The Role of Communication and Cohesion in Reducing Social Loafing in Group Projects

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Abstract

This study examines previously untested variables that influence social loafing in professional and technical communication group projects by determining the influence of communication quality and task cohesion on social loafing. A set-up factors model, which included group size, peer review, project scope, and method of team formation, was also tested for means of comparison. The results indicated the communication quality and task cohesion model significantly reduced social loafing, explaining 53% of the variance in social loafing. The model of set-up factors only explained about 4% of the variance. The article discusses instructional strategies that foster quality communication to reduce loafing.

Group projects are highly prevalent in higher education, specifically in business, professional, and technical communication classrooms (Alexander, 2012; Lam, 2013; Scott, 1995; Wolfe, 2010). For business and professional communication students, group projects are particularly important because they provide practical opportunities for students to develop necessary teamwork skills. Furthermore, group projects that involve clients, which are common in business and professional communication courses, expose students to real-world experience that they would not otherwise be exposed to in traditional college coursework (Blakeslee, 2001; Cooke & Williams,

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2004; Vik, 2001). However, group projects come with a unique set of challenges, one of the most difficult challenges being noncontributing team members, also referred to as *social loafing*. Students have even reported that social loafing is one of the most significant factors in their dissatisfaction with group projects (Hall & Buzwell, 2012; Williams, Beard, & Rymer, 1991). Therefore, studying ways to deter social loafing is relevant for business and professional communication instructors because of the prevalence and negative influence of social loafing in and on group projects.

When it comes to deterring social loafing, however, instructors often "lack effective strategies for handling the problems" related to slacking team members (Wolfe & Powell, 2014, p. 74). To compound this problem, research also suggests that instructors rarely provide explicit teamwork training or support for students working in teams (e.g., Alexander, 2012; Chen, Donahue, & Klimoski, 2004; Oakley, Hanna, Kuzmyn, & Felder, 2007; Vik, 2001). Even if instructors wanted to proactively deter social loafing by implementing training or other strategies, little research exists that provides evidence for particularly effective training topics or strategies. Instead, a large body of research focuses on how set-up factors influence social loafing, such as implementing peer evaluations into group projects or allowing students to self-select their teammates. While research on these set-up factors is important, there remains a gap in knowledge regarding the influence of team factors on social loafing—factors like communication quality and task cohesion.

In response to the lack of research on team factors, I developed and tested a model to determine the influence of communication quality and task cohesion on social loafing. Understanding the influence of these factors on social loafing is vital because it provides instructors with the research-based teamwork strategies and topics they are currently lacking. In addition to testing this model, I also posed two research questions: (a) Is the new model (communication quality and task cohesion) more or less influential than a set-up factors model on social loafing? (b) Which subconstructs of communication quality are most influential in establishing communication quality?

The remainder of the article outlines relevant literature, presents rationale for the current study, and reports the results. Then, specific implications and pedagogical strategies are discussed based on the results.

Literature Review

This literature review first examines the theoretical underpinnings of social loafing. Studies on social loafing in higher education are then discussed.

Theoretical Foundations of Social Loafing

Social loafing is defined as the "reduction in motivation and effort when individuals work collectively compared to when they work individually" (Karau & Williams, 1993, p. 681). One prominent explanation of social loafing was described in the collective effort model, which argues that social loafing "occurs because individuals expect their effort to be less likely to lead to valued outcomes when working collectively than when

working coactively" (p. 700). A more recent experiment conducted on an online community supported the collective effort model as individuals contributed more to the online community if they thought their contributions were unique (Ling et al., 2005).

Another explanation for social loafing is that some team members expect their counterparts to slack, and therefore intentionally expend less effort when working in a group to avoid being taken advantage of. This explanation is often referred to as the *sucker effect* (Orbell & Dawes, 1993). Early empirical studies found support for the sucker effect as some teammates chose to fail at a task than exert additional effort to carry the load of a free rider (Kerr, 1983; Schnake, 1991). In a recent study, Piezon and Ferree (2008) found that the sucker effect was prevalent in virtual teams and was associated with perceptions of social loafing. Finally, other early studies reported that individuals exerted more effort if they did not expect their teammates to loaf (Harkins & Jackson, 1985; Mulvey, Bowes-Sperry, & Klein, 1998; Mulvey & Klein, 1998; Robbins, 1995).

Social Loafing in Student Teams

While much of the older research on social loafing focused on the theoretical causes of the phenomenon, more recent research has examined the phenomenon in naturally occurring student teams (Price, Harrison, & Gavin, 2006). Student teams are fundamentally different from work teams in that student teams often have "no history, little if any internal hierarchy, and often little supervision" (Wolfe & Powell, 2014, p. 74). The majority of this research has focused specifically on the influence of three set-up factors on social loafing: peer evaluation, group size, and method of team formation.

