, 1991; Singelis, 1994). Essentially, self-construal refers to how people define self in relation to others. The extent, to which people are likely to be guided by either independent or interdependent self-construal, will depend largely on cultural conditioning. According to Markus & Kitayama (1991), cultural practices that are prevalent in individualist societies tend to encourage people to develop an independent mind-frame. Conversely, those prevalent in collectivist societies tend to

encourage the development of an interdependent mind-frame. Notwithstanding, people from all cultures may engage both kinds of self-schemas depending on context (Gardner, Gabriel & Lee, 1999). There is empirical evidence from both neuropsychological (Sui & Han, 2007) and cognitive-based studies (Gardner et al., 1999; Howard, Gardner, & Thompson, 2007) that has suggested independent and interdependent self-construal co-exist in all individuals and are relatively fluid in nature, that is, people can switch between the two. A 'dynamic-constructivist' explanation of frame-switching (Hong, Morris, Chiu, & Benet-Martínez, 2000) suggests that self-schemas related to independence, and those related to interdependence, are stored separately in long term memory as domain-specific knowledge structures. Because of this, a specific set of self-schemas, for example, those related to independence, can guide one's thinking in a given situation, whilst self-schemas related to interdependence lie dormant, and vice versa. For further discussion on "frame-switching" see Hong et al. (2000).

Of particular interest for this study, is literature which suggests that self-related motivational processes are likely to differ depending on whether the independent or interdependent self is active (Brewer & Gardner, 1996; Cross, Bacon & Morris, 2000; Markus & Kitayama, 1991). Clear evidence can be found in research related to the effects of self-construal on how people approach in-groups and out-groups. It is important to note that an "in-group" is more than just an aggregate of persons that exists through happenstance, for example, people on the same bus. Rather, there is a sense of common identity which creates a social bond between people in a particular group. A tight-knit nuclear family or a close circle of friends are examples of in-groups.

Research has shown that when independent self is active, people are likely to give greater weight to personal goals than goals of the in-group (Oyserman, Coon & Kemmelmeier, 2002). A prime goal for those with an independent mind-frame is to be autonomous, distinct and separate from others. Conversely, when the interdependent self is active, an individual is likely to subsume, or at least equate, her or his personal goals with those of the in-group (Markus & Kitayama, 1991). When interdependent self is salient, a key goal is to facilitate and strengthen strong cooperative relationships with fellow in-group members. One of the consequences of this is that when interdependent self is active, an individual is likely to be acutely aware of, and sensitive to, the needs of others in the in-group (Cross et al., 2000; Markus & Kitayama, 1991).

Self-efficacy for group processes

Effective group work requires that students are competent in both the content and process aspects of working in groups (Johnson, Johnson & Holubec, 1994). Content refers to being able to successfully apply one's content knowledge so that the group can solve a problem or create a group product. An example could be a student applying her or his knowledge of physics to help the group build a model bridge. Process, on the other hand, refers to being able to successfully execute skills such as building trust, coordination and conflict resolution. There has been an imbalance of self-efficacy based research on group work in schools, in that there has been more emphasis on students' self-efficacy beliefs for the content aspect of working in groups (Moriarty, Douglas, Punch, & Hattie,

1995; Nichols & Miller, 1995) than on process. This is surprising given that there has been a recent surge in research and interventions aimed at improving students' process skills for working in groups (Blatchford, Baines, Rubie-Davies, Bassett, & Chowne, 2006; Gillies, 2000; Prichard, Bizo & Stratford, 2006). Despite the lack of research in this area in schools studies of teams in organisations have identified self-efficacy for group processes as a key predictor of group/team performance (Eby & Dobbins, 1997; Tasa, et al., 2007).

In terms of understanding how group processes self-efficacy beliefs are likely to develop, it is important to draw on Bandura's (1997) social cognitive theory. According to this theory, students' self-efficacy beliefs for group processes are likely to stem from four principal sources. Previous mastery experience in executing process skills such as building on the ideas of others and coordinating the activities of the group, is the most powerful source of self-efficacy for group processes. Although indirect, observing peers of perceived similar ability engage in the process aspects of working in a group, may also be a relatively strong source of self-efficacy for group processes. Verbal persuasion from teachers or fellow group members about group process skills, and interpretation of physiological and affective states when working in a group can also be a source of self-efficacy (Bandura, 1997).

Theoretical framework and hypotheses

The arguments outlined in the theoretical framework are principally concerned with how students' self-construal and self-efficacy beliefs are related to their attitudes toward cooperating in friendship and acquaintance groups.

Group work is most likely to appeal to students for whom interdependent self is salient. These students are likely to seek opportunities to interact as much as possible with the in-group (friends) (Markus & Kitayama, 1991). Consequently, one may reasonably expect highly interdependent students to have had extensive mastery experiences working in friendship groups. Consistent with the literature on self-efficacy (Bandura, 1997; Pajares, 1996), these mastery experiences may be expected to lead to relatively strong self-efficacy for working with friends. Furthermore, given special emphasis placed on facilitating and maintaining cooperative relationships with the in-group (Markus & Kitayama, 1991), it seems reasonable to predict that students, for whom interdependent self is active, are likely to have cooperative attitudes when working with friends. However, whilst the friendship group is likely to be the most salient referent group, students who perceive themselves interdependent with classmates, are likely to appreciate the importance of being cooperative when undertaking collective activities, in general. Therefore, it is reasonable to assert that students with an interdependent mind-frame are also likely to have a cooperative attitude when working with acquaintances.

