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The University of San Francisco

SOCIAL LOAFING CONSTRUCT VALIDITY IN HIGHER EDUCATION:
HOW WELL DO THREE MEASURES OF SOCIAL LOAFING STAND UP TO SCRUTINY?

A Dissertation Presented
to
The Faculty of the School of Education
Learning and Instruction Department

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

by
Jacquelyn de l'Eau
San Francisco, CA
June 2017

THE UNIVERSITY OF SAN FRANCISCO

Dissertation Abstract

Social Loafing Construct Validity in Higher Education:
How Well Do Three Measures of Social Loafing Stand Up to Scrutiny?

The purpose of this study was to examine the construct validity of social loafing using convergent and discriminant validity principles. Three instruments that purport to measure social loafing were factor analyzed: A ten-item instrument by George (1992), a 13-item instrument by Mulvey and Klein (1998), and a 22-item instrument by Jassawalla, Sashittal, and Malshe (2009) for a total of 45 items that were compiled into a single instrument with which data were collected, correlated, and factor analyzed.

One hundred and sixty graduate and undergraduates enrolled in management courses at a small private Northern California university were surveyed. Thirteen classes were surveyed and data was collected over three semesters.

Data collected were factor analyzed using Principle Axis Factoring and rotated using Promax with Kappa = 4 for each instrument. Correlations, Keyser-Meyer-Olkin, and Bartlett's test of sphericity were inspected for reasonable factorability, sampling adequacy, and appropriateness of running a factor analysis. Eigenvalues > 1 and Scree plots supported the number of factors extracted with primary factor loadings of .4 or higher. Pattern, structure, and factor correlation matrices were inspected for content, loadings, and correlations among the derived factors. Derived factors were compared to each author's

theoretical framework. Additionally, the eight derived factors were factor analyzed using the same procedures. The result was three final derived factors.

Findings showed correlations among the author's scales indicated that the three instruments do not measure the same thing. George's and Jassawalla et al.'s instruments share 55% of the variance. Mulvey and Klein's instrument shares little in common with Jassawalla et al. and virtually nothing with George. Further, George, Mulvey and Klein, and Jassawalla et al. had hypothesized 10 scales whereas my factoring had eight factors. Findings showed that the 8-factor solution supported George, partially supported Mulvey and Klein, and did not support Jassawalla et al. The final 3-factor solution does help to define the social loafing construct. The findings suggest using the instruments with caution. Further research to ensure accurate conceptualizations of the social loafing construct should be continued.

This dissertation, written under the direction of the candidate's dissertation committee and approved by the members of the committee, has been presented to and accepted by the Faculty of the School of Education in partial fulfillment of the requirements for the degree of Doctor of Education. The content and research methodologies presented in this work represent the work of the candidate alone.

Jacquelyn de l'Eau

May 3, 2017

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May 3, 2017

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CHAPTER I

STATEMENT OF THE PROBLEM

More people work in teams today than ever. From the expansion of global markets to the development of information and communication technology, the need for speed, efficiency, and knowledge-sharing have made the use of teams routine (Driskell, Radtke, & Salas, 2003; Karau & Williams, 1993; Powell, Piccoli, & Ives, 2004). In today's economy, teams make it possible for organizations to be agile, efficient, and responsive to issues that emerge in complex global markets. Thus, the demand for effective teamwork continues to grow.

Teams work under collocated and non-collocated conditions. Team members meet either Face-to-Face (FtF) or use information and communication technology to meet virtually. Teams form of necessity to come up with new ideas, plan strategies, and make decisions about how to execute related tasks (Cooke, Gorman, & Winner, 2008; S. W. Kozlowski & Ilgen, 2006a).

Teams are distinguished from groups by task demands. In teams, the task demands are cognitive (Cooke & Gorman, 2006). Thus, they impose a focus that dictates the activities and expertise needed to achieve a specified goal (Marks, Mathieu, & Zaccaro, 2001). Although today's teams share definitional similarities to past research on groups such as solving problems through social interaction, teams can no longer be reliably referred to as intact and bounded within organizations (S. W. Kozlowski & Bell, 2003). Contemporary definitions of teams are more nuanced to reflect their use, context, and member expertise. Thus, teams are a special type of group or structured social unit formed around shared purpose, responsibility and interdependence over task and goals (Cohen &

Bailey, 1997; Kozlowski & Ilgen, 2006a; McGrath et al., 2000; Salas, Dickinson, Converse, & Tannenbaum, 1992); teams tackle cognitively demanding issues in which team members role's are defined but not fixed, and individual expertise is heterogeneous (Cooke & Gorman, 2006).

Today's employers want college graduates to join the workforce ready to collaborate on teams that cross cultural and organizational boundaries. However, employers have observed that work preparedness in college graduates falls short of what is needed to be effective in the workplace (Klebnikov, n.d.; Myers, 2016). In a survey of 400 organizations, the Association of American Colleges and Universities (AACU) found that less than forty percent of employers rated college students as well prepared, and that just over 20% considered students proficient in using both knowledge and skills at work (Association of American Colleges & Universities, 2015).

Subject matter capability is important to employers, but desire for the mastery of soft skills cuts across all disciplines. High turnover among millennials serves as a deterrent to employer investment in employee development (Knowledge at Wharton, 2016). Therefore, employers want to hire college graduates already competent in teamwork, communication, ethical decision-making, critical thinking, and the ability to apply the knowledge they have learned (Association of American Colleges & Universities, 2015). The National Association of Colleges and Employers (NACE) surveyed their membership to find out what attributes employers want to see on résumés of 2016 college graduates. Over two hundred NACE employer members representing a 20.1% response rate, found that the ability to work in a team came in second at 79% of respondents and was barely eclipsed by leadership at 80.1% of respondents for the number one spot

(National Association of Colleges and Employers, 2016). In a similar survey conducted by AACU released in 2015, skills most valued in new hires were ranked on a 5-point scale in which teamwork came in at 4.6 barely eclipsed by critical thinking at 4.7 (Adams, 2015).

By 2025, 75% of the workforce will be made up of millennials (Bisoux, 2016). In an article to anticipate the needs of both employers and millennials, Bisoux interviewed two workplace futurists, Jeanne Meister and Karie Willyerd, and David Krackhardt, a co-director of the Center for Future Work at Carnegie Mellon University in Pittsburgh, Pennsylvania. According to the experts, the ability of new college graduates to work in teams will remain among the top four job prerequisites in 2025. According to Krackhardt, to the extent virtual teams penetrate all aspects of business and life, FtF team interaction will become increasingly crucial to build and preserve trust across virtual teams. In virtual teams, trust is the super glue of virtual relationships (Jarvenpaa, Knoll, & Leidner, 1998). Even the variety of technology-mediated communication such as email, teleconferencing, video-conferencing, and social media are not enough to forge the type or frequency of interaction needed to innovate and generate fresh ideas without the development of trust that can only be cultivated in FtF relationships (Bisoux, 2016).

Trends in research on teamwork and education practices to promote team effectiveness create both teaching and learning opportunities in higher education (Kohut, 2012; Tannenbaum, Mathieu, Salas, & Cohen, 2012). In its Eligibility Procedures and Accreditation Standards, the Association to Advance Collegiate Schools of Business (AACSB) is explicit in stating that all bachelors, masters, and doctoral students not only have learning experiences in interpersonal relationships and teamwork, but must also gain a theoretical understanding of groups and group dynamics (Association to Advance

Collegiate Schools of Business, 2016), topics important to learning how to be a team member in good standing. Management educators have also recognized the importance of student proficiency in both FtF and virtual teams for at least a decade (Clark & Gibb, 2006).

As the use of teams has grown, scholars of management recognize there is still much to be learned about teamwork. Research suggests that skills gained through collaborative learning transfer to team-based work environments (Chiong & Jovanovic, 2012). However, traditional attributes of organizational team effectiveness are changing. For example, the importance of preparation to be an effective team member in virtual team environments was examined in a longitudinal study (Gapp & Fisher, 2012). The findings suggest that how student teams thought about managing their team process was just as important to team effectiveness as how they thought about managing the team task. It indicated that the ability to be effective in a team is predicated upon learning how to develop the quality of social and motivational interactions that promote cooperation in teams over the length of the task (Gapp & Fisher, 2012). Cooperation is important because modern work is more cognitive than physical and the domains in which cognition is used are sufficiently complex that the expertise needed is dispersed among many different workers (Cooke, Gorman, Myers, & Duran, 2013). Today's employers use self-directed work teams to access and synthesize expert knowledge into new ideas because they know that agility, efficiency, and innovation occur through team interaction (Sutton & Millar, 2011).

According to Cooke et al. (2013) work teams are typically composed of heterogeneous experts in which cognitive activity carried out by teams is amassed and

integrated into team cognition. In the education literature, team cognition is described as “cognitive activity that occurs at the team level” (Cooke, 2008, p. 240). Team cognition is a consequence of effective information exchange, integration, and use by team members (Andres, 2010), and is considered imperative to solve some of today’s most complex problems (Cooke et al., 2013).

Team cognition is relevant to business, education, medicine, and the military. A meta analysis to measure the magnitude of cognition, motivation, and behavior on team performance found that the three factors collectively explained 18.4% of the total variance in performance and of that, a significant 6.8% was attributed to team cognition (DeChurch & Mesmer-Magnus, 2010). The problem is that team motivation losses like social loafing has been associated with diminished cognitive effort put forth by the individual team members (Price, 1987). Social loafing describes individual motivation in a group task. According to Karau and Williams (1993), social loafing is the amount of effort an individual is willing to exert while working on a joint task as opposed to working alone. Specifically, it describes a decline in individual performance output while working in a group when compared to working alone (Suleiman & Watson, 2008).

Today, there are three main measures of social loafing, two of which are the most commonly cited and used instruments to investigate social loafing and related construct variables. However, little research, if any, has been done to investigate the construct validity of these measures, nor has it examined the extent to which these instruments that claim to measure social loafing do so. Therefore, the purpose of this study is to examine the construct validity of social loafing.

Excluded from this research are team cognition and other nonmotivation factors described in the research literature. Although this study may be extended to student teams working virtually, virtual teams, per se, will not be the subject of this study. Other studies have examined the impact of technological devices from text only to audio-video functionality on virtual team performance. Suffice it to say that technological development of information and communication technology has far-outpaced our understanding of human behavioral implications, including motivation, of these systems (S. W. Kozlowski & Ilgen, 2006a). At both work and school, teams can and do meet both FtF and virtually which may promote more social loafing; however, no evidence exists to support social loafing in this hybrid setting, and, for purposes of this study, will not be a variable for consideration. Notwithstanding the real differences between FtF and virtual teams with respect to both interpersonal and task processes, FtF and virtual teams experience similar frustrations and consequences of social loafing. Therefore, the study includes student participants enrolled in both FtF and virtual teams. Although research has investigated self-reported social loafing, a meta analysis found effect sizes to be non-significant suggesting that either team members were unaware of or unwilling to admit social loafing on team tasks (Karau & Williams, 1993). Furthermore, none of the instruments under study measure self-reported social loafing. Therefore self-reported social loafing will not be included in this study.

Purpose of the Study

The primary purpose of the present study is to examine the construct validity of social loafing as measured by three primary instruments currently in use. A secondary purpose of this research is to find out how well a reanalysis of the data from three different

social loafing measures help to define the social loafing construct.

Educational Significance

“Social loafing is a process loss that has long been a bane of group productivity” (Blaskovich, 2008, p. 42). The educational significance of this research will be to underscore the importance of accurate conceptualizations of social loafing to better understand its real affect on student teams in higher education. It has suggested that social loafing may be experienced by college students as a multivariate construct (Jassawalla, Sashittal, & Sashittal, 2009). In contemporary literature, much of what is known about social loafing has come from either studying organizational teams, or student teams from which inferences have been made about social loafing in work teams (Blaskovich, 2008; Chidambaram & Tung, 2005; Furumo, 2009; George, 1992; Liden, Wayne, Jaworski, & Bennett, 2004; Monzani, Ripoll, Peiró, & Van Dick, 2014; Mulvey & Klein, 1998; Suleiman & Watson, 2008). As a consequence, contemporary understanding of social loafing from the perspective of workers may lead to its undermeasurement or inaccurate measurement from the perspective of college students. Therefore, emphasis must be placed on the conceptualization of social loafing to accurately measure this counter-productive behavior as students see it. This will aid educational research by offering a construct-valid instrument that can be used to identify and deter potential motivational problems related to social loafing in college-age students. Further, it will serve as a reminder to educators that learning to be an effective team member is also a goal of collaborative learning.

Theoretical Framework

Several theories have guided research on social loafing, but no single theory has provided a unifying theme that wholly encapsulates its varied and complex motivations (Knoke, 1988; Shepperd, 1993). The following summarizes several theories used to guide research on social loafing.

Bandura's (1990) moral disengagement theory describes the deterioration of human integrity and its affect on social loafing in virtual teams. This theory concludes that in the absence of witnesses, people will act in ways that violate their own values and beliefs that causes cognitive dissonance. According to moral disengagement theory, the remedy to cognitive dissonance takes the form of blaming the recipient of the behavior. Although moral disengagement theory has been used to understand harmful conduct, no one is really exempt from occasionally behaving in morally questionable ways. Generally, social sanctions are believed to support self-censure but to the extent social standards are weakened in FtF and virtual environments, self-standards dictate behavior (Bandura, 1990). Moral disengagement theory provides an interesting lens through which to view social loafing in virtual teams. Member anonymity and lessened social presence weaken social standards of virtual teams. Size and dispersion are salient features of virtual teams that can contribute to lack of accountability, humanity, and empathy. Thus, teams may be even more vulnerable to the mechanisms of moral disengagement that enables social loafing: Diffusion of responsibility, dehumanization, and attribution of blame (Alnuaimi, Robert, & Maruping, 2010).

Similarly, Latané's (1981) social impact theory has also used size and dispersion to explain social loafing in both FtF and virtual teams. In contrast to moral disengagement

theory which suggests the weak social structure of teams contributes to a form of opportunism in some team members to reduce their own effort and let others do the work, social impact theory offers a more sympathetic explanation and applies more broadly than Bandura's theory to both FtF and virtual teams. According to Latané, social impact suggests social loafing is an outcome of how people perceive others and are perceived by others. Social impact is the way people affect one another emotionally, mentally, intellectually, psychologically, and physically. Social impact is experienced through one of three mechanisms that facilitates these states: Strength, immediacy, and number (Latané, 1981). Strength refers to positional power which, while relevant in FtF teams is far less so in virtual teams. However, immediacy refers to proximity and number refers to how many team members exist, and are both relevant to virtual teams. According to Latané, teams are made up of sources and targets. In Latané's theory there is a direct relationship between proximity, power and number of the source that determines the extent to which the target will exert effort.

Chidambaram and Tung (2005) extended Latané's theoretical framework to virtual teams with the development of two theoretical explanations of social impact theory to elaborate: Dilution effect and Immediacy gap. The dilution effect refers to motivation as a function of team size or "number": The larger the team the lower individual motivation. Given the large numbers, team members may feel their contribution is too inconsequential or redundant to make a difference; therefore, motivation declines and effort is reduced or withdrawn. Further, Chidambaram and Tung noted the dilution effect is not only felt by the absolute number of team members added, but it has been shown mathematically that modest size increases also increase the number of possible relationships exponentially, as

indicated by the following formula: $x = (3^n - 2^{n+1} + 1)/2$, where x equals the number of relationships and n equals the number of members (Hare, 1976). Therefore, a five-member team will have 90 possible relationships, which is almost four times as many possible relationships as in a four-member team. According to Chidambaram and Tung even modest increase such as doubling the membership to 10 increases the number of possible relationships dramatically (28,500). Thus the dilution effect can be felt more keenly by team members as team size increases.

The immediacy gap refers to proximity, and describes the feeling of isolation as a function of proximity between sources and targets. The immediacy gap describes how closely individual contributions can be monitored or even discerned, and social comparisons made. When member contributions are not easily identifiable, members may fail to identify with the group; thus, decrease their contribution accordingly. Further, the immediacy gap impacts relational interaction important to cohesion (Chidambaram & Tung, 2005).

An overview of the various theoretical frameworks would not be complete without a discussion of Knoke's (1990) motivation model, a synthesis of three theoretical perspectives that assumes there is a rational explanation between rewards and effort (Kidwell & Bennett, 1993). Although, frequently applied in the examination of work teams, it is no less relevant to student teams concerned with distribution of rewards vis-à-vis grades, fairness, and relationships. In an adaptation of Knoke's motivation model used to predict whether people will contribute to collective action organizations, Kidwell and Bennett used it to recast shirking, social loafing, and free-riding under a single moniker, Propensity to Withhold Effort (PWE). Although shirking describes behavior at the

individual level as someone who simply does not do his job, free-riding and social loafing describe behavior at the group level as someone who intentionally or unintentionally, does not carry his own weight. At the heart of shirking, free-riding, and social loafing is the tendency to withhold effort. By reconceptualizing shirking, free-riding, and social loafing into a single construct, Kidwell and Bennett created a model to examine PWE as a whole rather than the sum of its parts. They argued that PWE described anyone who contributed less effort due to motivation and circumstance, and that differences among shirking, free-loading, and social loafing may be used to describe the *reason and context* for putting in less effort (Kidwell & Bennett, 1993). Returning to Knobe's synthesized motivation model, a central theme of PWE research is that effort is a rational economic exchange that has ignored other incentives that collectively explain motivation as a whole. In contrast, Knobe's motivation model uses three theoretical perspectives that explain why, in collective action organizations, people are willing to join and contribute: Rational choice, normative conformity, and affective bonding (Knobe & Wright-Isak, 1982).

Rational choice describes weighing motivation in terms of costs and benefits whereas normative conformity is concerned with values and fairness. Finally, affective bonding describes motivation as a function of relationship quality. Using Knobe's supposition, none of these variables operate independently but rather operate collectively to affect a person's decision whether or not to contribute effort.

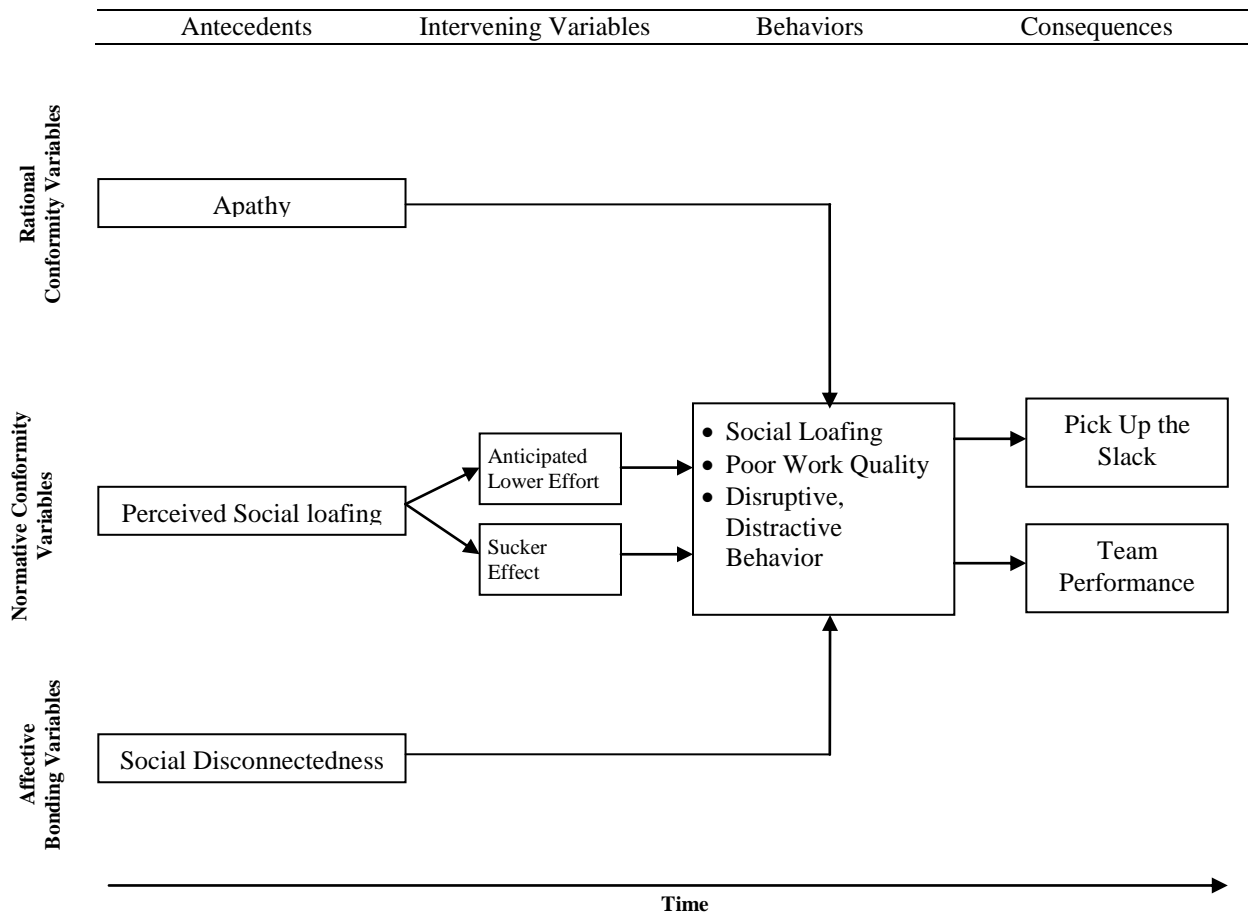
Knobe used this model to study contributions to collective action; Kidwell and Bennett used this framework to study PWE; and Liden et al. (2004) used it as a framework to study multiple contextual variables to see which, if any, predicted social loafing in work teams. This study extends Knobe's framework to organize social loafing-related contextual

variables into a nomological network (Cronbach & Meehl, 1955) of antecedents, intervening variables, behaviors, and consequences to illustrate the relationships of the social loafing construct to other related constructs.

The model of social loafing in Figure 1 presents these antecedents, intervening variables, behaviors, and consequence shown to have relationships with social loafing in the three most commonly used social loafing measures. In prior research, antecedent variables have been shown to predict social loafing (Liden et al., 2004). However, the social loafing model indicates that social loafing may be temporal. The model shows that social loafing is not a single discrete act but rather a process that emerges over time. Antecedent variables shown to predict social loafing may influence team members to loaf at any point along the time continuum. Intervening variables that describe the reactions of group members to social loafing may influence other team members to loaf. For example, anticipated lower effort in a team member may prompt other team members to reduce their own effort. Similarly, the fear of the sucker effect, or being judged as a sucker for doing all of the work, is an intentional subjective decision to reduce one's own effort in response to perceived social loafing. Social loafing behaviors are most often associated with contribution quantity or "doing less" whereas recent research suggests it may be associated with contribution quality in the form of poor quality work and/or poor conduct described as distractive disruptive behaviors (Jassawalla, Sashittal, & Sashittal, 2009). The consequences of social loafing mean that other members must do more to pick up the slack created by the loafer and that social loafing can negatively impact team performance (Figure 1).

Figure 1

Model of Social Loafing



Past conceptualization of social loafing has been derived from co-active settings in which participants were asked to perform either motor or cognitive tests of short duration and ease of implementation. The evidence from this research has been sufficient to establish that social loafing was present. What it cannot show is the sequencing or timing at which social loafing appears. This early research created the lens through which most empirical research on social loafing in school and work teams has been examined. However, researchers claim that this approach does not explain unaccounted for variances in the social loafing construct (Jassawalla et al., 2009; Liden et al., 2004). In reality, time

factors that include project duration, deliverables, coordination, scheduling and other activities such as role and task assignment, deadlines and planning that influence how a team performs over time (Marks et al., 2001), do not fit neatly into social loafing as a static phenomenon. The Model of Social Loafing (Figure 1) suggests that, in teams, the decision to social loaf develops over time as members have experiences that shape their willingness to contribute. Based upon the literature, four phases observed earlier including antecedents, intervening variables, behaviors, and consequences indicate that the inception of social loafing may occur at different times over the life of the team.

Background and Need

Organizations are well into their third decade of team deployment to execute complex tasks (Rutte, 2005). Today, teams are employed with such regularity that little is accomplished in modern life without them. Although teams are central to everything we do, team functioning is rarely discernible (S. W. Kozlowski & Ilgen, 2006b). Despite this lack of transparency, teams have still managed to revolutionize organizational work through work process penetration at all levels, thus supplanting the individual knowledge worker as a primary resource of information and decision-making (Kozlowski & Bell, 2003).

Today's organizations rely upon a range of technology-supported activities (Anderson, McEwan, Bal, & Carletta, 2007) to perform work. As early as 2004, Martins, Gilson, & Maynard speculated that it was likely that most organizations had adopted some form of technology—a statement that in 2017 is more true than ever. Furthermore, global management practice has been responsible for the transmigration of FtF teams to virtual teams as advances were made in the availability and low cost of information and

communication technology, rapid advances in digital technology, and an emphasis on team-based work.

Although virtual teams hold a promise of unique opportunities, and despite the growing reliance on them, they are not without their challenges (Chidambaram & Tung, 2005; Piezon & Ferree, 2008). Research on virtual team interaction has produced mixed results (Mesmer-Magnus, DeChurch, Jimenez-Rodriguez, Wildman, & Shuffler, 2011). Impaired teamwork processes can negatively affect performance. Indeed, poor team interaction has been shown to result in lower cohesion, inefficient decision-making and insufficiency of knowledge-sharing (Driskell et al., 2003). According to Marks et al. (2001), a review of the literature indicates that most scholars “believe the essence of [teamwork process] lies in team interaction and that different forms of team processes influence the type of interaction that takes place” (p. 357).

Technical competence and task proficiency alone in both virtual and FtF teams are not sufficient for effective team functioning. Unless team taskwork is purely additive, it is through interpersonal interaction that team members are able to negotiate meaning, resolve issues, agree on purpose, and make decisions that direct, align, and monitor the team taskwork. Teamwork processes have been shown to have “non-trivial” relationships with both team performance and team member satisfaction outcomes (Cohen & Bailey, 1997; LePine, Piccolo, Jackson, Mathieu, & Saul, 2008; Marks et al., 2001). According to Marks et al. (2001), poor team interaction processes can be a liability capable of undermining the effectiveness of strategy development, its planning and execution, and monitoring its progress. Further, weak team interaction processes can spiral teams into motivation process losses in which member effort deteriorates, and social loafing can flourish.