Peer Evaluation.   To reduce social loafing, Harkins and Jackson (1985) argued that individual effort must not only be identifiable, but contributions must also be evaluated against the work of teammates. In the classroom context, this is most often implemented via peer evaluations. Research has shown mixed support for peer evaluations to reduce social loafing. In support of peer evaluations, Aggarwal and O'Brien (2008) found that the presence of peer evaluations significantly reduced incidences of social loafing in marketing group projects. Similarly, Erez, Lepine, and Elms (2002) studied self-managed undergraduate teams and found that groups who conducted peer evaluations experienced higher levels of workload sharing, cooperation, and member satisfaction. Finally, Brooks and Ammons (2003) tested a peer evaluation method on cross-disciplinary student teams and found that it indeed helped reduce social loafing. On the other hand, some studies have reported negative outcomes from the use of peer evaluation. For instance, Bacon, Stewart, and Silver (1999) found that peer evaluations had a "negative effect on the tendency for team members to have equal influence, the team's ability to agree on goals, and each member's felt accountability" (p. 483). Furthermore, Price et al. (2006) found that peer evaluation had no significant influence on social loafing. While peer evaluations are a widely used tool in group projects, it is not clear whether peer evaluations significantly reduce social loafing.

Group Size. Another set-up factor that has received considerable attention is group size. Research has shown that when group size increases so does anonymity, making it difficult for team members to assess individual contribution. Hechter (1987) found that increased group size inhibits the ability of team members to both monitor and encourage each other. The link between group size and social loafing was replicated in early classroom research (Kerr, 1983; North, Linley, & Hargreaves, 2000; Strong & Anderson, 1990). More recent research from Aggarwal and O'Brien (2008) and Maiden and Perry (2011) also found that smaller group sizes reduced incidences of social loafing. In summary, there seems to be strong evidence linking group size and social loafing.

Method of Team Formation. Decker (1995) described three ways teams are formed in academic settings: (a) random assignment, (b) self-selection, and (c) teacher assignment. Most of the research around team formation has focused on self-selection and random assignment. Some research has argued for self-selection, citing that the method fosters cohesion among team members (Bacon et al., 1999; Strong & Anderson, 1990). However, negative consequences of self-selection include homogenous and nondiverse teams (Bacon, Stewart, & Stewart-Belle, 1998). As a result of these homogenous teams, Mello (1993) reported that self-selected teams possess inadequate skill sets among their group members.

Random assignment of team members has been mostly associated with negative team outcomes. For example, students reported that random team assignment was unfair, even as unfair as an instructor randomly assigning grades (Bacon et al., 1998). Vik (2001) also argued against the method, citing its unpredictability. While very little research has compared the influence of the two methods specifically on social loafing, one study found no significant differences in social loafing between self-selected and randomly assigned teams (Aggarwal & O'Brien, 2008).

The third method of team formation, teacher assignment, has not received much attention in the literature. Pieterse and Thompson (2010) examined groups formed based on academic alignment, or with individuals who possess similar "academic abilities, skills and goals" (p. 2). They found that teams high in academic alignment reported fewer social loafers than teams low in academic alignment. When social loafing did occur, the authors argued that it was due to strong team members excluding the contributions of weaker members. Based on the literature, there is no clear consensus on the influence of team formation on social loafing.

Non-Set-Up Factors. Very few studies of student teams and social loafing have examined variables that were not set-up factors. Stark, Shaw, and Duffy (2007) articulated this gap when they wrote, "the scales of research on social loafing behavior are, however, unbalanced. Research progress on situational antecedents outpaces by a wide margin research progress on the person-related factors that may relate to social loafing behavior" (p. 700). A handful of studies have examined the influence of interpersonal factors on social loafing and found that winning-orientation, preference for group work, conscientiousness, and organizational citizen behavior all were associated with

reductions in social loafing (Hoon & Tan, 2008; Stark et al., 2007). On the other hand, Klehe and Anderson (2007) examined the influence of three personality traits on social loafing and found that conscientiousness, agreeableness, and openness had no significant impact on social loafing.

A few key patterns emerge from the literature review. First, most of the research on social loafing in higher education has focused on studying the influence of set-up factors on social loafing. Even though these factors have been well researched, there is mixed support for the effectiveness of these factors to reduce social loafing. Additionally, very little research on non-set-up factors exists. Therefore, this gap in the literature provides an entry point for the model that was developed in the current study. The following section describes the rationale for studying the influence of communication quality and task cohesion on social loafing.

Model and Hypothesis Development

Even though the link between communication and social loafing has not been explicitly studied, the two variables have been discussed together in the literature. Karau and Williams (1993) wrote, "Communication among group members should enhance collective effort when it enhances perceptions of task importance or social responsibility, but should hinder collective effort when it relays negative task attitudes or contributes feelings of dispensability" (p. 702). Similarly, Strong and Anderson (1990) linked the two variables when they advised instructors to "emphasize open communication" as a means of reducing social loafers (p. 65). More recently, Blaskovich (2008) examined social loafing across varying communication mediums and found that virtual communication increased social loafing.

