PERCEPTION OF SOCIAL LOAFING, CONFLICT, AND
EMOTION IN THE PROCESS OF GROUP DEVELOPMENT


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ABSTRACT

This study was conducted for two purposes. The first was to find out trend patterns for perceived social loafing, the four types of intra-group conflict (i.e., task, relationship, logistic, and contribution), and positive vs. negative emotions, in the group's developmental process. The second was to explain how perceived social loafing was aroused based upon the knowledge of intra-group conflicts and negative emotions. Participants (n = 164) were required to report their personal perception of social loafing, intra-group conflicts, emotions (i.e., anger, fatigue, vigor, confusion, tension, depression, and friendliness), and the stage of group development, in their current small group interaction. Four major findings emerged out of the data analysis. First, perceived social loafing, relationship conflict, logistical conflict, contribution conflict, and negative emotions all followed a reversed V-shaped trend of development with their respective peaks observed at Stage 2 (i.e., *Counterdependency and Fight*), whereas task conflict followed a slanted, *N*-shaped, but relatively stable, trend over the course of group development. Second, positive emotions developed in a V-shaped trend pattern, wherein the lowest point was observed at Stage 2 and highest point at Stage 4 (i.e., *Work*). Third, the perception of social loafing was found to be directly and positively influenced by contribution conflict and negative emotions, while task conflict, logistical conflict, and relationship conflict did not have direct positive effects on perceived social loafing. However, task conflict was found to have a marginally significant direct suppressing effect upon perceived social loafing once the influences from logistic conflict, contribution conflict, relationship conflict and negative emotions were controlled for. Fourth, the current study also found that the perception of social loafing might not always trigger negative emotions in the group, because social compensation might offset the negative consequences that perceived social loafing was likely to bring to the group.

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**Chapter One: Introduction**

Groups are indispensable to human life.    In early human history, our ancestors

hunted and battled in groups for the purpose of survival.    In the modern era, we engage

in groups to accomplish many of our life's important tasks that require collective effort

and the pooling of individual inputs (Karau & Williams, 1993).    Settings where group

work is required include, but are not limited to, business, therapy, education, sports,

juries, vocational training, policy making, and organizational committees.    As Poole,

Hollingshead, McGrath, Moreland, and Rohrbaugh (2004) put it, "people live in groups,

work in groups, and play in groups" (p. 3).

Groups outperform individuals in at least four aspects: stimulating creativity,

accumulating information, advancing self-understanding, and promoting satisfaction

when decisions are made on a collective basis (Beebe & Masterson, 2000; McGrath,

1984; Levine & Moreland, 1990).    In spite of the aforementioned advantages of working

in groups, research has revealed several other aspects that pertain to the group's

liabilities: Group can stifle idea generation, result in conformity, and beget conflicts.

Group is also a place where some members tend to exert less effort and unfairly take

advantage of the group to pick up the slack (Latané, Williams & Harkins, 1979;

Williams, Harkins & Latané, 1981).    This phenomenon is called social loafing, a widely

acknowledged and plausible cause of productivity loss in workplaces that require

collective endeavor (George, 1992).

Even though teamwork is highly valued, the likelihood of social loafing in group

settings should not be overlooked.    Karau and Williams' (1993) meta-analysis of social

loafing suggests that "there is at least a moderate tendency for individuals to engage in

social loafing and reduce their effort when working on collective tasks" (p. 695),

although this conclusion might have been an underestimation considering that the data

reviewed were drawn mostly from studies that focused only on the prevention of social

loafing in laboratory settings.    The authors argued that in real natural settings, where

causes of social loafing are diverse and not artificially restrained, social loafing is more

likely to occur than it is in laboratories.    As Latané et al. (1979) have claimed, social

loafing is a type of social disease that "has negative consequences for individuals, social

institutions, and societies" (p.831).

Social loafing is detrimental to the group in at least three aspects.    First, it

reduces group efficiency.    Reduced group efficiency might further lead to lowered

profits and benefits (Latané et al., 1979).    Second, the group-level motivation and

cohesiveness will decline in response to the presence and perception of social loafing

(Mulvey & Klein, 1998).    Third, the negative emotional reactions to the perception of

social loafing in the group may also cause peer members to refuse to become the suckers

who pick up the slack of those loafers, thus reducing their own contributions to the group

instead – a phenomenon termed as the *sucker effect* by Kerr (1983).

Researchers have identified various antecedents to social loafing.    Plausible

factors contributing to social loafing include perceived lack of potential for evaluation of

one's contribution (Olson, 1965; Harkins & Jackson, 1985), perceived dispensability of

one's contribution (Harkins & Petty, 1982; Weldon & Mustari, 1988), perceived lack of

influence over group outcomes(Comer, 1984; Price, 1987), perceived loafing by other

group members (Kerr, 1983; Jackson & Harkins, 1985), an individualistic orientation

(Earley, 1989, 1993), perception of unmotivating tasks (Brickner, Harkins, & Ostrom,

1986), perceived problematic group functioning and performance (Comer, 1995), and

perceived relatively low or high task-pertinent ability (Yamagishi, 1988; Comer, 1995).

Past research has been enlightening in revealing what factors might cause social

loafing, what consequences social loafing might potentially bring to the working group,

and what measures can be taken to avoid it [See Karau & Williams (1993) for details of

avoiding social loafing in a group setting].   Less attention has been directed to

investigating group members' perception of social loafing (Høiggard, Säfvenbom, &

Tønnessen, 2006).   Perception reflects individuals' awareness of the social environment

and is the precursor to their reaction to the social environment (Gibson, 1959).   A

stream of research has suggested that individuals' perception of their social environment

is believed to have stronger, more direct influences on behavior than does the social

environment itself (Eisenberger, Huntington, Hutchison, & Sowa, 1986; Krackhardt,

1990; Harrison & Klein, 2007).   With the same logic, it is reasonable to say that

perceived social loafing (which refers to an individual's assessment of the others'

contribution to the group) is more likely to influence and shape members' interaction

with others in the group than the actual loafing (which refers to an actual reduction in

effort among group members) (Mulvey & Klein, 1998), and it does a better job in predicting individuals' motivation to work, their satisfaction with reward distribution, and group's cohesiveness than the actual loafing (Høiggard et al., 2006).   Therefore, emphasis should be placed upon the perception of social loafing if the researcher wants to reveal the socio-emotional milieu of the group from the members' perspectives.

To expand the repertoire of the research of social loafing, the current study focuses on the perception of this particular phenomenon.   Two approaches are employed.   The first relates the perception of social loafing with stages of group development.   It tries to reveal how the perception of social loafing differs and fluctuates in and across the different phases in group's developmental process.   The reasons for investigating this question are twofold.   First, the knowledge about the process of social loafing in the eyes of the insiders of the group will provide a picture of how the experience of social loafing initiates and advances itself in groups (cf. Comer, 1995; Karau & Williams, 1993).   Such knowledge will be especially instrumental to theory building on the growth of perceived social loafing in group settings.   Second, the knowledge of how perceived social loafing unfolds itself in groups will be especially useful for group members to anticipate and manage tensions associated with social loafing.   The preventative measures will help the group to maintain a positive emotional environment, revitalize the group energy, promote cohesiveness, and enhance group performance, once the knowledge of the timing of perceived social loafing is clear.

The second approach is to explain the perception of social loafing in the group by seeking answers to the question of how perceived social loafing is resulted.    Two sets of the variables – group conflicts and emotions – are identified that correspond to the two dimensions of the group dynamics, respectively: substantive vs. socio-emotional (Bales, 1953; Bennis & Shepard, 1956; Tuckman, 1965).    Since any dysfunction of the group arises from the problems along those two dimensions, it is believed that the perception of social loafing should also result from the problematic interactions within each of those two dimensions.    Therefore, group conflicts and emotions should be where our explanation of perceived social loafing starts.

Three assumptions are underlying the investigation of the developmental issues pertaining to perceived social loafing.    First, group develops through distinct stages with respect to decision making and problem solving, as indexed by the differential task and socio-emotional behavioral patterns (e.g., Bales & Strodtbeck, 1951; Bennis & Shepard, 1956; Tuckman, 1965; Wheelan, 1999).    Second, each stage is mainly characterized by specific kinds of conflict (e.g., Ellis & Fisher, 1975; Pondy, 1967; Rummel, 1976), the general notion of which can be defined as the perception of goal incompatibility and interference from goal achievement among interdependent individuals (Donohue & Kolt, 1992; Folger, Poole & Stutman, 2001; Wilmot & Hocker, 2007).    Third, group members' emotional states are responses to the conflict arising in group (Steven-Long & Trujillo, 1995).

Two additional assumptions are underlying the quest for the explanatory issues pertaining to perceived social loafing.   Considering the fact that scanty literature has been found regarding the relationship of perceived social loafing with group conflict and emotions, the assumptions are thus proposed based upon the author's own academic beliefs and commonsensical knowledge as well.   The first assumption is that confusions about group goals and job content, negative emotions, relational discordance, or disagreements over logistical and contribution issues tend to heighten the level of perceived social loafing in the group.   The second assumption is that positive emotions and discussion or debate about different viewpoints concerning tasks tend to lessen the level of perceived social loafing in the group.

Specifically, I seek answers to the following questions:   How will social loafing be associated with different stages group development?   How will social loafing be influenced by conflict and emotion?   And how will discreet conflict patterns and emotional themes be further associated with those stages, in tandem with the fluctuation of perceived social loafing?   The next four chapters are devoted to the investigation of the above questions.

Chapter Two is a literature review which establishes a theoretical background for social loafing, group development, conflict, and emotion.   Hypotheses and research questions are then proposed.   Chapter Three focuses on data collecting procedures. Chapter Four reports statistical results.   Chapter Five discusses research findings, points out limitations, and lays out future research directions.

**Chapter Two: Literature Review**

Social loafing is the tendency to reduce individual effort when working

interdependently in a collective setting as compared to the individual effort expended

when working alone or independently in the mere presence of others (Williams & Karau,

1991).   However, there are two conceptual loopholes in this definition.   The first is that

the definition does not distinguish social loafing due to the loss of one's motivation from

one's intentional reduction of effort for the purpose of coordinating and collaborating

with other group members.   It is possible that individual may be motivated to reduce

effort in order to match his or her working pace with those low-performing co-workers.

Such effort reduction may reflect one's competence and skillfulness in cooperating with

the rest of the group.   In doing so, the person who slows down may not harm group's

overall emotional well-being and productivity, especially in the circumstance that those

low-performing members determine the task outcome (English, Griffith, Steelman, 2004;

Shaw, 1976).   As long as effort reduction is strategic and conducive to maintaining a

harmonious working pace, safeguarding a sense of security toward the working

environment, and assisting the whole group in its goal achievement, it should not be

deemed social loafing.

The other conceptual loophole in the above definition is the lack of specification

on how effort reduction is identified as social loafing.   If individual effort reduction

cannot be felt or perceived by other group members, and if it is not negatively appraised,

then social loafing can hardly be acknowledged to be present in the group and thus less likely to have a significant impact on group's overall well-being and performance (Mulvey & Klein, 1998).   Social loafing starts to exert its influence over group outcomes (i.e., group morale, satisfaction, etc.) when other group members feel or perceive that they are being taken advantage of by some member who relies too much on the rest of the group to accomplish his or her portion of the work while the loafer is believed to unfairly enjoy and/or share the group outcome equally well with the hardworking rest.

Therefore, for the purpose of revealing its relationship with conflict, emotion, and group development, the original definition of social loafing needs some modification. The following working definition is thus proposed.   Social loafing occurs when an individual is perceived to shirk duties and free-ride upon the others' efforts and yet enjoy the benefits of the group in disproportion to his or her contribution.   This qualified definition has specified that decreasing one's contribution by shirking duties and piggybacking at the other's expense reflects motivation loss and is the typical effort reduction behavior, thus excluding the possibility of effort reduction for the sake of coordination and collaboration with low-performing members.   Furthermore, personal evaluation is implied in this working definition by the fact that a sense of unfairness is aroused by this free-riding behavior.   In addition, free riding and shirking are integrated into the definition of social loafing to make it more substantive and concrete than Williams and Karau's (1991) original definition.   Previous research has specified that

free riding connotes a sense of unfairness, shirking conveys the notion of avoiding one's

due responsibility, and social loafing signifies one's loss of work-related motivation

(Albanese & Van Fleet, 1985; Jones, 1984; Kidwell & Bennett, 1993).   While

emphasizing on the different aspects of the same phenomenon, free-riding, shirking, and

social loafing are similar to one another in that they all describe a person who constantly

withholding effort by missing group participation and not providing his or her due effort

because of motivation loss.   Therefore, the current working definition of social loafing,

while preserving its original connotation, merges with the concepts of free riding and

shirking, and also supplements the original concept by suggesting perceptible behavioral

cues and implicating possible evaluative tones from the group members.

The question of how social loafing occurs in groups can be approached in two

ways.   One way is find out its causal antecedents.   Researchers have already specified

a multitude of possible antecedents to social loafing, such as perceived lack of control

over group outcomes, increased group size, no feedback about one's contribution – to

name just a few.   Another avenue is to see how social loafing naturally evolves in group

development.   Past research has been carried out mostly along the former avenue.   The

latter has rarely been explored yet.   However, the emergence and growth of social

loafing in the temporal development of a group must be investigated.   It would be

revealing to see how the timing of social loafing and its intensity or frequency relate to

the functioning of the group (such as the variety of conflicts, affective manifestations,

and crisis-coping strategies).   It would also be revealing if such studies generate new

knowledge about social loafing as a process variable, in addition to our current

understanding of it as a static dependent or independent variable.    So this dissertation

explores this overlooked territory.    In particular, it focuses on social loafing from the

perspective of the group members[1].    It mainly seeks answers to the following question:

How does the perception of social loafing fluctuate over the course of group

development?

Perception of social loafing is entangled with conflict and emotion in groups.

For instance, disagreement over the workload distribution and disruption in group's

relational harmony are related to perceived social loafing (Behfar et al, 2011; Kerr, 1983;

Mulvey & Klein, 1998; Robbins, 1995).    Furthermore, negative emotions, such as

frustration, anxiety, and anger, not only suggest the effects of conflict on the overall

group climate, but also reflect individual member's appraisal of the problematic

interaction within the group.    Such appraisal will further indicate one's behavioral

tendencies, such as fight or flight, either of which may potentially cause one to commit

social loafing.    Because both conflict and emotion have distinctive patterns across the

stages of group development (Baxter, 1982; Bales, 1950; Bennis and Shepard, 1956;

Bion, 1952; Ellis & Fisher, 1975; Jehn & Mannix, 2001; Pondy, 1967; Rummel, 1976;

Steven-Long & Trujillo, 1995; Stock & Thelen, 1958; Tuckman, 1965; Tuckman &

Jensen, 1977), it would be interesting to know how conflict and emotion co-evolve with

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[1] The reason why the perception of social loafing is the focal point of this dissertation has been addressed
in Chapter One, p.3-4.    I will re-verify the perception of social loafing in the section "Perceived Social
Loafing and Group Development" of this chapter on p. 33-35.

the perception of social loafing across the process of group development.    Such

knowledge will not only help us see the patterns of association between conflict and

perceived social loafing in conjunction with emotions in each stage of group development,

but also assists group practitioners and participants in locating problems in the group

interaction and hence developing strategies to better group performance.    So this

dissertation also seeks answers to the following question: How do conflict and emotions

develop in tandem with perceived social loafing in the process of group development?

Not only does this dissertation explore the trend patterns of perceived social

loafing, conflicts, and emotions in the process of group development, it also extends this

knowledge by seeking explanations.    That is, we want to know further the mechanism in

which conflicts and negative emotions influence the perception of social loafing in the

group setting.    By dividing conflict into four subsets (i.e., task conflict, relational

conflict, logistic conflict, and contribution conflict), the current dissertation seeks to test a

concise model that depicts how different types of conflict, together with negative

emotions, trigger group members' perception of social loafing in a group setting.    Such

an endeavor will provide new insights into the factors that influence the perception of

social loafing in the group process.

**Social Loafing**

The study of social loafing can be traced to Max Ringelmann (1913, cited in

Dashiell, 1935; Davis, 1969; Köhler, 1927; Latané et al, 1979; Zajonc, 1966), who

discovered that participants exerted themselves with less individual effort in a group

rope-pulling experiment than if they did alone.    As the group size increased, group

performance was lower than would be expected on the basis of the simple summation of

individual performance.    He further noted dyads pulled at 93% of the sum of their

individual efforts, trios at 85%, and groups of eight at only 49%.    From these

observations, Ringelmann determined that individuals perform below their potential

when working in a group.    And this effect was later termed Ringelmann effect (Kravitz

& Martin, 1986; Latané et al, 1979)

Steiner (1972) proposed two explanations to account for the Ringelmann effect.

One explanation is that individuals are not motivated to pull the rope as hard as they

could.    Lack of motivation then leads to reduced effort, especially as the group size

increases.    The other explanation is that the group may fail to coordinate and

synchronize its members' efforts in an optimally efficient manner.    With poor

synchronization procedures, one's contribution may be cancelled out by the others' (e.g.,

pulling the rope while others are pausing), thus resulting in the reduced average effort *per*

*capita* as the group size increased.    Even though Steiner favored the latter explanation as

more parsimonious than the former, research by Ingham, Levinger, Graves, and Peckham

(1974) revealed evidence that equally favored the former explanation that emphasized

motivation reduction.

Ingham, Levinger, Graves, and Peckham (1974) replicated the rope-pulling

experiment.    They blindfolded participants and made them believe they were pulling the

rope with others while in fact they were pulling alone.    It was discovered that individual

performance in that pseudo-group setting still decreased as group size increased.    This

finding strengthens the argument that reduced performance is caused by reduced effort

rather than solely by inefficient coordination.

Latané et al. (1979) conducted a similar experiment in which participants were

asked to shout and clap as loudly as they could, both individually and with others.    Their

findings suggested that half of the individual decrement in group performance is due to

faulty coordination and half is due to reduced effort.    This evidence further corroborates

the notion that the reduced individual effort is by itself a factor that significantly accounts

for the downgraded overall group performance.    Thus, to describe the effect of

individual effort reduction on group outcomes, the authors coined the term s*ocial loafing*.

Now social loafing is a well known and extensively documented phenomenon

(Henningsen, Cruz, & Miller, 2000; Karau & Williams, 1997; Kerr & Bruun, 1983).

Research indicates that across activities and most populations, there is some degree of

social loafing within every group, be it high or low performing (Henningsen et al., 2000;

Karau & Hart, 1998; Karau & Williams, 1993).    The types of task in which social

loafing has been identified include "physical tasks (e.g. shouting, rope pulling,

swimming), cognitive tasks (e.g. generating ideas), evaluative tasks (e.g. quality of

poems, editorials, and clinical therapists), and perceptual tasks (e.g. maze performance

and vigilance task on a computer screen)" (Karau & Williams, 1993, p. 682).    Social

loafing is also found in a range of populations varying in age, gender, and culture.

Since the 1970's, roughly over 100 research papers have explored the causal

agents to social loafing (Miller, 2001).    Attempts have also been made to synthesize

previous findings into theoretical models that provide overarching frameworks for

understanding what factors lead to or eliminate social loafing.    Three models have been

proposed so far.

Kidwell and Bennett (1993) provided an untested conceptual model that

summarized possible antecedents to employees' propensity to withhold effort in the

organizational context.    The authors argued that skirting, social loafing, and free riding

all shared a "common denominator" – propensity to withhold effort (p. 430).    The model

categorized possible causal agents into four classes: group structure, group interaction,

task characteristics, and reward systems.    (1) Group structure includes three variables:

group size, turnover rates, and length-of-service homogeneity.    It was hypothesized that

group size and turnover rates had a positive relationship to propensity to withhold effort

while length-of-service homogeneity had a negative relationship with propensity to

withhold effort.    (2) Group interaction includes three variables: perceived degree of peer

compliance norms, equity perceptions, and perceived altruism.    These three variables

were all hypothesized to correlate negatively with propensity to withhold effort.    (3)

Task characteristics include two variables: interdependence and perceived task visibility.

Employees' propensity to withhold effort was hypothesized to correlate positively with

interdependence and negatively with perceived task visibility (i.e., the degree to which

one's contribution to the group is clear to the superior as well as to the other co-workers).

(4) Reward systems include only one variable: wage premium.     The relationship

between wage premium and propensity to withhold effort was hypothesized to be

negatively related, controlling for perceived lack of alternative employment

opportunities.     It was also hypothesized that wage premium acts as a moderating factor

that influence the strength of the relationships between propensity to withhold effort and

its various antecedents, such as group size, interdependence, perceived peer compliance

norms, turnover rates and perceived altruism.

Kidwell and Bennett (1993) asserted that underlying their model were three

perspectives derived from Knoke (1990).     First, the rational choice perspective focuses

on how an employee calculates costs and rewards for the purpose of maximizing his or

her final benefits when working in an organizational setting.     Under this perspective, the

contextual cues that relate to employees' propensity to withhold effort include group size,

task interdependence, perceived task visibility, and perceived loss of wage premiums if

dismissed for withholding effort.     Second, the normative conformity perspective focuses

on how an employee abides by socially prescribed norms and regulations that guide the

acceptable conducts in the organizational setting.     This perspective includes such

contextual cues as perceived peer compliance norms and equity norms.     Third, the

affective bonding perspective focuses on how an employee is motivated to work based on

his or her emotional attachment to other co-workers and the group.     This perspective

focuses on turnover rates, length-of-service homogeneity, and perceived altruism at a

work group.     Kidwell and Bennett stated that rational calculation of the group

environment, conformity to organizational norms, and affective closeness to the group

shape employee's propensity to withhold effort

    While Kidwell and Bennett's (1993) model utilizes three perspectives (i.e.,

rational, normative, and affective) to account for employee's motivation to withhold

effort in an organizational setting, Karau and Williams' (1993) Collective Effort Model

(CEM) argues that one's motivation to work with or without effort in a collective setting

is determined by the extent to which they expect their effort to be instrumental in

obtaining valued outcomes.     The CEM further specifies three factors determining

individual motivation: (1) *expectancy*, the degree to which high levels of effort are

expected to lead to high levels of performance, (2) *instrumentality*, the degree to which

high-quality performance is perceived as instrumental in obtaining an outcome, and (3)

*valence* of the outcome, the degree to which the outcome is viewed as desirable.    In a

collective setting, being instrumental means three ongoing reasoning processes:

Individual performance should be perceived to lead to group performance; group

performance should lead to group outcomes; and group outcomes should lead to the

realization of individual goals.    Possible group outcomes include group evaluation from

the outside, group cohesiveness, and extrinsic rewards.    Possible individual outcomes

include self-evaluation, feelings of belonging, intrinsic rewards, and extrinsic rewards.

Furthermore, the following four factors determine the valence of the outcomes: the extent

to which the task is important, the extent to which the reward is meaningful, the extent to

which individuals differ from one another in terms of individualism, cultural background

and gender, and the extent to which anxiety is aroused during the evaluation process.

According to CEM, social loafing will be reduced when: (1) group members

believe that they will be evaluated by the experimenter, their co-workers, themselves, or

others, (2) the size of the group is small, (3) individuals perceive that their contributions

to the collective product are unique, rather than redundant with the inputs of others, (4)

the group has established a standard with which to compare each member's performance,

(5) the tasks are either intrinsically interesting, meaningful to the individual, important to

one's reference group or to valued others, or high in personal involvement, (6) individuals

work with respected others (high group valence; friends, teammates, partners, and

respected coworkers) or in a situation that activates a salient group identity, (7)

individuals expect outperform their co-workers, and (8) individuals have a dispositional

tendency to view favorable collective outcomes as valuable and important.

The above two models have identified multiple factors that potentially increase or

decrease the occurrence of social loafing.    They both equate social loafing with the

intention to work with less effort.    They both include rationality to account for one's

effort-withholding intention.    The difference between the two model lies in that Kidwell

and Bennett's (1993) model specified both the objective contextual antecedents (i.e.,

group structure and reward system) and the subjective state of mind (i.e., evaluation of

group environment and affective affinity to the group), whereas the CEM emphasized

solely upon one's rational ability to reason.    However, neither of those two models

directly identifies types of social loafers and then labels them accordingly.   Even though

loafing behaviors can be manifested in limited manners (e.g., relying too much on others

to accomplish the work, absenteeism, or tardiness), the internal motives of the loafers are

actually diverse.   If the intrinsic motives of the loafer can be classified, social loafing

can better be understood from the perspective of the loafer, especially in terms of what

purpose(s) the loafer holds, and how he or she interprets the working environment.

Classifying social loafing with respect to the loafer's intention is needed if the study of

social loafing wants to be advanced in addition to its contextual causal agents in the

group setting.   Fortunately, Comer (1995) has made an initial attempt.

       Comer (1995) argued that social loafing occurred because the loafer had diverse

intentions to do so.   Based on this logic, the author then classified loafing into five

types, each of which corresponds to a particular intrinsic motive in response to a

particular work-related stimulus.   The first type is retributive loafing, which results from

the intention to avoid the sucker role.   The second type is disheartening loafing, which is

caused by the perceived lack of influence over task outcomes.   The third type is

self-effacing loafing, which occurs when one intends to avoid appearing too competent.

The fourth type is self-marginalized loafing, which is aroused by the perception of the

dispensability of one's potential contribution to the group work.   The last type is

self-enhancing loafing, which involves one's intention to avoid appearing incompetent

rather than lazy.   As we can see, social loafing results from different appraisals of the

diverse work environment.   This relationship is further moderated by task motivation.

Specifically, performing an engaging and meaningful task, as opposed to a boring one with trivial outcome, will curb the occurrence of social loafing.

Comer (1995) further argued that there were four generic reasons that could account for why people tended to appraise their work environment in the way that further led them to loaf.   Those four reasons were: perception of loafing by group members, individualism vs. collectivism, perception of problematic group performance, and perception of relative task ability.   It was hypothesized that perception of loafing by group members results in one's wish to avoid sucker role and one's perception of lack of influence over task outcomes.   Individualism was hypothesized to result in one's wish to avoid sucker role while collectivism increases one's perception of lack of influence over task outcomes.   Perception of problematic group performance was hypothesized to lead to one's perceived lack of lack of influence over task outcomes.   Perception of superior task ability over co-workers was hypothesized to increase one's wish to avoid appearing too competent and one's perceived lack of influence over task outcomes, while perception of inferior task ability to co-workers was hypothesized to increase one's perception of dispensability of contribution to the task outcome and one's wish to avoid appearing incompetent.

In sum, the above three models all take into account an adequate number of factors that explain the occurrence of social loafing in a group setting.   Comer's (1995) model states that people loaf out of different intentions based up their appraisal of the relevant cues in the work environment.   Karau and Williams' (1993) CEM uses

motivational theories to explain how social loafing can be reduced when expectancy,

instrumentality, and valence of the outcome are all considered in a collective setting.

Kidwell and Bennett's (1993) model specifies that variables based upon rational choice,

normative conformity, and affective bonding all relate to one's propensity to withhold

effort (similar to social loafing) in an organizational setting.    They are similar in that

they all include elements of rationality (i.e., appraisal of the group context) in one's

decision to loaf.    They differ in ways of categorizing those variables that lead to the

loafing intention: Comer classified five different reasons of social loafing based upon the

loafer's appraisals of the contextual cues within the group; Karau and Williams studied

social loafing by looking at the interplay of the factors related to expectancy,

instrumentality and value; and Kidwell and Bennett explained social loafing by

investigating rational, affective, and normative cues rooted in the organizational setting.

It should be noted that those three models only provide us with a static summary of the

factors leading to social loafing in group settings.    None of them has addressed social

loafing in the dynamic process of group development.    In other words, none of them has

specified at which critical point in the history of the group those factors leading to social

loafing become salient and effective.    Furthermore, none of them seems to explain

social loafing by referring to the framework of conflict types along with the

corresponding emotions.    Since conflict and emotion are indispensable to the process of

group development, failure to include them in the explanation of social loafing might

prevent us from seeing social loafing in a broader picture of the group dynamics, where

members are under the influence of emotions in times of conflict throughout the process

of group development.    Therefore, it is necessary to establish the link between social

loafing and group conflict along with emotions in the course of group development.

**Conflict and Emotion in Groups**

        In group settings, conflict and emotion are instrumental to our understanding of

how social loafing might be perceived in the group.    Conflict arises when group

members perceive incompatibility in their goals and interference from one another in

achieving those goals (Donohue & Kolt, 1992; Folger et al., 2001; Wilmot & Hocker,

2007).    Emotion occurs when the individual is experiencing an event that has been

viewed as important to his or her goal attainment (Oatley & Jenkins, 1996).    Given the

fact that goal interference in conflict is an important event both to the individual and the

group, emotion results as the individual or the group responds or reacts to the conflict in a

negative manner (Mandler, 1984).    In addition, as conflict is potentially related to low

cohesion, deficient team coordination, inequity perception, and insufficient feedback

(Jehn, 1995), it may not only instigate negative emotion, but also harm the group's

motivation to make effort on the task, thus forecasting potential social loafing in the

group (cf., Comer, 1995; Kidwell & Bennett, 1993).    Furthermore, because there is

evidence that emotion facilitates both the speed with which arousing information is

processed (Öhman, Flykt, & Esteves, 2001) and the likelihood that it will be processed

(Anderson & Phelps, 2001; Vuilleumier & Schwartz, 2001), it can be reasoned that when

group members' emotions are negatively aroused, they tend to pay immediate attention to

such productivity-threatening behaviors as constant avoidance of group participation, less

contribution to the group task, and/or too much reliance upon others to finish the assigned

work.    Thus, when conflict and negative emotions are both present in groups, there is a

high chance for group members to attend to and experience social loafing in their

working setting.

Simply stating that both conflict and negative emotions are related to social

loafing in groups is not enough, though.    Indeed, in order to better understand their

interrelationship, it is necessary to specify what type of conflict may directly or indirectly

influence social loafing.    Such a specification may serve to establish a web of

associations that explains how each type of conflict is differentially related to social

loafing.    Furthermore, it is also necessary to explore the role of negative emotions in the

relationship between conflict and social loafing.    Including emotion into the current

study helps account for why certain types of conflict result in social loafing, or to what

extent negative emotions may influence that relationship.    As is evident, the current

study will provide insights into the interplay between conflict, emotion, and social loafing

in the milieu of group development.

Two related topics are discussed below.    First, types of conflict in groups and

their discrete influences on group outcomes are explored.    Second, emotional themes in

groups and their differential association with conflict types are analyzed.    This section is

a foundation for understanding how social loafing is influenced by both conflict and

emotion.    It also acts as bridge connecting conflict, emotion, and social loafing with group development.

**Conflict types in groups.**

Conflict in groups has been identified by theorists to include three types: task, relationship, and process (Jehn, 1997; Jehn & Mannix, 2001; Mannix & Jehn, 2004). Task conflict, also termed substantive or cognitive conflict, is caused by an awareness of the differences in viewpoints and opinions about the group's task, such as disagreements about defining the goal(s) for the group, divergence in the content of decisions, or debate about the pros and cons of an idea (Behfar et al., 2011; De Dreu & Weingart, 2003; Guetzkow & Gyr, 1954; Jenn, 1995, 1997; Priem & Price, 1991).    Relationship conflict, also called socio-emotional or interpersonal conflict, stems from value differences and personality clash, and is often imbued with personal animosity, tension, and annoyance among members (Behfar et al., 2011; De Dreu & Weingart, 2003; Guetzkow & Gyr, 1954; Jenn, 1995, 1997; Pearson, Ensley & Amason, 2002; Priem & Price, 1991). Process conflict concerns "disagreements about assignments of duties and resources" (Jehn, 1997, p.540).    Such disagreements reflect the extent to which group members differ in opinions about two types of issues: logistic decisions about planning and task delegation in completing the task, and contribution decisions about distributing rewards and handling disruptive behaviors such as constant absence, unpreparedness, and social loafing (Behfar et al, 2011; Greer & Jehn, 2007; Steiner, 1972).

The three types of conflict bring discrete influences on group outcomes.

Relationship conflict has negative impact on group productivity and level of satisfaction

with working in the group by interfering with the group's effort to solve problems and

make decisions (Evan, 1965; Gladstein, 1984; Wall & Nolan, 1986).    Task conflict of

moderate levels can improve decision-making outcomes and group productivity by

increasing decision quality through incorporating devil's advocate roles and constructive

criticism (Amason, 1996; Cosier & Rose, 1977; Jehn, 1995; Schweiger, Sandberg, &

Rechner, 1989), while very high levels of task conflict can stymie group's task

completion through its high association with emotional outbreak and degraded

interpersonal relationship quality (DeChurch, Hamilton, & Haas, 2007; Simons &

Peterson, 2000; Tidd, McIntyre, & Friedman, 2004).    Process conflict over logistic

issues can decrease the group's performance as well as its ability to make effective

coordination on the task by carrying personal connotations in terms of implied

capabilities or respect in the group (Deutsch, 1973; Jehn & Bendersky, 2003; Jehn &

Chatman, 2000), whereas process conflict over contribution issues can negatively affect

members' satisfaction with working each other and commitment to the group by

potentially inducing a sense of disrespect and unfairness (Bies, 1987; Greer & Jehn, 2007;

Lind & Tyler, 1988).

Not only do those three types of conflict discretely influence group performance

and satisfaction, they are also interrelated throughout the group process.    Research by

Jehn (1997) has demonstrated that task conflict may transform into relationship conflict

when criticisms regarding the task are perceived as negatively implying other's

competence or task conflict has not been successfully resolved.    Research by Behfar et

al. (2008) also found that early process conflicts led to higher levels of all conflict forms

later in a team's interaction, but this cycle was broken when conflict management was

successful at early stages of group development (see also Folger, 1993; Greer, Levine &

Szulanski, 2008; Jehn, 1997; Jehn & Bendersky, 2003; Kuhn & Poole, 2000; Sheppard,

Lewicki, & Minton, 1992; Skarlicki, Folger, & Tesluk, 1999).    Therefore, there is no

doubt that conflict of various forms has impact on group outcomes, be it negative or

positive.    It should also be noted that those various forms of conflict are interrelated in

that one form will transform into another once conflict management is not successful at

the time when that conflict occurs in the group (Greer et al., 2008).

**Emotional displays during conflict.**

Interaction in times of conflict is fraught with affective reactions (Bell & Song,

2005; Jehn, 1997).    For instance, Thomas (1992) found that stress and threat were

associated with conflict in organizations.    In fact, those emotions can shape individuals'

interpretation of group reality and responses to the conflict situations.    Research has

found that people involved in conflict tend to work less effectively when they are

immersed with jealousy, hatred, anger, or frustration, because those emotions may

narrow an individual's thought-action repertoires (Fredrickson & Branigan, 2005) and

oversimplify rational reasoning in the process of conflict management and problem

solving (Argyris, 1962; Pinkley, 1990; Ross, 1989; Thomas, 1992).    Similarly, the

threat-rigidity hypothesis proposed by Staw, Sandelands, and Dutton (1981) has argued

that when group members are under threat or time pressure, they tend to experience

anxiety through threat appraisal, which further blunts their sensitivity to divergent cues

related to solution or task completion, and restricts the amount of information processed

(Gladstein & Reilly, 1985; Lazarus, 1991; Skinner & Brewer, 2002; Staw et al., 1981).

A literature review has revealed a wide range of negative emotions in conflict

episodes, including anger (Russel & Fehr, 1994), frustration (Guetzkow & Gyr, 1954),

uneasiness, discomfort, tenseness, resentment (Stearns, 1972), annoyance, irritation, fury,

rage (Russell, 1978), reproach, scorn, remorse, and hatred (Allport, 1937).   It was also

found that regardless of the type of conflict, emotions in response to conflict were mostly

of negative valance and manifested by such behaviors as yelling, crying, banging fists,

slamming door, or having an angry tone (Jehn, 1997).   By contrast, positive emotions,

such as sympathy, respect, and liking for the other party, are barely, if ever, observed.

The experience of positive emotions during conflict episode is very much contingent

upon one's concern for the benefit of the other party involved in conflict in conjunction

with one's approaching behavioral tendency (see Bell & Song, 2005 for detail).

Without such contingency, negative emotions always result as the response to conflict.

It is easy to see that relational conflict is emotion-laden: negative emotions such

as anxiety, animosity, frustration, strain, and uneasiness are what people normally

experience in that situation (Walton & Dutton, 1969).   Apparently, such reactions may

cause one to either psychologically or physically withdraw from the disturbing situation,

provided that social or group norms deem withdrawal appropriate, and/or potential

conflict management is not anticipated to be available (Jehn, 1997; Peterson, 1983; Ross,

1989).    On the other hand, task conflict may also arouse tension, antagonism, frustration,

unhappiness among group members, as well as dissatisfaction with working in the group

(Amason & Schweiger, 1994; Jehn, 1995).    Although negative emotions tend to arise in

task conflicts (Baron, 1990; Medina et al., 2005; Ross, 1989), the group may benefit from

this type of conflict.    Through presenting dissenting viewpoints (a process somewhat

reflecting the group member's motivation to achieve personal as well as the group's

goals), group members critically evaluate the group's goal, progress, and resources, thus

subsequently decreasing the possibility of groupthink and increasing thoughtful analysis

of the criticisms and alternative solutions (Janis, 1982).    So, in face of the urgency to

keep the group goal-and task-oriented, the negative emotions aroused by the debate over

the differences in opinions and viewpoints may prompt and signal approaching

behavioral tendencies (Bell & Song, 2005) that facilitate analytical thinking and

systematic information processing to remove current as well as forestall future

interference (Buss, 2001; Schwartz, 1990; Schwartz & Bless, 1991).

The process conflict (i.e., logistic vs. contribution) is also linked to negative

emotions.    Logistic conflict rises from disagreements about how to most effectively

organize and utilize group resources to accomplish a task.    Because such disagreements

over job assignment and resource delegation tend to invoke personal connotations with

respect to skills, competencies or personalities (Behfar et al., 2008; Greer & Jehn, 2007),

logistic conflict may incite such emotive reactions as tension, antagonism, frustration,

uneasiness, and unhappiness, among group members.    In addition, appraisal theory also

suggests that negative affects arise from the appraisal that an event is interfering with

one's goals or interrupting one's original plan (see Lazarus, 1991 for detail).    Thus,

when dissents over logistic issues exist (e.g., Who should do what? How should the

resources be distributed with in the group?), negative affect is likely.    Furthermore, with

regard to the behavioral tendencies, logistic conflict can prompt such approach behaviors

as planning (i.e., suggesting a sequential order and direction of acts to be performed in

completing a task), monitoring (i.e., assessing the progress of group performance), and

critical evaluation (i.e., arguing about the way a group member performs her duty,

criticizing about a member's performance, or disapproving a member's suggestion) to

help group coordination and task completion (Behfar et al., 2011; Rhee, 2007).    Even

though planning, monitoring, and critical evaluation tend to discourage further

development of ideas and narrow the range of potential courses of actions in a group task

by stressing efficiency (Rhee, 2007), they can promote group coordination as well as task

completion on the group level (Behfar et al., 2007, 2011).    In contrast, contribution

conflict, arising from the perception of unfair compensation for members who free ride or

otherwise fail to fulfill job obligation and expectation, highlights anger, resentment,

animosity, and dissatisfaction (Behfar et al., 2011).    The negative affect that stems from

this type of conflict tend to weaken members' enthusiasm for and commitment to the

group (Desivilya & Yagli, 2005; Greer & Jehn, 2007).    When motivation to participate

in collective activity is low, psychological or physical withdrawal is likely to occur in this conflict situation.

In brief sum, this section has addressed conflict, emotion, and their relationship. Conflict roughly has three types – task, relationship, and process (with logistic and contribution conflicts included under the process conflict). These three types are distinct in that each type of conflict involves unique content of interaction observable in the group process. Yet, they are related in that all of them are associated with negative emotions. Their relatedness is also manifested by the fact that one type of conflict may later trigger another type once conflict management is not successful and the emotional intensity of the anteceding conflict escalates (Greer et al., 2008). It should be noted that conflict and emotion develop in groups over time (Bales, 1953; Baxter, 1982; Bennis & Shepard, 1956; Ellis and Fisher, 1975; Tuckman, 1965; Tuckman & Jensen, 1977). To further understand the dynamic nature of group interaction, it is necessary to look at how group develops through the different stages of its lifetime. The theory of group development provides a backdrop on which conflict, emotion, and social loafing all can be viewed together. The next section reviews the literature on group development by focusing on Wheelan's (1994) Integrated Model of Group Development.

**Group Development**

Like any growing organism, group develops in discernible patterns over time. Based upon this assumption, scholars (e.g., Bales, 1953; Bennis & Shepard, 1956; Bion, 1961; Mann, 1966; Tuckman, 1965; and Tuckman & Jensen, 1977) have proposed

various similar models that depict group's growing process but differ in the number and

sequence of the phases or stages [See also Hare (1973) for a review].    To reconcile

those differences, Wheelan and her colleagues (Wheelan, 1994; Wheelan &

Hochberger, 1996) proposed the Integrated Model of Group Development, in which

they came up with five stages.

The initial stage of development focuses on issues of *inclusion and dependency*,

as members attempt to identify behaviors acceptable to the leader and other powerful

group members.    Group members look to the leader to clarify roles and responsibilities

and provide safety.    There is a tendency to be polite and tentative.    They may engage in

what has been called "pseudo-work," such as exchanging stories about outside activities

or other topics that are not relevant to the group.    Anxiety, as disguised by the

superficial polite remarks being exchanged within the group, actually abounds in this

early stage (Wheelan, 2003, 2005).

The second stage is defined as a period of *counterdependency and fight*, which is

marked by conflict among and between members and leaders.    Conflict is an inevitable

part of this process.    At this stage, the struggles regarding authority and status are

present, while members also disagree among themselves about group goals and

procedures.    In hope of developing a unified set of goals, values, and operational

procedures, group members are debating about how the group should operate and what

roles each of them will play.    They are not as concerned about fitting in as they are

about expressing opinions.    There is also a tendency for subgroups or cliques to emerge

at this stage.    Even though conflict is prevalent at this stage, scholars argued that it is the

prerequisite for subsequent increases in cohesion and cooperation (Dunphy, 1968; Mann,

1966; Mills, 1964; Tuckman, 1965; Tuckman & Jensen., 1977).    Confrontation with the

leader serves to establish intermember solidarity and openness (Lundgren, 1971; Mills,

1964; Slater, 1966).    In addition, if conflicts are adequately resolved, member

relationships with the leader and each other become more trusting and cohesive (Coser,

1956; Deutsch, 1971; Northen, 1969).    This phase also provides the opportunity to

clarify areas of common values, which further increases group stability.

　　　If the group manages to work through the inevitable conflicts in Stage Two,

member trust, commitment to the group, and willingness to cooperate increase.

Communication becomes more open and task-oriented.    This third stage of group

development, referred to as the *trust and structure* stage, is characterized by more mature

negotiations about roles, organization, and procedures.    There are more open exchanges

of ideas and feedback.    Power struggles that were important during the previous stage

lessen in intensity.    Group members begin a more mature and realistic planning process

about achieving the group's goals.    It is also a time in which members work to solidify

positive working relationships with each other (Wheelan, 2005aa).

　　　As its name implies, the fourth, or *work*, stage of group development is a time of

intense team productivity and effectiveness.    Having resolved many of the issues of the

previous stages, the group can focus most of its energy on goal achievement and task

accomplishment.    The goals in this stage include making informed decisions, remaining

cohesive while embracing task-related conflicts, getting things done well, and

maintaining high performance over the long haul (Wheelan, 2005a).   Members of the

group continue to communicate in constructive ways, working with a high degree of

collaboration, creativity, and productivity.

Groups that have a distinct *ending* point experience a fifth stage.   This is the

point when work colleagues retire or are resigned, family members may leave home, or

tasks get accomplished.   At this point group members have the opportunity to reflect

upon and evaluate their, as well as their peers' performance, along with their satisfaction

with the quality of interpersonal relationships.   They may have a chance to share their

feelings and thoughts, celebrate effort and achievement, and comment on their learning.

Increased expressions of positive feelings may be circulated, and members' appreciation

of each other and the group experience may be expressed (Lundgren & Knight, 1978).

On the other hand, separation issues may also cause disruption and conflict in some

groups (Farrell, 1976; Mann et al., 1967; Mills, 1964).

The Integrated Model of Group Development assumes that there is an order to the

above stages, but at the same time it maintains that events can also cause a group to

return to a previous stage at any point.   For example, the inclusion of new members, a

change in the structure, or new sets of demands at Stage 2 may well make the group

return to Stage 1.   It is also possible that a group may stay stuck in Stage 2 and not

progress, or even regress to the previous stage, if conflict has not been successfully

navigated.   So Wheelan's model reveals a general trend of group development by

delineating typical activities and behavioral patterns most observable in each of the five

stages.    It should be noted that those activities and behavioral patterns may forecast

social loafing in groups.    For example, the second stage (*counterdependence and fight*)

is characterized by low levels of cohesiveness and high levels of interpersonal conflict.

According to Kidwell and Bennett (1993), lack of affective bonding with or emotional

attachment to the group predicts group members' propensity to withhold effort, leading to

potential social loafing in the group.    Then it can be reasoned that if a group is

performing on the second stage (*counterdependence and fight*), social loafing is likely to

result.    Therefore, using Wheelan's model as a general frame of reference, we can

investigate how social loafing unfolds itself in the process of group development,

supplementing and enhancing the extant group development theories with more power in

predicting problematic interactions (such as social loafing) on the basis of the knowledge

of a particular stage in group's lifetime.    The following section explores the question of

when social loafing is to be perceived on the different stages of group development, and

provides explanations that address the question of why social loafing can be perceived in

that particular stage.

**Perception of Social Loafing in Group Development**

Before addressing the connection of group development to social loafing, it is

necessary to distinguish perceived social loafing from actual social loafing.    Making

such distinction helps to clarify the goal of this research – establishing a connection

between group members' perception of social loafing with their perception of the group

progress.    Actual social loafing is the effort reduction behavior enacted by one or more

group members, regardless of whether the rest of the group can feel or perceive it

(Comer, 1995; Karau & Williams, 1993; Kidwell & Bennett, 1993).    In contrast,

perceived social loafing focuses on the awareness of the group members who believe the

existence of social loafing in the group, irrespective of whether it actually exists or is

actually committed within the group (Mulvey & Klein, 1998).    In addition, perceived

social loafing is based upon group members' appraisal and reflection of the quality of

their group experience, whereas actual social loafing involves effort reduction behaviors

that can be observed objectively (e.g., through unobtrusive watching, gauging

productivity , and supervisor evaluation).    It is possible for social loafing to occur

without the other group members perceiving the reduced effort if a false sense of

harmony predominates in the group.    It is also possible that group members can perceive

loafing even when all group members are actually contributing fully to the group task if

the group has irresolvable relational conflicts imbued with personal attacks or strong

negative emotions.    For perceived loafing to perfectly reflect actual loafing, the efforts

of all group members would need to be observed, attended to, correctly interpreted, and

accurately retrieved by all group members (Lord, 1985).    Research in a number of areas

of organizational behavior (e.g., attribution theory, justice, stress, decision making, and

performance appraisal) has shown that attitudes and behavior are largely based on

perceptions which may or may not reflect actual conditions (Ilgen, Major, & Tower,

1994).    Since the current study is mainly concerned with group members' appraisal of

their intra-group interaction (which is fraught with conflicts and emotional displays on the backdrop of group development), perceived, rather than actual, social loafing is considered as a better variable that meets the purpose of the current research than actual loafing.    Thus, perceived social loafing is the focus of this research.

Wheelan's 5-stage model of group development provides a context for identifying when social loafing tends to emerge and is likely to be perceived.    On Stage One, *Inclusion and Dependency*, when group members are not familiar with the task and look to the leader for job and role clarification, they are likely to find their competencies mismatched with the group's goal and task requirements.    This is because initial role and task assignments tend to be based on members' external status, first impressions, and initial self-presentation rather than the match between their task-related abilities and the group goals (Wheelan & Hochberger, 1996).    Fearing the rejection by the group, one may not openly show disagreement with the mis-assigned role or task by passively complying with the leader and the rest of the group.    This further could reinforce a sense of lack of influence over group outcomes.    According to Comer (1995), when a group member feels that he or she does not have a say in the group's task completion, he or she will be disheartened to loaf.    On the other hand, social loafing may also occur when the loafer intentionally works less hard in front of the group because he or she does not want to be unfairly exploited later by other members.    This strategic avoidance of appearing too competent leads to self-effacing loafing (Comer, 1995).    Whatever the reason is for social loafing, it can sneak in at this initial stage of group formation.    As Wheelan and

Hochberger (1996) observed, participation was generally limited to a few vocal members while the rest might act like by-standers who seldom took the initiative to contribute substantively to group activities.   Despite the fact that social loafing may exists in the first stage of group development, group members who are experiencing that stage are not likely to perceive it.   This is because the group task has yet to be formally defined, overt conflicts are minimal, performance norms have not been established, open disagreements with the initial group goals are rare, intra-group communication is usually tentative and polite, and member's deviation from the emerging group norms is also rare (Wheelan & Hochberger, 1996).   Meanwhile, group members are making efforts to reduce the primary tension (i.e., the awkward feeling they have before communication rules and expectations are established, Bormann, 1990; Bormann & Bormann, 1988) by being polite and taking time to learn about each other.   So the superficial rapport gives rise to an overall positive group environment, minimizing the chance of spotting problematic interactions and thus lowering the possibility of perceiving social loafing within the group.   So it is hypothesized that:

> H1: Group members performing in the stage of *Inclusion and Dependency* are
>
> more likely to disagree about having perceived social loafing than agree about
>
> having perceived social loafing in their group.

The second stage of group development in Wheelan's model is *Counter-dependency and Fight*, which is marked by conflict among and between members and leaders.   Disagreements about goals, tasks, and role assignments start to surface when

subgroups or coalitions begin to form and members in their subgroup or coalition feel

secure enough to vent their dissents toward people or things belonging to the other camp

(Wheelan & Hochberger, 1996).    Social loafing in the form of disheartening and

self-effacing (see also Comer, 1995) may still continue at this point because conflicts

about goals, tasks, norms, and role assignments have yet to be solved successfully and the

causes for those two types of loafing (i.e., perceived lack of influence over outcomes, and

concern over being exploited later by other group members) are still there in the group.

In addition to those two types of loafing, a third type – retributive loafing – may also

occur on the second stage, because some members may openly assert their individuality

in the form of nonconformity to the current group power structure (Comer, 1995;

Worchel & Goutant, 2002).    Because this stage is typical of open discordance with the

group leader, social loafing is perceived on the basis of some visible cues, such as

reduced interaction with the leader, increased instances of absence or tardiness in group

participation, and increased verbal disagreements with the original task assignment.

Furthermore, the prevalent inter-clique tension may also lead to a less positive group

climate, which adds to the possibility of ascribing social loafing to members in the other

subgroup.    So it is hypothesized that:

> H2: Group members performing in the stage of *Couterdependency and Flight* are
>
> more likely to agree about having perceived social loafing than disagree about
>
> having perceived social loafing in their group.