Furthermore, contemporary scholars argue that today's team evolves, and effort is underway to advance teams as dynamic, adaptive, complex open systems (Cohen & Bailey, 1997; Ilgen, Hollenbeck, Johnson, & Jundt, 2005; S. W. J. Kozlowski & Chao, 2012; Tannenbaum et al., 2012). In this context, neither team tasks nor team processes are fixed (Kozlowski & Ilgen, 2006a). Taskwork, or how team members complete the task together, relies upon team member competence and teamwork processes to coordinate member expertise and execute the task successfully. Teamwork processes are the interpersonal interactions by which team members work interdependently to coordinate taskwork that culminate in short and long-term outcomes (Marks et al., 2001).

Work teams inhabit organizational structures that have evolved. Not only are traditional hierarchies flatter, but the organization itself resides within a multilevel context that includes the individual, the team, the organization, and the environment (Kozlowski & Chao, 2012). At the individual level, team members are engaged in a task that influences team-level processes. Both task and teamwork processes are shaped and constrained by changing demands at the organizational and environmental levels. These shifting changes force team members to constantly adapt and evolve.

In addition, teams may inhabit an organization but be more deeply embedded in the task environment (e.g., surgical teams, emergency response teams) that drive the team task needs and activities without regard to the organization (Cohen & Bailey, 1997; Ilgen, Hollenbeck, Johnson, & Jundt, 2005; S. W. J. Kozlowski & Chao, 2012; Tannenbaum et al., 2012). For example, consider drought conditions in California in which teams of firefighters must deploy strategies that address containment in conditions that are extremely dry and water is scarce. At the moment, the environment is the primary context

in which firefighting teams are embedded. In this instance, the environment defines team member task and activity, and not the individual city, county or state entities that employ individual team members.

Ilgen et al. (2005) summarized that today's teams are temporal and contextual and team membership is mutable; thus, interaction not only occurs within the team but also across context, time, and membership "in ways that are [far more complicated] than simple cause and effect relationships" (p. 519).

Since the late 20th century, teams have been further impacted by the widespread use of sophisticated socio-technical systems. Socio-technical systems refer to the integration of technology with social requirements that improve overall work process effectiveness (Fox, 1995). Socio-technical systems have generated more cognitively demanding jobs, and the work in which cognition is used are more complex and specialized (Cooke & Gorman, 2006). Specialization has contributed to the widespread use of teams as the necessity to share unique expertise for has grown (Cooke et al., 2008; S. W. Kozlowski & Ilgen, 2006a).

In summary, teams play a crucial role in today's workplace. It has been suggested that in some ways, effective teamwork may be harder in virtual teams than in face-to-face teams. Never-the-less, it remains that both types of teams are affected by a level of complexity not imagined just 30 years ago. The evolving nature of teams, socio-technology, the growth of multinational corporations, and the seriousness of today's problems all demand group-level cognitive bandwidth to be solved. In this environment in which team processes can derail team motivation, social loafing can have real

consequences. Therefore, it is incumbent to gain better insight and understanding into social loafing in teams.

Social Loafing

Social loafing was first observed more than 100 years ago in a comparison of group performance with individual performance among adults during a rope-pulling exercise. The findings showed that not only did individual performance wane in teams compared with performing the task alone, but also individual performance deteriorated more as group size increased (Kravitz & Martin, 1986). The study was not published (Latané, Williams, & Harkins, 1979) but documented in a 1927 book about performance psychology by Walter Moede, a German industrial psychologist (as cited in Ingham, Levinger, Graves, & Peckham, [1974]), and is routinely referenced by today's scholars for its relevance to our current understanding of group performance and motivation, particularly social loafing. According to Kravitz and Martin (1986), Max Ringlemann, a French professor of agricultural engineering, was interested in the efficiency of work performance whether it was carried out by man, animals, or machines. His early research which began in 1882 was most interested in examining human factors that would account for a worker's maximum performance while pushing a cart sideways. His interest in comparisons between individual and group performance were secondary until 1913, when he documented the mean differences of individuals and groups in a rope-pulling study, and found that individuals working alone outperformed groups in their exertion of effort. Furthermore, Ringlemann found that as groups grew in size, there was a corresponding decrement in overall group effort with the addition of each new member (Ingham et al., 1974). Overall, he found the efficiency in relative performance per added participant

declined on average 0.0725% up to eight participants. According to Ringlemann's notes reported in Moede's book, an individual could pull 63 kg of pressure (100.0%), while three people exerted pressure of 160 kg, only two and a half times the average individual performance, and groups of 8 pulling at 248 kg could not even match let alone exceed the sum of four individuals pulling alone at 252 kg (as cited in Latané et al., 1979).

Ringlemann concluded that the decline in group performance was attributed to coordination losses (Kravitz & Martin, 1986). It would be 60 years before contemporary research on social loafing would recast that finding.

Interest in social loafing did not reemerge until 1974. Inspired by Ringlemann's data reported in Moede (1927), Ingham et al. (1974) experimentally reexamined the data despite the absence of a description of Ringlemann's procedure (Kravitz & Martin, 1986). Two studies were conducted to see if Ringlemann's data could be replicated and to test motivation as a source of process loss (Ingham et al., 1974). Twenty-four college students and 63 boys were asked to perform a rope pulling task. Findings from the first study showed a linear relationship. Although it confirmed an inverse relationship between group size and individual performance, the decrement in effort was far more dramatic by the addition of the first and second participant at 9% and 18%, respectively, then rapidly dropped off so that the addition of the 6th person yielded a 22% decrement, after which no further increase in mean differences between individual and group performance were observed. In the study that followed to parse out coordination losses from motivational losses, coordination losses were controlled by managing the participant's perception of group size when the participant was really pulling alone. In this instance, while the data showed a drop in performance comparable to the first study, the results were linear. The

findings from this study suggest that the process losses observed in both studies were a function of motivational losses in the form of social loafing, not coordination losses (Ingham et al., 1974). More than that, it showed that these motivation losses contributed to the failure of a group to reach its full potential.

The relationship between group size and motivation was commonly referred to as the Ringlemann Effect. This moniker would last a short five years, up until Latané et al. (1979) coined the phrase, the social loafing effect, a name forever after associated with all manner of reduced individual exertion in groups. Latané was very cynical about social loafing characterizing it as a “social disease” that had real consequences for individuals, groups, and institutions by robbing individuals of their motivation to contribute their maximum ability. Like Ingham et al. (1974), Latané et al. (1979) also controlled for coordination losses in studies of physical tasks in which participants were asked to clap and cheer as hard as they could. In this instance, motivation losses were associated with individual perceptions that others were not working as hard as they, or social loafing. Further, the goal was easy, and the participation of others in the task redundant; this meant that the demand for individual exertion was lower. Mental calculations of the equal distribution of rewards and the absence of ways to measure individual contribution were suspected to be disincentives to putting forth as much effort in a collective condition. After all, why exert effort when by doing little or nothing, the outcome will be the same? It was concluded that increasing the size of groups lessened the social impact, or the pressure individuals felt to perform, thus allowing them to “hide-in-the-crowd” (Latané et al., 1979).

This phenomenon would next be investigated by Kerr and Bruun (1981) who determined that physically demanding tasks took a toll, and that larger groups afford individuals the chance to minimize, at least in part, exertion in a group task. First, they hypothesized that an intact, stable group would not experience social loafing, which they attributed to fatigue associated with the competing demands of repeated trials in different group sizes. The hypothesis was not supported demonstrating that social loafing was alive and well in intact stable groups, too. In the study that followed, the researchers hypothesized that if a task were redefined in a way that made each member's individual contribution transparent, it would follow that members would think that they could not "hide-in-the-crowd", thus diminish the social loafing effect. The findings suggested that while the social loafing effect was weakened by this type of intervention, it was not eradicated. A significant group size simple main effect indicated that there was still a social loafing effect, $F(2,128) = 7.17, p < .01$ (Kerr and Bruun, 1981).

What is most interesting about these studies is that the researchers took on the role of cheerleader urging participants to work on the task as hard as they could, but to no avail (Ingham et al., 1974; Kerr & Bruun, 1981; Latané et al., 1979). Despite encouragement, and even when controlling for fatigue (Kerr & Bruun, 1981), group performance suffered when compared with individual performance. This raised a question about the effect of intrinsic motivation on social loafing. In a field study to examine both the extrinsic and intrinsic origins of social loafing in a large retail store, salespeople organized by primary work groups and their supervisors were surveyed (George, 1992). Extrinsic origins of social loafing referred specifically to task visibility. Task visibility is the extent to which an individual's contribution to a group task can be distinguished or observed from the

contributions of other group members (Harkins & Petty, 1982). Intrinsic involvement was measured using three indicators: Task significance, task meaningfulness, and contribution. Both task visibility and intrinsic motivation along the three indicators had inverse relationships with social loafing, but only task visibility was a significant predictor of social loafing. What the findings showed is that social loafing occurred more often when task visibility was low. Further, task visibility remained a predictor of social loafing when controlling for intrinsic motivation, but not the reverse. However, George concluded that intrinsic motivation served as an important moderator of the relationship between task visibility and social loafing. Specifically that when intrinsic involvement was high (the task was significant, meaningful, and made a difference), task visibility may not be necessary. As noted by de Jong, Curşeu, and Leenders (2014), social loafing is not always a by-product that results from the absence of supervision; sometimes group members remain engaged because they perceive their contribution to be important to the output of the group.

Concurrent with research on physical tasks, studies of effort controlling for coordination losses were extended to cognitive tasks. Undergraduates were asked to evaluate a poem and a related editorial either alone or in a group (Petty, Harkins, Williams, & Latané, 1977). The results of this study suggest that social loafing was present. Further research on cognitive tasks such as solving mazes (Jackson & Williams, 1985) found that task difficulty affected social loafing. Easy tasks contributed to social loafing while more challenging tasks appeared to reduce social loafing. Further research on cognitive tasks included brainstorming (Harkins & Petty, 1982) and making paper moons (Zaccaro, 1984). Harkins and Petty (1982) were able to show that in both cognitively challenging tasks and

tasks involving the unique contribution of individuals there was no difference in performance between individuals and groups whereas identifiability of individual outputs was found to do little to deter social loafing. In contrast, Zaccaro (1984) was interested in the effect of task attractiveness on social loafing. This investigation was distinctly different from earlier ones. Conditions of earlier studies were in place to induce a perception of group participation in study subjects when, in fact, they were acting alone. Zaccaro (1984) was an early pioneer of studying social loafing in small groups. He suspected that forces internal to the group such as group performance norms could only occur in settings where visual and verbal interaction would place pressure on individual group members to exert more effort who might otherwise engage in social loafing. Further, comparisons of social loafing were examined at two levels. Like earlier studies, group performance was compared with individual performance. Unlike other studies, group performance was also compared with other groups. Although it is not clear that the focus in this study was the first of its kind, research that followed also used group comparisons as their level of analysis for understanding social loafing.

The study was a 2 x 2 experimental design in which psychology students were assigned to either low or high task attractiveness treatment in either an individual or FtF group condition. Treatment for individual and group students in the high task attractiveness condition were told the purpose of the study was to investigate causes of recent declines in American workforce productivity, whereas individual and group students in the low task attractiveness condition were given no cover story. High task attractiveness is a source of group cohesion (Zaccaro, 1984), and was found to be a source of group pressure that was able to deter social loafing whereas low task attractiveness was not.

Furthermore, an increase in group size from two to four members enhanced performance in the high task condition whereas in the low task condition, it did not. The results of the study suggest that groups with high commitment to the task perform better than groups with low committed members.

What began as an incidental outcome from studies of human ability, social loafing research has revealed an Achilles Heel in our understanding of teams and team performance. Scholars agree it is a pervasive problem that persists undeterred and prevents too many performance teams from achieving their full potential (Blaskovich, 2008; Latané et al., 1979; Monzani et al., 2014). A Google search of Social Loafing reveals that one hundred years of international interest and research on the phenomenon of social loafing has generated nearly 24,000 studies and reviews published in journals that represent nearly every academic discipline in education. Research on the parameters and antecedents of social loafing have been repeatedly examined in FtF teams while research on social loafing in virtual teams lags behind. A Google search of “social loafing” without the terms or phrases “leadership”, “organizational behavior” nor “meta-analysis” that spanned the period of time 2005-2017 (The first study on social loafing in virtual teams was published in 2005) resulted in 208 items of which only 30 had the words social loafing and virtual teams or other like terms (Eg., Computer-supported learning) in the title or abstract. This is a concern. Social loafing’s long association with poor group performance in FtF teams has only recently been identified in the literature as particularly problematic in virtual teams (Blaskovich, 2008; Chidambaram & Tung, 2005; Driskell et al., 2003; Furumo, 2009). As a consequence, there is still much research to be done to understand social loafing impacts in virtual teams.

Social Loafing Construct Validity

As noted, there are three main instruments used to measure social loafing cited in the literature. They include a 10-item instrument (George, 1992), a 13-item instrument (Mulvey & Klein, 1998), and a 22-item instrument (Jassawalla et al., 2009). A brief description of each instrument follows.

George (1992) performed the first field study to investigate social loafing in the workplace. The purpose was to investigate social loafing in ongoing groups. Her research examined how intrinsic forces, such as performing meaningful work, and extrinsic forces, such as supervisory task visibility affected social loafing specifically in retail sales workers. The original instrument was designed for use by supervisors to assess social loafing in individual salespeople they supervised. This instrument would become the most frequently cited measure of social loafing, adapted as needed to fit different contexts and users including dropping items that were not relevant (Hoon & Tan, 2008; Liden et al., 2004; Murphy, Wayne, Liden, & Erdogan, 2003; Piezon & Ferree, 2008).

Mulvey & Klein's (1998) instrument was used to examine what impact a perception that someone may be loafing had on other group members while working together on a team task. Specifically, Mulvey and Klein were interested in finding out if the suspicion that someone is not doing their fair share, Anticipated Lower Effort, is correlated with social loafing by the group as a whole. They wanted to know if there was a relationship between the perception of social loafing and the Sucker Effect defined as team members who reduce their own effort to avoid been exploited by the social loafer (Kerr & Bruun, 1983). The authors found that Anticipated Lower Effort and Sucker Effect moderated the relationship between perceived social loafing and group performance, and

led to more social loafing. Although not used with the frequency of the George instrument, like George, Mulvey's instrument has been adapted and used to measure social loafing in different contexts (Faught, 2015; Hung, Chi, & Lu, 2009; Shiue, Chiu, & Chang, 2010; Whiteoak, 2007). Further, Mulvey's items that measure perceived social loafing were used to measure social loafing. Although perceived social loafing and social loafing may covary, social loafing can happen without the knowledge or awareness of other group members (Comer, 1995; Mulvey & Klein, 1998); therefore, using Mulvey and Klein's instrument to measure social loafing, may not, in fact, do so.

In 2009, Jassawalla et al. published an instrument that measured social loafing from the perspective of undergraduate college students. Although much is known about the effect of social loafing on work teams, Jassawalla et al. (2009) warns that it is not clear whether students share the literature's so narrowly defined perspective of social loafing as the equivalent of "slacking off". Their research suggests that from the perspective of students, social loafing may be a multidimensional construct: Poor quality work and distractive, disruptive behaviors. Her research also suggests that two variables not observed in research on work teams, apathy and social disconnectedness are antecedents of social loafing. Jassawalla et al. observed that students identify consequential relationships between social loafing with team performance (Jassawalla et al., 2009; Mulvey & Klein, 1998) and other team members who pick up the slack created by the social loafer (Jassawalla et al., 2009). Furthermore, Jassawalla et al. suggests that the social loafing construct may be under measured because it has been too closely aligned with contribution quantity not contribution quality and "fails to account for the variance that is associated with key omitted factors" (p.48) such as distractive disruptive behaviors and poor work

quality. Unlike the two previous instruments, Jassawalla's instrument has not been used in other research.

In closing, findings from prior controlled research under artificial or unnatural settings do not necessarily predict social loafing in either academic project teams or industry work teams (Liden et al., 2004). Until George (1992), what was known about social loafing emerged from studies on motor tasks: Rope-pulling (Ingham et al., 1974; Kravitz & Martin, 1986), clapping and cheering (Latané et al., 1979), and pumping a rubber bulb (Kerr & Bruun, 1981), and cognitive tasks: Evaluating a poem (Petty et al., 1977), brainstorming (Harkins & Petty, 1982), making paper moons (Zaccaro, 1984), and solving mazes (Jackson & Harkins, 1985). Although this research made important contributions to our understanding of social loafing, the studies were conducted in static settings in which participants were often (and falsely) led to believe they were members of a group. While these findings continue to inform contemporary research on social loafing, they do not exemplify the reality in which today's teams function. It may be that, as suggested by Jassawalla et al. (2009), our understanding of the social loafing construct is not only incomplete, but also as Liden et al. (2004) suggests, not representative of the patterns of behaviors in real teams working together over time.

Research Questions

In accordance with the research aims of this study, the following will be asked:

1. To what extent do the three social loafing measures and their subscales correlate?
2. To what extent does a factor analysis of the items in each of the three social loafing measures correspond to the theoretical framework underlying each author's instrument?
3. Do the results of a factor analysis of the factors identified in research question two help define the social loafing construct?

Definitions

Anticipated Lower Effort is an expectation by a group member that the perception of social loafing will prompt other members to reduce their own effort to avoid the sucker effect (Mulvey & Klein, 1998).

Apathy refers to the apparent disinterest and lack of caring for the task, other team members, or the grade in student teams (Jassawalla et al., 2009).

Cohesion is a multidimensional construct that have been described as the forces that act on team members to remain in the team which includes interpersonal attraction to other team members, team prestige, and attraction to the team task (Festinger, 1950).

Distributive Justice is gauged by the perceived fairness of decision outcomes with respect to salary, rewards, policy, evaluations, etc. (Liden et al., 2004).

Perceived Social Loafing occurs when group members hold a belief that another member is not carrying their full weight. It may be true or not true, but can have a negative effect on member motivation for all team members (Comer, 1995).

Process Loss equals the difference between a group's potential performance and its actual performance (Steiner, 1972).

Social Disconnectness refers to the negative nature of social relationships between those who social loaf and their team members because of disliking or failing to get along with other team members and/or the team itself (Jassawalla et al., 2009).

Social Loafing is the tendency for individual motivation and effort to deteriorate in the execution of a group task. In the literature social loafing is used interchangeably with free-riding and is an intentional act not to participate or contribute but to take credit for the group effort or unintentionally expending less effort than would be required if the task was performed alone (Latané, 1981).

Sucker Effect is a fear of looking foolish for picking up the slack of a social loafing team member (Mulvey & Klein, 1998).

Task Visibility can be a perception or fact that one's individual contributions to a team task is identifiable (Harkins & Petty, 1982).

Teams are two or more people who socially interact to achieve a shared organizational goal or goals, are interdependent with respect to knowledge expertise, roles, and responsibilities, and are embedded within an organizational system. Today's teams can have permeable and impermeable boundaries as to membership. In teams with impermeable boundaries, team members have linkages to other organizational, member, and task resources (Cohen & Bailey, 1997; S. W. Kozlowski & Ilgen, 2006a; McGrath et al., 2000; Salas et al., 1992).

Team Cognition is a consequence of effective information exchange, integration, and use by team members (Andres, 2010).

Trust is the willingness of an individual to be vulnerable to the actions of another based on an expectation that the other party will perform an action important to that individual irrespective of the ability to control or monitor the other person (Mayer, Davis, & Schoorman, 1995).

Virtual Teams are non-located teams often spatially separated by time and/or distance whose members are mutually interdependent and are using information and communication technology to work collaboratively to complete a routine task or perform complex problem-solving (Driskell et al., 2003).

CHAPTER II

LITERATURE REVIEW

A substantial body of scholarly research has investigated the phenomenon of social loafing in FtF teams throughout the twentieth century to increase group performance (Harkins & Petty, 1982; Jackson & Williams, 1985; Kerr & Bruun, 1983; Latané et al., 1979; Mulvey & Klein, 1998; Zaccaro, 1984), to reduce the behavior (George, 1992; Kerr & Bruun, 1983), and to maintain group motivation (Ingham et al., 1974; Kidwell & Bennett, 1993). This research has provided support for its existence within the laboratory (Guerin, 1999; Ingham et al., 1974; Latané et al., 1979), the classroom (Jassawalla et al., 2009), and the workplace (George, 1992; Kidwell & Bennett, 1993). Advances in the growing use of ICT and virtual teams exacerbate this phenomenon. Scholars claim that social loafing is robust in both FtF and virtual teams. However, research on social loafing has been mostly confined to the study of FtF teams whereas technology-supported teams has received little attention in the literature (Chidambaram & Tung, 2005).

In this review of the literature, I open with an overview of social loafing, in general, and all its permutations: Social Loafing, Free-Riding, Sucker Effect, and Perceived Loafing. This is followed by a review of Social Loafing in teams. Finally, Construct Validity of Social Loafing is reviewed.

Social Loafing, Free-Riding, Sucker Effect, and Perceived Loafing

Research on social dilemmas has broadened our understanding of social loafing (Albanese & Van Fleet, 1985; Jackson & Harkins, 1985; Kerr, 1983; Olson, 1971; Robbins, 1995; Schnake, 1991; Shepperd, 1993). Subtle distinctions to explain motivations for social loafing in small groups have been introduced into the literature.

Social Loafing

Social loafing is a type of self-interest that induces a negative synergy responsible for group productivity losses (Robbins, 1995; Shepperd, 1993). Social loafing describes a type of group motivation loss that leads to productivity loss when a group member or members reduce or withdraw physical and/or mental effort while working in a group on a joint task compared with when the same group member(s) work alone with negative implications and consequences for other group members, and overall team effectiveness and team performance (Comer, 1995; Karau & Williams, 1993; Latané, 1981; Marks et al., 2001; Rutte, 2003; Sheppard, 1993).

A meta-analysis of 78 studies, found a significant social loafing effect in studies that predicted social loafing whereas the effect size in social loafing studies that did not predict social loafing was found to be small. However, the overall meta-analysis showed that across all tasks and populations studied, the effect size was both moderate and generalizable (Karau & Williams, 1993), indicating a reliable social loafing effect across all studies (Rutte, 2003) that suggested a social loafing tendency is robust among individuals within teams. Economists, political scientists, sociologists, and psychologists have investigated the effect of this type of self-interest in rational decision-making to the detriment of the common good. This type of social dilemma is described in the parable, *The Tragedy of the Commons*. This story illustrates the conflict that exists when people share in a common good. In this story, shepherds share the same pasture to graze herds of sheep. Each shepherd knows if they act in their own self-interest and increase the size of their herd, they stand to make more profit. However, they also know that if enough shepherds act in their own self-interest, the pasture will be overgrazed and become useless.

Thus the choice most beneficial to the individual, the rational choice, negatively impacts the community as a whole if all shepherds acted in their own self-interest (Hardin, 1968). The argument for social loafing as a social dilemma stems from the notion that the effort necessary to realize the common good or desired outcome is akin to some other commodity needed to realize the collective good (Shepperd, 1993).

According to Kerr, teams are often confronted with two issues common to social dilemmas that undermine motivation. The first is the perception that some group members over-function to achieve the group goal, making the contributions of others inconsequential or unnecessary; the second is the perception that other team members will free-ride on the coat tails of others' efforts (Kerr, 1983).

In *Tragedy of the Commons*, acting in one's own self interest is characterized as defecting from the interest of the common good. Free-riding is a type of defection that occurs to the extent that team members perceive little value in their contribution when the division of the public goods will be the same with or without their effort (Shepperd, 1993). Free-riding is a willful intent to exploit the shared benefits of a group task without bearing a proportional share of the effort to achieve the task (Albanese & Van Fleet, 1985). A decision to free-ride is based on an assessment of the benefit to be realized in contrast with the relative effort to be exerted. Even a desired benefit does not insure that all group members will exert effort equally (Olson, 1971). The mere expectation that one can achieve valued performance outcomes off the backs of other group members while doing very little oneself can incentivize free-riding (Kerr & Bruun, 1983). Therein lays the social dilemma. If a member's contribution makes only a marginal difference to an overall group

task outcome and the benefit derived will be equally shared, there is little, if any, incentive to exert 100% effort.

Free-Riding

Free-riding is distinguished from social loafing by its deliberation and is measureable at the individual level. In contrast, social loafing is a function of many variables that contribute to either the intentional or unintentional decision to exert effort, and is measured at the group level (Kerr & Bruun, 1983). According to Steiner (1972), free-riding is observable at the individual level by use of task processes that define how member contributions will be assessed. For example, a disjunctive task, or a single problem for the group to solve, is assessed on the basis of the most effective member whereas a conjunctive task, or a task that requires the performance of every group member to succeed (E.g., Mountain climbing), is assessed on the basis of the least effective member. In contrast, additive tasks, or a group effort in which all member contributions are the same (E.g., Rope pulling, brainstorming), are assessed based on the sum of each group member's effort (Kerr & Bruun, 1983).

According to Kerr and Bruun, most social loafing research has relied on additive tasks to operationalize social loafing. For example, in a comparison of a large and small group task, participants were asked to participate in a study on cooperative learning (Shaw, 1960). One hundred and thirty-six female undergraduates at a state university were asked to abstract certain information from an article describing a stellar constellation. Participants were told that a group score would be given based upon the whole group's performance. Participants were assigned to small (2-5 members) and large (6-8 members) group conditions. By summing the group performance, the research showed that when

given a choice between reading a one-page summary or a 10-page article on the topic, participants in the small groups selected the longer articles to read whereas participants in the larger groups selected the one-page summaries. This finding showed that for additive tasks, social loafing was a function of group size and was consistent with Latané's social impact theory that when the responsibility was smaller, as in the large groups, participants were more likely to loaf.

Similarly, disjunctive and conjunctive tasks were more likely to result in social loafing as group size grows. However, when disjunctive and conjunctive tasks were investigated based upon member ability, they had opposite effects on member task motivation in the form of free riding (Kerr & Bruun, 1983). In a disjunctive task, participants were asked to blow as much air as they could through a mouthpiece at 30 second intervals. Before starting, participants were tested given individual performance feedback on their high or low ability. As predicted, the findings showed that when only the best score was used to measure group performance, low ability members were less motivated. Similarly, in conjunctive tasks, where the score of the least able member was used, high ability members were less motivated. When asked about perceived dispensability of effort, high ability participants felt more important in the disjunctive condition than the low ability participants while the reverse was true in the conjunctive condition (Kerr & Bruun, 1983).