Students for whom independent self is salient are likely to favour instructional settings which provide them with opportunities to work autonomously. Although in some group work situations there may be opportunities to work autonomously (Cohen, 1994), many group activities require a high level of interaction between people, as well as the need to put personal interests aside for the good of the group (Cohen, 1994). As a consequence,

students for whom independent self is salient are likely to be disinclined to pursue opportunities to work in groups. This is even likely to apply to working with friends, given that those with an independent self-construal tend to be ambivalent toward in-groups (Kim, 1994). Consequently, one may expect these students to have relatively low self-efficacy for working in groups with either friends or acquaintances. Moreover, given that working interactively and sacrificing personal interests for the good of the group tends to be incompatible with being independent (Markus & Kitayama, 1991), one may also predict that students who define self in independent terms are likely to have a negative attitude toward cooperating in groups in general, regardless of whether they are friends or acquaintances.

The literature on self-efficacy suggests that these beliefs vary in terms of their domain-specificity (Bandura, 1997). In the context of this study, group work with friends and group work with acquaintances can be considered distinct sub-domains within the over-arching domain school-based group work (Hanham & McCormick, 2007). Indeed, it would seem reasonable to assert that a student's self-efficacy beliefs for her process skills will differ depending on whether she works in a group with friends or works in a group with acquaintances. A student, who has been successful in working on joint activities with friends, may be highly self-efficacious for working in such contexts. Conversely, another student may be more self-efficacious for working with acquaintances, possibly because he tends to be distracted by aspects of the friendship and perceives that she is more likely to stay on-task when working with acquaintances.

Students who are highly efficacious for particular activities tend to positively engage in those activities, for example through increased effort and persistence (Bandura, 1997). Focusing specifically on self-efficacy for group processes, research in organisational contexts (Eby & Dobbins, 1997) found that self-efficacy for group processes was related to levels of cooperation in teams. Based on this and the notion that cooperative relationships are an integral part of successful, joint activities (Johnson, Johnson, & Stanne, 2000; Slavin, 1996), one may expect students who are highly efficacious for their group process skills to generally have cooperative attitudes when working in groups. Therefore, in the context of this study, students who are highly self-efficacious for working with friends may be predicted to have cooperative attitudes toward friends. Similarly, those who are highly self-efficacious for working with acquaintances may be expected to have cooperative attitudes when working in such contexts.

Although students' judgments of self-efficacy for working in groups may vary depending on with whom they work, it is possible that self-efficacy beliefs for working in one domain may generalise to other similar contexts (Bandura, Adams, & Beyer, 1977). Aside from family, most students' initial experiences of engaging in groups take place with friends. Therefore, it seems reasonable to expect that most students' self-efficacy beliefs for working with others are likely to originate from the friendship context. Although there may be differences working with friends compared to acquaintances, the process skills required to work effectively with others are essentially the same in both contexts. Therefore, it is predicted that self-efficacy developed by being successful by working in groups with friends may "flow on" to some extent to acquaintance contexts.

Following the above analysis, we posited the following hypotheses.

- Hypothesis 1a: Interdependent self will be positively related to cooperative attitudes toward friends and cooperative attitudes toward acquaintances.
- Hypothesis 1b: Independent self will be negatively related to cooperative attitudes toward friends and cooperative attitudes toward acquaintances.
- Hypothesis 2a: Self-efficacy for working with friends will be positively related to cooperative attitudes toward friends.
- Hypothesis 2b: Self-efficacy for working with acquaintances will be positively related to cooperative attitudes toward acquaintances.
- Hypothesis 3a: Interdependent self will be positively related to self-efficacy for working with friends and self-efficacy for working with acquaintances.
- Hypothesis 3b: Independent self will be negatively related to self-efficacy for working with friends and self-efficacy for working with acquaintances.
- Hypothesis 4: Self-efficacy for working with friends will be positively related to self-efficacy for working with acquaintances.

Method

Participants

The sample comprised 188 students (78% male) of Year 10 (n = 108) and Year 11 (n = 80) from two Independent high schools in metropolitan Sydney, Australia. One school was coeducational and the other a single sex boys school. There were two Year 10 and two Year 11 classes from the former, and three Year 10 and two Year 11 classes from the latter. Students in Years 10 and 11 were selected because they had already spent a number of years at high school and were considered more likely to have well-elaborated self-schemas related to self-construal and self-efficacy for group work. It was anticipated that schools would not grant access to students in Year 12 because of their high stakes final school examinations. The ages of the participants ranged from 14 to 18 years (M =15.8, SD = .75).

Procedures

Through the assistance of a coordinator at each school, arrangements were made for the first author to inform potential participants about the broad aims of the study; they were not informed about specific issues of the research. Upon confirmation from each school that those who expressed interest in participating in the study had returned signed consent forms (94% response rate), times and dates were arranged for the researcher to administer the questionnaires.