The outbreak of conflicts and emotions in the second stage can prompt the group

to be aware of the issues with its goals, norms, tasks, roles, as well as the member's

interaction.    After rounds of negotiation, discussion, and problem solving, the group

gradually converges upon some level of consensus regarding those issues.    In addition,

conflict resolution, if successful, increases the level of trust and cohesion within the

group (Wheelan & Hochberger, 1996).    Now the group is on Stage Three, *Trust and

Structure*, which is characterized by breaking the wall of division and developing

cohesive group climate.    Tensions formerly associated with Stage Two are now lessened

because group goals are clarified, cooperation stressed, roles re-negotiated, leadership

refined, coalition declined, group norms redefined, and individual commitment to the

group goals and tasks strengthened (Wheelan & Hochberger, 1996).    Furthermore, the

perceived compliance with norms and the subsequent pro-social act (i.e., cooperation)

toward other members of the group tend to decrease the level of effort-withholding

propensity, which further reduces the occurrence of social loafing (Kidwell & Bennett,

1993).    In addition, the re-negotiated roles, readjusted leadership, and improved

interpersonal relationships make group members believe that their individual effort is

valued by their groupmates and can bring about the intended group results, thus uplifting

the overall work-related motivation and reinforcing the group identity among all group

members.    According to Karau and Williams (1993), meaningful tasks, salient group

identity, and respectable group members to work with, will lessen the likelihood of the

occurrence of social loafing.    Even though some of the factors leading to actual social

loafing may still exist during this stage (e.g., avoid being too competent, the sucker role effect), heightened motivation to pull the group back on the task track and repair the formerly-compromised intra-group relationship may dampen the strength of the effects of those factors on the likelihood of social loafing.   Therefore, because of the collective efforts to re-structure and refine the group with respect to its roles, goals, and climate, chances for actual social loafing are reduced.   Not only is the actual social loafing less likely to occur, but it is also less likely to be perceived by the group members.   This is because the rising level of trust, cohesion, and satisfaction with working in the group (Wheelan & Hochberger, 1996) creates a positive working climate for all group members and motivates them to cooperate with each other, thus bolstering a strong sense of affinity and affiliation toward the group.   The positive affect inclines the group members toward a positive appraisal of their group experience (Dipboye, 1985; Landy & Farr, 1980), lowering the likelihood of perceiving social loafing in the group.   So it is hypothesized that:

> H3: Group members performing in the stage of *Trust and Structure* are more
>
> likely to disagree about having perceived social loafing than agree about
>
> having perceived social loafing in their group.

The fourth stage of group development, *Work*, is the time when intense team productivity is at its peak level.   Task interdependence, which is characterized by the task-driven interaction within the group (Shea & Guzzo, 1987), is highly stressed during this period, for the group members need to interact with one another to accomplish the

task before the deadline.    According to Manz and Angle (1986), when task

interdependence is high in the group, individuals tend to believe that their effort is

indistinguishable from the effort put forth by their coworkers.    They might lose their

sense of personal achievement in their work.    They tend to believe that it is best to

reduce effort given that opportunities for personal accomplishment are not forthcoming

(Kidwell & Bennett, 1993; Liden et al., 2004).    Consequently, social loafing occurs.

In work settings where interdependence is highly stressed, it is also typical for

group members to compare their abilities with those of their peers through interaction

(Goethals & Darley, 1987).    According to Festinger (1954), individuals need to know

where they stand in terms of their skills, proficiency, and knowledge in the group by

comparing with their group peers.    It is likely that an individual who perceives he or she

is less competent at the task than other group members will feel his or her contribution as

redundant or unnecessary, as a result of this sense of relative inferiority to others in the

group (Comer, 1995).    According to Comer (1995), the perception of dispensability of

one's contribution to group work will forecast self-marginalizing loafing.    On the other

hand, the perception of relatively low ability in oneself may also lead to self-enhancing

loafing, in which case the loafer tries to give group members the impression that he or

she is lazy rather than incompetent.    Another consequence of intra-group comparison is

that an individual who perceives his or her task ability as superior to other group

members will also loaf so as not to deflate those less capable coworkers and/or to keep

them from relying too much on him or her to complete their own share of work (Comer,

1995).    Accordingly, in addition to self-marginalizing loafing and self-enhancing

loafing, another two types of loafing may result: self-effacing loafing (to avoid appearing

too competent) and retributive loafing (to avoid the sucker role).

In addition to its actual occurrence, social loafing is also likely to be perceived on

the fourth stage of group development (Liden et al., 2004).    As a salient character of this

stage, interdependence makes it easy for group members to keep track of each other's

quality as well as quantity of contribution, speed as well as efficiency of production

through task-related interactions.    Once any instance such as tardiness in group meeting

participation, failure to meet the assignment's due date, submission of a defective piece

of work that requires redo by other members, and/or contribution to the group work with

no substantive content, occurs in the group, members can quickly notice and interpret it

as social loafing.

Furthermore, emotional tensions on this stage relate to social loafing being

perceived by the group.    As task-related activity reaches its peak, conflicts are managed

in such a way as to limit debate and disagreement to task issues only, while little energy

is devoted to solving relational or socio-emotional issues (Bales, 1953; Wheelan, 2005a).

As a result, negative emotions such as anxiety and discomfort start to accumulate and

lurk its way in the group, often insinuating group members' concerns over incompatible

beliefs/attitudes/values, personality clash, and mismatched work styles.    Such negative

emotions are further reinforced and exacerbated by the perception of absenteeism,

tardiness, balkiness in completing group assignment, questioning the worth of the group,

and rejection of the help requested by other members (Bennis & Shepard, 1956).    While

the group still carries its work momentum forward, the manifestation of negative

emotions during this work-intensive stage not only signals problematic interaction along

the socio-emotional dimension of group dynamics, but also pertains to the group's

awareness of the occurrence of social loafing.    So it is hypothesized that:

> H4: Group members performing in the stage of *Work* are more likely to agree
>
> about having perceived social loafing than disagree about having perceived
>
> social loafing in their group.

Two of the hypotheses above (H2 and H4) have predicted the likelihood of

perceiving social loafing in the stage of *Counterdependency and Fight* and the stage of

*Work*.    Then, for the purpose of academic quest, it is legitimate to ask: Is social loafing

more likely to be perceived in the stage of *Work* than in stage of *Counterdependency and*

*Fight*, or is it the other way round?    Based upon the foregoing analysis, it can be seen

that the perception of social loafing in the stage of *Counterdependency and Fight* is

contingent upon the group members' discordance with their leader or supervisor's initial

role assignment, as well as the negative emotions brought up by the inter-clique conflict

(Bennis & Shepard, 1956; Tuckman1965; Wheelan, 1994; Wheelan & Hochberger,

1996).    However, the factors leading to the perception of social loafing in the stage of

*Work* are greater in number and more influential than those in the stage of

*Counterdependency and Fight*.    First, the stage of *Work* is typified by a high level of

task interdependence that not only gives rise to actual social loafing (Comer, 1995;

Kidwell & Bennett, 1993), but also makes it easier for the whole group to monitor its

overall working pace and notice especially the loafer's slacking-off moments.    Second,

when group members are performing in the stage of *Work*, they are quite anxious about

getting the work done in a timely manner, as some deadline previously established is

drawing close.    They are very sensitive to such cues as tardiness, absenteeism,

postponement or delay by some potential slackers.    Such sensitivity increases the chance

for members to perceive social loafing.    Third, as has been stated, lack of relational

maintenance in the stage of *Work* increases the chance for the group to experience

negative emotions.    According to Carretié et al. (2001) and Vaish and Grossmann

(2008), when people are under the influence of negative emotions (e.g., anger and

outrage), they tend to make biased judgments and attribute social loafing to peers with

whom they have troubled relationship.    Therefore, higher task interdependence, bigger

pressure to complete group work before the deadline, and more intense emotions as a

result of less relational maintenance – all point to the stage of *Work* as a time more likely

for group members to perceive social loafing than they are in the stage of

*Counterdependency and Fight*.    So it is hypothesized that:

> H5a: Group members are more likely to perceive social loafing in the stage of
>
> > *Work* than they are in the stage of *Counterdependency and Fight*.
>
> H5b: The stage of *Work* associates with group members' perception of social
>
> > loafing more strongly than does the stage of *Counterdependency and Fight*.

H5c: The degree of the perception of social loafing in the stage of *Work* is higher

than the degree of the perception of social loafing in the other stages of group

development.

The *ending* stage in Wheelen's model is marked by the completion of the task and

the termination of the group.    Since this is the ending point and no task needs to be

done, social loafing is not an issue and will not be addressed in the current paper.

In a nutshell, by looking at the different stages of group development, we can

predict whether or not social loafing will be perceived by the group members.    Social

loafing is more likely to be perceived when the group is performing on Stage 4 (i.e.,

*Work*) and Stage 2 (i.e., *Counterdependency and Fight*) than when the group is

performing on Stage 1 (i.e., *Inclusion and Dependency*) and Stage 3 (i.e., *Trust and*

*Structure*).    The above analysis also suggests that the perception of social loafing is

inseparable to the group's experience of conflict and emotion in the course of group

development.    It is pretty much easy to see the implication here: Conflict and emotion

influence the perception of social loafing in a particular way.    The following section

reviews the relevant literature and tries to establishing the possible connections between

conflict, emotion, and the perception of social loafing.

**Conflict, Emotion, and Perceived Social Loafing**

The former review on conflict and emotion has laid a foundation for

understanding how conflict and emotions are related to the perception of social loafing.

Their possible relationships are proposed as follows.    In the first place, perceived social

loafing is directly incited by contribution conflict, because the perceptions of unequal

share of workload and unfair reward distribution are where social loafing starts to be

perceived.    Negative emotions pervade as a result of the contribution conflict, based

upon VanYperen et al.'s (2000) finding that unjust reward outcomes (i.e., distributive

injustice) lead to negative affect in workplace.    The negative affect aroused by the

contribution conflict may further incline the group members toward the judgment that

social loafing is occurring in the group, because negative emotions facilitate both the

speed with which the arousing information is processed (Öhman, Flykt, & Esteves, 2001)

and the likelihood that it will be processed (Phelps, Ling, & Carrasco, 2006; Vuilleumier

& Schwartz, 2001).    When group members are under the influence of the negative

emotions aroused by the contribution conflict, they are highly likely to attend to such

relevant cues as concerning free-riding, interaction withdrawal, and effort reduction in

their following conflict interaction within the group.

        In addition, perceived social loafing would also stem directly or indirectly from

relationship conflict.    Their direct association can be derived by arguing that

withdrawing from conflict and making reduced contribution to the group (i.e., the two

basic elements that define social loafing) can be intuitively adopted by at least one party

when relationship conflict arises in a group setting, as compared to the other conflict

management tactics.    That is, collaboration or compromising involves rounds of

discussion and negotiation, which cost time and energy.    The accommodation strategy in

handling relationship conflict may not only cause the accommodating party to lose face

and say, but also incur humiliation.    The use of competition strategy, however, is prone

to drive the confrontation to escalate, especially in face of the other party who adopts the

same strategy.    Even though withdrawal and effort reduction are by no means pro-social

considering their negative influences on group productivity and morale (Deutsch, 1973;

Folger et al., 2001), they are strategic in that 1) they save the less powerful individual

from being a target of continued attack or denigration, 2) the person who withdraws can

retaliate the other party (often the one with comparatively more power in the conflict) by

adding relatively more workload to that party or the others concerned (which is quite

typical of retributive loafing), and 3) the loafer asserts his or her importance to group's

task completion once the loafing causes delay or undermines group performance (which

is quite typical of self-enhancing loafing) (cf. Comer, 1995).    Baxter (1982) also argued

similarly that avoidance is a prevalent means of coping with conflicts in group settings,

considering the total efforts when other conflict management styles are adopted.    Group

members are quite alert and sensitive to others' avoiding and effort reducing tendencies,

because they do not want to be exploited unfairly by the potential loafers in the

relationship conflict.    At the same time, relationship conflict can also influence the

perception of social loafing through the mediation of negative affect.    It has been found

that stress, anxiety, and resentment aroused from the troubled relationship may trigger

fleeing tendencies in group members, especially in members who are in an inferior

position in the conflict (Jehn, 1997; Peterson, 1983; Ross, 1989; Walton & Dutton, 1969).

Meanwhile, through group's emotional contagion mechanisms (Barsade, 2000; Barsade

& Gibson, 1998), those who are in the dominant position in the conflict are also under the influence of negative emotions (e.g., anger and outrage), which prompted them to attend to those cues signaling effort reduction and judge them as the evidence of social loafing in the group. It is also interesting to note that sometimes those negative emotions may even bias some members toward attributing social loafing to their peers with whom they have troubled relationships, even though their peers may not actually loaf at all, a case corresponding to the negativity bias (see Carretié et al., 2001; Vaish & Grossmann, 2008 for detail).

Based upon the above analysis on the relationship among perceived social loafing, contribution conflict, relationship conflict, and the negative emotions, it is seen that both contribution conflict and relationship conflict can directly cause perceived social loafing in the group. In addition, contribution conflict and relationship conflict assert their influence on the perception of social loafing through the mediation of negative emotions. However, it should be noted that in group settings, contribution conflict and relationship conflict are entangled in such a way that mutual causation is possible. On the one hand, the sense of unfairness and injustice aroused by the contribution conflict may lead one party into believing that they are being exploited by the other party, thus bringing tensions and relational discordance to the group. On the other hand, the tensions caused by the troubled relationship in the group may lead some members into reducing their involvement with group activities by being late, absent, or postponing, thus generating contribution conflict in the group. Considering their reciprocal causal relationship, it is

at least safe to say that contribution conflict and relationship conflict are correlated in a

group situation.    Therefore, the following hypotheses are proposed to describe the

association between contribution conflict, relationship conflict, perceived social loafing

and negative emotions:

> H6a: The higher the level of contribution conflict, the higher the level of
>
> perceived social loafing in the group.
>
> H6b: The higher the level of contribution conflict, the higher the level of negative
>
> emotions in the group.
>
> H7a: The higher the level of relationship conflict, the higher the level of perceived
>
> social loafing in the group.
>
> H7b: The higher the level of relationship conflict, the higher the level of negative
>
> emotions in the group.
>
> H8: The higher the level of negative emotions, the higher the level of perceived
>
> social loafing in the group.
>
> H9: Contribution conflict and relationship conflict tend to covary, such that the
>
> higher the level of contribution conflict, the higher the level of relationship
>
> conflict in the group.

The association of task and logistic conflicts with perceived social loafing may be

contingent upon the level of negative emotions in the group.    Research has shown that

groups discuss, argue, and debate about goal issues or task delegations when confronting

moderate levels of task or logistic conflict (Jehn, 1995).    Those conflict interactions

indicate group members' motivation to reorganize the group's human resource structure

by assigning the right job to the right person.    They may also serve to minimize the

occurrence of social loafing because group members believe that their involvement in

resolving task or logistic conflict is intrinsically meaningful and important to achieving

their personal as well as the group's goals [see Karau and Williams (1995) for details of

reducing social loafing in groups.].    Furthermore, although a moderate level of task and

logistic conflicts may coincide with animated discussions and personal excitement, they

are, by definition, void of intense interpersonal emotions (Jehn & Mannix, 2001).    As

has been suggested above, when negative emotions are low in the group, the chance for

social loafing to be perceived is also low.    Therefore, moderate levels of task and

logistic conflicts may be associated with low levels of perceived social loafing in the

group.    However, if negative emotions become intense in either of those two conflict

situations (indicating the escalation of the intensity and severity of the conflict), group

members tend to perceive those conflicts more as relationship conflicts, thus making

biased judgment regarding the efforts contributed by their co-workers.    This would

suggest the possibility of high levels of social loafing being perceived in the group.

Since the relationship between perceived social loafing and task or logistic conflict is

contingent up the intensity of negative emotions, it can be proposed that negative

emotions may moderate the association of task and logistic conflict with perceived social

loafing.    Therefore, the above analysis generates the following four hypotheses:

H10a: When the level of negative emotions is low (i.e., not or very little felt), task

conflict and perceived social loafing are negatively correlated in the group.

H10b: When the level of negative emotions is high (i.e., very much or extremely

felt), task conflict and perceived social loafing is positively correlated in the

group.

H11a: When the level of negative emotions is low (i.e., not or very little felt),

logistic conflict and perceived social loafing is positively correlated in the

group.

H11b: When the level of negative emotions is high (i.e., very much or extremely

felt), logistic conflict and perceived social loafing is negatively correlated in

the group.

With regard to the relationship between perceived social loafing and conflict type,

it has been proposed that all those four conflict types exert some influence on perceived

social loafing.   However, little is known about the relative strength of the prediction

from conflict types to the perceived social loafing.   That is, little is known about

whether contribution conflict predicts perceived social loafing better than the relationship

conflict does, and whether relationship conflict predicts perceived social loafing better

than the task conflict or the logistic conflict does.   So the following question captures

the above research endeavor:

RQ1: Is contribution conflict associated with perceived social loafing more closely than are other conflict types (i.e., task conflict, relationship conflict, and logistic conflict)?

In sum, conflict is associated with the perception of social loafing in group interaction.   Such associations might be either mediated (as in the case of contribution conflict or and relationship conflict) or moderated (as in the case of task conflict or logistic conflict) by the presence of negative emotions.   So far, the connections of perceived social loafing with conflict, emotion, and group development have been established.   What has yet to be addressed is the connection between group development and conflict in conjunction with emotions.   The following section seeks to depict such relationships and propose further hypotheses.

**Conflict and Emotion in Group Development**

It has been argued that the possibility of perceiving social loafing is differentially associated with distinctive stages of group development.   It has also been argued that the perception of social loafing is associated differentially with distinctive conflict types in conjunction with emotional themes.   So, it can be further reasoned that conflict in conjunction with emotional displays should go hand in hand with stages of group development.   Past research has already found communication patterns in conflict vary over the course of group development.   For example, Ellis and Fisher (1975) classified group development into three phases, with each phase typified by a distinct conflict pattern.   Conflict in Phase One was the result of individual differences, thus the phase

was labeled *interpersonal conflict phase*.    Phase Two was called the *confrontation phase*, because it was characterized by increased polarization of opinions as well as direct responses to disagreements.    Phase Three was fraught with task-oriented interactions with emphasis on showing consensus, offering support, and clarifying ambiguity, thus labeled *substantive conflict phase*.    Baxter's (1982) research also reported similar results, where she found that the initial stage of a group's history was characterized by a generally low level of expressed disagreement, the middle stage was accompanied by an increased expression of disagreement and argument, and the final stage was likely to see the reduced frequency of disagreement acts.

It was Jehn and Mannix (2001) who made the initial attempt to see how the three types of conflict develop over time in high performing groups.    In their longitudinal study, the authors investigated 51 three-person groups, whose members were part-time M.B.A. students taking the same general management course at three U.S. business schools.    They found that higher group performance was associated with particular patterns of conflict.    That is, process conflict and relationship conflict were both escalating gradually in the group's history (which was divided into early, middle, and late time blocks), while task conflict reached its peak in the middle stage of group development.    In addition, chances for perceiving task conflict were greatest in early and middle stages, followed by relationship conflict and then process conflict.    In the late stage, process conflict dominated, with relationship conflict ranking in the second place and task conflict having the comparatively minimum occurrence.    Jehn and

Mannix also found that low performing groups only had relationship conflict escalating over the course of the group development, while process conflict and task conflict both had a down fall from early to middle stages and a rise from middle to late stages, resulting in a U-shape function.   While task conflict in low–performing groups maintained the highest level of all the three conflict types across the history of the group, the other two conflict types were found to be associated differentially with the each of the three time blocks (i.e., early, middle, and late): 1) Process conflict were more likely to be perceived in early stage than relationship conflict, 2) relationship conflict were more likely to be perceived in middle stage than process conflict, and 3) they had almost a tie in late stage.

Although differences can be found among the above three studies [i.e., Ellis and Fisher (1975) emphasized upon the typical pattern of interaction during conflict, Baxter (1982) focused upon the expressed vs. unexpressed disagreements, and Jehn and Mannix (2001) stressed the developmental trend of the three conflict types], they all have revealed that conflict develops through stages in groups.   However, none of them has addressed how different types of conflict develop within a specific model of group development.   In other words, no research has yet tested the generality of the group developmental model by connecting the conflict types with the typical interaction patterns depicted by a specific group developmental model.   Furthermore, even though emotions might be implied in the conflict process, none of those studies provides an overarching picture depicting how conflict and emotion co-exist and co-develop in the

group's history.    Closing such loopholes would not only specify more clearly and in more detail how conflict develops across the lifetime of group, but also validate the connection of group development with various other constructs, such as social loafing and emotion.    Therefore, the following analysis explores and proposes hypotheses with respect to the relationship between group developmental stages and the conflict types in conjunction with emotional manifestations.

The group performing in the initial stage, *Inclusion and Dependency*, would find logistic conflict more salient than the other three types of conflict (i.e., contribution, task, and relationship).    Past research has demonstrated that once the task is assigned by a supervisor (such as the organization's management or the group leader), the means of accomplishing the task is left to the group itself (Hackman, 1987; Wageman, 1996). Group members are allowed, and even encouraged to discuss the procedural or administrative features of the task.    Tuckman (1965) also found that the initial stage of group formation is characterized by the direct attempts to search available techniques and resources that are to be used to accomplish the task.    In addition, because group members have their unique past group experiences and personalized ways of approaching the task, discrepancies in the styles of working are inevitable, thus opening the possibility for disagreements about the steps or procedures of getting the job done.    In comparison, chances of perceiving relationship conflict, contribution conflict, and task conflict are relatively small, because: 1) group members are nice and polite toward one another to develop interpersonal relations and strive to leave other group members with good

impressions, 2) members have yet to make full contributions to the task, thus having a

minimum sense of unfairness in relation to the comparison between their contribution and

others' contributions, their corresponding rewards and other's corresponding rewards,

and 3) members rarely challenge the goal and the workload initially assigned to them.

These three factors all point to the possibility that relationship conflict, contribution

conflict, and task conflict are less likely to be experienced than the logistic conflict.

Therefore, it is hypothesized that:

> H12a: In the stage of *Inclusion and Dependency*, group members tend to report
>
> higher degrees of logistic conflict than the degrees of either relationship,
>
> contribution, or task conflict.

Emotions on the individual level in this initial stage of group development can be

categorized as excitement accompanied by anxiety, uncertainty, and frustration (Guerrero

& Anderson, 2000).    Because of the pressure to seek inclusion and get the attention

from the group leader, group members may show that they are excited about joining the

group and knowing each other.    In addition, because the group situation is new to them,

they may also have a certain level of expectations about their forthcoming experience in

the group with mixed feelings of uncertainty and anxiety.    Furthermore, through some

initial interaction with other members or the leader in the group, they may find that some

incidences are not what they previously anticipated, as revealed by the fact that favorable

comments are least reinforced and more ambiguous comments are reinforced than in

other stages (Fisher, 1970).    Therefore, they can feel that there is a latent conflict caused

by differences among themselves in the group, and it is really frustrating to see that

tensions are accumulating but still dormant for a certain period of time.    Because

interpersonal relationships just start to form in this initial stage of group development,

personal emotions should be revealed in a positive light for the purpose of relational

maintenance.    Thus, it is reasoned that even though tension and anxiety may exist,

negative emotions such as anger, fatigue or depression are less likely to be aroused

through intra-group interaction.    It is hypothesized that:

> H12b: In the stage of *Inclusion and Dependency*, group members tend to
>
> experience more positive emotions (i.e., friendliness and vigor) than those
>
> negative emotions (i.e., anger, depression, tension, confusion, and fatigue).

The group performing on the second stage, *Counterdependency and Fight*, is

characterized by disharmony between the group leader and the followers.    Possible

clique formation may also occur based on the similarities members share with one

another about their beliefs, values, or attitudes (Wheelan, 1994).    Established leader will

undergo a period when group members are questioning his or her qualification by

examining the leader's legitimacy, resources, expertise, attractiveness, and overall

competence.    At the same time, there is a competition for leadership from group

members, as evidenced by the facts that the leader is often the target of mocking, that

leader's motion is accepted with ambivalence, reservation, or resistance, and that group

members are often absent from group meetings.    On the other hand, when two opposing

cliques are formed in the group, members in one clique are striving to be the privileged

class over the other, stressing their differential qualities in terms of beliefs, attitudes, and

values while disparaging the defects in the other clique.    Thus, coalition formation,

ideational polarization, and leadership challenge are quite typical of a group in the second

stage of group development (Ellis & Fisher, 1975).     As can be seen, the discordance

during this time reflects the disagreement about issues of leadership, power, and

hierarchical structure, rather than the differences in the opinion about what or how group

task should be accomplished.    Therefore, relationship conflict tends to prevail in this

stage.    So, it is hypothesized that:

> H13a: In the stage of *Counterdependency and Fight*, group members tend to
>
> report higher degrees of relationship conflict than the degree of either task,
>
> logistic, or contribution conflict.

As the name of the second stage suggests, group members are emotionally

detached from the group leader, valuing the leader less positively than they would in the

initial stage.    They also avoid involvement with the task, as the competition for power

and status is considered as their priority to anything else.    Between the coalitions, the

conflict causes all group members to defend their position represented by each sub-group,

with hostile and aggressive remarks being directed toward the group leader or members

in the opposing sub-group (Mann, 1953; Stoute, 1950).    Uncertainty and anxiety over

the productivity of the group upset group members, for the existence of the group is now

being endangered.    If no measures were taken to solve the leadership issue and the

deteriorating group moral, the formation of cliques and the alienation from the group

leader would definitely check the group from advancing further to a higher stage.

Therefore, it is reasoned that anxiety, anger, and emotional exhaustion may abound in the

second stage.    So, it is hypothesized that:

> H13b: In the stage of *Counterdependency and Fight*, group members tend to
>
> experience more negative emotions (i.e., anger, depression, tension, confusion,
>
> and fatigue) than positive emotions (i.e., friendliness and vigor).

Wheelan (1994) described the third stage of group development, *Trust and*

*Structure*, as a relationship promotion period when group members come out of their

sub-group to redefine their relationship with the whole group.    Group members at this

point realize that they are better together than apart, that former coalitions have

compromised the group's productivity, and that cooperation can still be achieved in spite

of differences and disagreement.    Since group climate is now improving and the

previously-harmed relationships are now being amended, relationship conflict is inclined

to decline.    Process conflict (i.e., logistic and contribution conflict) is also less likely to

be felt because the modified group structure (i.e., norms, workload distribution, and

fairness) has not only removed most, if not all, of the confusions about the role delegation

and task coordination, but also rectified the previous procedure that caused the sense of

unfairness.    However, group members are more likely to experience task conflict during

this period of time than they would experience other conflict types.    Past research has

found that after the group has successfully managed relationship conflict, members are

likely to be comfortable with each other and able to engage in task-related conflict

without its turning into personal attack (Gersick, 1988, 1989; Jehn & Mannix, 2001).

The content of the task conflict includes discussions of task goals and debates around

various opinions of group members in terms of the final product and decision.    Task

discussion, disagreements, and idea generation most often occur during this period of

time.    Thus, it is hypothesized that:

> H14a: In the stage of *Trust and Structure*, group members tend to report higher
>
> degrees of task conflict than the degrees of either relationship, logistic, or
>
> contribution conflict.

With respect to emotional displays in this stage of group development, it is quite

evident that mutual trust reaches its peak.    Laughter, joking, and humor will gradually

increase among group members (Bennis & Shepard, 1956).    Most of the individuals are

quite satisfied with their current interpersonal relationships within the group.    Their

biggest concern, however, is about the outcast (i.e., independent) who may harm the

overall harmony in the group.    Group members are also anxious about whether they can

get positive feedback from the leader or from the other members (Steven-Long et al.,

1995).    Except for that, the overall intensity of negative emotions, such as fatigue,

frustration, or anger, is really low.    So, it is hypothesized that:

> H14b: In the stage of *Trust and Structure*, group members tend to experience
>
> more positive emotions (i.e., excitement and vigor) than negative emotions
>
> (i.e., anger, depression, tension, confusion and fatigue).

Wheelan (1994) labeled the fourth stage of group development as *Work*, a period in which group members worked effectively and constructively as a whole unit to realize the goals of cooperation and productivity.   As task involvement and interdependence are typical during this period of time, group members tend to find barriers or discrepancies do exist between them in terms of the understanding of the task, the value system each of them holds, and the personality issues.   Those barriers or discrepancies, which were concealed in the form of illusory intimacy in the former stage, now backlash and gradually undermine the quality of relationship within the group.   However, relationship conflicts will not be addressed overtly and openly on the group level because of the cost of distraction from the group's energy on processing the task.   Instead, contribution conflict will replace relationship conflict as the most evident conflict type.   This is because the formerly suppressed tensions in the relationship conflict can incite group members to intentionally withdraw from group activities in such forms as tardiness or absence in group participation, postponement or delay of one's work, and slacking off or piggybacking onto others to finish one's required portion of work.   At the same time, the number of task-related conflict and logistic conflict tends to decline gradually, as the group is approaching the deadline, procedures of how to do the task are now being followed, and the task is about to be finished pretty shortly.   Thus, it is hypothesized that:

H15a: In the stage of *Work*, group members tend to report higher degrees of

contribution conflict than the degrees of either relationship, logistic, or task

conflict.

Emotional displays unfold in two successive themes.    In the early stage of *work*,

individuals are quite happy with a rejuvenated sense of belonging.    Such joyous

atmosphere is also infused by a high degree of camaraderie, affiliation, and uniformity.

However, this fake feeling of union is quickly disillusioned by the forthcoming

contribution conflict as well as the latent relationship conflict.    Subsequently, when the

initial "honey moon" period at the outset of the *work* stage starts to fade, emotions such

as frustration, anxiety, anger, and despair emerge in reaction to the perception of the

escalated absenteeism, tardiness, balkiness in initiating group assignment, questioning the

worthiness of the group, and rejection of the help requested by other members (Bennis &

Shepard, 1956).    Such feelings also go with the group member's flight behavioral

strategies, revealing their attitudes toward each other and the group.    So, it is

hypothesized that:

H15b: In the stage of *Work*, group members tend to experience more negative

emotions (i.e., anger, depression, tension, confusion, and fatigue) than positive

emotions (i.e., friendliness and vigor).

With respect to the development of conflict and emotions across the stages of

group development, questions still remain as to how the different types of conflict and

emotional themes fluctuate over time.    So the following research questions are

proposed:

> RQ2. In what stage of group development does a particular conflict type (i.e., task
>
> conflict, relationship conflict, logistic conflict, and contribution conflict) fall
>
> to the bottom or rise to the peak?
>
> RQ3. In what stage of group development do positive emotions (or negative
>
> emotions) fall to the bottom or rise to the peak?

Thus far, this chapter has reviewed theories of group development and social

loafing.    It has explained how group development stages are possibly related to the

perception of social loafing, the experience of the conflict types, as well as emotional

displays in the group.    Also explained is possible link between conflict types and

perceived social loafing in conjunction with emotional displays.    Twenty-five

hypotheses and three research questions have been proposed.    The next chapter

describes the procedures of collecting the data to test those hypotheses and answer the

research question.

## Chapter Three: Method

This chapter reports the procedures for collecting the data and the methods of measuring the relevant variables for the current research.    The sample size and the participants' demographic information are first summarized and reported.    What follows is a specification about the steps taken to collect the data.    Finally, measurements for the relevant variables are discussed and summarized in terms of their respective reliability and validity.

**Participants**

Two hundred students at a Midwestern university showed their intentions to participate in this study.    Among them, 36 failed to input any data when requested to fill out an online questionnaire.    So, the valid sample size is 164, and the response rate is 82%.

Among those who completed the questionnaire, 107 participants are female (65.2%).    With respect to age, 146 participants are in the range between 19 and 23 years old (89.0%), 8 participants are between 24 and 28 years old (4.9 %), and 4 participants are between 29 and 33 years old (2.4 %).    The following three age ranges – below 18 years old, between 34 and 38 years old, and over 44 years old – each contain 2 participants, altogether accounting for 3.6% of the total.    None of the participants reported their age in the range between 39 and 43 years old.

The ethnic groups to which the participants belong are roughly diverse.    One hundred and fourteen participants are white, accounting for 69.5 % of the total.    The number of Asian participants is 27, accounting for 16.5% of the total.    Ten participants (6.1 %) are black or African American, one participant (.6 %) is American Indian or Alaskan Native, and one (.6 %) is of Hispanic origin.    There are eight students who are from multiple races (4.9 %), and three students (1.8 %) rated themselves as belonging to "some other race."    The details of the number of people in terms of sex, age, and ethnicity in each course section are listed in Table 1.    The information regarding the number of groups in each course section is also reported.

**Procedures**

This data set was collected in the spring semester of 2012.    All participants were students who had registered for the course, *Introduction to Small Group Communication*, in the Department of Communication Studies.    The course had nine different sections taught by five instructors, with one instructor teaching three sections, two instructors each teaching two sections, and the rest of the instructors each teaching one section.    Among them, three were teaching specialists and the remaining two were graduate students who were either on a Master's or Ph.D. track in the Department of Communication Studies. All five instructors were required by the Department of Communication Studies to adopt the same textbook for the course.    They also covered similar topics in class.    The following topics were common to all classes: theories of small group communication,

Table 1.

The Frequency of Groups, Sex, Age, and Ethnicity on Course Section

| Section | Number of Groups | Number of Partici-pants | Sex | | Age | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Below 18 | 19 – 23 | 24 – 28 | 29 – 33 | 34 – 38 | 39 – 43 | Over 44 |
| 001 | 5 | 14 | 9 | 5 | 0 | 10 | 2 | 0 | 1 | 0 | 1 |
| 002 | 5 | 19 | 2 | 17 | 1 | 17 | 1 | 0 | 0 | 0 | 0 |
| 003 | 5 | 11 | 1 | 10 | 0 | 10 | 1 | 0 | 0 | 0 | 0 |
| 004 | 6 | 21 | 9 | 13 | 0 | 21 | 0 | 1 | 0 | 0 | 0 |
| 005 | 5 | 21 | 11 | 10 | 1 | 17 | 2 | 1 | 0 | 0 | 0 |
| 006 | 6 | 23 | 7 | 16 | 0 | 22 | 0 | 1 | 0 | 0 | 0 |
| 007 | 5 | 14 | 6 | 8 | 0 | 14 | 0 | 0 | 0 | 0 | 0 |
| 008 | 5 | 20 | 8 | 12 | 0 | 19 | 1 | 0 | 0 | 0 | 0 |
| 009 | 5 | 20 | 4 | 16 | 0 | 16 | 1 | 1 | 1 | 0 | 1 |
| Total | 47 | 164 | 57 | 107 | 2 | 146 | 8 | 4 | 2 | 0 | 2 |
| % | | | 34.8 | 65.2 | 1.2 | 89.0 | 4.9 | 2.4 | 1.2 | 0 | 1.2 |

| Section | Ethnicity | | | | | | |
|---|---|---|---|---|---|---|---|
| | White | Black or African American | American Indian or Alaskan Native | Hispanics | Asian | From multiple races | Some other race |
| 001 | 9 | 3 | 0 | 0 | 1 | 1 | 0 |
| 002 | 15 | 0 | 0 | 0 | 4 | 0 | 0 |
| 003 | 6 | 1 | 0 | 0 | 3 | 0 | 1 |
| 004 | 14 | 2 | 0 | 1 | 5 | 0 | 0 |
| 005 | 15 | 2 | 0 | 0 | 3 | 1 | 0 |
| 006 | 18 | 0 | 0 | 0 | 2 | 3 | 0 |
| 007 | 10 | 1 | 0 | 0 | 2 | 0 | 1 |
| 008 | 15 | 0 | 0 | 0 | 3 | 1 | 1 |
| 009 | 12 | 1 | 1 | 0 | 4 | 2 | 0 |
| Total | 114 | 10 | 1 | 1 | 27 | 8 | 3 |
| % | 69.5 | 6.1 | .6 | .6 | 16.5 | 4.9 | 1.8 |

elements of group dynamics (i.e., members' personalities, group norms, power structure, trust issues, cultural background), group decision making and problem solving, conflict management, group climate, leadership, and nonverbal communication in small groups. Also similar were the grading systems established by each instructor in the course syllabus for evaluating students' performance. That is, students were evaluated and graded based upon their individual performance (e.g., in-class attendance, exam and quiz scores, accounting for 60% of the total grade) and group performance (e.g., the quality of the group work, peers' evaluation, quality of the group presentation, accounting for 40% of the total grade).

With respect to group activities, each student had to work in their respective group that was formed either voluntarily or by the instructor's appointment at the beginning of the semester. Once groups were formed, group membership was not allowed to change throughout the semester. Each class had 5 to 6 groups. Each group had the size ranging from 4 to 5 people. Students were required, throughout the semester, to accomplish 4 pre-assigned tasks and collectively submit their product in the form of group work in accordance with the timelines pre-established in the course syllabi. The instructors adopted either one of the following two formats of group work for their respective classes. The first format of group work was to ask groups to choose one out of the three options (e.g., creating a board game, identifying and proposing solutions to a social problem, or advertising for a music band), write down in three consecutive assignments the group's decision making and problem solving processes as related to the

selected task by following John Dewey's Reflective Thinking Model (Dewey, 1933), and

finally make a group presentation in class at the end of the semester.    The second format

of group activities was to engage each group with three tasks that required them to deal

with one by one throughout the semester.    For example, the first task could be a virtual

project that asked each group to make a wise use of a $25 budget and create an itinerary

of spending the allotted money.    The second assignment could require each group to

identify a topic that could be used for its members to take sides and get involved in a

debate.    Each group would then do a panel presentation, in which the two coalitions

took sides on the issue and debated with each other within the group.    The third

assignment could be the one that required each group to reflect upon, analyze, and

evaluate its group performance throughout the semester.    A group presentation was to

follow, the purpose of which was to address the following question: How did you do as a

group throughout this semester?    The small group instructors would choose one of the

two patterns addressed above and assign group work and organize group activities.

Despite the different ways of organizing group activities, the two patterns of group work

were quite similar in that they both required high levels of group members' cognitive

endeavors in terms of task planning, coordination and cooperation with one another.

Since interdependence was stressed in both types of group work, according to the

findings in past research (e.g., Comer, 1995; Harkins & Petty, 1982; Latané et al., 1979;

Kidwell & Bennett, 1993), social loafing was likely to occur in those interdependent

settings where group members may find their contribution redundant or not identifiable.

In addition, since each group was formed on the basis of zero history, where students did not have a history of interaction with everyone else in the group in the past, the norms and rules that regulated workload distribution, coordination, and cooperation in the group were not expected to be maturely developed at the point when each group started to form. Whenever the norms and rules that regulated group's task planning and reward distribution were ambiguously spelled out, caused confusion among group members, or instigated nonconformity, social loafing would occur in the group (Comer, 1995). Therefore, because of the interdependent nature of the group task and the possible loopholes in the group norms and rules that failed to properly regulate workload and reward distribution, it was very likely that social loafing could occur in the current targeted groups, irrespective of what format of the group task each group was opting for.

Data collection was launched in two weeks after the spring semester began. The researcher came to each small group communication class, informing the students about the purpose of the study, the procedure for data collection, and the possible benefit they could receive if they participated in the study on a voluntary basis. This was followed by handing out the consent forms to those who signaled their intention to participate in the survey. Students were required to leave their emails and their signatures at the end of the consent form. After a pool of the participants was created, the total number of people was divided by 12, corresponding to the 12 weeks in which they were about to work in groups. In each of the following weeks, 14 or 15 people were randomly chosen from a pool of 200 students and then contacted by the researcher through email, asking

them to finish an online survey about their latest group experience.    The person who

failed to fill out the online survey in the former week was contacted a second time and

reminded of the online survey.    If they failed to respond again, they would be

unsubscribed from the mailing list and never get touched.    The data collection ended

one week before the final exam, by which time all groups would have completed all of

their group tasks, according to the descriptions in the syllabus of each course.    Two

weeks after the final exam, each course instructor was contacted and asked to report the

group's performance grades for each group in their respective classes.

**Measures**

The current study takes into account five variables: neuroticism, perceived social

loafing, conflict type, emotion, and group development stage.    The first variable is the

control variable, the second is the dependent variable, and the remaining are the

independent variables.

**Neuroticism.**

Neuroticism is an enduring tendency to experience negative emotional states.

Individuals who score high on neuroticism are more likely than the average to experience

such feelings as anxiety, anger, guilt, and depressed mood (Matthews, Deary, &

Whiteman, 2009).    They respond more poorly to environmental stress, and are more

prone to interpret ordinary situations as threatening, and minor frustrations as hopelessly

difficult (Hettema et al., 2006).    Because people of neurotic personality may overreact to

some threatening events, such as social loafing, it can be argued that neurotic people are

more likely than non-neurotic people to report having seen social loafing in the group.

Thus, in order to obtain unbiased results, the impact of neurotic personality on the

perception of social loafing must first be removed before gaining the knowledge of the

true relationship between the perception of social loafing, conflict, emotion, and group

development stages.    Therefore, neuroticism is set as a control variable.

Eight items related to neuroticism were extracted from John, Donahue, and

Kentle's (1991) *Big Five Inventory* (BFI).    The BIF instrument contains 44 items,

measuring the big five personality traits (i.e., extraversion, conscientiousness,

agreeableness, openness, and neuroticism).    The BIF was reported to be a reliable

instrument (i.e., the Cronbach's alpha ranging from .75 to .90 with the average above .80,

and the three- month test-retest reliabilities ranging from .80 to .90, with a mean of .85),

and there was substantial validity evidence concerning its convergent and divergent

relations with other Big Five instruments as well as peer ratings (Rammstedt & John,

2005, 2007).    It was also found to be employed by various studies on social behaviors

and experiences in dyadic relationship as well as in groups (John, Naumann, & Soto,

2008).    Furthermore, considering the research setting where subjects' time is a premium,

the brevity and simplicity of the BFI scales make it easy and efficient to administer so as

to avoid participants' fatigue (Benet-Martínez & John, 1998).    Therefore, the BFI was

selected, and one of its subscales – Neuroticism – was extracted for the current research.

Neuroticism was measured in eight items, including such statements as "I am a

person who is depressed and blue," "I am a person who worries a lot," – to name just a

few.    Participants' responses were based upon how they would evaluate themselves

based on those statements.    All eight items were answered on 5-point Likert scales ($1 =$

*strongly disagree, 5 = strongly agree*).    After having the three reverse items recoded,

the current study has shown acceptable internal consistency with Cronbach's alpha at

.789.    Previous studies utilizing the same measure have similar results, for example, 87

in John et al. (2008), and .72 inÜlke and Bilgiç (2011).

　　　With respect to the convergent validity of the neuroticism scale, it is found that 26

out of the 28 inter-item correlations between the 8 items are significant and range

from .144 to .508 (see Table 2 for detail).    Two correlations are not significant at $\alpha = .05$:

Item 1 (i.e., I am someone who is depressed and blue) and Item 3 (i.e., I am someone who

can be tense) correlate at $r = -.043$, $p = .292$; Item 1 and Item 8 (i.e., I am someone who

gets nervous easily) correlate at $r = .115$, $p = .071$.    Considering the fact that the

majority of the inter-item correlations are positive and significant, the current scale

measuring the construct of neuroticism is pretty high in terms of the convergent validity.

In addition, the factor analysis has revealed that all items load higher than .40 on a single

factor, giving the evidence that these 8 items are measuring the same construct (see Table

3 for detail).    Furthermore, neuroticism has significant correlations with relationship

conflict ($r = .178$, $p < .05$), logistic conflict ($r = .209$, $p < .01$), depression ($r = .280$, $p$

$< .01$), anger ($r = .296$, $p < .01$), tension ($r = .418$, $p < .01$), fatigue ($r = .231$, $p < .01$),

confusion ($r = .310$, $p < .01$), vigor ($r = -.174$, $p < .05$), friendliness ($r = -.222$, $p < .01$),

and social loafing ($r = .178$, $p < .05$), showing the concurrent validity of the neuroticism

scale (see Table 4 for detail).

Table 2.

The Correlation Matrix of the 8 items of Neuroticism [c]

| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|------|------|------|------|------|------|------|------|
| N1 | — | | | | | | | |
| N2R | .430 | — | | | | | | |
| N3 | -.043[a] | .218 | — | | | | | |
| N4 | .156[b] | .508 | .343 | — | | | | |
| N5R | .285 | .466 | .253 | .342 | — | | | |
| N6 | .144[b] | .270 | .440 | .376 | .300 | — | | |
| N7R | .305 | .460 | .269 | .341 | .427 | .309 | — | |
| N8 | .115[a] | .333 | .303 | .507 | .287 | .279 | .409 | — |

a. $p > .05$
b. $p < .05$
c. Correlations greater than .218 are significant at $\alpha = .01$.

Table 3

Factor Loadings for Exploratory Factor Analysis of Neuroticism

| Item | Neuroticism |
|------|------|
| N2R I am someone who is relaxed and handles stress well. | .741 |
| N4 I am someone who worries a lot. | .726 |
| N7R I am someone who remains calm in tense situations. | .704 |
| N5R I am someone who is emotionally stable, not easily upset. | .669 |
| N8 I am someone who gets nervous easily. | .649 |
| N6 I am someone who can be moody. | .602 |
| N3 I am someone who can be tense. | .534 |
| N1 I am someone who is depressed and blue. | .430 |

Note. Extraction Method: Principal Component Analysis.

Table 4

Correlations of Neuroticism with Conflict, Emotion, and Social Loafing

|                        | Neuroticism |
|------------------------|-------------|
| Relationship Conflict  | .178*       |
| Task Conflict          | .017        |
| Logistic Conflict      | .209**      |
| Contribution Conflict  | .024        |
| Depression             | .280**      |
| Anger                  | .296**      |
| Tension                | .418**      |
| Fatigue                | .231**      |
| Confusion              | .310**      |
| Vigor                  | -.174*      |
| Friendliness           | -.222**     |
| Social Loafing         | .178*       |

$^*p < .05$    $^{**}p < .01$

**Perceived social loafing.**

Perceived social loafing is the perception that one or more other group members are contributing less than they could to the group (Comer, 1995).   The current instrument is a combination of George (1992) and Mulvey and Klein (1998).   George's (1992) instrument asked participants to indicate their agreement with ten statements about the occurrence of social loafing in their groups.   Examples of the statements in the instrument would be: "Some members do not do their share of work," and "Some members spend less time on group work if others are present to handle the job" – to name just a few.   George (1992) reported the Cronbach's alpha of the scale at .93 in her original article.   Later, in an article by Piezon and Ferree (2008), George's scale of the

perception of social loafing was tested on the internal consistency, and the Cronbach's

alpha was reported at .96.

Mulvey and Klein's (1998) scale asked participants to indicate their agreement

with four statements about their overall impression of social loafing in their groups.

Typical examples include "Member of my group are all trying as hard as they can

(reverse recoded)," and "Some members are contributing less than I anticipated."    The

internal consistency of this four-item scale in the form of the Cronbach's alpha was

reported at .89.

The current instrument measuring the perception of social loafing includes 12

statements.    Four of the statements were exactly the same as those in Mulvey and Klein

(1998).    Seven of the statements were adapted from George (1992) by replacing those

specific terms (e.g., salesperson, customer service) in the original instrument with general

terms (e.g., group members, substantive contribution).    Three statements in George's

(1992) original scale were dropped because they were either in the identical wording as

those in Mulvey and Klein (1998) or addressing issues not relevant to small group

interaction in class (e.g., one item talked about leaving work for the next shift, which is

typical in the organizational setting rather than the classroom setting).    One new

statement was created to describe the social loafing behavior that had not been depicted

either in George's (1992) or Mulvey and Klein's (1998) original instrument.    This new

statement depicted a situation in which a loafer was either being tardy to or missing

group meetings without prior notification to the whole group.    Table 5 lists all the 12

items.   The current instrument measuring the perception of social loafing was on 5-point

Likert scales (*1 = strongly disagree, 5 = strongly agree*).   After having the two reverse

items recoded (i.e., item 97 and item 100), the current instrument was tested on its

internal consistency and the initial Cronbach's alpha was .941.

The factor analysis with the method of principal component extraction has

revealed that there is only one factor whose eigenvalue is greater than 1 (Eigenvalue =

7.335, explaining 61.125% of the variance).   The Kaiser-Meyer-Olkin Measure of

Sampling Adequacy (KMO) is .922, which indicates the current sample is marvelous for

a factor analysis among the relevant variables (Kaiser, 1974).   The value of Barlett's

Test of Sphericity is 1426.725, with degrees of freedom at 66, $p < .01$, providing the

evidence that it is 99% confident that the correlation matrix for factor analysis is not an

identity matrix, and thus the current data set is appropriate for factor analysis.   The

factor loadings of the 12 items on factor 1 after principal axis extraction suggest that all

items load significantly high on factor, with the minimum loading at .561 and the

maximum at .838 (see Table 5 for detail).

Table 5.

Factor Loadings for Exploratory Factor Analysis of Social Loafing

| Item | Social Loafing |
|---|---|
| 103. Some members of my group do not do their share of work. | .838 |
| 102. Some members of my group put forth less effort than the rest when we work together on the task. | .833 |
| 106. Some members of my group work with less effort and finish their portion of the group work with low quality. | .828 |

| | |
|---|---|
| 99. Some members of my group are contributing less than I anticipated. | .828 |
| 98. Some members of my group are free-riders, who relied too much on others to do their share of work. | .814 |
| 107. Some members of my group are less likely to make substantive contribution to group work if other members are available to do this. | .798 |
| 104. Some members of my group spend less time on the group work if others are present to handle the job. | .788 |
| 105. Some members of my group avoid helping others finish the group work as much as possible. | .742 |
| 97R. Members of my group are all trying as hard as they can. | .687 |
| 100R. Given the abilities, all my group members are doing the best they can. | .682 |
| 101. Some members of my group defer responsibilities they should assume to other people. | .668 |
| 108. Some members of my group often miss, or arrive late at group meetings without prior notice to the whole group or the group leader. | .561 |

Note. Extraction Method: Principal Axis Factoring.

The reliability analysis has revealed that if Item 108 is deleted, the Cronbach's alpha is .943, which is higher than the original .941.   Even though this amount of increase is marginal (i.e., .002), further analysis has shown that Item 108 only shares 38.6% of its total variance with the rest of the items, while other items' squared multiple correlation coefficients (indicating the amount of the variance sharing with the rest of all the other items) range from .473 to .754.   In addition, the communality extracted from Item 108 is only .315 with the principal axis factor analysis, suggesting that only 31.5% of the variance in Item 108 can be explained by factor 1.   In contrast, the communalities extracted from other items range from .471 to .703.   Furthermore, Item 108 cannot capture perfectly the notion of social loafing in that being tardy to group meetings or missing the meetings may be influenced by many uncontrollable factors, such as traffic

jams, family member emergency, car break-down, etc., and is not equivalent to the notion

of intentionally reducing the work-related effort in the presence of other group members.

Therefore, considering the problematic semantic implication of item 108 and the

marginal gains in the magnitude of the Cronbach's alpha if it is deleted, item 108 is thus

dropped from further analysis.    And the Cronbach's alpha for the 11-item scale that

measures social loafing is .943.

With respect to the convergent validity of the social loafing scale, it is found that

all inter-item correlations are positive and significant.    The majority of the correlations

(48 out of 55) are greater than .5, which suggests most of the correlations are of large size

(Cohen, 1988, 1992).    The smallest correlation is between Item 97 and Item 101, with $r$

= .384, while the largest is between Item 98 and Item 99, with $r$ = .824 (see Table 6 for

detail).    In addition, the factor analysis has revealed that all the 11 items load higher

than .40 on a single factor, giving the evidence that those 11 items are measuring the

same construct (See Table 7 for detail).    It should also be noted that perceived social

loafing has stronger correlation with contribution conflict ($r$ = .651, $p$ < .01) than

relationship conflict ($r$ = .548, $p$ < .01) or logistic conflict ($r$ = .314, $p$ < .01), providing

further evidence of the construct validity of the scale, because contribution conflict was

defined partly in terms of the perception of social loafing (Behfar et al., 2011).

Furthermore, social loafing has significant correlations with neuroticism ($r$ = .178, $p$

< .05),depression ($r$ = .388, $p$ < .01), anger ($r$ = .527, $p$ < .01), tension ($r$ = .582, $p$ < .01),

fatigue ($r$ = .448, $p$ < .01), confusion ($r$ = .392, $p$ < .01), vigor ($r$ = -.271, $p$ < .01), and

friendliness ($r = -.266$, $p < .01$), showing the concurrent validity of the scale of perceived

social loafing (see Table 8 for detail).

Table 6.