Sucker Effect

Free-riding only answers a part of the question posed by Kerr in 1983, when he asked, "When and why does a person working in a group have a different level of task motivation than when working alone?" (p. 819). Group members do not like it when

others take advantage of their efforts while contributing very little effort of their own.

Indeed, research suggests that even the perception that a group member is free-riding, can cause other group members to reduce the amount of effort they invest in the task to avoid being exploited. This is referred to as the Sucker Effect. The sucker effect describes the reduction in effort by group members aware of the inequitable distribution of labor when other group members are free-riding (Jackson & Harkins, 1985; Kerr, 1983; Robbins, 1995).

In a study to examine equity in group member effort, participants were asked to shout as loud as they could (Jackson & Harkins, 1985). It was predicted that participants would match the same level of effort exerted by their partner. In dyads, participants were told by their partner, a confederate, how hard she intended to try on the shouting activity. When the participant knew her partner intended to try as hard as she could, the participant also tried as hard as she could to match her partner. When the participant was told by her partner that she would hardly try at all, the participant reduced her own effort. At the start of the experiment, the researchers had “tested” each participant’s shouting ability. The participant and their partner (the confederate) were told they had equal ability. Each participant participated in 10 trials (5 alone and 5 “group”). Headphones and blindfolds prevented the participant from realizing their partner was not participating at all. Three conditions were tested: Low Effort (LE), High Effort (HE), and Social Loafing Replication (SLR).

Similar to earlier research on social loafing, participants, on average, exerted effort in their group equal to 79% of their effort alone. However, when the participant thought they were working with a committed, high-ability partner, they not only exceeded their

SLR performance but also closed the gap between working alone and in a group. Similarly, in the LE condition when the participant had been told their partner would hardly work, they exerted lower effort in the group and alone than in either of the SLR and HE conditions. As hypothesized, the findings showed that participants gauged their own effort in the collective condition to match the amount of effort they anticipated their “partner” would exert (Jackson & Harkins, 1985). This suggests that when participants have knowledge a group member will free-ride, they will reduce their own effort to avoid being played for a sucker.

This is a phenomenon that cannot be avoided even if it means passing up money to do so. In Kerr (1983), participants participated in another physical activity. In a disjunctive task, when the group effort is evaluated based on the highest performing member, participants were asked to pump as much as possible in 30 second intervals. If the group effort achieved a specified criterion level, group members would each receive \$0.25. During the trials, the confederate-partner consistently demonstrated a comparable ability in the task to the participant but the performance feedback indicated the confederate-partner consistently failed at the task. This led the participant to conclude the partner was able but not willing; likewise, the participant reduced their own effort of success on the task from 90% success to 75% success (Kerr, 1983). Not even the promise of money was enough of an inducement to deter the sucker effect.

The sucker effect has also been found in cognitive tests. Even when the task was thought-provoking and personally involving in which participants had a chance to make a unique contribution, the participant adjusted their own behavior to avoid the sucker effect (Robbins, 1995). When a high-ability partner communicated to the participant that she

intended to free-ride, the participant reduced her own effort. Consistent with earlier findings, when the participant knew their high-ability partner would work as hard as hard as they could, the participant would social loaf less. What differed in this particular study from others, and calls for more research is that when the participant was paired with a low-ability partner who was free-riding, the participant did not match the low-ability partner's level of performance. Although the participant did not exert as much effort working alone, she still social loafed less with a low-ability partner than a high-ability one. The findings from this study concluded that high task involvement and the opportunity to make a unique individual contribution did not deter social loafing as hypothesized in earlier research (Robbins, 1995). However, they did suggest that while no one wants to play the sucker to a high ability partner, there is no shame in picking up the slack when a participant is paired with a low-ability partner.

The implications of both free-riding and the sucker effect in virtual teams is explained by Latané's social impact theory, and illustrated in an exploratory case study. In virtual teams, Latané's theory helps to explain a fertile contextual setting in which both free-riding and the sucker effect can thrive. Team size dilutes the social impact of individual team members. As team size grows, the opportunity to hide in the crowd becomes easier, and with our understanding of free-riding, more desirable. Further, the use of information and communication technology removes a sense of immediacy prevalent in teams that meet FtF. Thus, accountability that is often fostered by proximity can be diminished in virtual teams. The chance that some team members are free-riding contributes to the avoidance by other team members not to be taken advantage of by reducing their own or effort (the sucker effect). In a less notable exploratory case study to

describe the development of virtual team skills in a management principles course, Olson-Buchanan, Rechner, Sanchez, and Schmidtke, (2007) expressed surprise over the finding that in some instances, virtual teams had participants who never participated at all, while other teams had two or more people who went “AWOL” during the semester. Issues of fairness emerged among the remaining members left with more work as a consequence of both free-riding and the sucker effect. Even the option for remaining team members to list non- or marginally-active partners on the final paper for a group grade did not serve as a deterrent to either forms of social loafing.

Perceived Social Loafing

Latané says that social loafing is about perception: How one is perceived and how one perceives others. Another source of social loafing that has received little attention in the literature is perceived social loafing. Perceived social loafing is different from other forms of social loafing in that it has nothing to do with whether social loafing has actually occurred (Comer, 1995; Mulvey, Bowes-Sperry, & Klein, 1998; Tata, 2002). Although the mere perception of social loafing may induce social loafing, perceived social loafing and social loafing may not always covary (Mulvey & Klein, 1998). However, perceived social loafing can erode team satisfaction and performance even in the absence of actual social loafing (Tata, 2002).

In a study to investigate the influence of social perceptions on group goal processes, participants working in three to five-member teams were asked to complete a group project (Mulvey & Klein, 1998). Halfway through the semester, an instrument surveyed team members that among other things, measured perceived loafing on group goal difficulty and group goal commitment. Group goal difficulty and group goal

commitment were significantly correlated with group goal performance. The results of this study showed that perceived loafing accounted for an insignificant 3% of the total variance in group goal performance. In a follow-up longitudinal study designed to both replicate and correct problems in the earlier study, anticipated lower effort and the sucker effect were positively correlated with collective goal difficulty and accounted for 20% of the variance, while perceived loafing accounted for an incremental 18% of the variance. Perceived social loafing also had a negative impact on the group's goal commitment. The implications of these findings suggest perceived loafing can spiral into lower effort and aspirations on non-social loafers that can develop into a negative self-reinforcing loop.

In another study to examine the effects of perceived social loafing and defensive impression management on group effectiveness, perceived social loafing was found to be negatively correlated with group member satisfaction and group performance. Impression management refers to efforts by individuals to influence how they are perceived by others (Mulvey et al., 1998). Defensive impression management strategies are typically excuses used to explain bad behavior. The study found that groups with high levels of perceived social loafing exhibited a negative relationship between defensive impression management and group effectiveness whereas groups with low perceived social loafing showed a positive relationship (Mulvey et al., 1998). What this suggested is that as long as members who were using defensive impression management were not perceived by other group members as social loafers, the excuses were accepted and team effectiveness stayed strong. In contrast, when defensive impression management was accompanied by the perception of other group members that the individual was social loafing, excuses were not accepted and team effectiveness declined.

Perceptions of social loafing can be rife within the context of virtual teams. In a less notable research study on virtual collaborative learning aimed at gaining insight into student engagement and participation, students expressed reluctance to participate in online collaborative work because of the mere perception that others' would free-ride (Chiong & Jovanovic, 2012). These perceptions emerged in instances in which team members failed to communicate in a timely way, exhibited no social connection toward other team members, and/or refused to use alternative forms of social media with which they were unfamiliar, to communicate. Students did not complain about free-riding (individuals received individual grades, not group grades) but complained a great deal about their perception that team members were not participating. What the findings suggest is that the perception of low or no participation by other group members resulted in a decision to exert less or no effort on the task.

Free-riding, sucker effect, and perceived social loafing are all phenomena of the social loafing construct. All three are of concern, and to some extent, can overlap. This section has clarified the distinction between these forms of social loafing. Free-riding has been shown to stimulate a reactionary reduction in motivation due to the sucker effect whereas perceived social loafing needs no real social loafing to occur to stimulate a decline in motivation in the perceiver.

Social Loafing in Teams

From 1974 to 1993, nearly 80 studies on social loafing in groups used a range of tasks that employed physical, cognitive, evaluative, and perceptual tasks across diverse cross-sections of participants with respect to culture, gender, age, and occupation. In these comparisons across gender, culture, and tasks, social loafing was found to be robust

although the effect was slightly smaller in women and eastern cultures. In classic social loafing research, antecedents of social loafing that have received the most empirical and theoretical attention in FtF groups are task visibility, task value, cohesion, perceived social loafing, task interdependence, and group size (Karau & Williams, 1993). In a meta analytic review of 78 studies that spanned nearly twenty years of research on social loafing, Karau and Williams found that task visibility and task valence had especially strong influence. Task visibility is described as the evaluation potential of individual contributions whereas task valence describes high personal involvement and meaning.

According to Karau and Williams, early theorizing on social loafing suggested individuals working alone tend to perceive a more direct relationship between their own high quality effort and valued outcomes such as task importance, rewards, meaningfulness, and evaluation apprehension. However, when individuals worked in groups, variables other than individual effort determined performance and valued outcomes. A collective effort model (CEM) developed by Karau and Williams used to isolate the most likely threats to individual motivation in groups illustrates how group outcomes changed the nature of individual outcomes. In contrast to individual outcomes, group outcomes included group evaluation, cohesion, and extrinsic rewards. Group outcomes also transform individual outcomes into feelings of belonging, self-evaluation, and intrinsic and extrinsic rewards, a far cry from task importance, rewards, meaningfulness, and evaluation apprehension. As a consequence, individuals working in groups do not perceive relationships between their own individual effort and the group performance, between group performance and group outcomes, nor can individual outcomes be parsed out from group outcomes.

Karau and Williams predicted that when the outcomes of performance became detached from individual effort, individuals would have a tendency to social loaf, and that this tendency would be consistent across the studies. They also suspected social loafing would be reduced when individuals perceived their contributions were evaluated, work was intrinsically meaningful, groups were small, individual contributions were unique, respected group members, thought co-workers would perform poorly, and valued group work. What they found was the tendency for individuals to social loaf was consistently obtained and moderate in magnitude. The tendency to social loaf was especially strong when there was no potential for evaluation of individual outcomes and the task was not perceived as meaningful (Karau & Williams, 1993).

Although most or all of the research used in the meta analysis was performed exclusively in laboratory experiments, its most significant findings were duplicated in an organizational setting. George (1992) performed research to increase understanding of the extrinsic and intrinsic origins of social loafing as it occurs in ongoing organizational work teams. As articulated by George, the extrinsic explanation of social loafing focuses on whether individual contributions to a group effort are identifiable (supervisor is aware of what individuals are doing) whereas the intrinsic explanation of social loafing focuses on whether the individual experiences high involvement in their work (performing work tasks is valued regardless of supervisory awareness of what individuals are doing).

The data for this research came from a sample of salespeople working for a large retailer specializing in clothing and household goods in the southwestern United States. Supervisors completed a rating form for each salesperson they supervised who was included in the study. Extrinsic Involvement (task visibility), Intrinsic Involvement (task

valence) and Social Loafing were measured. Intrinsic involvement was measured along three indicators: task significance, task meaningfulness, and contribution.

The results showed that task visibility and intrinsic involvement had statistically significant negative correlations with social loafing, $r = -.29$ and $r = -.15$, respectively. But of the four predictors of social loafing (task visibility, task significance, task meaningfulness, and contribution) only task visibility was statistically significant as a predictor of social loafing.

Task visibility is a significant predictor of social loafing when intrinsic involvement is considered; however, intrinsic involvement when task visibility is considered is not a significant predictor of social loafing. Finally, the interactions of task visibility with both contribution and task meaningfulness were statistically significant, whereas the task visibility with task significance interaction was not.

These findings were consistent with the results of prior research conducted in the laboratory. Social loafing was more likely to occur when individuals perceived task visibility to be low, but happened less often when intrinsic involvement was high. The combined effects of extrinsic and intrinsic influences, task visibility remained a significant predictor with intrinsic involvement controlled, but intrinsic involvement was not a significant predictor with task visibility controlled.

The findings suggest that employees are aware of the exchange relationship they have with their employer; however, compensation alone may not be enough to deter employee loafing. Even employees who experience intrinsic satisfaction in their job tasks, may still be motivated to engage in social loafing when they think that their behavior is not monitored (George, 1992).

George's study findings were consistent with earlier research that says when individual team member inputs are distinguishable from other member inputs, extrinsic motivation, or task visibility, can reduce social loafing. In contrast, her findings do not support earlier research that suggests that high personal involvement and meaning reduces social loafing. Although intrinsic motivators may moderate social loafing in the absence of task visibility, these intrinsic motivators are not predictors of social loafing nor necessarily prevent social loafing in the absence of task visibility. Limitations of the study included generally low levels of social loafing, and having studied low level workers, may not generalize to professional level workers.

Subsequent empirical research suggests that when individuals value the collective outcomes associated with group performance and interaction more than the isolated outcome of their individual efforts, they may actually work harder collectively, especially when their own group outcomes were evaluated against the outcomes of other groups. In a study to determine if highly cohesive groups reduced or eliminated social loafing, Karau and Williams (1997) investigated individual inputs that contributed to favorable group outcomes that were then compared with other groups.

Two studies were designed to test this hypothesis. Experiment 1 used a 2x2 mixed design: cohesive/non-cohesive and individual or collective work design with cohesiveness as a between-subjects factor and work condition as a within-subjects factor. Thirty volunteer students from the American Institute of Business in Iowa were randomly assigned to one of the two cohesive conditions. Half of the participants worked with a group of their choice, the other did not. Student groups were asked to type as quickly as they could and told that speed, not accuracy, was most important to test the capabilities of

a microcomputer to be used in small business. Students were told whether or not they were assigned to the group of their choice. With that knowledge, the task itself was carried out alone so that cohesiveness could be manipulated and studied based upon attraction to and importance of the group to the individual group member. Participants then typed one paragraph repeatedly in four separate 10-minute trials.

Using a 100-point scale survey to measure cohesion, members of cohesive groups reported they enjoyed pooling their efforts more ($M = 66.87$) than noncohesive groups ($M = 50.94$.) The findings showed that participants in the noncohesive condition typed more words per minute individually than collectively, whereas participants in the cohesive condition typed more words per minute collectively than individual. Neither work condition's simple effect was significant. Thus the main hypothesis (cohesion would reduce social loafing) received modest support.

In Experiment 2, Karau and Williams (1997) replicated Experiment 1 to create a stronger test of group cohesiveness. In this study, it was predicted that not only would work group cohesion eliminate social loafing in work groups with high-ability members, but high-ability members would also work harder collectively while working with low-ability members.

Participants were 164 men and women from Purdue University. The experiment used a 2x2x2 between subjects factorial design (cohesion, work condition: Individual or collective, coworker ability). Individuals were randomly assigned to a work condition and a co-worker ability condition. Participants were asked to perform an idea generation task to generate as many uses as possible for a knife in 12 minutes while in a simulated communication technology setting. Participants were told that researchers were interested

in individual and group results, respectively with an emphasis on quantity over quality. Group scores were compared.

The results showed that cohesive group members scored much higher on the cohesive index ($M = 84.51$) than noncohesive groups ($M = 31.30$). Within the high-ability condition, there was a significant interaction between work condition and cohesiveness $F(1, 105) = 6.02, p < .02$. Members of noncohesive groups social loafed as demonstrated by working harder individually than collectively, whereas members of cohesive groups worked equally hard collectively and individually.

The findings of both studies suggest that group cohesion may moderate social loafing. People may be far less attentive to individualist concerns and may simply work hard across work settings because the group and its members are valued. Members of cohesive groups may focus instead on collective processes and outcomes whereas noncohesive groups may seek to maximize their individual outcomes in a strategic fashion. Similar to the findings of Karau and Williams (1993), people working with strangers may be attentive primarily to individualistic concerns and such attention may be enhanced when coworkers are expected to perform especially well or poorly.

To shed light on the relative importance of the antecedents linked to social loafing, Liden et al. (2004) examined key individual- and group-level antecedents of social loafing among members of FtF work groups also in an organizational setting. Antecedents were examined at either the individual or group-level of analysis. Specifically, individual-level antecedents of social loafing included the degree to which individuals perceived task interdependence, task visibility, and both distributive justice “fair pay” and procedural justice “fair rules”. Antecedents representing the group level were group size,

cohesiveness, and perception of the prevalence of social loafing among members of the group.

Employees (168 with a 50% response rate) and immediate supervisors (23 with a 79.3% response rate) of two large global organizations located in the Midwest participated in the study. Employees responded to questionnaires that included measures of the antecedents of SL. Specifically, employees completed measures of task interdependence, task visibility, distributive justice, procedural justice, cohesiveness, and perceived coworker loafing. Managers participated in close-ended, structured interviews about employee performance, organizational citizenship behavior, SL, and group size.

The results showed that even when tested in a multivariate model, all of the independent variables except procedural justice significantly predicted social loafing, that social loafing operated at both individual and group levels, and that performing a field study of intact work groups enhanced the external validity of the lab experiments of student subjects who performed simple tasks and participated in temporary ad hoc groups.

Contrary to the prediction that perceived coworker loafing, aggregated to the group level is positively related to social loafing, perceived coworker loafing was negative in the prediction of social loafing. In contrast to Mulvey & Klein (1998) who found that perceived loafing can spiral into lower effort and aspirations on non-social loafers, these findings may show that, as suggested in a study by Williams & Karau (1991), individuals who view their group's task or goals to be important or of value tend to work harder when they perceive that their coworkers are not able or motivated to do a good job.

In general, the emphasis of social loafing research has been to understand why people loaf in the context of employee work teams (Jassawalla et al., 2009). Field studies

performed with workers have verified inferences made about social loafing at work from earlier research conducted in laboratories that used students as proxies for employee workers. According to Jassawalla et al. (2009), very little is really known about social loafing from the perspective of students. Jassawalla et al. (2009) began an investigation to learn how students experienced social loafing.

During an exploratory study, students were asked to think about their experiences related to social loafing. An undergraduate class discussion of George's 1992 measure of social loafing formed the basis for exploring personal experiences students had with social loafing. In small focus groups students were asked to answer questions aimed at understanding what students thought and did about social loafing. In addition, students were asked what, if any, intervening strategies they employed to reduce or eliminate its effect.

The data was collected, analyzed, and synthesized into themes. The content analysis suggested that Apathy and Social Disconnectedness were key contextual variables of social loafing. Apathy is characterized by complete disinterest in the task at hand as well as indifference to both the task performance and task grade. Social disconnectedness describes a set of behaviors that included side-bars, texting, joking around, arriving late, that was exasperated by either not liking a team member or not getting along with a team member or both.

Three predictions were made on the basis of these findings. Hypothesis 1: Students define social loafers as those who engage in doing less, doing poor quality work, and engaging in distractive behavior; hypothesis 2: Students attribute social loafing behaviors to apathy and social disconnectedness; and hypothesis 3: As a consequence of

social loafing, students will say that they worked harder to pick up the slack and team performance was adversely effected. Scales were constructed from the data to create an instrument to measure social loafing. The instrument was then administered to 394 undergraduate business students in 23 sections at a midsized state university. Students were told they were participating in a study about social loafing. The response rate was 100%. Every student reported they had experienced some form of social loafing in a group project. No extra credit nor monetary or gift incentives were given to students for their participation. The study findings showed significant effects for all three hypotheses.

The results indicated that the social loafers' apathy (H1; $\beta = 0.462$, $t = 2.92$, $p < 0.05$) and loafer's social disconnectedness (H2; $\beta = 0.207$, $t = 1.91$, $p < 0.1$) were positively related to their distractive behavior on the team. In contrast to the perspective of scholars that loafers are deliberate in their decision to contribute less effort, the findings from this study suggest that loafers are largely unaware of peer perception that they are viewed as poor contributors who exhibit distracting and disruptive behaviors that interfere with the group's overall productivity.

Loafer's apathy is also positively related to poor quality work (H3; $\beta = 0.656$, $t = 3.96$). Indeed, other group members attribute distracting, disruptive behaviors to the loafer's laziness and lack of caring, or apathy. When loafers produce poor quality work, the team members do more and pick up the slack to compensate for the loafing (H3(a); $\beta = 0.724$, $t = 4.41$) but distractive behavior of the social loafer (H3(b); $\beta = 0.296$, $t = 2.06$) positively contributes to poor overall team performance. From the perspective of other students, the consequence of social loafing is that the lion's share of the work falls on the shoulders of other group members. Further, and possibly more importantly, students do

perceive the consequence of social loafing on performance as insignificant whereas distractive, disruptive behaviors are uniquely linked to poor performance. This finding suggests that students can and will compensate for those that social loaf; however, they cannot overcome the impact of the distractive and disruptive behaviors of students on poor overall team performance. Further, the inability to get along with one or more group members was shown to erode team performance thus reinforcing these findings. From the perspective of students, loafing was attributed to the loafer's "psychosocial make-up" (p.48) in which poor work quality and distractive, disruptive behaviors were related to social loafing.

Despite the volume of research dedicated to technology-supported teams in both education and business, there have are few empirical studies about social loafing in virtual teams. With the advent of virtual team work, the literature has cautioned that social loafing might be more prevalent and possibly more damaging in virtual teams than it already is in FtF teams (Blaskovich, 2008; Monzani et al., 2014). The following reviews contemporary research on social loafing in virtual teams.

In the first study to investigate social loafing in virtual teams, Chadambaram and Tung (2005) conducted research that extended Kidwell and Bennet's (1993) theoretical reasoning for social loafing to online student teams. In a controlled study aimed at how motivation and circumstance were affected by group size and group dispersion in virtual teams, 240 undergraduate business students were randomly assigned to 40 virtual teams. Team sizes varied from 4-8 members. In addition, the teams themselves were randomly assigned between two conditions: FtF and virtual teams. The teams participated in a decision-making activity that was used to measure individual quality and quantity of ideas

generated during brainstorming under each condition, as well as the quality of the final decision and the extent of group cohesion. The quality of ideas was evaluated by two instructors with an acceptable level of interrater agreement of 0.68. The quantity of ideas was averaged across the group to evaluate individual contribution. The quality of the decision was evaluated by two expert judges (distinguished from the marketing instructors), and cohesion was assessed using a survey that measured participant perception. All teams used the same groupware software, and received training on Electronic Brainstorming, Topic Commentator, and Electronic Voting, three tools embedded in the software and used during the study. In addition, the virtual teams had access to instant messaging features used to communicate with faculty and each other.

Partial least-squares were used to test the hypotheses. Results showed that group size inversely affected group cohesion ($\beta = -0.369$; $t = 2.859$, $p < 0.005$), and group decision making, including individual contribution quality ($\beta = -0.442$; $t = 3.593$, $p < 0.005$), and group decisions ($\beta = -0.736$; $t = 7.164$, $p < 0.005$). Similarly, group dispersion affected the quantity of individual ideas generated ($\beta = -0.442$; $t = 3.593$, $p < 0.005$); however, group dispersion was found to have no impact on decision quality nor group cohesion. Post hoc ANOVAs tested interaction effects between group size and group dispersion. No significant interaction effects were noted among idea quantity, idea quality, decision quality, and the degree of cohesiveness.

The findings showed that when it comes to social loafing, group size matters but group dispersion does not. Judging from lower motivation measured by the number of ideas generated, the quality of ideas generated, and low cohesion, it was concluded that social loafing was evident in larger groups. According to Chidambaram and Tung, these

findings suggest that some uses of ICT contribute to member perceptions that the payoff of singular contributions in larger groups are marginal, at best, and supports earlier findings that these perceptions are at the core of motivational losses.

Alternatively, Chidambaram and Tung's findings on dispersion offer a somewhat different picture than what is typically found in the literature. In contrast to Latané's, (1981) social impact theory that predicts an inverse relationship between group dispersion and individual group member effort, Chidambaram and Tung found that although distance affected quantity of ideas generated, it did not impair either idea quality or group cohesion. They attributed the difference in number of ideas generated FtF and virtually to an attribute of FtF teams: Social pressure to appear productive may have generated more but not better ideas nor did it result in greater cohesion. They concluded that these findings suggest that without the social pressure of working FtF, distance may promote a type of efficiency in idea generation by only generating as many ideas as needed.

As the first of its kind, this study is not without some limitations. The ability to generalize its findings is limited due to its experimental design. The effect of group size on social loafing may also be attributed to an extraneous variable, such as how work is divided among members. In this study, only two group sizes were examined for a brief period of time. It may be that other types of tasks, technology, and length of affiliation produce different results. Also, in the study, FtF and virtual teams were discrete states whereas in organizations they are likely to be more fluid.

In addition, findings may have been attributable to other variables that included how the teams were operationalized (the FtF team used technology and verbal communication to conduct their work whereas the virtual team only used technology);

further, both teams received training in how to use the software which prior research has shown to positively affect virtual group performance (Driskell et al., 2003).

Although long associated with poor group performance, social loafing has been identified in recent information systems research as particularly vexing problem for virtual teams. The dynamics of the virtual setting may exacerbate the behavior. Blaskovich, (2008) conducted a study to investigate whether virtual teams would exhibit higher social loafing. Participants were 279 students randomly assigned to 93 different 3-member groups and sessions. A 2x2 factorial design was used where communication was either virtual or FtF. Instructions were given that identified members as peers in a hypothetical organization with similar job descriptions who are collectively tasked with allocating resources for an IT investment. Students were asked to work as a team of management accountants responsible for allocating company resources for an information technology system, and make a recommendation to purchase from an outside vendor or develop the technology in-house. Materials for the simulation were available on a computer. Face-to-face teams met in a conference room where they collectively accessed the materials from one computer source. Virtual team members completed the task from individual computers in separate conference rooms.

The 2x2 factorial design was obtained by crossing the communication mode (virtual or FtF) with the sequencing of evidence used to make decisions: (1) Evidence supporting insourcing followed by evidence supporting outsourcing, and (2) Evidence supporting outsourcing followed by evidence supporting insourcing. Groups were asked to make seven recommendations on a scale of 0-100 where 100 was “certain to recommend” after reading 7 rounds of background information labeled $R_0 - R_6$.

The results showed that virtual teams perceived lower levels of participation in the group task ($t = 11.70, p < 0.01$) and effort expended in individual recall ($t = 8.01, p < 0.01$) than teams that met FtF. The accuracy score on the recall test was statistically significant averaging 7.93 items for virtual team members and 8.28 items for FtF team members. The difference in time on task in FtF and virtual teams was not statistically significant.