To minimise time demands the questionnaires were administered in class groups. As part of the administration protocol, participants were assured that the questionnaire was not an exam, and there were no right or wrong answers. It was re-emphasised that their responses would be completely confidential. The participants were asked not to speak or

influence each other's responses in any way. In most cases the questionnaires were completed within 10 to 15 minutes.

Instrument

All scale measures were on a 7-point Likert-type scale ranging from 1 (not true of me) to 7 (very true of me), except for the self-efficacy items, which had an 11-point scale ranging from 0% (not at all confident) to 100% (completely confident). Demographic information on age, sex, school year and school was also obtained. Face validity was checked a priori by subject matter experts and a group of Year 10 (n = 20) and Year 11 (n = 10) students.

Independent and interdependent self items

To tap independent and interdependent self-construal, 17 items were adapted from studies conducted in organisational, cross-cultural and intra-cultural settings (Cross, et al., 2000; Singelis, 1994; Triandis 1996). As the sample comprised secondary school students in Australia, some modifications were made to the wording of the items. For example, terms such as "others" and "co-workers" were replaced with the term "classmates". For example, "I prefer to be distinguished from others" was changed to "I prefer to be distinguished from my classmates". Essentially, both independent and interdependent self-construal items were designed to measure the extent to which the participants perceived themselves to be independent from, and interdependent with, classmates.

Self-efficacy items

Eleven matching items, some of which were adapted from a previous organisational study (Eby & Dobbins, 1997) and others developed specifically for this study, were used to measure self-efficacy for working with friends and self-efficacy for working with acquaintances. To distinguish the two contexts, matching sets of self-efficacy items were placed in separate sections of the questionnaire; one was prefaced with the statement "This section refers to working in groups with your close friends", and the other, "This section refers to working in groups with not-close friends". We acknowledge that dichotomising relationships with others simplifies the complex range of possible relationships. However, in addition to making the data manageable, we considered the term "not-close friend" avoided priming any negative thoughts by students concerning their relationships with other students, which has ethical implications.

Essentially, the self-efficacy items were designed to assess each student's perceived capability to perform specific group process skills. Participants were asked, how confident they were that they could successfully execute skills such as, "coordinate the activities of the group" and "build on other group members' ideas".

Cooperative attitude items

Eleven matching items developed specifically for this study were used to measure cooperative attitudes toward friends and cooperative attitudes toward acquaintances. Four

items were specifically about giving help; two were concerned with being flexible in a group; there were also several single items, each of which was concerned with seeking help, preparedness to share resources, preparedness to listen to others, emphasis on working with others, receiving help, and simply being cooperative. These attitudes have been identified as integral to the success of group ventures across a range of settings (Jehn & Shah, 1997; Webb & Palincsar, 1996). The same procedures used to differentiate self-efficacy toward friends and acquaintances were used to distinguish between students' attitudes towards cooperation with friends and students' attitudes toward cooperation with acquaintances.

Statistical analyses

Data were analysed using version 14.0 of *SPSS for Windows*. Exploratory factor analysis and multiple regression analysis were employed. Exploratory factor analysis allowed us to assess the extent to which the data collected meaningfully reflected the variables of interest to the study. Multiple regression analyses were used to test the hypotheses of the study.

Results

Exploratory factor analysis

Separate principal factor analyses were carried out to identify factor structures. The criteria used to determine the number of factors were, eigenvalues greater than one, scree test, non-trivial communality levels, Cronbach alpha, and most importantly, interpretability. Item loadings and Cronbach's alphas for the final factors are shown in Tables 1-5.

Interdependent/independent self-construal factors

A three factor structure was identified for interdependent/independent self. The factors were named *Interdependent Self*, *Independent Self-Uniqueness, and Independent Self-Non-Influence* (See Table 1). The eigenvalues were 3.53, 2.33 and 1.43 which explained 27.1%, 17.9% and 11% of the variance respectively.

Interdependent Self comprised six items and was characterised by self-definition in terms of membership of the group, for example, "My classmates help define who I am". Independent Self-Uniqueness consisted of five items concerned with definition of oneself as unique and distinct from fellow classmates, for example, "I am a unique person separate from my classmates". Independent Self-Non-Influence consisted of two items which were about placing special emphasis on defining self independently of the influence of classmates, for example, "My classmates do not influence how I see myself". Although the alpha reliability score for this factor was relatively low (alpha = .55), it was decided to retain it for possible further analyses as it was deemed to be theoretically coherent, and Cronbach alpha reliability measures tend to be sensitive to small numbers of items (Cortina, 1993).