The Correlation Matrix of the 11 items of Social Loafing

| Item | 97R | 98 | 99 | 100R | 101 | 102 | 103 | 104 | 105 | 106 | 107 |
|------|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|
| SL97R | — | | | | | | | | | | |
| SL98 | .490 | — | | | | | | | | | |
| SL99 | .567 | .824 | — | | | | | | | | |
| SL100R | .709 | .566 | .586 | — | | | | | | | |
| SL101 | .384 | .577 | .552 | .393 | — | | | | | | |
| SL102 | .561 | .652 | .691 | .519 | .570 | — | | | | | |
| SL103 | .641 | .656 | .688 | .619 | .510 | .650 | — | | | | |
| SL104 | .544 | .644 | .631 | .459 | .593 | .695 | .660 | — | | | |
| SL105 | .474 | .566 | .543 | .465 | .505 | .605 | .672 | .623 | — | | |
| SL106 | .505 | .643 | .664 | .528 | .584 | .656 | .676 | .653 | .726 | — | |
| SL107 | .540 | .616 | .624 | .493 | .590 | .761 | .643 | .645 | .564 | .682 | — |

Note. All correlations are significant at $p < .01$.

Table 7.

Factor Loadings for Exploratory Factor Analysis of Social Loafing – 11 items

| Item | Social Loafing |
|------|----------------|
| 103. Some members of my group do not do their share of work. | .834 |
| 99. Some members of my group are contributing less than I anticipated. | .830 |
| 102. Some members of my group put forth less effort than the rest when we work together on the task. | .829 |
| 106. Some members of my group work with less effort and finish their portion of the group work with low quality. | .822 |
| 98. Some members of my group are free-riders, who relied too much on others to do their share of work. | .811 |
| 107. Some members of my group are less likely to make substantive contribution to group work if other members are available to do this. | .799 |
| 104. Some members of my group spend less time on the group work if others are present to handle the job. | .798 |

| | |
|---|---|
| 105. Some members of my group avoid helping others finish the group work as much as possible. | .741 |
| 97R. Members of my group are all trying as hard as they can. | .690 |
| 100R. Given the abilities, all my group members are doing the best they can. | .679 |
| 101. Some members of my group defer responsibilities they should assume to other people. | .673 |

Note. Extraction Method: Principal Axis Factoring.

Table 8.

Correlations of Social Loafing with Neuroticism, Conflict, and Emotion

| | Social Loafing |
|---|---|
| Neuroticism | .178[*] |
| Relationship Conflict | .548[**] |
| Task Conflict | .045 |
| Logistic Conflict | .314[**] |
| Contribution Conflict | .615[**] |
| Depression | .388[**] |
| Anger | .527[**] |
| Tension | .582[**] |
| Fatigue | .448[**] |
| Confusion | .392[**] |
| Vigor | -.271[**] |
| Friendliness | -.266[**] |

*$p < .05$   ** $p < .01$

**Conflict types.**

Behfar et al.'s (2011) four-scale categorization of conflict was used as the

instrument to measure the four conflict types: relationship conflict, task conflict,

logistical conflict, and contribution conflict.   The scale had 13 questions that asked

subjects to report the extent to which they had experienced each of the four conflict types

in their group.   All questions were answered on 5-point Likert scales (*1 = not at all, 5 =*

*a great deal/extremely*).

Relationship conflict is defined as interpersonal animosity and tension among

group member (Behfar et al., 2011; De Dreu & Weingart, 2003; Guetzkow & Gyr, 1954;

Jenn, 1995, 1997; Pearson et al., 2002; Priem & Price, 1991).    In Behfar et al.'s (2011)

instrument, relationship conflict was measured on such questions as "How much friction

is there among members of your team?" and "How much are personality conflicts evident

in your team?"    The internal consistency of this scale was tested on a sample of 264

people, and the corresponding Cronbach's alpha was .91.

Task conflict is defined as disagreements and debates over the content of the work

and goals to be achieved (Behfar et al., 2011; De Dreu & Weingart, 2003; Guetzkow &

Gyr, 1954; Jenn, 1995, 1997; Priem & Price, 1991).    In Behfar et al.'s (2011) four-scale

instrument, task conflict was measured on such questions as "How often do your team

members argue about different viewpoints regarding your group task?" and "How

frequently do your members of the team engage in debate about different opinions or

ideas?"    The Cronbach's alpha of this scale was .83 on the basis of a sample of 264.

Logistical conflict is the disagreement about how to best coordinate the resource

of group work, including issues of timing and workload distribution (Blount & Janicik,

2000; Blount, Mannix, & Neale, 2004; Hackman, 1990; Janicik & Bartel, 2003; Kabanoff,

1985).    In Behfar et al.'s (2011) four-scale instrument, logistical conflict was measured

on such questions as "How frequently do your team members disagree about the optimal

amount of time to spend on different parts of teamwork?" and "How often do members of

your team disagree about who should do what?"    The internal consistency of this scale

was tested on a sample of 264 people.    The corresponding Cronbach's alpha was .84.

Contribution conflict is defined as conflict about member contributions that

disrupt group process, such as lack of preparation or free-riding (Benne & Sheats, 1948;

Hackman & Morris, 1975; McGrath, 1964; Steiner, 1972).    In Behfar et al.'s (2011)

four-scale instrument, contribution conflict was measured on such questions as "How

often is there tension in your team caused by members not performing as well as

expected?" and "To what extent is there tension in your team caused by members not

completing their assignments on time?"    The Cronbach's alpha that reflected the internal

consistency of this scale was reported at .92 on the basis of a sample of 264.

Behfar et al. (2011) also continued testing the reliability and validity of the

instrument by employing three more samples from the business schools in the U.S. and

U.K.    The Cronbach's alphas for the scale of relationship conflict ranged from .76 to .96.

For task conflict the Cronbach's alphas ranged from .92 to .96.    For logistical conflict,

the Cronbach's alphas were from .89 to .92.    For contribution conflict, the Cronbach's

alphas were from .87 to .92.    Confirmatory factor analysis conducted by Behfar and her

colleagues also revealed that the four-factor model had a better fit than the more

traditional three-factor model (i.e., task, relationship, and process conflict) and the basic

one-factor model.    Discriminant validity analysis showed that task conflict was not

significantly correlated with logistical conflict, and marginally correlated with

contribution conflict ($r = .13$, $p < .05$ in the first sample, and $r = -.29$, $p < .05$ in the second

sample).    However, relationship conflict was significantly correlated with both types of

process conflict (logistical $r = .49$, $p< .05$, contribution $r = .47$, $p< .05$ in the first sample,

and logistical $r = .54$, $p< .05$, contribution $r = .46$, $p< .05$in the second sample).    Behfar

et al. (2011) explained that such high correlations might be due to the inclusion of

"tension" and "friction" in the coding scheme of both process conflicts, suggesting an

emotional tone and the source of relationship conflict.

With respect to the predictive validity of the four-factor scale of conflict types,

Behfar et al. (2011) conducted multivariate regression analysis and found that logistical

conflict was only negatively associated with group performance ($\beta = -3.6$, $p < .01$) and

team coordination ($\beta = -.34$, $p < .01$).    Contribution conflict was negatively associated

with group satisfaction ($\beta = -.30$, $p < .01$).    Task conflict was positively associated with

task commitment ($\beta = .25$, $p < .05$).    Relationship conflict had significant negative

association with task commitment ($\beta = -.35$, $p < .01$), team coordination ($\beta = -.47$, $p$

$< .01$), and team satisfaction ($\beta = -.54$, $p < .01$).

In the current study, a test of the internal consistency of each of the four conflict

scales was also conducted.    The Cronbach's alpha coefficient for relationship conflict

was .853.    For task conflict, it was .723.    For logistical conflict, it was .747.    For

contribution conflict, it was .819.

The current data also provided additional evidence in support of the convergent

validity, construct validity, and discriminant validity of Behfar et al.'s (2011) four-scale

instrument.    Factor analysis on the current data with the method of maximum likelihood

extraction and oblique rotation has produced a factor pattern matrix where four factors emerge (see Table 9 for detail).   Factor 1 (contribution conflict) contains three items with loadings ranging from .507 to .791.   Factor 2 (task conflict) contains three items with loadings ranging from .589 to .693.   Factor 3 (relationship conflict) contains three items with loadings ranging from .564 to .848.   Factor 4 (logistical conflict) contains four items with loadings ranging from .520 to .764.   As can be seen, items measuring a particular construct of conflict type tend to have high loadings on the factor that represents that particular conflict type (convergent and construct validity).   In addition, items that do not purport to measure a particular construct of conflict type tend to have very small or negligible loadings on the factor that represent the specific conflict type (discriminant validity).   This pattern of factor loadings roughly corresponds to the results in Behfar et al. (2011), with only one exception in Item 52 (i.e., How much are personality conflicts evident in your team?).   Item 52 was originally developed to describe relationship conflict.   In the current study, it loads more strongly on logistical conflict than on relationship conflict.   This suggests that more work is needed to refine the current instrument measuring the four types of group conflict.

Furthermore, the following facts provide additional evidence in support of the discriminant validity of the current four-type conflict scale.   The correlations of task conflict with the other three conflicts are relatively smaller (ranging from .224 to .457), compared with all the other correlations (ranging from .462 to .681) (see Table 10 for detail).   This piece of evidence is roughly similar to the results found in Behfar et al.

(2011).   Moreover, the evidence in support of the discriminant validity can also be seen from Table 11 that shows the correlations of the four conflict types with neuroticism, emotions, and social loafing.   Task conflict is only positively correlated with tension ($r$ = .198, $p < .05$) and confusion ($r = .275$, $p < .01$).   It does not correlate significantly with neuroticism, depression, anger, confusion, vigor, friendliness, or social loafing. However, relationship conflict, logistical conflict, and contribution conflict do not have the same pattern of correlations with neuroticism, emotions, and social loafing as task conflict: They generally have more significant correlations with neuroticism, emotions, and social loafing.   In addition, with respect to relationship conflict, the magnitude of its correlations with neuroticism, emotions, and social loafing is relatively larger than that of the correlations of either logistical or contribution conflict with neuroticism, emotions, and social loafing.   Therefore, based upon the above evidence, the discriminant validity of the current measure of conflict types is well established by the current data set.

A further examination of Table 11 also provides evidence in support of the concurrent validity of the four-type conflict scale.   It is seen that relationship conflict, logistical conflict and contribution conflict are positively correlated with all negative emotions (i.e., depression, anger, tension, fatigue, and confusion) and social loafing. They are also negatively correlated with positive emotions (i.e., friendliness and vigor), with the exception of the correlation between logistical conflict and vigor ($r = -.105$, $ns$). Relationship conflict and logistical conflict also have significant correlation with neuroticism while task conflict and contribution conflict do not.

Table 9.

Factor Loadings in the Factor Pattern Matrix for Group Conflict Types

| | Factor | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Item | Contribu tion | Task | Relation ship | Logistic al |
| 54 How often is there tension in your team caused by member(s) not performing as well as expected? | .791 | | | |
| 47 To what extent is there tension in your team caused by member(s) not completing their assignment(s) on time? | .682 | | | |
| 44 How much tension is there in your team caused by member(s) arriving late to team meetings? | .507 | | | |
| 48 How frequently do members of your team engage in debate about different opinions or ideas? | | .693 | | |
| 42 How often do your team members argue about different viewpoints regarding your group task? | | .691 | | |
| 49 How many differences about the content of decisions did the group have to work through? | | .589 | | |
| 46 How much tension is there among members of your team? | | | .848 | |
| 43 How much interpersonal friction is there among members of your team? | | | .658 | |
| 45 How much emotional conflict is there among members of your team? | | | .564 | |
| 51 How frequently do your team members disagree about the optimal amount of time to spend in meetings? | | | | .764 |
| 52 How much are personality conflicts evident in your team? | | | | .578 |
| 50 How often do members of your team disagree about who should do what? | | | | .556 |
| 53 How frequently do your team members disagree about the optimal amount of time to spend on different parts of teamwork? | | | | .520 |

Note. Extraction Method: Maximum Likelihood.

Rotation Method: Oblimin with Kaiser Normalization

Table 10.

The Correlations of the Four Conflict Types

| Conflict Types | M | SD | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| 1. Relationship | 1.77 | .67 | (.853) | | | |
| 2. Task | 2.48 | .72 | .309 | (.723) | | |
| 3. Logistical | 1.84 | .64 | .628 | .457 | (.747) | |
| 4. Contribution | 1.94 | .85 | .681 | .224 | .462 | (.819) |

Note: All correlations are significant at α = .01.    The Cronbach's alpha for each scale is reported on the diagonal.


Table 11.

Correlations of Conflict with Neuroticism, Emotion and Social Loafing

| | Relationship Conflict | Task Conflict | Logistical Conflict | Contribution Conflict |
|---|---|---|---|---|
| Neuroticism | .178* | .017 | .209** | .024 |
| Depression | .573** | .081 | .365** | .363** |
| Anger | .607** | .069 | .396** | .421** |
| Tension | .529** | .198* | .413** | .428** |
| Fatigue | .447** | .101 | .331** | .354** |
| Confusion | .508** | .275** | .495** | .265** |
| Vigor | -.296** | .003 | -.105 | -.254** |
| Friendliness | -.320** | .022 | -.163* | -.170* |
| Social Loafing | .548** | .045 | .314** | .615** |

*$p < .05$   **$p < .01$

**Group development.**

The design of the current instrument that measures the four stages of group

development relied upon two sources: Clark's (2010) *Teamwork Survey Questionnaire*

(TSQ) and Wheelan and Hochberger's (1996) *Group Development Questionnaire – Draft*

(GDQ-draft).    Clark's TSQ contained 32 items in four scales measuring the four stages

of group development in Tuckman's (1965) model: Forming, Storming, Norming, and

Performing.    Each scale contained eight items depicting the behaviors typical in the

particular stage of group development.

Wheelan and Hochberger's GDQ-draft contained four scales, each of which

corresponded to what Wheelan (1994) had depicted in her *Integrated Model of Group*

*Development*: Dependency/Inclusion, Counterdependency/Fight, Trust/Structure, and

Work.    Scale I contained 21 items depicting the behavioral pattern typical of

dependency and inclusion, Scale II contained 15 items depicting the behavioral pattern

typical of counterdependency and fight, Scale III contained 16 items depicting the

behavioral pattern typical of trust and structure, and Scale IV contained 40 items

depicting the behavioral pattern typical of work.    The drafted version, rather than the

finalized version of GDQ, was chosen because it would be too costly to get the

certification and authorization of using the formal and patented version of GDQ: The

GDQ online training for certification cost $2,150.    The primary researcher did not have

enough funding sources to support him in taking the relevant online training and

authorization course, so the only solution was to create an instrument that would be more

or less similar to the formal version of GDQ.    To achieve this, the GDQ-draft and TSQ

were both resorted to.    A pool of the items was then generated on the basis of the above

two measurements, so that chances for selecting the most appropriate items depicting the

group interaction in the classroom setting would increase, hopefully.

In the current study, a smaller number of items (i.e., roughly 8 items for each

scale that measures a particular stage of group development) were selected for measuring

the four stages of group development.    It is hoped that this instrument measuring group development would capture the typical behavioral pattern in each stage with acceptable reliability and validity.    So the selection was initiated by the primary researcher of this dissertation based upon his academic judgment, and the finalization was made on the basis of the advice from his academic advisor after several rounds of face-to-face discussions and meetings.

The current instrument is composed of 33 items.    Each item is scored from 1 (*never true of this group*) to 5 (*always true of this group*).    To measure the typical behavioral pattern of *Dependency and Inclusion*, four items were extracted from Scale I of GDQ-Draft, and four items were from the Forming Stage of TSQ.    Examples included "It seems as if little is being accomplished with the project's goals" and "Members communicate in a tentative and very polite way, with minimal overt conflict." To measure the typical behavioral patterns of *Counterdependency and Fight*, five items were extracted from Scale II of GDQ-Draft, and four items were from the Storming Stage of TSQ.    Examples included "People seem to have very different views about how things should be done in this group" and "There is a lot of resisting of the tasks on hand and quality improvement approaches."    To measure the typical behavioral patterns of *Trust and Structure*, four items were extracted from Scale III of GDQ-Draft, and four items were from the Norming Stage of TSQ.    Examples included "The group is spending its time planning how it will get its work done" and "We take out team's goal and objectives literally, and assume a shared understanding."    To measure the typical

behavioral patterns of *Work*, four items were extracted from Scale IV of GDQ-Draft, and four items were from the Performing Stage of TSQ.   Examples included "The group acts on its decision" and "We get a lot of work done."

Factor analysis was conducted on each of the four scales created for the current study.   The extraction method was principal axis factoring, and the rotation method is Quartimax.   For the first scale (labeled as GDS 1), the initial factor analysis revealed that there was no homogeneous single structure within this scale: Three factors emerged with each factor's eigenvalue greater than 1, accounting for 31.55% of the total variance. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) was .603, which indicated the current sample is acceptable for a factor analysis among the relevant variables (Kaiser, 1974).   The value of Barlett's Test of Sphericity was 117.28, with degrees of freedom at 28, $p < .01$, providing the evidence that the null hypothesis that the correlation matrix for factor analysis was an identity matrix could be rejected.   It could then be concluded that the current data measuring Group Development Stage 1 (GDS 1) was appropriate for factor analysis.   A look at the items' factor loadings on the three factors revealed that the third factor could be ignored because one item (i.e., Item 41) loaded positively high on this factor and the other item (i.e., Item 29) loaded negatively on it (see the first factor column in Table 12).   So a second round of factor analysis was conducted by restraining the number of extracted factors to 2.   Subsequent results showed that 1) the two factors accounted for 26.58% of the total variance; 2) two items were represented by factor 1 (reflecting low socio-emotional engagement) and three

items were represented by factor 2 (reflecting low task engagement).    The other three

items (Item 13, Item21, and Item29) did not load significantly high on either factor, and

therefore, they were removed from future analysis (see the second factor column in Table

12).    After removing the three items, a third round of factor analysis was conducted on

the remaining 5 items.    Because two dimensions had not been previously expected, this

time the method of rotation was switched to the orthogonal rotation (i.e., varimax) to

better reveal the factor structure of GDS 1.    The KMO value was .60, and the value of

Barlett's Test of Sphericity was 83.72, with degrees of freedom at 28, $p < .01$.    These

two results indicated that a factor analysis can be conducted on the five items for GDS 1.

Two factors emerged with both of the eigenvalues greater than 1, accounting for 36.92%

of the total variance.    The factor structure was quite similar to that produced in the last

factor analysis (see the third factor column in Table 12).

Table 12.

Factor Loadings for Exploratory Factor Analysis of GDS 1

| Item | Factor (Initial)[a] 1 | 2 | 3 | Factor (2nd Round)[a] 1 | 2 | Factor (3rd Round)[b] 1 | 2 |
|---|---|---|---|---|---|---|---|
| 36. Members communicate in tentative and very polite way, with minimal overt conflict. | .865 | | | .846 | | .759 | |
| 37. There is very little conflict expressed in the group. | .511 | | | .495 | | .593 | |
| 22. Team members are afraid or do not like to ask others for help. | | .557 | | | .487 | | .601 |
| 18. It seems as if little is being accomplished with the project's goals. | | .553 | | | .520 | | .549 |

| | | | |
|---|---|---|---|
| 41. We haven't discussed our goals very much. | .448 | .531 | .423 |
| 29. We are trying to define the goal and what tasks need to be accomplished. | -.493 | Remo ved | Remo ved |
| 13. Members tend to go along with whatever the leader or the course instructor suggests. | | Remo ved | Remo ved |
| 21. Although we are not fully sure of the project's goals and issues, we are excited and proud to be on the team. | | Remo ved | Remo ved |

a: Note. Extraction Method: Principal Axis Factoring.     Rotation Method: Quartimax with Kaiser Normalization.

b: Note. Extraction Method: Principal Axis Factoring.     Rotation Method: Varimax with Kaiser Normalization.


Factor analysis on the second scale (labeled as GDS 2) produced the following

results.    The KMO value was .830, which indicated the current sample is meritorious for

a factor analysis among the relevant variables (Kaiser, 1974).    The value of Barlett's

Test of Sphericity was 348.91, with degrees of freedom at 36, $p < .01$, providing the

evidence that the null hypothesis that the correlation matrix for factor analysis was an

identity matrix could be rejected.    It could then be concluded that the current data

measuring Group Development Stage 2 (GDS 2) was appropriate for factor analysis..

Two factors emerged from the factor analysis, with eigenvalues greater than 1,

accounting for 38.07% of the total variance.    However, the second factor only contained

one item (Item 28) that loaded high on it (see Table 13 for details).    Therefore, Item 28

was removed from the subsequent analysis.    A follow-up factor analysis was conducted

on the remaining eight items, and the results showed that 1) The KMO value was .853,

and the value of Barlett's Test of Sphericity was 324.24, with degrees of freedom at 28, $p$

< .01, indicating that factor analysis could be conducted; 2) one factor emerged, with its

eigenvalue greater than 1, accounting for 35.29% of the total variance; 3) all the eight

items loaded pretty high on a single factor (ranging from .458 to .727), which depicted a

situation fraught with conflict and tension (see Table 13).

Table 13

Factor Loadings for Exploratory Factor Analysis of GDS 2

| Item | Factor (Initial) | | Factor (after item removal) |
|---|---|---|---|
| | 1 | 2 | 1 |
| 30. There is quite a bit of tension in the group at this time. | .736 | | .712 |
| 31. Many of the team members have their own ideas about the process and personal agendas are rampant. | .730 | | .727 |
| 23. People seem to have very different views about how things should be done in this group. | .586 | | .592 |
| 25. The tasks are very different from what we imagined and seem very difficult to accomplish. | .577 | | .581 |
| 24. The goals we have established seem unrealistic. | .570 | | .569 |
| 16. Conflicts about values, disagreements about goals and tasks, or dissatisfaction with roles, emerge. | .538 | | .541 |
| 38. There is a lot of resisting of the tasks on hand and quality improvement approaches. | .528 | | .524 |
| 12. We generate lots of ideals, but we do not use many because we fail to listen to them and reject them without fully understanding them. | .453 | | .458 |
| 28. Members challenge the group leader or the course instructor's ideas. | | .632 | Removed |

Note. Extraction Method: Principal Axis Factoring.

Rotation Method: Quartimax with Kaiser Normalization.

Factor analysis on the third scale (labeled as GDS 3) produced the following

results.    The KMO value was .796, which indicated the current sample is very close to

meritorious for a factor analysis among the relevant variables (Kaiser, 1974).    The value

of Barlett's Test of Sphericity was 358.11, with degrees of freedom at 28, $p < .01$,

providing the evidence that the null hypothesis that the correlation matrix for factor

analysis was an identity matrix could be rejected.    It could then be concluded that the

current data measuring Group Development Stage 3 (GDS 3) was appropriate for factor

analysis.    Two factors emerged, with eigenvalues greater than 1, accounting for 41.93%

of the total variance.    However, factor 2 only contained one item (Item 35) that also

loaded high on factor 1 (see the first column in Table 14).    In addition, Item 26 did not

load high on either factor.    Therefore, Item 26 was first removed from the subsequent

analysis.    A follow-up factor analysis was conducted on the remaining 7 items by

restraining the extracted factor to 1, and the results showed that 1) The KMO value

was .792, and the value of Barlett's Test of Sphericity was 330.86, with degrees of

freedom at 21, $p < .01$, indicating that factor analysis could be conducted; 2) one factor

emerged, with its eigenvalue greater than 1, accounting for 37.83% of the total variance;

3) all but Item 11 loaded greater than .40 on a single factor (see the second column in

Table 14).    Therefore, Item 11 was removed from the scale and a third round of factor

analysis (which adopted the same procedure as the last one) was conducted on the

remaining 6 items.    The results showed that 1) The KMO value was .782, and the value

of Barlett's Test of Sphericity was 296.50, with degrees of freedom at 15, $p < .01$,

indicating that factor analysis could be conducted; 2) one factor emerged, with its

eigenvalue greater than 1, accounting for 41.66% of the total variance; 3) all the items

loaded high on a single factor (ranging from .502 to .842), which depicted a situation in

which task structure was established and group morale improved (see the third column in

Table 14).

Table 14

Factor Loadings for Exploratory Factor Analysis of GDS 3

| Item | Factor (Initial) | | Factor (2nd round) | Factor (3rd round) |
|---|---|---|---|---|
| | 1 | 2 | 1 | 1 |
| 19. There is a close attachment to the team. | .841 | | .708 | .690 |
| 33. We can rely on each other. We work as a team. | .739 | | .819 | .842 |
| 10. We have formed bond with each other and accepted each other as members of the team. | .683 | | .718 | .702 |
| 40. We have thorough procedures for agreeing on our objectives and planning the way we will perform our tasks. | .498 | | .529 | .504 |
| 34. We often share personal problems with each other. | .496 | | .488 | .502 |
| 35. We take our team's goals and objectives literally, and assume a shared understanding. | .450 | .549 | .537 | .562 |
| 11. The group is able to form subgroups, or subcommittees, to work on specific tasks. | .416 | | | Removed |
| 26. The group is spending its time planning how it will get its work done. | | | Removed | Removed |

Note. Extraction Method: Principal Axis Factoring.

Rotation Method: Quartimax with Kaiser Normalization.

Factor analysis on the fourth scale (labeled as GDS 4) produced the following

results.    The KMO value was .902, which indicated the current sample is marvelous for

a factor analysis among the relevant variables (Kaiser, 1974).    The value of Barlett's

Test of Sphericity was 438.51, with degrees of freedom at 28, $p < .01$, providing the

evidence the null hypothesis that the correlation matrix for factor analysis was an identity

matrix could be rejected.    It could then be concluded that the current data measuring

Group Development Stage 4 (GDS 4) was appropriate for factor analysis.     One single

factor emerged, with its eigenvalue greater than 1, accounting for 43.13% of the total

variance.    All the eight items loaded high on a single factor (ranging from .546 to .773),

which depicted a situation in which productivity reached a certain high level and group's

goal was being accomplished (see Table 15).

Table 15.

Factor Loadings for Exploratory Factor Analysis of GDS 4

| | Factor |
| Item | 1 |
| --- | --- |
| 15.  Our team feels that we are all in it together and shares responsibilities for the team's success or failure. | .773 |
| 27.  We fully accept each other's strengths and weakness. | .754 |
| 20.  We are able to work through group problems. | .675 |
| 39.  This group encourages high performance and quality work. | .673 |
| 14.  We get a lot of work done. | .670 |
| 17.  Now is the time we truly work together and try to get things done properly and timely. | .569 |

| 9. The group gets, gives, and uses feedback about its effectiveness and productivity. | .551 |
|---|---|
| 32. The group acts on its decisions. | .546 |

Note. Extraction Method: Principal Axis Factoring.

Rotation Method: Quartimax with Kaiser Normalization.

The factor analysis produced five items for GDS 1 (with two sub-dimensions),

eight items for GDS 2, six items for GDS 3, and eight items for GDS 4.    Tests of the

internal consistency on each of the four scales produced the following results.    For GDS

1, the Cronbach's alpha for the first sub-dimension with the two items (depicting low

socio-emotional engagement) is .626, whereas the Cronbach's alpha for second

sub-dimension with the three items (depicting low task engagement) is .531.    The

overall Cronbach's alpha for GDS 1 with all the five items included is .245, suggesting

the two sub-dimensions could not be combined into one dimension and thus should be

treated as separate.    The Cronbach's alpha for the scale of GDS 2 with eight items

(depicting conflict and tension) is .806.    The Cronbach's alpha for the scale of GDS 3

with six items (depicting morale and amended relationship) is .790.    Finally, the

Cronbach's alpha for the scale of GDS 4 with eight items (depicting work and

productivity) is .855.    Although these results are smaller than the Cronbach's alphas

reported by Wheelan and Hochberger (1996) in their test of the internal consistency of

the four scales of GDQ, these two sets of Cronbach's alphas are quite close (see Table 16

for comparisons).    Considering the smaller number of the items in each of the scales in

the current instrument, it would be more time-saving and efficient to use the present scale

than Wheelan and Hochberger's 60 item GDQ while at the same time the current

measurement was almost as reliable as GDQ.

Table 16.

Comparison of the Cronbach's Alphas, Scale Mean, and Scale SD between the Current
Instrument (GDS) and GDQ by Wheelan and Hochberger's (1996)

| Current Instrument – GDS | | | | Wheelan and Hochberger's GDQ | | | |
|---|---|---|---|---|---|---|---|
| Scale | Alpha | Mean | SD | Scale | Alpha | Mean | SD |
| GDS 1 | .245 | 2.79 | .50 | GDQ I | .54 | 2.97 | .40 |
| GDS 1a | .626 | 3.95 | .83 | | | | |
| GDS 1b | .531 | 2.01 | .73 | | | | |
| GDS 2 | .806 | 2.00 | .61 | GDQ II | .88 | 2.92 | .64 |
| GDS 3 | .790 | 3.58 | .65 | GDQ III | .74 | 3.42 | .46 |
| GDS 4 | .855 | 3.99 | .59 | GDQ IV | .88 | 3.65 | .59 |

Note. $n = 164$ in both samples

GDS 1a – Low socio-emotional engagement (2 items)

GDS 1b – Low task engagement (3 items)

In order to establish the construct validity of the current instrument that measures

stages of group development, two types of analysis were employed.    The first type of

analysis was to check the mean score of each GDS dimension (i.e., GDS 1, GDS 2, GDS

3, and GDS 4) against the overall temporal process of group development by dividing the

12 weeks evenly into four periods, and see if the distribution of the mean scores of each

GDS dimension in the four successive periods formed a pattern that could confirm what

Wheelan and her colleagues had predicted in *Integrated Model of Group Development*.

Table 17 listed the details of the means of GDS scores in each of the four successive

periods of group development.    Period I (i.e., Week 1-3) roughly corresponded to the

initial stage of group development when group members were trying to seeking inclusion

into the group and maintain politeness with one another.    Period II (i.e., Week 4-6)

roughly corresponded to a time when group members were trying to assert their

individual identity and experiencing interpersonal discordance with the group.    Period

III (i.e., Week 7-9) roughly corresponded to a time when group members were trying to

improve interpersonal relationship and bring back order to the group.    Period IV (i.e.,

Week 10-12) roughly corresponded to a time when productivity prevailed.    Ideally, if

the current instrument is valid, then the following four arguments should be supported by

the data: 1) The mean score of GDS1 is higher in Period I than in any other period; 2) the

mean score of GDS 2 is higher in Period II than in any other period; 3) the mean score of

GDS 3 is higher in Period III than in any other period; 4) the mean score of GDS 4 is

higher in Period IV than in any other period.    According to Table 17, only the fourth

argument regarding GDS 4 in Period 4 is supported (i.e. the mean score of GDS 4 is 4.07,

higher than the other GDS scores in Period 4).    Two of the above arguments (i.e., GDS

1 in Period I and GDS 2 in Period II) were weakly supported in that 1) the mean score of

GDS 1 is higher in Period I (2.84) than it is in either Period II (2.71) or IV (2.71), but the

mean score reaches the highest in Period III (2.93); 2) the mean score of GDS 2 is higher

in Period II (2.02) than it is in Period I (1.94) or III (2.00), but both scores in Period II

and IV (2.02) are in a tie.    The argument about GDS 3 in Period III is not well supported:

The mean score of GDS 3 is smaller in Period III (3.43) than in it is in either Period II

(3.68) or IV (3.70), and both scores in Period III and I (3.43) are in a tie.    Therefore, the

analysis of the mean scores of GDS over the four successive periods of group

development provides some, but not strong, evidence in support of the construct validity

of the current measure of group development stages.

Table 17.

The Means of GDS Scores in Each of the Four Successive Periods of Group
Development

|  | Period I (Week 1-3) | Period II (Week 4-6) | Period III (Week 7-9) | Period IV (Week 10-12) |
|---|---|---|---|---|
| GDS 1 | 2.84 | 2.71 | 2.93 | 2.71 |
| GDS 1a | 3.94 | 3.96 | 4.04 | 3.90 |
| GDS 1b | 2.10 | 1.88 | 2.19 | 1.92 |
| GDS 2 | 1.94 | 2.02 | 2.00 | 2.02 |
| GDS 3 | 3.43 | 3.68 | 3.43 | 3.70 |
| GDS 4 | 3.90 | 4.06 | 3.88 | 4.07 |

GDS 1a – Low socio-emotional engagement (2 items)

GDS 1b – Low task engagement (3 items)

The second type of analysis that can possibly establish the construct validity of

the current scale of group development is to use factor analysis on the four scales and see

whether major dimensions would emerge, just in the same way as Wheelan and

Hochberger (1996) did in their testing of the construct validity of GDQ.   The method of

principal axis factoring with orthogonal rotation was used and two major factors emerged:

Factor 1 was composed of items from GDS 3 and GDS 4; factor 2 was composed of

items from GDS 2 and 1 (see Table 18 for details).   This result was very similar to what

Wheelan and Hochberger (1996) had found in their study of the validity of GDQ.   In

addition, the internal consistency of the two main factors was also very high: $\alpha = .899$ for

Factor 1, and $\alpha = .818$ for Factor 2.   As a comparison, Wheelan and Hochberger (1996)

reported the internal consistency of the two main factors in their study as $\alpha = .90$ for

Factor 1 (composed of items from Scale GDQ III and IV), and $\alpha = .88$ for Factor 2

(composed of items from Scale GDQ I and II).   Furthermore, the pattern of scales'

correlations in the current study showed that GDS 1 and GDS 2 are significantly

correlated, $r = .256$, $p < .01$; GDS 3 and GDS 4 are also significantly correlated, $r = .765$,

$p < .01$.   Wheelan and Hochberger (1996) reported similar results: $r = .37$, $p < .05$ for

the correlation between GDQ I and GDQ II, and $r = .83$, $p < .01$ for the correlation

between GDQ III and GDQ IV (see Table 19 for detail).   Therefore, based upon the

factor analysis and correlation matrix, it can be concluded that the current instrument that

measures group development is quite comparable to Wheelan and Hochberger's (1996)

GDQ in terms of its construct validity.


Table 18.

Exploratory Factor Analysis on the Items from the Four GDSs

| Item | Factor | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| --- | --- | --- | --- | --- | --- | --- |
| GrpDev19 | .779 | | | | | |
| GrpDev33 | .737 | | | | | |
| GrpDev10 | .660 | | | | | |
| GrpDev34 | .491 | | | | | |
| GrpDev40 | .421 | | .570 | | | |
| GrpDev35 | .452 | | | | | .454 |
| GrpDev15 | .653 | | | | | |
| GrpDev27 | .604 | | | | -.407 | |
| GrpDev17 | .547 | | | | | |
| GrpDev14 | .531 | | | | | |
| GrpDev20 | .529 | | | | | |
| GrpDev39 | .523 | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| GrpDev32 | .460 | | | | |
| GrpDev9 | .403 | | .484 | | |
| GrpDev31 | | .708 | | | |
| GrpDev30 | | .676 | | | |
| GrpDev24 | | .592 | | | |
| GrpDev25 | | .556 | | | |
| GrpDev23 | | .547 | | | |
| GrpDev38 | | .518 | | | |
| GrpDev16 | | .503 | | | |
| GrpDev12 | | | | | .626 |
| GrpDev22 | | | | | .491 |
| GrpDev18 | | .472 | | | |
| GrpDev41 | | | -.653 | | |
| GrpDev36 | | | | .719 | |
| GrpDev37 | | -.407 | | .529 | |

Note. Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.

Table 19.

Correlations of the Four Sub-Scales

| | M | SD | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| 1. GDS 1 | 2.79 | .50 | (.245) | | | | | |
| 2.    GDS 1a | 3.95 | .83 | .505 | (.626) | | | | |
| 3.    GDS 1b | 2.01 | .73 | .756 | -.184* | (.531) | | | |
| 4. GDS 2 | 2.00 | .61 | .256 | -.366 | .568 | (.806) | | |
| 5. GDS 3 | 3.58 | .65 | -.222 | .271 | -.458 | -.324 | (.790) | |
| 6. GDS 4 | 3.99 | .59 | -.222 | .358 | -.524 | -.437 | .765 | .(855) |

*$p < .05$.

All the other correlations are significant at $\alpha = .01$.    The Cronbach's alpha for each scale is reported on the diagonal.

GDS 1a – Low socio-emotional engagement.    GDS 1b – Low task engagement

The current instrument also showed high levels of discriminant validity and

criterion-related validity (see Table 20 for details).    For discriminant validity, it can be

seen that GDS 1 does not correlate significantly with group conflicts and emotions, while

GDS 2 does.    Both GDS 1 and GDS 2 have positive correlations with perceived social

loafing, while both GDS 3 and GDS 4 have negative correlations with perceived social

loafing.    Furthermore, neither GDS 1 nor GDS2 correlates significantly with

neuroticism, compared with GDS 3 and GDS 2, both of which have negative correlations

with neuroticism.    With respect to the criterion-related validity, it can be seen that both

GDS 3 and GDS 4 are correlated significantly with fewer group conflicts (i.e.,

relationship conflict, logistical conflict, and contribution conflict), less intense negative

emotions, more strongly-felt positive emotions, and reduced level of social loafing.

Furthermore, GDS 2 has significant positive correlations with all types of group conflict

and negative emotions.    It also has significant negative correlations with positive

emotions, though the absolute magnitude of them is relatively smaller than its

correlations with positive emotions.

Table 20.

Correlations of GDS with Neuroticism, Conflict, Emotion and Social Loafing

| | GDS 1a | GDS 1b | GDS 1 | GDS 2 | GDS 3 | GDS 4 |
|---|---|---|---|---|---|---|
| Neuroticism | -.116 | .065 | -.020 | .048 | -.200* | -.258** |
| Relationship Conflict | -.437** | .425** | .082 | .628** | -.327** | -.467** |
| Task Conflict | -.204** | -.001 | -.137 | .282** | .117 | .015 |
| Logistic Conflict | -.383** | .314** | .021 | .587** | -.115 | -.312** |
| Contribution Conflict | -.270** | .270** | .058 | .423** | -.258** | -.304** |
| Depression | -.303** | .259** | .026 | .513** | -.364** | -.477** |
| Anger | -.367** | .338** | .052 | .560** | -.450** | -.537** |
| Tension | -.246** | .247** | .053 | .473** | -.366** | -.462** |
| Fatigue | -.238** | .140 | -.035 | .380** | -.321** | -.400** |

| | | | | | |
|---|---|---|---|---|---|
| Confusion | -.213* | .309** | .134 | .508** | -.316** | -.377** |
| Vigor | .100 | -.213** | -.121 | -.189* | .463** | .412** |
| Friendliness | .202** | -.248** | -.083 | -.257** | .243** | .366** |
| Social Loafing | -.254** | .414** | .195* | .391** | -.495** | -.527** |

Note: $^{*}p < .05$   $^{**}p < .01$

GDS 1a – Low socio-emotional engagement   GDS 1b – Low task engagement

With respect to determining the particular stage of group development an individual was working in on the basis of their four concurrent GDS scores, the following procedures were adopted.    1) Each individual had four GDS sub-scale scores.    Each of those four scores was calculated by dividing the sum of the scale items' values by the number of items in that particular scale.    2) Wheelan's scoring system (Wheelan, 2005b, as cited in Noel, 2006) was used as a blueprint to develop the scoring norms for the current study.    Wheelan's scoring system was based upon the sum of all the item values in each GDQ scale, thus ranging from the lowest 15 to the highest 75.    In order to apply Wheelan's scoring system to the current study, each cutting score in Wheelan's scoring system was divided by 15 (i.e., the number of items in each GDQ scale), so that GDS scores could be evaluated on this new transformed scoring system.    Table 21 lists both Wheelan's scoring system and the transformed scoring system in the current study.    3) In case of the exceptions in the data that were not captured in Table 21, the primary researcher developed some additional norms that could also help to determine the stage of group development.    The development of these additional norms was based upon the primary researcher's academic judgment after he made several attempts to classify each case into the particular stage of group development.    Later, several rounds of discussion

were also held between the primary researcher and his academic adviser on the face

validity of the newly-developed scoring norms.    Some of the norms were refined after

the discussions.    Table 22 is the list of those finalized norms.

Table 21.

GDQ vs. GDS Scoring System for Determining Stages of Group Development

|  | GDQ | | | | GDS[a] | | | |
|---|---|---|---|---|---|---|---|---|
|  | GDQ 1 | GDQ 2 | GDQ 3 | GDQ 4 | GDS 1 | GDS 2 | GDS 3 | GDS 4 |
| Stage 1 | $> 42$ | $< 42$ | $< 53$ | $< 56$ | $> 2.80$ | $< 2.80$ | $< 3.53$ | $< 3.73$ |
| Stage 2 | $< 45$ | $> 46$ | $< 53$ | $< 56$ | $< 3.00$ | $> 3.07$ | $< 3.53$ | $< 3.73$ |
| Stage 3 | $< 44$ | $< 40$ | 54-58 | 57-62 | $< 2.93$ | $< 2.67$ | 3.60-3.87 | 3.80-4.13 |
| Stage 4 | $< 44$ | $< 40$ | $> 59$ | $> 63$ | $< 2.93$ | $< 2.67$ | $> 3.93$ | $> 4.2$ |
| Dysfunct ional | $> 40$ | $> 42$ | $< 53$ | $< 56$ | $> 2.67$ | $> 2.80$ | $< 3.53$ | $< 3.73$ |

a. The cutting scores in GDS are equal to the corresponding GDQ scores divided by 15

Table 22.

Additional Norms in GDS Scoring System for Determining Stages of Group Development

|  | GDS | | | |
|---|---|---|---|---|
|  | GDS 1 | GDS 2 | GDS 3 | GDS 4 |
| Stage 1 | $> 2.80$ | $< 2.80$ | $< 3.68$ | 3.50-4.15 |
| Stage 1 | $\geq 4.00$ | $< 2.80$ | $< 3.53$ | 4.00-4.40 |
| Stage 3 | $< 2.93$ | $< 2.88$ | $>3.10$ | 3.00-4.00 |
| Stage 4 | $\leq 3.20$ | $\leq 3.00$ | $>3.10$ | $> 4.15$ |
| Dysfunctional | $< 2.67$ | $< 2.90$ | $< 3.00$ | $< 3.70$ |
| Dysfunctional | $>3.30$ | $>3.80$ | 4.00-4.20 | 3.50-3.80 |

It should be noted that the additional norms for classifying GDS stages (in Table

22), together with the adapted version of Wheelan's scoring system (in Table 21), could

capture almost all the cases in the data.    Only one case could not be well classified into

any stage of group development, even with reference to the above two sets of

classification criteria, i.e., GDS 1 = 3.00, GDS 2 = 3.50, GDS 3 = 3.67, GDS 4= 4.00.

Such a GDS pattern signaled the individual's perception of a middle level of task

ambiguity (GDS 1), a moderate level of group conflict (GDS 2), a moderate to high level

of trust and structure (GDS3), and a fairly high level of work and productivity (GDS4).

Because task ambiguity, conflict, group morale, and productivity were experienced at

almost the same time when the data were entered, the individual must have been unclear

or ambivalent about his or her group interaction.    Thus, such a pattern of GDS scores

was later rated as "dysfunctional", meaning a period of time when the stage of group

development was stuck and interaction within the group was problematic.

**Group emotions.**

A shortened form of the Profile of Mood States (POMS-SF, Shacham, 1983) was

used to measure the emotions that group members had experienced in their recent group

activities.    The Profile of Mood States (POMS) was originally developed by McNair,

Lorr, and Droppleman (1971).    It was a self-report instrument to assess psychological

stress and distinct mood states.    It was used in a variety of healthy, physically ill, and

psychiatric populations (Curran, Andrykowski, & Studts, 1995).    Morgan and his

colleagues also introduced the POMS into sports and found its usefulness for predicting

sports performance (Morgan, 1978; Morgan & Johnson, 1977, 1978; Morgan & Pollock,

1977; Nagle, Morgan, Hellickson, Serfass, & Alexander, 1975).    The POMS consisted

of 65 adjectives representing six conceptual dimensions: Anger, Fatigue, Vigor, Tension,

Confusion, and Depression.     Numerous studies have tested and confirmed the reliability

and validity of this instrument since the instrument was created (e.g., Andrade et al., 2010;

McNair et al. 1971; Morfeld et al., 2007; Pollock, Cho, Reker, & Volavka, 1979;

Yokoyama, Araki, Kawakami, & Tkakeshita, 1990).

The POMS-SF preserved the same six conceptual dimensions as the full-length

POMS, while reducing the number of items from 65 to 37.     Shacham (1983) suggested

that the POMS-SF might be an excellent alternative to the more time-consuming POMS

because the POMS-SF had kept all the information available in the original POMS

without any significant decrease in internal consistency (POMS-SF: Cronbach's alpha

ranged from .80 to .91; POMS: Cronbach's alpha ranged from .74 to .91)

The POMS-SF also provided a specific formula to assess negative emotions.

According to Curran, et al. (1995), McNair, Lorr, and Droppleman (1992), and Shacham

(1983), negative emotions were assessed on the scale of Total Mood Disturbance (TMD),

which was derived by summing all item scores on Tension, Fatigue, Depression,

Confusion, and Anger, then subtracting the item scores on Vigor.     To be more specific,

TMD = Tension + Fatigue + Depression + Confusion + Anger + 24 – Vigor [Note: 24 is

equal to 4 times the number of items in Vigor, which includes 6 items; 4 is the highest

point in the 5-point Likert scale with 0 = *not at all* and 4 = *a great deal/extremely*].

Higher scores of TMD means higher levels of negative emotions felt by the subject.

Curran et al. (1995) reported the reliability scores of TMD had Conbach's alphas rangecd

from .87 to .92 in a number of tests with different samples of subjects.   In Annesi (2005),

the author reported the Cronbach's alpha for TMD at .73.

POMS-SF included 37 items.   The subscale of Anger (e.g., angry, annoyed,

resentful) contained 7 items, and the Cronbach's alpha was reported at .90 in Shacham

(1983).   The subscale of Fatigue (e.g., worn-out, fatigued, weary) contained 5 items, and

the Cronbach's alpha was reported at .87.   The subscale of Vigor (e.g., full of pep,

energetic, active) contained 6 items, and the Cronbach's alpha was reported at .87.   The

subscale of Confusion (e.g., confused, bewildered, forgetful) contained 5 items, and the

Cronbach's alpha was reported at .82.   The subscale of Tension (e.g., nervous, on edge,

worried) contained 6 items, and the Cronbach's alpha was reported at .80.   The subscale

of Depression (e.g., miserable, sad, discouraged) contained 9 items, and the Cronbach's

alpha was reported at .91.

Curran et al. (1995) provided addition evidence in support of the concurrent

validity of the POMS-SF.   They collected data from 600 individuals representing five

different clinical samples and one sample of healthy adults.   They found that the internal

consistency coefficients estimated in Cronbach's alphas for the POMS-SF sub-scales are

quite high across all six samples, ranging from .76 (the Confusion subscale in healthy

adult sample) to .95 (Depression subscale in healthy adult sample).   Of the 36 values of

Cronbach's alpha computed for the scales in POMS-SF, only 2 values were less than .80,

and 23 equaled or exceeded .90.   More significantly, internal consistency estimates for

the POMS-SF were similar to or even exceeded those in the full-length POMS.

In the current study, all the six sub-scales in the original POMS-SF were retained.

A 5-point Likert scale format was established for the current study, with *1 = not at all*

and *5 = a great deal/extremely*.     One additional sub-scale of friendliness comprised of 5

items was added.     The purpose of adding this sub-scale was to increase the content

validity as well as the construct validity of the notion of positive emotion.     Andrade et al.

(2010) included this sub-scale in their study of the factor structure of the POMS

questionnaire and reported the internal consistency of Friendliness in the Cronbach's

alpha at .77.     So, there were seven mood state dimensions included in the current study:

Tension (6 items), Depression (8 items), Anger (7 items), Vigor (6 items), Fatigue (5

items), Confusion (5 items) and Friendliness (5 items).     After the internal consistency

tests were conducted on the current data, the Cronbach's alphas indexing the reliability of

those seven dimensions were .86 for Tension, .89 for Depression, .90 for Anger, .82 for

Vigor, .84 for Fatigue, .79 for Confusion, and .81 for Friendliness.

The negative emotion was assessed by creating a negative emotion index (NEI).

NEI was calculated by dividing the Total Mood Disturbance (TMD) score by the number

of total items.     The following formula was used to obtain the TMD score: TMD =

Tension + Fatigue + Depression + Confusion + Anger + 66 – (Vigor + Friendliness).

And NEI is equal to TMD divided by 42.     By contrast, positive emotion was derived by

dividing the sum of all the item scores in Vigor and Friendliness by the number of the

items in these two scales.     So, a positive emotion index (PEI) was created by using the

following formula: PEI = (Vigor + Friendliness) / 11.    In the current study, the internal

consistency values for NEI and PEI are .91 and .71, respectively.

The discriminant and convergent validity of the current instrument measuring

emotions were revealed by the pattern of inter-scale correlations (see Table 23 for details).

For the convergent validity, Depression, Anger, Tension, Fatigue, Confusion all have

significant positive correlations with the Negative Emotion Index (NEI), ranging

from .696 to .864.    The correlations between these five scales are also found significant

and positive.    Vigor and Friendliness both have significant positive correlations with the

Positive Emotion Index (PEI), $r = .851$ and $r = .906$ respectively.    Their inter-scale

correlation is also significant positive ($r = .548$).    For the discriminant validity, it is seen

that Depression, Anger, Tension, Fatigue, Confusion all have negative small correlations

with PEI, ranging from -.108 to -.281, some of which are not significant at $\alpha = .05$.

Vigor and Friendliness both have significant negative correlations with the NEI, $r = -.495$

and $r = -.543$ respectively.    Furthermore, the inter-scale correlations between the

positive and negative emotions are all negative, ranging from -.088 to -.305, four of

which are insignificant.    The correlation between NEI and PEI is also negative, $r = -.586$,

$p < .01$.

Table 23.

Means, Standard Deviations, and Correlations of the Scales in POMS-SF

|  | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. NEI | 1.84 | .49 | (.910) | | | | | | | | |
| 2. PEI | 3.43 | .70 | -.586 | (.707) | | | | | | | |
| 3. Depression | 1.29 | .51 | .799 | -.182[*]. | (.893) | | | | | | |
| 4. Anger | 1.53 | .67 | .864 | -.281 | .819 | (.897) | | | | | |
| 5. Tension | 1.84 | .72 | .840 | -.276 | .684 | .714 | (.855) | | | | |
| 6. Fatigue | 1.60 | .72 | .775 | -.185* | .652 | .680 | .685 | (.843) | | | |
| 7. Confusion | 1.77 | .66 | .696 | -.108[a] | .540 | .597 | .674 | .642 | (.790) | | |
| 8. Vigor | 3.12 | .81 | -.495 | .906 | -.099[a] | -.202 | -.225 | -.132[a] | -.100[a] | (.824) | |
| 9. Friendliness | 3.80 | .78 | -.543 | .851 | -.237 | -.305 | -.265 | -.205 | -.088[a] | .548 | (.814) |

* $p < .05$.     a = *ns*

All the other correlations are significant at $\alpha = .01$.

The Cronbach's alpha for each scale is reported on the diagonal.

NEI: Negative Emotion Index; PEI: Positive Emotion Index

**Chapter Four: Results**

This chapter reports the results of the statistical analysis on the relationship

between perceived social loafing, conflict types, emotions, and stages of group

development.    However, two questions have yet to be answered before the relevant

statistical outputs could be presented: 1) Should the Dysfunctional Stage be identified as

a separate stage, or should it be treated in the same way as Stage 2 (i.e.,

*Counterdependency and Fight*)? 2) Should nonindependence (see Kenny & La Voie,

1985, Kenny et al., 2002) in the data be taken into account when conducting the statistical

analysis (especially when conducting regression analysis), or should it be disregarded in

all the analyses?    Answers to the above two questions are suggested in the following

two sections, with explanations on why those two issues are important to the current

statistical analysis.