Overall, the results suggest that virtual teams exhibited social loafing behavior evidenced by lower individual recall and perceptions of effort and participation. Recency bias used to measure performance outcomes, refers to decisions that are based on the latest information received and are considered inferior based on the order in which it was received rather than the content value of the information (Blaskovich, 2008). Virtual teams exhibited much greater recency bias where groups that received evidence supporting outsourcing last, recommended outsourcing (13.75 points) and groups that received evidence supporting insourcing last recommended insourcing (7.73 points). FtF teams were able to mitigate the recency bias while virtual were not.

The findings show that members of virtual teams reported lower participation and effort in the group than members of FtF teams, and they also suffered from reduced recall ability. Results also indicated that virtual teams exhibited recency bias indicative of social loafing providing evidence that virtual teams may be more prone to this counterproductive behavior.

In conclusion, the evidence shows that groups function differently when using technology to communicate. Optimizing virtual team productivity has many practical implications, most notably that teams could use communication technology to complete tasks but will not be realized if technology is allowed to cause an unintentional decline in

decision quality. The findings here support Latané's (1981) social impact theory that suggests distance predicts social loafing whereas results from research conducted by Chidambaram & Tung (2005) did not.

As with many studies investigating social loafing in the workplace, using students as proxies raises concerns about external validity. The level of analysis for outsourcing was not as complete as it would have been by a practicing managerial accountant, nor was student knowledge and experience in making those types of decisions.

To know if social loafing is even happening, one must look beyond the impact of group size and dispersion on social loafing. To determine if loafing actually exists, performance comparisons must be made between individual team members. Meta-analytic evidence has shown that increases in group size produce a curvilinear decrease in performance. Moreover, this phenomenon was more pronounced when measured between individual and small group activity than when measured between small groups (2-4 persons) and larger groups (Karau & Williams, 1993).

Suleiman and Watson (2008) confirmed the presence of social loafing in virtual teams in a comparison of individual and team performance. In a study of 296 undergraduate business students, the students were told they were participants of fictitious eight-member teams. The participants were asked to complete a series of simulated general management decision-making tasks related to correspondence in their in-baskets. The task relevance was characterized as sufficiently engaging to business students but offered little cognitive challenge sufficient to overcome the tendency to social loaf.

In a controlled study with a 3 x 2 x 2 factorial design, evaluation was operationalized as feedback and anonymity. Both evaluation and group size were

manipulated experimentally. To control for collective performance, there was no communication among team members across the fictitious “technology-supported teams”. Each of the 12 treatments had two experimental groups, the control group had 3. Participants were randomly assigned to experimental groups; however, tests for normality and homogeneity revealed that U.S. citizens completed a greater number of tasks ($M = 5.93$, $SD = 2.61$) than non-U.S. citizens ($M = 4.30$, $SD = 2.18$, $F[1, 296] = 8.71$, $p = 0.0001$, $d = 0.09$). To control for cultural differences, 20 participants were dropped from the data set. The independent variable was group size. The dependent variable was performance operationalized by number of tasks complete. Tasks were considered to be complete when the solution offered was serious and viable. Identifiability and feedback were expected to moderate the effect of group size on performance. Furthermore, individuals providing self-feedback were predicted to complete more tasks and loaf less than individuals who received group feedback or no feedback. Feedback was displayed on each participant’s computer except for those in the control group.

ANOVA confirmed a significant social loafing effect $F[11, 275] = 3.16$, $p = 0.0001$, $d = 0.18$, $r^2 = 0.12$). Individual participants ($M = 6.36$, $SD = 0.22$) outperformed participants in groups ($M = 5.55$, $SD = 0.21$). Thus, participants working individually completed more tasks than those working in teams which indicated the presence of social loafing. Further, participants who provided self-feedback $F[1, 183] = 11.31$, $p = 0.0001$, $d = 0.10$) or received group member-feedback $F[1, 187] = 8.37$, $p = 0.0001$, $d = 0.10$) completed a greater number of tasks than subjects receiving no feedback. Feedback was not found to reduce the effects of social loafing, and those in the self-feedback treatment were still found to loaf significantly more than those receiving feedback from team

members. Therefore, hypothesized effects between feedback and loafing were not supported. Finally, there was no support for the effect of identifiability on performance or social loafing. This finding contradicts prior research that suggests identifiability is one of the stronger mechanisms for deterring social loafing (George, 1992; Karau & Williams, 1993; Liden, Wayne, Jaworski, & Bennett, 2004).

The findings also show that social loafing occurs predominantly under conditions of self-feedback, another contradiction to earlier studies that suggest social loafing was found to decrease with any form of feedback (Suleiman & Watson, 2008). The findings of this study indicate that no feedback is a better antidote to social loafing than either self- or group-member feedback, especially because it appears social loafing is actually heightened through the self-feedback condition.

The need to maximize precision in control and measurement of variables may be one of this study's greatest limitations. Ideally, to discern levels of loafing, a subject would be placed in two conditions (individual and collective) to see if performance differed between the two. Participants were only placed in one of the two conditions. If repeated measures were used, the study may have appeared contrived and confusing to the participants. Therefore repeated measures were not used. Individual loafing could still be discerned simply because participants in the individual condition still completed more tasks than those in the collective condition. What was less clear was if a single participant would put in less effort in the collective condition compared to the individual condition.

Antecedents to social loafing identified in the FtF literature such as task visibility (Kidwell & Bennett, 1993), individual contribution (Karau & Williams, 1993), and dominance (Piezon & Ferree, 2008) are more challenging to manage in virtual teams.

Furthermore, social loafing can be both real and perceived. Piezon and Ferree (2008) investigated perceived social loafing, and its antecedents from the perspective of 227 undergraduate and graduate students learning in virtual team settings enrolled at either a major Southeastern University or a U. S. Naval War College. Group size ranged from 2-9 members, and was self-selected. Groups were autonomous with respect to task, goals, and member roles. At the conclusion of the group project, participants were asked to complete an online survey to indicate agreement on scales measuring (a) perceptions of others' social loafing; (b) personal degree of social loafing operationalized as the sucker effect; (c) individual task visibility; (d) individual contribution; (e) distributive justice; and (f) group member dominance.

Both descriptive statistics and correlations were used. The negative relationship between contributions and social loafing were significant ($r = -0.29$) and indicated that participants perceived social loafing occurred in their task group. Negative correlations between distributive justice and self-reported social loafing ($r = -0.26$) and perceived social loafing in others ($r = -0.18$) suggest that as positive perceptions of distributive justice increase, social loafing decreases. A negative correlation between contributions and dominance ($r = -0.22$) suggests that as perceptions of dominance increase, contributions decrease. A strong positive relationship between dominance and self-reported social loafing ($r = 0.50$) and suggests that as perceptions and experiences of dominant behavior increases, so does social loafing. Further, a strong positive relationship between dominance and the sucker effect ($r = 0.61$) suggests that perceptions of dominance will be met with efforts to reduce or withhold contributions. Finally, strong positive correlations between the sucker effect and self-reported social loafing ($r = 0.79$) reinforced earlier

findings that as perceptions of social loafing increase so does the withdrawal of effort (Mulvey & Klein, 1998). Once again, task visibility showed no correlation with social loafing which is consistent with other research on virtual teams (Suleiman & Watson, 2008). The lack of correlation with self-reported social loafing is not unexpected due to the absence in the literature of individuals to self-report. Alternatively, the absence of a correlation between perceptions of social loafing and task visibility is in conflict with prior research (Liden et al., 2004), and thus, requires further investigation.

As a naturalistic study, issues that relate to sample selection, study design, study task, and surveys used may limit the findings of this study. However, these issues do not entirely undermine its relevance or the contribution that it makes to what has been observed in controlled settings of both FtF and virtual teams. This study's longitudinal approach includes a large cross section of groups that reported similar experiences that, with the exception of task visibility, has been found to be consistent with other social loafing research in both FtF teams and virtual teams.

In the exploratory study that follows, Furumo (2009) introduces a distinction between two different types of social loafing: Deadbeats and deserters. Deadbeats depict social loafers who withdraw effort because they believe their effort cannot be identified, a view consistent with dimensions of social impact theory: Dilution effect (group size), and the Immediacy Gap (group dispersion). Deserters are social loafers who withdraw effort due to frustration over group process issues, in this case, conflict and conflict management. Deadbeats and deserters in virtual teams were studied to determine if their perceptions of group cohesion, trust, conflict, and satisfaction varied from active members. Hypotheses were tested using a quasi-experimental design in which 192 upper division undergraduate

students enrolled in a management course at a mid-sized university in the Midwestern United States were randomly assigned to 16 12-member teams to complete a week-long task. Before completion of the study, 16 students were dropped from the study for several reasons including dropping the class, previous experience in virtual teams, or attempting to divulge their identity to their virtual team. The remaining sample of 176 students ranged in age from 19 – 50 and 60% were male. Prior to the start of the study, all participants were trained on WebCT software, the instructional software package used to conduct the team task. Perfect scores on three different training tasks were required to participate in the study. Participants were allowed to retake each module as many times as they needed to earn a score of 100%.

Following an online group decision-making task that involved the allocation of \$1 million in surplus funds, participants were asked to estimate the amount of time each team member spent on the task, and to identify team members that either contributed 10% or less to the project (Deadbeats), or those who prematurely left the team and/or completed the project on their own (Deserters). Deadbeats were only classified as such when they were identified as a deadbeat by their entire team. Thirteen deadbeats (8 male) and 3 deserters (3 male) were identified.

The independent variable, type of student, had three conditions: Active team member, deadbeat, or deserter. The dependent variables measured were trust, group cohesion, task and relationship conflict, process and outcome satisfaction, and conflict management style. To control for intervening variables, students were instructed not to reveal personal information nor try to make FtF contact, and that doing so would result in

removal from the study. Before the scale data was used, principal components factor analyses were conducted to insure items appropriately tested the intended constructs.

Results showed that active team members reported higher trust and group cohesion ($M = 3.71, SD = .74$) and ($M = 4.67, SD = 1.24$), respectively, than deadbeats ($M = 3.44, SD = .75$) and ($M = 3.88, SD = 1.18$) and deserters ($M = 1.94, SD = .77$) and ($M = 2.50, SD = 1.64$). They also reported more satisfaction with both the process and the outcome of the team. To determine which groups significantly varied, two planned contrasts were performed. In the first contrast, active members had significantly higher levels of trust, group cohesion, process and outcome satisfaction, and less relationship conflict than either the deadbeats or deserters. In the second contrast, deadbeats reported significantly higher levels of trust and lower levels of relationship conflict than deserters but differences were not significant for the other variables. Finally, active team members reported significantly higher levels of the integrating management style which places high regard on personal and team member concerns $F(1, 175) = 4.38, p = 0.04$ but when compared to the deadbeat/deserters collectively, no significant differences were found on conflict avoidance $F(1, 175) = 2.22, p = 0.14$. However, between deadbeats and deserters, deserters had significantly higher levels of conflict avoidance than deadbeats $F(1, 175) = 6.25, p = 0.03$.

The results of this study clearly show that overall, the deadbeat/deserter group reported lower levels of trust, cohesion, satisfaction, and higher levels of conflict than the active team members. Moreover, the deserters had significantly higher levels of relationship conflict and lower trust levels than the deadbeats. While it is unclear as to whether lack of trust and cohesion led to conflict or conflict led to lack of trust and cohesion, it is clear the end result is a less positive experience for deserters and deadbeats.

The findings suggest that participation in virtual teams is more difficult than working in FtF teams. It is harder to establish and build trust, and much harder to address conflict effectively. This exploratory study examines social loafing in new way by examining how deadbeats and deserters differ. Many studies have analyzed deadbeats (shirkers, lurkers, and free-riders) in the literature whereas very little is known about deserters. This study suggests that by examining deadbeats and deserters in light of social impact theory, deadbeats may be an outcome of the dilution effect—as team size increases, individual contributions are less identifiable which tends to erode motivation, thus effort. Similarly, deserters may be a product of the immediacy gap—as sources and targets become further removed from one another, individual motivation declines due to a sense of isolation and detachment experienced by dispersed group members. The irony is that deserters who submitted the team project on their own generally submitted a higher quality product. This suggests they may have liked to work in the team but that working as team became frustrating, and they felt they could not continue. This study confirmed earlier findings that group size and distance in virtual teams contribute to low or no motivation in some team members.

The increased task-oriented focus of virtual teams inhibits quality social interactions responsible for not only resolving conflict and building trust but also creating and sustaining a shared sense of group identity. As a consequence, virtual teams are particularly vulnerable to motivational losses, such as social loafing. It has already been shown that when group members perceive that others are loafing, they too, become personally less motivated which leads to less collective effort, contributions, and may harm overall performance. Although the impact of technological devices on performance is not

the subject of this study, Monzani et al. (2014) investigated the effect of low fidelity ICT contributes to social loafing in virtual teams. In a comparison with FtF teams, affective outcomes such as work process satisfaction, result satisfaction, and cohesion were measured. Participants were 176 students enrolled in an organizational psychology course. They were randomly assigned to one of 44 four-member teams. The independent variable had two modalities: FtF and virtual teams. The dependent variables were perceived loafing, work results satisfaction, work process satisfaction, and group cohesiveness. Participants were asked to create a human resources consulting company. Groups met weekly for one hour and were expected to accomplish specified project goals. Participants in FtF mode were seated together around a table while participants in an ICT-enabled mode were separated at individual computer workstations. They were instructed to interact only using NetMeeting for XP Windows, software that simulates a chat room. Participants entered under pseudonyms. The software kept a record of log-ins and posts for everyone to view. A low fidelity medium, text chat, was used to measure the effect of a low fidelity communication on social loafing due to the prevalence of its use in modern organizations.

Descriptive statistics and correlations were used. Perceived loafing was negatively related to the three dependent variables: Work cohesion ($r = -0.42, p < 0.001$); work process satisfaction ($r = -0.56, p < 0.001$); and work results satisfaction ($r = -0.53, p < 0.001$). Interaction terms between communication media and perceived loafing were significant: Work cohesion ($\beta = -0.22, p < 0.05$); work process satisfaction ($\beta = -0.20, p < 0.05$); and work results satisfaction ($\beta = -0.24, p < 0.09$).

This study empirically supported earlier findings that the perception of social loafing in virtual teams negatively affects cohesion and satisfaction (both process and

results). Further, low fidelity communication moderated the relation between perceived social loafing and these three affective outcomes in such a way that the negative effect of perceived social loafing was amplified. The implications of these findings are quite serious. The research suggests that when loafers manage to free-ride undetected, task demands increase for co-workers. As suggested in earlier research, perceptions of social loafing can lead others to social loaf as well. Further, more work being done by fewer people may lead to stress, negativity, and conflict endangering group viability.

In a less notable study aimed at understanding effective group work using non-zero sum game theory, social loafing was exhibited by game players. Even regrouping game players, did not minimize its effect. The purpose of this study was aimed at gaining a better understanding of student engagement and participation in computer-supported collaborative learning environments (Chiong & Jovanovic, 2012). The main objective was to understand and explain the problems of effective group work from the perspective of Evolutionary Game Theory (EGT). EGT has been used to understand cooperation in groups.

The study followed 193 undergraduates over 13 weeks at a university in Australia who were studying business and information systems or technology. Initially, students were randomly assigned to smaller 5-8 member teams. Students were working adults who were experienced with online learning but not computer-supported collaborative learning; however, most had participated in FtF collaborative learning. Students were asked to complete four tasks that included design and development of software products and reflections on the experience of collaborating in an online course. Writing assignments (and grading) were conducted on an individual basis. Students were required to post a

minimum of 10 discussion threads in an online learning management system. Students received extra credit for their participation. Following the submission of concurrent tasks 1 and 2, strategic regrouping of participants based upon EGT was done (e.g., more active participants were moved to more active groups while less active participants were moved to less active groups. According to EGT, the regrouping would increase cooperation in all groups).

The study findings suggest students' reasons for participation included social learning and exposure to different points of view, as well as social comparison and competition (attributed to individual assignments and grades). The most common reason noted for students who did not participate was concern about the level of participation of other group members. Impediments caused by asynchronous technology were also noted. Finally, lack of social connection, thus the lack of trust was noted as negatively influencing the group dynamic alienating student participation. Only inactive groups noted their participation was motivated by extra credit. Both active and inactive groups reported time constraints as a deterrent to participation. Furthermore, EGT was not found to be an effective mediator of inactive groups. While it was found that students regrouped from inactive groups to more active groups participated more on tasks 3 and 4, inactive students regrouped into inactive groups did not.

The researchers found low participation of other group members turned out to be the main reason that other group members did not participate, reinforcing the notion of the effect of perceived social loafing on other group members (Mulvey & Klein, 1998). In contrast, active members reported that their own high participation was a function of the high participation of other group members. These findings support earlier research that

found when participants were paired with a high-ability partner who intended to try their hardest, the participant matched and often exceeded not only the performance of their partner but also their own personal best (Kerr, 1983). Because this was not a study of social loafing per se but a by-product of other research into effective virtual teams, the researchers concluded that according to EGT, free will is an essential component of how group members will regroup themselves to increase performance and achievement. The researchers noted that by doing the regrouping themselves, free will was absent. Thus, the authors concluded that the study findings were inconsistent with EGT.

What is interesting about this study is that although it was intended to examine cooperation in virtual teams, it illustrates social loafing as a social dilemma illustrated in the parable, *The Tragedy of the Commons*. It alludes to concerns over perceptions of social loafing, free-riding, and the unwillingness of other group members to play the sucker. It shows that when group members think their partners were able but not willing to exert effort they, in turn, reduced their own effort. It also demonstrated that when high ability members intended to put forth their best effort other members worked equally hard or harder. Task Identifiability did not deter social loafing, and trust levels appeared to be inversely related to social loafing whereas cohesion had a direct relationship with social loafing. As a qualitative study, its findings cannot be generalized; however, it provides a snapshot of how students experience social loafing in real time that supports earlier empirical research, and illustrates how, in a rational world, no one would choose to cooperate. Thus, social loafing hangs on the periphery of teams, a threat with “negative consequences for individuals, social institutions, and societies” (Latané et al., 1979, p.

831). It suggests that cooperation is actually learned and its practice is a decision that begins with small acts of trust.

Construct Validity of the Social Loafing Construct

There are three main measures of social loafing in the literature: George (1992), Mulvey and Klein (1998), and Jassawalla, Sashittal, and Sashittal (2009). This section will review the use of each instrument to measure social loafing in different studies.

George (1992)

George (1992) developed an instrument to measure the extent to which sales employees put forth less effort when other sales people were available to do the work. The scale was used to measure how social loafing was affected by extrinsic and intrinsic motivation. Task Visibility was used to measure extrinsic motivation whereas the indices of intrinsic motivation were Task Significance, Task Meaningfulness, and Contribution. Both extrinsic motivation and intrinsic motivation were found to be predictors of social loafing. However, when the effects of extrinsic and intrinsic motivation were combined, only task visibility was found to be a predictor of social loafing. This suggests that employees will have a tendency to social loaf regardless of intrinsic motivation if they believed that they are not being observed by a supervisor. The findings also indicated that intrinsic motivation may modify the relationship between task visibility and social loafing such that when intrinsic motivation is high, employees will engage in social loafing less often.

Several studies have adapted George's scales to study non-retail work teams. A frequently cited study modified the scales to investigate antecedent variables of social loafing in a multinational corporation (Liden et al., 2004). In this study to investigate

antecedents at both the individual and group level, results were consistent with George's (1992) earlier findings that low task visibility resulted in social loafing. Liden et al. (2004) also found that both cohesion and distributive justice were negatively correlated with social loafing, while task interdependence and group size had a positive relationship with social loafing. The findings from this multivariate analysis were consistent with earlier research that examined antecedents one at a time with the exception of the effect of perceived loafing on other group members. In contrast to research that suggests people who are suspicious that others may not be doing their fair share will choose to put in less effort (Mulvey & Klein, 1998), the results of this study suggest the opposite is true. When the task is meaningful and significant, other team members will pick up the slack despite the perception of social loafing (Liden et al., 2004).

Another study adapted George's (1992) instrument to understand antecedent variables of social loafing in online learning (Piezon & Ferree, 2008). The findings from this study found no support that task visibility predicted social loafing. However, there was support for earlier research (Liden et al., 2004) on the inverse relationship between distributive justice and social loafing.

Another adaptation of the George instrument was used in yet another field study to measure the relationship between two social exchange theories: Leader-member exchange and team-member exchange, and social loafing (Murphy et al., 2003). The results indicated a leader-subordinate relationship can affect social loafing in the workplace, suggesting the importance of effective interpersonal relations between leaders and employees. In contrast to past laboratory research that has shown connections between the

quality of interpersonal relationships among team members and social loafing, this study did not find a relationship between team-member exchange and social loafing.

In some instances, the instrument was adapted and used to make inferences about workplace social loafing by studying students. An example of this was a study that adapted the instrument to measure the relationship between organizational citizenship behavior and social loafing (in organizations) and then was administered to 341 undergraduate students (Hoon & Tan, 2008). The study was the first of its kind to suggest a relationship between personality and social loafing. Conscientiousness (reliable, disciplined, and persevering) and felt responsibility (a theory that empathy may promote altruism) were significantly, negatively correlated with social loafing whereas contextual factors identified in earlier research as antecedents of social loafing: Task visibility, task interdependence, and group cohesion were not found to be significantly correlated with social loafing in this study at all.

Mulvey and Klein (1998)

In 1998, Mulvey and Klein (1998) investigated the affect of perceived social loafing in teams on other team members' own motivation along with two related variables: Anticipated Lower Effort and the Sucker Effect. Anticipated lower effort describes lower group motivation because of the expectation others will social loaf. The sucker effect refers to the curtailment of one's own effort when other group members are not pulling their weight for fear of looking like a sucker. Anticipated lower effort and sucker effect were used to measure the extent to which the perception of social loafing in some team members would negatively affect the motivation of other team members. The results suggest that perceptions of social loafing have negative effects on group goal difficulty.

The study found that the mere perception of social loafing may motivate team members to reduce their own effort to avoid being taken for a sucker. While it may be true that the mere perception of social loafing can erode overall motivation and morale in other team members, other research has shown no relationship between perceived social loafing and reduced effort, suggesting that intrinsic motivation should not be ignored (Liden et al., 2004).

The Mulvey instrument was used in a study to understand the impact of antecedents on turnover in small decision-making committees (Whiteoak, 2007). The results showed that perceived loafing had a positive relationship with turnover (the intention to leave the group) and had a significant inverse relationship with cohesion whereas group potency, or the belief held that a group can reach its goals, was positively correlated with cohesion and goal commitment. A hierarchical regression analysis showed that the hypothesized path from cohesion to turnover intention was not significant nor was the path from perceived social loafing to turnover intention.

Further, in a study to understand the impact of social and system factors on social loafing in online communities (Shiue et al., 2010), Mulvey and Klein's instrument was used to measure the extent to which social loafing is negatively correlated with cohesion and social ties, and is positively correlated with perceived risk. Perceived risk refers to the uncertainty of online users about negative repercussions from participating in online groups. The results showed that social loafing had significant negative relationships with cohesion and social ties and a significant positive relationship with perceived risk. The findings suggest that the reasons for online social loafing may be attributable to weak

online relationships and trust, and as a consequence may erode online community cohesion.

Finally, in a study to compare social loafing in students who received either athletic or academic scholarships (Faught, 2015), Mulvey's instrument was used to measure social loafing from a social dilemma perspective. This research made the argument that social loafing is an economically rational decision from the perspective of athletes who are rewarded based on athletic participation and scholarship students are rewarded on the basis of their GPA. The dilemma is when these two groups with "meaningfully different rewards systems" (p. 22) must work in teams together. The findings showed that social loafing was significantly positively related to scholarship students experience whereas no significant correlation was found between social loafing and the experience of scholarship athletes.

Jassawalla et al. (2009)

In 2009, Jassawalla, et al. introduced the latest social loafing instrument to the literature. Jassawalla, et. al. (2009) observed that most of what is known about the causes of social loafing to this point had been through the study of work teams or inferences made about work teams from research on student teams. Despite the growth of student teams in higher education, the literature remained silent on student perspectives of social loafing. To correct this oversight, Jassawalla, et. al. (2009) developed an instrument to investigate social loafing as it appears in student teams. Three hundred and ninety-four graduate students participated in the study. The key findings of this research can be summarized into three categories: The complexity of the social loafing construct, student attributions of antecedents, and social loafing and team outcomes.

In contrast to the extant literature on social loafing, this study suggests that the social loafing construct is multidimensional. Earlier research has measured the social loafing construct indexed by the quantity of the social loafer's contribution. Jassawalla, et al. has found that from the student perspective there are at least two indicators of social loafing: Contribution quantity and contribution quality. Their research also suggests that while other student team members can compensate for contribution quantity, contribution quality impairs overall team performance. Based on their findings, Jassawalla et al. question whether contemporary measures that suggest that social loafing is a unidimensional construct lead to incomplete measures of social loafing. For example, students attributed loafing to Apathy and Social Disconnectedness. Apathy, characterized by student disinterest, laziness, and a willingness to defer responsibilities to others, matches the consensus in the literature whereas Social Disconnectedness describes a condition of poor needs management, distrust, and anxiety that were the source of distractive, disruptive behavior.

Further, the study found that team members tried harder to compensate for loafer apathy and social disconnectedness (Jassawalla et al., 2009). They took over the responsibility for making revisions, and redoing the work, when necessary to make up for the loafer's poor quality work. But when faced with social disconnectedness, students were helpless to overcome the negative impact of distractive and disruptive behaviors.

Students agreed they were able to compensate for apathy, but behaviors associated with social disconnectedness impair overall performance for which other student team members cannot compensate. The findings that student teams will work harder (not less) of their own volition (unprompted by task visibility) when they perceive a group member

to be social loafing flies in the face of earlier assertions in research on work teams (Jassawalla et al., 2009) such as the inverse relationship between low task visibility and social loafing (George, 1992), and the positive relationship between perceived social loafing and social loafing in other team members (Mulvey & Klein, 1998).

To summarize, the overall findings of this study suggest that the antecedents of social loafing in students teams may vary from those found in work teams. Furthermore, the social loafing construct showed evidence of being multidimensional as opposed to unidimensional. The study suggests that the social loafing in classroom teams may be more complicated than indicated by earlier research on work teams, and that qualities of social loafing from the perspective of students may actually interfere with learning.