Based on the link between communication and social loafing, I developed a model that examines the influence of communication quality and task cohesion on social loafing, which is displayed in Figure 1. As Figure 1 depicts, task cohesion is a mediating variable between communication quality and social loafing. This mediated relationship is described in detail in the next section.

Communication Quality and Cohesion

Very early research provided initial support for the link between communication and cohesion in teams (Back, 1951; Grossack, 1954; Lott & Lott, 1965; Newcomb, 1956). Subsequent research explicitly linked specific facets of communication to team cohesion including cooperative communication (Bakar & Sheer, 2013; Carless & De Paola, 2000; Lee, 1997), open communication (Griffith, 1988; Strong & Anderson, 1990; Wech, Mossholder, Steel, & Bennett, 1998), and appropriate communication (Lowry, Roberts, Romano, Cheney, & Hightower, 2006). Based on this research, I proposed the following hypothesis.

> **Hypothesis 1**: Communication quality will significantly and positively influence task cohesion.
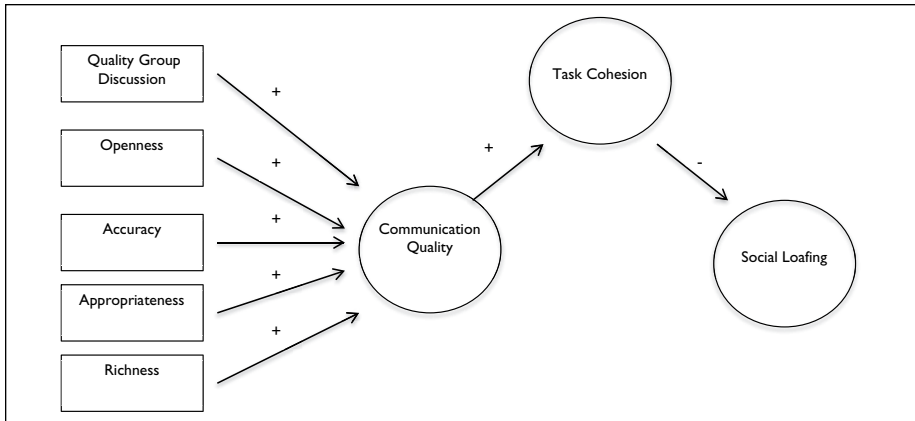
Figure 1. Communication quality theoretical model.

Task Cohesion and Social Loafing

Cohesion has been associated with the overall effectiveness of work teams (Cohen & Bailey, 1997; Hackman, 1987; Sundstrom, de Meuse, & Futrell, 1990). In regard to social loafing specifically, several studies have reported that members of cohesive teams engage in less social loafing (Duffy & Shaw, 2000; Karau, Markus, & Williams, 2000; Karau & Williams, 1993; Murphy, Wayne, Liden, & Erdogan, 2003). This connection was replicated in a field study when Liden, Wayne, Jaworski, and Bennett (2004) found that the presence of social loafing in teams was associated with decreased cohesiveness. Therefore, I also proposed these hypotheses:

> **Hypothesis 2**: Task cohesion will significantly and negatively influence social loafing.
> **Hypothesis 3**: Task cohesion will mediate the relationship between communication quality and social loafing.

Research Questions

Given these hypotheses, and the gaps in the literature on social loafing, I developed the following research questions:

> **Research Question 1:** Is the new model (communication quality and task cohesion) more or less influential than a set-up factors model on social loafing?
> **Research Question 2:** Which subconstructs (quality group discussion, appropriateness, richness, openness, and accuracy) of communication quality are most influential in establishing communication quality?

Method

Participants

A total of 445 participants participated in the study. Before conducting the study, I obtained permission from my university's Institutional Review Board. All participants were enrolled in 18 professional and technical communication courses at the University of North Texas in Denton, Texas. Students who completed a team project during the Spring 2013 semester were recruited, and participation in the study was completely voluntary.

Fifty-four percent of participants were male, and 46% were female. Less than 1% identified as transgendered. The sample included a mix of freshmen (34%), sophomores (20%), juniors (20%), seniors (22%), and graduate students (4%). Students worked on a variety of professional and technical communication projects, including marketing strategy presentations, instructional guides, brochures, press releases, and feasibility reports. Finally, 91% of the sample worked on at least one group project previously.

Measures

I used the Qualtrics system to create a survey, which included 10 demographic questions and 36 items that were derived from the measures described below. For each measure described, I cite the study where the measure originated. See the appendix for the survey items.

Communication Quality. Lowry et al. (2006) developed the latent construct of communication quality by using five previously existing subconstructs: quality group discussion, appropriateness, richness, openness, and accuracy. I have provided a citation for each of these five subconstructs. Each item was measured on a 7-point Likert-type scale.