**Dysfunctional Stage vs. Stage of *Counterdependency and Fight***

Descriptive analysis on the frequency of data points in each stage of group

development has revealed that the second stage of group development, i.e.,

*Counterdependency and Fight*, contained only 6 cases, as compared to 33 cases in the

first stage (i.e., *Inclusion and Dependency*), 37 cases in the third stage (i.e., *Inclusion and*

*Dependency*), 73 cases in the fourth stage (i.e., *Inclusion and Dependency*), and 15 cases

in the Dysfunctional stage.    Although such results correspond more or less to the

findings in the research conducted by Wheelan and her colleagues (see Wheelan et al.,

2003; Wheelan & Hochberger, 1996; Wheelan & Williams, 2003; Wheelan, 2009), the

scanty number of cases (i.e., 6) in the second stage does suggest a potential problem with

the power of, say, the ANOVA test, which will be used to analyze the current data set: A

Type II error may cause an erroneous null hypothesis to be unable to be rejected.    To

avoid committing such an error, the data that were originally categorized into the

Dysfunctional Stage are reclassified into Stage 2 (i.e., *Counterdependency and Flight*).

Evidence lending support to this data management is reported below.

First, a two-step cluster analysis using SPSS (by having SPSS automatically

determine the maximum number of clusters) on the four GDS scale scores in the

Dysfunctional Stage and Stage 2 (i.e., *Counterdependency and Fight*) revealed that these

two stages go to the same category (in other words, they "cluster" together).

Furthermore, in order to guarantee that the patterns of small group interaction in the

Dysfunctional Stage were really similar to those in in Stage 2 (i.e., *Counterdependency*

*and Fight*), the two-step cluster analysis was employed again to cluster-analyze the four

GDS dimensions (i.e., GDS 1 ~ 4) in the Dysfunctional Stage alone.    But this time the

number of clusters was fixed at 2, for the sake of finding out two broad, yet

distinguishable and interpretable, patterns of small group interaction inside the

Dysfunctional Stage.    As it turned out, the two clusters belonging to the Dysfunctional

Stage demonstrated similarity in terms of the behavioral patterns to those in Stage 2 (i.e.,

*Counterdependency and Fight*).    To be specific, the first pattern in the Dysfunctional

Stage – GDS 1 (2.60 ~ 3.60), GDS 2 (2.75 ~ 3.88), GDS 3 (3.00 ~ 4.17), GDS 4 (3.88 ~

4.00) – revealed a mode of group interaction that might be extremely volatile: The

moderate levels of uncertainty about group goals (in GDS 1) coupled with the moderate

levels of relational tensions and conflict communication (in GDS 2) were mixed with

fairly high levels of positive group climate (in GDS 3) and productivity (in GDS 4).

Such a pattern in the GDS scores might indicate that group members had no clear picture

of the way their groups operated, suggesting the unstable nature of the small group

interaction at this particular stage of group development.    In addition, subgroup

formation (or coalitions) was also a possibility at this time, as the positive group climate

(reflected by the GDS 3 scores) might indicate the positive relationships within the

subgroups, while relational tensions (reflected by the GDS 2 scores) might suggest

relational conflict between those subgroups.    According to Wheelan (1994) and Clark

(2010), coalition formation and unstable nature of interaction are the two characteristics

unique to Stage 2 (i.e., *Counterdependency and Fight*),    The second pattern – GDS 1

(1.40 ~ 2.80), GDS 2 (1.50 ~ 2.88), GDS 3 (1.83 ~ 3.00), GDS 4 (2.88 ~ 3.75) –

represented a mode of overall low levels of group interaction, where lack of sense of

inclusion (in GDS 1), suppression of conflict communication and emotional

manifestation (in GDS 2), deficient cohesiveness or morale (in GDS 3), and crippled

productivity (in GDS 4) were all prevalent.    Such characteristics in the second pattern

more or less pointed to the problematic interaction in Stage 2 (i.e., *Counterdependency*

*and Fight*), although conflict and emotion in Stage 2 were openly expressed rather than

suppressed, according to the original coding scheme.    But the suppression of conflict

and emotion should by no means be interpreted as that they were nonexistent.    On the

contrary, it simply indicates the avoidance of involvement and lack of motivation among

group members to manage conflicts in their small group interactions.    The relatively low

scores of GDS 1, GDS 3, and GDS 4 in the second pattern also betrayed the conflict

nature of the group interaction at this particular moment of group development (i.e.,

lacking sense of belonging, cohesion, and productivity).    Therefore, based upon the

above results obtained through cluster analysis, it is possible for the Dysfunctional Stage

to merge with Stage 2 (i.e., *Counterdependency and Fight*).

Second, independent *t*-tests were also conducted to investigate whether difference

existed between the Dysfunctional Stage and Stage 2 (i.e., *Counterdependency and Fight*)

with respect to conflicts, emotions, and social loafing.    The results in Table 24 showed

that only relationship conflict and negative emotions had significant differences at $\alpha = .05$

between those two stages [for relationship conflict, $t(19) = 2.30$, $p = .03$; for negative

emotions, $t(19) = 2.43$, $p = .03$].    Such statistical results further corroborated the

aforementioned argument that conflict (especially the relationship conflict) and emotions

were suppressed in the Dysfunctional Stage, while being openly expressed in Stage 2

(i.e., *Counterdependency and Fight*).    However, such differences were not significant at

$\alpha = .01$.    With respective to the other variables, no significant differences were found

between those two stages.    Therefore, it can be concluded that the overall differences

between the Dysfunctional Stage and Stage 2 (i.e., *Counterdependency and Fight*) are not

so large as to make them two distinct stages.    In conclusion, based upon the above two

pieces of evidence derived from cluster analysis and t-tests, the data in the Dysfunctional

Stage did not differentiate much from the data in Stage 2.    Thus, these two stages were

combined into one category.    And the label, Stage 2, was retained.    The number of the

cases in Stage 2, therefore, was raised from 6 to 21.

Table 24.

Comparing Social Loafing, Conflict, and Emotions between Stage 2 and Dysfunctional
Stage

|  | Stage 2 | | | Dysfunctional Stage | | | | |
|--|--|--|--|--|--|--|--|--|
|  | *n* | *M* | *SD* | *n* | *M* | *SD* | *t* | *df* |
| PSL | 6 | 3.697 | .786 | 15 | 3.079 | .930 | 1.432 | 19 |
| RelCft | 6 | 3.333 | .801 | 15 | 2.550 | .669 | 2.295* | 19 |
| TskCft | 6 | 2.667 | .596 | 15 | 2.667 | .797 | .000 | 19 |
| LgtCft | 6 | 2.778 | 1.129 | 15 | 2.422 | .761 | .843 | 19 |
| ConCft | 6 | 2.833 | 1.070 | 15 | 2.756 | .859 | .175 | 19 |
| NEI | 6 | 2.976 | .585 | 15 | 2.356 | .506 | 2.432* | 19 |
| PEI | 6 | 2.532 | .663 | 15 | 3.147 | .646 | -1.960 | 19 |

*Note*. PSL = Perceived Social Loafing; RelCft = Relationship Conflict; TskCft = Task Conflict; LgtCft = Logistic

Conflict; ConCft = Contribution Conflict; NEI= Negative Emotion Index; PEI = Positive Emotion Index.

* *p* < .05

**Nonindependence**

According to Kenny et al. (2002), "the data from small group studies are often

*nonindependent*, which means that persons who are in the same group are more similar

(or dissimilar) to one another than are persons who are members of different groups" (p.

126).    The most common measure to estimate the degree of nonindependence is the

intraclass correlation coefficient (Hays, 1973; Myers, DiCecco, & Lorch, 1981; cited

from Kenny & La Voie, 1985), which is defined as

$$r_I = \frac{MS_{BG} - MS_{WG}}{MS_{BG} + (n-1)MS_{WG}} \qquad (1)$$

where $n$ is the group size and is assumed to be equal across groups, $MS_{BG}$ is the mean

square between groups, and $MS_{WG}$ is the mean square within groups.    Test of

statistical significance of the intraclass correlation coefficient uses the mean squares from

the ANOVA that treats group as the independent variable.    The test is based on

following formula:

$$F = \frac{MS_{BG}}{MS_{WG}} \qquad (2)$$

with $k$-1 degrees of freedom in the numerator and $k(n-1)$ degrees of freedom in the

denominator, where $k$ is the number of groups, and $n$ is the group sized.    However, if the

value of intraclass correlation coefficient is negative, the F statistic would be computed as

$$F = \frac{MS_{WG}}{MS_{BG}} \qquad (3)$$

with a corresponding flip in the degrees of freedom.    Finally, the test should be

two-tailed, and the usual $p$ value should be doubled.

If group sizes are unequal, the value of $n$ must be computed using an additional

formula given by Searle (1971, pp.473-474):

$$n = \frac{N^2 - \sum_{j=1}^{k} n_j^2}{N(k-1)} \qquad (4)$$

where $N = \sum_{j=1}^{k} n_j$, $k$ is the number of groups, and $n_j$ is the size of $j^{th}$ group.

Nonindependence between scores of group members not only undermines the

assumption of independent observations inherent to the analysis of variance (ANOVA)

and regression models, but also biases the estimate of error variance, the consequence of

which is that standard errors, $p$ values, confidence intervals, and most effect-size

measures are biased (Kenny et al., 2002).    Kenny et al. (2002) further noted in detail

how to determine the influences nonindependence have on significance testing by

looking at the magnitude and the sign of the intraclass correlation coefficient.    To be

more specific, if the estimated intraclass correlation coefficient is or is near 1 or $-1/(n\text{-}1)$,

the respective upper and lower limit of intraclass correlation coefficient, then

nonindependence biases the significance test of the effect of the independent variables:

The test will be too liberal, and the alpha level that is used to reject the null hypothesis

needs to be adjusted to a higher value.    Furthermore, if the estimated intraclass

correlation coefficient is or is near 0, then there is little or no bias in the significance test

and the individuals , rather than the groups to which those individuals belong, can be

treated as the unit of analysis.

Table 25 lists the estimation of the intraclass correlation coefficients for the

independent variables (i.e., conflict types, positive and negative emotions) and dependent

variable (i.e., social loafing), together with the corresponding significance tests.    It

should be noted that 3 groups with a total of 3 participants were removed from the

original 47 groups that comprised a total of 164 participants in the analysis.    Because

each of those 3 groups contained only one group member who finished the online survey,

there simply was no variability in each of those 3 groups with respect to the variables of

interest, and consequently no legitimacy for estimating nonindependence in each of those

3 groups.   Furthermore, according to the recommendation from Myers (1972, cited from

Kenny & La Voie, 1985), the *p*-value of the *F* test should be evaluated at an alpha level

of .25 for the significance of group-level effects, rather than the more conventional level

of .05.   The current research thus adopted this criterion in the significance tests of the

intraclass correlation coefficients.

As is shown in Table 25, nonindependence is not of a big concern in the variables

of negative and positive emotions, as both coefficients are not significant: for NEI

$r_I = .07$, $p = ns$; for PEI  $r_I = .05$, $p = ns$.   For social loafing and the four conflict types,

the corresponding intraclass correlation coefficients are significant at the alpha level of

.25: social loafing,  $r_I = .16$, $p = .03$; relationship conflict,  $r_I = .11$, $p = .13$; task

conflict,  $r_I = .12$, $p = .09$; logistic conflict,  $r_I = .13$, $p = .07$; contribution conflict,

$r_I = .20$, $p = .01$.   Since the magnitude of each significant intraclass correlation

coefficient (ranging from .11 to .20) is closer to 0 than to either the upper (i.e., 1) or low

limits (i.e., -.38), according to Kenny et al. (2002), the individuals, rather than the groups,

will be treated as the unit of analysis, without harming too much the significant tests of

the statistics obtained in the ANOVA test as well as the regression analysis.

Furthermore, by referring to the data collecting procedures (see Chapter 3), it is known

that every week for 12 weeks an average of 13 participants were randomly selected from

a pool of 200 to fill out online questionnaires surveying their most recent group

experiences.   This procedure of weekly random selection may also lower the chance of

high nonindependency in the data, as not all participants from the same group reported

their group experiences at exactly the same period of group development.   Thus, this

random selection of participants on a weekly basis would further attenuate or dilute the

influence of nonindependency on the data.   Therefore, based upon the above two pieces

of evidence – the small magnitude of intraclass correlation coefficients and the weekly

random selection procedure, it is thus concluded that the current study will have

individual, rather than group, as the unit of analysis.

Table 25

Intraclass Correlation Coefficients of Social Loafing, Four Types of Conflict and Positive vs. Negative Emotions

|        | $MS_B$ | $MS_W$ | $n$  | $r_I$ | $F$  | $df_1$ | $df_2$ | $p$      | Low[a] | Hi[a] |
|--------|--------|--------|------|-------|------|--------|--------|----------|--------|-------|
| PSL    | 1.45   | .86    | 3.65 | .16   | 1.68 | 43     | 114.08 | .03*     | -.38   | 1     |
| RelCft | .55    | .39    | 3.65 | .11   | 1.44 | 43     | 114.08 | .13*     | -.38   | 1     |
| TskCft | .70    | .46    | 3.65 | .12   | 1.50 | 43     | 114.08 | .09*     | -.38   | 1     |
| LgtCft | .49    | .31    | 3.65 | .13   | 1.54 | 43     | 114.08 | .07*     | -.38   | 1     |
| ConCft | 1.12   | .58    | 3.65 | .20   | 1.94 | 43     | 114.08 | .01*     | -.38   | 1     |
| NEI    | .25    | .20    | 3.65 | .07   | 1.28 | 43     | 114.08 | .30      | -.38   | 1     |
| PEI    | .55    | .46    | 3.65 | .05   | 1.19 | 43     | 114.08 | .45      | -.38   | 1     |

*Note.* PSL = Perceived Social Loafing; RelCft = Relationship Conflict; TskCft = Task Conflict; LgtCft = Logistic Conflict; ConCft = Contribution Conflict; NEI= Negative Emotion Index; PEI = Positive Emotion Index.

a. The possible low and high ends of $r_I$.

* $p < .25$

**Descriptive Analysis of Perceived Social Loafing, Conflict, and Emotions in Small**

**Group Development**

In this section, the means and standard deviations of perceived social loafing, four

types of conflict, and positive vs. negative emotions are reported.    For each of these

variables, the grand mean, along with the corresponding standard deviation, is first

reported.    Then, a description is provided about the trend of each of those variables as

well as their respective highest and lowest mean scores when the four stages of group

development are taken into account[1].    Lastly, special attention is given to the order of

magnitude of each conflict type at a particular stage of group development.    All these

descriptions serve to lay a foundation for the statistical analyses to be addressed in the

following sections

Table 26

Means and Standard Deviations of Social Loafing, Four Types of Conflict and Positive
vs. Negative Emotions over the Course of Group Development [a]

|        | Stage 1    | Stage 2    | Stage 3    | Stage 4    | Grand *M* (*SD*) |
|--------|------------|------------|------------|------------|------------------|
| PSL    | 2.91 (.88) | 3.26 (.92) | 2.44 (.95) | 1.97 (.91) | 2.43 (1.02)      |
| RelCft | 1.72 (.45) | 2.77 (.78) | 1.71 (.52) | 1.52 (.50) | 1.77 (.67)       |
| TskCft | 2.30 (.48) | 2.67 (.73) | 2.40 (.63) | 2.56 (.83) | 2.48 (.72)       |
| LgtCft | 1.65 (.46) | 2.52 (.87) | 1.97 (.65) | 1.67 (.47) | 1.84 (.64)       |
| ConCft | 1.97 (.81) | 2.78 (.90) | 1.86 (.74) | 1.73 (.76) | 1.94 (.85)       |
| NEI    | 1.87 (.44) | 2.53 (.59) | 1.84 (.37) | 1.62 (.32) | 1.84 (.49)       |
| PEI    | 3.18 (.60) | 2.97 (.69) | 3.41 (.64) | 3.69 (.68) | 3.43 (.70)       |
|        |            |            |            |            | Total            |
| N      | 33         | 21         | 37         | 73         | 164              |

*Note*. PSL = Perceived Social Loafing; RelCft = Relationship Conflict; TskCft = Task Conflict; LgtCft = Logistic

Conflict; ConCft = Contribution Conflict; NEI= Negative Emotion Index; PEI = Positive Emotion Index.

a. Means are reported first.    Standard deviations are reported in the parentheses.

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[1]The comparison of each variable of interest between the four instructors can be obtained upon request.

Table 26 lists the means and standard deviations of perceived social loafing, four types of conflict, positive vs. negative emotions at each stage of group development, as well as their respective grand means and standard deviations when the whole group process is considered.   It is noted that throughout the history of groups both perceived social loafing ($M = 2.43$, $SD = 1.02$) and task conflict ($M = 2.48$, $SD = .72$) were on average on moderately low levels, while relationship conflict ($M = 1.77$, $SD = .67$), logistic conflict ($M = 1.84$, $SD = .64$), contribution conflict ($M = 1.94$, $SD = .85$), and negative emotions ($M = 1.84$, $SD = .49$) were all on low levels[2].   Positive emotions, on the other hand, were generally maintained on a moderately high level across the four stages of group development ($M = 3.43$, $SD = .70$).

With respect to how each of those variables developed stage by stage across the developmental process of group work, it is seen that the magnitude of perceived social loafing increased from Stage 1 ($M = 2.91$, $SD = .88$) to Stage 2 ($M = 3.26$, $SD = .92$), then decrease from Stage 2 to Stage 3 ($M = 2.44$, $SD = .95$), and continued to drop till Stage 4 ($M = 1.97$, $SD = .91$).   Perceived social loafing hit its highest mean score at Stage 2 and the lowest mean score was at Stage 4.   This pattern of the mean score distribution also applies to relationship conflict (highest at Stage 2: $M = 2.77$, $SD = .78$; lowest at Stage 4: $M = 1.52$, $SD = .50$), contribution conflict (highest at Stage 2: $M = 2.78$, $SD = .90$; lowest

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[2]  Since the questionnaire is based upon a 5-point Likert scale (1 = not at all, 2 = very little, 3 = some or somewhat, 4 = quite a lot, and 5 = a great deal/extremely), it is reasonable to make the following arbitrary judgment for any value that falls in the designated range: $1 \leq$ low level/degree $< 2$, $2 \leq$ moderately low level/degree $< 3$, $3 \leq$ moderately high level/degree $< 4$, and $4 \leq$ high level/degree $< 5$.

at Stage 4: $M = 1.73$, $SD = .76$), and negative emotions (highest at Stage 2: $M = 2.53$, $SD$

$= .59$; lowest at Stage 4: $M = 1.62$, $SD = .32$).    Logistic conflict also followed a similar

rise-and-fall pattern: The mean of logistic conflict was found to increase from Stage 1 ($M$

$= 1.65$, $SD = .46$) to Stage 2 ($M = 2.52$, $SD = .87$), and then decrease from Stage 2 to

Stage 3 ($M = 1.97$, $SD = .65$) till Stage 4 ($M = 1.67$, $SD = .47$).    However, despite the

fact that its highest point was at Stage 2, the lowest mean score of logistic conflict was

found at Stage 1, rather than at Stage 4.    Task conflict, on the other hand, followed a

different pattern of development.    Its mean score was found to increase from Stage 1 ($M$

$= 2.30$, $SD = .48$) to Stage 2 ($M = 2.67$, $SD = .73$), then decrease from Stage 2 to Stage 3

($M = 2.40$, $SD = .63$), and increase again from Stage 3 to Stage 4 ($M = 2.56$, $SD = .83$).

Task conflict hit its highest point at Stage 2 and its lowest was at Stage 1.    For positive

emotions, the mean was found to decrease from Stage 1 ($M = 3.18$, $SD = .60$) to Stage 2

($M = 2.97$, $SD = .69$), and then increase from Stage 2 to Stage 3 ($M = 3.41$, $SD = .64$) till

Stage 4 ($M = 3.69$, $SD = .68$).    As can be seen, positive emotions had the highest mean

score at Stage 4 and the lowest at Stage 2.

It is also interesting to note from Table 26 that the order of the magnitude of the

four types of conflict is different from stage to stage.    At Stage 1, task conflict was

observed to have the largest mean score ($M = 2.30$, $SD = .48$), followed successively by

contribution conflict ($M = 1.97$, $SD = .81$), relationship conflict ($M = 1.72$, $SD = .45$), and

logistic conflict ($M = 1.65$, $SD = .46$).    At Stage 2, the mean of contribution conflict was

the highest ($M = 2.78$, $SD = .90$), followed successively by relationship conflict ($M =$

2.77, *SD* = .78), task conflict (*M* = 2.67, *SD* = .73), and logistic conflict (*M* = 2.52, *SD* =

.87).    At Stage 3, task conflict was observed to have the highest mean score (*M* = 2.40,

*SD* = .63), followed successively by logistic conflict (*M* = 1.97, *SD* = .65), contribution

conflict (*M* = 1.86, *SD* = .74), and relationship conflict (*M* = 1.71, *SD* = .52).    At Stage

4, task conflict was again observed to have the largest mean score (*M* = 2.56, *SD* = .83),

followed successively by contribution conflict (*M* = 1.73, *SD* = .76), logistic conflict (*M*

= 1.67, *SD* = .47), and relationship conflict (*M* = 1.52, *SD* = .50).    As these results

suggest, task conflict was in the first order of concern by group members at Stage 1,

Stage 3, and Stage 4.    Contribution conflict was in the first order of concern at Stage 2.

By contrast, logistic conflict was in the last order of concern at Stage 1 and Stage 2.

Relationship conflict was in the last order of concern at Stage 3 and Stage 4.    Finally, by

looking at the grand means of the four types of conflict, it can be seen that throughout the

course of group development, task conflict was the top concern by group members,

followed successively by contribution conflict, logistic conflict, and relationship conflict.

**Perception of Social Loafing at each Stage of Group Development**

The first set of hypotheses sought to find out the relationship between the

perception of social loafing and the stages of group development.    To be specific, the

researcher would like to see (1) whether or not social loafing was perceived by the

majority, and (2) whether or not social loafing was consciously perceived at each

particular stage of group development.    To achieve this, the researcher utilized two

statistical methods: one-way Chi square test and one-sample *t*-test.    The one-way Chi

square analysis was employed to compare the number of people who agreed to have

perceived social loafing at a particular stage of group development with those who

disagreed.   Because social loafing was originally evaluated against a 5-point Likert

scale, with *1 = strongly disagree*, and *5 = strongly agree*, scores of social loafing were

then transformed by coding any value that is below 3 as "Disagree" and any other value

that is above 3 as "Agree."   The value of 3 is a threshold score, reflecting group

members' neutral attitude of neither denying nor acknowledging the existence of social

loafing during the time of their small group interaction.   If at a particular stage of group

development a group member's score of perceived social loafing happened to be equal to

3, then that data entry was removed in the one-way Chi-square analysis, because that

person's perception of social loafing was indeterminate at that special moment of group

process.

The one-sample *t*-test was intended to be an additional but complementary

method of data analysis that served to check the findings obtained in the one-way Chi

square test.   It served to make further exploration of the data by seeing if social loafing

was truly ignored or bewared of at a particular stage of group development.   To achieve

this end, the one-sample *t*-test analysis first employed the value of 3 as the threshold

score.   As has been suggested, the value of 3 denotes group members' neutral attitude of

neither denying nor acknowledging the existence of social loafing during the time of their

small group interaction.   If at a particular stage of group development the mean value of

perceived social loafing is significantly greater than the value of 3, then we can reject the

null hypothesis and conclude at the pre-designated confidence level (for example, we are

95% confident when the $\alpha$ was set at .05) that the data support the argument that group

members performing at that particular stage are on average aware of social loafing.

However, if the mean value of perceived social loafing is not significantly different than

the value of 3, we cannot reject the null hypothesis.    We can only conclude that group

members on average took neutral attitudes toward social loafing by neither denying nor

acknowledging its existence in their group interaction.    If this occurs, in order to reveal

whether or not social loafing was truly perceived by group members, we need to employ

another threshold value (i.e., 2) for further comparison.    According to the 5-point Likert

scale, the value of 2 denotes the meaning of "a little disagree[ing]" about having

perceived social loafing at a particular moment of group development, signifying that

social loafing starts to be on one's conscious guard but the severity of it is not high

enough to have group members treat it as a serious problem.    If the mean value of

perceived social loafing was significantly smaller than the value of 2, we will reject the

null and conclude at the pre-designated confidence level (for example, we are 95%

confident when the $\alpha$ was set at .05) that social loafing was not consciously bewared of.

If the mean value of perceived social loafing is not significantly different from the value

of 2, then we cannot reject the null hypothesis.    We can only conclude that group

members started to be consciously aware of social loafing but would not treat it as a

serious problem in their group interaction.    If the mean value of perceived social loafing

was significantly greater than the value of 2 but not significantly different from the value

of 3, we can conclude that social loafing was being consciously perceived, but group

members were not quite certain whether or not it is appropriate to report its existence in

the group.    But what if at a particular stage of group development we obtained a mean

value of perceived social loafing that is significantly greater than the value of 2 and at the

same time significantly smaller than the value of 3?    Such a situation may imply that

group members on average did not want to openly acknowledge or address the existence

of social loafing during their group interaction, but at the same time instances of social

loafing could not be overlooked.

Because of the presence of the significant zero-order correlation between

neuroticism and social loafing ($r = .178$, $p = .02$), the researcher has the legitimate reason

to suspect that neuroticism may act as a covariate in the relationship between the

perception of social loafing and stages of group development.    In other words, a neurotic

person is more likely than a non-neurotic one to report to have experienced social loafing

in his or her group.    If that is the case, the influence of neuroticism has to be controlled

for in order to reveal the true relationship between the perception of social loafing and

stages of group development.    Analysis of Covariance (ANCOVA) was conducted by

setting perceived social loafing as the dependent variable, group development stages as

the independent variable, and neuroticism as the covariate.    As it turned out, the $F$

statistic for neuroticism is not significant, $F(1, 159) = 2.48$, $p = .12$, indicating that the

influence of neuroticism could be ignored in the following statistical tests (i.e., Chi

square, $t$-test, ANOVA, and multiple mean comparison.)

Table 27 lists the frequency as well as the mean of the degree of social loafing

perceived at each stage of group development.    Also listed are the results of the one-way

Chi square tests and the one-sample $t$-tests on the hypotheses that relate the degree of

perceived social loafing to each stage of group development.    Relevant outcomes with

respect to the hypotheses are reported next.

Table 27

Frequency, Mean, and Standard Deviation of Social Loafing on each Stage of Group
Development with Chi Square Test and T-Test

| | $n$ | | Chi Square | | | $t$-test | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Disagree (%) | Agree (%) | $\chi^2$ (df) | $p$ | N | $M$ (SD) | $t_1$ $(df)^a$ | $p_1$ | $t_2$ $(df)^b$ | $p_2$ |
| Stage 1 | 16 (51.6) | 15 (48.4) | .03 (1) | .86 | 33 | 2.91 (.88) | -.59 (32) | .56 | 5.94 (32) | .000* |
| Stage 2 | 9 (45.0) | 11 (55.0) | .20 (1) | .65 | 21 | 3.26 (.92) | 1.28 (20) | .22 | 6.27 (20) | .000* |
| Stage 3 | 26 (70.3) | 11 (29.7) | 6.08 (1) | .01* | 37 | 2.44 (.95) | -3.60 (36) | .001* | 2.80 (36) | .008* |
| Stage 4 | 62 (84.9) | 11 (15.1) | 35.6 (1) | .00* | 73 | 1.97 (.91) | -9.71 (72) | .000* | -.305 (72) | .762 |

a. $H_o: \mu_0 = 3$

b. $H_o: \mu_0 = 2$

* $p < .05$

H1 states that when group members are performing at the stage of *Inclusion and*

*Dependency*, they tend to disagree about having perceived social loafing more than they

agree about having perceived social loafing in their group.    The Chi-square test shows

that this hypothesis is not statistically supported, $\chi^2(1) = .03, p = ns$, with $n_{disagree} (= 16)$

$> n_{agree} (= 15)$.    Such results have revealed that although the observed frequency of

disagreement is a little higher than that of agreement (16 vs. 15), there is not much

statistically significant difference between the number of people who disagreed to have

experienced social loafing and the number of people who agreed to have experienced it at

the stage of *Inclusion and Dependency*.   Furthermore, the one-way *t*-test analysis have

revealed that the average level of the awareness of social loafing at Stage 1 (i.e.,

*Inclusion and Dependency*) is not statistically different from the threshold score of 3,

$t(32) = -.59, p = ns$.   However, when comparing the mean of perceived social loafing at

Stage 1 with the threshold score of 2, the one-way *t*-test produced a significant result,

$t(32) = 5.94, p < .001$.   Combining these two pieces of evidence from the one-way

*t*-tests, we can argue that although group members performing at Stage 1 were generally

not sure whether or not it would be appropriate to openly report having perceived social

loafing, they actually could feel it in their group interaction.

H2 states that group members performing at the stage of *Counterdependency and*

*Fight* are more likely to agree about having perceived social loafing than disagree about

having perceived social loafing in their group.   The Chi-square test shows that this

hypothesis is not statistically supported, $\chi^2(1) = .20, p = ns$, with $n_{disagree}(= 9)$

$< n_{agree}(=11)$.   Such results have revealed that although the observed frequency of

disagreement is a little smaller than that of agreement (9 vs. 11), there is not much

statistically significant difference between the number of people who disagreed to have

experienced social loafing and the number of people who agreed to have experienced it at

the stage of *Counterdependency and Fight*,   Furthermore, the one-way *t*-test analysis

have revealed that the average level of the awareness of social loafing at Stage 2 (i.e.,

*Counterdependency and Fight*) is not statistically different from the threshold score of 3,

$t(20) = 1.28, p = ns$.    However, when comparing the mean of perceived social loafing at

Stage 2 with the threshold score of 2, the one-way *t*-test produced a significant result,

$t(20) = 6.27, p < .001$.    Combining these two pieces of evidence from the one-way

*t*-tests, we can argue that although group members performing at Stage 2 were generally

not sure whether or not it would be appropriate to openly report having perceived social

loafing, they actually could feel it in their group interaction.

H3 predicts that when group members are performing at the stage of *Trust and*

*Structure*, they are more likely to disagree about having perceived social loafing than to

agree about having perceived social loafing in their group.    The Chi-square test shows

that this hypothesis is statistically supported, $\chi^2(1) = 6.08, p < .05$, with $n_{disagree}(= 26)$

$> n_{agree}(= 11)$.    In addition, the one-way *t*-test analysis have revealed that the average

level of the awareness of social loafing at Stage 3 (i.e., *Trust and Structure*) is statistically

smaller than the threshold score of 3, $t(36) = -3.60, p < .05$.    Furthermore, when

comparing the mean of perceived social loafing at Stage 3 with the threshold score of 2,

the one-way *t*-test also produced a significant result, $t(36) = 2.80, p = .008 < .05$.

Combining these two pieces of evidence from the one-way *t*-tests, we can see that

although group members performing at Stage 3 generally did not want to openly

acknowledge or address the existence of social loafing during their group interaction,

they actually could not ignore it in their group interaction.

H4 predicts that when group members are performing on the stage of *Work*, they are more likely to agree about having perceived social loafing than to disagree about having perceived social loafing in their group.    Even though the Chi-square test has produced a significant result, $\chi^2(1) = 35.6$, $p < .05$, the hypothesis is not statistically supported: The direction of the comparison is opposite to what was originally hypothesized, $n_{disagree}(= 62) > n_{agree}(= 11)$.    This result shows that the number of people who disagree about having perceived social loafing is greater than the number of people who agree about having perceived social loafing at the stage of *Work*.    In addition, the one-way *t*-test analysis have revealed that the average level of the awareness of social loafing at Stage 4 (i.e., *Work*) is statistically smaller than the threshold score of 3, $t(72) = -9.71$, $p < .05$.    Furthermore, when comparing the mean of perceived social loafing at Stage 4 with the threshold score of 2, the one-way *t*-test did not produce a significant result, $t(72) = -.305$, $p = ns$.    Combining these two pieces of evidence from the one-way *t*-tests, we can argue that although group members performing at Stage 4 were perceiving instances of social loafing, they would not treat it as a serious problem and thus they would not openly admit it in their group interaction.

H5a states that group members are more likely to perceive social loafing at the stage of *Work* than they are at the stage of *Counterdependency and Fight*.    However, this hypothesis is not supported by the current data.    As Table 27 has revealed, 55.0% of the people performing on Stage 2 (i.e., *Counterdependency and Fight*) reported to have experienced social loafing, whereas 15.1% of the people performing on Stage 4 (i.e.,

*Work*) reported to have experienced social loafing.    It seems that it is more likely for people performing on the on Stage 2 (i.e., *Counterdependency and Fight*) to experience social loafing than it is for people performing on Stage 4 (i.e., *Work*) to experience it. The difference between the two proportions (55.0% – 15.1% = 39.90%) was significant by a Chi square test, $\chi^2(1) = 13.86$, $p < .05$.    Further estimation on the interval of the difference between these two proportions also reveals that the 95% confidence interval is from .1660 to .6320, meaning that we are 95% confident that the true difference between the above two proportions in the population lies somewhere between 16.60% and 63.20%.    Furthermore, the results from the *t*-test have suggested that the average level of the awareness of social loafing at the stage of *Counterdependency and Fight* is statistically higher than the average level of social loafing at the stage of *Work*, $t(92) = 5.71$, $p < .05$, meaning that on average people are more likely to be aware of social loafing at Stage 2 (i.e., *Counterdependency and Fight*) than they are at Stage 4 (i.e., *Work*).

H5b hypothesizes that the stage of *Work* is more strongly associated with group members' perception of social loafing than is the stage of *Counterdependency and Fight*. Two zero-order correlations are computed, one between GDS 2 (which measures the typical activities in the stage of *Counterdependency and Fight*) and perceived social loafing, and the other between GDS 4 (which measures the typical activities in the stage of *Work*) and perceived social loafing.    The corresponding correlation coefficients are $r_{2\,SL} = .391$, $p < .01$, and $r_{4\,SL} = -.527$, $p < .01$.    However, because GDS 2 and GDS 4 are

significantly correlated, $r_{24} = -.44$, $p < .01$, testing the above hypothesis must take into

account the fact that the two correlations (i.e., $r_{2\,SL}$ and $r_{4\,SL}$) are not independent.

According to Howell (2007, p. 262), the following formula will be used:

$$t = (r_{12} - r_{13}) \sqrt{\dfrac{(N-1)(1+r_{23})}{2\left(\dfrac{N-1}{N-3}\right)|R| + \dfrac{(r_{12}+r_{13})^2}{4}(1-r_{23})^3}} \qquad (5)$$

where $|R| = (1 - r_{12}^2 + r_{13}^2 + r_{23}^2) + 2(r_{12}r_{13}r_{23})$.    This ratio is distributed as $t$ on $N - 3$

degrees of freedom, and $N$ is the sample size.    To compute the $t$ value, the absolute

values of the correlation coefficients will be used, because we are interested in comparing

the strength of the correlation, rather than the direction of the correlation.    When we let

   $r_{12}$ = the absolute value of the correlation between DGS 4 and Social loafing = .527

   $r_{13}$ = the absolute value of the correlation between DGS 2 and Social loafing = 391

   $r_{23}$ = the absolute value of the correlation between DGS 4 and DGS 2 = .44

   N = 164,

the test is nearly significant, $t(161) = 1.926$, $p = .06$, meaning we can almost reject the

null hypothesis that both correlation coefficients are equal in the population.    As a

consequence, H5b is marginally supported, leading to the conclusion that the magnitude

of the association between the stage of *Work* and group members' perception of social

loafing is greater than the magnitude of the association between the stage of

*Counterdependency and Fight* and group members' perception of social loafing.

     H5c states that the degree of the perception of social loafing in the stage of *Work*

is higher than the degree of the perception of social loafing in the other three stages of

group development.    Table 27 has revealed that this hypothesis is not statistically

supported.    The mean of perceived social loafing is at its lowest at Stage 4 ($M = 1.97$,

$SD = .91$), as compared to the means at the other stages of group development (e.g., at

Stage 1, $M = 2.91$, $SD = .88$; at stage 2, $M = 3.26$, $SD = .92$; at stage 3, $M = 2.44$, $SD =$

.95).    Figure 1 plots the mean of perceived social loafing at each stage of group

development.    It is seen that the level of social loafing reaches its peak at Stage 2 and

hits its bottom at Stage 4.

In order to test whether at Stage 4 the degree of perceived social loafing is at its

lowest in the population, multiple comparisons between the four means are then made.

In the ANOVA test, the overarching null hypothesis that the four means of perceived

social loafing are equal across the four stages of group development is rejected, $F (3,$

$160) = 14.98$, $p < .001$.    Multiple pair-wise comparisons of the means of perceived

social loafing across the four stages of group development with Tukey HSD correction

has produced the following findings: (1) No significant differences are found in the

means of perceived social loafing between Stage 4 and Stage 3, between Stage 3 and

Stage 1, and between Stage 1 and Stage 2; (2) significant differences are found in the

following three sets of comparison at $\alpha = .05$: Stage 1 vs. Stage 4, Stage 2 vs. Stage 4,

and Stage 2 vs. Stage 3.    Table 28 lists all the pair-wise comparisons of perceived social

loafing between the stages of group development.    As it shows, even though the above

results suggest that the mean of perceived social loafing has the potential to be at its

lowest at Stage 4, such an argument did not receive strong statistical support.
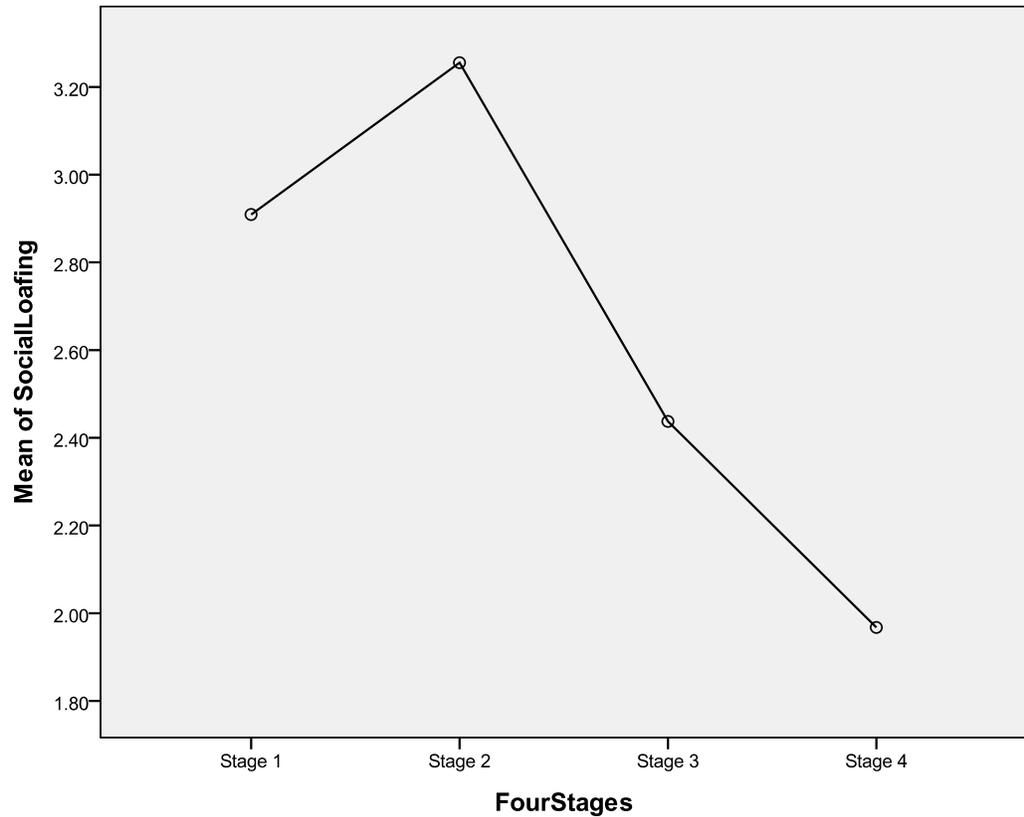
Figure 1. Means of Perceived Social Loafing on Stages of Group Development

Table 28

Pair-wise Comparisons with Tukey HSD Correction and Effect Sizes of Perceived Social Loafing by Stage of Group Development

|  |  | Mean Differences ($\bar{X}_r - \bar{X}_c$) | | | |
|  |  | (Effect Sizes are indicated in Parentheses)[a] | | | |
|  | M(SD) | 1 | 2 | 3 | 4 |
| 1. Stage 1 | 2.91(.88) | -- |  |  |  |
| 2. Stage 2 | 3.26(.92) | .35 (.42) | -- |  |  |
| 3. Stage 3 | 2.44(.95) | -.47 (.56) | -.82* (.98) | -- |  |
| 4. Stage 4 | 1.97(.91) | -.94* (1.13) | -1.29* (1.55) | -.47 (.56) | -- |

a. The effect size is evaluated with the mean square root (error) at .834.

* $p < .05$

Even though the above multiple comparisons between the means of perceived

social loafing did not give a definitive answer to the question of how the degree of

perceived social loafing fluctuated across the four stages of group development, Figure 1

did reveal a curvilinear trend, where perceived social loafing reached its peak at Stage 2

and hit its bottom at Stage 4.    The trend analysis provided results that supported such an

argument.    It is noted that both linear trend and quadratic trend were found to be

significant [for the linear trend: $F$ (1, 160) = 33.79, $p$ < .001, $\eta^2$ = .174; for quadratic

trend, $F$ (1, 160) = 6.73, $p$ = .010 < .05, $\eta^2$ = .040].    The cubic trend was found to be

marginally significant, $F$ (1, 160) = 3.82, $p$ = .052 < .10, $\eta^2$ = .023.    Such results

suggested that the overall trend of perceived social loafing was linear and downward,

with the lowest level of perceived social loafing at Stage 4.    Beyond the overall linear

trend, there was a curvilinear trend where perceived social loafing reached its peak at

Stage 2 and then dropped with different speed from Stage 2 to Stage 3, and from Stage 3

to Stage 4.

**Explaining Perceived Social Loafing from Negative Emotions and Intra-group**

**Conflicts**

The second set of hypotheses addressed the different patterns of the association

between perceived social loafing, negative emotions, and conflict types in groups.    Two

kinds of association were proposed: mediation and moderation.    The mediation

relationship could be tested with the path analysis technique.    To be specific,

relationship conflict and contribution conflict were treated as two exogenous variables

that covaried with each other while negative emotions and perceived social loafing were

treated as two endogenous variables with negative emotions as the mediator.    Figure 2

graphically depicts the mediational model.    In addition, the model also proposed that the
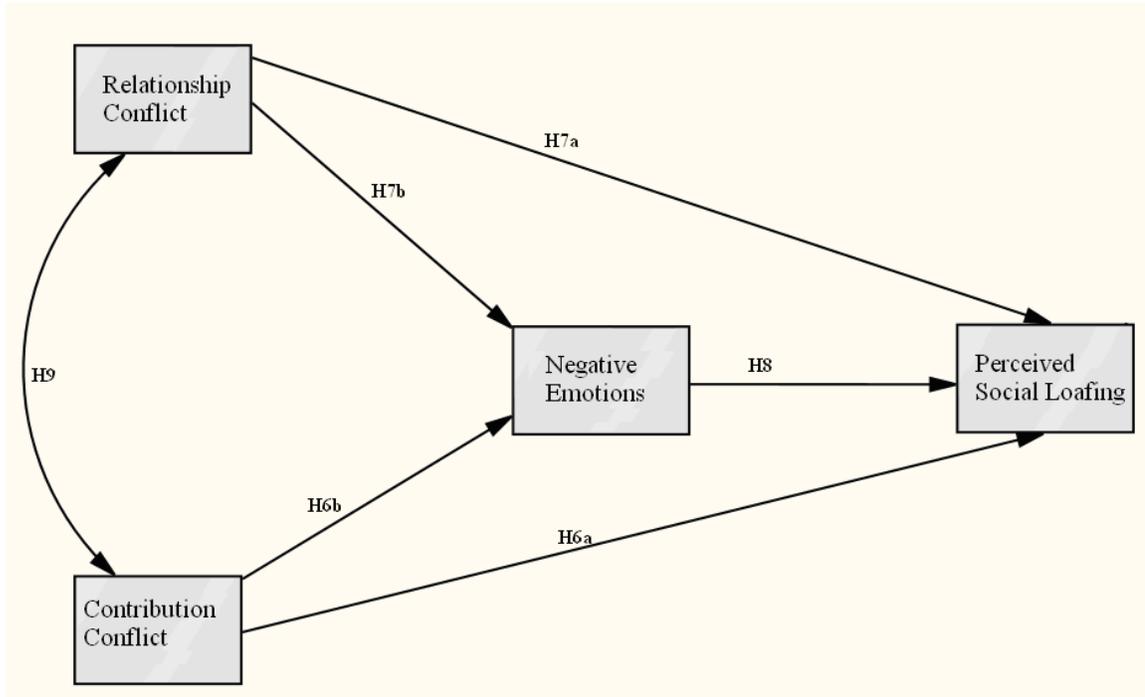


Figure 2. General theoretical model relating contribution conflict, relationship conflict, negative emotions to perceived social loafing

main effects of relationship conflict and contribution conflict on perceived social loafing

did not disappear even in the presence of the mediating variable – negative emotions.

On the other hand, a moderation effect was proposed to account for the relationships

between task conflict and perceived social loafing and also between logistic conflict and

perceived social loafing, with negative emotions acting as a moderator in the two

proposed relationships.    It was proposed that with the presence of negative emotions,

task (or logistic) conflict and perceived social loafing would be differentially associated.

Multiple regression analysis was employed to test the moderation effect.    Figures 3 and

4 graphically depict the moderating roles that negative emotions play in the relationship

between task (and logistic) conflict and perceived social loafing.
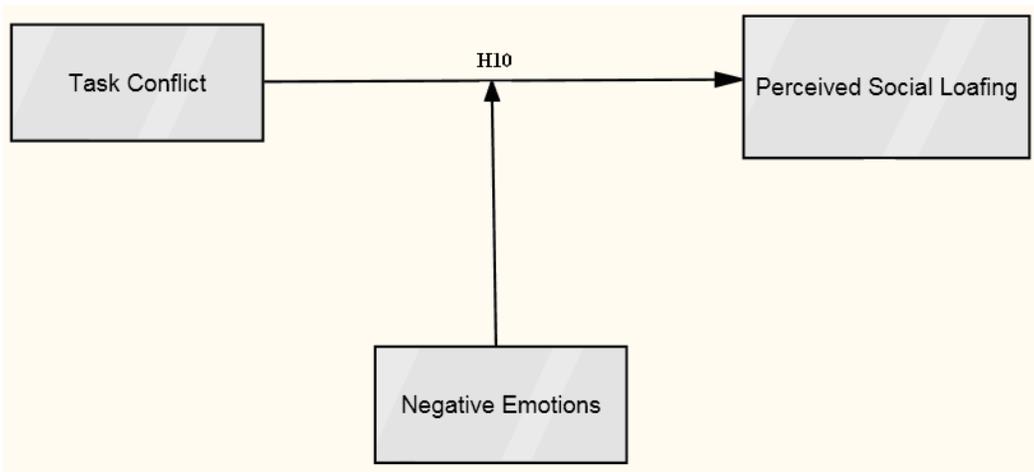


Figure 3. General theoretical model relating task conflict to perceived social loafing, moderated by negative emotions
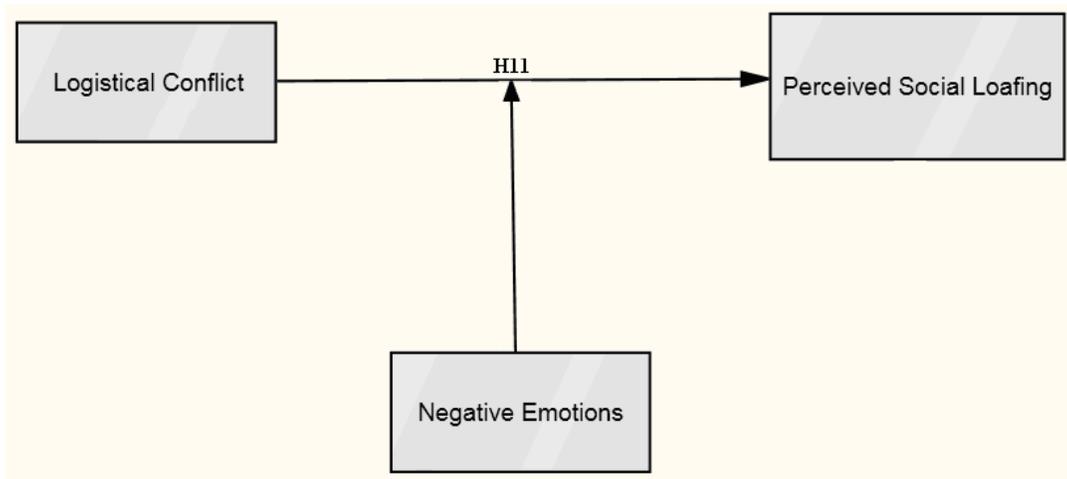


Figure 4. General theoretical model relating logistic conflict to perceived social loafing, moderated by negative emotions

Table 29 presents the means, standard deviations, and zero-order correlations for

all the variables of interest in the current analysis.    As it reveals, the means of all those

variables did not exceed the number of 3 (i.e., the middle level of group members' overall

Table 29

Means, Standard Deviations, and Correlations of the Variables in the Path Analysis

| | M | SD | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| 1. Social Loafing | 2.43 | 1.02 | – | | | | | |
| 2. Relationship Conflict | 1.77 | .67 | .55* | – | | | | |
| 3. Task Conflict | 2.48 | .72 | .05 | .31* | – | | | |
| 4. Logistic Conflict | 1.84 | .64 | .31* | .63* | .46* | – | | |
| 5. Contribution Conflict | 1.94 | .85 | .62* | .68* | .22* | .46* | – | |
| 6. NEI | 1.84 | .49 | .58* | .65* | .127 | .43* | .46* | – |

* $p < .01$

NEI: Negative Emotion Index

awareness of the problematic interactions in the group), suggesting group members'

overall awareness of conflicts, social loafing, and negative emotions in their recent group

activities was relatively low.    In addition, among the four conflict types, the level of the

awareness of task conflict ($M = 2.48$, $SD = .72$) was relatively higher than the awareness

levels of the other three conflict types(contribution conflict: $M = 1.94$, $SD = .85$; logistic

conflict: $M = 1.84$, $SD = .64$; relationship conflict: $M = 1.77$, $SD = .67$), suggesting the

attention to tasks and goal accomplishment was a major theme in group life, relative to

the attention to relational maintenance, procedural process, and reward distribution.

Furthermore, with respect to the zero-order correlations, it is seen that all the four conflict

types were significantly interrelated with one another, with the lowest correlation

between task conflict and contribution conflict (i.e., $r = .22$, $p < .01$), and the highest

correlation between relationship conflict and contribution conflict (i.e., $r = .681$, $p < .01$).

It is also seen that task conflict had two nonsignificant correlations, one with perceived

social loafing (i.e., $r = .045$, $p = ns$), and the other with negative emotions (i.e., $r = .117$,

$p = ns$).    Such a pattern of nonsignificant correlations will be analyzed in depth when the

moderating effect of negative emotions is being explored in the relationship between task

conflict and perceived social loafing.

A path analysis using AMOS (v.18) was conducted to examine the effects of

relationship conflict and contribution conflict on perceived social loafing, and the

possible role (i.e., mediating) negative emotions played in those effects.    It was

hypothesized that both relationship conflict and contribution conflict had positive

correlations with perceived social loafing after controlling for the influence of negative

emotions (H6a and H7a).    In addition, both relationship conflict and contribution

conflict also had positive correlations with negative emotions (H6b and H7b).    Next,

negative emotions would have positive correlation with perceived social loafing (H8).

Finally, relationship conflict and contribution conflict covaried (H9).