To my knowledge, no one has replicated this study. A Google scholar search of the title indicated that this study had been cited 58 times. Subsequent empirical research using data gathered from this study observed that both apathy and social disconnectedness among undergraduate students has received little or no attention in the literature even though it has been suggested that these two variables may impair student learning (Sashittal, Jassawalla, & Markulis, 2012). A brief examination of each cited article in Google scholar support this finding.

Summary

This review of select research from the literature shows growing evidence of the impact social loafing on modern teamwork. Until recently, a disproportionate amount of social loafing research focused its attention on organizational work teams. Field studies of working adults or laboratory studies using college students as proxies for working adults have isolated predictors of social loafing and consequences of social loafing. Both

controlled studies and field studies have been able to show that social loafing is robust across physical, perceptual, and cognitive settings. Meanwhile, a generational tsunami of connected millennials whose relationships are mostly digital have begun to enter both college and workforce with little or no teamwork experience sufficient to prepare them for the vagaries of effective teamwork and performance. The urgency to prepare these students for the inevitable community and institutional teamwork they will face both professionally and personally cannot be overstated. Thus, examining social loafing in student teams in this dissertation is not only important but also theoretically sound.

Based upon evidence from the literature, a further examination of the social loafing construct and its related variables are warranted with the intent to contribute to the current but limited understanding about social loafing from the perspective of students working in student project teams.

CHAPTER III

METHODOLOGY

This chapter reports the methodology, design and procedures used in the present study. The purpose of this study was to examine the construct validity of social loafing using convergent and discriminant validity principles. Three instruments that purported to measure social loafing were factor analyzed: A ten-item instrument published by George (1992), a 13-item instrument published by Mulvey and Klein (1998), and a 22-item instrument published by Jassawalla et al. (2009).

For purposes of expediency, Mulvey and Klein is referred to as “Mulvey”, and Jassawalla, et al. is referred to as “Jassawalla” in Chapters III, IV, and V in descriptions of methodology and findings, but not citations. Further, the terms instruments, scales, and items will be used to describe the levels of each author’s measure. Instruments refer to all items and scales refer to all subgroups of items each author hypothesized to measure a subscale of the instrument. It will be necessary to distinguish each author’s hypothesized instrument structure from the results of my factor analyses. For the results of my factor analysis, I will refer to the factors as “my factors” for clarity. In addition, both authors’ and my factor labels will be reported in title case.

Procedures to collect and analyze data to examine the construct validity of the social loafing construct are described in the sections that follow: Research Design, Sample, Human Subjects Protection, Instrumentation, Procedures, and Proposed Data Analysis.

Research Design

Generally, constructs are unobservable but theoretically meaningful phenomena knowable through their relationships with other construct variables and/or assertions (Cronbach & Meehl, 1955). Measures make unobservable latent constructs observable. The concern is how well do scores on the measure reflect the latent construct it attempts to measure? Moreover, does the scores measure the latent construct or do they measure another related construct? A study of the construct validity of a measure attempts to see if logically-related measures correlate and thus provide convergent evidence, and whether measures of unrelated constructs to the construct of interest do not correlate and thus provide evidence of discriminant validity.

Factor analysis is an analytic technique that can be used to provide evidence on construct validity. Factor analysis attempts to identify the latent construct or constructs that underlie a set of test scores or item correlations. Consequently, a factor analysis can help determine if a factor structure and its content supports the theoretical framework of the phenomenon under study. A planned factor analysis follows a five-step protocol: Assess suitability of data for factor analysis, select factor extraction, describe criteria used in determining factor extraction, select rotational method, and interpret and label the results (B. Williams, Onsman, & Brown, 2010). These steps were followed to investigate the construct validity of social loafing. George's 10-item instrument, Mulvey's 13-item instrument, and Jassawalla's 22-item instrument for a total of 45 items were compiled into a single instrument and used to collect data that were correlated and factor analyzed.

Sample

A sample of 195 undergraduate and graduate students enrolled in the School of Management at a medium-sized private university in Northern California consented to participate in the survey. Participants were asked to recall a time in the current semester, the last semester, or more than two semesters ago when they had observed social loafing during a student team project in a class in which they were enrolled while attending the university. Thirty-five students (eight of whom were undergraduates) indicated they had not observed social loafing. For those students, the survey ended and they were thanked for their participation. That left an $n = 160$.

Students surveyed were enrolled in classes during Summer 2016, Fall 2016, and Spring 2017. Table 1 lists courses surveyed, the three semesters in which data were collected, and the number of students surveyed in each class across all three semesters. Five professors taught the courses, and over half of the courses surveyed were taught by a single professor. Ninety-two of the 160 participants observed social loafing during the semester in which they were surveyed. Although it is not possible to specify them in Table 1 because of the way the survey question was asked, twenty-one of the 160 participants indicated that they had been enrolled in an online course at the time they observed social loafing.

Table 1

Courses and Semesters in which Data were Collected

Course Name/Program	Summer 2016	Fall 2016	Spring 2017	Total
Undergraduate Courses Surveyed:				
Systems in Organizations	3			3
Systems and Technology		7	18	
Information Technology and E-Trends		23		
Business Analytics (2 Sections)			22	22
Management & Organizational Dynamics			23	23
Graduate Courses Surveyed:				
Emerging Technologies for Public Managers (2 Sections)	46			37
Culminating Project			7	7
Organization Development Consulting			9	9
Individual and Team Intervention (2 Sections)			37	37
Total Participants	49	30	116	195
Less: Participants who did not observe SL	7	1	27	35
Actual Sample Size	42	29	89	160

Protection of Human Subjects

Student participants were informed of the study purpose and procedures in the consent form. The general information and instructions for administration of the survey were described in advance of signing the consent form or completing the instrument. Paper consent forms were read, signed, and turned in prior to receiving the website link to the instrument. Students were advised that their participation was voluntary and confidential. No identifying information by name or student identification number was required to complete the survey for the purpose of maintaining and protecting student anonymity. No one had access to the final results of the instrument except the researcher. In compliance with the University of San Francisco Institutional Review Board, written permission was obtained from course instructors.

With the exception of data collected in Summer 2016, administration of the instrument in each section was done by the researcher. Administration of the data

collected during Summer 2016 was carried out by the course instructor. Participation in all classes was voluntary, and was not compensated.

Instrumentation

In this section, each of the three author's instruments is reviewed. Specifically, the methodology used by each author to develop the scales is described, and the items used in each instrument are reported.

During the planning phase for this study, I completed a logical analysis of the 45 items from the George, Mulvey, and Jassawalla instruments. Items were checked to see if they appeared to measure the intended scales hypothesized by the authors. The items were also checked with respect to other closely related constructs from the literature. Based on my logical analysis, I determined that not all of the items would behave as predicted by the authors. As a result, 10 items were added to the social loafing instrument as a "safety net" to help parse out possibly underrepresented factors that might emerge during factoring of the instruments. The items were selected from scales that measured possible antecedent variables, as follows: Three items measuring Trust (Jarvenpaa et al., 1998), two items measuring Cohesion (Carless & De Paola, 2000), two items measuring Distributive Justice (Liden et al., 2004), and three items measuring Task Visibility (George, 1992).

This proved to be an unnecessary precautionary step. In a factor analysis of all 55 items, the additional 10 items defined their own constructs but contributed little to explain the underlying factor structure of social loafing. Thus, they were dropped from any further analysis. Appendix A summarizes the 10 additional items by author, scale, and items selected for use in the social loafing instrument.

George

The most frequently cited and used instrument was first published in 1992 by George. The instrument was designed to measure the extent to which sales employees social loafed. The participants were supervisors of a large retailer who were asked to rate their sales employees on social loafing. Table 2 lists the 10 social loafing items.

Table 2

George's (1992) Ten Social Loafing Items

Scale	Items
Social Loafing	Defers responsibilities he or she should assume to other salespeople. Puts forth less effort on the job when other sales people are around to do the work. Does not do his or her fair share of the work. Spends less time helping customers if other salespeople are present to serve customers. Puts forth less effort than other members of his or her work group. Avoids performing housekeeping tasks as much as possible. Leaves work for the next shift which he or she should really complete. Is less likely to approach a customer if another salesperson is available to do this. Takes it easy if other salespeople are around to do the work. Defers customer service activities to other salespeople if they were present.

Note: Agreement was measured using a 5-point Likert scale anchored by 1 = Not at all Characteristic and 5 = Very Characteristic.

In George's (1992) initial research, focus groups of upper management provided initial feedback used to form the basis of the instrument. This was followed by a review and an evaluation by separate groups of sales people, supervisors, and managers to judge whether the instrument fairly represented their understanding of the social loafing construct. In addition, the scale was associated with a separate one-item scale ($r = 0.72, p < .0001$) that asked the supervisors to rate the extent to which salespeople exhibited less effort than the rest of their sales team during work. In my study, Cronbach's alpha was

computed for George's measure indicating that it met conventional standards of scale reliability with a coefficient of 0.89.

Items developed by George (1992) for use in a retail setting were reworded to be more generic. For example, the word "salespeople" was replaced with "team members" and "Leaves work for the next shift which he or she should really complete" was changed to "Leaves work for others which he or she should really complete". The phrase, "The social loafer" was added to the beginning of each item.

Mulvey

In 1998, Mulvey investigated the effect of perceived social loafing in teams on other team members' own motivation. Mulvey predicted that a perception (true or not) of team member loafing would cause a reduction in other team members' efforts to avoid the so-called sucker effect. According to Mulvey, the sucker effect refers to reducing one's own effort in reaction to perceived social loafing in another team member. The participants were 392 undergraduate students in a Southeastern university, randomly assigned to 104 member groups. Mulvey developed a 13-item instrument comprised of three scales used to measure Perceived Social Loafing (4 items), Anticipated Lower Effort (4 items), and Sucker Effect (5 items). Table 3 lists the 13-item instrument.

Table 3

Mulvey's (1998) 13 Social Loafing Items

Scales	Items
Perceived Social Loafing	<p>Members of my group are trying as hard as they can. (R)</p> <p>Members of my group are “free-loaders”.</p> <p>Members of my group are contributing less than I anticipated.</p> <p>Given their abilities, my group members are doing the best they can. (R)</p>
Anticipated Lower Effort	<p>Because some group members are not trying as hard as they can, the rest of my group will probably put in less effort.</p> <p>Some of my group members are putting in less effort than they could, so other group members will not try as hard as they could.</p> <p>Because some members are not doing their share, I don’t think anyone in my group is going to work as hard as they could on this project.</p> <p>Since some group members are not expending much effort on this project, others in the group will likely reduce their effort.</p>
Sucker Effect	<p>Because other group members are not contributing as much as they could, I’m not trying my best on this project.</p> <p>Because other group members are putting in less effort than they are able, I do not plan to continue to work hard on the project.</p> <p>Others in my group are not trying their best on this project, so I’m not trying my best either.</p> <p>Because other group members are not trying as hard as they could, I am not working as hard as I could on this project.</p> <p>Because other group members are not trying as hard as they can, I am going to reduce my effort on this project.</p>

Note. (R) Indicates reverse coding. Agreement was measured using a 5-point Likert scale anchored by strongly disagree to strongly agree.

A pilot study was conducted by Mulvey to test the Perceived Social Loafing scale. Data collected from 96 students assigned to project teams were factor analyzed. A single interpretable factor that accounted for 70% of the variance emerged. Factor loadings for each item ranged from 0.84 to 0.89. Measures to assess Anticipated Lower Effort and Sucker Effect were developed but not included in the pilot study. Instead, students were instructed to read the first part of each two-part item. The first part of the item referred to other group members who were not doing their share. Disagreement with the first part of

the item was indicated with not applicable. Agreement with the entire item was measured on a 5-point Likert scale anchored by strongly disagree to strongly agree. Not applicable items were later rescored to indicate strong disagreement with the item.

Coefficient alphas were reported for all three scales. Perceived Social Loafing was 0.89, Anticipated Lower Effort was 0.90, and Sucker Effect was 0.92. The scales were combined into a single 13-item instrument to measure social loafing. To ensure that all 13 items measured three individual constructs as predicted, a factor analysis of all items was conducted. A scree test indicated a 3-factor solution that accounted for 77% variance. Mulvey's factor analysis results indicated that items loaded together on each factor as predicted. In my study, Cronbach's alpha was computed for Mulvey's instrument indicating that it met conventional standards of scale reliability with a coefficient of 0.87.

For purposes of my study, items worded in the present tense were changed to past tense. Also, the phrase "group members" was changed to just "members". For consistency in phrasing across the items that measured Anticipated Lower Effort and Sucker Effect, the word "because" was added to three items. For two-part questions, Mulvey's instructions directed participants to decide if the first part of the item was true. If it was true, then the participant was directed to read and respond to the entire item. For example, Mulvey's two-part items followed this structure: "Since some group members are expending much less effort on this project, others in the group will likely reduce their effort". In contrast, this same item was reworded, as follows: "Because some members did not expend much effort on this project, others in the group likely reduced their effort". Mulvey's instructions were not included in my data collection. Student participants asked to participate in the current study were required to reply affirmatively they had experienced

social loafing one or more times to access the instrument. Therefore, Mulvey's instructions to answer two-part questions only if the first part was true were not relevant.

Finally, two of Mulvey's social loafing items were written in such a way that they needed to be reverse-coded. The first was "Members of my group tried as hard as they could", and the second was "Given their abilities, my group members did the best they could". .

Jassawalla

In 2009, Jassawalla investigated social loafing from the perspective of students. Jassawalla predicted that students experience social loafing differently than workers, the subject of George's instrument. The participants were 394 undergraduate business students in 23 sections at a mid-sized state university. Jassawalla developed a 22-item instrument comprised of 6 scales used to measure Apathy (5 items), Distractive and Disruptive Behavior (3 items), Social Disconnectedness (3 items), Poor Work Quality (4 items), Team Members do More to Pick Up the Slack (4 items), and Overall Team Performance (3 items). Table 4 lists the 22-item instrument.

Table 4

Jassawalla's (2009) 22 Social Loafing Items

Scales	Items
Apathy	<p>I believe that the social loafer was not interested in the topics/task assigned to the team.</p> <p>I believe that the social loafer did not care about earning a high grade in the class.</p> <p>I believe that the social loafer expected others to pick up the slack with no consequences to him/her.</p> <p>I believe that the social loafer just did not care.</p> <p>I believe that the social loafer was just plain lazy.</p>
Distractive Disruptive Behavior	<p>The social loafer had trouble paying attention to what was going on in the team.</p> <p>The social loafer engaged in side conversations a lot when the team was working.</p> <p>The social loafer mostly distracted the team's focus from its goals and objectives.</p>
Socially Disconnected	<p>The social loafer did not like one or more of the team members.</p> <p>The social loafer did not get along with one or more members of the team.</p> <p>The social loafer was not part of the clique, and did not seem to belong to the team.</p>
Poor Work Quality	<p>The social loafer came poorly prepared for team meetings.</p> <p>The social loafer had trouble completing team-related homework.</p> <p>The social loafer did a poor job of the work he or she was assigned.</p> <p>The social loafer did poor quality work overall on the team.</p>
Expects Others to Pick Up the Slack	<p>As a result of social loafing, team members had to waste time explaining things to the social loafer.</p> <p>As a result of social loafing, other team members had to do more than their fair share of the work.</p> <p>As a result of social loafing, other team members had to redo or revise the work done by the social loafer.</p> <p>As a result of social loafing, the work had to be reassigned to other members of the team.</p>
Team Performance	<p>As a result of social loafing, the team had fewer good ideas than other teams.</p> <p>As a result of social loafing, the team missed deadlines.</p> <p>As a result of social loafing, the team's final presentation was not as high a quality as that of other teams.</p>

Note: Jassawalla did not indicate what the response options were for this instrument.

Jassawalla's study began with an exploratory study conducted in two sections of an organizational behavior course. In each section, Jassawalla led a discussion about George's measure of social loafing. The discussion became the basis for exploring personal experiences students had with social loafing. In small focus groups, students were asked to answer questions aimed at understanding what they thought and did about social loafing including intervening strategies used to reduce or eliminate it.

Qualitative data generated from the focus groups became the source for scale development. The notes from the focus group were collated and analyzed. Six scales were derived from the qualitative data. To verify resulting data were loading on hypothesized constructs, descriptive statistics and Cronbach's alpha were examined for internal consistency. The authors noted that only three of the six scales fell within an acceptable value of 0.70 but they retained all six scales as their values were only slightly lower. The six scales were combined into a single 22-item instrument, and administered to 394 undergraduate business students. Next, an exploratory factor analysis was performed. According to Jassawalla, most items behaved as expected. Cross loadings were evaluated, and decisions made to keep or discard the item.

Jassawalla then conducted two confirmatory factor analyses to assess unidimensionality of scales, the discriminant validity of scales, and to determine if social loafing is a second order construct. The first confirmatory factor analysis indicated that all items loaded significantly on their hypothesized constructs indicating unidimensionality of scales. The second order confirmatory factor analysis for the social loafing construct indicated acceptable fit indices and factor loadings. The risk of common method variance was mitigated through careful instructions to participants and attention to construction of

the items. In my study, Cronbach's alpha was computed for Jassawalla's measure indicating that it met conventional standards of scale reliability with a coefficient of 0.87.

For purposes of my study, the phrase, "I believe that" was dropped from the first five items as the respondent's belief was inherent in the item. The phrase "than other teams" was dropped from the item, As a result of social loafing, the team had fewer good ideas than other teams, as students had no way to know this. Finally, the word "presentation" was changed to "project" in the last item to fit the student team assignment.

Pilot Study

An IRB approved pilot study was conducted in advance of the current study to test procedures to administer items electronically, and to examine correlations among the three social loafing instruments. The pilot study was administered during Spring 2016.

Seventy-one students enrolled in two sections of Systems in Organizations in the School of Management at a small Northern California University were asked to complete a survey to measure the construct validity of the social loafing construct. Participation was voluntary, and was not compensated. The pilot sample was not included in the present study sample of $n = 160$.

Intercorrelations and factor analyses on the collected data indicated there may be multiple components to social loafing. An inspection of the intercorrelations indicated that George's instrument had little in common with Mulvey's, but appeared to share something in common with Jassawalla although they were not measuring exactly the same thing. Finally, Mulvey and Jassawalla appeared to have more in common than Mulvey and George, but the relationship was very slight. Table 5 presents the intercorrelations among George's, Mulvey's and Jassawalla's instruments computed from the pilot data.

Table 5

Correlations for Three Different Social Loafing Measures

	George	Mulvey	Jassawalla
George	1		
Mulvey	-0.07	1	
Jassawalla	0.75	0.22	1

Procedures

Students were asked to complete the instrument online (in Google Forms) during class. A paper version of an IRB-approved consent form was used with the first 66 participants and was later replaced with an electronic version embedded at the beginning of the survey. The first 66 participants were given the instrument URL after completing and turning in signed and dated consent forms. Participants who consented electronically by checking the box “Agree” were automatically given access to the survey. If they declined consent, the final page of the survey appeared where they were thanked for their participation, and were prevented from proceeding with the survey. Similarly, if they indicated they had not experienced social loafing under the demographic data that was collected, the final page of the survey appeared where they were thanked for their participation, and they were prevented from proceeding with the survey.

All students received the same instructions upon entry to the survey. Students were asked to recall a time when they observed social loafing in a student project team. Keeping in mind the time they recalled social loafing in a team project, student participants were asked to indicate their agreement with the social loafing items using a 5-point Likert scale: 1 = *Strongly Agree*, 2 = *Agree*, 3 = *Neither Agree nor Disagree*, 4 = *Disagree*, and 5 = *Strongly Disagree* for each survey item. Participants were required to answer each item

before they could proceed to the next item. Completion of the instrument took 12-15 minutes.

Preliminary Data Analysis

Demographic variables for gender, age, education level, language preference, and group size were collected in the Fall 2016 and Spring 2017 but not in Summer 2016. Therefore, they were not used for analysis in the present study. Data cleaning identified twenty-three missing cases for a single social loafing item from Apathy in the Fall 2016. This occurred because the survey set-up step to force the respondent to reply before moving to the next item was missed in error. Missing cases were imputed with the item mean score. No other missing values occurred. Data collection was obtained during Summer 2016, Fall 2016, and Spring 2017 semesters. As noted under Instrumentation, two of Mulvey's items were reverse-coded.

Table 6 presents the 45-items of the social loafing instrument from the 10 George items (G), the 13 Mulvey items (Mu), and the 22 Jassawalla items (J) along with means and standard deviations. Items are written as adapted and presented to respondents for the current study, and were organized in random order in the instrument.

Table 6

Author(A), Items, Means (M), and Standard Deviations (SD)

A	Items	M	SD
G	The social loafer deferred responsibilities he or she should have assumed to other team members.	2.19	.93
	The social loafer put forth less effort when other team members were around to do the work.	2.15	.90
	The social loafer did not do his or her fair share of the work.	2.14	1.09
	The social loafer spent less time helping team members if others were present to do this.	2.21	.89
	The social loafer put forth less effort than other members of the team.	1.92	1.12
	The social loafer avoided performing housekeeping tasks as much as possible.	2.56	1.17
	The social loafer left work that should have been completed by him or her for other team members to complete.	1.94	.87
	The social loafer was less likely to exercise initiative as long as other team members were available to do this.	2.01	.89
	The social loafer took it easy and let other team members do the work.	1.99	.86
	The social loafer deferred project-related tasks to other team members when they were present.	2.68	1.01
Mu	Members of my group tried as hard as they could. (R)	3.59	1.11
	Members of my group were “free riders”.	2.66	1.03
	Members of my group contributed less than I anticipated.	2.96	1.09
	Given their abilities, my group members were did the best they could. (R)	3.66	1.03
	Because some members did not try as hard as they could, the rest of my group put in less effort.	3.51	1.04
	Because some members put in less effort than they could, other group members did not try as hard as they could.	3.37	1.14
	Because some members did not do their share, I don’t think anyone in my group worked as hard as they could on this project.	3.45	1.19
	Because some members did not expend much effort on this project, others in the group likely reduced their effort.	3.46	1.06
	Because some members did not contribute as much as they could, I did not try my best on this project.	3.85	1.03
	Because some members put in less effort than they are able, I did not continue to work hard on the project.	3.91	1.07
	Because some members did not try their best on the project, I did not try my best either.	3.97	1.01
	Because some members did not try as hard as they could, I did not work as hard as I could on the project.	3.93	1.05
	Because some members did not try as hard as they could, I reduced my effort on the project.	3.81	1.05
J	The social loafer was not interested in the topic/task assigned to the team	2.47	.91
	The social loafer did not care about earning a high grade in the class	2.63	1.08

The social loafer expected others to pick up the slack with no consequences to him/her.	2.26	.97
The social loafer just did not care.	2.53	1.10
The social loafer was just plain lazy.	2.51	1.07
The social loafer had trouble paying attention to what was going on in the team.	2.49	1.07
The social loafer engaged in side conversations a lot when the team was working.	2.90	1.16
The social loafer mostly distracted the team's focus from its goals and objectives.	2.99	1.02
The social loafer did not like one or more of the team members.	3.21	1.07
The social loafer did not get along with one or more members of the team.	3.18	1.10
The social loafer was not part of the clique and did not seem to belong to the team.	3.06	1.14
The social loafer came poorly prepared for team meetings.	1.95	.90
The social loafer had trouble completing team-related homework.	2.13	1.01
The social loafer did a poor job of the work he or she was assigned.	2.40	1.18
The social loafer did poor quality work overall on the team.	2.04	.92
As a result of social loafing, team members had to waste time explaining things to the social loafer.	2.14	.98
As a result of social loafing, other team members had to do more than their fair share of the work.	1.91	.87
As a result of social loafing, other team members had to redo or revise the work done by the social loafer.	1.88	1.00
As a result of social loafing, the work had to be reassigned to other team members.	2.16	1.02
As a result of social loafing, the team had fewer good ideas.	3.20	1.11
As a result of social loafing, the team missed deadlines.	3.42	1.21
As a result of social loafing, the team's final project was not as high a quality as that of other teams.	2.82	1.14

Note: For purposes of the current study, all items were converted to 5-point Likert scales: 1 = *Strongly Agree*, 2 = *Agree*, 3 = *Neither Agree nor Disagree*, 4 = *Disagree*, and 5 = *Strongly Disagree*. (R) Items were reverse-coded.

Means and standard deviations were computed for each item. An inspection of the mean scores for all scales indicates the means range from 1.88 to 3.97. The highest mean scores were for five items that measured Sucker Effect ranged from 3.91 – 3.97 indicating that, on average, students are not inclined to reduce their own effort just because one or more of the other team members has chosen to do so. The two reverse-coded items to measure Perceived Social Loafing showed disagreement with the perception that team members social loafed, indicating that respondents thought their team members actually did try as hard as they could and that given their abilities, team members did do the best

that they could. Very low mean scores related to Poor Work Quality and Letting Others Pick Up the Slack showed unambiguous agreement with social loafing behaviors. The scores indicated that the social loafer would show up poorly prepared for meetings, and would then let other team members do more than their fair share of the work making revisions and redoing the work to compensate for the social loafer.

Description of Factor Analysis

The factor analyses were conducted using SPSS version 24 (*IBM SPSS for Windows*, 2016). All factor analyses were computed using four methods, a result of crossing two extraction methods (principal components analysis and principle axis factor analysis) and two rotation methods (varimax and promax with kappa = 4). This produced two component solutions, one with an orthogonal rotation and one with an oblique rotation, and two factor analysis solutions with orthogonal and oblique rotations. All four methods generally produced similar results, and therefore, only the factor analysis with oblique rotation is reported in Chapter IV. Table 7 presents the four methods.

Table 7

Extraction and Rotation Combinations Used to Factor Analyze Data

	Extraction	Orthogonal Rotation 1	Oblique Rotation 2
Method 1	Principal Components Analysis	(a) Varimax	(b) Promax
Method 2	Principal Axis Factoring	(a) Varimax	(b) Promax

Sample size is important in factor analysis because smaller samples are thought to result in less reliable coefficients, unexplained variability in the relationships, and produce results that do not generalize. Numerous factor analytic studies have attempted to

determine the optimal sample size. The debate has been provoked by worry over risks of sampling error (MacCallum, Widaman, Zhang, & Hong, 1999). Guidelines on sample size have ranged from 100 participants (Gorsuch, 1983) to 500 or more participants (Comrey & Lee, 1992), suggesting there is considerable disagreement over what sample size is large enough. Ratios of participants to variables ($N:p$) from 3:1 (Cattell, 2012) to 10:1 (Everitt, 1975) have also been suggested but the wide range has not proven useful to researchers.