1. *Quality group discussion* (Burgoon et al., 2002). This subconstruct measures a team member's perception of how effective and satisfactory discussions and the development of discussions were during the project. A sample item includes "The outcome of the group discussions were satisfactory." The measure had high internal reliability ($\alpha = .88$).
2. *Appropriateness* (Burgoon & Walther, 1990). This subconstruct measures a team member's perception of how suitable and applicable communication was among team members. A sample item includes "The group discussions were suited to the topic." This measure had high internal reliability ($\alpha = .739$).
3. *Richness* (Burgoon et al., 2002). This subconstruct measures a team member's perception of how vivid and detailed messages were among team members. A sample item includes "In terms of our group's communication, responses were filled with details." This measure had high internal reliability ($\alpha = .86$).

4. *Openness* (O'Reilly & Roberts, 1977). This subconstruct measures a team member's perception of how receptive the team was to each other's communication. A sample item includes "When people communicated to each other in this group, there was a great deal of understanding." The measure had high internal reliability ($\alpha = .809$).

5. *Accuracy* (O'Reilly & Roberts, 1977). This subconstruct measures a team member's perception of whether their group's communication was correct and properly understood. A sample item includes "The information I received was generally accurate." This measure had high internal reliability ($\alpha = .79$).

Task Cohesion (Carless & De Paolo, 2000). There are three ways that cohesion has been measured in the literature: (a) *social cohesion*, or attraction to team as a social entity; (b) *task cohesion*, or the extent to which a team is united and committed to achieving a particular work task; and (c) *individual attraction* to the team. According to Carless and De Paola (2000), task cohesion is the most relevant measure for work-related teams because, as the authors argued, "social aspects of cohesion are unrelated to work-group performance" (p. 84). Furthermore, the authors questioned the "usefulness of assessing social cohesion and individual attraction to the group" when studying *work* groups (p. 84). The argument that task cohesion is the most appropriate measure for work teams (as opposed to social cohesion or individual attraction) has also been supported in other research (Mullen & Cooper, 1994; Zaccaro, Foti, & Kenny, 1991). Therefore, task cohesion was chosen as the measure of cohesion in the present study since team projects are primarily work related and not social in nature.

Task cohesion was measured using a four-item scale that measures "the extent to which the team is united and committed to achieving the work task" (Carless and De Paola, 2000, p. 72). A sample item includes "Our team is united in trying to reach its goals for performance." This measure had high internal reliability ($\alpha = .885$).

Social Loafing (Dommeyer, 2007). Social loafing was measured using a five-item scale that measures the degree to which an individual experienced a problem with slacking in their group. A sample item includes "One or more of my teammates did not contribute fairly to the group project." The measure had high internal reliability ($\alpha = .891$).

Group Size (Aggarwal & O'Brien, 2008). Group size was measured by a single item asking respondents to report the number of members in their groups including themselves.

Peer Evaluation (Aggarwal & O'Brien, 2008). Peer evaluation was measured by a single question asking students to report the number of times they completed peer evaluations during the project.

Project Scope. Aggarwal and O'Brien (2008) predicted that projects with a more limited scope would reduce social loafing. Project scope was measured with a single

question asking students to report the percentage of the total grade that the group project was worth.

Method of Team Formation. This was measured as a variable with three options as described in Decker (1995): self-selected, randomly assigned, or nonrandom teacher assigned.

Procedure

As noted earlier, 18 professional and technical communication courses were recruited for the study. After the study was described to students, I obtained consent from students who agreed to participate. Participants completed their group projects without any additional researcher interference. When the projects ended, students completed the online survey in class. Students were asked to refrain from sitting immediately next to a teammate so that they would be open and honest when answering survey items about their experience. The whole process took about 30 minutes to complete.

Data Analysis

To test the hypotheses, partial least squares structural equation modeling (PLS-SEM), a causal modeling method, was used. PLS-SEM allows researchers to examine relationships between formative (causal) and reflective (consequent) variables in complex models (Lowry & Gaskin, 2014). PLS-SEM functions very similarly to multiple regression analysis in that its main goal is to maximize the explained variance in a dependent variable (Hair, Ringle, & Sarstedt, 2011). Essentially, the method allows researchers to understand the relative influence that independent variables have on an outcome variable. In the case of the current study, PLS-SEM was used to determine the relative influence of communication quality and task cohesion on social loafing.

This statistical method was chosen because it is well suited for examining relationships among constructs for previously untested or exploratory models (Lowry & Gaskin, 2014). Since the model in the present study has never been tested, it fulfills the exploratory criteria of PLS-SEM. Furthermore, PLS-SEM should be chosen instead of simple linear regression when a model tests latent constructs. Latent constructs are theoretical, or unobserved, constructs that are determined by multiple, observed indicators (Lowry & Gaskin, 2014). Because the present study has a latent construct, communication quality (determined by five subconstructs), PLS-SEM is an appropriate statistical method.