Figure 5 lists the standardized parameter estimates of the various effects.    Table

30 lists the unstandardized parameter estimates as well as the standard errors for full

model.    It is seen that negative emotions fully mediated the relationship between

relationship conflict and perceived social loafing, thus statistically supporting H7b and

H8 (H7b: $\beta = .63, p < .01$; H8: $\beta = .37, p < .01$), but not H7a ($\beta = .01, p = .944$).    In

other words, the correlation between relationship conflict and perceived social loafing

dropped to zero after accounting for the influence of negative emotions.    While the H6a

was statistically supported ($\beta = .44, p < .01$), H6b was not ($\beta = .03, p = .724$).    In other
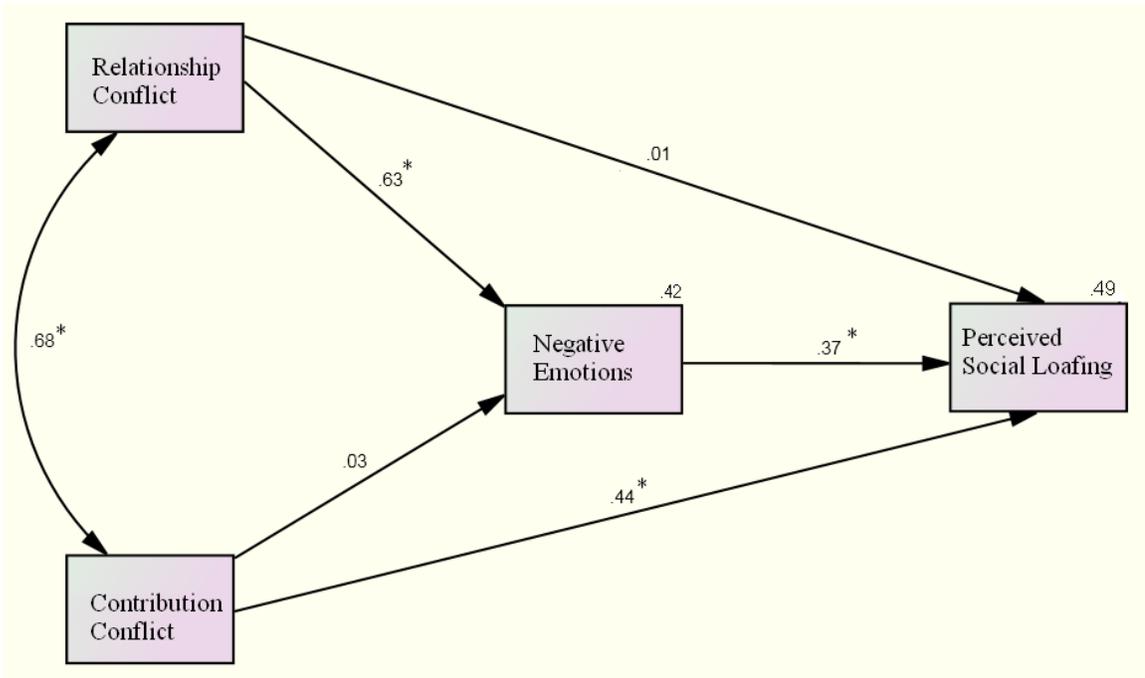
Figure 5. General theoretical model relating contribution conflict, relationship conflict, negative emotions to perceived social loafing: standardized parameter estimates
* *p* < .01

Table 30.

Unstandardized Path Coefficients, Standard Errors, and t-Values for General Theoretical Model

|  | Estimate | *SE* | *t* | *p* |
|---|---|---|---|---|
| Relationship conflict to negative emotions (H7b) | .464 | .060 | 7.756 | <.01 |
| Contribution conflict to negative emotions (H6b) | .017 | .047 | .354 | .724 |
| Negative emotions to perceived social loafing (H8) | .774 | .154 | 5.027 | <.01 |
| Relationship conflict to perceived social loafing (H7a) | .010 | .138 | .070 | .944 |
| Contribution conflict to perceived social loafing (H6a) | .534 | .093 | 5.773 | <.01 |

words, negative emotions did not act as a mediator in the relationship between

contribution conflict and perceived social loafing, but the main effect of contribution

conflict on perceived social loafing was significant.    Finally, the hypothesis on the

covariation between relationship conflict and contribution conflict (H9) was statically

supported, r = .68, p < .01.

To evaluate the overall model fit, several fit indices were used: $\chi^2$ goodness-of-fit

statistic, the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the

comparative fit index (CFI), and the root mean square error of approximation (RMSEA).

A model is considered to have very good fit if the $\chi^2$ statistic is nonsignificant, the GFI,

AGFI, and CFI are greater than .95, and the RMSEA is below 0.05.    According to

Browne and Cudeck (1993), RMSEA values less than .08 correspond to an acceptable fit,

whereas a value greater than .10 suggests poor fit.    As is seen in Table 31, the RMSEA

value for the full model is .549 (greater than .10), indicating poor fit for the full model.

Table 31.

Fit indices of the Full Path Model and the Revised Model

|  | $\chi^2$ | df | p | GFI | AGFI | CFI | RMSEA |
|---|---|---|---|---|---|---|---|
| Full Model | 0 | 0 | 1 | 1 | – | 1 | .549 |
| Revised Model | .13 | 2 | .937 | 1 | .998 | 1 | .000 |

Note. GFI = goodness of fit index; AGFI = adjusted goodness of fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

Therefore, the full model was revised, with the two nonsignificant pathways (i.e., the

pathway from relationship conflict to perceived social loafing, and the pathway from

contribution conflict to negative emotions) removed in a stepwise way.    Figure 6 lists

the standardized parameter estimates of the revised model after both of the nonsignificant

pathways were removed.    Table 32 lists the unstandardized parameter estimates and

standard errors of the revised model.    As can be seen, all the pathway coefficients are
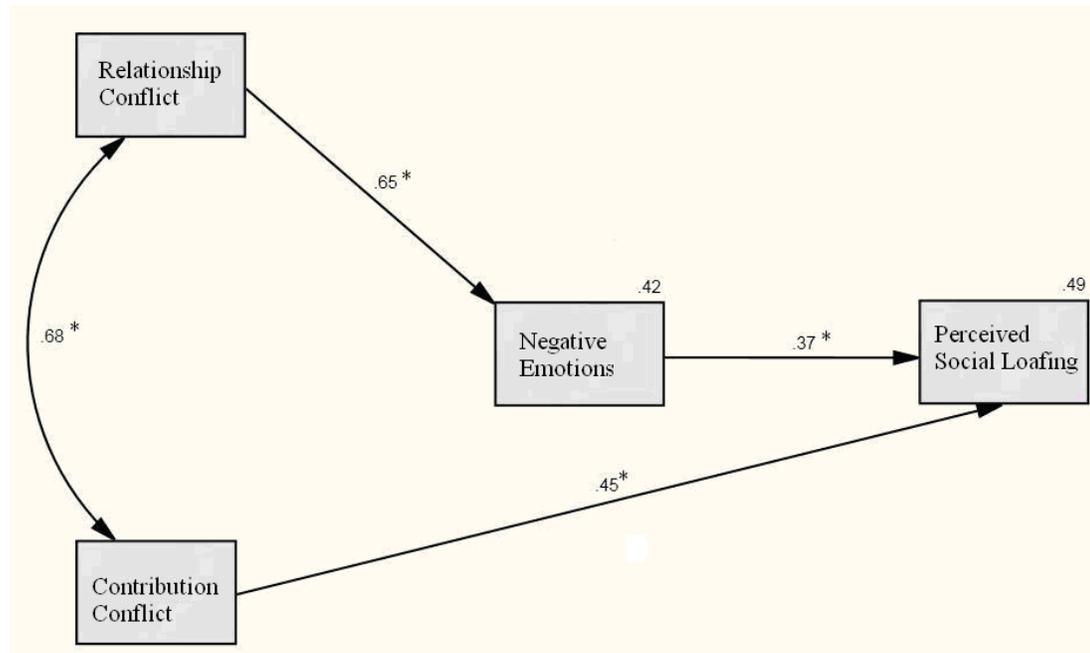


Figure 6. Revised model relating contribution conflict, relationship conflict, negative
emotions to perceived social loafing

Table 32.

Unstandardized Path Coefficients, Standard Errors, and t-Values for Revised Model

|  | Estimate | SE | t | p |
|---|---|---|---|---|
| Relationship conflict to negative emotions | .478 | .044 | 10.915 | <.01 |
| Negative emotions to perceived social loafing | .779 | .130 | 5.976 | <.01 |
| Contribution conflict to perceived social loafing | .538 | .076 | 7.120 | <.01 |

significant at $\alpha = .01$.    The magnitude of each significant pathway coefficient is almost

the same as that in the full model.    Furthermore, relevant statistics in Table 31 also

suggest goodness of fit for the revised model: Not only do the GFI, AGFI and CFI values

are greater than .95, but the RMSEA value hits zero as well, suggesting better goodness

of fit for the revised model.

With respect to testing the moderation effect of negative emotions on the

relationship between task conflict and perceived social loafing (H10a and H10b),

hierarchical multiple regression analysis was conducted.   Table 33 reports all the

relevant results in terms of the standardized and unstandardized regression coefficients

for the two independent variables and the interaction term, the total variance explained in

the form of $R$ squares, the significance of the regression coefficients, and significance of

the $R$-square change after the interaction term was included in the regression analysis.   It

Table 33

Hierarchical Multiple Regression Analysis Predicting Perceived Social Loafing from
Task Conflict, Negative Emotions and the Interaction between Task Conflict and
Negative Emotions

| Predictors[a] | Unstandardized | | $\beta$ | $p$ | $R^2$ | $\Delta R^2$ |
| | $B$ | Std. Error | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Model 1. | | | | | .333[b] | |
| Task Conflict | -.032 | .092 | -.023 | .727 | | |
| Negative Emotions | 1.210 | .135 | .579 | .000 | | |
| | | | | | | |
| Model 2. | | | | | .343[b] | .010[c] |
| Task Conflict | -.055 | .093 | -.039 | .555 | | |
| Negative Emotions | 1.217 | .135 | .582 | .000 | | |
| Task Conflict × Negative Emotions | -.332 | .209 | -.103 | .115 | | |
| $n = 164$ | | | | | | |

a. All predictors were mean-centered before being entered into the regression analysis in SPSS.

b. $p < .01$

c. $F$ statistic for $\Delta R^2$: $F (1, 160) = 2.518, p = .115$

can be seen that H10a and H10b do not receive strong support, with both the interaction

term and $R$ squares change nonsignificant at $\alpha$ = .05 (Task Conflict × Negative Emotions:

$\beta$ = -.103, $p$ = .115; $\Delta R^2$ = .010, $p$ = .115).    Thus, the moderation effect of negative

emotions on the relationship between task conflict and perceived social loafing is not

supported by the data in the current study.5676890-

  With respect to testing the moderation effect of negative emotions on the

relationship between logistic conflict and perceived social loafing (H11a and H11b),

hierarchical multiple regression was employed.    Table 34 reports all the relevant results

in terms of the standardized and unstandardized regression coefficients for the two

independent variables and the interaction term, the total variance explained in the form of

Table 34

Hierarchical Multiple Regression Analysis Predicting Perceived Social Loafing from
Logistic Conflict, Negative Emotions and the Interaction between Logistic Conflict and
Negative Emotions

| Predictors[a] | Unstandardized | | $\beta$ | $p$ | $R^2$ | $\Delta R^2$ |
| | $B$ | Std. Error | | | | |
|---|---|---|---|---|---|---|
| Model 1. | | | | | .338[b] | |
| Logistic Conflict | .126 | .114 | .079 | .269 | | |
| Negative Emotions | 1.133 | .149 | .542 | .000 | | |
| | | | | | | |
| Model 2. | | | | | .341[b] | .003[c] |
| Logistic Conflict | .165 | .121 | .103 | .175 | | |
| Negative Emotions | 1.167 | .153 | .558 | .000 | | |
| Logistic Conflict × Negative Emotions | -.120 | .127 | -.070 | .346 | | |
| $n$ = 164 | | | | | | |

a. All predictors were mean-centered before being entered into the regression analysis in SPSS.

b. $p$ < .01

c. $F$ statistic for $\Delta R^2$: $F$ (1, 160) = .894, $p$ = .364

*R* squares, the significance of the regression coefficients, and significance of the *R*-square

change after the interaction term was included in the regression analysis.    It can be seen

that H11a and H11b do not receive statistical support, with both the interaction term and

*R* squares change nonsignificant at $\alpha$ = .05 (Task Conflict × Negative Emotions: $\beta$ =

-.070, *p* = .346; $\Delta R^2$ = .003, *p* = .346).    Thus, in the relationship between logistic conflict

and perceived social loafing, negative emotions do not act as a moderator.

   To recapitulate, five conclusions can be made.    First, relationship conflict only

had an indirect influence on perceived social loafing, as was evidenced by the statistical

result that the relationship between relationship conflict and perceived social loafing was

fully mediated by negative emotions.    Second, contribution conflict had a direct

influence on perceived social loafing, and such a relationship was not mediated by

negative emotions.    Third, negative emotions had a direct effect upon perceived social

loafing.    Fourth, negative emotions did not moderate the relationship between task

conflict and perceived social loafing.    Fifth, the relationship between logistic conflict

and perceived social loafing was not moderated by negative emotions, either.    It is

interesting to note that contribution conflict seemed to be more strongly related to

perceived social loafing than did relationship conflict or logistic conflict, as only

contribution conflict had its direct effect on the perceived social loafing while the other

two types of conflict did not.    Task conflict should be least associated with perceived

social loafing because the zero-order correlation between these two variables is not

significant.    The following analysis tries to answer the research question (i.e., RQ1): Is

the association between contribution conflict and perceived social loafing stronger than

the association between perceived social loafing and any of the other conflict types (i.e.,

relationship conflict, logistic conflict, and task conflict)?

Table 35 (see also Table 29) reveals the ascending order of the magnitude of the

correlations between perceived social loafing with the four conflict types: task conflict ($r$

$= .045, p = ns$), logistic conflict ($r = .314, p < .01$), relationship conflict ($r = .548, p <$

$.01$), contribution conflict ($r = .615, p < .01$).    Based upon the formula in the previous

section (Formula 5) that dealt with comparing two nonindependent correlations, the

$t$-statistics of the comparisons between pairs of correlations are reported above the

diagonal in Table 35.    It is seen that the strength of the association between contribution

Table 35

Correlations between Perceived Social Loafing and Conflict Types, and Comparisons
between Correlations [a]

| | $r_{SL}$ | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 1. ConCft | .615 | – | 1.373(.172)[b] | 4.596(.000)[b] | 7.262(.000)[b] |
| 2. RelCft | .548 | .681 | – | 4.097(.000)[b] | 6.496(.000)[b] |
| 3. LgtCft | .314 | .462 | .628 | – | 3.467(.000)[b] |
| 4. TskCft | .045 | 224 | .309 | .457 | – |

*Note*. ConCft = Contribution Conflict; RelCft = Relationship Conflict; LgtCft = Logistic Conflict; TskCft = Task

Conflict; $r_{SL}$ = Correlation of Perceived Social Loafing with each of the Conflict Types.

a. The correlations between conflict types are listed below the diagonal.    The $t$-statistics for comparisons are listed

above the diagonal, with $p$ values in the parentheses.

b. To adjust for Type I error, the null hypothesis that there is no difference between each pair of correlations in the

population should be evaluated with the Bonferroni adjustment by setting the $\alpha$-level at = .05/6 = .0083.

conflict and perceived social loafing is not statistically greater than that of the association

between relationship conflict and perceived social loafing, $t(161) = 1.373, p = .172$.

However, the association between contribution conflict and perceived social loafing is greater in strength than either the associations between logistic conflict and perceived social loafing [$t$ (161) = 4.596, p < .0083], or the associations between task conflict and perceived social loafing [$t$ (161) = 7.262, p < .0083].   So, contribution conflict is associated with perceived social loafing more closely than are logistic conflict and task conflict, but the strength of its association with perceived social loafing is not statistically greater than the strength of the association between perceived social loafing and relationship conflict.

**Emotions and Intra-group Conflicts at each Stage of Group Development**

This section provides statistical results to answer the following four questions: 1) How does each type of conflict differ from each other in magnitude within each stage of group development?   2) How does each type of conflict develop across the four stages of group development?   3) How do positive emotions differ from negative emotions in magnitude within each stage of group development?   4) How do positive emotions and negative emotions develop across the four stages group development?   The first and third question will be answered in the form of hypothesis testing, whereas the second and fourth questions will be answered by exploring the trend of development of each variable of interest across the four stages of group development.

Before conducting any statistical analysis in this section, one additional question should be addressed first: Do participants' neurotic personalities influence the statistical

results we intend to obtain with regard to the above four generic questions?    In other

words, does neuroticism act as a covariate in the relationship of conflicts and emotions

with the stages of group development?    According to Howell (2007), a prerequisite for a

variable to be a covariate is that its relationship with the dependent variable should be

linear.    In the current analysis, the dependent variables are conflict types (i.e.,

relationship, task, logistic, and contribution) and emotions (i.e., positive vs. negative).

A check on the correlations of neuroticism with conflict types and emotions has revealed

that neuroticism had significant linear relationship with four variables: relationship

conflict ($r = .178$, $p = .022$, $R^2 = .032$), logistic conflict ($r = .209$, $p = .007$, $R^2 = .044$),

negative emotions ($r = .386$, $p < .001$, $R^2 = .149$), and positive emotions ($r = -.222$, $p =$

$.004$, $R^2 = .049$).    Neuroticism had nonsignificant linear relationships with task conflict

($r = .017$, $p = .829$) and contribution conflict ($r = .024$, $p = .758$).    It was further noticed

that among the four significant correlations, three (i.e., the correlations of neuroticism

with relationship conflict, logistic conflict, and positive emotions) were of small size

[small: .1 ~ .3, medium: .3 ~ .5; large: .5 ~ 1, according to Cohen (1988)], with the

variance of each targeted variable explained by neuroticism (i.e., the $R^2$'s) ranging from

.032 to .049.    The only medium-sized significant correlation was between neuroticism

and negative emotions ($r = .386$, $p < .001$), with 14.9% of the variance explained by

neuroticism.    Based upon the evidence above, a decision thus is made: Neuroticism will

not be treated as a covariate variable in the analysis involving task conflict and

contribution conflict, because neither task conflict nor contribution conflict correlated

significantly with neuroticism.    Whether or not neuroticism should be treated as a

covariate variable in the analysis involving relationship conflict, logistic conflict, positive

emotions, or negative emotions is partly contingent upon the following tests of

homogeneity of regression.

According to Howell (2007), the assumption of homogeneity of regression holds

that the regression coefficients of the covariate variable on the dependent variable should

be equal across all levels of treatment (p. 576).    To translate it to the current study, it can

be said that if the interaction between the predictor variable (i.e., stage of group

development) and the potential covariate variable (i.e., neuroticism) has a significant

effect on the dependent variable (i.e., relationship conflict, logistic conflict, positive

emotions, or negative emotions), then the ANCOVA (Analysis of Covariance) model

should not be used.    To test this assumption, the general linear model is constructed for

each of the four dependent variables of interest with the respective interaction terms

included.    The significance tests on the interaction terms are what we will focus upon.

For relationship conflict, the interaction between neuroticism and stages of group

development is not significant, $F$ (3, 156) = .261, $p$ = .853, $\eta^2$ = .005.    For logistic

conflict, the interaction between neuroticism and stages of group development is

significant, $F$ (3, 156) = 4.176, $p$ = .007, $\eta^2$ = .074.    For negative emotions, the

interaction between neuroticism and stages of group development is not significant, $F$ (3,

156) = 1.382, $p$ = .25, $\eta^2$ = .026.    For positive emotions, the interaction between

neuroticism and stages of group development is not significant, $F$ (3, 156) = .503, $p$ =

.681, $\eta^2 = .010$.   Therefore, for the analysis involving logistic conflict, neuroticism will

not be treated as the covariate variable because of the violation of the assumption of

homogeneity of regression.   Lastly, the following ANCOVA tests will show whether or

not neuroticism should be included in the analysis involving relationship conflict,

negative emotions or positive emotions.

The ANCOVA tests revealed that neuroticism was a significant covariate variable

in the analyses involving either positive emotions or negative emotions.   For the test of

the effect of stage of group development on positive emotions, the $F$ statistic associated

with neuroticism as a covariate variable was $F (1, 159) = 5.364, p = .022, \eta^2 = .033$.   For

the test of the effect of stage of group development on negative emotions, the $F$ statistic

associated with neuroticism as a covariate variable was $F (1, 159) = 26.07, p < .001, \eta^2 =$

.141.   The ANCOVA test also revealed that neuroticism was not a significant covariate

variable in the analyses involving relationship conflict.   The $F$ statistic associated with

neuroticism as a covariate variable was $F (1, 159) = 2.471, p = .118, \eta^2 = .015$.   In a

recapitulation, based upon the above results from the test of linearity, the test of

homogenous regression coefficients, and the test of the significance of covariation in

ANCOVA, it is concluded that neuroticism will be included as the covariate variable only

in the analysis involving negative and positive emotions.   Neuroticism will be removed

from the analyses that involve any of the four conflict types.

Table 36 lists the degrees of four conflict types (i.e., relationship conflict, task

conflict, logistic conflict, and contribution conflict) and emotions (i.e., negative vs.

Table36

Pairwise Comparisons between Conflict Types and Emotions with Bonferroni Adjustment within each Stage of Group Development

|  |  | Mean Differences ($\overline{X}_r - \overline{X}_c$)[a] | | | | | |
|  |  | (t-values are indicated in Parentheses) | | | | | |
| Stage | Conflict | RelCft | TskCft | LgtCft | ConCft | NEI [b] | PEI [b] |
|---|---|---|---|---|---|---|---|
| 1 | RelCft | **1.72(.45)** |  |  |  |  |  |
| $N = 33$ | TskCft | .58(5.79)** | **2.30(.48)** |  |  |  |  |
|  | LgtCft | -.07(-.92) | -.65 (-7.30)** | **1.65(.46)** |  |  |  |
|  | ConCft | .25(2.08) | -.33(-2.23) | .32(2.48)* | **1.97(.81)** |  |  |
|  | NEI [b] |  |  |  |  | **1.86(.37)** |  |
|  | PEI [b] |  |  |  |  | 1.33(8.58)** | **3.19(.65)** |
| 2 | RelCft | **2.77(.78)** |  |  |  |  |  |
| $N = 21$ | TskCft | -.10(-.51) | **2.67(.73)** |  |  |  |  |
|  | LgtCft | -.25(-1.51) | -.15(-.76) | **2.52(.87)** |  |  |  |
|  | ConCft | .01(.02) | .11(.47) | .26(1.09) | **2.78(.90)** |  |  |
|  | NEI [b] |  |  |  |  | **2.49(.37)** |  |
|  | PEI [b] |  |  |  |  | .51(2.66)* | **3.00(.65)** |
| 3 | RelCft | **1.71(.52)** |  |  |  |  |  |
| $N = 37$ | TskCft | .69(8.43)** | **2.40(.63)** |  |  |  |  |
|  | LgtCft | .26(3.14)** | -.43(-4.65)** | **1.97(.65)** |  |  |  |
|  | ConCft | .15(1.45) | -.54(-4.35)** | -.11(-1.13) | **1.86(.74)** |  |  |
|  | NEI [b] |  |  |  |  | **1.82(.37)** |  |
|  | PEI [b] |  |  |  |  | 1.60(10.89)** | **3.42(.64)** |
| 4 | RelCft | **1.52 (.50)** |  |  |  |  |  |
| $N = 73$ | TskCft | 1.04(10.75)** | **2.56(.83)** |  |  |  |  |
|  | LgtCft | .15(2.42)* | -.89(-10.60)** | **1.67(.47)** |  |  |  |
|  | ConCft | .21(3.13)** | -.83(-7.07)** | .06(.61) | **1.73(.76)** |  |  |
|  | NEI [b] |  |  |  |  | **1.65 (.38)** |  |
|  | PEI [b] |  |  |  |  | 2.02(19.44)** | **3.67(.65)** |

*Note*. ConCft = Contribution Conflict; RelCft = Relationship Conflict; LgtCft = Logistic Conflict; TskCft = Task Conflict; NEI= Negative Emotion Index; PEI = Positive Emotion Index.

a. Each variable's mean and standard deviation are highlighted on the diagonal with standard deviation in parenthesis.

b. The means of NEI and PEI have been adjusted after the influence of Neuroticism was partialled out.

* $p < .017$ (= .10/6) for conflict types, and $p < .025$ (=.10/4) for emotions.

** $p < .0083$ (= .05/6) for conflict types, and $p < .0125$ (=.05/4) for emotions.

positive) at each stage of group development.    The mean and standard deviation for each

variable are highlighted on the diagonal with standard deviation in parenthesis.    In

addition, the mean and standard deviation for negative emotions and positive emotions at

each stage of group development have been adjusted after the influence of neuroticism

was partialled out.    Finally, information regarding the statistical tests on pairwise

comparisons between conflict types and emotions at each stage of group development is

also provided below the diagonal.

H12a hypothesized that at the stage of *Inclusion and Dependency* (Stage 1) group

members tend to report higher degrees of logistic conflict than the degrees of relationship,

contribution, or task conflict.    Table 36 reveals that this hypothesis was not supported.

Actually, logistic conflict had the smallest observed mean score, compared to the mean

scores of other types of conflict.    Table 36 also reveals that the mean of task conflict ($M$

= 2.30, $SD$ = .48) was significantly greater than that of logistic conflict ($M$ = 1.65, $SD$ =

.46), $t(32) = 7.30$, $p < .0083$.    In addition, the degree of contribution conflict ($M$ = 1.97,

$SD$ = .81) were found to be marginally greater than that of the logistic conflict, $t(32)$ =

2.48, $p < .017 (= .10/6)$.    Furthermore, no statistically significant difference were found

between logistic conflict and relationship conflict ($M$ = 1.72, $SD$ = .45), $t(32) = -.92$, $p <$

*ns*.    Therefore, based upon the above evidence, it can be concluded that the degree of

logistic conflict was not the highest of all the four conflict types at the stage of *Inclusion*

*and Dependency* (Stage 1), but rather task conflict was relatively a big concern at this

stage.

H12b stated that in the stage of *Inclusion and Dependency* (Stage 1) group members tend to experience more positive emotions than those negative emotions.   This hypothesis received statistical support.   The degree of positive emotions (*Adj. M* = 3.19, *SD* = .65) was greater than that of negative emotions (*Adj. M* = 1.86, *SD* = .37), with *t* (32) = 8.58, *p* < .001.

H13a hypothesized that at the stage of *Counterdependency and Fight* (Stage 2) group members tend to report higher degrees of relationship conflict than the degree of either task, logistic, or contribution conflict.   This hypothesis was not statistically supported.   As Table 36 has revealed, although the degree of relationship conflict (*M* = 2.77, *SD* = .78) at this stage was higher than that of either task conflict (*M* = 2.67, *SD* = .73) or logistic conflict (*M* = 2.52, *SD* = .87), it was smaller than, but very close to, the degree of contribution conflict (*M* = 2.78, *SD* = .90).   Subsequent pairwise comparisons with Bonferroni adjustment also revealed that the degree of relationship conflict was not statistically different than the degree of task, logistic, or contribution conflict, as none of the six pairwise comparisons were statistically significant.   As the results suggest, at the stage of *Counterdependency and Fight* group members experienced almost equal degrees of relationship, task, logistic, and contribution conflicts.

H13b stated that at the stage of *Counterdependency and Fight* (Stage 2) group members tend to experience more negative emotions than positive emotions.   This hypothesis was not statistically supported, as Table 36 revealed the opposite of the original hypothesis: The adjusted mean of negative emotions (*Adj. M* = 2.49, *SD* = .37)

was smaller than the adjusted average degree of positive emotions (*Adj. M* = 3.00, *SD* =

.65).    In addition, such a difference was marginally significant at $\alpha$ = .05/4 = .0125: *t*

(20) = 2.66, *p* = .015 > .0125.    As this result suggests, at the stage of

*Counterdependency and Fight* group members were likely to experience higher degrees

of positive emotions than they did negative emotions.

H14a hypothesized that at the stage of *Trust and Structure* (Stage 3) group

members tend to report higher levels of task conflict than the levels of relationship,

logistic, or contribution conflict.    This hypothesis was statistically supported, with the

level of task conflict (*M* = 2.40, *SD* = .63) the highest of all the conflict types

(relationship conflict, *M* = 1.71, *SD* = .52; logistic conflict, *M* = 1.97, *SD* = .65;

contribution conflict, *M* = 1.86, *SD* = .74).    In addition, all pairwise comparisons of task

conflict with any of the other three conflict types were significant at $\alpha$ = .05/6 = .0083

[task vs. relationship conflict, *t* (36) = 8.43, *p*< .001; task vs. logistic conflict, *t* (36) =

4.65, *p*< .001; task vs. contribution conflict, *t* (36) = 4.35, *p*< .001].

H14b predicted that at the stage of *Trust and Structure* (Stage 3) group members

tend to experience more positive emotions than negative emotions.    This hypothesis was

statistically supported, with the adjusted average degrees of positive emotions (*M* = 3.42,

*SD* = .64) greater than the adjusted average degrees of negative emotions (*M* = 1.82, *SD* =

.37).    Moreover, such a difference was significant at $\alpha$ = .05/4 = .0125: *t* (36) = 10.89,

*p*< .0001.

H15a hypothesized that at the stage of *Work* (Stage 4) group members tend to report higher levels of contribution conflict than the levels of either relationship, logistic, or task conflict.    This hypothesis was not statistically supported, as Table 36 revealed the opposite of the original hypothesis: The mean of contribution conflict ($M = 1.73$, $SD = .76$) smaller than the mean of task conflict ($M = 2.56$, $SD = .83$).    A paired sample *t*-test showed that such a difference was statistically significant, $t(72) = -7.07$, $p < .001$, meaning that group members were likely to report higher levels of task conflict than the level of contribution conflict at Stage 4 (i.e., *Work*).

H15b predicted that at Stage 4 (i.e., *Work*) group members tend to experience more negative emotions than positive emotions.    This hypothesis was not statistically supported, with the average degrees of negative emotions ($M = 1.65$, $SD = .38$) smaller than the average degrees of positive emotions ($M = 3.67$, $SD = .65$).    Moreover, such a difference was significant at $\alpha = .05/4 = .0125$: $t(72) = 19.44$, $p < .0001$.    As this result suggests, at the stage of *Work* group members experienced more positive emotions than negative emotions.

In a brief sum, with respect to the relative importance of each conflict type and each emotional manifestation at each stage of group development, four conclusions can be drawn from the above results.    First, task conflict seemed to be the major theme that governed groups' activities at Stage 3 (i.e., *Trust and Structure*) and Stage 4 (i.e., *Work*), as was evidenced by two facts: (1) The average degree of task conflict at the last two stages of group development was the highest compared to the average degrees of either

relationship conflict, logistic conflict, or contribution conflict;    (2) paired sample *t*-test

with Bonferroni adjustment on the Type I error found statistically significant differences

between task conflict and any of the other three conflict types at the last two stages of

group development.    Second, task conflict had the tendency to be dominant at Stage 1

(i.e., *Inclusion and Dependency*).    However, it was not statistically different in degrees

from contribution conflict, even though the degree of task conflict was significantly

higher than the degrees of either relationship conflict or logistic conflict.    Third, all

types of conflict seemed to escalate to their respective highest point (because of their

respective highest mean compared to their means at the other stages) at Stage 2 (i.e.,

*Counterdependency and Fight*) and no particular type of conflict seemed to be

significantly higher in degree than the others at this stage.    Fourth, the level of positive

emotions was always higher than the level of negative emotions across the stages of

group development.    With the above four conclusions in mind, the investigation of the

last two research questions about how conflict types and emotional manifestations

develop across the four stages of group development is in order.

RQ2 asked in what stage of group development task conflict (or relationship

conflict, logistic conflict, contribution conflict) falls to the bottom or rises to the peak.

ANOVA analysis was conducted by treating each conflict type as the dependent variable

and stage of group development as the independent variable.    Because four overarching

null hypotheses were tested all at once with the dependent variables nonindependent to

each other, to control for the familywise Type I error, each *F*-statistic was evaluated with

Bonferroni adjustment by setting $\alpha = .05/4 = .0125$.     To see how a particular conflict

fluctuated across the stages of group development, multiple pairwise comparisons were

subsequently conducted when the overarching null hypothesis was rejected.     The trend

of the progression of each conflict across the four stages of group development was also

investigated.

For relationship conflict, the null hypothesis that the average degree of

relationship conflict was the same across each stage of group development was rejected,

$F (3, 160) = 29.56, p < .001, \eta^2 = .357$.     Multiple pairwise comparisons revealed that

relationship conflict reached its peak at Stage 2 (i.e., *Counterdependency and Fight*), as

the mean at Stage 2 ($M = 2.77, SD = .78$) is significantly higher than the means at other

stages (Stage 1: $M = 1.72, SD = .45$; Stage 3: $M = 1.71, SD = .52$; Stage 4: $M = 1.52, SD$

$= .50$).     However, no significant differences were found in the pairwise comparisons of

relationship conflict in Stage 1 vs. Stage 3, Stage 1 vs. Stage 4, and Stage 3 vs. Stage 4

(see Table 37).     With respect to how relationship conflict developed across the four

stages of group development, it is seen in Figure 7 that relationship conflict went up from

Stage 1 to Stage 2, and then dropped sharply from Stage 2 to Stage 3.     It continued to

drop from Stage 3 to Stage 4, but the speed of dropping slowed down, as the slope of the

line became less sharp than the former slope from Stage 2 to Stage 3.     The trend analysis

also provided results that supported such a trend.     It was noted that linear, quadratic, and

cubic trends were all found to be significant [for the linear trend: $F (1, 160) = 19.92, p <$

$.01, \eta^2 = .111$; for the quadratic trend, $F (1, 160) = 44.52, p < .01, \eta^2 = .218$; for the cubic

Table 37

Pairwise Comparisons with Tukey HSD Correction and Effect Sizes of Relationship Conflict between Stages of Group Development

| | M(SD) | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| | | Mean Differences ($\overline{X}_r - \overline{X}_c$) (Effect Sizes are indicated in Parentheses)[a] | | | |
| 1. Stage 1 | 1.72(.45) | -- | | | |
| 2. Stage 2 | 2.77(.78) | 1.05(3.62)* | -- | | |
| 3. Stage 3 | 1.71(.52) | -.01(.04) | -1.06(3.66)* | -- | |
| 4. Stage 4 | 1.52 (.50) | -.20(.67) | -1.25(4.29)* | -.19(.64) | -- |

a. The effect size is evaluated with the mean square root (error) at .291.

* $p < .05$
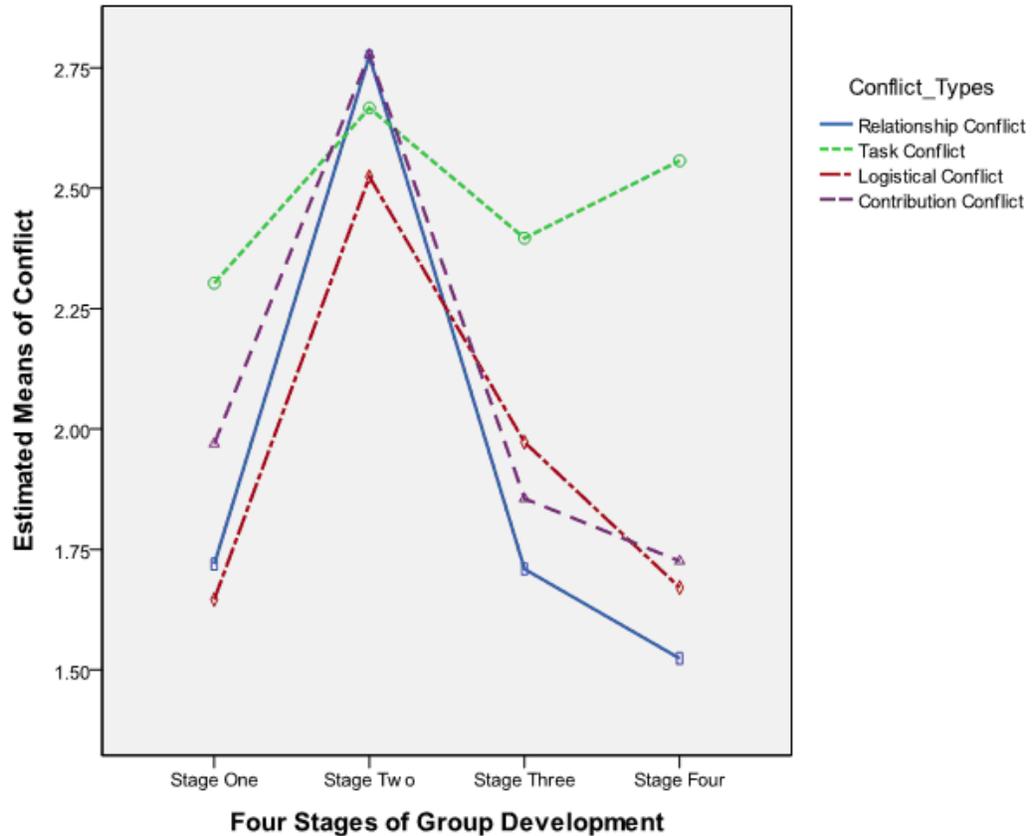


Figure 7. The Trend of Relationship Conflict, Task Conflict, Logistic Conflict, and Contribution Conflict across the Four Stages of Group Development

trend, $F$ (1, 160) = 43.15, $p < .01$, $\eta^2 = .212$]. Such results suggested that the overall

trend of relationship conflict was linear and downward, with the possible lowest level of

relationship conflict at Stage 4. Beyond the overall linear trend, there was a curvilinear

trend where it reached its peak at Stage 2 and then declined at different speeds from Stage

2 to Stage3 and from Stage 3 to Stage 4.

For task conflict, the null hypothesis that the average degree of task conflict was

the same across each stage of group development was not rejected, $F$ (3, 160) = 1.596, $p$

= .196, $\eta^2 = .029$. Therefore, no difference was found in the means of task conflict

across the four stages of group development. In addition, trend analysis of task conflict

across the four stages of group development revealed that neither the linear nor the

quadratic trend was significant [for the linear trend: $F$ (1, 160) = 1.002, $p = .318$, $\eta^2 =$

.006; for the quadratic trend, $F$ (1, 160) = .677, $p = .412$, $\eta^2 = .004$]. Only the cubic

trend was marginally significant at $\alpha = .10$ [$F$ (1, 160) = 3.089, $p = .081$, $\eta^2 = .019$].

Combining these results in both ANOVA and trend analyses, it is thus concluded that

even though it has its own relatively stable momentum with no statistically significant

rise or drop across the four stages of group development, task conflict, as Figure 7

revealed, had a tendency to follow a slanted $N$ shape, in which it rose from Stage 1 to

Stage2, dropped from Stage 2 to Stage3, and then rose again from Stage 3 to Stage4,

within a range between 2.25 and 2.70.

For logistic conflict, the null hypothesis that the average degree of logistic

conflict was the same across each stage of group development was rejected, $F$ (3, 160) =

13.82, $p < .001$, $\eta^2 = .206$.    Multiple pairwise comparisons revealed that logistic conflict

reached its peak at Stage 2 (i.e., *Counterdependency and Fight*), as the mean at Stage 2

($M = 2.52$, $SD = .87$) is significantly higher than the means at other stages (Stage 1: $M =$

1.65, $SD = .46$; Stage 3: $M = 1.97$, $SD = .65$; Stage 4: $M = 1.67$, $SD = .47$).    However, no

significant differences were found in the pairwise comparisons of logistic conflict in

Stage 1 vs. Stage 3, Stage 1 vs. Stage 4, and Stage 3 vs. Stage 4 (see Table 38).    With

respect to how logistic conflict developed across the four stages of group development, it

is seen in Figure 7 that logistic conflict went up from Stage 1 to Stage 2, and then

dropped sharply from Stage 2 to Stage 3.    It continued to drop from Stage 3 to Stage 4,

but the speed of dropping slowed down, as the slope of the line became less sharp than

the former slope from Stage 2 to Stage 3.    The trend analysis also provided results that

supported such a trend.    It was noted that the linear trend was not statistically

significant, $F(1, 160) = 1.45$, $p = .23$, $\eta^2 = .009$, whereas both quadratic and cubic trends

Table 38

Pairwise Comparisons with Tukey HSD Correction and Effect Sizes of Logistic Conflict
between Stages of Group Development

| | M(SD) | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| | | Mean Differences ($\overline{X}_r - \overline{X}_c$) (Effect Sizes are indicated in Parentheses)[a] | | | |
| 1. Stage 1 | 1.65(.46) | -- | | | |
| 2. Stage 2 | 2.52(.87) | .88(2.74)* | -- | | |
| 3. Stage 3 | 1.97 (.65) | .32(.98) | -.55(1.72)* | -- | |
| 4. Stage 4 | 1.67 (.47) | .02(.07) | -.85(2.57)* | -.30(.91) | -- |

a. The effect size is evaluated with the mean square root (error) at .332.

* $p < .05$

were found to be significant [for the quadratic trend, $F(1, 160) = 32.24$, $p < .01$, $\eta^2 =$

.181; for the cubic trend, $F(1, 160) = 11.82$, $p < .01$, $\eta^2 = .069$].   Such results suggested

that the overall trend of logistic conflict was a curvilinear trend where it reached its peak

at Stage 2 and then declined at different speeds from Stage 2 to Stage3 and from Stage 3

to Stage 4.

For contribution conflict, the null hypothesis that the average degree of

contribution conflict was the same across each stage of group development was rejected,

$F(3, 160) = 9.96$, $p < .001$, $\eta^2 = .157$.   Multiple pairwise comparisons revealed that

relationship conflict reached its peak at Stage 2 (i.e., *Counterdependency and Fight*), as

the mean at Stage 2 ($M = 2.78$, $SD = .90$) is significantly higher than the means at other

stages (Stage 1: $M = 1.97$, $SD = .81$; Stage 3: $M = 1.86$, $SD = .74$; Stage 4: $M = 1.73$, $SD$

$= .76$).   However, no significant differences were found in the pairwise comparisons of

contribution conflict in Stage 1 vs. Stage 3, Stage 1 vs. Stage 4, and Stage 3 vs. Stage 4

(see Table 39).   With respect to how contribution conflict developed across the four

Table 39

Pairwise Comparisons with Tukey HSD Correction and Effect Sizes of Contribution
Conflict between Stages of Group Development

| | | Mean Differences ($\overline{X}_r - \overline{X}_c$) (Effect Sizes are indicated in Parentheses)[a] | | | |
|---|---|---|---|---|---|
| | *M(SD)* | 1 | 2 | 3 | 4 |
| 1. Stage 1 | 1.97(.81) | -- | | | |
| 2. Stage 2 | 2.78(.90) | .81(1.31)[*] | -- | | |
| 3. Stage 3 | 1.86(.74) | -.11(.19) | -.92(1.50)[*] | -- | |
| 4. Stage 4 | 1.73(.76) | -.24(.40) | -1.05(1.71)[*] | -.13(.21) | -- |

a. The effect size is evaluated with the mean square root (error) at .615.

* $p < .05$

stages of group development, it is seen in Figure 7 that contribution conflict went up from

Stage 1 to Stage 2, and then dropped sharply from Stage 2 to Stage 3.    It continued to

drop from Stage 3 to Stage 4, but the speed of dropping slowed down, as the slope of the

line became less sharp than the former slope from Stage 2 to Stage 3.    The trend analysis

also provided results that supported such a trend.    It was noted that linear, quadratic, and

cubic trends were all found to be significant [for the linear trend, $F$ (1, 160) = 9.44, $p$

<.01, $\eta^2$ = .056; for the quadratic trend, $F$ (1, 160) = 12.06, $p$ < .01, $\eta^2$ = .070; for the

cubic trend, $F$ (1, 160) = 14.46, $p$ < .01, $\eta^2$ = .083].    Such results suggested that the

overall trend of contribution conflict was linear and downward, with its lowest level

possibly at Stage 4.    Beyond the overall linear trend, there was a curvilinear trend where

it reached its peak at Stage 2 and then declined at different speeds from Stage 2 to Stage3

and from Stage 3 to Stage 4.

RQ3 asked in what stage of group development negative emotions (or positive

emotions) falls to the bottom or rises to the peak.    ANOVA analysis was conducted by

treating negative (or positive) emotions as the dependent variable and stage of group

development as the independent variable.    Because two overarching null hypotheses

were tested all at once with the dependent variables nonindependent to each other, to

control for the familywise Type I error, each $F$-statistic was evaluated with Bonferroni

adjustment by setting $\alpha$ = .05/2 = .025.    To see how a particular conflict fluctuated

across the stages of group development, multiple pairwise comparisons were

subsequently conducted when the overarching null hypothesis was rejected.    The trend

of the progression of each conflict across the four stages of group development was also

investigated.

For negative emotions, the null hypothesis that the average degree of negative

emotions was the same across each stage of group development after controlling for the

effect of neuroticism was rejected, $F$ (3, 159) = 27.64, $p < .001$, $\eta^2 = .343$.   Multiple

pairwise comparisons revealed that negative emotions reached its peak at Stage 2 (i.e.,

*Counterdependency and Fight*), as the adjusted mean of negative emotions at Stage 2

(*Adj. M* = 2.49, *SD* = .37) is significantly higher than the means at other stages (Stage 1:

*Adj. M* = 1.86, *SD* = .37; Stage 3: *Adj. M* = 1.82, *SD* = .37; Stage 4: *Adj. M* = 1.65, *SD* =

.38).   Also significant was the pariwise comparison of the adjusted means between

Stage 4 and Stage 1, $F$ (1, 156) = 7.37, $p = .007 < .0083$   However, no significant

differences were found in the pairwise comparisons of relationship conflict in Stage 1 vs.

Stage 3, and Stage 3 vs. Stage 4 (see Table 40).   With respect to how negative emotions

developed across the four stages of group development, it is seen in Figure 8 that

Table 40

Pairwise Comparisons with Bonferroni Correction and Effect Sizes of Negative Emotions
between Stages of Group Development

| | | | Adjusted Mean Differences ($\overline{X}_r - \overline{X}_c$) (Effect Sizes are indicated in Parentheses)[a] | | | |
|---|---|---|---|---|---|---|
| | *M(SD)* | Adj. *M(SD)* | 1 | 2 | 3 | 4 |
| 1. Stage 1 | 1.87(.44) | 1.86(.37) | -- | | | |
| 2. Stage 2 | 2.53(.59) | 2.49(.37) | .63(1.70)* | -- | | |
| 3. Stage 3 | 1.84(.37) | 1.82(.37) | -.03(.09) | -.67(1.79)* | -- | |
| 4. Stage 4 | 1.62(.32) | 1.65 (.38) | -.21(.57)* | -.84(2.27)* | -.17(.48) | -- |

a. The effect size is evaluated with the mean square root (error) at .372.

* $p < .0083$
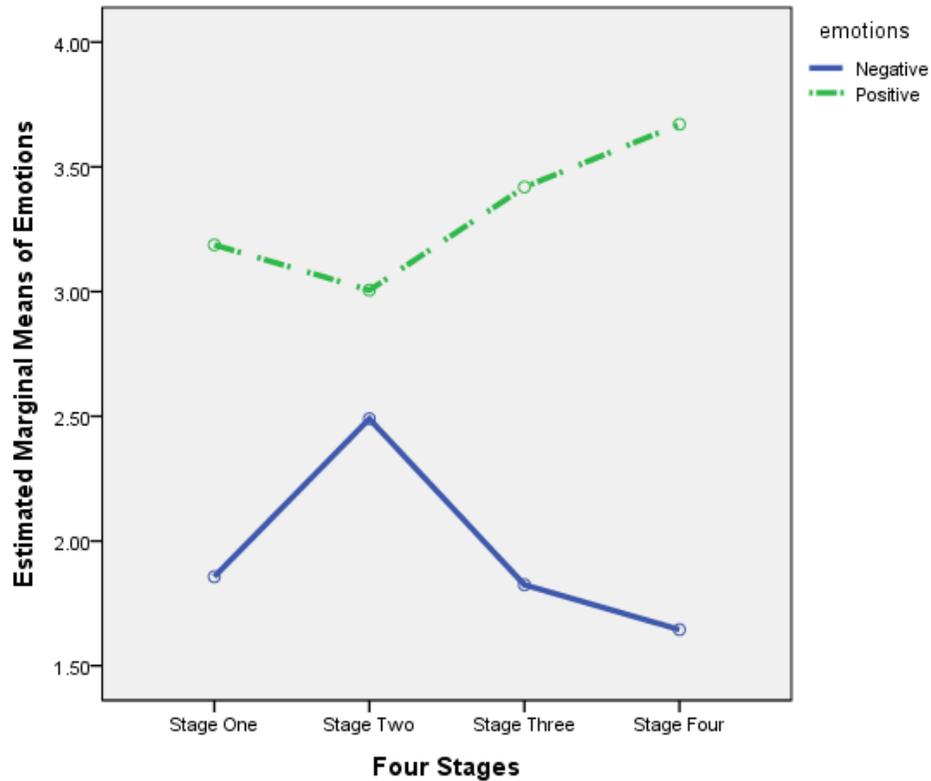
Figure 8. The Trend of Positive Emotions and Negative Emotions across the Four Stages of Group Development

negative emotions went up from Stage 1 to Stage 2, and then dropped from Stage 2 to

Stage 3 at about the same speed as it went up in the previous period.    It continued to

drop from Stage 3 to Stage 4, but the speed of dropping slowed down, as the slope of the

line became less sharp than the former slope from Stage 2 to Stage 3.    The trend analysis

also provided results that supported such a trend.    It was noted that linear, quadratic, and

cubic trends were all found to be significant [for the linear trend: $F(1, 159) = 25.88, p <$

$.001, \eta^2 = .140$; for the quadratic trend, $F(1, 159) = 39.83, p < .001, \eta^2 = .200$; for the

cubic trend, $F(1, 159) = 32.24, p < .001, \eta^2 = .169$].    Such results suggested that the

overall trend of negative emotions was linear and downward, with the possible lowest

level of relationship conflict at Stage 4.     Beyond the overall linear trend, there was a

curvilinear trend where it reached its peak at Stage 2 and then declined at different speeds

from Stage 2 to Stage3 and from Stage 3 to Stage 4.

For positive emotions, the null hypothesis that the average degree of positive

emotions was the same across each stage of group development after controlling for the

effect of neuroticism was rejected, $F$ (3, 159) = 7.76, $p < .001$, $\eta^2 = .128$.   Multiple

pairwise comparisons revealed that positive emotions reached its peak at Stage 4 (i.e.,

*Work*), as the adjusted mean of positive emotions at Stage 4 ($M = 3.67$, $SD = .65$) was

significantly higher than the means at Stage 1 ($M = 3.19$, $SD = .65$) and Stage 2 ($M =$

3.00, $SD = .65$).   However, no significant differences were found in the pairwise

comparisons of relationship conflict in Stage 1 vs. Stage 2, Stage 1vs. Stage 3 ($M = 3.42$,

$SD = .64$), Stage2 vs. Stage 3, and Stage 3 vs. Stage 4 (see Table 40).   With respect to

how positive emotions developed across the four stages of group development, it is seen

in Figure 8 that positive emotions dropped from Stage 1 to Stage 2, and then went up

from Stage 2 to Stage 3.   It continued increase to from Stage 3 to Stage 4.   It was noted

from the trend analysis that only the linear trend was statistically supported [$F$ (1, 159)

== 17.49, $p < .001$, $\eta^2 = .099$], even though the quadratic trend was marginally supported

[$F$ (1, 159) = 3.73, $p = .055$, $\eta^2 = .023$].   In addition, the cubic trend was not statically

significant, $F$ (1, 159) = 1.92, $p = .168$, $\eta^2 = .012$.   Such results suggested that the

overall trend of positive emotions was linear and upward, with the possible highest level

of positive emotions at Stage 4.   Beyond the overall linear trend, there was a tendency of

a curvilinear trend where positive emotions hit the bottom at Stage 2 and then went up

from Stage 2 to Stage3 and to Stage 4.

