



SOCIAL LOAFING BEHAVIOUR IN COLLABORATIVE GROUP WORK AMONG
UNIVERSITY STUDENTS IN MALAYSIA: SELF-EFFICACY, GROUP COHESION
AND TASK INTERDEPENDENCE

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Social Loafing Behaviour on Collaborative Group Work among University Students in

Malaysia: Self-Efficacy, Group Cohesion and Task Interdependence

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SOCIAL LOAFING BEHAVIOUR

APPROVAL FORM

This research paper attached here to, entitled Social Loafing Behaviour on Collaborative Group Work Among University Students in Malaysia: Self-Efficacy, Group Cohesion and Task Interdependence prepared and submitted by Dheenosheeni A/P Maganthrin Kumar, Khoo Jing Wen and Kishuvan A/L Marimuthu in partial fulfilment of the requirements for the Bachelor of Social Science (Hons) Psychology is hereby accepted.



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Abstract

The propensity to put in less effort when working in a collaborative group is known as "social loafing". These would have detrimental effects, such as having an adverse effect on group productivity, lowering performance, and stress. Studies on social loafing predictors are relatively limited. Therefore, the objective of this quantitative and cross-sectional study is to examine the role of self-efficacy, group cohesion, and task interdependence in predicting social loafing behaviour among university students in Malaysia in collaborative group work. Data was gathered using the Qualtrics online survey platform. In this study, 350 university students (aged 18 to 41 years old; $M = 22.71$ years; $SD = 2.24$) were recruited using the purposive sampling method. It was determined whether there was any correlation between the predictors and social loafing behaviour using both Multiple Linear Regression (MLR) and Pearson's Product-Moment Correlation (PPMC). According to MLR findings, none of the three independent variables—self-efficacy, group cohesion, and task interdependence—individually predicted social loafing, but collectively they were significant predictors. However, in contrast to the PPMC findings, social loafing behaviour was negatively correlated with all three independent variables. In the context of Malaysia's higher institutions, the current study has addressed a knowledge and research gap on the factors that influence social loafing behaviour in collaborative groups among university students in Malaysia. Moreover, this study aims at providing a positive learning experience through collaborative groups and also contributes to raising awareness of the social loafing tendency among university students across higher education educators and institutional bodies.


Keywords: Social loafing, self-efficacy, group cohesion, task interdependence, Malaysia university students

DECLARATION

We declare that the material contained in this paper is the end result of our own work and that due acknowledgement has been given in the bibliography and references to ALL sources by they printed, electronic or personal.

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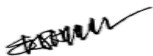
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List of Abbreviations

Abbreviations

1. CEM - Collective Effort Model
2. SLTQ - Social Loafing Tendency Questionnaire
3. GSES - General Self-Efficacy Scale
4. GCS - Group Cohesiveness Scale
5. TIS - Task Interdependence Scale
6. SIT - Social Identity Theory
7. SPSS - Statistical Package for the Social Sciences
8. UTAR - Universiti Tunku Abdul Rahman
9. SERC - Scientific and Ethical Review Committee
10. DOSM - Department of Statistics Malaysia
11. VIF - Variance Inflation Factor
12. MLR - Multiple Linear Regression
13. PPMC - Pearson Product-Moment Coefficient

Chapter I

Introduction

Background of Study

Over the past few decades, group-based activities have continued to draw attention in higher education and the workplace (Rajaguru et al., 2020). Several studies state that collaborative group work helps to develop and improve overall student performance, such as communication skills and interpersonal skills (Mutwarasibo, 2013; Rajaguru et al., 2020; Teng & Luo, 2014). The group assignment is an example of collaborative group work among university students. In universities, collaborative group work is defined as a graded assignment that requires students to work collaboratively across several class periods as well as involving time outside of the normal class meeting (Hall & Buzwell, 2012). Moreover, group assignments have been seen as practical opportunities to develop students' teamwork skills and interpersonal life skills (Kalfa & Taksa, 2013; Maiden & Perry, 2011). This is due to the fact that collaborative work requires abilities such as managing and adjusting time with the group members as well as reinforcing ideas of sharing, discussion, and feedback from group members, which lead them to solve problems in the assignment (Pombo et al., 2010). However, issues arise when some individuals fail to contribute their fair share while doing collaborative group work. This psychological phenomenon is known as "social loafing."