As part of the data analysis, the protocol set forth in Lowry and Gaskin (2014) was followed to ensure validity and reliability of all constructs examined in the study. Also, mediation analysis was conducted to test the hypotheses established in the literature review. Finally, a second model that included the classroom set-up factors of group size, peer evaluations, and project scope was tested.
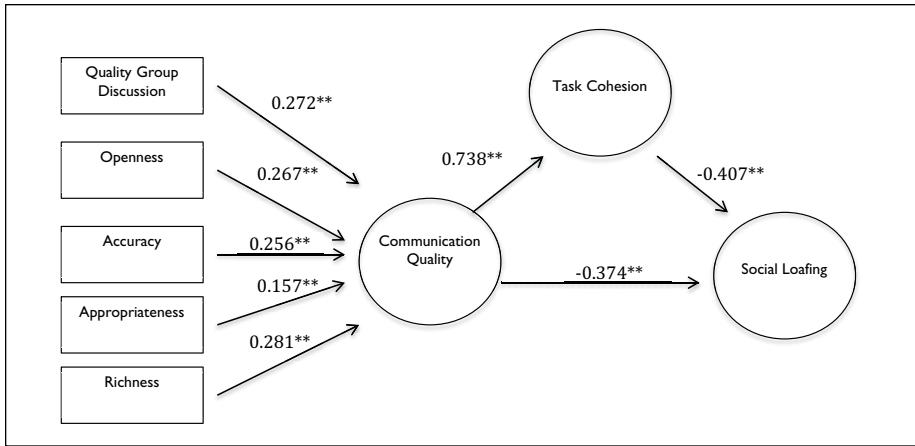
Figure 2. Results of partial least squares structural equation modeling communication quality model.

**p < .001.

Results

The results of the PLS-SEM indicate that communication quality and task cohesion strongly influence social loafing (R^2 = .531, *p* < .001). An R^2 value of .531 is interpreted as communication quality and task cohesion explaining 53.1% of the total variance in social loafing.

Hypothesis Test Results

Hypothesis 1 predicted that communication quality positively influences task cohesion. As shown in Figure 2, Hypothesis 1 was supported. Communication quality significantly and positively influenced task cohesion (B = 0.738, *t* = 31.685, *p* < .001). The standardized beta weight of 0.738 indicates a very strong relationship between communication quality and task cohesion.

Hypothesis 2 predicted that task cohesion significantly and negatively influences social loafing. As shown in Figure 2, Hypothesis 2 was supported as task cohesion significantly and negatively influenced social loafing (B = −0.407, *t* = 8.613, *p* < .001).

Finally, Hypothesis 3 predicted that the relationship between communication quality and social loafing is mediated by task cohesion. To test for mediation, I used a well-accepted three-step method as outlined in Baron and Kenny (1986). The first step is establishing a baseline direct relationship (also referred to as the direct model) between communication quality and social loafing. As shown in the dotted line in Figure 2, communication quality had a significant, direct, and negative influence on social loafing (B = −0.667, *p* < .001, R^2 = 0.458). The second step of mediation analysis is adding the mediating variable (task cohesion) and testing the model again. When

task cohesion was added to the model, the direct effect between communication quality and social loafing was reduced, but still significant (B = −0.374, $p < .001$). Also, the overall R^2 for the mediated model increased to 0.531, indicating that the mediated model explained more variance than the direct model. Therefore, these results indicate a partially mediated effect. The last step is determining whether the mediated effect is significant. Sobel's test revealed a significant mediated effect ($t = 7.93$, $p < .001$). Therefore, task cohesion significantly and partially mediated the effect of communication quality on social loafing. Hypothesis 3 was supported.

Results for the Research Questions

Research Question 1 focused on comparing the communication quality model with a model of classroom set-up factors that included group size, project scope, number of peer evaluations, and method of team formation. Overall, set-up factors explained only 4.5% of the variance in social loafing ($R^2 = 0.045$). Interestingly, neither project scope (B = 0.004, $p = .942$) nor the number of peer evaluations (B = 0.025, $p = .636$) had a significant influence on social loafing. Group size was the only set-up factor that had a significant, albeit limited, influence on social loafing (B = 0.207, $p < .001$). Additionally, a one-way analysis of variance revealed no significant difference between the three methods of team formation on social loafing ($F = 1.15$, $p = .318$). Interestingly, self-selected teams reported the highest level of social loafing ($M = 3.30$, $SD = 1.58$) as compared to nonrandomly teacher-assigned teams ($M = 3.02$, $SD = 1.65$) or randomly assigned teams ($M = 3.07$, $SD = 1.55$). Finally, method of team formation was also tested as a moderating variable on the communication quality model. This test revealed no significant differences between the three methods on communication quality, task cohesion, or social loafing, which indicates that communication quality and task cohesion strongly influenced social loafing regardless of how a team was formed. In summary, communication quality and task cohesion have a much stronger influence on social loafing than the set-up factors model.