Table 41

Pair-wise Comparisons with Bonferroni Correction and Effect Sizes of Positive Emotions
between Stages of Group Development

| | M(SD) | Adj. M(SD) | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| | | | Adjusted Mean Differences ($\overline{X}_r - \overline{X}_c$) (Effect Sizes are indicated in Parentheses)[a] | | | |
| 1. Stage 1 | 3.18(.60) | 3.19(.65) | -- | | | |
| 2. Stage 2 | 2.97(.69) | 3.00(.65) | -.19(.29) | -- | | |
| 3. Stage 3 | 3.41(.64) | 3.42(.64) | .23(.36) | .42(.65) | -- | |
| 4. Stage 4 | 3.69(.68) | 3.67(.65) | .48(.74)* | .67(1.04)* | .25(.39) | -- |

a. The effect size is evaluated with the mean square root (error) at .646.

* $p < .0083$

In a nutshell, findings regarding the trend of conflict types and emotions are

summarized below.    (1) The overall trend of conflict types, except for task conflict, was

more or less likened to an upside-down V shape, wherein each conflict reached its

highest level at Stage 2 (i.e., *Counterdependency and Fight*).    (2) Statistically, task

conflict showed a relatively stable momentum across the four stages of group

development, meaning that no significant differences were found in the degree of task

conflict between any two stages of group development.    However, trend analysis

revealed that a slanted, flat, *N* shape (see Figure 7) was nearly significant that depicted

the rise-fall-rise trend of development for task conflict in the course of group

development.    (3) The trend of negative emotions was identical to the general trend of

conflicts – curvilinear with a possible peak at Stage 2.    4) The trend of positive emotions

generally followed a linear, upward pattern, with the possible highest level at Stage 4

(i.e., *Work*).    Positive emotions were also likely to fall to the bottom at Stage 2, as a

curvilinear trend was marginally supported by the current data.    Figure 9 visually

displays all the trends related to perceived social loafing, conflict types and emotions

across the four stages of group development.
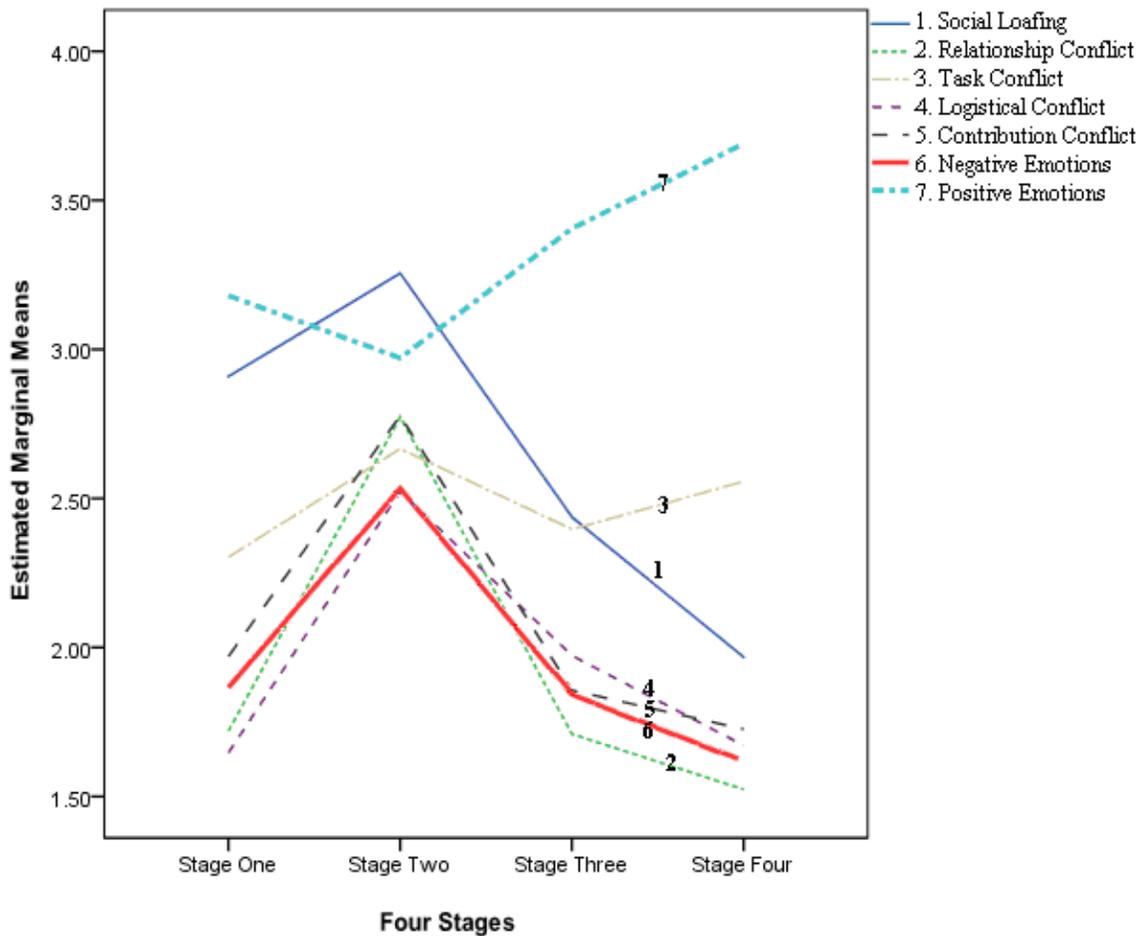


Figure 9. The Trend of Perceived Social Loafing, All Conflict Types and Emotions
across the Four Stages of Group Development

**Additional Exploration of the Relationship between Perceived Social Loafing,**

**Intra-group Conflicts, and Negative Emotions**

So far statistical analysis has revealed distinct patterns of fluctuation in perceived social loafing, conflict (task, relationship, logistic, and contribution), and emotions (positive vs. negative) across the four stages of group development.   It also has revealed that both negative emotions and contribution conflict have their discreet, direct influences on perceived social loafing whereas relationship conflict exerts its indirect influence on perceive social loafing through the mediation of negative emotions.   However, three questions remain unresolved.   First, the two moderation hypotheses arguing that the relationship between perceived social loafing and task/logistic conflict is dependent upon the presence of high vs. low degrees of negative emotions failed to receive any statistical support.   That is, it is still murky as to how task conflict and logistic conflict exert their differential influence on the perception of social loafing.   Second, even though in the mediation model relationship conflict and contribution conflict were proposed to be the two covarying exogenous variables that explained how perceived social loafing was resulted, the covarying argument failed to specify the direction of influence between relationship conflict and contribution conflict.   Such a direction needs to be specified because it would not only suggest how one conflict could possibly trigger another, but also be instrumental to laying a foundation for the construction of an integrated model that takes into account all the four types of conflict and negative emotions in explaining how perceived social loafing is resulted.

Third, the integrated model has yet to be established.    So far we have not had a

clear picture about how we can explain the perception of social loafing based upon all our

knowledge of four types of group conflict and negative emotions.    The integrated model

to be constructed would be especially helpful in revealing (1) the extent to which each

type of conflict shapes the perception of social loafing in the group, (2) the possible

direction of triggering from one type of conflict to another, and (3) the role that negative

emotions play in the relationship between conflict and perceived social loafing.

Therefore, the above three questions are to be investigated in the following subsections.

**The direction of influence between relationship conflict and contribution**

**conflict.**

In the initial testing of the mediation hypotheses, it was found that relationship

conflict and contribution conflict covaried significantly.    This finding suggests that these

two types of conflict are interrelated in the group setting, and one may transform to or

trigger the other at some point in the group's history[3].    But this finding fails to address

the direction of the transformation or triggering, nevertheless.    That is, is contribution

conflict the result of relationship conflict, or is the opposite true?    The following

statistical evidence seems to support the argument that relationship conflict is the result

---

[3]  As Table 29 has revealed, all the four types of conflict are interrelated with each other, and it is possible
that each may transform to or trigger another at some point in the history of the group.    To keep the
current discussion focused, the relationship between relationship conflict and contribution conflict is first
addressed.    Questions regarding how they may transform to or trigger another and how they may
differentially influence negative emotions as well as the perception of social loafing will be explored later
in this chapter.

of contribution conflict.   Furthermore, it also shows that contribution conflict results in

negative emotions through the mediation of relationship conflict.

First, it is noted from Table 29 that the zero-order correlation between

contribution conflict and negative emotions was significant ($r = .46$, $p < .01$).   Second,

the zero-order correlation between contribution conflict and relationship conflict was

significant ($r = .68$, $p < .01$).   Third, when the influence of relationship conflict was

removed from both of these variables, the partial correlation between contribution

conflict and negative emotions was not significant, $r_{partial} = .028$, $p = .726$.   Therefore,

combining the above three results with the former results that showed a significant

association between relationship conflict and negative emotions, it is concluded that

relationship conflict fully mediates the association between contribution conflict and

negative emotions (Baron & Kenny, 1986).   Such a finding clarifies the association

between relationship conflict and contribution conflict beyond their covarying

relationship that was originally hypothesized[4].   The finding further explains away the

discrepancy between the emotion-laden contribution conflict and its lack of direct

influence on negative emotions: It is the relationship conflict which is triggered by

contribution conflict that actually arouses negative emotions.   Most important, the

finding insinuates what type of conflict the contribution conflict may finally end up with:

---

[4]  Since this is an alternative model to the one proposed in Figure 6, all the weights and model fit indices
should remain the same.   The only difference is the double-headed arrow connecting relationship conflict
and contribution conflict in original model is now replaced by a single-headed arrow pointed from
contribution conflict toward relationship conflict.   To avoid redundancy, the graph depicting this
alternative model is not provided.

Contribution conflict instigates discordance in interpersonal relations, which

subsequently brings tensions in the course of group members' interaction.

**Task conflict in predicting perceived social loafing.**

With respect to the relationship between task conflict and perceived social loafing,

it was originally hypothesized that negative emotions played a moderating role, such that

in the presence of high levels of negative emotions, task conflict and perceived social

loafing would be positively correlated, while in the presence of low levels of negative

emotions, task conflict and perceived social loafing would be negatively correlated.

However, this hypothesis was not supported (see Table 33).   To make further

explorations, I will make reference to the relevant statistics in Table 33, and propose

another direction that will reveal how task conflict influences the perception of social

loafing in the group setting.

It should be noted in Table 33 that the signs of the beta weights for task conflict in

the regression equations were negative in both main effect model (i.e., Model 1) and

interaction model (i.e., Model 2), after controlling for the effect of negative emotions on

both task conflict and perceived social loafing (Model 1: $\beta$ = -.023, $p$ = .727; Model 2: $\beta$

= -.039, $p$ = .555).   It should also be noted that the zero-order correlation between task

conflict and perceived social loafing was of a positive sign ($r$ = .045, $p$ = .282).   Even

though none of the correlation or beta weights were significant, the switch in the

direction of the association between task conflict and perceived social loafing after

controlling for the influence of negative emotions might indicate the suppression effect:

According to Smith, Ager, and Williams (1992), suppression occurs when either the

absolute value of a predictor's beta weight is greater than its bivariate correlation with the

criterion or when the two have different signs.    In the current case, the positive

nonsignificant bivariate correlation between task conflict and perceived social loafing

might be due to a certain amount of the variance they both share with a third variable

(that is, negative emotions), but that amount of common variance was more or less offset

by another set of common variance that was in the opposite direction to the former and

might potentially reflect the true relationship between task conflict and perceived social

loafing.    Should the influence of this third variable be partialled out from both task

conflict and perceived social loafing, their true relationship that was once "suppressed"

now would get released and manifested (i.e., task conflict would now correlate negatively

with the perception of social loafing, after controlling for the third variable).    Although

the current partial correlation between task conflict and perceived social loafing was not

significant in the presence of negative emotions, its change of sign nevertheless indicated

the possibility of the suppression effect.    Moreover, negative emotions might not be a

good choice to help explore the suppression effect, as negative emotions only correlated

significantly with perceived social loafing, $r = .577$, $p < .001$, but not with task conflict, $r$

$= .117$, $p = .135$, indicating that negative emotions could not successfully partial out a

significant amount of variance from task conflict, thus potentially leading to a

nonsignificant partial correlation coefficient between task conflict and perceived social

loafing.    It is possible that if another predictor is correctly specified and then selected,

together with task conflict, in predicting perceived social loafing in the regression

analysis, the true and significant relationship between task conflict and perceived social

loafing will emerge.

The variable chosen to replace negative emotions in the above analysis is

relationship conflict.    There are two reasons for the selection.    First, relationship

conflict positively correlates with both task conflict ($r = .309$, $p < .001$) and perceived

social loafing ($r = .548$, $p < .001$), indicating a significant amount of common variance

shared by all these three variables.    Second, past research has shown that in group

settings affective (e.g., emotional well-being, and job satisfaction) and behavioral (e.g.,

propensity to leave the job, and team performance) phenomena were studied by taking

into account the influences from both task conflict and relationship conflict (De Dreu &

Weingart, 2003; Medina et al., 2005).    This is because task conflict and relationship

conflict usually co-occur in the group, and studying them together, rather than separately,

would facilitate distinguishing their unique as well as interactive impact on the criterion

variable.    For example, Medina et al. (2005) found that when relationship conflict and

task conflict were simultaneously entered into regression analysis, only relationship

conflict had a positive influence on the desire to leave the current job, while task conflict

did not affect it negatively.    In addition, the interactive effect of relationship and task

conflict showed that this interaction contributed substantially to predict the propensity to

leave the current job.    Finally, relationship conflict mediated in the link between task

conflict and affective reactions.    Therefore, following Medina and many other

researchers' footsteps, the author of this dissertation includes relationship conflict in

studying the relationship between task conflict and perceived social loafing.    Test is also

conducted on whether the interaction between task conflict and relationship conflict

would influence the perception of social loafing at the same time.

Hierarchical multiple regression analysis was employed to find out how task

conflict and relationship conflict influenced the perception of social loafing (Cohen and

Cohen, 1983).    First of all, the main effect of task conflict and relationship conflict was

introduced into the equation, after which the interaction terms were included.    To

prevent problems of multicollinearity, these analyses were conducted with mean-centered

variables (Aiken and West, 1991).    As can be seen in Table 42, when controlling for

relationship conflict, task conflict negatively associates with the perception of social

loafing (Model 1: $\beta = -.137$, $p = .048 < .05$).    In addition, when the interaction was

introduced into the regression equation, the strength of the relationship between task

conflict and perceived social loafing became stronger (Model 2: $\beta = -.211$, $p = .031 < .05$).

These results revealed the actual relationship between task conflict and perceived social

loafing after removing the influence of relationship conflict from both of them: the higher

the degree of task conflict, the lower the degree of perceived social loafing in the group.

It also implies that task conflict has the potential to decrease or restrain the degree of

perceived social loafing in the group.    Furthermore, even though the interaction was

marginally significant ($\beta = -.118$, $p = .072 < .10$), it did not change the overall pattern of

the relationship between task conflict and perceived social loafing – task conflict was

Table 42

Hierarchical Multiple Regression Analysis Predicting Perceived Social Loafing from Task Conflict, Relationship Conflict and the Interaction between Task Conflict and Relationship Conflict

| Predictors[a] | Unstandardized | | $\beta$ | $p$ | $R^2$ | $\Delta R^2$ |
| | B | Std. Error | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Model 1. | | | | | $.317^{b}$ | |
| Task Conflict | -.194 | .097 | -.137 | .048 | | |
| Relationship Conflict | .907 | .105 | .590 | .000 | | |
| | | | | | | |
| Model 2. | | | | | $.331^{b}$ | $.014^{c}$ |
| Task Conflict | -.211 | .097 | -.148 | .031 | | |
| Relationship Conflict | .926 | .105 | .602 | .000 | | |
| Task Conflict × Relationship Conflict | -.254 | .140 | -.118 | .072 | | |
| $n = 164$ | | | | | | |

a. All predictors were mean-centered before being entered into the regression analysis in SPSS.

b. $p < .01$

c. $F$ statistic for $\Delta R^2$: $F (1, 160) = 3.288$, $p = .072$
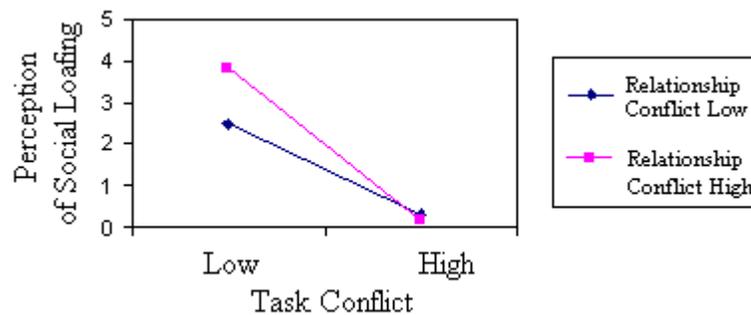


Figure 10. The Effect of the Interaction between Task Conflict and Relationship Conflict on Perceived Social Loafing

found to be consistently in negative correlation with perceived social loafing regardless

of the level of relationship conflict.    Moreover, as Figure 10 also reveals, the slope to

the line of high relationship conflict is greater in magnitude than the slope to the line of

low relationship conflict, meaning the increase of task conflict can make the degree of

perceived social loafing drop faster when relationship conflict is high than when it is low.

To conclude, all the above evidence points to the function of task conflict in its ability to

restrain the degree of perceived social loafing in the group setting.    Such a finding

reveals the beneficial function of task conflict, echoing Jehn (1995) and many other

conflict scholars' argument that task conflict (but not relationship conflict) can have

positive effects on team performance (Amason & Schweiger, 1997; Simons & Peterson,

2000; Van de Vliert & De Dreu, 1994).

One caveat, however, should be made for the interpretation of the above result

and conclusion.    That is, in order for task conflict to function in its beneficial manner,

the level of it should not be high.    A low to moderate level of task conflict seem to be

appropriately functional in that it increases group members' tendency to scrutinize task

issues and to engage in deep and deliberate processing of task-relevant information.

This fosters learning and the development of new and sometimes highly creative insights,

leading the group to become more effective and innovative (De Dreu & West, 2001; Jehn,

1995).    On other hand, if the degree of task conflict is too high, then it may quickly

degenerate into relationship conflict or other types of conflict, undermining the group's

emotional environment and subsequently bringing about negative effects on group

performance (Jehn, 1994, 1995, 1997).    In the current study, the average degree of task

conflict in all the groups was moderately low, indicating the right level that may

maximize the beneficial effects of task conflict on group performance.

In summary, the effect of task conflict on the perception of social loafing was found to be suppressed by the presence of relationship conflict[5].   When the influence of relationship conflict was removed from both task conflict and perceived social loafing, it was found that task conflict correlated negatively with the perception of social loafing in the group.   It was also found that when the degree of relationship conflict is high, escalating the level of task conflict within the moderate range of intensity was capable of making the degree of perceived social loafing drop faster than when the degree of relationship conflict is low.   What follows next is the discussion on how logistic conflict is associated with the perception of social loafing in the group.

**Logistic conflict in predicting perceived social loafing.**

With respect to the relationship between logistic conflict and perceived social loafing, it was originally hypothesized that negative emotions played a moderating role, such that in the presence of high levels of negative emotions, logistic conflict and perceived social loafing would be positively correlated, while in the presence of low levels of negative emotions, logistic conflict and perceived social loafing would be negatively correlated.   However, this hypothesis was not supported (see Table 34).   To

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[5]  In terms of whether the presence of contribution conflict or logistic conflict also suppress the relationship between task conflict and perceived social loafing, hierarchical multiple regression analysis that adopted the same procedure as the one on relationship conflict was further conducted to test the suppression effect. It was found that neither of them does.   For contribution conflict, the standardized beta weights associated with task conflict were: $\beta = -.098$, $p = .125$ in Model 1, and $\beta = -.097$, $p = .129$ in Model 2.   The interaction between task conflict and contribution conflict was not significant, either: $\beta = -.034$, $p = .585$. For logistic conflict, the standardized beta weights associated with task conflict were: $\beta = -.125$, $p = .138$ in Model 1, and $\beta = -.126$, $p = .137$ in Model 2.   The interaction between task conflict and logistic conflict was not significant, either: $\beta = -.012$, $p = .871$

make further exploration, the following analysis continues the statistical analysis

employed in the last chapter, and tries to propose a new direction to find out how logistic

conflict influences perceived social loafing in the group.

Even though results in Table 34 did not support the moderating hypothesis of the

role of negative emotions in the relationship between logistic conflict and perceived

social loafing, it did reveal that negative emotion played a mediating role in the above

relationship.   This is because when negative emotions as a predictor was entered into the

hierarchical multiple regression analysis, the once significant bivariate correlation

between logistic conflict and perceived social loafing ($r = .314, p < .001$) now became

nonsignificant ($\beta = .079, p = .269$ in Model 1), while negative emotions significantly

predicted perceived social loafing ($\beta = .542, p < .001$ in Model 1).   According to Baron

and Kenny (1986), this evidence suggested the mediating effect of negative emotions:

When the mediator is significantly related to the dependent variable, and the once

significant relationship between the independent and dependent variables becomes

nonsignificant after the mediator is entered into the multiple regression analysis, then the

mediator may be said to account for the relationship between the independent and

dependent variables.   Thus, the following argument is in order: Negative emotions

mediate the relationship between logistic conflict and perceived social loafing, such that

the higher the degree of logistic conflict, the higher the degree of negative emotions

experienced, and consequently the higher the degree of social loafing perceived in the

group.   Table 43 reports all the results related to the test of the mediating role that

negative emotions played in the relationship between logistic conflict and perceived

social loafing.    It is seen that when the variable of negative emotions was entered into

the regression analysis in Step 2, the once significant direct effect of logistic conflict on

perceived social loafing ($\beta$ = .314, $p$ < .001) now became nonsignificant (Step 2: $\beta$ = .079,

$p$ = .269).    In addition, negative emotions had significant direct effect on perceived

social loafing (Step 2: $\beta$ = .542, $p$ < .001).    Furthermore, logistic conflict also exerted its

main effect on negative emotions (Step 3: $\beta$ = .434, $p$ < .001).    All these results support

the argument that negative emotions fully mediated the relationship between logistic

conflict and perceived social loafing.

Table 43

Hierarchical Multiple Regression Analysis Predicting Perceived Social Loafing from
Logistic Conflict and Negative Emotions

| Predictors | Unstandardized | | $\beta$ | $p$ | $R^2$ | $\Delta R^2$ |
| | B | Std. Error | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Step1[a]. | | | | | .099[b] | |
| Logistic Conflict | .502 | .119 | .314 | .000 | | |
| | | | | | | |
| Step 2[a]. | | | | | .338[b] | .239[c] |
| Logistic Conflict | .126 | .114 | .079 | .269 | | |
| Negative Emotions | 1.133 | .149 | .542 | .000 | | |
| | | | | | | |
| Step 3[a] | | | | | .434[b] | |
| Logistic Conflict | .332 | .054 | .434 | .000 | | |
| $n$ = 164 | | | | | | |

a. In Step 1 and Step 2, the dependent variable is perceived social loafing.    In Step 3, the dependent variable is
negative emotions.

b. $p$ < .001

c. $F$ statistic for $\Delta R^2$: $F$ (1, 161) = 58.049, $p$ < .001

From the above analysis, it is seen that logistic conflict generates negative emotions, which further lead to the perception of social loafing in the group.    However, considering the fact that relationship conflict also generates negative emotions, it is interesting to explore an additional question: Which variable ultimately causes negative emotions, logistic conflict, relationship conflict, or both?    The answer to this question is meaningful in three ways.    First, it would reveal which of them is the true and direct reason in explaining negative emotions in the group.    Second, it would also reveal how logistic and relationship conflict exert their discrete impacts upon negative emotions.    Third, the answer would suggest the possible direction of the transformation from one type of conflict to the other.

Results in Table 44 support the argument that relationship conflict is the mediator that fully accounts for the relationship between logistic conflict and negative emotions. First of all, it is seen that logistic conflict had its direct influence on negative emotions (Step 1: $\beta = .434$, $p < .001$).    Then, after relationship conflict was entered into the regression analysis in Step 2, the once significant relationship between logistic conflict and negative emotions became nonsignificant (Step 2: $\beta = .043$, $p = .578$), while at the same time relationship conflict had its significant direct influence on negative emotions (Step 2: $\beta = .623$, $p < .001$).    Finally, logistic conflict was found to have its significant main effect on relationship conflict (Step 3: $\beta = .628$, $p < .001$).    Therefore, based upon the above evidence, three conclusions can be drawn.    First, only relationship conflict has its main effect upon negative emotions.    By contrast, logistic conflict generates negative

emotions through the mediation of relationship conflict, meaning that only after logistic

conflict relegated to relationship conflict did negative emotions start to emerge in the

group.    Second, the results also show that logistic conflict has its indirect effect upon

negative emotions, while only relationship conflict had its direct effect upon negative

emotions.    Third, the data also implied that logistic conflict tended to transform into

relationship conflict in the group.    All in all, the conclusion regarding the connection of

logistic conflict with negative emotions through the mediation of relationship conflict

renders support to what Martínez-Moreno and her colleagues once

Table 44

Hierarchical Multiple Regression Analysis Predicting Negative Emotions from Logistic
Conflict and Relationship Conflict

| Predictors | Unstandardized | | $\beta$ | $p$ | $R^2$ | $\Delta R^2$ |
| | B | Std. Error | | | | |
|---|---|---|---|---|---|---|
| Step1[a] | | | | | .189[b] | |
| Logistic Conflict | .332 | .054 | .434 | .000 | | |
| | | | | | | |
| Step2[a] | | | | | .423[b] | .235[c] |
| Logistic Conflict | .033 | .059 | .043 | .578 | | |
| Relationship Conflict | .458 | .057 | .623 | .000 | | |
| | | | | | | |
| Step3[a] | | | | | .359[b] | |
| Logistic Conflict | .653 | .064 | .628 | .000 | | |
| n = 164 | | | | | | |

a. In Step 1 and Step 2, the dependent variable is negative emotions.    In Step 3, the dependent variable is relationship conflict.

b. $p < .001$

c. $F$ statistic for $\Delta R^2$: $F (1, 161) = 65.583, p < .001$

argued: Controversies about how to accomplish team tasks may induce misunderstand-

ings, resentment, real or perceived personal attacks, prompting feelings of annoyance and

irritation in team members over time (Martínez-Moreno, González-Navarro, Zornoza, , & Ripoll, 2009; Martínez-Moreno, Zornoza, González-Navarro, & Thompson, 2012).

Another question arising in relation to logistic conflict is this: What role does contribution conflict play in the relationship between logistic conflict and perceived social loafing in the group?    Since both of these two types of conflict are interrelated with each other ($r = .426, p < .001$) and they both concern group members' disagreements about how the group should manage the coordination of people in accomplishing the task (Behfar et al., 2011; Benne & Sheats, 1948; Hackman & Morris, 1975; Homans, 1950; Kabanoff, 1991; Marks, Mathieu, & Zaccaro, 2001; McGrath, 1964), the answer to the question just raised would not only provide an additional explanation to how logistic conflict results in the perception of social loafing beyond the explanation in the mediation of relationship conflict and negative emotions, but also offer the evidence about the direction of the transformation from one type of conflict to the other in the group (i.e., Does logistic conflict relegate to contribution conflict, or other way round?).

Results in Table 45 support the argument that contribution conflict is the mediator that fully accounts for the relationship between logistic conflict and perceived social loafing.    First of all, it is seen that logistic conflict had its direct influence on perceived social loafing (Step 1: $\beta = .314, p < .001$).    Then, after controlling for the influence of contribution conflict in Step 2, the once significant relationship between logistic conflict and perceived social loafing became nonsignificant (Step 2: $\beta = .038, p = .588$), while at

the same time contribution conflict had its significant direct influence on negative

emotions (Step 2: $\beta$ = .598, $p$ < .001).   Finally, logistic conflict was found to have its

significant main effect on contribution conflict (Step 3: $\beta$ = .462, $p$ < .001).   Therefore,

based upon the above evidence, two conclusions can be drawn.   First, logistic conflict

has its indirect influence on the perception of social loafing through the mediation of

contribution conflict, such that the higher the degree of logistic conflict, the higher the

degree of contribution conflict, and subsequently the higher the degree of social loafing

perceived in the group.   Second, the data also implied that logistic conflict tended to

transform into contribution conflict in the group.

Table 45

Hierarchical Multiple Regression Analysis Predicting Perceived Social Loafing from
Logistic Conflict and Contribution Conflict

| Predictors | Unstandardized | | $\beta$ | $p$ | $R^2$ | $\Delta R^2$ |
| | B | Std. Error | | | | |
|---|---|---|---|---|---|---|
| Step1[a] | | | | | .099[b] | |
| Logistic Conflict | .502 | .119 | .314 | .000 | | |
| | | | | | | |
| Step2[a] | | | | | .380[b] | .281[c] |
| Logistic Conflict | .061 | .112 | .038 | .588 | | |
| Contribution Conflict | .724 | .085 | .598 | .000 | | |
| | | | | | | |
| Step3[a] | | | | | .214[b] | |
| Logistic Conflict | .610 | .092 | .462 | .000 | | |
| $n$ = 164 | | | | | | |

a. In Step 1 and Step 2, the dependent variable is perceived social loafing.   In Step 3, the dependent variable is

contribution conflict.

b. $p$ < .001

c. $F$ statistic for $\Delta R^2$: $F$ (1, 161) = 72.978, $p$ < .001

In summary, logistic conflict does not seem to have its direct influence on the perception of social loafing in the group.    There seem to exist two ways for logistic conflict to influence the perception of social loafing.    First, logistic conflict results in the perception of social loafing in the group through two successive mediators – relationship conflict and negative emotions.    Logistic conflict would first transform into relationship conflict, which subsequently gives rise to the negative emotions.    It is the negative emotions that finally lead to the perception of social loafing in the group.    Second, logistic conflict also indirectly influences the perception of social loafing through the mediation of contribution conflict, such that disputes over the procedures of doing the task and assigning task-related roles would cause tensions related to unfairness in reward distribution, which further leads to the perception of social loafing in the group.

Thus far, the prediction of perceived social loafing based upon each type of conflict alongside negative emotions has been explored and discussed.    This has laid a sound foundation for the upcoming discussion on predicting perceived social loafing by integrating all the four conflict types, together with negative emotions, all at once in one model.    This integrative model is proposed below, with supporting statistical evidence also reported.

**Proposing a model that predicts perceived social loafing based upon all intra-group conflicts and negative emotions.**

The model to be proposed next is based upon the preceding findings regarding the relationship between conflict, negative emotions, and perceived social loafing.    To lay a

sound empirical foundation for the model, all those findings relevant to revealing the

interrelationship among the four types of conflict, and the relationship of a particular type

of conflict with negative emotions and perceived social loafing, are listed below as a way

of illustrating the reasoning process involved in constructing the model.

In the preceding section on testing the relationship of perceived social loafing

with relationship conflict, contribution conflict, and negative emotions, three points can

be generalized out of the relevant empirical findings.    First, negative emotions mediated

the relationship between relationship conflict and perceived social loafing.    Second,

contribution conflict had its direct effect on perceived social loafing without being

mediated by negative emotions.    Third, continued statistical analysis has shown that

contribution conflict generated negative emotions through the mediation of relationship

conflict.

Then, analysis was conducted on how task conflict predicted the perception of

social loafing in the group.    Two points can be generalized out of the relevant empirical

findings.    First, task conflict alone was not significantly correlated with the perception

of social loafing in the group.    Second, the effect of task conflict on perceived social

loafing was suppressed only by the presence of relationship conflict.    That is, when the

influence of relationship conflict was controlled for, task conflict had negative correlation

with the perception of social loafing in the group.

Lastly, analysis was conducted on how logistic conflict, relationship conflict,

contribution conflict, and negative emotions were interrelated to predict the perception of

social loafing in the group.    Three points can be generalized out of the relevant

empirical findings.    First, logistic conflict exerted its influence upon perceived social

loafing through mediation of the negative emotions.    Second, logistic conflict exerted its

influence upon negative emotions through the mediation of relationship conflict.    Third,

logistic conflict also exerted its influence upon perceived social loafing through

mediation of the contribution conflict.

    The above findings have addressed quite well how relationship conflict, logistic

conflict, contribution conflict, and negative emotions are interwoven to predict the

perception of social loafing in the group.    However, what is missing is the position of

task conflict in the web of the aforementioned associations that predicted perceived social

loafing.    It is only known that task conflict had all the significant bivariate correlations

with the rest types of conflict, and the effect of task conflict on perceived social loafing

was suppressed by relationship conflict.    But it is still unknown what pattern of the

association exists between task conflict and the other three types of conflict, and how that

pattern is combined with negative emotions and further exerts its influence on perceived

social loafing.    It is very important to address these two questions, because the answers

would not only provide empirical evidence that reveals the direction of the prediction

from one type of conflict to the other, but also give implications about the configuration

of the model to be constructed at the end of this section.

    Past conflict research regarding how each type of conflict was interrelated or

triggered the other type(s) over time always treated task conflict as the independent

variable and relationship conflict as the dependent variable (e.g., Martínez-Moreno et al.,

2012; Simons & Peterson, 2000).    Such a way to arrange these two variables suggested

that task conflict might be the source of all the other types of conflict that emerged later

in the history of group development (see also Greer et al., 2008).    In addition, it also

suggested that relationship conflict was the end point, into which task conflict might

develop, if it developed at all.    Past research also tried to explain the link between task

conflict and relationship conflict by looking at trust (Simons & Peterson, 2000), conflict

management (DeChurch et al., 2007), and process conflict (Martínez–Moreno et al.,

2012).    Process conflict is especially worth mentioning here because its specific role in

the association between task conflict and relationship conflict would determine the

structure of the model to be proposed next.    As Martínez-Moreno et al. (2012)

hypothesized, process conflict would be a moderator in the association between task

conflict and relationship conflict.    However, this hypothesis was not well supported by

the data in their research.    Maybe process conflict was a mediator that accounted for the

above association, rather than in the role of a moderator.    This is because process

conflict (i.e., task delegation and role assignment) implies personal connotations that may

potentially question one's capabilities and worth within the group, thus triggering

relationship conflict (Greer & Jehn, 2007; cf. Jehn & Bendersky, 2003).    On the other

hand, confusions about the content of the task or the goals to be achieved can easily lead

to disagreements regarding logistic matters, because it is impossible for group members

to design ways of doing the task without knowing clearly what the task really is.    Task

conflict may trigger relationship conflict only when some negative connotations about one's ability or value were implied in the process of debating about role assignment and task delegation.    Therefore, the possible mediating role of process conflict is now tested and the results are provided next.

Results in Table 46 support the argument that logistic conflict is the mediator that fully accounts for the association between task conflict and relationship conflict.    First of all, it is seen that task conflict had its direct influence on relationship conflict (Step 1: $\beta = .309$, $p < .001$).    Then, after controlling for the influence of logistic conflict in Step 2, the once significant relationship between task conflict and relationship conflict became nonsignificant (Step 2: $\beta = .027$, $p = .698$), while at the same time logistic conflict had its significant direct influence on relationship conflict (Step 2: $\beta = .616$, $p < .001$). Moreover, when contribution conflict was entered into the regression analysis in Step 3, it was found that the influence of task conflict on relationship conflict remained nonsignificant (Step 3: $\beta = .019$, $p = .743$), while both logistic and contribution conflict exerted their significant influence on relationship conflict (Step 3: $\beta = 390$, $p < .001$ for logistic conflict; $\beta = 496$, $p < .001$ for contribution conflict).    Finally, task conflict was found to have its significant main effect on logistic conflict (Step 4: $\beta = .457$, $p < .001$). Therefore, based upon the above evidence, three conclusions can be drawn.    First, task conflict has its indirect influence on relationship through the mediation of logistic conflict, such that the higher the degree of task conflict, the higher the degree of logistic conflict, and subsequently the higher the

Table 46

Hierarchical Multiple Regression Analysis Predicting Relationship Conflict from Task Conflict, Logistic Conflict, and Contribution Conflict

| Predictors | Unstandardized | | $\beta$ | $p$ | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|---|---|
| | $B$ | Std. Error | | | | |
| Step1[a] | | | | | .095[b] | |
| Task Conflict | .285 | .069 | .309 | .000 | | |
| | | | | | | |
| Step2[a] | | | | | .395[b] | .300[c] |
| Task Conflict | .025 | .064 | .027 | .698 | | |
| Logistic Conflict | .640 | .072 | .616 | .000 | | |
| | | | | | | |
| Step3[a] | | | | | .589[b] | .194[d] |
| Task Conflict | .017 | .053 | .019 | .743 | | |
| Logistic Conflict | .405 | .065 | .390 | .000 | | |
| Contribution Conflict | .391 | .045 | .496 | .000 | | |
| | | | | | | |
| Step4[a] | | | | | .209[b] | |
| Task Conflict | .407 | .062 | .457 | .000 | | |
| $n = 164$ | | | | | | |

a. In Step 1 through Step 3, the dependent variable is relationship conflict.   In Step 4, the dependent variable is logistic conflict.

b. $p < .001$

c. $F$ statistic for $\Delta R^2$: $F(1, 161) = 79.839$, $p < .001$

d. $F$ statistic for $\Delta R^2$: $F(1, 160) = 75.362$, $p < .001$

degree of relationship conflict.    Second, the data also implies that task conflict tends to

transform into logistic conflict, which finally degenerates to relationship conflict in the

group.    Third, contribution conflict, in addition to logistic conflict, is another variable

that significantly accounts for the variance in relationship conflict, implying the direction

of the transformation from contribution conflict to relationship conflict.    However, it is

still murky as to the role contribution conflict in the overall web of the associations

linking task conflict and relationship conflict.    Such a role will be explored next.

Results in Table 47 support the argument that logistic conflict is the mediator that

fully accounts for the association between task conflict and contribution conflict.    First

of all, it is seen that task conflict had significant association with contribution conflict

(Step 1: $\beta$ = .224, $p$ = .004 < .01).    Then, after controlling for the influence of logistic

conflict in Step 2, the once significant relationship between task conflict and contribution

conflict became nonsignificant (Step 2: $\beta$ = .016, $p$ = .936), while at the same time

logistic conflict had its significant direct influence on contribution conflict (Step 2: $\beta$

= .455, $p$ < .001).    Finally, task conflict was found to have its significant main effect on

logistic conflict (Step 4: $\beta$ = .457, $p$ < .001).    Therefore, based upon the above evidence,

two conclusions can be drawn.    First, task conflict has its indirect

Table 47

Hierarchical Multiple Regression Analysis Predicting Contribution Conflict from Task
Conflict and Logistic Conflict

| Predictors | Unstandardized | | $\beta$ | $p$ | $R^2$ | $\Delta R^2$ |
| | $B$ | Std. Error | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Step1[a] | | | | | .050[b] | |
| Task Conflict | .264 | .090 | ..224 | .004 | | |
| | | | | | | |
| Step2[a] | | | | | .214[b] | .164[c] |
| Task Conflict | .019 | .092 | .016 | .936 | | |
| Logistic Conflict | .600 | .104 | .455 | .000 | | |
| | | | | | | |
| Step3[a] | | | | | .209[b] | |
| Task Conflict | .407 | .062 | .457 | .000 | | |
| $n$ = 164 | | | | | | |

a. In Step 1 and Step 2, the dependent variable is contribution conflict.    In Step 3, the dependent variable is logistic
conflict.

b. $p$ < .001

c. $F$ statistic for $\Delta R^2$: $F$ (1, 161) = 33.513, $p$ < .001

influence on contribution conflict through the mediation of logistic conflict, such that the

higher the degree of task conflict, the higher the degree of logistic conflict, and

subsequently the higher the degree of contribution conflict.    Second, the data also

implied that contribution conflict directly results from logistic conflict in the group.

In a brief sum of the findings regarding the interrelationship between conflict

types, it is seen that task conflict only has its indirect influence upon relationship conflict.

Logistic conflict is a mediator that accounts for the association between task conflict and

relationship conflict, and also the association between task conflict and contribution

conflict.    Also by referring to the findings listed at the beginning of this section, it is

seen that logistic conflict exerted its influence upon negative emotions through the

mediation of relationship conflict, and logistic conflict also exerted its influence upon

perceived social loafing through mediation of the contribution conflict.    Moreover,

relationship conflict exerts its influence upon perceived social loafing through the

mediation of negative emotions, and contribution conflict has its direct influence upon

perceived social loafing.    Furthermore, contribution conflict exerts its influence upon

negative emotions through the mediation of relationship conflict.    Finally, task conflict's

dampening effect on the perception of social loafing will emerge when the influence of

relationship conflict is controlled for.    Therefore, based upon those empirical findings

just listed, a model of explaining/predicting the perception of social loafing from conflict

and negative emotions is proposed below (Figure 11).
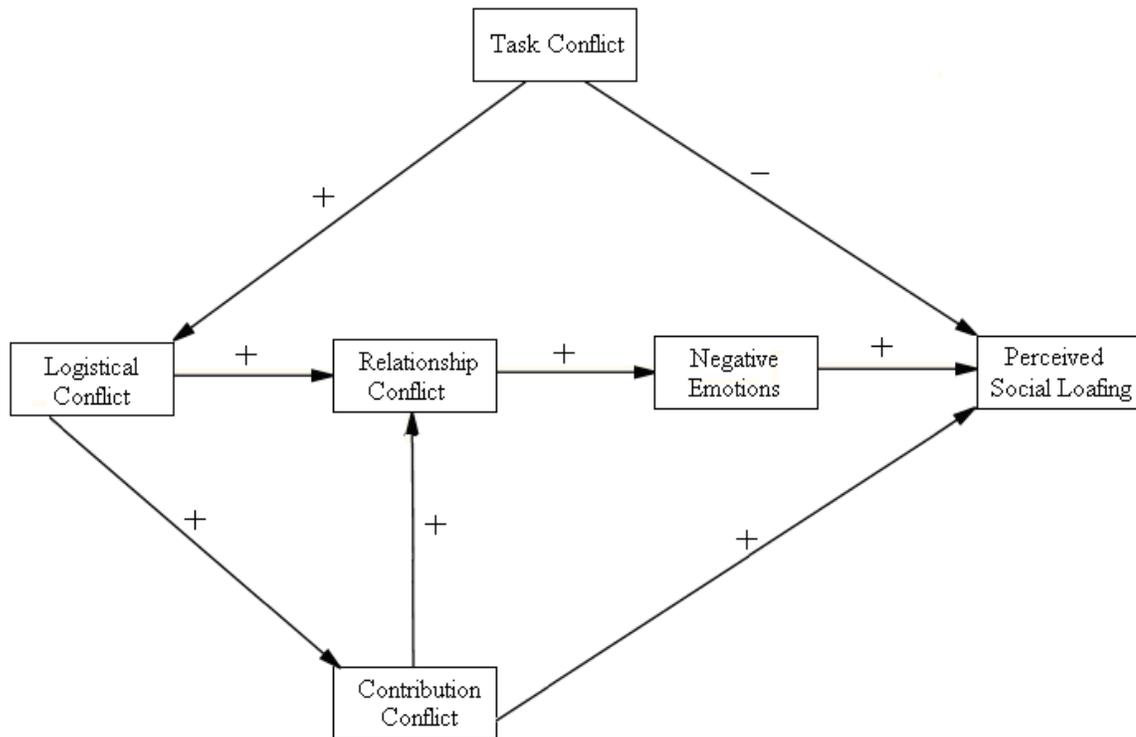
Figure 11. A model predicting the perception of social loafing from conflict and negative emotions

Based upon the correlation table (see Table 29), a path analysis using AMOS (v.18) was conducted to examine the model proposed above.    Table 48 lists the unstandardized parameter estimates as well as the standard errors for the model.    Figure 12 lists the standardized parameter estimates of the model.    It was found that the model was well supported.    All the pathways were significant at $\alpha = .01$, with one exception – the pathway from task conflict to perceived social loafing being marginally significant, $\beta = -.10, p = .07 < .10$.    Considering that in small group research the $\alpha$-level can be set at .10 to lower the probability of committing a Type II error (Cohen & Bailey, 1997; Meyes, Gamst, & Guarino, 2006), such a result can be accepted as the indication of reflecting the true relationship between task conflict and perceived social loafing in the population after

partially out the influences from logistic conflict, relationship conflict, contribution

conflict, and negative emotions.    In addition, to evaluate the overall model fit, the

following fit indices were used: $\chi^2$ goodness-of-fit statistic ($\chi^2 = 4.477$, $df = 7$, p = .724),

the goodness-of-fit index (GFI = .991), the adjusted goodness-of-fit index (AGFI = .973),

the comparative fit index (CFI = 1), and the root mean square error of approximation

(RMSEA < .0001).    A model is considered to have very good fit if the $\chi^2$ statistic is

nonsignificant, the GFI, AGFI, and CFI are greater than .95, and the RMSEA is below

0.05.    As can be concluded, the model just proposed is a fit model.

Table 48.

Unstandardized Path Coefficients, Standard Errors, and t-Values for the Model of
Predicting the Perception of Social Loafing from Conflict and Negative Emotions

|  | Estimate | SE | t | p |
|---|---|---|---|---|
| Task conflict to logistic conflict | .407 | .062 | 6.567 | <.001 |
| Logistic conflict to contribution conflict | .610 | .092 | 6.657 | <.001 |
| Logistic conflict to relationship conflict | .414 | .059 | 7.033 | <.001 |
| Contribution conflict to relationship conflict | .391 | .045 | 8.766 | <.001 |
| Relationship conflict to negative emotions | .478 | .044 | 10.915 | <.001 |
| Negative emotions to perceived social loafing | .783 | .130 | 6.032 | <.001 |
| Contribution conflict to perceived social loafing | .565 | .076 | 7.472 | <.001 |
| Task conflict to perceived social loafing | -.147 | .081 | -1.813 | .070 |
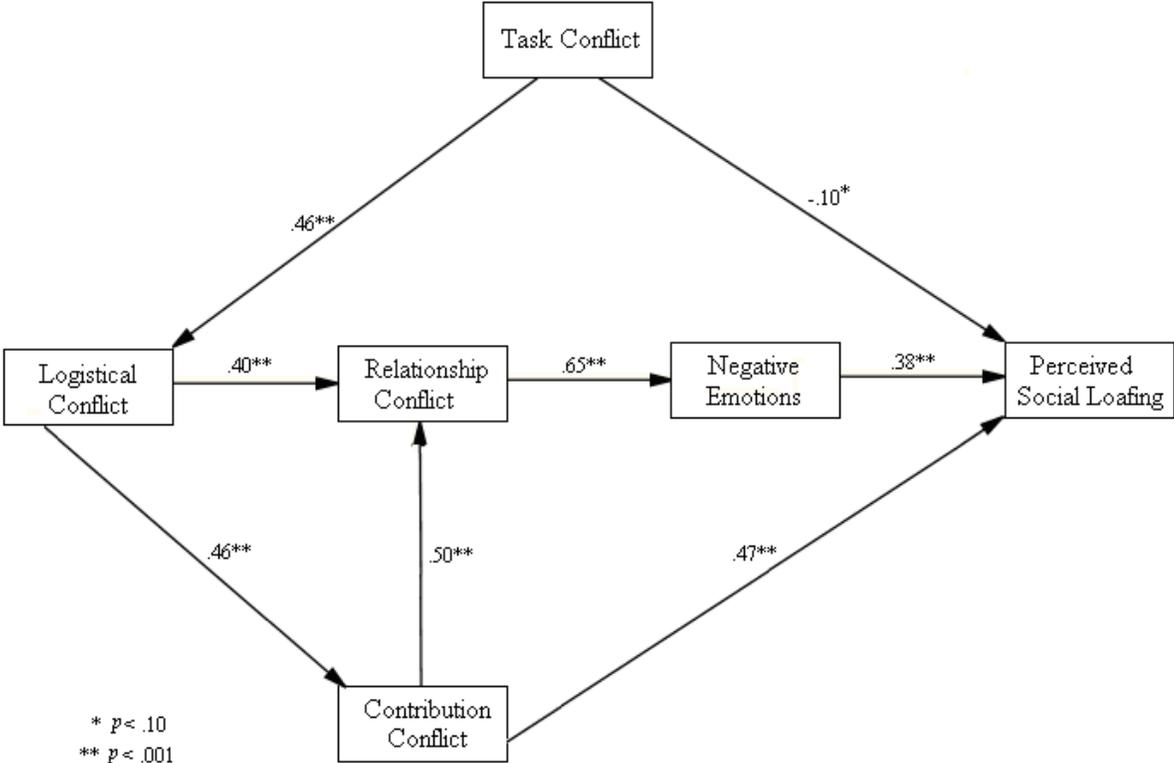
Figure 12. A model explaining/predicting the perception of social loafing from conflict and negative emotions: standardized parameter estimates

In summary, this section tries to establish the interrelationship between conflict, negative emotion, and perceived social loafing.    A generic picture is drawn in terms of how the perception of social loafing is influenced by the awareness of conflict and negative emotions in the group.    It also has revealed the possible direction of the transformation from one type of conflict to another, and how each type of conflict exerts its differential influence on the perception of social loafing in the group.    To be specific, three conclusions can be drawn.    First, task conflict has both positive and negative effects upon the perception of social loafing in the group.    The positive effect is indirect in that the negative implications of one's ability or worth involved in task conflict first arouse logistic conflict, leading further to contribution conflict and/or relationship

conflict.    Then contribution conflict leads directly to the perception of social loafing in

the group, whereas the relationship conflict leads indirectly to the perception of social

loafing through the mediation of negative emotions.    The negative effect (a.k.a. the

dampening effect) of task conflict on perceived social loafing is a direct effect, provided

that group members truly resort to the proper conflict management strategy and handle

the task-related issues without making unnecessary negative implications of personality

clashes.    Second, two factors potentially lead to the escalation of perceived social

loafing directly in the group –either negative emotions or contribution conflict will

directly influence the escalation of the degree of perceived social loafing in the group.

Third, logistic conflict acts like a "hub" in the association web connecting task conflict

and relationship conflict.    It directs the transformation from task conflict to relationship

conflict in two ways (i.e., one is from task conflict to logistic conflict and, finally, to

relationship conflict; the other is from task conflict to logistic conflict to contribution

conflict and, finally, to relationship conflict), potentially explaining how task conflict

degenerates to relationship conflict in the group.    Now that a model predicting perceived

social loafing based upon conflict and negative emotions has been established, together

with a description of how perceived social loafing fluctuates with conflict and emotions

over the course of group development, it is quite necessary to provide a more general

discussion about what those results can tell.    The next chapter is in order and serves this

purpose.

**Chapter Five: Discussion**

In this study social loafing is approached from the insider's perspective. That is, emphasis is placed upon the individual's perception of social loafing in the group. Perception of social loafing is stressed because this exact notion is believed to better influence and shape group member's interaction with other co-workers than actual loafing (Mulvey & Klein, 1998). Furthermore, perception of social loafing excels over actual loafing at predicting individuals' motivation to work, their satisfaction with reward distribution, and group's cohesiveness (Høiggard et al., 2006). Therefore, studying perception of social loafing is potentially conducive to improving morale, maintaining relationship, managing group conflicts, and boosting group performance.

This study was conducted for two purposes. The first purpose was to investigate how perceived social loafing, in conjunction with various forms of group conflict and positive vs. negative emotions, evolved in the process of small group work. Such an investigation would not only facilitate depicting a generic pattern of fluctuation for each of those variables over the course of small group interaction, but also provide a description of the relative importance of each of those variables at each distinctive stage of group development. Group practitioners would be well equipped with such knowledge when they were consulted regarding the timing of perceived social loafing, various forms of group conflict, and positive vs. negative emotions in the group's history of development. They could go further to prime their clients by informing them about

how those variables would be differentially experienced over the course of group work,

so that tensions could possibly be reduced in times of real interaction.

The second purpose of this study was to establish a path analytic model

connecting the perception of social loafing with various forms of group conflict and

negative emotions.   This would facilitate explaining, and hopefully predicting, the

perception of social loafing based solely upon the knowledge of conflict types alongside

negative emotions in small groups.   Group practitioners could use that information to

help their clients to differentiate the various direct and/or indirect impacts of different

types of group conflict and negative emotions on the perception of social loafing.   They

could also alert their clients to the way that one type of conflict may trigger another type

during small group interaction, and how that triggering process may shape group

members' experience of negative emotions and perception of social loafing in the group.