MacCallum et al. (1999) has argued that standard errors are not just a function of sample size but are also subject to a number of factor analysis features such as rotation method, the number of factors, and the communality of factors. They suggest that other determinants of the adequacy of sample size allow sample sizes to be much lower when communalities, or the proportion of unexplained variance defined by the sum of squared factor loadings, are high ($> .4$). All of my factor analyses were computed based upon a sample size of $n = 160$. The ratio of participants to variables, 160:8 met the criteria of sample size sufficiency for data analysis.

To answer research question one, intercorrelations were computed and analyzed for both the authors' three instruments and their 10 subscales. Criteria used to evaluate factorability of the data to answer research questions two and three were reported. Correlation matrices were inspected to ensure reasonable factorability by verification that each item in all three scale items correlated $>.3$ with at least one other item. In addition, the Keyser-Meyer-Olkin measure of sampling adequacy was checked to ensure that it was $>.5$, the commonly recommended minimum value of sampling adequacy, and Bartlett's test of sphericity was examined to ensure the appropriateness of running a factor analysis.

The number of factors extracted from the data was supported by two criteria: Eigenvalues > 1 and scree plots. Finally, all items had primary factor loadings of .4 or higher.

Principal factor analysis with promax (with kappa = 4) produced the cleanest pattern matrices sufficient to explain the underlying structure of each factor with the most items that had loadings greater than 0.40. Consequently, only these results are reported here. Promax is an oblique rotation that results in factors that are correlated and share some variance in common. Oblique rotation produces three matrices: Pattern matrix, structure matrix, and factor correlation matrix. The pattern matrix reports distinct loadings and correlations. The structure matrix reports the correlations between each variable and factor. The factor correlation matrix reports correlations between all of the factors.

The general strategy for research question two was to factor each instrument using the procedures just described, and to compare the factor structure of this study's data to that based upon the author's hypothesized structure. A determination of the extent to which my research supported the theoretical framework of each author was made. The criteria used to form the basis for this determination included a comparison between the number of my derived factors and the author's measure; an inspection and comparison of the items that loaded on each derived factor with the author's measure; and a general interpretation of my factors contrasted with that of the author's interpretation. My three factor analyses generated a total of eight derived factors: Two factors for George, three factors for Mulvey, and three factors for Jassawalla.

For research question 3, I factor analyzed the eight derived factors. To perform this step, I composited each derived factor by adding together the items that loaded on it, then correlating and factor analyzing the correlations. Because of the indeterminacy of factor

scores, I used the unit weighting procedure described by Grice and Harris (1998). While the unit weighting procedure has problems as well, it has a rather long list of endorsers. To test the correspondence between the unit weights procedure I used all of the typical regression methods for computing factor scores. I correlated the unit weighted scores based on my principal factor analysis using promax (with kappa = 4) with the factor scores computed from my four separate factor analyses using the regression method. My unit weighting factor scores correlated between .94 and .99 for my first George factor and between .96 and .98 for my second George factor, suggesting that my unit weighting was justified.

Factor Labels

Labeling factors extracted is more of an art than a science. The process I followed to label factors was to review the content of each factor, and their factor loadings, paying attention to both the size and direction of each loading. My initial goal was to retain the author's original label if my factor was the same or almost the same as the author. In only one case, was this possible when my factor analysis generated the same factor as predicted by the author. I found that either the number of factors generated and/or the items loading on each factor varied between my results and the results of the authors. Therefore, I labeled my factors, as follows.

I carefully considered the items and the factor loadings in each derived factor to assess what it contained. I referred to online dictionaries and thesauruses to identify labels that would fit the nuance of each derived factor. As much as possible, I kept labels to a single word for simplicity, and included brief definitions for all labels that were used. This approach provided more depth of insight into each derived factor reported.

In summary, data collected from 160 respondents was used to test the construct validity of social loafing. Three measures of social loafing were factor analyzed and rotated using principal factor analysis with promax (with kappa = 4). The measures of social loafing that were subjected to factor analysis included George's 10-item instrument, Mulvey's 13-item instrument, and Jassawalla's 22-item instrument. The factor analysis generated eight derived factors: Two for George, three for Mulvey, and three for Jassawalla. These were analyzed, labeled, and compared to the author's theoretical framework. Finally, the eight derived factors were composited, and the composite variables were factor analyzed. Three derived factors were generated. They were also labeled, and then analyzed for the extent to which the factors helped to define the social loafing construct. The results of the factor analyses are reported in Chapter 4.

CHAPTER IV

RESULTS

The present study used correlational techniques and factor analysis to provide evidence on the construct validity of social loafing. The factor analysis was conducted on three social loafing instruments to answer the following research questions:

1. To what extent do the three social loafing measures and their subscales correlate?
2. To what extent does a factor analysis of the items in each of the three social loafing measures correspond to the theoretical framework underlying each author's instrument?
3. Do the results of a factor analysis of the factors identified in research question two help define the social loafing construct?

In this chapter, data are presented in three sections. In the first section, data from intercorrelations of the three instruments and their ten subscales are presented to answer the research question one. In the second section, factor analyses of each of the three instruments are presented to answer research question two. Next, my resulting factors will be compared with the theoretical framework represented by each of the author's rating scales. In the final section, factor analyses of my factors from research question two are presented to answer research question three. Methods of extraction, rotation, criteria, and factor labeling used will be described, and an analysis of observed similarities and differences will be discussed.

Analysis Related to Research Question 1

Research question one was, “To what extent do the three social loafing measures and their subscales correlate?” This question was addressed in two ways. First, the scale scores for each instrument were correlated, and second, total summed scores for each instrument were correlated. The George instrument had one scale, the Mulvey instrument had three scales, and the Jassawalla instrument had six scales.

All data analyses were based on data collected from 160 participants, and all correlations were Pearson product-moment correlation coefficients. Correlations greater than 0.20 are statistically significant at the 0.01 level of statistical significance using a two-tailed probability. Of course, the multiple correlations produced are not independent. For interpretive purposes, I will use 0.40 as the criterion, the same as I used to report the correlations between the items and the factors in the factor pattern matrices. A correlation of 0.40 accounts for 16% of the variance.

Total correlations across the three instruments were: George and Mulvey, $r = -0.07$ which indicates that George and Mulvey instruments only share about 0.49% of the variance; George and Jassawalla, $r = 0.77$ or 59% of the shared variance; and Mulvey and Jassawalla, $r = 0.23$ indicating they only share about 5% variance. These correlations were almost identical to the pilot study.

Table 8 presents the means, standard deviations, intercorrelations, and reliabilities among the 10 subscales from the three social loafing instruments.

Table 8

Means, Standard Deviations (SD), Intercorrelations, and Reliabilities Among the 10 Subscales of the Three Social Loafing Instruments

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1 Social Loafing	2.18	0.64	0.86									
2 Perceived Social Loafing	3.22	0.69	0.17	0.54								
3 Anticipated Lower Effort	3.45	0.88	0.04	0.58	0.79							
4 Sucker Effect	3.90	0.90	-0.26	0.22	0.65	0.91						
5 Apathy	2.48	0.73	0.66	0.24	0.20	0.01	0.76					
6 Distractive Disruptive Behavior	2.79	0.79	0.45	0.16	0.32	0.20	0.43	0.55				
7 Social Disconnectedness	3.15	0.85	0.25	-0.02	0.11	0.29	0.32	0.45	0.65			
8 Poor Quality Work	2.13	0.82	0.80	0.13	-0.06	-0.19	0.59	0.47	0.28	0.82		
9 Expect Others to Pick Up Slack	2.02	0.74	0.69	0.23	0.08	-0.25	0.55	0.32	0.15	0.66	0.75	
10 Overall Team Performance	3.15	0.77	0.14	0.32	0.56	0.47	0.22	0.26	0.26	0.16	0.20	0.36

Note: Reliabilities are reported on the diagonal

George's and two of Mulvey's scales were positively correlated. George's and Jassawalla's scales had strong positive correlations $> .4$ between Social Loafing and Apathy ($r = 0.66$), Distractive Disruptive Behavior ($r = 0.45$), Poor Work Quality ($r = 0.80$), and Expected Others to Pick Up the Slack ($r = 0.69$). Finally, Mulvey's and Jassawalla's scales were positively correlated. All correlations had coefficients $> .4$.

Analysis Related to Research Question 2

Research question two was "To what extent does a factor analysis of the items in each of the three social loafing measures correspond to the theoretical framework underlying each author's instrument?" The items of each instrument were factor analyzed and compared with each author's theoretical framework.

This section is divided into three subsections by author. Each subsection is introduced by the results reported in four different matrices: intercorrelations matrix, pattern matrix, structure matrix, and factor correlation matrix. The matrices are followed by a discussion of the criteria used to evaluate the results and the extent to which the findings support the author's theoretical framework.

George

Table 9 presents the intercorrelations of the 10 George items. The pattern, structure and factor correlation matrices are presented in Tables 10, 11, and 12. To assist in interpretation of the correlation matrix in Table 9, the entire written-out item can be found in Appendix B. The written-out items are sorted by their identification number (ID#).

Factorability of George's ten-item instrument to measure social loafing was examined. First, the item correlation matrix in Table 9 showed that every item correlated

Table 9

Intercorrelation Matrix for George's 10 Items

	ID#	1	2	3	4	5	6	7	8	9	10
1	G1	1.00									
2	G2	0.46	1.00								
3	G3	0.15	0.27	1.00							
4	G4	0.35	0.49	0.22	1.00						
5	G5	0.18	0.24	0.79	0.19	1.00					
6	G6	0.13	0.28	0.59	0.29	0.62	1.00				
7	G7	0.41	0.52	0.43	0.56	0.37	0.35	1.00			
8	G8	0.17	0.49	0.33	0.53	0.31	0.32	0.62	1.00		
9	G9	0.26	0.47	0.53	0.44	0.50	0.45	0.53	0.44	1.00	
10	G10	0.27	0.29	0.26	0.46	0.15	0.33	0.34	0.33	0.33	1.00

Table 10

Pattern Matrix Results for George's Data

Items	Shirker	Feckless
Spent less time helping team members if others were present to do this.	.83	
Left work s/he should have completed for other team members to complete	.72	
Put forth less effort when other members were around to do the work	.72	
Was less likely to exercise initiative as long as other members were available	.64	
Deferred responsibilities s/he should have assumed to other team members	.52	
Deferred project-related tasks to other team members when they were present	.49	
Took it easy and let other team members do the work	.44	
Put forth less effort less effort than other team members		.96
Did not do his or her fair share of the work		.90
Avoided performing housekeeping tasks as much as possible		.64
Percentage of variance	44.76	15.77
Eigenvalues	4.47	1.58

Note: All of these items begin with the phrase, "The social loafer..." Some items have been slightly modified for space considerations.

Table 11

Structure Matrix for George's Data

Items	Shirker	Feckless
Left work s/he should have completed for other team members to complete	0.76	
Spent less time helping team members if others were present to do this.	0.78	0.49
Put forth less effort when other members were around to do the work	0.70	
Was less likely to take initiative as long as other members were available	0.68	0.41
Took it easy and let other team members do the work	0.48	
Deferred project tasks to other team members when they were present	0.51	
Deferred responsibilities s/he should have assumed to other team members	0.64	0.61
Put forth less effort less effort than other team members		0.89
Did not do his or her fair share of the work	0.43	0.88
Avoided performing housekeeping tasks as much as possible	0.43	0.69

Table 12

Factor Correlation Matrix for George's Data

Factor Labels	1	2
1 Shirker	1.00	
2 Feckless	0.52	1.00

.3 with at least one other item, indicating reasonable factorability. The determinant score to measure multicollinearity was .01 above the rule of thumb ($> .00001$), indicating there was an absence of multicollinearity in the data. The Kaiser-Meyer-Olkin measure of sampling adequacy was .83, and Bartlett's test of sphericity was significant ($\chi^2(45) = 700.85, p < .05$), indicating appropriateness of running a factor analysis on the data.

Two criteria used to determine the number of factors were eigenvalues > 1 and the scree plot. Extraction produced a two-factor solution with eigenvalue factors > 1 . The first factor had an eigenvalue of 4.47 that explained 44.76% of the variance, and the second factor had an eigenvalue of 1.58 that explained 15.77% of the variance. An examination of the scree plot revealed leveling off after the second eigenvalue thus supporting the number of factors extracted. Finally, no items were eliminated nor cross-loadings found. Reliabilities for the items making up each factor were estimated using

Cronbach's Alpha. The alphas were strong: .83 for Shirker and .86 for Feckless. Elimination of any items did not result in higher alpha scores.

Inspections of both pattern (Table 10) and structure (Table 11) matrices identified two factors, Shirker and Feckless. Shirker indicates a social loafer will abdicate responsibility when others are around to do the work, and Feckless indicates a social loafer will lack initiative when working alone. Intercorrelations in Table 12 suggest that the two factors are moderately correlated, 0.52 accounting for 27% shared variance.

A comparison of George's theoretical framework and its single factor solution with my two-factor solution showed that all of her items were retained. An inspection of the items that loaded on each factor in my two-factor solution appeared to distinguish between social loafing in both the presence and the absence of other team members indicating that social loafing was perhaps more nuanced than originally conceived by George. However, I do not think this distinction detracts but rather adds to her conception of social loafing. Therefore, I found that my data supported her theoretical framework.

Mulvey

Table 13 presents the intercorrelations of the 13 Mulvey items. The pattern, structure and factor correlation matrices are presented in Tables 14, 15, and 16. To assist in interpretation of the item correlation matrix in Table 13, the entire written-out items can be found in Appendix B. The written-out items are sorted by their identification number (ID#).

An inspection of the item correlation matrix in Table 13 shows that every item correlates .3 with at least one other item indicating reasonable factorability. The

determinant score to measure multicollinearity is .000 below the rule of thumb ($> .00001$) that may indicate multicollinearity in the data, but an inspection of the correlation matrix does not support that conclusion. Correlations among Perceived Social Loafing, Anticipated Lower Effort and Sucker Effect were all low to moderate. The Kaiser-Meyer-Olkin measure of sampling adequacy is .84, and Bartlett's test of sphericity is significant ($\chi^2 (78) = 1254.79, p < .05$), indicating appropriateness of running a factor analysis.

Two criteria used to determine the number of factors were eigenvalues > 1 and the scree plot. Extraction produced a three-factor solution with eigenvalue factors >1 . An examination of the scree plot reveals leveling off after the third eigenvalue >1 thus supports the number of factors extracted. The first factor has an eigenvalue of 5.53 that explained 42.52% of the variance, the second factor has an eigenvalue of 1.91 that explained 14.65% of the variance, and the third factor has an eigenvalue of 1.39 that explained 10.67% of the variance.

During an inspection of the factors, two items were eliminated because they failed to meet minimum criteria of having a primary factor loading of .4 or above. The two items removed were "Because some members did not try as hard as they could, the rest of my group put in less effort" and "Because some members did not expend much effort on this project, others in the group likely reduced their effort". Internal consistency for each

Table 13

Intercorrelation Matrix for Mulvey's 13 Items

	ID#	1	2	3	4	5	6	7	8	9	10	11	12	13
1	M1	1.00												
2	M2	0.11	1.00											
3	M3	0.21	0.51	1.00										
4	M4	0.42	-0.07	0.15	1.00									
5	M5	0.19	0.24	0.39	0.36	1.00								
6	M6	0.31	0.30	0.42	0.29	0.52	1.00							
7	M7	0.22	0.02	0.19	0.43	0.48	0.30	1.00						
8	M8	0.34	0.26	0.38	0.35	0.54	0.72	0.43	1.00					
9	M9	-0.02	0.10	0.16	0.21	0.61	0.25	0.50	0.39	1.00				
10	M10	0.20	0.11	0.21	0.21	0.42	0.49	0.44	0.63	0.57	1.00			
11	M11	0.02	0.10	0.11	0.18	0.39	0.37	0.33	0.54	0.59	0.65	1.00		
12	M12	0.00	0.12	0.09	0.16	0.42	0.38	0.32	0.53	0.59	0.62	0.91	1.00	
13	M13	0.00	0.12	0.16	0.22	0.58	0.26	0.48	0.45	0.82	0.63	0.66	0.67	1.00

Table 14

Pattern Matrix Results for Mulvey's Data

Items	"Sucker Effect" Aversion	Copes to Get By	Layabout
Some did not try as hard as they could so I did not try hard	0.91		
Some did not try their best, so I did not try my best either	0.91		
Some did not try as hard as they could so I reduced my effort	0.86		
Some did not contribute as much as they could so I did not try	0.78		
Some put in less effort than they are able so I did not work hard	0.67		
Given their abilities my group members did the best they could		0.77	
Members of my group tried as hard as they could		0.60	
Some did not do their share, so others did not worked as hard		0.47	
Members of my group were "Free-Riders"			0.76
Members of my group contributed less than I anticipated.			0.69
Some did not try as hard as they were able, so others did not try			0.41
Percentage of variance	42.52	14.65	10.67
Eigenvalue	5.53	1.91	1.39

Note: Some items have been slightly modified for space considerations. Factor labels were named to represent the factors.

Table 15

Structure Matrix Results for Mulvey's Data

Items	"Sucker Effect" Aversion	Copes to Get By	Layabout
Some did not try their best, so I did not try my best either	0.87		
Some did not try as hard as they could so I did not try hard	0.86		
Some did not try as hard as they could so I reduced my effort	0.85		
Some did not contribute as much as they could so I did not try	0.78		
Some put in less effort than they are able so I did not work hard	0.75	0.43	
Given their abilities my group members did the best they could		0.72	
Some did not do their share, so others did not worked as hard	0.51	0.58	
Members of my group tried as hard as they could		0.56	
Members of my group contributed less than I anticipated.			0.72
Members of my group were "Free-Riders"			0.69
Some did not try as hard as they were able, so others did not try	0.42	0.49	0.56

Table 16

Factor Correlation Matrix for Mulvey's Data Set

		1	2	3
1	“Sucker Effect” Aversion	1.00		
2	Copes to Get By	0.51	1.00	
3	Layabout	0.44	0.54	1.00

of the scales, determined by the items ranking in each scale, produced alphas that ranged from moderate to strong: .91 for Factor 1, .62 for Factor 2, and .67 for Factor 3.

Elimination of any items did not result in higher alpha scores.

Inspections of both pattern (Table 14) and structure (Table 15) matrices identified three factors, “Sucker Effect” Aversion, Copes to Get By, and Layabout. “Sucker Effect” Aversion describes an avoidance strategy used to avoid looking like a sucker for doing all the work while others social loaf. Copes to Get By describes the effect of social loafing on other members who try their best to muddle through despite of the presence of a social loafer. Layabout indicates someone who does nothing and avoids work at all costs.

Intercorrelations in Table 16 suggest that the three factors are positively correlated. “Sucker Effect” Aversion and Copes to Get By have a moderate correlation of 0.51 accounting for 26% shared variance. “Sucker Effect” Aversion and Layabout have a moderate correlation of 0.44 accounting for 19% shared variance. Layabout and Copes to Get By have a moderate correlation of 0.54 accounting for 29% shared variance.

A comparison of Mulvey’s theoretical framework with my derived factors showed items that loaded on each factor in my three-factor solution appeared to support the Sucker Effect and to partially support Perceived Social Loafing as originally conceived by Mulvey. As predicted by Mulvey, all five items that loaded on Mulvey’s Sucker Effect also loaded on my factor, “Sucker Effect” Aversion. However, the other factors

did not load as predicted. Despite my use of the same extraction and rotation methods used by the author, factor loadings for Mulvey's Perceived Social Loafing and Anticipated Lower Effort in his analysis could not be replicated in mine.

In the Mulvey analysis, both Perceived Social Loafing and Anticipated Lower Effort were comprised of four items each. In my analysis, the four items that comprised Mulvey's Perceived Social Loafing divided evenly (two each) between my two factors, Copes to Get By and Layabout. Further, my analysis resulted in dropping two of the four items that comprised Mulvey's Anticipated Lower Effort, while the remaining two items loaded (one each) on Copes to Get By and Layabout. This meant that Copes to Get By and Layabout were both composed of two of Mulvey's Perceived Social Loafing Items and one of Mulvey's Anticipated Lower Effort items for a total of three items in each factor. As a consequence, Mulvey's scale to measure Anticipated Lower Effort ceased to exist in my analysis. In contrast, Mulvey's scale to measure Perceived Social Loafing was partially replicated. Two items to measure Perceived Social Loafing that loaded on Layabout were "Members of my group contributed less than I anticipated" and "Members of my group were 'Free-Riders'" together with the single Anticipated Lower Effort item, "Some did not try as hard as they were able so others did not try as hard as they were able". Collectively, the three items that loaded together on Layabout retained the character of Perceived Social Loafing.

As a result of this analysis, I concluded that Mulvey's theoretical framework was partially supported as a whole. Specifically, Sucker Effect was completely supported, Perceived Social Loafing was partially supported, and Anticipated Lower Effort found no support from my research.

Jassawalla

Table 17 presents the intercorrelations of the 22 Jassawalla items. The pattern, structure and factor correlation matrices are presented in Tables 18, 19, and 20. To assist in interpretation of the correlation matrix in Table 17, the entire written-out items can be found in Appendix B. The written-out items are sorted by their identification number (ID#).

An inspection of the correlation matrix in Table 17 indicates that all but two items (“The social loafer did not care about earning a high grade in the class” and “As a result of social loafing, the team’s final project was not as high a quality as that of other teams”) correlate .3 with at least one other item indicating reasonable factorability. It is noted later that neither of the two items loaded on a factor and thus, they were dropped from the analysis. The determinant score to measure multicollinearity is .000 below the rule of thumb ($> .00001$) and may indicate multicollinearity in the data; however, an inspection of the correlation matrix does not support that conclusion. Correlations among Apathy, Social Disconnectedness, Distractive Disruptive Behavior, Let Others Pick Up the Slack, Poor Work Quality, and Team Performance were all low to moderate. The Kaiser-Meyer-Olkin measure of sampling adequacy is .83 and Bartlett’s test of sphericity was significant, ($\chi^2 (231) = 1511.64, p < .05$) indicating appropriateness of running a factor analysis on the data.

Two criteria used to determine the number of factors included the examination of eigenvalues > 1 , and the scree plot. Extraction produced a five-factor solution with eigenvalue factors > 1 . However, the scree plot revealed leveling off beginning at the fourth Eigenvalue. A second factor analysis was run specifying four fixed factors to

Table 17

Intercorrelations Matrix for Jassawalla's 22 Items

ID #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1 J1	1.00																					
2 J2	0.25	1.00																				
3 J3	0.42	0.32	1.00																			
4 J4	0.36	0.56	0.52	1.00																		
5 J5	0.33	0.28	0.31	0.49	1.00																	
6 J6	0.14	0.16	0.28	0.35	0.35	1.00																
7 J7	0.13	0.06	0.23	0.26	0.34	0.26	1.00															
8 J8	0.16	0.17	0.16	0.29	0.21	0.26	0.37	1.00														
9 J9	0.11	0.19	0.07	0.21	0.11	0.06	0.38	0.35	1.00													
10 J10	0.15	0.14	0.16	0.26	0.19	0.08	0.38	0.36	0.77	1.00												
11 J11	0.08	0.14	0.16	0.25	0.35	0.45	0.12	0.08	0.15	0.25	1.00											
12 J12	0.22	0.41	0.44	0.54	0.39	0.49	0.19	0.23	0.12	0.11	0.27	1.00										
13 J13	0.17	0.25	0.47	0.38	0.54	0.46	0.28	0.14	0.07	0.06	0.38	0.56	1.00									
14 J14	-0.02	0.15	0.25	0.31	0.42	0.54	0.23	0.13	0.06	0.07	0.52	0.53	0.63	1.00								
15 J15	0.32	0.33	0.51	0.44	0.35	0.32	0.10	0.15	-0.02	0.09	0.31	0.58	0.48	0.47	1.00							
16 J16	0.35	0.33	0.32	0.38	0.30	0.42	0.23	0.23	0.17	0.25	0.26	0.58	0.36	0.33	0.50	1.00						
17 J17	0.32	0.23	0.50	0.24	0.27	0.22	0.03	0.08	-0.12	-0.03	0.14	0.42	0.43	0.30	0.60	0.38	1.00					
18 J18	0.25	0.21	0.33	0.28	0.31	0.21	0.14	0.17	0.04	0.09	0.09	0.42	0.37	0.26	0.54	0.43	0.46	1.00				
19 J19	0.31	0.14	0.43	0.32	0.24	0.09	0.10	0.21	0.03	0.04	0.04	0.39	0.37	0.28	0.51	0.28	0.59	0.48	1.00			
20 J20	-0.03	0.17	0.05	0.15	0.17	0.30	0.14	0.22	0.04	0.11	0.31	0.12	0.25	0.47	0.19	0.15	0.07	0.01	0.07	1.00		
21 J21	0.25	0.09	0.13	0.10	-0.07	-0.16	0.07	0.19	0.27	0.33	-0.08	-0.03	-0.20	-0.26	0.07	0.06	0.13	0.12	0.21	-0.02	1.00	
22 J22	0.15	0.13	0.18	0.12	0.00	0.17	0.04	0.23	0.07	0.14	0.01	0.14	0.07	0.10	0.17	0.09	0.06	0.11	0.11	0.29	0.21	1.00

Table 18

Pattern Matrix Results with Factor Labels for Jassawalla's Data

Items	Unen- gaged	Under per- forms	Dis- ruptive
Other team members had to do more than their fair share	0.83		
Work had to be reassigned to other team members	0.78		
The loafer did poor quality work overall	0.72		
The loafer expected others to pick up the work w/o consequences	0.66		
Team members had to redo/revise work done by the loafer	0.65		
The loafer was not interested in the topic/task assigned	0.57		
The loafer came poorly prepared to meetings	0.48		
Team members had to waste time explaining things to the loafer	0.44		
The social loafer just did not care	0.42		
The loafer did a poor job of the work s/he was assigned		0.88	
The loafer had trouble paying attention to what was going on		0.67	
The loafer was not in the clique & did not seem to belong		0.61	
The loafer had trouble completing team-related homework		0.58	
As a result of social loafing, the team missed deadlines		-0.52	
As a result of social loafing, the team had fewer good ideas		0.49	
The social loafer was lazy		0.40	
The loafer did not get along with one or more team members			0.88
The social loafer did not like one or more of the team members			0.85
The loafer engaged in side bars a lot when the team was working			0.44
The loafer distracted the team's focus from its goals/objectives			0.44
Percentage of variance	29.49	1.06	9.76
Eigenvalues	6.49	2.43	2.15

Note: Some items have been slightly modified for space considerations.