Research Question 2 examined the unique contribution of each subconstruct to communication quality. As seen in Figure 2, all five communication subconstructs significantly contributed to communication quality. Quality group discussion contributed the most (B = 0.272, $p < .001$), while appropriateness contributed the least (B = 0.157, $p < .001$). Table 1 displays a summary of all of the results.

Discussion

Theoretical Implications

From a theoretical standpoint, this study is significant for several reasons. First, communication quality and task cohesion explained more than 53% of the variance in social loafing, which indicates very strong support for the theoretical model. While the results are in line with previous literature, no empirical support for this model existed prior to the present study. Therefore, these findings provide much needed confirmation

Table 1. Summary of Results.

Relationship	B or F statistic	Significance
Communication quality > Task cohesion	B = 0.738	Significant**
Task cohesion > Social loafing	B = −0.407	Significant**
Richness > Communication quality	B = 0.281	Significant**
Quality group discussion > Communication quality	B = 0.272	Significant**
Openness > Communication quality	B = 0.267	Significant**
Accuracy > Communication quality	B = 0.256	Significant**
Appropriateness > Communication quality	B = 0.157	Significant**
Group Size > Social loafing	B = 0.207	Significant*
Peer Reviews > Social loafing	B = 0.025	n.s.
Project Scope > Social loafing	B = 0.004	n.s.
Method of team formation > Social loafing	F = 1.15	n.s.

Note. n.s. = not significant.
**$p < .001$. *$p < .01$.

to the early predictions of Karau and Williams (1993), who speculated that communication plays a role in influencing social loafing. According to the collective effort model, social loafing occurs when individuals cannot see value in their individual contributions or in the task at hand. In line with the collective effort model, one explanation for the findings might be that quality communication allows individuals to explicitly express their contributions to a project. For instance, open and honest communication may allow individuals to feel that their contributions are heard and valued by other team members. Similarly, accurate communication, which could manifest in a well-documented project, may also serve to highlight individual contributions and reduce social loafing. Findings from Ding and Ding (2008) supported this notion as they found that a well-documented project reduced free riding.

A second implication of the study stems from the results that indicated that set-up factors only explained about 4% of the variance in social loafing. The only set-up factor that significantly influenced social loafing was group size, which is supported in the prior literature (Aggarwal & O'Brien, 2008; Kerr, 1983; Strong & Anderson, 1990). Several other findings from the present study, however, provide new insights. First, the method of team formation did not significantly influence social loafing. Interestingly, self-selected groups actually reported more social loafing than randomly assigned or teacher-assigned groups. This directly contradicts previous research that argued that self-selected teams should experience more cohesion and less loafing (Bacon et al., 1999; Strong & Anderson, 1990). In fact, method of team formation had no significant influence on any of the outcome variables, including task cohesion. Therefore, even if self-selected teams were more socially compatible from inception, this compatibility did not translate into increased task cohesion or a reduction of social loafing. This finding seems to be in line with Carless and De Paola (2000) when they argued that "social aspects of cohesion are unrelated to

work-group performance" (p. 84). The results regarding team formation also seem to provide new insight for the general bias against randomized teams (Bacon et al., 1999; Vik, 2001).

Finally, the presence of peer evaluations did not significantly influence social loafing, which deviates from findings and recommendations of prior work (Brooks & Ammons, 2003; Erez et al., 2002; Harkins & Jackson, 1985; Strong & Anderson, 1990). Additionally, limiting a project's scope also failed to significantly influence social loafing. In interpreting these results, however, it is essential not to completely dismiss set-up factors. Instead, the results suggest that set-up factors are not, in and of themselves, sufficient to significantly influence social loafing. Instead, this research provides support for the idea that groups are more influenced by the processes and relationships within groups than by any single set-up factor, an argument explicitly stated in Stark et al. (2007).

Pedagogical Implications

In light of the results from the study, practical instructional strategies and topics are presented for business and professional communication instructors.

Consider Set-Up Factors Carefully. The results of the present study, as well as previous research provide consistent support for keeping groups small (Aggarwal & O'Brien, 2008; Lowry et al., 2006; North et al., 2000). In regard to a specific group size, North et al. (2000) and Lowry et al. (2006) both reported positive outcomes for groups of three. In fact, Lowry et al. (2006) found that groups of three reported significantly higher levels of communication quality than groups of six. So, in tandem with the results of the present study, there seems to be strong support for keeping groups small to reduce social loafing.