Social loafing refers to a psychological phenomenon that occurs within a group whereby certain group members reduce their perceptual, physical, or cognitive effort while working in a group compared to when working independently (Karau & Wilhau, 2020). Social loafing may lead to poor performance in a group, reduced productivity, and obstacles to achieving group success (Maiden & Perry, 2011; Ying et al., 2014). The loss of individual effort in teamwork situations can be explained by using the Collective Effort Model (CEM)

(Karau & Williams, 1993). According to CEM, the presence of social loafing depends on the individual's expectations regarding their ability and competence to accomplish the goal, as well as the value of the goal to the individual. Many researchers mentioned that self-efficacy had been used as a predictor of behavioural modification (Artino, 2012; Van Dinther et al., 2011). In general, self-efficacy refers to a belief or judgement of personal competence and capabilities for meeting task demand and performance across a wide variety of situations. Hence, self-efficacy can be used in determining an individual's performance outcome. For example, the perception of an individual views the difficulty of a task, and it will further influence their reactions to the task. Thus, the purpose of the current study is to examine self-efficacy as a predictor of social loafing behaviour of university students in Malaysia.

Moreover, Beal et al. (2003) indicated that group cohesion plays the most important role in group performance. Group cohesion, or cohesiveness, is defined as the measure of bonding between the group members. Higher cohesiveness indicates stronger group bonding (Ghosh et al., 2019). Previous studies also indicated that cohesion plays a vital role in group dynamics (Evans & Jarvis, 1980; Mudrack, 1989). This is because cohesion builds a stronger sense of commitment to goals among group members, which evokes an individual's motivation and effort while working in a group. Therefore, the present study aims to examine group cohesion as the other predictor of social loafing behaviour among university students in Malaysia.

Apart from that, Lee et al. (2015) mentioned that team cooperation and job performance are significantly influenced by task interdependence. The definition of task interdependence is the extent to which group members need to interact with other group members in order to complete their tasks (Liden et al., 2004). High levels of task interdependence encourage mutual helping, information sharing, communication, and other cooperative behaviours among the group members, which are important to completing the

group task and accomplishing the group goal (Wageman, 1995). Hence, our study is designed to determine task interdependence as the predictor of social loafing behaviour among university students in Malaysia.

Student feedback from a previous study showed that students who reported group work projects as negative experiences often faced the issue of free riding (Hall & Buzwell, 2012). Social loafing has brought negative consequences such as reduced productivity, influencing group performance and becoming an obstacle for the group trying to attain success. Hence, this phenomenon has strengthened the need to be reformed by conducting research among university students. However, there were limited studies that examined these three variables as predictors of social loafing behaviour. Thus, the main purpose of our study is to determine the self-efficacy, group cohesion, and task interdependence as predictors of social loafing behaviours in collaborative group work among university students in Malaysia.

Problem Statement

In a tertiary education setting or university, collaborative work is used by the majority of the subjects in order to train the students for their life after graduating, i.e., the work life (Hodges, 2002; Jääskelä et al., 2018). Ying et al. (2014) said that working collectively may lead to a decrease in motivation. This decrease in motivation leads to “social loafing,” in which people exhibit social loafing behaviour when they work in groups. Social loafing is said to have a greater impact in larger groups (Karau & Williams, 1993). Based on a study conducted by Piezon and Ferree (2008), the research regarding social loafing in an environment involving collaborative group work is rather vague. Certain antecedents, such as task interdependence and individual contribution, make it difficult to have control over collaborative work.

In other research conducted by Jackson and Williams (1985), although social loafing tends to impair simple task achievements, social loafing seems to enhance complex tasks. The researchers argued that improved performance and reduced stress may result from certain social loafing circumstances. Huguet et al. (1999) mentioned that individuals with low self-efficacy are also prone to social loafing when forced to work together in a group. This leads to individuals with high social loafing who have low motivation and make little to no effort when working in a group (Ying et al., 2014). In a study conducted by Høigaard et al. (2006), the researchers stated that there are insufficient past studies that suggest group cohesion and task cohesion as predictors of social loafing and more research is needed to duplicate these under different conditions. For example, personality variables, relationships between the circumstances of social comparison and social loafing, as well as environmental factors.

There were limited studies had found in examining the role of self-efficacy, group cohesion and task interdependence as predictors of social loafing behaviour. Hence, more research should be done to validate the predictors of social loafing behaviour in collaborative group work. To prevent university students' social loafing from sustaining and negatively impacting collaborative group work at the individual, group and organizational levels, it is critical to understand the behaviour predicts and gaps in knowledge of the study that must be prioritised for reform in order to provide better learning experience for our future leaders. Therefore, this study is conducted to fill the research and knowledge gaps in self-efficacy, group cohesion, and task interdependence as predictors of social loafing behaviour in collaborative group work among university students in Malaysia.

Research Objectives

1. To examine the role of self-efficacy, group cohesion and task interdependence in predicting social loafing behaviour among university students in Malaysia.

2. To determine the relationship between self-efficacy, group cohesion and social loafing behaviour among university students in Malaysia.