Table 19

Structure Matrix Results for Jassawalla's Data

Items	Unengaged	Underperforms	Disruptive
The loafer did poor quality work overall	0.78	0.52	
Other team members had to do more than their fair share	0.73		
Work had to be reassigned to other team members	0.68		
The loafer came poorly prepared to meetings	0.68	0.62	
The loafer expected others to pick up the work w/o consequences	0.67		
Team members had to redo/revise work done by the loafer	0.63		
Team members had to waste time explaining things to the loafer	0.59	0.46	
The social loafer just did not care	0.58		
The loafer was not interested in the topic/task assigned	0.50		
The loafer did a poor job of the work s/he was assigned	0.42	0.86	
The loafer had trouble completing team-related homework	0.59	0.73	
The loafer had trouble paying attention to what was going on		0.67	
The loafer was not in the clique & did not seem to belong		0.58	
The social loafer was lazy	0.48	0.55	
As a result of social loafing, the team had fewer good ideas		0.43	
The loafer did not get along with one or more team members			0.86
The social loafer did not like one or more of the team members			0.81
The loafer engaged in side bars a lot when the team was working			0.48
The loafer distracted the team's focus from its goals/objectives			0.48
As a result of social loafing, the team missed deadlines			-

Table 20

Factor Correlation Matrix for Jassawalla's Data

Factor Labels	1	2	3
1 Unengaged	1.00		
2 Underperforms	0.52	1.00	
3 Disruptive	0.26	0.16	1.00

extract. However, in my four-factor solution the fourth factor was defined by only a single item. Therefore, a third factor analysis was conducted with three fixed factors to extract.

The three-factor solution generated bore no cross loadings but had two items, "The social loafer did not care about earning a high grade in the class" and "As a result of social

loafing, the team's final project was not as high a quality as that of other teams" that did not load on any of the three factors. Consequently, these two items were deleted.

Internal consistency for each of the scales, determined by the items ranking in each scale, produced alphas that ranged from moderate to strong: .83 for Factor 1, .64 for Factor 2, and .75 for Factor 3. Elimination of any items did not result in higher alpha scores.

Inspections of both pattern (Table 18) and structure (Table 19) matrices identified three factors, Unengaged, Underperforms, and Disruptive. Unengaged describes someone who does the bare minimum, does not enjoy what s/he is doing, nor does s/he care. Underperforms describes someone who performs less well than expected. Disruptive describes someone who causes trouble and, as a consequence, stops the team from continuing as it should.

Intercorrelations in Table 20 suggest that the three factors are positively correlated. Unengaged and Underperforms have a moderate relationship of $r = 0.52$ accounting for 27% shared variance. Unengaged and Disruptive have a small relationship of $r = 0.26$ accounting for about 7% shared variance. Underperforms and Disruptive have a small relationship of $r = 0.16$ accounting for about 3% shared variance.

A comparison of Jassawalla's six-factor theoretical framework with my three-factor solution found no support in my research. This determination was made for several reasons. First, Jassawalla had six factors; I found only three. Second, none of the items loaded as predicted on any of my derived factors, described as follows. Items from her scales Apathy (3), Poor Quality Work (2), and Team Members Do More to Pick up the Slack (4) loaded on Unengaged. Items from her scales Apathy (1), Distractive Disruptive

Behavior (1), Social Disconnectness (1), Poor Work Quality (2) and Team Performance (2) loaded on on Underperforms. Two items from her scales Distractive Disruptive Behavior and Social Disconnectedness loaded on Disruptive. Third, two items noted earlier did not load on any factors. Fourth, the loadings on my factors as describe produced different interpretations of each factor than those hypothesized by Jassawalla.

In summary, factor analyses of the three social loafing instruments resulted in eight derived factors: Two for George, three for Mulvey, and three for Jassawalla. With the exception of one factor, the new factors were not identical in number or composition to the factors identified by the authors. New labels were applied to all eight factors to minimize confusion between the eight scores generated from my factor analyses and the authors' ten scales.

In the next section, item scores that had primary loadings on each of the eight derived factors were summed to form eight composite scores. The eight composites were then correlated and factor analyzed to investigate what conclusions about social loafing can be derived. Consequently, my eight factor labels from Research Question 2 become the names of the eight composite variables factored in the next section. This analysis resulted in a three-factor solution to which three new factor labels were applied. The analysis and its outcomes are described in the next section.

Analysis Related to Research Question 3

Research question three was, do the results of a factor analysis of the factors identified in research question two help define the social loafing construct? Eight composite variables were created based on the factor analyses reported under research question two and factor analyzed. A new and final three-factor solution was generated.

Table 21 presents the intercorrelations of the eight composite variables. The pattern, structure and factor correlation matrices are presented in Tables 22, 23, and 24. Finally, Table 25 presents a summary of the three derived final factors, eight composite variables, and their related items.

Factorability of the eight new scales was examined. First, the correlation matrix reported in Table 21 showed that every item correlated .3 with at least one other item, indicating reasonable factorability. The Kaiser-Meyer-Olkin measure of sampling adequacy was .65 and Bartlett's test of sphericity was significant, ($\chi^2 (28) = 542.48, p < .05$) indicating appropriateness of running a factor analysis on the data. The Determinant Score was 0.31 indicating an absence of multicollinearity.

Two criteria used to determine the number of factors were eigenvalues > 1 and the scree plot. Extraction produced a three-factor solution with eigenvalue factors > 1 . The first factor had an eigenvalue of 3.08 that explained 38.50% of the variance, the second factor had an eigenvalue of 1.78 that explained 22.26% of the variance, and the third factor had an eigenvalue of 1.10 that explained 13.80% of the variance. An examination of the scree plot reveals leveling off after the third eigenvalue > 1 thus supports the number of factors extracted. A three-factor solution accounted for 69.56% of the total variance.

An inspection of the correlation matrix in Table 21 shows moderate-strong positive correlations between Unengaged and Shirker of $r = 0.78$. This indicates these factors tapped something similar. The same could also be said for the two factors,

Table 21

Intercorrelation Matrix for the Eight Composite Variables

		1	2	3	4	5	6	7	8
1	Shirker	1.00							
2	Feckless	0.42	1.00						
3	"Sucker Effect" Aversion	-0.26	-0.18	1.00					
4	Copes to Get By	0.02	-0.28	0.34	1.00				
5	Layabout	0.26	0.31	0.31	0.30	1.00			
6	Unengaged	0.78	0.48	0.17	0.06	0.34	1.00		
7	Underperforms	0.48	0.73	0.07	-0.16	0.33	0.58	1.00	
8	Disruptive	0.22	0.09	0.34	0.00	0.26	0.26	0.36	1.00

Table 22

Pattern Matrix for the Eight Composite Variables

Composite Variables	Slacking	Free Riding	Falling Short
Unengaged	0.91		
Shirker	0.87		
"Sucker Effect" Aversion		0.92	
Layabout		0.47	
Disruption		0.41	
Underperforms			0.74
Feckless			0.71
Copes to Get By			-0.63

Table 23

Structure Matrix for the Eight Composite Variables

Composite Variables	Slacking	Free Riding	Falling Short
Unengaged	0.91		0.48
Shirker	0.84		0.43
"Sucker Effect" Aversion		0.84	
Layabout		0.53	
Disruption		0.44	
Underperforms	0.63	0.41	0.86
Feckless	0.55		0.80
Copes to Get By			-0.41

Table 24

Factor Correlation Matrix for the Eight Composite Variables

Factor		1	2	3
1	Slacking	1.00		
2	Free Riding	0.19	1.00	
3	Falling Short	0.54	0.11	1.00

Underperforms and Feckless, that also shared a moderate-strong correlation of $r = 0.73$ that also appeared to tap something similar. “Sucker Effect” Aversion had a small negative correlation with both Shirker (-0.26) and Feckless (-0.18). This indicates that as social loafing increased, team members did not reduce their own effort, in kind, to avoid the appearance of being a sucker for doing all of the work but may compensate by working harder. Copes to Get By had a small negative correlation with Feckless (-0.28) and Underperforms (-0.16). This indicates that student team members do not necessarily reduce their own effort, but instead choose to carry the weight of the loafer in a less than optimal situation.

Inspections of both pattern (Table 22) and structure (Table 23) matrices identified three factors: Slacking, Free Riding, and Falling Short. Slacking describes someone who turned in poor quality work, did not help out, did not care much about the project/grade, and did not do anything if others were around to do it.

Free Riding describes a capable member who does not work hard and engages in behavior that is disruptive in ways that stimulates social loafing in other team members. Although Free Riding contains two low factor loadings on Layabout = 0.47 and Disruptive = 0.41, they establish the conditions for the “Sucker Effect” Aversion to occur. As noted

earlier, “Sucker Effect” Aversion is the decision by other team members to also social loaf to avoid being exploited by the social loafer.

Falling Short describes substandard performance in which a person has trouble fitting in, paying attention, meeting deadlines, and turning in poor work quality. This contributes to a negative perception by other team members of their own ability to perform well in the circumstances. Copes to Get By had a single negative factor loading in contrast with the other two scores for Feckless and Underperforms. This indicated that when a social loafer engages in behaviors that detract from the efficiency of the team, overall team performance is impaired to some extent. As a consequence, team members find themselves falling short as they are only able to do the best they can under these circumstances.

Intercorrelations in Table 24 suggest that the three factors are positively correlated. Slacking and Free Riding have a small relationship of $r = 0.19$ accounting for about 4% shared variance. Slacking and Falling Short have a moderate relationship of $r = 0.54$ accounting for about 29% shared variance. Free Riding and Falling Short have a small relationship of $r = 0.11$ accounting for about 1% shared variance.

Table 25 summarizes the three Final Factors, the Intermediate Factors and the 45 Items that loaded on each factor. Items are sorted in the order of their factor loadings computed in the section, Analysis of Research Question 2 with highest loadings first. Intermediate Factors were composited and factor analyzed to produce the Final Factors.

Table 25

Summary of Derived Final Factors, the Eight Composite Variables, and Their Related Items

Final Derived Factors	Eight Composite Variables	Items
Slacking	Unengaged	Other members had to do more than their fair share Work had to be reassigned to other team members The loafer did poor quality work The loafer expected others to pick up the slack w/o consequences Team members had to redo/revise work done by loafer The loafer was not interested in the topic/task assigned The loafer came poorly prepared to meetings Team members had to waste time explaining things to the loafer The social loafer just did not care
	Shirker	Loafer spent less time helping team members if others were present to do it Loafer left work s/he should have done for other team members to complete Loafer put forth less effort when other members were around to do the work Loafer was less likely to take initiative if other members were available Loafer deferred responsibilities s/he should have done to other members Loafer deferred related tasks to other team members when they were present Loafer took it easy and let other team members do the work
Free Riding	SE Aversion	The loafer did not get along with one or more team members The social loafer did not like one or more of the team members The loafer engaged in side bars a lot when the team was working The loafer distracted the team's focus from its goals/objectives
	Layabout	The loafer did not get along with one or more team members Members of my group were "Free-Riders" Members of my group contributed less than I anticipated. Members did not try as hard as they could, so others did not try hard
	Disruptive	The loafer did not get along with one or more team members The social loafer did not like one or more of the team members The loafer engaged in side bars a lot when the team was working The loafer distracted the team's focus from its goals/objectives
Falling Short	Feckless	The loafer put forth less effort than other team members The loafer did not do his or her fair share of the work The loafer avoided performing housekeeping tasks as much as possible
	Underperforms	The loafer did a poor job of the work s/he was assigned The loafer had trouble paying attention to what was going on The loafer was not in the clique & did not seem to belong to the team The loafer had trouble completing team-related homework As a result of social loafing, the team missed deadlines As a result of social loafing, the team had fewer good ideas
	Copes to Get By	Given their abilities my group members did the best they could Members of my group tried as hard as they could Members did not do their share, so no one worked as hard as they could

Summary

A review of the data analysis revealed three findings. First, it confirmed that the three instruments do not measure exactly the same thing. George's and Jassawalla's instruments overlap about 55%; Mulvey's instrument shares little in common with Jassawalla, and nothing at all with George. Second, the findings showed that although George, Mulvey, and Jassawalla collectively had 10 scales, my factor analysis resulted in just eight factors. Third, the factor analysis of the eight factors suggested three common factors, and that these common factors do help to define the social loafing construct.

CHAPTER V

SUMMARY, LIMITATIONS, DISCUSSION, AND IMPLICATIONS

This chapter will conclude this dissertation with a summary of the study, its limitations, followed by a discussion of the results, and close with implications for theory and practice. The summary provides a brief overview of the background including the problem, purpose, theoretical framework, research questions, and methods. Limitations will describe influences that could not be controlled and their potential impact on the methodology and findings. The discussion will interpret and describe the findings as they relate to the larger body of social loafing research. Finally, Implications will describe how the findings may impact future research and practice.

Summary of Study

The purpose of this research was to examine the construct validity of social loafing. Social loafing is a phenomenon of individual motivation that plagues teamwork. It is often described as a motivation loss in which one or more team members exert less effort on a team task than if they were working on the same task alone. Social loafing has been shown to have relationships with antecedent, behavioral, and consequential variables that impair team processes and productivity. In instruments intended to measure social loafing and its related constructs, problems of construct validity emerged during a pilot study that has led to this investigation.

Social loafing in teamwork is robust. Characterized as a “social disease” (Latané et al., 1979), and “.... a bane of group productivity” (Blaskovich, 2008), researchers have studied its impact on teamwork for more than 40 years as it applies to both physical and cognitive team tasks. Its inherent negative consequences for effective teamwork,

specifically as it relates to team productivity and outcomes, has propelled the study of social loafing from the social sciences into the workplace.

One of the earliest controlled studies of social loafing attempted to reexamine data from a French engineer, Max Ringlemann, who stumbled upon social loafing as an incidental outcome of other research. Curious about the phenomenon, Ingham et al. (1974) set out to investigate Ringlemann's data that showed an inverse relationship between group size and individual effort in a rope-pulling team task. Ingham et al. built a wooden rope-pulling apparatus to electronically measure the rope-pulling effort of participants. Individuals measured pulling alone exhibited on average 130 pounds of efficiency. In contrast, three people pulling together averaged 106.6 pounds, and six people pulling together averaged 101.4 pounds demonstrating drops in effort to 82% and 78%, respectively, of their average individual efficiency. These findings replicated Ringlemann's data.

But why? Was it, as Ringlemann speculated, a coordination loss or something else? To explain the decrease in efficiency, Ingham performed a follow-up study. Using the same apparatus and activity, he employed the use of five confederates trained in simulating rope-pulling to control for coordination losses. A participant working alone with two confederates who were only pretending to pull on the rope had a pulling efficiency at 85% of his average individual efficiency. Interestingly, no further decline was observed by adding more confederates, and actually indicated a slight uptick in pulling efficiency to 86% with the addition of the sixth person. Therefore, Ingham was able to provide evidence that group size was inversely related to individual effort. Furthermore a curvilinear relationship between group size and individual performance indicated the

decline in effort was due to the negative impact group size had on individual motivation while working in a group task. Thus, Ingham et al. found that the reduction in effort was due to a motivation loss not a coordination loss.

Research on the deleterious effect of group size on individual performance continued. In the next two studies to investigate this phenomenon, Latané et al. (1979) used easy, repetitive, and redundant tasks: Clapping, cheering, and shouting. In a semi-circle, six participants were asked to clap and cheer as loud as they could alone, in pairs, in groups of four, and in groups of six. Volume was measured with a General Radio sound-level meter. Individual clapping averaged 84 decibels (dB) and individual cheering averaged 87 dB. In contrast, two-member groups performed at 71% of the sum of their individual capacity, four-person groups performed at 51%, and six-person groups performed at 40%, thus affirming the inverse nature of the relationship between group size and individual performance characterized by Latané as social loafing. The study that followed controlled for both coordination losses and social facilitation. Latané was interested in Ingham's findings that motivation losses were curvilinear. He suspected that the decline in individual effort would have continued if not for the presence of others that may have been motivating in and of itself. To control for this, individual participants were sequestered, separated by curtains. Participants were told that other team members were behind the curtain, and that they would be able to hear them shout using headsets. Participants were asked to shout alone, then in real groups of two, and real groups of six followed by shouting in pseudo groups of two and six. In the latter case, team member shouting had been audio-recorded and was played back in the headsets.

What they found is that real groups of two shouted at 66% of capacity and real groups of 6 at 36%. In the two-person pseudo groups, individuals shouted at 82% of capacity, and in the six-person pseudo groups, 74% of capacity. From these results, Latané found that differences between pseudo groups and individual performance were the result of motivation losses whereas differences between real and pseudo groups were a function of coordination losses. Further, he thought the findings suggested that mental calculations of goals, outcomes, and rewards, assessment of group size, and an absence of ways to measure contribution could be additional variables that also influence social loafing.

In 1983, Kerr and Bruun investigated the extent to which individual member contribution to group success matters, and the extent to which task visibility and task difficulty deter social loafing. Three studies followed. The first study examined the likelihood that individuals would reduce their effort when the group was assessed on either the highest-ability member's performance, or the lowest-ability member's performance. As hypothesized, low-ability members contributed less when the group score was based on only high-ability member contribution (conjunctive task) whereas high-ability members contributed less when the group score was based on only low-ability member contribution (disjunctive task). Finally, a hypothesis that a calculus of how much effort was needed for success based on increases in group size was not confirmed.

The second study hypothesized that in both conjunctive and disjunctive tasks, increases in group size would promote perceptions in members that their effort to group success was dispensable. As a consequence, members would social loaf as group size increased and high-ability or low-ability member scores mattered. This prediction was supported.

Further, the authors predicted that members would exert the most effort with a moderately difficult task for both conjunctive and disjunctive tasks. This prediction was not supported. Task difficulty did not increase member effort when only the highest or lowest-ability member score mattered.

In the final experiment, task visibility, measured by individual and group feedback, was investigated for its ability to deter social loafing. In this study, individuals and groups received performance feedback. The findings showed that although task visibility modified the relationships between group size and member ability, it did not eradicate social loafing altogether.

Together, these studies demonstrated how some task features affect the perception that one's effort is dispensable to the success of a task. The task features include member ability and group size. The study found that it may be that when group members believed their effort to be dispensable, they had a greater tendency to social loaf. Further, the study indicated that neither task difficulty nor task visibility served as deterrents to social loafing as long as the individual perceived their contribution as dispensable.

In contrast, a study to investigate the intrinsic and extrinsic motivators of social loafing found that task visibility did serve as a deterrent to social loafing to some extent (George 1992).

George hypothesized that task visibility was an extrinsic motivator that would reduce social loafing. In her study to understand the effect of intrinsic and extrinsic motivations of social loafing in the workplace, George found that task visibility had a statistically significant negative correlation with social loafing. In contrast to the findings of Kerr and Bruun (1981), George was able to show that although task visibility did not

eliminate social loafing altogether, it did serve as a deterrent such that when the inputs to a task could be physically observed and accounted for by someone-in-charge, in this case, a sales supervisor, employees engaged in social loafing less.

A study to investigate social loafing in virtual teams, trust and cohesion were examined for their ability to reduce social loafing in “deadbeats” and “deserters”. Deadbeats performed 10% of the work while deserters left the team altogether (Furumo, 2009). Furumo hypothesized that active team members will experience higher levels of trust, or faith in the competencies and motivations of other team members, than deadbeats and deserters, and that deserters will experience less trust than deadbeats. As predicted, Furumo found that team members who experienced more trust were active and did not social loaf whereas deadbeats and deserters reported lower trust, and deadbeats experienced trust to some degree whereas deserters did not.

In these circumstances, trust among team members reduced social loafing. But what happens when trust increases social loafing? Karau and Williams (1997) who categorized trust into high, medium, and low came up with counterintuitive findings. In a brainstorming activity, team members with medium to high trust actually generated fewer ideas in groups than when working alone. Further, those who had low trust picked up the slack for underperforming team members because they were not trusted to carry their own weight. Generally, trust has been characterized as the super glue of team relationships as it tends to facilitate cooperation, communication, information sharing, and performance in both FtF and virtual teams.

Furumo (2009) also predicted that deadbeats would experience more cohesion than deserters, and that team members who did not social loaf at all would experience higher

levels of cohesion than either deadbeats or deserters. Cohesion, a variable that has long been associated with cultivating a sense of “we-ness”, is thought to be strong enough to increase team satisfaction, motivation, confidence, loyalty, and duration, while providing a strong defense against negativity and conflict.

Both predictions were supported. The findings also indicated the incidence of social loafing may be higher in virtual teams, especially in the face of conflict. In a study to examine the antecedents of social loafing in teams that met face-to-face, Liden et al. (2004) hypothesized that group cohesiveness, aggregated to the group level, is negatively related to social loafing. The hypothesis was supported demonstrating that the higher team cohesion is, the less social loafing the team will experience. Thus, both trust and cohesion among team members are variables that have both been shown to affect social loafing such that the more trust and cohesion a team possesses, the less likely individual team members will social loaf.

In another study to examine social loafing in virtual teams, findings showed a negative correlation between perceptions of positive distributive justice and social loafing in virtual teams (Piezon & Ferree, 2008). Distributive justice describes a perception of fairness in the distribution of rewards in teams, and is concerned with equitable distribution of a shared reward based on individual contribution of effort. In teamwork, team members receive the same amount of money or the same grade—even those who have social loafed throughout the project. When rewards are wrongly distributed to undeserving team members, the lack of fairness may prompt more social loafing. The findings suggested when students perceive that rewards are commensurate with the amount of effort invested in a team project, they were less inclined to social loaf. However, when

team members are aware that members who underperform are compensated equally, they may reduce their own effort.

This phenomenon is closely related with the consequences of another variable, perceived social loafing. Perceived social loafing is a subjective assessment of the extent to which other team members carry their weight. If social loafing is suspected, that perception alone may drive other team members to reduce their own effort. Team members do not like to be exploited in this way nor perceived by the loafer as sucker for doing all of the work. In a study to investigate the effect of perceived social loafing on “actual” social loafing, Jackson and Harkins (1985) tested the notion that when team members expect other team members to social loaf, they will reduce their own effort to preserve equity in the distribution of work. The findings showed that when a confederate said that she would try as hard as she could on a shouting activity, the participant tried as hard as she could on both the individual and the collective condition. Similarly, when the participant was told by the confederate that she would try less hard than she was capable, the participant modified her own effort to match the confederate.

In a study to investigate the influence of social perceptions on group goal processes, Mulvey and Klein (1998) predicted that perceived social loafing would be positively related to anticipated lower effort and the sucker effect. This hypothesis was supported, suggesting that when team members infer that others are social loafing, they will lower their own aspirations for the team and effort to the team because they do not wish to be subject to the sucker effect, or taken advantage of by lower performing teammates. The research on perceived social loafing indicates that the anticipation can be as consequential as the real thing. Concern that fellow team members will not pull their

weight can have real consequential damages to team goals, commitment, and performance as actual social loafing.

Jassawalla et al. (2009) investigated social loafing from the perspective of students. Apathy and social disconnectedness were found to be highly correlated with social loafing. Further, Jassawalla et al. found the two antecedents more accurately articulated the student experience of social loafing in project teams. Apathy, or disinterest in the topic at hand, and social disconnectness, or students who engage in distractive, disruptive behaviors, suggest that students are more concerned with work quality not work quantity as measured in earlier social loafing research. Students do not equate social loafing so much with slacking as with distractive social behaviors and lack of interest. The findings from this study suggest that students believe they can compensate for poor quality work associated with apathy but that they cannot overcome the distractive, disruptive behaviors associated with social disconnectedness.

Most research on social loafing, a sample of which is summarized here, is highly concentrated on trying to identify both causes and deterrents of social loafing. A preponderance of research in both face-to-face and virtual teams has focused on both group size and group member proximity to one another and has established that increases in both group size and distance between members increases social loafing. The research has also shown that when tasks are too easy, too redundant, and/or task rewards are not distributed fairly, team members will reduce their effort. But other research has found that task difficulty, task heterogeneity, task visibility as well as affective bonds among team members such as trust and cohesion may deter social loafing. The research suggests an

elaborate nomological net of constructs surrounding social loafing, yet the research has not fully exploited this network.

Much of the research has been performed in controlled studies, and more recently in field research. Field research has almost exclusively examined the correlational relationships between social loafing and its related variable constructs. Most of the correlational research has relied upon George's 10-item scale developed to measure social loafing in sales associates in a retail store. The instrument was developed 25 years ago, and has since been adapted for use both at work and in schools. Other correlational research has relied upon Mulvey's 13-item instrument developed nearly twenty years ago and has been mostly used in part to measure perceived social loafing. The most recently-developed instrument is Jassawalla's 2009 22-item instrument that has only been used in original research.

Construct validity is the key feature of any measurement (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014), yet is a step often skipped. Scales used to measure latent variables rely heavily on the accurate attribution of a specified behavior to measure an inferred trait that cannot be observed (Cronbach & Meehl, 1955; Smith, 2005). Therefore, of necessity, construct validity of scales must be revisited often to ensure they continue to measure what they purport to measure. Up to now, it appears that no one has investigated the construct validity of social loafing since the development of the scales used in this study. Therefore, the purpose of this research was to study the construct validity of social loafing.

Although the volume of research amassed over decades of interest in construct validity is overwhelming, there is no single theory that guides the research. At best, the research on construct validity relies upon the two principles of convergent and discriminant validity. Convergent validity is the extent to which two measures of a construct that should be related are related whereas discriminant validity is the extent to which two measures that should not be related are not related (Campbell & Fiske, 1959). According to Campbell and Fiske, demonstrating both convergent and discriminant validity are necessary to the establishment of construct validity.

Social loafing as a motivation loss is an important variable for study because of its negative influence on teams to fully realize their potential. Yet the measures used to study social loafing do not have much evidence of construct validity. Therefore, data collected on social loafing in this study was factor analyzed to assess construct validity of three instruments used in the literature to measure social loafing to answer the following research questions:

1. To what extent do the three social loafing measures and their subscales correlate?
2. To what extent does a factor analysis of the items in each of the three social loafing measures correspond to the theoretical framework underlying each author's instrument?
3. Do the results of a factor analysis of the factors identified in research question two help define the social loafing construct?