In regard to evaluation methods, the support for peer evaluations to reduce social loafing has been mixed, with the present study finding little support that the mere presence of peer evaluations reduced social loafing. However, the present study did not distinguish between methods of peer evaluation. A future study should examine differences between formative and summative peer evaluation techniques. Perhaps summative peer evaluation, or evaluation that occurs at the end of the project, does little to curb social loafing. That is, summative peer evaluation might be seen as punitive by social loafers because it does not provide an opportunity for loafers to adjust their behavior. On the other hand, Gueldenzoph and May (2002) argued for implementing peer evaluation as a formative assessment so students can make adjustments and improve their performance. This approach would likely foster a less punitive view of peer evaluation among students, and especially among social loafers, because the evaluation would be primarily used to provide feedback, and not merely to assign a grade. Furthermore, if students are provided with peer feedback and encouraged to openly discuss strategies for improvement, formative peer evaluation may also foster improved communication by encouraging more openness and accountability in teams. May (2008) further suggested that instructors consider a rater training protocol to

reduce social style bias in the peer review process. Therefore, instructors should thoughtfully consider how they might implement peer evaluation.

Provide Communication Training. Since the results of the present study highlighted the importance of high-quality communication in groups, instructors should consider setting aside class time to provide students with communication training. However, it is not realistic for instructors to devote an inordinate amount of class time to such training. Therefore, I propose two simple and quick training options: one high-level communication topic that is relevant for all team members and one discourse-level topic that is relevant for team leaders. The first topic instructors might consider covering is media choice, which involves effectively matching a communication task with a particular communication medium. A recent study found a direct relationship between training students on media choice and three aspects of communication quality (Lam, in press). Students who received training on media synchronicity theory and how to apply the theory to their communication choices reported statistically significant gains in richness, quality group discussion, and openness. Interestingly, in the present study, the results showed that the *same* three factors, richness (B = 0.281), quality group discussion (B = 0.272), and openness (B = 0.267), were the three most influential factors in developing communication quality. Therefore, training students with a theoretical framework like media synchronicity theory might be a simple way to improve several facets of communication quality and reduce social loafing. Since the concept is relatively simple, I have completed this training in about thirty minutes.

Instructors could also provide short discourse-level training specifically for team leaders. For example, instructors could conduct a brief training session using Campbell's (2006) framework for leadership communication. This framework teaches students to critically assess a communication context and then provides leaders with linguistic strategies for managing relationships within those contexts. Wolfe's (2010) teamwork book also provides many practical examples of discourse-level strategies for team leaders, with particularly useful strategies for communicating via email. Equipping student leaders to effectively use linguistic strategies could potentially influence several facets of communication quality, particularly openness. That is, a leader potentially creates a culture of respect and openness based on the way he or she communicates with others on the team in both face-to-face and computer-mediated interactions.

Consider a Communication Charter. An integral strategy for maximizing team success is training students in project management. For example, Ding and Ding (2008) advocated for the inclusion of team contracts, role definition, project logs, and progress reports in team projects. Similarly, Wolfe (2010) suggested that instructors require a team charter that outlines the goals and expectations of a team. In addition to these project management tools, instructors should also consider requiring a communication charter. A communication charter could outline shared expectations, protocols, and mediums for specific communication scenarios. When students share expectations for communication, the overall communication quality should benefit. For instance, if a

team collaboratively shared expectations about the type of information the team ought to discuss in face-to-face meetings, they will likely experience higher quality group discussions in those meetings. On the other hand, if a team does not have these shared expectations explicitly documented in a charter, they are more likely to come to their face-to-face meetings with varying ideas and expectations of what needs to be discussed, resulting in an ineffective use of time.

Assess and Develop Students' Communication Styles. Many instructors already use existing inventories to assess their students. For example, instructors in my department use personality tests, such as Myers-Briggs, to assess the personalities of individuals working in a group. Wolfe (2010) provided a discussion style inventory in her teamwork-training book that allows students to categorize themselves as either competitive or considerate communicators. Rehling (2004) used a similar approach and outlined the importance of being aware of conversational styles to reduce conflict in groups. She also provided several practical steps for students to improve their self-awareness of conversational styles such as being flexible and nonjudgmental when communicating. Finally, Lam (in press) suggests using a media choice scale that assesses an individual's media choice proficiency. The results of this inventory, along with other communication style inventories, could be used to group students and identify project coordinators. Overall, these inventories are not time intensive and can have a real impact on how students understand their own and their teammates' communication tendencies. Therefore, instructors should consider integrating these tools to increase awareness and emphasize the importance of communication at the front end of a project.

Encourage Documentation in the Writing Process. The act of writing collaboratively has the potential to increase inaccurate communication. That is, when more than one person authors a document, it is essential for every contributor to clearly and accurately document their unique contribution to the rest of the team. If a group member does not accurately convey their contribution, work can be either incomplete or redundant. This often manifests when students work on old versions of files, causing edits to be dispersed across multiple files.