Table 1: Final factor solution for the self-construal items

Interdependent Self (alpha = .85)	**Loadings**		
1. My classmates help define who I am.	**.78**		
12. In general, my relationships with my classmates are an important part of how I see myself.	**.75**		
5. The well-being of my classmates is very important to me.	**.71**	.15	.17
10. I usually feel a strong sense of pride when a classmate has an important accomplishment.	**.68**		.22
7. I enjoy spending time with my classmates	**.65**		
16. When I think of myself I often think of my classmates with whom I often associate.	**.61**		-.18
Independent Self-Uniqueness (alpha = .66)			
4. I am a unique person separate from my classmates.		**.69**	.20
6. I like to stand-out from my classmates.		**.61**	
11. I prefer to be distinguished from my classmates.		**.47**	
15. I am comfortable being singled out for praise and rewards.		**.45**	
9. My personal identity separate from my classmates is very important to me.		**.42**	.26
Independent Self-Non-Influence (alpha = .55)			
2. My personal views are not shaped by my classmates.		.19	**.66**
8. My classmates do not influence how I see myself.			**.62**

Self-efficacy for group work with friends factors

A two factor structure was identified for self-efficacy for group work with friends (see Table 2). These factors were named *Self-Efficacy Friends-Receptiveness of Ideas* and *Self-Efficacy Friends-Group Facilitation*. The eigenvalues were 3.63 and 1.41 accounting for 45.4% and 17.6% of the variance respectively.

Table 2: Final factor solution for the self-efficacy friend items

Self-Efficacy Friends-Receptiveness of Ideas (alpha = .83)	**Loadings**
10. I can accept other group members' viewpoints.	**.95**
11. I can build on other group members' ideas.	**.67**
4. I can encourage other group members to express their viewpoints.	**.65**
9. I can ask other group members for their ideas.	**.62**
Self-Efficacy Friends-Group Facilitation (alpha =.76)	
5. I can play an effective role in the running of the group.	**.70**
1. I can make a valuable contribution to a group project.	**.64**
7. I can coordinate the activities of a group.	**.63**
2. I can clearly explain my ideas to the group.	**.58**

Self-Efficacy Friends-Receptiveness of Ideas consisted of four items related to a student's judgment of his or her capacity to consider and build on ideas of other group members who were friends, for example, "I can accept other group members' viewpoints". Self-

Efficacy Friends-Group Facilitation comprised four items concerned with self-efficacy for organising the group's efforts, for example, "I can coordinate the activities of the group".

Self-efficacy for group work with acquaintances factors

The same two factor structure as for the friendship context was indentified for self-efficacy for group work with acquaintances (see Table 3). Consequently, similar labels were used to describe each factor, with one being labelled *Self-Efficacy Acquaintances-Receptiveness of Ideas* and the other, *Self-Efficacy Acquaintances-Group Facilitation*. The eigenvalues were 3.72 and 1.63 and explained 46.5% and 20.4% of the total variance respectively.

Table 3: Final factor solution for the self-efficacy acquaintance items

Self-Efficacy Acquaintances-Receptiveness of Ideas (alpha =.86)	**Loadings**	
10. I can accept other group members' viewpoints.	**.89**	
11. I can build on other group members' ideas.	**.81**	
4. I can encourage other group members to express their viewpoints.	**.67**	
9. I can ask other group members for their ideas.	**.64**	.34
Self-Efficacy Acquaintances-Group Facilitation (alpha =.80)		
5. I can play an effective role in the running of the group.		**.74**
7. I can coordinate the activities of a group.		**.70**
2. I can clearly explain my ideas to the group.		**.65**
1. I can make a valuable contribution to a group project.		**.65**

Cooperative attitudes toward group work with friends factors

A two factor structure was identified for cooperative attitudes toward group work with friends (see Table 4). These factors were named *Cooperative Attitude-Helping Friends* and *Cooperative Attitude-Flexibility Friends*. The eigenvalues for these factors were 4.39 and 1.05 and explained 43.9% and 10.5% of the variance respectively.

Cooperative Attitude-Helping Friends comprised eight items that referred to giving and receiving assistance as well as sharing resources with fellow group members who were friends. "When a group member asks for help I give it" is an item that loaded onto this factor. Cooperative Attitude-Flexibility Friends consisted of two items concerned with a student's willingness to swap tasks with fellow group members if necessary, and to alter ideas if they conflicted with those of others in the group. "I am willing to change my ideas if they clash with others in the group" is an example of an item which loaded onto this factor.

Cooperative attitudes toward group work with acquaintances factor

A single factor was identified for cooperative attitudes toward group work with acquaintances (see Table 5). This factor was named *Cooperative Attitude-Acquaintances* and had an eigenvalue of 6.57, which explained 59.8% of the total variance.

Table 4: Final factor solution for the cooperative attitude-friend items

Cooperative Attitude-Helping Friends (alpha = .88)	**Loadings**
6. I am willing to help finish work given to other group members even if I may not receive anything in return.	**.87**
5. If other group members are busy I try to offer assistance.	**.84**
3. I am prepared to share resources with other group members.	**.65**
1. When a group member asks for help I give it.	**.65**
2. I am willing to help finish work given to other group members.	**.64**
9. If I need help from another group member I ask for it.	**.47**
7. I try to emphasise working with others.	**.37**
11. I am prepared to listen to other group members' opinions even if I disagree with what they have to say.	**.31**
Cooperative Attitude-Flexibility Friends (alpha = .56)	
10. I am willing to change my ideas if they clash with others in the group.	**.75**
8. If I were good at a task but asked to swap with another group member I would do so.	**.47**