The three instruments used in the factor analysis were published by George (1992), Mulvey and Klein (1998), and Jassawalla et al. (2009). Ten items from George, 13 items

from Mulvey, and 22 items from Jassawalla totaling 45 items were compiled into a single social loafing instrument. The instrument was administered to 195 undergraduates and graduates enrolled in management courses at a Northern California university. Data collection was conducted during three consecutive semesters: Summer 2016, Fall 2016, and Spring 2017. Student consent to participate and experience with social loafing was required to gain online access to the full instrument. Data collected from a sample size of 160 was tabulated and factor analyzed.

Items were extracted using principal axis factoring with promax (with kappa = 4) in SPSS version 24 (*IBM SPSS for Windows*, 2016). Descriptive statistics, intercorrelations, and eight derived factor scores were obtained. Factorability of the data was evaluated by inspection of item correlations $> .3$, sampling adequacy by inspection of Keyser-Meyer-Olkin $> .5$, and correlational sufficiency by inspection of Bartlett's test of sphericity. The absence of multicollinearity was supported by determinant values $> .00001$.

The number of derived factors was verified by inspection of eigenvalues > 1 and scree plots. All items had primary factor loadings of .4 or higher. Factor loadings reported in pattern matrices were examined, as were the correlations in the structure matrices to ensure they supported the factor structure reported in the pattern matrix. Finally, factor correlation matrices were examined to determine the extent the derived factors correlated with each other.

Once the factor analyses were established, the item content of each factor was reviewed and analyzed for their similarities, differences, and underlying shared commonalities. This analysis was used to assign descriptive labels to each of the derived factors.

My initial factor analyses resulted in eight derived factors: Two for George, three for Mulvey, and three for Jassawalla. My eight derived factors were labeled: Shirker, Feckless, “Social Loafing” Aversion, Copes to Get By, Layabout, Unengaged, Underperforms, and Disruptive. Composite scores were computed for each of the eight derived factors and then factor analyzed. The factor analysis resulted in three final factors. They were: Slacking, Free Riding, and Falling Short. Table 27 presents a summary of each instrument, factors hypothesized by the authors (with authors’ labels), and factors derived from my analyses (with my labels).

Findings

There were three major findings as they relate to research questions one, two, and three enumerated as follows:

1. The three instruments do not measure the same thing. George’s and Jassawalla’s instruments overlap about 55%; and Mulvey’s instrument shares little in common with Jassawalla, and almost nothing at all with George.
2. George, Mulvey, and Jassawalla instruments had a total of 10 factors. In contrast, my individual factor analyses of the George, Mulvey, and Jassawalla instruments resulted in eight derived factors.
3. My final derived three-factor solution does help define the social loafing construct.

Intercorrelations among George, Jassawalla, and Mulvey indicate that while George and Jassawalla measure something in common, neither measures exactly the same thing. Further, neither Jassawalla nor George instruments appear to have much, if anything, in common with Mulvey.

Second, factor analyses of each instrument did not generate the same factor structure as the authors' factor structures. With the exception of Mulvey's "Sucker Effect", scale items did not behave exactly as predicted by the authors. The derived factor structure for George was a two-factor solution in contrast to her single-factor scale. The derived factor structure for Mulvey was a three-factor solution but, with the exception of "Sucker Effect" Aversion, did not have comparable factor loadings on the remaining two derived factors. The derived factor structure for Jassawalla was a three-factor solution in contrast to her six-factor solution. Table 26 presents a summary of the instruments, their hypothesized factors with author labels, and my derived factors with my labels.

Table 26

<i>Instruments, Hypothesized Factors w/ Author Labels, and Derived Factors w/ my Labels</i>		
Instrument	Ten Factors with Author Labels	Eight Derived Factors with my Labels
George	Social Loafing	Shirker Feckless
Mulvey	Perceived Social Loafing Anticipated Lower Effort Sucker Effect	Layabout Copes to Get By "Sucker Effect" Aversion
Jassawalla	Apathy Distractive, Disruptive Behavior Social Disconnectedness Poor Quality Work Others Do More, Pick up the Slack Overall Team Performance	Unengaged Underperforms Disruptive

Third, composite variables for the eight derived factors were factor analyzed. The factor analysis generated three final derived factors. The factors were labeled Slacking, Free Riding, and Falling Short. Slacking was composed of the two factors, Unengaged and Shirker. Slacking describes mostly observable social loafing behaviors that indicate unwillingness on the part of the social loafer to take much responsibility. Items included

in this factor describe behavior that can be evaluated objectively through observation and/or experience.

Free Riding was composed of the three factors, “Sucker Effect” Aversion, Layabout, and Disruptive. Free Riding describes the dampening effect of a social loafer’s willful misconduct on other team members own motivation.

Falling Short was composed of the three factors, Underperforms, Feckless, and Copes to Get By. Falling Short describes a situation in which someone may be an unwitting social loafer that impairs overall team performance.

Table 27 presents the three final derived factors and the composite variables that loaded on each derived factor.

Table 27

Three Final Derived Factors and Composite Variables in Each Final Factor

Final Three Derived Factors	Composite Variables in Each Final Factor
Slacking	Unengaged Shirker
Free Riding	“Sucker Effect” Aversion Layabout Disruptive
Falling Short	Underperforms Feckless Copes to Get By

Note: Factor loadings in each of the final three factors realign the eight composite variables/ derived factors so they no longer correspond to each author’s instrument as observed in Table 26.

Limitations

There were limitations. Generalizability of the findings may have been compromised by lack of random selection of respondents. All participants were self-selected graduates and undergraduates who reported on their experience with social loafing. Participants were fairly homogenous with respect to their majors and enrollment

in a single university. To achieve greater generalizability, it would have been better to include more universities and students enrolled in various academic disciplines.

Although all students participated in a group project during the time they were enrolled in courses in the School of Management, the amount of group work each experienced may have varied. Furthermore, this study measures team performance as a variable, but does not measure the extent to which group learning is impaired by social loafing. The fact that participants varied in age and experience may be a confounding variable in how participants perceived the social loafing construct between students enrolled in graduate and undergraduate programs. Moreover, the 45 items were not administered as originally conceived by the authors but adapted as described under instrumentation for ease of understanding and to fit the population that was being sampled.

Although, this study provided useful insight into how items that purport to measure social loafing behave, ability to make decisions about scales deduced from this factor analysis would be more credible if larger samples replicated these results.

The design of the study was retrospective. Students were asked to recall a time when they experienced social loafing. Although it appears that most students ($n = 92$) recalled a time they experienced loafing in the current semester, 68 students had to recall past events. This raises concerns about the accuracy of memory and consequently, the risk of bias.

Discussion

In the Discussion, I will review the most important findings of this study in the context of theory. It will be centered on the most significant outcomes as they relate to the research questions. Finally, Conclusions and Implications will complete this dissertation.

This study of the construct validity of the three measures began with a correlational analysis to understand the relationships among the authors' ten scales followed by a second correlational analysis of the authors three instruments. The correlations indicated that George and Mulvey had very small correlations between the scales, and an overall negative correlation between the two instruments. Thus, the correlations indicated that George and Mulvey did not measure the same thing. George and Jassawalla had a relatively strong positive relationship but not a perfect correlation between both their scales and their instruments. This indicated that although they shared a relationship they measured different things. Jassawalla had small positive correlations with Mulvey between both the scales and the instruments which indicated they had very little in common. In summary, the correlation matrices revealed that to the extent there was a relationship, the instruments measured different aspects of social loafing, and to the extent the relationship was small or non-existent, the instruments measured something altogether different from each other.

The correlational analysis was followed by a factor analysis of each author's instrument. The factor analyses supported Georges theoretical framework and partially supported Mulvey's theoretical framework but did not support Jassawalla's theoretical framework.

George's theoretical framework used a single scale to measure social loafing. In contrast, my factor analysis of her scale generated a derived two-factor solution that I

labeled Shirker and Feckless. Shirker assessed the social loafer in relation to other co-workers (e.g., “The social loafer put forth less effort when other team members were around to do the work”). Feckless assessed the social loafer acting alone (e.g., “The social loafer avoided performing housekeeping tasks as much as possible”). Further, the items that loaded on Shirker described objective social loafing behavior whereas the items that loaded on Feckless described subjective social loafing behavior, e.g. “The social loafer deferred project-related tasks to other team members when they were present” as opposed to “The social loafer did not do his fair share of the work”. In the first example, both the behavior and the consequence can be observed and/or experienced. In the second example, the loafer’s actions cannot be measured nor their impact observed. However, a two-factor solution still retains the original interpretation of social loafing as observed by George. Therefore, a derived two-factor solution provides a valid, if not more nuanced, interpretation of George’s theoretical framework.

Like Mulvey’s factor analysis, my factor analysis of his items yielded three derived factors that I labeled “Sucker Effect” Aversion, Copes to Get By, and Layabout. Five items developed by Mulvey to measure the Sucker Effect loaded together with high factor loadings on “Sucker Effect” Aversion. This indicated excellent support for Mulvey’s Sucker Effect scale. In contrast, the derived factor, Layabout, only partially supported Mulvey’s theoretical framework for Perceived Social Loafing but the other derived factor, Copes to Get By, did not support Mulvey’s theoretical framework at all.

During an analysis of why they differed, I encountered two problems. The first problem was my inability to replicate Mulvey’s findings using the same extraction and rotation methods used in their factor analysis as noted earlier. The second problem

indicated mechanical issues with how the items to measure Perceived Social Loafing and Anticipated Lower Effort were worded and organized. Wording of the items used the phrase “members of my team” to refer to both the social loafer and team members. This meant the test-taker decided to whom each item referred. In contrast, both George and Jassawalla called out the social loafer in their items clearly distinguishing between the social loafer and other members of the team. An example of calling out the social loafer is “The social loafer was lazy” (Jassawalla et al., 2009). As a consequence, it is difficult to discern to whom the Perceived Social Loafing and Anticipated Lower Effort items refer.

The second problem was the similarity in how the items were organized. For example, let’s compare two items meant to measure Perceived Social Loafing and Anticipated Lower Effort. The item to measure Perceived Social Loafing is “Members of my group tried as hard as they could”. The item to measure Anticipated Lower Effort is “Because some members of my group put in less effort than they could, other group members did not try as hard as they could”. It is immediately apparent that the items are likely confusing at the very least. Moreover, they force the respondent to make judgments about meaning. If we are talking about all group members, then how do you distinguish between those who loafed (Perceived Social Loafing items) and those who anticipated loafing in others (Anticipated Lower Effort items)?

As a consequence of both the wording and organization of the items, Perceived Social Loafing items and Anticipated Lower Effort items did not load cleanly or separately on different factors. Instead, the four Perceived Social Loafing items loaded two each on Copes to Get By and Layabout. In addition, two of the four Anticipated Lower Effort

items each loaded on Copes to Get By and Layabout while the other two Anticipated Lower Effort items had no factor loadings at all, and were removed from the analysis.

Perceived Social Loafing items that loaded with one Anticipated Lower Effort item on Layabout retained the character of Perceived Social Loafing providing partial support for Mulvey's Perceived Social Loafing. The same cannot be said for Copes to Get By. Therefore, I concluded that that overall, Mulvey's theoretical framework was only partially supported.

Jassawalla's theoretical framework included six scales to measure social loafing. A factor analysis of the scales yielded a derived three-factor solution that I labeled Unengaged, Underperforms, and Disruptive. Unengaged indicates a social loafer who does the bare minimum. What stands out in the derived factor, Unengaged, is that all four of Jassawalla's scale items to measure, Team Members do More to Pick up the Slack, loaded together on this factor. This indicated that team members picked up the slack to compensate for the social loafer.

Underperforms is someone who does not perform as well as expected. Two items from the scale to measure Distractive Disruptive Behavior (e.g., "The social loafer had trouble paying attention to what was going on in the team") and two items from the scale to measure Social Disconnectedness (e.g., "The social loafer was not part of a clique and did not seem to belong to the team") were included in this factor. Taken together with items from Poor Work Quality and Team performance, suggests other team members perceive this type of social loafer as a drag on the team's performance due to a lack of focus, submission of incomplete or insufficient work, and not being a good fit with the rest of the team.

Disruptive is someone who impedes work by causing distractions. Items that loaded on Disruptive include four items to measure Distractive Disruptive Behavior and one to measure Social Disconnectedness. An inspection of the items indicates acts that are deliberate and provocative. Example of the items are, “The social loafer engaged in side conversations a lot when the team was working” and “The social loafer mostly distracted the team’s focus from its goals and objectives”. The social loafer typically had problems with someone in the group of which everyone was aware. Jassawalla observed that findings from the literature suggest this behavior occurs because the loafer is not concerned with being penalized confident that other team members will pick up the slack.

What stands out in the derived factors Underperforms and Disruptive is the behavior of the items from Jassawalla’s scales Distractive Disruptive Behavior and Social Disconnectedness. They did not load as predicted and a closer inspection of the items explained why. The items from Jassawalla’s two scales that loaded on Disruptive described behavior that was more aggressive and deliberate whereas the items from the two scales that loaded on Underperforms were more passive and possibly committed without awareness. In fact, the items that loaded on Underperforms described acts of omission whereas items that loaded on Disruptive described acts of commission. These are important distinctions in the analysis of the final three-factor solution that follows.

The findings from factor analyzing Jassawalla’s instrument, indicated that her six factor theoretical framework was unsupported.

Following the analysis for each instrument, my eight derived factors were composited and the composite variables were factor analyzed. A final three-factor solution

was generated and labeled Slacking, Free Riding, and Falling Short. An analysis of each factor follows.

The factor structure of Slacking includes two of the eight derived factors, Unengaged and Shirker. Taken together, they described the social loafer to be someone who did not carry their weight. The social loafer appeared apathetic to the project and the grade demonstrated by poor quality work, and a lack of initiative to do anything extra to help the team. Although team members may vent their frustration about the social loafer, the social loafer does not impede the overall team's performance. Team members pick up the slack and work harder to compensate for the shortcomings of the social loafer.

Slacking may be the most common form of social loafing. It is possible that students who social loaf as described in this first factor have disassociated their own contribution from the group outcome. Karau and Williams (1993) observed that sometimes individuals do not make the connection between their own effort and the group outcome whereas the connection between individual effort and individual outcomes, such as meaningfulness, rewards, importance, and evaluation is vivid. According to Karau and Williams, group outcomes transform individual outcomes into feelings of belonging, self-evaluation, and both intrinsic and extrinsic rewards. They conclude that the more detached the group outcome is from the individual outcome the higher the likelihood for social loafing.

It is also possible that students who social loaf as described under Slacking do not perceive their effort as needed. Student projects replete with redundancy of effort and low complexity of project-related tasks foster social loafing. Harkins and Petty (1982) found

that team members who felt their contribution was not needed due to low task difficulty and lack of unique contribution tended to loaf more.

Despite the frustration caused by this type of social loafing, it appears, as Jassawalla observed, that student teams do not let the performance of this type of social loafing get the best of them. They will buckle down by working harder and longer to pick up the slack created by the social loafer. As evidence this may be the case, three of four items to measure Expected Others to Pick Up the Slack were included in the derived factor, Unengaged, which had a factor loading of 0.91 on the final derived factor, Slacking.

In contrast, the factor structure of Free Riding, provides insight into the conditions that promote a different type of social loafing, or the sucker effect. The factor structure includes four Jassawalla items labeled Disruptive, and eight of Mulvey's items labeled "Sucker Effect" Aversion and Layabout.

As noted earlier, Disruptive describes intentional acts designed to distract from the team's purpose and objectives. Free Riding begins with a social dilemma in which a team member assesses the economic value of effort vs. reward. As observed by Shepperd (1993), if the individual recognizes rewards will be the same with or without his contribution, the social loafer detects little value to be gained by working hard. Thus, it is likely he will ignore the common good and instead act in his own self interest.

Therefore, in a school team project, students may choose to willfully free ride because they know that regardless of how much effort they contribute, the outcome in the form of a grade will be the same. The assumption they make is that others will continue to work hard, and therefore their effort would be merely redundant. The only problem with that calculus is that free riding can backfire in the form of the sucker effect.

People do not like the feelings that are engendered by others who take advantage, especially when they know that the free-rider is able to do the work (Kerr, 1983).

Therefore, other team members may reduce their own effort to the team project to avoid being played for the sucker who did all of the work.

Another explanation for the sucker effect has been suggested by Mulvey's research. Mulvey predicted that Perceived Social Loafing will have a positive relationship with the Sucker Effect. Included in the factor structure of Free-Riding is the composite variable, Layabout. The contents of Layabout include two items from Mulvey's Perceived Social Loafing scale. Therefore, it may be that both free-riding among able team members and the mere presence of a perception that someone is loafing whether the perception is accurate or not, may be enough to induce other team members to reduce their own effort to avoid the sucker effect. It is interesting to note that "Sucker Effect" Aversion had the highest factor loading, 0.92 compared with all of the other seven composite variables. This may be an indicator of how truly vexing social loafing can be regardless of its origination.

The factor structure of the third derived factor, Falling Short, includes Copes to Get By, Underperforms, and Feckless. Similar to Free Riding, Falling Short includes items from two Jassawalla scales, Distractive Disruptive Behavior and Socially Disconnected described earlier. In contrast to the items that loaded on Free Riding that describe social loafing behavior as provocative, deliberate, and conscious, the items that loaded on Falling Short describe behaviors that are passive, involuntary and maybe even unconscious. For example, Jassawalla describes students to whom social loafing was ascribed who were unaware that other team members thought that they did not pull their weight. More surprising still is that, in this instance, the perception of social loafing did not result in the

sucker effect. If anything, other team members more willingly picked up the slack and did the best they could when faced with the limitations of the loafer.

According to Kerr (1983) although team members cannot abide picking up the slack for able team members who choose to free ride, they will never-the-less pick up the slack for someone they perceive as less able. In this instance, it appeared other team members associated the social loafer's behavior to low ability, not to low effort. In support of a low ability member, items that related to poor work quality also loaded on the score for Falling Short. In contrast, no items that measured poor work quality loaded onto Free Riding. Kerr (1983) concluded that other team members were willing to carry a less capable team member. Therefore, social loafing that results because the social loafer is a less capable person does not result in the sucker effect.

Further, Jassawalla's observations help explain why team performance is affected under conditions described in Free Riding and Falling Short where it is not under conditions as described in Slacking. Free Riding indicates that team members who observed social loafing in an able member did not compensate, but reduced their own effort instead. As a consequence, reduced effort in most or all team members resulted in lower team performance. In contrast, Falling Short indicates that even though the team members tried to compensate for the social loafer, they also had fewer good ideas and more missed deadlines because of the social loafer. Moreover, their attempts to compensate appeared constrained. Collectively, items such as, "Members tried as hard as they could", "Given their abilities, my group members did the best they could", and "Because some members did not do their share, I don't think anyone in my group work as

hard as they could on the project” indicated uninspired confidence in the team’s overall performance.

Jassawalla noted that teams like those described in Slacking can overcome social loafing in the form of apathy and poor work quality by working harder, but teams faced with social loafing as described in Free Riding and Falling Short cannot. The drain on team member resources of social loafing attributed to behaviors described by items included in the two Jassawalla scales, Distractive Disruptive Behavior and Socially Disconnected. Kerr (1993) helps clarify differences in the consequences observed in Free Riding and Falling Short. He explains that when an able person loafers as exhibited in Free Riding, team members will also social loaf to avoid the sucker effect. In contrast, when a less able person social loafers as exhibited in Falling Short, team members will try to compensate for the loafer. But in neither case, according to Jassawalla et al. (2009) will team members be able to overcome the impact of social loafing and its negative impact on overall team performance.

Conclusion

The results of my dissertation contributed to social loafing research by creating a wider nomological net as a result of a factor analysis of three measures of social loafing that had not previously been done. My factor analyses identified 8 derived factors and three final derived factors: Slacking, Free Riding, and Falling Short. These three factors help to clarify the underlying structure of the social loafing construct. The findings indicate both the complexity and multidimensionality of social loafing.

The importance of construct validity to measure latent variables cannot be overstated. The absence of construct validity can produce results in measures of latent

variables that are difficult to interpret. In the present study, this was not the case. A factor analysis not only showed items from different measures of social loafing that go together, it also distinguished between items that measured different aspects of the social loafing construct. It also indicates that social loafing is more complex and more nuanced than previously proposed. On the basis of this study, the best conceptualization of the social loafing construct is the final three-factor solution. It isolates three distinct aspects of social loafing: Slacking, Free Riding, and Falling Short while also providing insight into the deleterious effect of social loafing in student teams.

Implications for Future Research

There are three primary implications for future research from this study as they relate to the construct validity of social loafing. One of the most relevant issues to come from this research is a need to replicate the findings of this study with larger sample sizes to not only better understand the social loafing construct but also to develop a construct-valid measure of social loafing. The results of this study was able to show that current measures of social loafing only supported one author's theoretical framework. Further, this study indicates different factor structures when compared with each author's theoretical framework. Finally, this study showed that items from three different measures loaded together with each other that indicate there may be a better construct-valid measure of social loafing than currently exists. However, the findings from this study merit more research that can only come from factor analyzing data using larger sample sizes in different academic disciplines and institutions.

Another useful area for future research is to perform a confirmatory factor analysis (Brown, 2014). A confirmatory factor analysis across a range of higher education settings

and larger sample sizes would help to assess the degree of model fit and improve the model through evaluation of each scale's internal structure and internal consistency. A confirmatory factor analysis with larger sample sizes and varied settings would also help to either generalize or to reject the findings of the current study.

While completing demographic variables, 35 students indicated they had not observed social loafing in a student team project during the program in which they were enrolled. Of the 35 students, only eight were undergraduates. This indicates that there may be differences in the extent of social loafing between undergraduates and graduates. Although this was not a part of the present study, future research might explore if there are differences in the extent of social loafing between graduates and undergraduates.

Implications for Practice

There are implications for higher education from this research, especially as they relate to disciplines in which teamwork is routinely required in course projects. Although teams are routinely used in education, faculty may want to be aware that collaborative learning is not exempt from social loafing. To thwart its impact, faculty may want to provide information to students on how to be an effective team member, especially as it relates to learning specific team process skills to solve problems such as social loafing. Peer evaluation is another method to introduce students to the concept of social loafing and to also alert students when they social loaf. Peer evaluation tools like the Comprehensive Assessment of Team Member Effectiveness (Loughry, Ohland, & DeWayne Moore, 2007) help can teams identify and deflect social loafing, especially when used in conjunction with team training on effective teams and being an effective team member. Implement the

use of experiential exercises to help student teams develop cohesion and trust, both of which have been shown to deter social loafing.

It is also important to develop complex and meaningful team projects that avoid redundancy of effort. Research on the best teamwork suggests complex projects that use heterogeneous task expertise are more satisfying, rewarding, and committed, but more importantly suffer fewer of the maladies of teams like social loafing.

Social loafing is pervasive. Eighty-two percent of the sample used in this study had experienced a team in which social loafing occurred just during the program in which they were currently enrolled.

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Appendix A

Author, Scale, and Items Selected for Use in the 55-Item Instrument Administered to Students

Author	Scale	Items Selected for Use
Carless & De Paola, (2000)	Cohesion	Team members were united together in trying to achieve the project goals Team members were happy with the team's level of commitment to the task
Liden, et al. (2004)	Distributive Justice	My grade was fair in comparison to the grades of other team members Grades were awarded fairly based upon individual contributions.
George (1992)	Task Visibility	The instructor was aware of students who put in below average effort The instructor was unable to assess how hard each member worked It was hard for the instructor to notice a team member who was not contributing
Jarvanpaa, et al. (1998)	Trust	If I had my way, I would not let other team members have any influence over issues that are important to the project I wish I had a good way to oversee the work of other team members I was comfortable giving other team members complete responsibility for the completion of this project

Appendix B

Reference Table to Interpret George, Mulvey, and Jassawalla Intercorrelations

Author	Label	Item
George	G1	The loafer deferred responsibilities s/he should have assumed to others.
	G2	The loafer put forth less effort when others were around to do the work.
	G3	The social loafer did not do his or her fair share of the work.
	G4	The loafer spent less time helping members if others were present to do it.
	G5	The social loafer put forth less effort than other members of the team.
	G6	The social loafer avoided performing housekeeping tasks as much as possible.
	G7	The loafer left work that s/he should have completed others to complete.
	G8	The loafer did not exercise initiative if others were available to do the task.
	G9	The social loafer took it easy and let other team members do the work.
	G10	The loafer deferred project-related tasks to other team members
Mulvey & Klein	M1	Members of my group tried as hard as they could.
	M2	Members of my group were “free riders”.
	M3	Members of my group contributed less than I anticipated.
	M4	Given their abilities, my group members were did the best they could.
	M5	Some members did not try as hard as they could, so others put in less effort.
	M6	Some put in less effort than they could so others did not try as hard.
	M7	Some did not do their share so noone worked as hard as they could.
	M8	Some did not expend much effort so others likely reduced their effort.
	M9	Some did not contribute as much as they could so I did not try my best.
	M10	Some put in less effort than they are able, so I did not continue to work hard.
	M11	Some did not try their best so I did not try my best either.
	M12	Some did not try as hard as they could so I did not work as hard as I could.
	M13	Some did not try as hard as they could so I reduced my effort on the project.
Jassawalla et al.	J1	The social loafer was not interested in the topic/task assigned to the team.
	J2	The social loafer did not care about earning a high grade in the class.
	J3	The social loafer expected others to pick up the slack with no consequences.
	J4	The social loafer just did not care.
	J5	The social loafer was just plain lazy.
	J6	The loafer had trouble paying attention to what was going on in the team.
	J7	The loafer engaged in side conversations a lot when the team was working.
	J8	The loafer mostly distracted the team’s focus from its goals and objectives.
	J9	The loafer did not like one or more of the team members.
	J10	The social loafer did not get along with one or more members of the team.
	J11	The loafer was not part of the clique, and did not seem to belong to the team.
	J12	The social loafer came poorly prepared for team meetings.
	J13	The social loafer had trouble completing team-related homework.
	J14	The social loafer did a poor job of the work he or she was assigned.
	J15	The social loafer did poor quality work overall on the team.
	J16	As a result of loafing, the team had to waste time explaining to the loafer.
	J17	As a result of loafing, other members had to do more than their fair share.
	J18	As a result of loafing, other members had to redo or revise the loafer’s work.
	J19	As a result of social loafing, work had to be reassigned to other members.
	J20	As a result of social loafing, the team had fewer good ideas.
	J21	As a result of social loafing, the team missed deadlines.
	J22	As a result of loafing, our project was not as high a quality as other team’s.