One strategy that may help writing teams foster accurate communication is requiring students to regularly record and share their contributions with teammates. For example, students have used the "comment" feature in Google Drive's word processing application to document the changes they made when they worked on a document. Their comments were time stamped and saved in the document. Also, the system automatically sent an email of the comment to every student on the team. The automatic email is particularly helpful for both loafers and nonloafers. For loafers who may not be actively viewing a document, the automatic email is helpful because it does not actually require students to open the document to see the contributions of their fellow teammates. Furthermore, in some instances, these emails perhaps serve as motivation by making their teammates' tasks visible. For nonloafers, contributions are more visible to both peers and the instructor. Research suggests that if a team member believes

his or her work is not visible to fellow teammates, he or she may be less inclined to complete the task at all (Karau & Williams, 1993; George, 1992). Documenting and sharing small tasks in the writing process could, therefore, increase task visibility and reduce loafing.

Limitations and Directions for Future Research

Cross-sectional empirical research allows researchers to create and test theoretical models. However, implications on causality must be carefully interpreted. While PLS-SEM allows researchers to test relationships between variables within a model, these results are only interpretable within the theoretical framework in which they are tested. Because it is impossible to test every possible factor that influences social loafing in a single model, examining additional variables could be a natural area for further inquiry. Furthermore, future work should examine practical, pedagogical techniques that foster communication quality. For example, to establish causality, future studies could employ an experimental design to control and test the effect of a variety of communication training protocols on communication quality, task cohesion, and social loafing. Ultimately, instructors will benefit from easily implemented training modules that produce significant results within the context of student team projects, and future research should test a variety of training protocols to this end.

Another limitation of the study is the study's quantitative approach, which limits the in-depth or personal feedback a researcher can glean from students regarding social loafing. Therefore, future research using qualitative methods like interviews or participant observations could provide important insights into this body of research.

In summary, the present study provides strong evidence that communication quality and task cohesion strongly influence social loafing. Because these variables were not previously studied in relation to social loafing, the results are theoretically and practically significant. Professional, business, and technical communication instructors should consider the various suggestions for integrating communication training into their group projects. Training students to communicate effectively is no easy feat, but this study provides a solid starting point for instructors to focus their training and instruction. Future research in this area will continue to improve our understanding of teamwork in writing-intensive projects.

Appendix

Measurement Instruments

Communication Quality (All items answered on a 1 to 7 Likert-type scale, 1 being *strongly disagree* and 7 being *strongly agree*)

Quality Group Discussion

1. The overall quality of the group discussions was good.
2. The outcome of the group discussions was unsatisfactory . . . satisfactory.

3. The execution of the group discussion was competent . . . incompetent.
4. The development of group discussion contents was careless.

Appropriateness (Burgoon & Walther, 1990)

1. The group discussions were appropriate . . . inappropriate.
2. The group discussions were suited to the topic . . . off topic.
3. The group discussions were unsatisfying . . . satisfying.

Richness (Burgoon et al.,2002). In terms of our group's communication, it can be said that . . .

1. Responses lacked details . . . were filled with details.
2. Messages were very vivid . . . unclear.
3. Forms of expression had high variety . . . high redundancy.
4. The amount of information was lean . . . rich.

Openness (O'Reilly & Roberts, 1977)

1. It was easy to communicate openly to all members of this group.
2. Communication in this group was very open.
3. I found it unenjoyable to talk to other members of this group.
4. When people communicated to each other in this group, there was a great deal of understanding.
5. It was difficult to ask advice from any member of this group.

Accuracy (O'Reilly & Roberts, 1977)

1. The information I received was generally accurate.
2. I can think of a number of times when I received inaccurate information from others in the group.
3. It was often necessary for me to go back and check the accuracy of information I received.
4. I sometimes felt that group members didn't understand the information received.
5. The accuracy of information passed among group members did not need to be improved.

Task Cohesion

1. Our team is united in trying to reach its goals for performance.
2. I'm unhappy with my team's level of commitment to the task.
3. Our team members have conflicting aspirations for the team's performance.
4. This team does not give me enough opportunities to improve my personal performance.

Social Loafing (All items answered on a 1 to 7 Likert-type scale, 1 being *not characteristic* and 7 being *very characteristic*)

One or more member of my team:

1. Defers the responsibility he or she should assume to other group members.
2. Puts forth less effort when other group members are around to do the work.
3. Does not do his or her share of the work.
4. Spends less time helping on tasks if others are around to do the work.
5. Puts forth less effort than other group members.
6. Takes it easy if other group members are around to do the work.

Group Size

1. How many members were on your team, including yourself?

Peer Evaluation

1. Enter the number of peer evaluations you completed in your team project.

Project Scope

1. What percentage of your grade was this group project?

Method of Team Formation

1. Was your team randomly assigned, teacher assigned, or self-selected?

Author's Note

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