Table 5: Final factor solution of the cooperative attitude-acquaintance items

Cooperative Attitude-Acquaintances (alpha = .93)	**Loadings**
4. I try to be cooperative.	**.82**
5. If other group members are busy I try to offer assistance.	**.82**
3. I am prepared to share resources with other group members.	**.81**
6. I am willing to help finish work given to other group members even if I may not receive anything in return.	**.80**
1. When a group member asks for help I give it.	**.77**
2. I am willing to help finish work given to other group members.	**.74**
9. If I need help from another group member I ask for it.	**.71**
11. I am prepared to listen to other group members' opinions even if I disagree with what they have to say.	**.70**
10. I am willing to change my ideas if they clash with others in the group.	**.70**
7. I try to emphasise working with others.	**.70**
8. If I were good at a task but asked to swap with another group member I would do so.	**.61**

Cooperative Attitude-Acquaintances comprised eleven items that reflected students' attitudes toward helping, sharing, and being flexible with fellow group members who were not-close friends, for example, "I am prepared to share resources with other group members". That cooperative attitudes acquaintances contained items related to both being helpful and flexible is interesting. To remind the reader, in the friendship context there were two distinct cooperative attitude factors, one about giving and receiving help, and the other, about being flexible. One possible explanation for the difference is that students may be more familiar with working with friends than acquaintances, and hence may have been more likely to draw finer distinctions between being helpful and flexible in the friendship context than the acquaintance context.

Multiple regression analyses

Intercorrelations for the variables are shown in Table 6. A mixed procedures approach, that is, a combination of hierarchical and stepwise multiple regression methods, was used to test relationships between variables of interest in this study. Such a "mixed mode" of analysis requires the ranking of predictor variables of interest in each multiple regression model into blocks, according to the theoretical and temporal relevance of each predictor variable to the dependent variable. In all of the multiple regression models, demographic variables were entered first in the order of sex, age, school, and school year, because of a natural 'temporal' order. That is, sex is generally determined at birth, age is related to development and so on (categorical variables were entered as dummy variables). This approach meant that demographic differences were controlled for. Following this, selected independent variables were entered in a specific order based on theoretical and logical argument. However, when there was no clear theoretical reason for entering independent variables in a specific order, these variables were entered stepwise.

Table 6: Spearman correlations of the extracted factors

	1	2	3	4	5	6	7	8	9	10
1. Interdependent Self	-									
2. Independent Self-Uniqueness	.03	-								
3. Independent Self-Non-Influence	-.01	.11	-							
4. Self-Efficacy-FR-REC	.24*	.08	.21*	-						
5. Self-Efficacy-FR-GRF	.17*	.24*	.12	.15*	-					
6. Self-Efficacy-ACQ-REC	.25*	-.02	.16*	.58*	.24*	-				
7. Self-Efficacy-ACQ-GRF	.06	.19*	.11	.02	.53*	.17*	-			
8. Cooperative-Attitude-Helping-FR	.28*	.24*	.18*	.38*	.33*	.26*	.04	-		
9. Cooperative-Attitude-Flexibility-FR	.30*	.05	.13	.43*	.09	.23*	-.06	.71*	-	
10. Cooperative-Attitude-ACQ	.31*	.06	.14	.36*	.17*	.63*	.19*	.49*	.40*	-

FR = Friends; ACQ = Acquaintances
Self-Efficacy-FR-REC = Self-Efficacy Friends-Receptiveness of Ideas
Self-Efficacy-FR-GRF = Self-Efficacy Friends-Group Facilitation
Self-Efficacy-ACQ-REC = Self-Efficacy Acquaintances-Receptiveness of Ideas
Self-Efficacy-ACQ-GRF = Self-Efficacy Acquaintances-Group Facilitation
Cooperative Attitude-Helping-FR = Cooperative Attitude-Helping Friends
Cooperative Attitude-Flexibility-FR = Cooperative Attitude-Flexibility Friends
Cooperative Attitude-ACQ = Cooperative Attitude-Acquaintances
* $p < .05$

To test hypotheses 1a, 1b, and 2a, a multiple regression model with Cooperative Attitude-Helping Friends the dependent variable was developed (see Table 7). The order of entry of the predictor variables was based on the extent to which they could be considered to reflect students' beliefs about being connected to a specific group context. In this instance, the friendship group is the most salient group. Therefore, following the entry of the

demographic variables, the two self-efficacy friend variables were entered together using stepwise procedures. Since Interdependent Self was about being connected to the class group, this was entered next. Finally, Independent Self-Uniqueness and Independent Self-Non-Influence were entered into the model using a stepwise procedure. Although related to groups, these variables were about being apart from the class group.