With the above two purposes in mind, it is intended that this study will add to the small

group research the information about the trend patterns for perceived social loafing,

different forms of group conflict, and positive vs. negative emotions in the course of

group development.   It is also hoped that this study could explicate a range of factors

that potentially affect the perception of social loafing in small groups.

The sections below discuss the relevant statistics reported in the last chapter.   To

give a preview of the discussion, a synopsis provided next serves to outline the major

findings of this research.   Overall, 9 out of the 25 hypotheses in this research received

statistical support.   The three research questions that had been proposed to explore (1)

the associations between conflict types and perceived social loafing, (2) the associations

between stages of group development and conflict types, and (3) the associations between

stages of group development and positive vs. negative emotions, also received answers

with statistical evidence.    Altogether, ten major findings emerged from the previous

statistical analysis.    First, perceived social loafing, negative emotions, relationship

conflict, and contribution conflict followed a reversed V-shape pattern of progression in

group development: Their respective means rose from Stage 1 (i.e., *Inclusion and*

*Dependency*) to Stage 2 (i.e., *Counterdependency and Fight*), then fell from Stage 2 to

Stage 3 (i.e., *Trust and Structure*), and continued falling until Stage 4 (i.e., *Work*).

Each of them reached its peak at Stage 2 and drop to its bottom at Stage 4.    Second,

logistic conflict followed a similar pattern of progression to the first one (i.e., a reversed

V shape).    The only difference was that logistic conflict had its lowest point observed at

Stage 1, although its peak was observed still at Stage 2.    Third, the degree of task

conflict seemed to follow a slanted, flat, *N*-shaped pattern of development, wherein it

rose from Stage 1 to Stage 2, then dropped from Stage 2 to Stage 3, and finally rose again

from Stage 3 to Stage 4.    Fourth, positive emotions had a drop from Stage 1 to Stage 2,

but kept escalating from Stage 2 until Stage 4.    Fifth, at each stage of group

development, the top two conflict types that concerned the group members most are: task

conflict and contribution conflict at Stage 1, contribution conflict and relationship

conflict at Stage 2, task conflict and logistic conflict at Stage 3, task conflict and

contribution conflict at Stage 2 (same as at Stage 1).    Sixth, at each stage of group

development, the conflict that concerned the group members least is: logistic conflict at

Stage 1 and Stage 2, and relationship conflict at Stage 3 and Stage 4.   Seventh,

contribution conflict had a direct influence on perceived social loafing while relationship

conflict only had its indirect influence on perceived social loafing through the mediation

of negative emotions.   Eighth, task conflict had a direct, minimizing effect on perceived

social loafing, and this effect did not emerge until the influences of relationship conflict,

contribution conflict, logistic conflict, and negative emotions on perceived social loafing

were all statistically controlled for.   Ninth, task conflict might degenerate into either

relationship conflict or contribution conflict through the mediation of logistic conflict.

Tenth, logistic or contribution conflict aroused negative emotions through the mediation

of relationship conflict.   In the following sections, the findings are discussed in detail

with their statistical implications explicated.

**Perceived Social Loafing, Intra-group Conflicts, and Emotions at each Stage of**

**Small Group Development**

When looking at the grand means of all the variables of interest, it is seen that the

magnitude of both perceived social loafing and task conflict was each on a moderately

low level.   The magnitude of relationship conflict, logistic conflict, contribution conflict

or negative emotions was each on a low level.   Positive emotions, however, were

generally maintained on a moderately high level over the course of group work.   These

results have the following four implications.   First, the moderately low level of social

loafing indicates that in the current study social loafing was generally sensed as an issue

by group members, but it was below the threshold of being openly admitted by them.

Second, task conflict was on a relatively higher level than relationship conflict, logistic

conflict, or contribution conflict[1], reflecting the fact that performing tasks and resolving

task-related issues are actually the major themes that any task-oriented groups are faced

up with.    However, a moderate but manageable level of task conflict may be a boon for

task-oriented groups, because it may potentially stimulate creativity (Amason, 1996) and

increases success of decision making and problem solving (Simons & Peterson, 2000).

Third, the fact that the average magnitude of relationship conflict, logistic conflict,

contribution conflict, and negative emotions each fell within the low-level range indicates

that they were being managed and controlled by group members so that the group's goal

accomplishment could not be potentially jeopardized and the existence of the group itself

could not be endangered (Jehn, Greer, Levine, & Szulanski, 2008).    Fourth, the higher

level of positive emotions might indicate that keeping up the positive emotions at the

moderately, but not extremely, high level would be instrumental to the formation and

sustenance of group's cohesion, commitment, and morale, which would further facilitate

group's task performance.    A moderately high level of positive emotions in most of the

groups would also facilitate most of the groups in their open discussions about some

sensitive or critical group issues, thus circumventing groupthink – a deficit quite typical

---

[1] An ANOVA test revealed that the omnibus hypothesis that the degrees of all the four conflict types were equal was rejected at $\alpha = .05$: $F(3, 652) = 33.19$, $p < .001$, $\eta^2 = .132$.    Post hoc pairwise comparisons in Tukey HSD revealed that the degree of task conflict was significantly higher than that relationship conflict (Mean difference = .72, $p < .001$), logistic conflict (Mean difference = .64, $p < .001$), and contribution conflict (Mean difference = .54, $p < .001$).

in the situation with an extremely high level of positive emotions, where group member

would give up critical thinking and sacrifice productivity only for the purpose of

maintaining superficially good interpersonal relations (Janis, 1982).   Based upon the

above four implications, a first, yet somewhat rough and sketchy picture can be drawn.

In task-oriented groups, positive emotions, on average, will be maintained at a

moderately high level.   Task conflict and perceived social loafing will be maintained at

moderately low levels.   And relationship conflict, logistic conflict, contribution conflict,

and negative emotions will be maintained at low levels[2].

Next, another picture is drawn with improved precision.   Perceived social

loafing, conflict types, and negative vs. positive emotions are described altogether at each

stage of group development.   This will reveal the relative importance of those variables

at each distinctive developmental phase in the group's history.

**Stage 1 (*Inclusion and Dependency*).**   Two findings were related to the

perception of social loafing at this stage.   First, there was no significant difference

between the number of people who agreed to have perceived social loafing and the

number of people who disagreed to have perceived it.   Second, although on average

group members would neither agree nor disagree openly about having experienced social

loafing at this stage, they were somewhat aware of it in their groups.   Two typical

---

[2]  The reason to depict this rough picture is to put up a baseline by which we could judge whether or not a
particular group is functioning properly.   Such a pattern of combination in terms of the average degrees of
the perceived social loafing, four conflict types, and emotions connotes that deviations from this pattern
may indicate the malfunctioning within the group.

activities conducted at this stage – low socio-emotional interaction and lack of task

engagement – can explain the above results.    First, lack of task engagement (e.g., little

has been accomplished yet) might make group members feel that their group coworkers

were not working hard enough on the collective task.    It was their fault that caused the

progress of the whole group stagnant.    With such feelings, group members would

suspect the existence of social loafing in the group[3].    Second, low socio-emotional

interaction might reflect a suppression of conflict as an effort to maintain politeness in the

group (also known as "removing the primary tension in the group", see Bales, 1950;

Fisher, 1970).    To some extent, this would create a safe ambience for group members to

start socialization and get to know each other, leading to a group climate characterized as

superficial politeness.    Working in such a group climate, group members were likely to

refrain from reporting that they had experienced social loafing in the group[4], either for

fear of arousing troubled relationship with others or for the purpose of saving themselves

from addressing the issue.    With these two typical activities that potentially had opposite

effects on the perception of social loafing in Stage 1, it was possible to have the above

two results.

　　　　With respect to the relative importance of each conflict type, it is seen that task

conflict had the highest mean value, followed successively by contribution conflict,

---

[3] This argument was supported by the fact that the Pearson Correlation Coefficient for the relationship between low task engagement and perceived social loafing was significant, $r = .414$, $p < .01$.

[4] This argument was supported by the fact that the Pearson Correlation Coefficient for the relationship between low socio-emotional engagement and perceived social loafing was significant, $r = -.254$, $p < .01$.

relationship ship, and logistic conflict.    Task conflict seemed to have the tendency to

prevail over the other conflict types in Stage 1.    Statistical analysis showed that both

relationship conflict and logistic conflict were significantly smaller in magnitude than

task conflict.    Contribution conflict, however, was not found statistically different in

magnitude than either task conflict or relationship conflict, but its magnitude was

marginally greater than that of logistic conflict (see Table 36 in Chapter Four for details).

Such results revealed that in Stage 1 group members had stronger concern and

disagreement about defining tasks and goals than they had about resolving relational

issues, assigning job-related roles and responsibilities, or deciding upon the procedures of

doing the task.    The above results also implied that concerns over establishing rules and

norms that regulated reward distribution and maintaining a sense of justice in that process

(i.e., reward distribution should be in proportion to one's contribution) were also as

important as, if not more than, task conflict.    To explain the preceding findings, again,

let us look at the typical group activities in Stage 1.    First, considering the fact that Stage

1 was characterized by few discussions about setting up group goals and a minimal level

of task completion (a.k.a. lack of task engagement), group members had a vague picture

about what was going to be done.    Thus, owing to the confusions about, or

misunderstandings of, task contents and group's goals, task conflict would inevitably

emerge and linger.    In addition, those who suspected that the level of task engagement

within the group was low would feel that they were being unfairly exploited by their less

contributing peers, especially when they believe they were themselves the hard-working

members in the group.    Thus, this would give rise to a sense of contribution conflict.

Furthermore, because Stage 1 was also characterized by suppressing interpersonal

discordance and maintaining an ambience of superficial interpersonal politeness (a.k.a.

low socio-emotional interaction), relationship conflict was liable to be minimally

experienced.    Finally, because logistic conflict might be insinuating one's lack of worth

or incompetence, it might potentially trigger relational tensions within the group (Jehn,

1995).    Such relational tensions would violate the basic assumption of maintaining

harmony within the group in Stage 1.    Therefore, logistic conflict, like relationship

conflict, was prone to be minimized so that the group might have the energy to focus

upon getting to know each other and building up initial relations within the group.

The overall emotional environment in Stage 1 was characterized by a moderately

high level of positive emotions (feelings of friendliness and energy).    This result is

understandable in that establishing an initial warm working environment would be of key

importance for the whole group to work together, resolve issues, and succeed later.

However, it should be noted that the modifier "moderately" insinuates group members'

reservation about having truly experienced positive emotions, as the magnitude of

positive emotions at Stage 1 was not large enough to be significantly greater than the

threshold value (i.e., 3 = some or somewhat)[5].    Such a statistical result might reflect

group members' certain level of the awareness of the possible problematic interactions in

---

[5]  In Stage 1, the adjusted mean score for positive emotions ($Adj. M = 3.19$, $SD = .65$) was compared with
the value of 3 (= some or somewhat).    The result was not significant, $t(32) = 1.35$, $p = .19$.    It was also
compared with the value of 4 (=quite a lot), and the result was significant, $t(32) = -5.78$, $p < .001$

Stage 1 (i.e., social loafing, task conflict, and contribution conflict).   While maintaining

positive emotions at a certain high level was of necessity, those problematic interaction

episodes just mentioned might have tuned down the magnitude of positive emotions that

would otherwise have been higher, had those problematic interactions been in lower

levels.   Negative emotions (e.g., feelings of anxiety, anger, depression, etc.), however,

were generally little felt at this time of group development, because suppressing them

would facilitate the enhancement of the overall emotional well-being for the whole group

and protect the group from malfunctioning at this early time of group formation[6].

**Stage 2 (*Counterdependency and Fight*).**   As its label had suggested, during

Stage 2 there was an outbreak of various problematic interactions.   It was found that the

observed mean values of perceived social loafing, four conflict types, and negative

emotions all reached their respective highest points, compared to the other stages.

Positive emotions, by contrast, reached the lowest point at this period of group

development.   As its name might suggest, Stage 2 seemed to be a time of turbulence, in

which both dysfunctional interaction and tension abounded.   However, it should be

cautioned that the overall levels of conflict and negative emotions were moderately low

(as their mean values were ranging from 2.49 to 2.78; see Table 26 in Chapter Four for

details), meaning that all types of conflict and negative emotions were not likely to be

believed to go out of control, and that group boundaries remained intact.   The mean

---

[6] In Stage 1, the adjusted mean score for negative emotions (*Adj. M* = 1.86, *SD* = .37) was compared with
the value of 2 (= very little felt).   The result was not significant, $t(32) = 1.32$, $p = .20$.

value of perceived social loafing, on the other hand, was observed to be moderately high, but statistical analysis revealed that group members had an equal chance to agree and disagree about having experienced social loafing in their groups.   Moreover, although it was found that social loafing was generally more or less experienced by group members in Stage 2, yet it was contained quite well even at this critical moment of group development when all the dysfunctional interactions and tensions peaked, as group members still did not intend to report it openly.   With all these results in mind, it can be said that despite some negative connotations its label might suggest (i.e., low attraction to the group and intense interpersonal tensions), Stage 2 was still functional in that all types of conflict, negative emotions, and social loafing received attention from, and subsequently were handled by, group members, while group's boundaries remained intact and group members were still able to work with each other on the collective tasks in their respective groups.

In terms of how different types of conflict were differentiated in Stage 2, it is seen through observation that relationship conflict and contribution conflict were almost in a tie in this period, and they were both relatively higher in magnitude than was either task conflict or logistic conflict.   In addition, the degree of task conflict was a bit higher than that of logistic conflict.   However, it is worth noting that no pairwise comparisons between conflict types were significant in Stage 2.   This piece of evidence might lend support to the argument that although differences had been observed between different types of conflict in Stage 2, such differences might be trivial and all those types of

conflict might be more or less on the same level.   Relating this evidence with the fact

that all types of conflict had greater observed mean values in Stage 2 than they had in

Stage 1, it is further argued that in Stage 2 all types of conflict increased in magnitude

and had the tendencies to converge toward the same level[7].   It should be cautioned that

the above arguments be accepted with reservation.   The limited number of data points in

Stage 2 might have reduced the power of the statistical tests that would otherwise

produce significant results if the number of data points in this stage had been larger[8].

Therefore, more research is needed before a firm conclusion could be reached with

respect to how different types of conflict are in a relative position to each other in terms

of their magnitude in Stage 2.

Analysis on the emotional displays revealed that negative emotions rose to the

peak and positive emotions dropped to the bottom in Stage 2, compared to their

respective magnitude at the other stages.   Additionally, only marginally significant

differences were found between these two types of emotions, with positive emotions

being observed to be relatively higher in magnitude.   These results suggested that on

average positive emotions still tended to prevail in Stage 2, although the level of negative

emotions had the tendency to rise up to the same level as the positive emotions.   These

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[7] Four one sample *t*-tests were further conducted by comparing the mean of each type of conflict in Stage 2 with the value of 3 (a scale number corresponding to "some or somewhat," indicating each conflict was beginning to be felt).   Bonferroni adjustment was used by setting the alpha level at $.05/4 = .0125$.   It was found that none of results were significant: Relationship Conflict, $t(20) = -1.33$, $p = .198$; Task Conflict, $t(20) = -2.09$, $p = .05$; Logistic Conflict, $t(20) = -2.52$, $p = .02$; Contribution Conflict, $t(20) = -1.14$, $p = .27$;

[8] It has been stated in the last chapter that the sample size in Stage 2 is 21, compared to 33 in Stage 1, 37 in Stage 3, and 73 in Stage 4.

results also rendered support to the preceding argument that even in Stage 2, where

various problematic interactions (in the form of conflict, social loafing, negative

emotions, etc.) were on relatively higher levels than they were in Stage 1, for a group to

function properly and make progress toward achieving its goal(s), those problematic

interactions should be contained while a nice and warm group climate (in the form of

positive emotions) should be sustained to create a safe emotional environment for group

members to address and further manage those problematic issues in their respective

groups.    Also considering the rising tendency for negative emotions and the fact that

they were on a moderately, rather than extremely, low level in Stage 2, it can be further

concluded that although groups might strive to maintain an overall positive working

environment at this time, negative emotions was not totally overlooked, nevertheless[9].

They might function to spur the group members to face the reality and manage

problematic interactions, so that problems related to tasks, relations, and processes could

be redressed in the next stage.

     **Stage 3 (*Trust and Structure*).**    In general, Stage 3 was found to be a period in

the history of group development that saw an overall drop of social loafing, conflict, and

negative emotions, as compared with their respective levels in Stage 2.    The level of

positive emotions, by contrast, was observed to increase only by a small margin from

Stage 2 to Stage 3.    To better illustrate how social loafing, conflict, and negative vs.

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[9]  In Stage 2, the adjusted mean score for negative emotions (*Adj. M* = 2.49, *SD* = .37) was compared with
the value of 2 (= very little felt).    The result was significant, $t(20) = 3.69$, $p = .001 < .05$.

positive emotions were experienced by group members in this stage, the following

discussion is in order that focuses on the implications that the aforementioned results

could possibly suggest.

The level of perceived social loafing was found to be moderately low in Stage 3.

Statistical analysis (i.e., Chi-square test and one-sample $t$-tests) showed that: (1) people

performing in this stage were more likely to disagree about having perceived social

loafing than they were to agree about having perceived it; and (2) social loafing was not

addressed openly by group members, but it was not overlooked, either.   Considering the

fact that group members were making effort to promote their interpersonal relationships

and refine their work structures (i.e., redefining task contents and goals, streamlining

norms, and re-negotiating roles) in this stage, group members might be quite reserved

about openly reporting social loafing in their group, for fear of disrupting the overall

cohesive group climate they had been working hard to restore.   However, this does not

mean that the issue of social loafing would be totally ignored in this stage.   The fact that

the mean value of perceived social loafing at this stage was significantly greater than the

threshold value 2 (i.e., a little disagree[ing] about having perceived social loafing)

suggests that social loafing was still an issue concerning the group members at Stage 2.

This is because boosted morale and refined procedures for doing the group work would

prompt those highly-motivated members to pick up the other's slacks, especially when

those hardworking members had attached their own fate to the success of the whole

group, a phenomenon labeled as "the social compensation effect" by Williams and Karau

(1991, p. 571).   In the current study, the social compensation effect was very much likely to occur in the classroom setting, because most college students placed their individual course grade on their top priority over the other rewards they intended to obtain from their group activities, such as improving small group communication skills, making new friends, and etc.   Therefore, the fact that those hardworking social compensators picked up the loafers' slacks revealed that social loafing was perceived in their group.   This explained why perceived social loafing was maintained at a moderately low level, but meanwhile its existence could not be overlooked.

With respect to the relative order of the degree of each type of conflict at Stage 3, two findings emerge.   First, through observations of the means, it was revealed that the level of task conflict was the highest, followed successively by logistic conflict, contribution conflict, and relationship conflict.   *Post hoc* comparisons also found that the degree of task conflict was higher than the degree of any of the remaining conflict types (i.e., logistic conflict, contribution conflict, and relationship conflict, see Table 36 in Chapter Four for details).   Second, the level of contribution conflict was not significantly different from either that of logistic conflict or relationship conflict, but logistic conflict was on significantly higher level than was relationship conflict.   Based upon these results, it can be seen that deciding upon what to do (as was represented by task conflict) and how to do it (as was represented by logistic conflict) were the two major themes that group members had to face in Stage 3.   Even though moderately low, task conflict was instrumental in keeping the ball rolling in a healthy direction:   Group

members would remove confusions about the task content and the possible goals to be

achieved through managing task-related issues, thus eventually paving the way for

making plans for future task completion while still feeling safe and attracted to the group.

In addition, compared to the other types of conflict, the level of relationship conflict was

the lowest in Stage 3, thus giving support to the notion that Stage 3 was a period in the

history of group development when group members formed bond with each other and

accepted each other as members of the team (Wheelan & Hochberger, 1996).

Furthermore, contribution conflict was on the same level as either logistic or relationship

conflict and neither of its two pairwise comparisons with logistic or relationship conflict

was statistically significant, thus creating some confusion as to whether the degree of

logistic conflict was truly higher than that of relationship conflict in Stage 3 in the

population.

Since the tensions associated with relational conflict and contribution conflict that

had once been most evident in Stage 2 subsided in Stage 3, the overall emotional

environment would be acknowledged as friendly and amicable in the eyes of group

members.   This was supported by the evidence that negative emotions were on a low

level while positive emotions were on a moderately high level.   In addition, the one

sample $t$-test revealed that group members performing in Stage 3 generally discounted

negative emotions[10], while acknowledging that they were experiencing positive

emotions[11].   Furthermore, paired-sample *t*-test also showed that the level of positive

emotions was significantly higher than that of negative emotions (see Table 36 for details

in Chapter Four).   Therefore, it can be concluded that positive emotions pervaded in

Stage 3, while at the same time negative emotions were not paid enough attention to.

It is interesting to note that perceived social loafing, four conflict types, and

negative vs. positive emotions in Stage 3 were on the same level as their corresponding

levels in Stage 1 (see Table 26).   It seemed that on average they all had the tendency to

either increase (as in the case of positive emotions) or decrease (as in the case of

perceived social loafing, conflict, and negative emotions) to a level that matches their

corresponding level in Stage 1.   This mechanism might guarantee the proper functioning

of the group and save it from having latent, unresolved troubles before it was going to

move to the next phase when work and production would prevail.   Although such an

argument is by no means affirmative or definitive, it implies that the level of each of

those variables in Stage 1 might be taken as a rough baseline upon which to judge

whether or not the group's transition from Stage 2 to Stage 3 is successful.   More future

research is needed to support or falsify this argument.

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[10]  The adjusted mean value of negative emotions (*Adj. M* = 1.82, *SD* = .37) was found to be marginally different than the value of 2 (= a little disagree) in a one-sample *t*-test, $t(36) = 1.80$, $p = .08 < .10$, meaning that negative emotions were nearly overlooked by group members performing on Stage 3.

[11]  The adjusted mean value of positive emotions (*Adj. M* = 3.42, *SD* = .64) was found to be significantly higher than the value of 3 (= neither agree nor disagree) in a one-sample *t*-test, $t(36) = 3.18$, $p = .003 < .01$, meaning that positive emotions were consciously bewared by group members performing on Stage 3.

**Stage 4 (*Work*).**    This is a time characterized by production and task completion. It was observed that the degree of perceived social loafing, relationship conflict, logistic conflict, contribution conflict and negative emotions in Stage 4 each was decreasing, as compared to their respective degrees at the previous stage.    In addition, at this stage all of them, save logistic conflict, received their respective lowest scores.    In contrast, positive emotions were found to be on the highest level, compared with the levels of positive emotions in the other stages.    Moreover, the mean of task conflict was also found to increase in this stage, as compared with its mean in Stage 3 and Stage 1.    The following discussion will focus on how each of those variables operated in this fourth stage of group development, and what implications they could possibly tell.

In Stage 4, it was found that the degree of perceived social loafing continued to drop, and it fell to its lowest level.    Statistical analysis (i.e., Chi-square test and one-sample *t*-tests) revealed that (1) people performing at this stage were more likely to disagree about having perceived social loafing than they were to agree about having perceived it; and (2) group members would not treat it as a serious problem and thus they would not openly admit it in their group interaction.    As has been described in Chapter Two, Stage 4 (i.e., *Work*) was typified by a unified commitment to the common goals, mutual support and feedback, adherence to the deadline, and accelerated work pace toward task accomplishment (Wheelan & Hochberger, 1996).    All these characteristics pointed to the following factors that would lower the occurrence of social loafing, as well as the perception of it: the overall elated work environment, translucent job assignment,

and the perception of increased efficiency and effectiveness in job accomplishment

(Comer, 1995; Latané et al., 1979; Kidwell & Bennett, 1993).   In addition, it was found

that the degree of perceived social loafing in Stage 4 dropped significantly below the

level of its counterpart in Stage 1 (i.e., the baseline upon which to judge whether or not

the group malfunctions), backing up the argument that it was in Stage 4 that the degree of

perceived social loafing dropped to its lowest point.

With respect to how different types of conflict were differentiated in Stage 4, it is

seen through observation that the level of task conflict was the highest, followed

successively by contribution conflict, logistic conflict, and relationship conflict.   *Post*

*hoc* comparisons found that the degree of task conflict was higher than the degree of any

of the other conflict types (i.e., logistic conflict, contribution conflict, and relationship

conflict).   In addition, both contribution conflict and logistic conflict were found to be

significantly higher in magnitude than relationship conflict.   Furthermore, no significant

difference was found in term of the magnitude between contribution conflict and logistic

conflict.   The above results would suggest the following implications.   First, task

conflict was the dominant theme in the conflict management episode in Stage 4, as it was

the time for group members to do the assignments, handle task-related issues, and work

toward the group's goal.   Group members might find that there still existed some

discrepancy between what they had previously thought about with respect to the task

content and group goals and what they encountered during the time of actually doing the

work by themselves.   Task conflict was also felt to be somewhat escalating because

group members might feel pushed and no time to redefine the task or the goal when

confronting the amount of work they needed to do and the close deadline they needed to

keep up with.    Second, relationship conflict was minimally experienced either because

relational issues had been resolved in the previous stage so that group members were

working together in high moral, or because Stage 4 was a stage that was all about work

and would not allow group members to contribute their extra cognitive resources to

managing relationship conflict.    Lastly, concerns over coordination (i.e., who is doing

what in what order) and fairness (i.e., getting reward in proportion to one's contribution)

within the group also lingered in this stage.    Although they were observed to fall to the

low level, they somewhat reflected two facts: (1) in Stage 4 group members were making

adjustment in terms of task delegation in order to raise task efficiency and catch up with

the deadline timely, and (2) group members were also trying to monitor the others'

contribution and match their own accordingly, in order to make sure a sense of justice in

terms of distributing rewards was well maintained and shared.

Since the group was near task completion and many of the problematic

interactions (e.g., social loafing, and different kinds of conflict) were perceived to lessen

a great deal in Stage 4, the overall emotional environment in this stage would be quite

similar to the emotional environment in Stage 3 – friendly and amicable in the eyes of

group members.    This was further supported by the evidence that negative emotions

were on a low level (and probably the lowest, compared to the levels in the other stages)

whereas positive emotions were on a moderately high level (and probably the highest,

compared to the levels in the other stages).   In addition, one sample *t*-test revealed that

group members performing in Stage 4 generally denied having experienced negative

emotions[12], while acknowledging that they had experienced positive emotions[13].

Furthermore, paired-sample *t*-test also showed that the level of positive emotions was

significantly higher than that of negative emotions, meaning that positive emotions were

predominantly experienced over negative emotions.   Therefore, it can be concluded that

positive emotions pervaded in Stage 4, while at the same time negative emotions were

seldom experienced.

In summary, based upon the above analysis on how social loafing, conflict, and

positive vs. negative emotions were experienced in each stage of group development,

seven conclusions can be drawn.   First, throughout the history of group development,

the degrees of perceived social loafing, all types of conflict, and negative emotions were,

on average, maintained on low or moderately low levels while positive emotions were on

a moderately high level.   Second, concerns over the existence of social loafing in the

group would not dissipate until the fourth stage of group development, in which morale

and productivity were high while negative emotions, relationship conflict, contribution

conflict, and logistic conflict were low.   Third, task conflict seemed to be the

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[12]  The adjusted mean value of negative emotions (*Adj. M* = 1.65, *SD* = .38) was found to be significantly different than the value of 2 (= a little disagree) in a one-sample *t*-test, $t(72) = 4.88$, $p < .001$, meaning that negative emotions were denied to be experienced by group members performing on Stage 4.

[13]  The adjusted mean value of positive emotions (*Adj. M* = 3.67, *SD* = .37 was found to be significantly higher than the value of 3 (= neither agree nor disagree) in a one-sample *t*-test, $t(72) = 7.10$, $p = < .01$, meaning that positive emotions were consciously bewared of by group members performing on Stage 4.

predominant conflict over the other types of conflict in Stage 1, Stage 3, and Stage 4.

Fourth, second to task conflict, contribution conflict seemed to be another big issue that

group members faced in all the stages.    Fifth, all types of conflict were almost on the

same level in Stage 2, with relationship and contribution conflict a little bit higher in

magnitude than task and logistic conflict.    Sixth, the magnitude of positive emotions

was consistently higher than that of negative emotions across the four stages of group

development.    Seventh, in the process of moving toward Stage 3, the degree of each of

the variables in this study tended to decreases (as in the case of perceived social loafing,

conflict, and negative emotions) or increases (as in the case of positive emotions) to a

degree similar to what it was in Stage 1.    This tendency of regressing toward the initial

state might indicate that the transition of the group from Stage 2 to Stage 3 was smooth.

Any deviation in the opposite direction in this process might indicate the dysfunction of

the group in its developmental process.    Thus far, the second picture that depicts how

social loafing, conflict, and positive vs. negative emotions tend to be experienced in each

stage of group development has been drawn.    What is still missing is another picture that

depicts how each of those variables fluctuated in the whole group developmental process.

This will be addressed in the next section.

**Trend of Social Loafing, Intra-group Conflicts, and Emotions in Small Group Development**

Based upon the trend analysis of all the variables in the course of group development (see also Figure 9 in Chapter Four), four patterns emerged.   The first pattern looked more or less like an upside-down V shape, but the tip of its right-side handle was lower than the tip of its left-side handle.   The rising tendency occurred from Stage 1 to Stage 2, with the highest point observed at Stage 2.   The declining tendency occurred from Stage 2 to Stage 4, with the lowest point observed at Stage 4.   In addition, the rising rate from Stage 1 to Stage 2 seemed to be quite similar to the dropping rate from Stage 2 to Stage 3, as the two slopes differed only in sign, but not in magnitude. Moreover, with respect to the downward movement from Stage 2 to Stage 4, it seemed that the rate of declining slowed down from Stage 3 to Stage 4, in contrast to the declining rate from Stage 2 to Stage 3 (as the slope of the former was less steep than that of the latter).   Furthermore, the declining seemed to level off at Stage 4, as the difference of the mean values of the specific variable at Stage 4 and Stage 3 was not found significant.   Finally, the statistical results from the trend analysis showed that linear, quadratic, and cubic trends were all significant, meaning respectively that (1) the overall trend of development in the history of group evolution for the variable of interest was linear and downward, and lowest score was at Stage 4; (2) there was a curvilinear trend that revealed the rise-and-fall tendency, the peak of which corresponded to Stage 2; (3) even though the declining tendency from Stage 2 to Stage 3 till Stage 4 was evident,

the rate of declining differed in that the mean value dropped slower from Stage 3 to Stage

4 than it did from Stage 2 to Stage 3.    This pattern of development was embodied by

four variables – perceived social loafing, relationship conflict, contribution conflict, and

negative emotions.

The second pattern also looked like an upside-down V shape, but the tip of its

right-side handle was slightly higher than the tip of its left-side handle.    This pattern

shared a lot of similarities with the first pattern, in that (1) it had a peak in Stage 2; (2) the

magnitude of the rising rate from Stage 1 to Stage 2 was quite identical to that of the

falling rate from Stage 2 to Stage 3, and those two rates differed only in sign; (3) the

falling rate from Stage 3 to Stage 4 slowed down, as compared to its counterpart rate

from Stage 2 to Stage 3; (4) the declining seemed to level off at Stage 4, as the difference

of the mean values of a specific variable at Stage 4 and Stage 3 was not found significant.

This second pattern differed from the first pattern in two ways.    First, statistical analysis

revealed that in the second pattern the linear trend was not statistically significant, while

the quadratic and cubic trends were.    In contrast, in the first pattern all the trends of

interest (i.e., linear, quadratic, and cubic) were significant.    Second, in this second

pattern, the mean value at Stage 4 was observed higher than the mean value at Stage 1,

contrary to the situation in the first pattern, in which the mean value at Stage 4 was

observed lower than the mean value at Stage 1.    Taken all these together, it is seen that

the second pattern depicted a curvilinear trend of development, in which the degree of a

specific variable of interest rose to its peak at Stage 2 and then dropped successively at

different rates from Stage 2 to Stage 3, and from Stage 3 to Stage 4.    But it seemed that

lowest point might be at Stage 1, rather than at Stage 4.    The second pattern was

represented by logistic conflict.

The third pattern looked more or less like a slanted, flat, *N*-shape.    It had a rising

trend from Stage 1 to Stage 2, a falling trend from Stage 2 to Stage 3, and then a rising

trend again from Stage 3 to Stage 4.    In addition, the two rising rates and the one falling

rate were quite similar, as their respective slopes differed from each other only in sign,

but not in magnitude.    Moreover, based upon the results from the *post hoc* multiple

comparisons, the mean value at each stage of group development was not significantly

different from each other, meaning that those four means were identical to each other in

the population.    Furthermore, the statistical results from the trend analysis showed that

linear and quadratic trends were not statistically significant, whereas the cubic trend was

marginally significant, meaning that the snake-like shape would more or less capture the

pattern of development for the specific variable in the population.    Finally, taken all

these together, it can be argued that this pattern revealed the repeated rise-and-fall

fluctuation within a specific range in the history of group development.    And this pattern

was represented by task conflict.

The fourth pattern could be likened to the shape of V, with the right side stretched

longer and higher than the left side (an upright flip of the first pattern identified at the

beginning of this section).    It had a declining trend from Stage 1 to Stage 2, and a rising

trend from Stage 2 to Stage 4.    In addition, the dip (i.e., the lowest point) seemed to be

anchored at Stage 2, while the highest point was at Stage 4.    Moreover, based upon the

results from multiple *post hoc* comparisons, the mean value at Stage 4 was significantly

higher than the mean value either at Stage 1 or Stage 2, meaning that the variable of

interest that followed this trend tended to reach its highest point at Stage 4 in the

population.    Furthermore, the statistical results from the trend analysis showed that

linear and quadratic trends were statistically significant, whereas the cubic trend was not,

meaning that (1) the overall trend of development was linear and upward; (2) there was a

curvilinear trend that captured the fall-and-rise tendency, the valley of which

corresponded to Stage 2 in the history of group development.    Finally, taken all these

together, it can be argued that this pattern revealed an overall fall-and-rise tendency in the

history of group development, with the dip normally observed at Stage 2.    This pattern

was represented by positive emotions.

In summary, four conclusions can be drawn.    First, perceived social loafing,

relationship conflict, contribution conflict, and negative emotions all developed similarly

in an upside-down V-shaped trend, wherein they reached their respective peaks at Stage 2

and hit their respective lowest point at Stage 4.    Second, logistic conflict reached its

peak at Stage 2, but the lowest points might be at Stage 1.    Third, task conflict

developed in a slanted, flat, N-shaped trend, wherein it rose from Stage 1 to Stage 2,

dropped from Stage 2 to Stage 3, and then rose again from Stage 3 to Stage 4, with the

four means fairly close to each other in magnitude across the four stages.    Finally,

positive emotions developed in a V-shaped pattern across the four stages of group

development, wherein it dropped to its bottom at Stage 2 and reached its highest point at

Stage 4.   Thus far, perceived social loafing, group conflicts, and positive vs. negative

emotions have been described in terms of their respective magnitude at each stage of

group development, as well as their respective trend across the history of group work.

What comes next is an in-depth discussion of the model that reveals the interrelationship

between perceived social loafing, conflict, and negative emotions in the group setting.

**Understanding the Relationship among Perceived Social Loafing, Conflict, and Negative Emotions**

The path analytic model constructed in the last chapter has two broad implications

for our understanding of the relationships among perceived social loafing, four different

types of conflict, and negative emotions.   First, the model reveals that types of conflict

are interrelated, with an implication of how one type of conflict can trigger or be

triggered by another type.   That is, task conflict is indirectly associated with relationship

conflict and contribution conflict through the mediation of logistic conflict.   Both

contribution conflict and logistic conflict has direct influences upon relationship conflict.

Concerning the implication of conflict triggering, the model suggests that task conflict

can trigger logistic conflict.   Furthermore, relationship conflict can be triggered by

either one of the two direct sources – logistic conflict or contribution conflict.   Finally,

contribution conflict can be directly triggered by logistic conflict.

Second, the path analytic model also gives tentative explanations to the question of how the perception of social loafing was resulted.   Based upon the model, it is seen that the perception of social loafing is directly influenced by negative emotions and contribution conflict.   Relationship conflict indirectly influences the perception of social loafing through the mediation of negative emotions.   Logistic conflict influences the perception of social loafing in two indirect ways, i.e., either through the mediation of contribution conflict or through mediation of two successive variables – relationship conflict and negative emotions.   In addition to its direct influence on perceived social loafing, contribution conflict can also exert its indirect influence through the successive mediation of relationship conflict and negative emotions.   Task conflict, however, influences the perception of social loafing in two opposing ways.   On the one hand, task conflict may heighten the occurrence of logistic conflict in the group.   Logistic conflict then exerts its influence upon perceived social loafing in the two indirect ways just specified.   On the other hand, task conflict has a direct suppressing effect on perceived social loafing when the influences from the other three types of conflict and negative emotions were controlled for or held constant.

Although empirical data seem to support the model, making correct inferences from the model still requires some additional explanations.   Specifically, there are three areas in the path analytical model that are worth further explanation: 1) the nature of task conflict, 2) the mechanisms in the conflict triggering process, and 3) the direction of influence between negative emotions and perceived social loafing.   Explanations related

to these three areas are not only important to the rationalization of the whole empirical

model, but also serve to 1) eliminate the confusion regarding under which condition task

conflict promotes or suppresses the perception of social loafing, 2) elucidate the way

different types of conflict are interrelated and trigger one another, and 3) reveal the

consequence that perceived social loafing may have on group processes.   Accordingly,

the following three sub-sections are crafted, each of which corresponds to one of the

three areas mentioned above.

**Investigating the effects of task conflict on perceived social loafing.**

According to Jehn (1995), task conflict is the perception of disagreements among

group members about the content of their decisions, and involves differences in

viewpoints, ideas and opinions.   When task conflict occurs in a group setting, it may

have both benefits and detriments.   Simons and Peterson (2000) mentioned two

interrelated benefits that task conflict might have on group outcomes – improved decision

quality and affective acceptance of the group decision.   They reasoned that because task

conflict encouraged greater cognitive processing of the issues being discussed, prevented

premature consensus, and stimulated critical thinking, groups that experienced task

conflict tended to make better decisions than those who did not.   They also cited

evidence from past research on the association between open discussion and group's

emotional well-being (e.g., Amason, 1996; Greenberg & Folger, 1983; Lind & Tyler,

1988; Peterson, 1997).   They concluded that task conflict was related to group

members' increased likelihood to voice their own perspectives on the issues being

discussed and voice, in turn, was associated with group's greater affective acceptance of

group decision making.   Other researchers also mentioned that task conflict appeared to

be positively related to the quality of ideas and innovation (West & Anderson, 1996), the

increase of constructive debate (Jehn, Northcraft, & Neale 1999), the prevention of

groupthink (Turner & Pratkanis, 1994), and task commitment and member satisfaction

(Behfar et al., 2011).

Despite the beneficial effects that task conflict may have on group outcomes, its

detrimental effects were also found.   Jehn (1995) argued that task conflicts may cause

tension, antagonism, and unhappiness among group members and an unwillingness to

work together in the future.   Amason and Schweiger (1994) suggested that conflicts

over task issues can be frustrating and lead to dissatisfaction with the interaction.

Friedman, Tidd, Curral, and Tsai (2000) showed that task conflict increased stress level

in workplace.   Simons and Peterson (2000) cautioned management teams that task

conflict foreshadowed relationship conflict if the intensity and frequency of task conflict

are high and confrontation rather than negotiation was embedded in group discussion.

De Dreu and Weingart's (2003) meta-analysis also demonstrated that task conflict might

be as negative as relationship conflict.   de Wit, Greer, and Jehn (2012) provided an

explanation to the above-mentioned detrimental effects of task conflict.   They used

self-verification theory (Swann, Polzer, Seyle, & Ko, 2004) to argue that group members

would feel dissatisfied when they interpreted the challenges against their viewpoints by

other group members as an negative assessment of their own abilities and competencies

(see also Kerwin, Doherty, & Harman, 2011). This could cause people to ruminate and experience stress as a result of task conflict (Dijkstra, Van Dierendonck, & Evers, 2005; Yang & Mossholder, 2004).

As we can see, task conflict is a double-edged sword. On the one hand, it does something good to the whole group by boosting creativity, innovation, and productivity. It may also raise the overall level of positive affect within the group once all members have their individual say in the group. On the other hand, task conflict harms the group's emotional well-being, such as causing tension, frustration, or stress among group members. Task conflict may also distract group members from what they are currently doing, aggravating their cognitive overload in processing task-related information and disrupting their critical thinking. Consequently, task conflict may undermine group's creativity, innovation, and productivity (De Dreu, 2008; de Wit et al., 2012). So, it seems quite paradoxical that task conflict can both promote and obstruct the group's goal accomplishment. Such a trait of doing both good and evil is, in fact, a nature unique to task conflict. de Wit et al.'s (2012) meta-analytical study probing the paradox of intra-group conflicts found that only the bivariate correlation between task conflict (not relationship conflict or process conflict) and group performance was zero in the population and their relationship was moderated by whether or not other types of conflict co-occur when the effects of task conflict were being studied. That is, if task conflict occurs without relationship or process conflict also occurring, task conflict is less likely to be emotional (Yang & Mossholder, 2004), escalate (Greer et al., 2008), and impair

group performance (Peterson & Behfar, 2003; Shaw et al., 2011; Simons & Peterson,

2000).

With this double-edged nature of task conflict in mind, the seemingly

contradictory effects of task conflict on perceived social loafing found in the current

study now become understandable.   On the one hand, we see that task conflict exerts a

positive, indirect, influence upon perceived social loafing through the successive

mediations of the other types of conflict and negative emotions.   This result corresponds

to the detrimental effect of task conflict: it may directly and indirectly trigger the other

types of conflict, and when all the other conflicts are co-existing with task conflict in the

group, the negative effect of task conflict starts to appear – negative emotions were felt

and perceived social loafing then results.   On the other hand, when removing or

controlling for all the influences of the other types of conflict and negative emotions (also

akin to saying that groups are experiencing only task conflict), we see that task conflict

exerts a negative but direct effect upon perceived social loafing.   This result corresponds

to the beneficial aspect of task conflict: it promotes group members' processing of

task-related issues, increases their group participation, uplifts the group's morale, and

consequently suppresses the degree of perceived social loafing in the group.   In all, the

current study confirms the double-edged nature of task conflict that has been documented

in past research.   The current study suggests that in addition to its suppressing effect on

perceived social loafing, task conflict may potentially trigger other types of conflict,

which may further arouse negative emotions and subsequently results in the perception of

social loafing in the group.    So far, the question of why task conflict has two seemingly

contradictory impacts upon perceived social loafing has been explored and answered.

Coming next is an investigation into the conflict triggering process and the role that

logistic conflict plays in that process.

**Investigating the conflict triggering process.**

In addition to revealing how task conflict results in perceived social loafing, the

model proposed in this dissertation also explains how task conflict is likely to result in

relationship conflict in the group setting.    Such a mechanism is discussed next.    First,

task conflict arises when group members have disagreement about the content of the task.

Second, when group members do not have a clear picture about what the task really is for

the whole group, chances are that they have difficulty in properly assigning task-related

roles and responsibilities within the group and working out an effective procedure of

conducting the group work (Greer et al., 2008).    This gives rise to logistic conflict.

Third, with respect to the improper task assignment pertaining to logistic conflict,

some competent group members would feel their personal ability and worth are devalued

and they are disrespected while those less competent members would feel they are

overburdened and work beyond their capacity (Jehn & Bendersky, 2003).    What's more,

owing to the lack of clear task structure and the dysfunctional coordination, the group

progress is also perceived to be delayed.    Consequently, group members would feel

irritated and angry at each other, prompting relationship conflict to occur.    Fourth, also

relating to the issue of job assignment is the issue of distributive injustice (perceived

unfairness in outcome/reward distributions, Greenberg, 2006).    When tasks are

delegated in such a way as to indicate equal (or unequal) contribution but unequal (or

equal) resource allocation or reward distribution among group members, a sense of

unfairness is likely to arise.    This will instigate the occurrence of contribution conflict

(Behfar et al., 2011).    Fifth, pertaining to the contribution conflict, a sense of being

unfairly exploited by the other group members would further fuel misunderstanding,

resentment, and the perception of personal attack (Martínez-Moreno et al., 2012), leading

to relationship conflict in the group.    Thus, as is clear from the above analysis, logistic

conflict is very important to our understanding of how relationship conflict can be

instigated by task conflict: Logistic conflict not only fully explains the link between task

conflict and relationship conflict (i.e., it is the ineffective job delegation caused by the

failure to reach consensus about the task content that ultimately leads to relational

tensions in the group), but also gives rise to contribution conflict, which may further lead

to relationship conflict in the group (i.e., ineffective job delegation may also exacerbate

the perception of fairness, arousing contribution conflict to occur and consequently

sparking relationship conflict in the group).

The above description of conflict triggering process serves the purpose of

addressing the mechanism in which task conflict finally leads to relationship conflict and

the key role that logistic conflict plays in that mechanism.    Two inferences can be made

from the above discussion.    First, task conflict (disagreement about the group's goal and

the content of the work), if not resolved successfully, can trigger logistic conflict

(confusions about how to do the job), which may further spark either contribution conflict (disagreement about reward distribution) or relationship conflict (interpersonal tension). So, it is very important for groups to have open discussion, encourage critical thinking, and reach consensus, about the goals and the content of the task.    Second, special attention should be given to effectively managing logistic conflict (i.e., streamlining job assignment, optimizing coordination, and delegating roles and responsibilities in accordance with each group member's job-related competence, skills, and knowledge), because resolving logistic conflict would not only lower the chance for task conflict to degenerate further into relationship conflict, but also curb the emergence of contribution conflict, which may also potentially instigate relationship conflict.

Three cautions should be emphasized when interpreting the above results.    First, those findings do not answer the question of how each type of conflict evolved and co-evolved with each other over time in the history of group work (cf. Greer et al., 2008). In fact, the data regarding the four types of conflict were collected concurrently, thus forbidding the author from making generalizations about how each conflict evolves or transforms into other different types longitudinally.    However, the findings do imply a plausible explanation of how each form of conflict, excluding task conflict, is initiated directly and indirectly by the other forms of conflict.

Second, the current description of the conflict triggering process does not address the occurrence of task conflict.    Actually, it does not need to.    In the present study, task conflict is treated as an exogenous variable that provides the original source of dynamism

in the conflict triggering process.    Admittedly, in the middle of group history, task

conflict may be sparked by, say, contribution conflict, because group members may

intentionally show disagreements about what to do as a retaliation against having been

unfairly treated in terms of reward distribution (see also Spell, Bezrukova, Haar & Spell,

2011).    However, the origin of task conflict must involve differences in opinions and

viewpoints (cf., Behfar et al., 2010), and these differences are more related to people's

cognitive capacity than to the consequences of their problematic interaction, such as

relationship conflict, contribution conflict, or logistic conflict.    Therefore, explaining

task conflict from other conflictual interactions falls out of the scope of this research, and

thus is not addressed.    But it is still worth reminding that task conflict is important to the

group, because the rest three types of conflict are more or less, directly or indirectly,

triggered by it.

Third, causal statements should be made with reservation.    Since the data were

collected concurrently, I can only say that a particular pattern of discrete associations

among the four types of conflict has been found and statistically supported by the

empirical data.    This finding suggests the potential direction of triggering from one type

of conflict to another.    However, no explicit causal conclusions should be drawn in a

definitive sense here.    For example, it is not legitimate to say that the current model

*proves* that task conflict causes logistic conflict.    But it is fine to state that the statistical

results relevant to the model tend to support that task conflict has a high chance to first

trigger logistic conflict in the group setting.    This is because the preceding evidence

regarding the various associations among conflicts only satisfies the necessary condition

of a causal argument[14].   It does not sufficiently prove causation (i.e., one type of conflict

*causes* another type of conflict).   To show that the causal link is valid between any two

types of conflict, two more research designs are needed before sound causal arguments

can be reached – longitudinal and laboratory research designs.   The longitudinal

research should be conducted to demonstrate that the causes occur before the effects.

For example, although the current model implies that task conflict may occur before

logistic conflict, it is necessary to collect observational data to demonstrate that the initial

emergence of task conflict always occurs before the initial emergence of logistic conflict

in the group.   The laboratory research design, on the other hand, should be employed to

eliminate alternative explanations and establish the true causal link.   For example, in the

laboratory setting, we can control for the level of group's overall logistic management

capacity, hold each working environment as similar as possible, and set task conflict at

three different levels (e.g., high vs. moderate vs. low).   Then the magnitude of the

corresponding logistic conflict could be compared across those three conditions, so that

the effect of task conflict on logistic conflict can be computed statistically.   This is a

better way to establish the causal link between task conflict and logistic conflict,

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[14]  Suppose we have the following two statements: Conflict Type I causes Conflict Type II (A); Conflict
Type I and Conflict Type II correlate with each other (B).   It is true to state that if Conflict Type I causes
Conflict Type II (A), then Conflict Type I and Conflict Type II must correlate with each other (B).
However, the reverse is not true – if Conflict Type I and Conflict Type II correlate with each other (B),
then Conflict Type I must cause Conflict Type II (A).   So, A is the sufficient but not the necessary
condition of B, while B is the necessary but not the sufficient condition of A.

compared to the situation where data are collected concurrently.   Therefore, firm

conclusions regarding the causal relationship cannot be reached until additional

longitudinal and laboratory research is conducted in the future.   Now that the

mechanism inherent in the process of conflict triggering and the way to correctly interpret

that mechanism have been addressed, coming next is the exploration of the last question:

Why is it the case that negative emotions arouse the perception of social loafing, but not

the other way round?

**Investigating the relationship between negative emotions and perceived social loafing.**

It was originally hypothesized that the more negative emotions group members

felt, the more likely they were to report having perceived social loafing in their group.

As the relevant statistical analysis conducted in the last chapter suggests, this hypothesis

is supported.   In addition, the direction of influence in that association is also

ascertained: Since it is the negative emotions that directly exert the influence upon

perceived social loafing, the direction of influence is from negative emotions to perceived

social loafing, not the other way round.   Then the question arises:   Is it possible for

perceived social loafing aroused by negative emotions to backlash by exacerbating the

group's emotional well-being and generating more negative emotions in the group?

Such a question is raised because I want to know further what consequence the

perception of social loafing would bring to the group's emotional environment, be it

positive or negative.

In the current dissertation, I would like to argue that perceived social loafing triggered by negative emotions does not reversely influence negative emotions.   To be more specific, perceived social loafing does not necessarily backlash by undermining the group's emotional environment and arousing more negative affect in the group.   The reasons are given next.

As has been suggested before, perceived social loafing is actually the perception of another group member working with low levels of contribution and relying too much upon the rest to finish his or her portion of the work.   Usually, this perception will arouse a sense of unfairness regarding the unjust reward distribution, and the perception of such distributive unfairness is likely to lead to negative affect in workplaces (VanYperen et al., 2000).   However, a qualification should be imposed upon the preceding argument:   Such a sense of unfairness is especially likely to be aroused in the situation where the loafer is perceived to be high in competence but intends to exploit the rest by maximizing his or her gain-effort ratio (Plaks & Higgis, 2000).   However, the sense of unfairness and subsequently the negative emotions are less likely to be aroused when the loafer is perceived to be low in task-related capacity (Plaks & Higgis, 2000), the rest of the group attach the importance of goal achievement to their own personal interest (Williams & Karau, 1991), and the level of cohesiveness is high in the group (Karau & Williams, 1997).   Therefore, whether or not perceived social loafing undermines the group's emotional well-being depends upon the specific situations. When only these two variables – perceived social loafing and negative emotions – are

concerned without specifying the work situation, the influence of perceived social loafing

on negative emotions is hard to detect.

Continued statistical test using AMOS (v.18) is thus conducted on the hypothesis

that the influence of perceived social loafing on negative emotions is zero in the

population.   In order to test this hypothesis, the original recursive model depicted in

Figure 12 in Chapter Four is now revised into a non-recursive model by setting the errors

of perceived social loafing and negative emotions as covariates and adding an additional

arrow signifying the influence from perceived social loafing to negative emotions.   This

non-recursive model is illustrated in Figure 13 with the standardized estimates listed[15].