Table 7: Mixed procedures regression analysis using Cooperative Attitude-Friends Helping as the dependent variable

Step	New variable entered into the model	R_	_R_	B	SE B	_
1	Sex	.00	.00	-.24	.19	-.10
2	Age	.00	.00	-.01	.13	-.01
3	School Year	.02	.02	-.06	.20	-.03
4	School	.11	.09	.31	.16	.17
5	Self-Efficacy FR-REC†	.25	.14	.33	.07	.34***
	Self-Efficacy FR-GRF†	.31	.06	.22	.08	.20**
6	Interdependent Self	.34	.03	.20	.07	.19*
7	Independent Self-Uniqueness†	.36	.02	.16	.08	.14*

† entered stepwise
* $p < .05$
** $p < .01$
*** $p < .001$

Although accounting for a relatively small (3%) proportion of the variance, Interdependent Self is a statistically significant predictor of Cooperative Attitude-Friends Helping. This provides partial support for hypothesis 1a, and suggests that the more interdependent a student was, the more likely she or he was to have a cooperative attitude toward helping friends, and vice versa. With respect to the independent self-construal variables, Independent Self-Uniqueness is a statistically significant predictor, albeit accounting for a small proportion (2%) of the variance, whilst Independent Self-Non-Influence is not statistically significant. Notably, the positive direction of the relationship between independent self-uniqueness and cooperative attitude-friends helping (see Table 6) was contrary to our original prediction (Hypothesis 1b). It could be that students in this study, who viewed themselves as relatively unique, perceived that being cooperative did not compromise their uniqueness. The self-efficacy friend variables are the two best predictors of Cooperative Attitude-Friends Helping accounting for 14% and 6% of the variance respectively. These results provide support for hypothesis 2a, and suggest that the more self-efficacious a student was for being receptive or a facilitator, the more likely he or she was to have a cooperative attitude toward friends, and vice versa. It is interesting to note that the School was initially a statistically significant predictor accounting for 9% of the variance. However, when Interdependent Self was entered into the model, this variable was no longer statistically significant. This suggests that some of the variance of Interdependent Self was accounted for by the school. In simple terms, some schools may foster interdependence more than others.

A regression model with Cooperative Attitude-Friends Flexibility was also used to test hypotheses 1a, 1b, and 2a (see Table 8). The order entry of variables was based on the same rationale as the previous model.

Table 8: Mixed procedures regression analysis using Cooperative Attitude-Friends Flexibility as the dependent variable

Step	New variable entered into the model	R_	_R_	B	SE B	_
1	Sex	.02	.02	.12	.17	-.06
2	Age	.02	.00	-.11	.12	-.09
3	School Year	.04	.02	.09	.18	.05
4	School	.08	.04	.16	.15	.09
5	Self-Efficacy FR-REC†	.26	.18	.33	.06	.39***
6	Interdependent Self	.32	.06	.23	.07	.24**

† entered stepwise
* p < .05
** p < .01
*** p < .001

In this model, Interdependent Self is a statistically significant predictor accounting for 6% of the variance. This result provides further support for hypothesis 1a. The two independent self factors are statistically non-significant, therefore, in this model, there is no support for hypothesis 1b. Hypothesis 2a is supported in that Self-Efficacy Friends-Receptiveness of Ideas is a statistically significant predictor, whilst Self-Efficacy Friends-Group Facilitation is not statistically significant.

To test hypotheses 1a, 1b and 2b, a multiple regression model with Cooperative Attitude-Acquaintances was tested (see Table 9). The order of variables in this model was again based on the extent to which they reflected students' beliefs about being connected to a specific group context. However, in this case the self-efficacy acquaintance variables were included rather than the self-efficacy friend variables.

Table 9: Mixed procedures regression analysis using Cooperative Attitude-Acquaintances as the dependent variable

Step	New variable entered into the model	R_	_R_	B	SE B	_
1	Sex	.00	.00	-.03	.16	-.01
2	Age	.03	.03	-.13	.11	-.10
3	School Year	.07	.04	.35	.16	.18*
4	School	.08	.01	-.04	.14	-.02
5	Self-Efficacy FR-REC†	.55	.47	.67	.06	.66***
6	Interdependent Self	.57	.02	.18	.06	.16**

† entered stepwise
* p < .05
** p < .01
*** p < .001

Interdependent Self, although having only a small effect size (2%), is a statistically significant predictor. That is, the more interdependent a student was, the more likely she or he was to have a cooperative attitude toward acquaintances, and vice versa. This result, in combination with the fact that interdependent self is also a predictor of both of the cooperative attitude friend variables, means that hypothesis 1a is fully supported. With regard to the independent self variables, neither is a statistically significantly predictor. Self-Efficacy Acquaintances-Receptiveness of Ideas accounts for a relatively large 47% of the variance. This supports hypothesis 2b and suggests that the more self-efficacious a student was for being receptive to acquaintances, the more likely he or she was to have a cooperative attitude toward this group, and vice versa. The other self-efficacy acquaintance variable, Self-Efficacy Acquaintances-Group Facilitation is statistically non-significant. It is important to note that School Year is also a statistically significant predictor, accounting for 4% of the variance. In this case, Year 11 students (M = .23) were more likely to report positive cooperative attitudes toward acquaintances than Year 10 students (M = -.17). This may be explained in part by the fact that most school students mature as they progress through school.

To test hypotheses 3a and 3b a regression model with Self-efficacy Friends-Receptiveness of Ideas as the dependent variable was tested (see Table 10). The order of entry of the self-construal variables was again based on the extent to which they were about being part of a group. Therefore, following the entry of the demographic variables, Interdependent Self was entered, followed by Independent Self-Uniqueness and Independent Self-Non-Influence, which were entered together using stepwise procedures.