Based upon the statistics reported in the diagram below, two points are particularly

worthwhile to be stressed or reiterated.   First, relationship conflict is the only one source

of influence that triggers negative emotions, $\beta = .57, p < .001$.   No other types of

conflict have direct influences upon negative emotion.   Second, the influence from

perceived social loafing to negative emotions is not significant, $\beta = .14, p = ns$, while the

influence from negative emotions to perceived social loafing is significant, $\beta = .44, p <$

.001.   Taken together, the above two pieces of evidence support the following two

arguments.   First, perceived social loafing does not necessarily backlash by undermining

the group's emotional environment and arousing more negative affect in the group.

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[15]  To evaluate the overall model fit, the following fit indices were used: $\chi^2$ goodness-of-fit statistic ($\chi^2 =$ 3.531, $df = 5$, p = .619), the goodness-of-fit index (GFI = .993), the adjusted goodness-of-fit index (AGFI = .970), the comparative fit index (CFI = 1), and the root mean square error of approximation (RMSEA < .0001).

Second, the group's emotional well-being is undermined only when relationship conflict

is aroused.
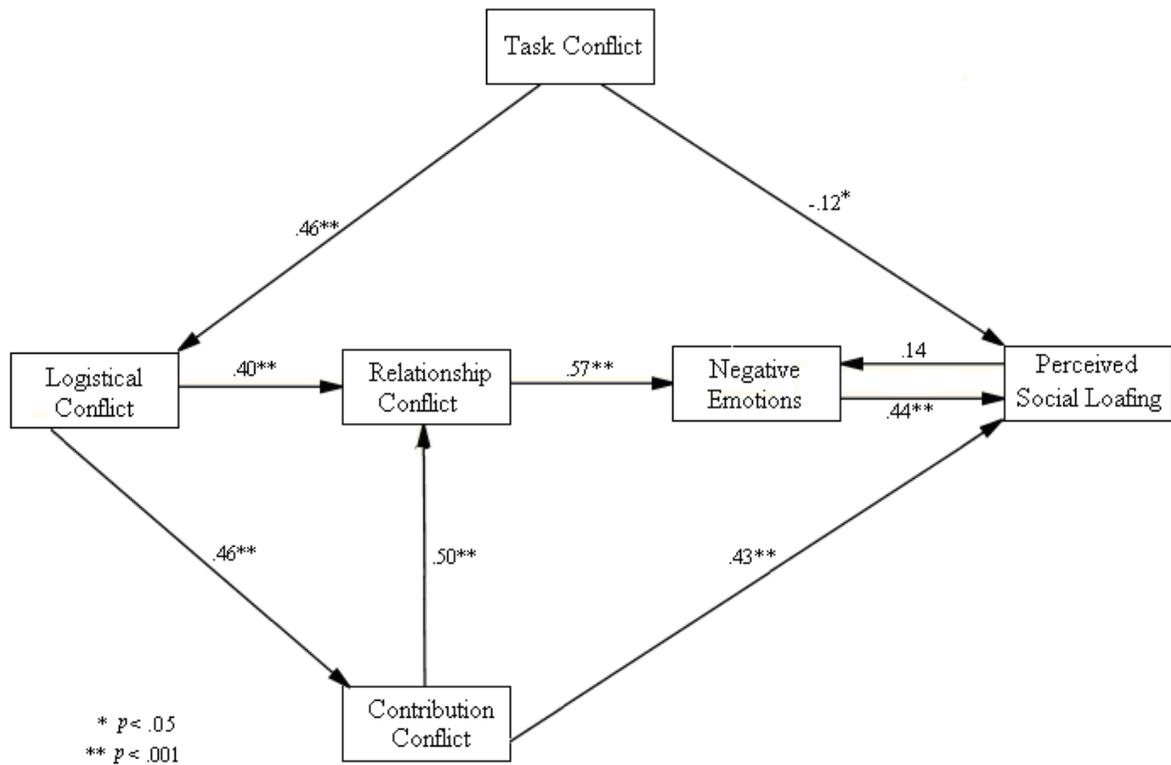


Figure 13. A non-recursive model predicting the mutual influences between perceived
social loafing and negative emotions: standardized parameter estimates


        The above results also suggest that the group's emotional environment is not so

easily disrupted when social loafing is being perceived.    In fact, the group is a system

that has its internal mechanism to maintain its emotionality on an optimal level that

promotes cooperation and to pull itself back to its normal working track in face of

disruptions.    Unless big crisis (for example, irresolvable interpersonal conflict) occurs in

the group, its boundary will remain intact, owing to the presence of such an internal

mechanism.    By applying this reasoning to the consequences that perceived social

loafing may bring to the group's climate, it is likely that group members may work even

harder with heightened energy and morale to compensate for the slacks left by the loafer,

a phenomenon named *social compensation* by Williams and Karau (1991).   Social

compensation acts to keep the group's productivity from dropping.   It may even spur the

group to a higher productivity level.   Williams and Karau (1991) suggested that the

importance or value of the task accomplishment to the individual group members may be

one reason that explains the social compensation effect.   They further suggested that

individuals may attempt to compensate for the weaknesses of coworkers either for their

own personal gain (i.e., success of the group will benefit them personally) or for the

altruistic reason that their efforts to compensate will benefit their less talented fellow

coworkers.   Whatever the reason, social compensation is conducive to keeping the

group's morale from falling, thus moderating the group's overall emotional environment

in a positive light in face of perceived social loafing.

     In a brief sum, the model proposed in this dissertation reveals that negative

emotions directly influence the perception of social loafing in the group.   However,

contrary to our intuition that the perception of social loafing may directly increase

negative emotions, statistical analysis conducted in this dissertation shows that this is not

always so:   Perceived social loafing does not necessarily increase negative emotions in

the group.   Because of the social compensation effect, keeping up the group morale and

compensating for the slacks left by the loafers may reduce the chances for the whole

group to experience negative emotions.

Thus far, findings related to the following two broad questions have been discussed: How do perceived social loafing, conflict, and positive vs. negative emotions develop over the course of group development?   How can we account for the perception of social loafing based upon our knowledge of different types of conflict and negative emotions?   Now is a time to connect these two separate sets of findings and see to what extent they tend to converge.

**Connecting the Two Perspectives: Developmental vs. Instrumental**

As has been suggested at the beginning of this chapter, the current study is conducted for two purposes.   First, it seeks to establish a generic pattern of fluctuation for each of the following variables in the course of group development: perceived social loafing, group conflict (i.e., task, relationship, logistic, and contribution), and emotions (i.e., positive vs. negative).   Second, it tries to explicate how the perception of social loafing is resulted by seeking explanations from conflict and negative emotions. Findings pertaining to the first purpose have revealed four trend patterns in the process of group development; they also have recorded the relative magnitude of each of those variables, especially the four types of conflict, at each stage of group development. Findings pertaining to the second purpose have revealed the differential impacts that the four types of conflict have on the perception of social loafing.   In addition, negative emotions also play a mediating role in the association between relationship conflict and perceived social loafing.   These relationships are represented in a model explaining, and

hopefully predicting, how the perception of social loafing is resulted in the group (see in

Figure 12).

It should be noted that the findings derived from those two seemingly separate

research purposes ought not to be viewed in sheer separation.   Rather, those findings

should be recognized as having addressed the same phenomenon from two different, yet

complementary, perspectives: instrumental vs. developmental.   According to Poole and

Garner (2006), the instrumental perspective focuses on depicting a web of cause and

effect by explaining or predicting a targeted phenomenon based upon one or several

antecedents.   The developmental perspective views the targeted phenomenon as a

natural part of the lifecycle of a functioning entity (for example, the functioning entity is

the group in the current study).   It serves the purpose of describing the phenomenon as it

is in the developmental process of the entity.   These two points of view are

complementary in that the instrumental perspective usually addresses the mechanism

inherent in a process leading to a specific outcome, whereas the developmental

perspective usually depicts how a phenomenon of interest naturally unfold itself within

an ongoing concern – group work – that is developing according to its own dynamics

over time.   To see the connection between the findings from those two perspectives, the

following discussion is in order that provides evidence in support of the notion that a

integral understanding of perceived social loafing is achieved when both perspectives are

taken into account.   It is hoped that the current endeavor would inform the extant

literature on the perception of social loafing with more accurate knowledge of its timing

as well as causes in the course of group development.

The first piece of evidence that sees the connection between the two perspectives

(i.e., developmental vs. instrumental) comes from the similarity in the conclusion reached

with respect to the strength of the associations between the independent variables and the

dependent variable in both trend analysis and the analysis of effect size.    From the trend

analysis, it is seen that perceived social loafing is in its closest connection with

relationship conflict, contribution conflict, and negative emotions, because their trend

patterns in the course of group development are identical (i.e., an upside-down V shape

with the tip of its right-side handle lower than the tip of its left-side handle).    The shape

of the trend for logistic conflict (i.e., an upside-down V shape with the tip of its right-side

handle was slightly higher than the tip of its left-side handle) is more or less similar to

that of perceived social loafing, and therefore logistic conflict should also be considered

as closely related to perceived social loafing in the course of group development.    The

shape of the trend for task conflict (i.e., a slanted, flat, *N* shape), however, is least

identical to that of perceived social loafing, and it should be considered as least

associated with perceived social loafing.    Similar conclusions can be reached by

investigating the total effects of those independent variables on perceived social loafing

(see Figure 12).    In the pathway analysis, it is seen that contribution conflict has both

direct and indirect effects on perceived social loafing, thus its total effect should be the

largest [total: .59; direct: .47; indirect: .12 (= .50 × .65 × .38)].    Negative emotions exert

only direct effect on perceived social loafing (total: .38; direct: .38; indirect: none).

Relationship conflict exerts its indirect effect on perceived social loafing through the

mediation of negative emotion [total: .25; direct: none; indirect: .25 (= .65 × .38)].

Logistic conflict, on the other hand, is connected with perceived social loafing in three

indirect ways: (1) through contribution conflict, (2) through relationship conflict to

negative emotions, and (3) through contribution conflict to relationship conflict to

negative emotions.   Considering the fact that all the standardized pathway coefficients

for these three indirect effects are positive, the total effect of logistic conflict on

perceived social loafing should also be positive and sizable when summing up all these

three indirect effects [total: .37; direct: none; indirect: .37 (= .46 × .47 +.40 × .65 × .38

+.46 × .50 × .65 × .38)].   However, task conflict should have the least associated impact

upon perceived social loafing, as its overall effect on perceived social loafing would not

only be attenuated by its decimal direct effect on logistic conflict, but also diluted further

by its direct negative effect on perceived social loafing when summing all these effects

up [total: .07; direct: -.10; indirect: .17 (= .46 × .46 × .47 + .46 × .40 × .65 × .38 + .46

× .46 × .50 × .65 × .38)].   Therefore, the order of the total standardized effect size for

each of the above mentioned independent variables on the dependent variable – perceived

social loafing – is listed as follows: contribution conflict, negative emotions, logistic

conflict, relationship conflict, and task conflict.   As can be seen, both trend analysis and

effect size analysis have revealed that perceived social loafing is more associated with

contribution conflict, negative emotions, logistic conflict, and relationship conflict than it is with task conflict.

The second piece of evidence that sees the connection between the two perspectives (i.e., developmental vs. instrumental) comes from the fact that both *post hoc* multiple comparison analysis and pathway analysis have placed task conflict in the dominant position over the other forces that reveal group dynamics.   Admittedly, task conflict does not have strong observable association with perceived social loafing, as their bivariate correlation is of small size and not significant, the total effect size of task conflict on perceived social loafing is almost negligible, and its trend pattern is different from that of perceived social loafing.   However, this by no means indicates that task conflict is of no importance to our understanding of group dynamics at all.   On the contrary, task conflict plays a very important role in keeping the group dynamics alive and moving the group forward in the process of achieving the goal(s).   *Post hoc* multiple comparison analysis has revealed that throughout the history of group development, the level of task conflict was always maintained on a moderate level, and its magnitude was relatively higher than that of the other conflict types in all the stages, except Stage 2 (i.e., *Counterdependency and Fight*), where the level of task conflict was observed to be lower than that of relationship and contribution conflict but no significant differences were found.   In other words, task conflict is a dominant theme in the process of group development most of the time, and it guides the pace and orientation in group's developmental process.   Furthermore, since its level is averagely higher than that of the

other conflict types, task conflict can be construed as the force that fuels the development

of other conflict types as well as negative emotions.   This inevitably influences the rise

and fall of the perception of social loafing in the process of group development.   Similar

conclusion can also be reached from the findings in the pathway analysis.   In the model

constructed through pathway analysis, task conflict is the exogenous variable to a system

with a web of associations that potentially explains or predicts the perception of social

loafing in the group.   In addition, the model insinuates that task conflict begets all the

other types of conflict, some of which further lead to the perception of social loafing

directly or through the mediation of negative emotions.   In other words, task conflict is

the source of the dynamics during the time of group interaction, giving rise to logistic

conflict, contribution conflict, relationship conflict, negative emotions, and perceived

social loafing successively in a row.   As can be seen, both *post hoc* multiple comparison

analysis and pathway analysis point to task conflict as the force that provides the

momentum to group development and brings about the emergence of other types of

conflict in the group.

Not only do the analyses from the two perspectives tend to reach similar

conclusions, but those two perspectives also complement each other with the findings

that cannot be addressed in the analysis solely from one perspective.   For example, the

instrumental perspective cannot give an accurate picture of the timing for the rise and fall

for perceived social loafing, different types of conflict, or emotions, let alone their

relative magnitude at each stage of group development.   However, the developmental

perspective makes up for this inadequacy.    Take conflict as an example.    With the

analysis on the rank order of each conflict type at each stage of group development, it is

revealed that contribution conflict is the dominant theme second to task conflict in the

history of group development, because the magnitude of contribution conflict was ranked

the second in Stage 1, Stage 2, and Stage 4 based upon the observed means (see Table 35

or Figure 9 in Chapter Four).    Furthermore, it also reveals that logistic conflict is least

concerned in Stage 1 and Stage 2, compared with the other types of conflict, while

relationship conflict is least concerned in Stage 3 and Stage 4, compared with the other

types of conflict.    Trend analysis, on the other hand, has revealed that the critical

moment to see the outbreak of non-task related conflict (i.e., relationship conflict, logistic

conflict, and contribution conflict) is Stage 2, while the level of task conflict remains

relatively stable across the four stages of group development.    Therefore, regarding an

understanding of the generic trend pattern and the timing for the specific variable of

interest in the lifecycle of a group, the developmental perspective does a better job than

the instrumental perspective.

The instrumental perspective, however, does a better job in explicating the

interrelationship between conflict, negative emotions, and the perception of social loafing

than does the developmental perspective.    Moreover, analysis from the instrumental

perspective also tends to suggest a web of possible triggering links among a set of

variables that the trend analysis or the multiple comparison analysis from the

developmental perspective is normally unable to discover.    In the current study, the

pathway analysis has revealed that the perception of social loafing is directly predicted by

contribution conflict and negative emotions in the group.   It also has shown that logistic

conflict is of key importance to group's conflict management and its handling of social

loafing: Logistic conflict is directly the first outcome that task conflict would degenerate

into, and it is also the direct antecedent that brings about contribution conflict and

relationship conflict.   Neglecting or ignoring logistic issues in the group would be

highly likely to engender relational issues and the sense of unfairness in group's reward

distribution (see also Greer et al., 2008), which would further instigate the perception of

social loafing in the group.   Another interesting finding in the pathway analysis is the

direct effect of task conflict on perceived social loafing: Controlling for the influences of

the other conflict types, task conflict is capable of lowering the level of perceived social

loafing in the group.   This finding corresponds to the argument made by conflict

scholars that a moderate level of task conflict is beneficial to the increasing of group

performance (e.g., Behfar et al., 2011; Jehn, 1994, 1995, 1997; Jehn & Bendersky, 2003;

Jehn & Chatman, 2000; Jehm & Mannix, 2001; Greer & Jehn, 2007; Simons & Peterson,

2000).   However, this restraining effect of task conflict on perceived social loafing

seems to be in contradiction to the preceding finding that shows task conflict has positive

indirect effect upon perceived social loafing (meaning that task conflict will indirectly

lead to the perception of social loafing in the group through the mediation of other

conflict types and negative emotions.   Maybe there is some part inherent in task conflict

that has negative implications about one's ability or worth, which might trigger

relationship conflict and have detrimental effects on group performance (Jehn, 1995).

The other part in task conflict involves increased cognitive understanding of the issue

being discussed, leading to improved quality of decision making (Baron, 1991; Fiol, 1994;

Janssen, Van de Vliert, & Veenstra, 1999; Putnam, 1994; Schweiger, Sandberg, & Ragin,

1986; Schweiger, Sandberg, & Rechner, 1989), job satisfaction, and willingness to stay in

the group (Amason, 1996; Hoffman & Maier, 1961; Korsgaard, Schweiger, & Sapienza,

1995).   In the pathway analysis, when the covariance between task conflict and other

types of conflict was partialled out, the beneficial effect (i.e., the direct suppression effect)

of task conflict on perceived social loafing then emerged.   This explains away why there

seems to be two contradictory effects of task conflict on perceived social loafing.   In

fact, it is the cognitive processing side of task conflict that restrains the perception of

social loafing in the group.   As is evident, in terms of explaining why or predicting how

the perception of social loafing is resulted, the instrumental perspective guides better

research design and produces more relevant results than does the developmental

perspective.

In summary, this section integrates the findings regarding the relationship

between perceived social loafing, conflict, and negative emotions from both the

instrumental perspective and the developmental perspective.   Both of the perspectives

reveal stronger associations of perceived social loafing with negative emotions and

non-task related conflict than with task conflict.   It is also stressed by both perspectives

that task conflict plays an important role in providing the overall dynamics in the process

of group development.   The two perspectives also complement each other in that the developmental perspective provides more accurate information about the trend, the magnitude, and the timing of perceived social loafing, each type of conflict, and emotions (negative vs. positive) across the four stages of group development, whereas the instrumental perspective does a better job in revealing the interrelationship between each of the variables stated above, and also in explaining why and possibly predicting how social loafing is resulted in the group.

**Limitations and Future Research**

The present study has four potential problems.   First, using college students as research subjects may not be appropriate.   College students may not be representative of the population in general.   Students and non-students differ in a plethora of dimensions, such as habits, life experiences, interpersonal skills, and/or personality traits – to name but a few (Sears, 1986).   Among those differences, age and educational level are the two most prominent characteristics that distinguish college students from the rest in the population: Student samples usually come from a very narrow age range and from the upper levels of educational background.   In the current study, 89.0% of the participants (164 in total) were in the age range between 19 and 23 years old.   Participants were either junior or senior undergraduates.   And they contributed data by filling out an online questionnaire posted on the Internet, which excluded those who were not computer –savvy and accustomed to using the Internet.   Moreover, students tend to comply with authority and cooperate with researchers, who are often instructors in their academic

environment, which may skew responses and, consequently, findings (James & Sonner,

2001; Peterson, 2001; Sears, 1986).   Because they belong to a very narrow age range,

have relatively higher educational level, and tend to be influenced by the researcher when

reporting the data, students are inclined to respond to research questions differently than

non-students.   Thus, research findings obtained from student samples may hinder their

generalizability to the rest of the population.   This actually is the issue of external

validity, which is defined by Cook and Campbell (1979) as the extent to which we can be

sure to infer that the causal relationship obtained in one research setting also applies to

other settings, where times, locations, persons, and/or sampling procedures are different.

For the current research, cautions should be taken when extrapolating the findings in this

study to the other settings that also involve small group interaction, such as committees in

the company, therapy groups in hospital, and management teams in business.   Although

the concern over external validity cannot be totally removed, measures were taken to

minimize it by designing the group tasks for the current study in a way that mimicked the

work of project teams in a real-world environment.   Tasks for the student teams and the

real-world project teams both involve cognitive processing in decision making and

problem solving, and they also require high levels of interdependence in the process of

teamwork.   More important is the fact that the teams in both situations went through a

certain period of time (e.g., varying from several weeks to several months) to work on

their respective group tasks, and disbanded after they accomplished their group goals.

Of course, replication is highly encouraged to verify the generalizability of the current

research findings to other settings.

Second, the current study may suffer from the issue of common method variance.

According to Podsakoff, MacKenzie, Lee, and Podsakoff (2003), common method

variance is the spurious "variance that is attributable to the measurement method rather

than to the constructs the measures represent" (p. 879).    Studies affected by common

method variance suffer from false correlations and run the risk of reporting incorrect

research results.    In the current study, all measures were collected from the same source

(student team members) using the same method (self-report in an online survey).    Thus

associations found between those variables of interest may be inflated by the common

method variance (Martínez-Moreno et al., 2012).    Future research on the similar topic

should collect the data by diversifying the methods of data collection.    For example,

emotional displays can be documented by using behavioral indices from the perspective

of a third party objective observer (cf. Bales, 1950, 1953; Bion, 1961), while it is still fine

to ask participants' personality types by relying upon pencil-and-pen self-reports.    In

addition, observational data can also be used with the group as the unit of analysis, in

stead of the self-report data with the individuals in the group as the unit of analysis.    In

case individual data be the only option, group data could still be obtained by summing up

or averaging out all the individual scores for the variables of interest in the group,

assuming those data points were collected roughly at the same time and intraclass

correlation for each variable is high (Kenny et al., 2002).    In either case (i.e., group data

through direct observation vs. group data through aggregation of individual scores), the

common method variance issue could be reduced, if not totally eliminated

(Martínez-Moreno et al., 2012).   Furthermore, future search should also employ more

advanced statistical procedures to control for the influences of the common method

variance on the results in the research (cf. Meade, Watson, & Kroustalis, 2007; Podsakoff

et al., 2003).

 Third, self-report as a way of collecting the data also gave rise to another problem

in the current study – the issue of social desirability.   According to Crowne and

Marlowe (1964), social desirability "refers to the need for social approval and acceptance

and the belief that it can be attained by means of culturally acceptable and appropriate

behaviors" (p. 109).   Because it is the general tendency on the part of individuals to

present themselves in a favorable light, regardless of their true feelings about an issue or

topic, social desirability is problematic: It not only biases the answers of respondents (i.e.,

to change the mean levels of the response) but also masks the true relationships between

two or more variables (Ganster, Hennessey & Luthans, 1983).   In the current study, it is

legitimate to believe that social desirability may somehow bias the findings, because the

data obtained for current research is based on participants' perceptions of their most

recent small group interaction.   Participants tended to report relatively lower degrees of

conflict, negative emotions, and perceived social loafing than what they had actually

experienced or felt in the real group situation, just to fake that their group interaction was

healthy and without problems (Griffith, Mannix, & Neale, 2003).   The overall low to

moderately low levels of conflict, negative emotions, and perceived social loafing plus

the moderately high level of positive emotions reported in the current study also rendered

support to the notion that social desirability lurked behind those results and findings.

Future research should include measures that assess the degree of social desirability in

the reported data (e.g., Crowne and Marlowe, 1960; Furnham, 1986; Ray, 1984), and

remove the influence of it to get an accurate picture of the results or findings that reflect

the actual interaction in the group setting.

Last, the path analytic model depicting the interrelationship between the four

types of conflict, negative emotions, and perceived social loafing should by no means be

interpreted in the notion of absolute causality.   That is, although cause and effect is

normally insinuated in the pathway analysis, the relationships as manifested in the current

proposed model only provide a plausible explanation of how those variables are

interconnected throughout the history of group development.   Various other directions

for the "causal links" may exist, especially when the dynamic process of group

development is considered.   For example, it is plausible that early process conflict may

cause new task conflict later in the group development (Greer et al., 2008).   Firm

conclusions regarding causation will not be reached until after strict experiments (e.g.,

random sampling in laboratories) are conducted and other plausible explanations

eliminated.   Therefore, future research is needed to confirm or disconfirm the current

research findings.

**Conclusion**

This study has focused on finding out the pattern of fluctuation for each of the following variables in the course of group development: perceived social loafing, intra-group conflicts (i.e., task conflict, relationship conflict, logistic conflict, contribution conflict), and emotions (i.e., positive vs. negative emotions).    Meanwhile, the question of how the perception of social loafing is resulted has also received answers and explanations from a path analytic model proposed to depict the various links between group conflicts, negative emotions, and perceived social loafing.    Findings are summarized in the following 11 points.    (1) The perception of social loafing evolved most closely with contribution conflict, relationship conflict, and negative emotions in the lifecycle of groups, in which the peak of development occurs at Stage 2 (i.e., *Counterdependency and Fight*) and the dip at Stage 4 (i.e., *Work*).    (2) Logistic conflict reaches its peak of development also at Stage 2, but its lowest level may be either at Stage 1 (i.e., *Dependency and Inclusion*) or Stage 4.    (3) Task conflict develops in a relatively stable manner, with no significant differences being found between stages.    It also is a very important factor that fuels the group momentum and keeps the group moving forward in the process of goal attainment.    (4) Positive emotions drop to the lowest point at Stage 2 and rise to the highest point at Stage 4.    (5) Throughout the history of group development, both task conflict and contribution conflict are predominantly concerned by group members.    (6) Logistic conflict is least concerned at the beginning two stages, while relationship conflict is least concerned at the last two

stages of group development.   (7) If the cognitive processing side of task conflict is

concentrated upon, it can directly minimize group members' perception of social loafing

in the group.   (8) If one's ability or worth is negatively implied in task conflict, it can

quick degenerate into relationship conflict and contribution conflict through the

mediation logistic conflict.   (9) Relationship conflict results in perceived social loafing

through the mediation of negative emotions.   (10) Contribution conflict results in

negative emotions through the mediation of relationship conflict.   (11) Logistic conflict

influences the perception of social loafing in two ways.   It may result in perceived social

loafing either through the mediation of contribution conflict, or through the mediation of

relationship conflict and negative emotions successively.   (12) Both negative emotions

and contribution conflict have direct effect on perceived social loafing, in that the higher

the negative emotions/contribution conflict, the higher the level of perceived social

loafing in the group.

What this study has contributed to academic insights is twofold.   First, it has

shown that task conflict is actually a double-edged sword in group interaction.   On the

one hand, task conflict facilitates group members' proper understanding of the task

content and group goals, which may further stimulate group's creativity and improve

group's productivity (Amason & Schweiger, 1997; Jehn, 1995; Simons & Peterson, 2000;

Van de Vliert & De Dreu, 1994).   On the other hand, within task conflict lie the seeds of

all the other types of conflict, which may bring negative impacts upon group processes.

It seems quite contradictory that task conflict can both promote and undermine group

performance.   Simons and Peterson (2000) resolved this contradiction by pointing out that task conflict finally degenerates into relationship conflict because of group members' misattribution of task conflict as relationship conflict.   This study has not only reconfirmed the Simons and Peterson's misattribution explanation, but also addressed clearly the content involved in the misattribution: It is the negative implications about one's ability, value, or worth imbedded in logistic conflict that start relationship conflict; it is also the perception of injustice in reward distribution resulted from logistic conflict that arouses relationship conflict.   The empirical results found here can shed light on group practitioners' consultation about conflict management in times of crisis.

Second, this study has approached the problematic interactions in group from both the instrumental perspective and the developmental perspective.   Findings derived from those two perspectives have built up a holistic picture of how perceived social loafing, different types of conflict, and negative vs. positive emotions are interrelated and fluctuate with each other over time in the course of group development.   Such a holistic picture is especially necessary for future researchers to make further integration of these two perspectives into one overarching, unified model that can simultaneously explain or predict perceived social loafing from conflict, emotion, and stages of group development. It will also provide group practitioners with the specific knowledge of timely intervention with proper strategies to reduce conflict, regulate emotions, restrain social loafing, and finally increase group cohesiveness, morale, and performance.

With respect to new research orientations, future research that investigates into the perception of social loafing should not only resolve the four limitations mentioned above (i.e., the external validity issue with college students as research subjects, the issue with common method variance, the issue with self-report, and the issue with causal interpretation of a path analytic model derived from concurrent data), but also expand our understanding of the sources of perceived social loafing.   Mulvey and Klein have (1998) identified two sources leading to the perception of social loafing: the number of loafers in the group and the extent of loafing by group members.   Høigaard et al. (2006) have identified three sources lessening the perception of social loafing: member's task-oriented attraction to the group, norms that encourage productivity, and norms that encourage social support.   In the present study, I have identified two direct contributing sources – contribution conflict and negative emotions – and one direct suppressing source – discussion/debate about the content of the task and group goal.   Future research needs to specify the relative importance or weight that each of those sources exerts in influencing the perception of social loafing.   Future research also needs to develop an overarching model that reveals those sources' mutual relationships with one another in addition to their direct and indirect effects on the perception of social loafing, so that explanation of the perception of social loafing will be well grounded.

For application purposes, the following suggestions can be implied from the findings in the current dissertation regarding lowering the perception of social loafing in the group.   First, the rules and norms guiding conflict management and emotional

displays should be established and consensually accepted at the beginning of group

formation.    Those rules and norms can also be revisited or streamlined later if need be.

Second, group members' productivity, quality of output, and punctuality in job

completion should be constantly monitored.    Third, timely feedback regarding the whole

group and individual's progress toward the group's goal achievement should be shared

with each member in the group.    Fourth, group members' emotional and relational needs

should be well attended to so that positive emotions are well maintained, while critical

thinking should be advocated and upheld by all the group members.    Fifth, special

attention should be given to resolving logistic conflict and contribution conflict.    That is,

individual task-related responsibility should be clearly, appropriately, and fairly

delegated so that every member understands what is expected of him or her, recognizes

that the assigned portion of the work matches the corresponding job-related ability, and

believes that personal gains in the group are attached to the personal contribution to the

group.    Finally, debates or discussions about the task should be confined to the

addressing of the confusions about or disagreements over the content of the job.    Any

insinuation or attack at personal values, abilities, and worth should be discouraged and

zero-tolerated.    With all the above six pieces of advice, the perception of social loafing

can and should be lowered.

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**CONSENT STATEMENT**
**Perceptions of Social Loafing, Conflict, and Emotion in the**
**Process of Group Development**
**IRB # 1201P08784**

You are invited to be in a study that investigates how group members experience social loafing, group conflict, and emotion in the different phases of group development, and how group conflict and emotion explain the perception of social loafing in the course of group development.   You are selected as a possible participant in this study because you are taking Introduction to Small Group Communication (Comm3411) in the Department of Communication Studies.   We ask that you read this form and ask any questions you may have before agreeing to complete the survey.

This study is being conducted by Min Zhu as part of the doctoral dissertation in the Department of Communication Studies at the University of Minnesota-Twin Cities. His advisor is Dr. Dean E. Hewes, professor in the Department of Communication Studies at the University of Minnesota – Twin Cities.

**Background Information:**
An explanation of the concepts that the current research investigates is as follows. _Social loafing_ is the phenomenon whereby some of the group members are perceived to slack off and rely too much upon others to do their work in the group.   _Conflict_ occurs when group members perceive the incompatibility of goals and interference from one another in achieving those goals.   _Emotion_ is what you feel at a particular moment in response to an event that is important you.   _Group development_ is the concept that describes the different phases that a group undergoes from the start to the end of its life.

The purpose of this study is threefold.   First, the study examines whether the perception of social loafing differs on the different stages of group development. Second, it seeks to explain the perception of social loafing by looking at group members' experience of conflict and emotion during their group interaction.   Third, it explores the pattern of association between social loafing, conflict and emotion on each of the stages of group development.

**Procedures:**
If you agree to participate, you are asked to sign this form and leave your email address at the end of the third page.   You will be contacted through email sometime later this semester, requesting you to fill out an online survey that examines your recent group experience in the past week or so.   The survey includes 109 questions asking: 1) your evaluation of your own personality; 2) your general impression about your most recent group experience; 3) your evaluation of the conflict you have just experienced in your group; 4) the emotions you have just gone through; 5) your

perception of social loafing in your last group experience.    This questionnaire will take 15-20 minutes to fill out.

You are encouraged to complete the online survey within one week, after you have been contacted by the researcher through email.    Should you fail to do the survey within the designated time, a follow-up email will be sent to you as a reminder.    In case you changed your mind and did not wish to continue the survey, you can just ignore the reminder email, and will not be contacted further.

**Risks and Benefits of Being in the Study:**
The risks of participating in this study are minimal.    The survey is completely confidential.    The researcher will report only your name to your instructor so that extra credit will be assigned to you.    Other than that, all the rest of the information you fill out in the online questionnaire is kept confidential, and will not be leaked to a third party, including your course instructor and any of your classmates.    Once your responses are entered into an electronic file, your name will be replaced by a numerical identification number and subsequently permanently removed from the data sheet.    Your original answers will also be permanently deleted from the online data base once the data collection process is over.

In addition, even though negative emotions might be induced by some of the questions asking the participants' recent group experience, the stress or psychological tension in the process of reflection is controllable and not likely to have permanent negative impact on the participants' health or well-being.

There are no immediate or expected benefits to you for participating in the survey, except the compensation that is explained below.

**Compensation:**
You may receive extra credit if you complete – or partially complete – this survey. The decision whether or not you will receive extra credit will be made by your Small Group Communication instructor.

**Confidentiality:**
The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify an individual.    Each questionnaire sheet will be randomly assigned an ID (i.e. 000, 001, 002, etc.) that will represent the participant for the purpose of inputting the data into the computer.    Research records will be stored securely and only the researcher will have access to them.    The only places you will be identified are on this consent form and on the front page of the online survey.    This consent form is used to have your permission so that we can have access to the information you enter into the online survey.    The front page of the online survey is used to report your name to your instructor so that you will be assigned the extra credits for your participation in the

survey.    Once responses are entered into the electronic file, your name will be permanently obliterated and replaced with the above-mentioned randomly ID.    There will be no way to link you to your questionnaire.

**Voluntary Nature of the Study:**
Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota-Twin Cities. If you decide to participate, you are free to withdraw at any time without affecting those relationships.

**Contacts and Questions:**
The researcher conducting this study is Min Zhu.    You may ask any questions you have now.    If you have questions later or wish to get the feedback regarding the results of this research, you may contact Min Zhu via email at zhux0146@umn.edu, or his advisor, Dean E. Hewes, at dhewes@umn.edu.

If you have any questions or concerns regarding the study and would like to talk to someone other than the researcher, contact Research Subjects' Advocate line, D528 Mayo, 420 Delaware Street S.E., Minneapolis, Minnesota 55455; telephone 612-625-1650.

You will be given this copy to keep for your records.    Please sign and date in the bottom of this page.

Signature of the Investigator:    *Min Zhu*        Date: ___Jan 12th, 2012_____

**Please cut the following slip and submit it to the researcher after you sign and date this consent form.**

✂ ----------------------------------------------------------------------------------------------------✂

Statement of consent:

I have read the above information.    I have asked questions and received answers.    I consent to participate in the study.

**Please print your name (Last Name, First Name)**
_____

**Please also print your email**
**address**_____

Your signature: _____        Date:_____

**APPENDIX B:   QUESTIONNAIRE**

Thank you for choosing to participate in this study.    Before you come to the survey section, please provide the demographic information regarding your gender, age, race/ethnicity, and the section number of your small group communication class.

What is your name? (Last Name, First Name)

_____

What is your sex?

_____Male          ____Female         _____Other

How old are you?

_____ 18 years old or less

_____19 – 23 years old (include 23)

_____24 – 28 years old (include 28)

_____29 – 33 years old (include 33)

_____34 – 38 years old (include 38)

_____39 – 43 years old (include 43)

_____Over 44 years old

What is your race/ethnicity?

_____White                          _____Black or African-American

_____American Indian or Alaskan Native

_____Asian                     _____Native Hawaiian or other Pacific Islander

_____From multiple races

_____Hispanics

_____Some other races       Please specify _____

What is the section number of your Small Group Communication class?

_____001          _____002          _____003          _____004          _____005          _____006

_____007          _____008

What is the date for today?

MM/DD/YYYY: _____/_____/_____

Now please read the following questions carefully and respond with the first answer that comes to your mind.    Remember, there are no right or wrong answers; we are only interested in your reflection of the group experience you just have had in the past week or so.

The following statements concern **how you look at yourself**.   We are interested in how you make assessment of yourself.   The characteristics below may or may not apply to you.   For example, do you agree that you are someone who *is relaxed and handles stress well*?   Please select a number next to each statement to indicate the extent to which **you agree or disagree with that statement.**   Circle the number in the right column, using the following rating scale:

SD = strongly disagree          AD = a little disagree      N= neither agree nor disagree         AA= a little agree                SA = strongly agree

|    |                                                          | SD | AD | N | AA | SA |
|----|----------------------------------------------------------|----|----|---|----|----|
| 1. | I am someone who is depressed and blue.                  | 1  | 2  | 3 | 4  | 5  |
| 2. | I am someone who is relaxed and handles stress well.     | 1  | 2  | 3 | 4  | 5  |
| 3. | I am someone who can be tense.                           | 1  | 2  | 3 | 4  | 5  |
| 4. | I am someone who worries a lot.                          | 1  | 2  | 3 | 4  | 5  |
| 5. | I am someone who is emotionally stable, not easily upset.| 1  | 2  | 3 | 4  | 5  |
| 6. | I am someone who can be moody.                           | 1  | 2  | 3 | 4  | 5  |
| 7. | I am someone who remains calm in tense situations.       | 1  | 2  | 3 | 4  | 5  |
| 8. | I am someone who gets nervous easily.                    | 1  | 2  | 3 | 4  | 5  |

This second set of statements concerns **your perception of the typical interaction patterns in your most recent small group activities in class**.   Reflect upon your group experience in the past week or so. Respond to each statement by indicating the extent to which each of the following statements is true. Circle the number in the right column, using the following rating scale:

  NT = not true of this group          RT = rarely true of this group      ST= sometimes true of this group
RT = frequently true of this group         AT = always true of this group

|     |                                                                                                                            | NT | RT | ST | FT | AT |
|-----|----------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----|
| 9.  | The group gets, gives, and uses feedback about its effectiveness and productivity.                                         | 1  | 2  | 3  | 4  | 5  |
| 10. | We have formed bond with each other and accepted each other as members of the team.                                        | 1  | 2  | 3  | 4  | 5  |
| 11. | The group is able to form subgroups, or subcommittees, to work on specific tasks.                                          | 1  | 2  | 3  | 4  | 5  |
| 12. | We generate lots of ideals, but we do not use many because we fail to listen to them and reject them without fully understanding them. | 1  | 2  | 3  | 4  | 5  |
| 13. | Members tend to go along with whatever the leader or the course instructor suggests.                                       | 1  | 2  | 3  | 4  | 5  |
| 14. | We get a lot of work done.                                                                                                 | 1  | 2  | 3  | 4  | 5  |
| 15. | Our team feels that we are all in it together and shares responsibilities for the team's success or failure.               | 1  | 2  | 3  | 4  | 5  |
| 16. | Conflicts about values, disagreements about goals and tasks, or dissatisfaction with roles, emerge.                        | 1  | 2  | 3  | 4  | 5  |

| | | NT | RT | ST | FT | AT |
|---|---|---|---|---|---|---|
| 17. | Now is the time we truly work together and try to get things done properly and timely. | 1 | 2 | 3 | 4 | 5 |
| 18. | It seems as if little is being accomplished with the project's goals. | 1 | 2 | 3 | 4 | 5 |
| 19. | There is a close attachment to the team. | 1 | 2 | 3 | 4 | 5 |
| 20. | We are able to work through group problems. | 1 | 2 | 3 | 4 | 5 |
| 21. | Although we are not fully sure of the project's goals and issues, we are excited and proud to be on the team. | 1 | 2 | 3 | 4 | 5 |
| 22. | Team members are afraid or do not like to ask others for help. | 1 | 2 | 3 | 4 | 5 |
| 23. | People seem to have very different views about how things should be done in this group. | 1 | 2 | 3 | 4 | 5 |
| 24. | The goals we have established seem unrealistic. | 1 | 2 | 3 | 4 | 5 |
| 25. | The tasks are very different from what we imagined and seem very difficult to accomplish. | 1 | 2 | 3 | 4 | 5 |
| 26. | The group is spending its time planning how it will get its work done. | 1 | 2 | 3 | 4 | 5 |
| 27. | We fully accept each other's strengths and weakness. | 1 | 2 | 3 | 4 | 5 |
| 28. | Members challenge the group leader or the course instructor's ideas. | 1 | 2 | 3 | 4 | 5 |
| 29. | We are trying to define the goal and what tasks need to be accomplished. | 1 | 2 | 3 | 4 | 5 |
| 30. | There is quite a bit of tension in the group at this time. | 1 | 2 | 3 | 4 | 5 |
| 31. | Many of the team members have their own ideas about the process and personal agendas are rampant. | 1 | 2 | 3 | 4 | 5 |
| 32. | The group acts on its decisions. | 1 | 2 | 3 | 4 | 5 |
| 33. | We can rely on each other. We work as a team. | 1 | 2 | 3 | 4 | 5 |
| 34. | We often share personal problems with each other. | 1 | 2 | 3 | 4 | 5 |
| 35. | We take our team's goals and objectives literally, and assume a shared understanding. | 1 | 2 | 3 | 4 | 5 |
| 36. | Members communicate in tentative and very polite way, with minimal overt conflict. | 1 | 2 | 3 | 4 | 5 |
| 37. | There is very little conflict expressed in the group. | 1 | 2 | 3 | 4 | 5 |
| 38. | There is a lot of resisting of the tasks on hand and quality improvement approaches. | 1 | 2 | 3 | 4 | 5 |
| 39. | This group encourages high performance and quality work. | 1 | 2 | 3 | 4 | 5 |
| 40. | We have thorough procedures for agreeing on our objectives and planning the way we will perform our tasks. | 1 | 2 | 3 | 4 | 5 |
| 41. | We haven't discussed our goals very much. | 1 | 2 | 3 | 4 | 5 |

In this third section, we want to ask **the extent to which you have experienced the following events in your recent in-class group interaction**.   Respond to each of the following questions by indicating the degree of the conflict you have just gone through.   Circle the number in the right column, using the following rating scale:

NA = None/Not at all        VL = very little        SS = some or somewhat

QL= quite a lot            GD = A great deal/Extremely

| | | NA | VL | SS | QL | GD |
|---|---|---|---|---|---|---|
| 42. | How often do your team members argue about different viewpoints regarding your group task? | 1 | 2 | 3 | 4 | 5 |
| 43. | How much interpersonal friction is there among members of your team? | 1 | 2 | 3 | 4 | 5 |
| 44. | How much tension is there in your team caused by member(s) arriving late to team meetings? | 1 | 2 | 3 | 4 | 5 |
| 45. | How much emotional conflict is there among members of your team? | 1 | 2 | 3 | 4 | 5 |
| 46. | How much tension is there among members of your team? | 1 | 2 | 3 | 4 | 5 |
| 47. | To what extent is there tension in your team caused by member(s) not completing their assignment(s) on time? | 1 | 2 | 3 | 4 | 5 |
| 48. | How frequently do members of your team engage in debate about different opinions or ideas? | 1 | 2 | 3 | 4 | 5 |
| 49. | How many differences about the content of decisions did the group have to work through? | 1 | 2 | 3 | 4 | 5 |
| 50. | How often do members of your team disagree about who should do what? | 1 | 2 | 3 | 4 | 5 |
| 51. | How frequently do your team members disagree about the optimal amount of time to spend in meetings? | 1 | 2 | 3 | 4 | 5 |
| 52. | How much are personality conflicts evident in your team? | 1 | 2 | 3 | 4 | 5 |
| 53. | How frequently do your team members disagree about the optimal amount of time to spend on different parts of teamwork? | 1 | 2 | 3 | 4 | 5 |
| 54. | How often is there tension in your team caused by member(s) not performing as well as expected? | 1 | 2 | 3 | 4 | 5 |

In this fourth section, we want to ask you **whether or not you have felt the specific emotion in your recent in-class group interaction**.   Respond to each statement by indicating the degree you have felt each of the emotions listed below.   Circle the number in the right column, using the following rating scale:

NA = none/not at all        VL = very little        SS = some or somewhat

QL= quite a lot            GD = A great deal/Extremely

**In your recent in-class group activities in the past week or so, how much following emotion or feeling have you experienced?**

| | | NA | VL | SS | QL | GD |
|---|---|---|---|---|---|---|
| 55. | Relaxed | 1 | 2 | 3 | 4 | 5 |
| 56. | Annoyed | 1 | 2 | 3 | 4 | 5 |
| 57. | Energetic | 1 | 2 | 3 | 4 | 5 |
| 58. | Hopeless | 1 | 2 | 3 | 4 | 5 |
| 59. | Resentful | 1 | 2 | 3 | 4 | 5 |
| 60. | Bitter | 1 | 2 | 3 | 4 | 5 |
| 61. | Worthless | 1 | 2 | 3 | 4 | 5 |
| 62. | Worried | 1 | 2 | 3 | 4 | 5 |
| 63. | Sad | 1 | 2 | 3 | 4 | 5 |
| 64. | Grouchy | 1 | 2 | 3 | 4 | 5 |
| 65. | Weary | 1 | 2 | 3 | 4 | 5 |
| 66. | Discouraged | 1 | 2 | 3 | 4 | 5 |
| 67. | On edge | 1 | 2 | 3 | 4 | 5 |
| 68. | Confused | 1 | 2 | 3 | 4 | 5 |
| 69. | Bushed | 1 | 2 | 3 | 4 | 5 |
| 70. | Tense | 1 | 2 | 3 | 4 | 5 |
| 71. | Active | 1 | 2 | 3 | 4 | 5 |
| 72. | Unable to concentrate | 1 | 2 | 3 | 4 | 5 |
| 73. | Miserable | 1 | 2 | 3 | 4 | 5 |
| 74. | Fatigued | 1 | 2 | 3 | 4 | 5 |
| 75. | Angry | 1 | 2 | 3 | 4 | 5 |
| 76. | Helpless | 1 | 2 | 3 | 4 | 5 |
| 77. | Lively | 1 | 2 | 3 | 4 | 5 |
| 78. | Exhausted | 1 | 2 | 3 | 4 | 5 |
| 79. | Bewildered | 1 | 2 | 3 | 4 | 5 |
| 80. | Worn out | 1 | 2 | 3 | 4 | 5 |
| 81. | Unhappy | 1 | 2 | 3 | 4 | 5 |
| 82. | Forgetful | 1 | 2 | 3 | 4 | 5 |
| 83. | Uncertain about things | 1 | 2 | 3 | 4 | 5 |
| 84. | Peeved | 1 | 2 | 3 | 4 | 5 |
| 85. | Vigorous | 1 | 2 | 3 | 4 | 5 |
| 86. | Cheerful | 1 | 2 | 3 | 4 | 5 |
| 87. | Blue | 1 | 2 | 3 | 4 | 5 |
| 88. | Furious | 1 | 2 | 3 | 4 | 5 |
| 89. | Restless | 1 | 2 | 3 | 4 | 5 |
| 90. | Full of pep | 1 | 2 | 3 | 4 | 5 |
| 91. | Nervous | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 92. | Good natured | 1 | 2 | 3 | 4 | 5 |
| 93. | Considerate | 1 | 2 | 3 | 4 | 5 |
| 94. | Sympathetic | 1 | 2 | 3 | 4 | 5 |
| 95. | Helpful | 1 | 2 | 3 | 4 | 5 |
| 96. | Friendly | 1 | 2 | 3 | 4 | 5 |

In this last section, we want to know **how you would like to evaluate your peers' performance in your recent in-class group activity**.   Respond to each statement by indicating the extent to which **you agree or disagree with that statement.**   Circle the number in the right column, using the following rating scale:

SD = strongly disagree         AD = a little disagree     N= neither agree nor disagree         AA= a little agree                SA = strongly agree

| | | SD | AD | N | AA | SA |
|---|---|---|---|---|---|---|
| 97. | Members of my group are all trying as hard as they can. | 1 | 2 | 3 | 4 | 5 |
| 98. | Some members of my group are free-riders, who relied too much on others to do their share of work. | 1 | 2 | 3 | 4 | 5 |
| 99. | Some members of my group are contributing less than I anticipated. | 1 | 2 | 3 | 4 | 5 |
| 100. | Given the abilities, all my group members are doing the best they can. | 1 | 2 | 3 | 4 | 5 |
| 101. | Some members of my group defer responsibilities they should assume to other people. | 1 | 2 | 3 | 4 | 5 |
| 102. | Some members of my group put forth less effort than the rest when we work together on the task. | 1 | 2 | 3 | 4 | 5 |
| 103. | Some members of my group do not do their share of work. | 1 | 2 | 3 | 4 | 5 |
| 104. | Some members of my group spend less time on the group work if others are present to handle the job. | 1 | 2 | 3 | 4 | 5 |
| 105. | Some members of my group avoid helping others finish the group work as much as possible. | 1 | 2 | 3 | 4 | 5 |
| 106. | Some members of my group work with less effort and finish their portion of the group work with low quality. | 1 | 2 | 3 | 4 | 5 |
| 107. | Some members of my group are less likely to make substantive contribution to group work if other members are available to do this. | 1 | 2 | 3 | 4 | 5 |
| 108. | Some members of my group often miss, or arrive late at group meetings without prior notice to the whole group or the group leader. | 1 | 2 | 3 | 4 | 5 |

Once again, thank you so much for your participation.   Should you need resources about managing conflict in small group interaction, you are encouraged to consult your course instructor first.   The following two web links will also give you additional information about theories of conflict management

and theories of social loafing: 1) http://en.wikipedia.org/wiki/Conflict_management. 2)
http://en.wikibooks.org/wiki/Managing_Groups_and_Teams/Print_version.    Please also contact your
course instructor regarding whether you have been updated on your extra points for the course grade.
Note: if you are interested in receiving feedback on where you are in your group progress, please contact
the primary researcher via zhux0146@umn.edu.

# UNIVERSITY OF MINNESOTA

Twin Cities Campus        *Human Research Protection Program*        *D528 Mayo Memorial Building*
                          *Office of the Vice President for Research*   *420 Delaware Street S.E.*
                                                                        *MMC 820*
                                                                        *Minneapolis, MN 55455*

                                                                        *Office: 612-626-5654*
                                                                        *Fax: 612-626-9061*
                                                                        *E-mail: irb@umn.edu or the@umn.edu*
                                                                        *Website: http://research.umn.edu/subjects/*

01/26/2012

Min Zhu
Dept of Communication Stu
Room 225      FordH
224 Church St SE
Minneapolis, MN 55455

RE:     "Perceptions of social loafing, conflict, and emotion in the process of group
        development"
        IRB Code Number: 1201P08784

Dear Min Zhu:

The referenced study was reviewed by expedited review procedures and approved on January 24,
2012. If you have applied for a grant, this date is required for certification purposes as well as the
Assurance of Compliance number which is FWA00000312 (Fairview Health Systems Research
FWA00000325, Gillette Children's Specialty Healthcare FWA 00004003). Approval for the
study will expire one year from that date. A report form will be sent out two months before the
expiration date.

Institutional Review Board (IRB) approval of this study includes the consent form received
January 17, 2012.

The IRB would like to stress that subjects who go through the consent process are considered
enrolled participants and are counted toward the total number of subjects, even if they have no
further participation in the study. Please keep this in mind when calculating the number of
subjects you request. This study is currently approved for 200 subjects. If you desire an increase
in the number of approved subjects, you will need to make a formal request to the IRB.

The code number above is assigned to your research. That number and the title of your study
must be used in all communication with the IRB office.

As the Principal Investigator of this project, you are required by federal regulations to inform the
IRB of any proposed changes in your research that will affect human subjects. Changes should
not be initiated until written IRB approval is received. Unanticipated problems and adverse
events should be reported to the IRB as they occur. Research projects are subject to continuing
review and renewal. If you have any questions, call the IRB office at 612-626-5654.

On behalf of the IRB, I wish you success with your research.

Sincerely,

Christina Dobrovolny, CIP
Research Compliance Supervisor
CD/ks

CC: Dean Hewes