Table 10: Mixed procedure regression analysis using Self-Efficacy Friends-Receptiveness of Ideas as the dependent variable

Step	New variable entered into the model	R_	_R_	B	SE B	_
1	Sex	.00	.00	-.14	.22	-.06
2	Age	.00	.00	-.17	.15	-.13
3	School Year	.06	.06	.55	.22	.28*
4	School	.10	.04	.34	.18	.17
5	Interdependent Self	.14	.04	.25	.08	.23**
6	Independent Self-Non-Influence†	.17	.03	.20	.10	.16*

† entered stepwise
* p < .05
** p < .01
*** p < .001

The results of the model provide support for hypothesis 3a, with Interdependent Self a statistically significant predictor of Self-efficacy Friends Receptiveness of Ideas, accounting for 4% of the variance. Independent Self-Non-Influence is also a statistically significant predictor, however, the direction of the relationship is positive (see Table 1), the opposite direction to our original prediction (see Hypothesis 3b). On reflection, there

appears to be no obvious explanation for this result. It is important to point out that the School was initially statistically significant, accounting for 4% of the variance. However, when Independent Self-Non-Influence was added to the model, the school was no longer statistically significant. This suggests that some of the variance of Independent Self-Non-Influence is accounted for by the School.

A regression model with Self-Efficacy Friends-Group Facilitation as dependent variable was also used to test hypotheses 3a and 3b (see Table 11). The order of entry of variables was the same as the previous model.

Table 11: Mixed procedures regression analysis using Self-Efficacy Friends-Group Facilitation as the dependent variable

Step	New variable entered into the model	R_	_R_	B	SE B	_
1	Sex	.00	.00	-.22	.19	-.11
2	Age	.00	.00	-.18	.13	-.15
3	School Year	.04	.04	.42	.19	.24*
4	School	.11	.07	.51	.16	.29**
5	Interdependent Self	.12	.01	.11	.07	.11
6	Independent Self-Uniqueness†	.16	.04	.21	.08	.21*

† entered stepwise
* $p < .05$
** $p < .01$
*** $p < .001$

Interdependent Self is statistically non-significant, and consequently, there is no support for hypothesis 3a. Notably, Independent Self-Uniqueness is also a statistically significant predictor accounting for 4% of the variance, but the direction of the relationship is positive (see Table 11), which is contrary to what we had originally anticipated (see Hypothesis 3b). This may be explained by the fact that facilitating others can at times involve standing apart, which is consistent with an independent self-construal (Markus & Kitayama, 1991). The regression model suggests that Year 11 students (M = .15) were more likely to be self-efficacious for facilitating in friendship groups than Year 10 students (M = -.10).

A model with Self-Efficacy Acquaintances-Receptiveness of ideas as the dependent variable was used to test not only hypotheses 3a and 3b, but also hypothesis 4, that self-efficacy for working with friendship groups would be related to self-efficacy for working with acquaintances (see Table 12). After entering the demographic variables, Self-Efficacy Friends-Receptiveness of Ideas was entered into the model, followed by Interdependent Self, and then the two independent self factors, which were entered using stepwise procedures.

Table 12: Mixed procedures regression analysis using Self-Efficacy Acquaintances-Receptiveness of Ideas as the dependent variable

Step	New variable entered into the model	R_	_R_	B	SE B	_
1	Sex	.00	.00	-.14	.18	-.06
2	Age	.03	.03	.13	.12	.10
3	School Year	.05	.02	.07	.19	.04
4	School	.07	.02	-.05	.16	-.03
5	Self-Efficacy-FR-REC	.36	.29	.51	.07	.54***
6	Interdependent Self	.38	.02	.16	.07	.15**

† entered stepwise
* p < .05
** p < .01
*** p < .001

The results of the regression model provide support for hypothesis 3a, with Interdependent Self identified as a statistically significant predictor, albeit with a small effect size (2%). Neither of the independent self-construal variables is statistically significant, therefore there is no support of hypothesis 3b in this model. Strong support was found for hypothesis 4, with Self-Efficacy Friends-Receptiveness of Ideas identified as a statistically significant predictor accounting for 29% of the variance. Age was initially statistically significant, however, when School Year was added to the model, this was no longer the case.

A model with Self-Efficacy Acquaintances-Group Facilitation was also used to test hypotheses 3a, 3b and 4 (see Table 13). The rationale for the order of entry of variables was the same as the previous model.

Table 13: Mixed procedures regression analysis using Self-Efficacy Acquaintances-Group Facilitation as the dependent variable

Step	New variable entered into the model	R_	_R_	B	SE B	_
1	Sex	.00	.00	.04	.18	.02
2	Age	.00	.00	-.17	.12	-.15
3	School Year	.07	.07	.44	.18	.25*
4	School	.08	.01	-.13	.15	-.07
5	Self-Efficacy-FR-GRF†	.31	.23	.53	.08	.52***
6	Interdependent Self	.31	.00	-.02	.07	-.02

† entered stepwise
* p < .05
** p < .01
*** p < .001

None of the self-construal variables emerged as a statistically significant predictor of self-efficacy acquaintances. As a result, there is no support in this model for hypotheses 3a and

3b. With respect to hypothesis 4, there is again strong support for this hypothesis with Self-Efficacy Friends-Group Facilitation being having the largest effect size (23%). School Year is also a statistically significant predictor accounting for 7% of the variance with Year 11 students (M = .21) more likely to report being self-efficacious about taking on a facilitator role when working with acquaintance groups than Year 10 students (M = -.15). This result may be related to increased maturity as a student progresses through school.

Conclusions

This study is the first step in a potentially rewarding area of inquiry that can assist teachers and policy makers to design groups that are effective and prepare students to work in groups and teams in a variety of contexts. However, it is important to reiterate that this was a preliminary investigation and acknowledge limitations.

The sample size is relatively small (N = 188) and a replicated study with a larger sample is desirable. Further a more substantial follow-up study should employ a random sample. Triangulation with observational and interview data could be used in future research to confirm and extend some of the findings of the study. Moreover, since the main emphasis of our study was relationships between self-beliefs and student attitudes, it would be important for future studies to investigate relationships between self-beliefs and actual group behaviour and group performance. Indeed, people's attitudes are not always in concert with their behaviours. Notwithstanding, attitudes to group work have been identified in studies of teams in the workplace as a critical predictor of group behaviour and performance (Cannon-Bowers & Salas, 1997; Cannon-Bowers, Tannenbaum, Salas & Volpe, 1995).

Of the two sets of self-beliefs that were the main foci of the research, self-construal and self-efficacy, the latter emerged as strongly related to students' attitudes toward cooperation with friends and acquaintances. This link between self-efficacy and cooperation is important in two key respects. First, it is consistent with past research on teams in organisations (Eby & Dobbins, 1997). Second, and perhaps more importantly, it may be of assistance to educators in helping them to better prepare students to work in groups. Training students to work collaboratively with others has been the focal point of a number of recent studies on group work in schools (Blatchford et al., 2006; Gillies, 2000; Prichard et al., 2006). The results for this study, especially the large effect sizes associated with self-efficacy for being receptive, suggests that honing students' receptiveness skills may be particularly important for preparing students to work in groups requiring a high level of cooperation.

Potentially one of the important findings of the study was the positive relationships between the self-efficacy friend variables and their equivalents in the acquaintance context. This provides some support for our argument that self-efficacy developed in the friendship context can "flow on" or transfer to the acquaintance context, and is consistent with previous research which suggests that self-efficacy developed in one context can generalise to other similar contexts (Bandura, Adams, & Beyer, 1977). Whilst we

acknowledge this is speculative and the nature of our data precludes drawing causal conclusions, logic would suggest that students' self-efficacy beliefs for working with others would likely originate in the friendship context rather than the acquaintance context. Indeed, some researchers (Zajac & Hartup, 1997) have argued that the friendship group serves as a key developmental context for nurturing students' skills as co-learners.

The relationships between self-construal and the self-efficacy variables were more complex than originally conceptualised. We had expected that, in general, the higher the interdependence, the higher would be the self-efficacy, whilst the higher the independence, the lower would be the self-efficacy. However, the data suggested that in the friendship context, highly interdependent students were likely to be self-efficacious for being receptive, whilst highly independent-unique students were likely to be self-efficacious for group facilitation. That self-efficacy for different process skills varied, depending upon which self-construal was salient, is important, especially with regards to group role-specialisation (Webb & Palincsar, 1996). When organising group work, teachers often have to make decisions about the types of group roles (e.g. note taker or facilitator) that are most appropriate for each student (see Kagan, 1992). If teachers are able to identify which self-construal is salient, for example, through diagnostic devices such as pre-tests, they may be better able to assign students to roles for which they are likely to believe themselves most capable, or strategically prepare them for other roles through mastery experiences.

With respect to the relationships between self-construal and cooperative attitude variables, these were in some cases consistent, and in other cases, inconsistent, with the literature. Although accounting for less variance than the self-efficacy variables, the positive link between interdependence and cooperative attitudes in both friendship and acquaintances is nevertheless consistent with past research on teams in the workplace (Oetzel, 2001).

Although accounting for a relatively small percentage of the variance, the more independent a student was in terms of perceiving self as unique, the more likely he or she was to have a cooperative attitude in terms of helping, was unexpected. Our original position based on the literature was that highly independent students were likely to have a negative attitude toward cooperation. On reflection, there may be many different reasons for students' having a cooperative towards others. Whilst speculative, it is possible that some highly independent students may have had a cooperative attitude for instrumental reasons. That is, they were cooperative as a means of meeting a personal goal.

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José Hanham is a PhD candidate in the School of Education at the University of New South Wales. His research interests are related to group work in schools, in particular, identifying cognitive-motivational processes that underlie student attitudes and behaviours in groups.

John McCormick is an Associate Professor in the Faculty of Education at the University of Wollongong. His primary research interests are related to motivation, in particular, social cognition, attribution, stress and cross-cultural differences.