Significance of Study

Firstly, the study aims to investigate the research and knowledge gaps of self-efficacy, group cohesion, and task interdependence towards social loafing behaviour of university students in Malaysia during collaborative group work. The data collected to obtain deep insights into these predicting variables of social loafing behaviour will help to understand individuals' and others' productivity levels when working collaboratively in groups. The understanding of these behaviours will allow us to consider internal and external factors and provide ways of mitigating the social loafing tendency of university students in Malaysia. This is because a single social loafer's perceived action or inaction can influence the overall group dynamics and experiences (Liden et al., 2004).

Besides, this study can be used to create awareness to improve positive learning experiences in face-to-face and online learning environments. The challenges university students face in collaborative group work might be overlooked; these have been a cause of stress, conflicts, low productivity, and poor performance. Hence, lecturers can optimise collaborative learning experiences by monitoring and ensuring equal participation among university students in Malaysia.

Furthermore, allowing the Department of Student Affairs and university administrators to assist lecturers in developing and implementing effective and productive course assessment for collaborative group work. This is to prevent the social loafing behaviour from becoming a self-sustaining behaviour of students when they enter the workforce and face more frustrating experiences in work projects with colleagues and

stakeholders. In conclusion, we hope our study can be a worthwhile and knowledgeable reference for future researchers.

Research Questions

Based on the problem stated above, this study proposed a few research questions as follows:

1. Does self-efficacy, group cohesion, task interdependence predict social loafing behaviour among university students in Malaysia?
2. Does self-efficacy associate negatively with social loafing behaviour among university students in Malaysia?
3. Does group cohesion associate negatively with social loafing behaviour among university students in Malaysia?
4. Does task interdependence associate positively with social loafing behaviour among university students in Malaysia?

Hypotheses

H₁: Self-efficacy, group cohesion, task interdependence predicts social loafing behaviour among university students in Malaysia.

H₂: Self-efficacy associates negatively with social loafing behaviour among university students in Malaysia.

H₃: Group cohesion associates negatively with social loafing behaviour among university students in Malaysia.

H₄: Task interdependence associates positively with social loafing behaviour among university students in Malaysia.

Conceptual Definition

Social Loafing. Social loafing is defined as the tendency of an individual to exert less effort when working in a group than when working individually (Ying et al., 2014).

Self-Efficacy. Self-efficacy reflects a person's belief in his or her ability to carry out the actions required to achieve specified performance goals (Bandura, 1977).

Group Cohesion. Group cohesion, or cohesiveness, is defined as the measure of bonding between the group members (Beal et al., 2003).

Task interdependence. Task interdependence is initiated by a degree of task-driven interaction that exists among group members and a degree of reliance of group members on one another in order to complete the overall tasks (Shea & Guzzo, 1987; Ven et al., 1976).

Operational Definition

Social Loafing. Social loafing is examined using the Social Loafing Tendency Questionnaire (SLTQ), a seven-item questionnaire to assess individual social loafing variances (Ying et al., 2014). A higher score indicates more social loafing behaviour.

Self-Efficacy. The first predictor of SLTQ is self-efficacy, which is measured by the General Self-Efficacy Scale (GSES), a 10-item scale. This scale is to measure the individual's level of self-efficacy (Schwarzer & Jerusalem, 1995). A higher score exhibits higher levels of self-efficacy.

Group Cohesion. The second predictor of SLTQ is group cohesion. It is evaluated by using the Group Cohesiveness Scale (GCS). This scale consists of seven items to determine perception of the group cohesion and the team's functioning (Wongpakaran et al., 2012). A higher score represents a higher degree of group cohesion among the group members.

Task interdependence. The third predictor of SLTQ is task interdependence, which will be examined using the Task Interdependence Scale (TIS). This scale comprises seven items that assess generalised task interdependence, inclusive of received task and critical task

interdependence (Kiggundu, 1983). A higher score in this questionnaire shows a high level of task interdependence among the group members.

Chapter II

Literature Review

Social Loafing

Social loafing refers to the tendency of an individual to exert less effort when working in a group than when working individually (Ying et al., 2014). A meta-analysis of research conducted by Karau and Williams (1993) presented an integrative model called the Collective Effort Model (CEM) to explain social loafing. CEM is an integrative model of individual motivation in a group. This model proposes two key elements that determine individual motivation within groups, which are their expectations regarding their ability to achieve the goal and the value of the goal to the individual. CEM represents the expansion of individual expectancy-value theories of work motivation with social identity and self-evaluation theories. The CEM suggests that individuals will only work hard when they expect their efforts to lead to performance that will be useful in obtaining the outcome (Karau & Wilhau, 2020). Based on Ying et al. (2014), their study examines the effect of social loafing on group performance by collecting 212 participants from Renmin University of China. The result of this study shows that individuals with high social loafing tendencies are more likely to perform worse in group tasks than in individual tasks.

According to Stouten and Liden (2020), social loafing often has a negative impact on other members of the group because they need to put in extra effort to get the work done. Not only that, but social loafing is also a threat to attaining group success because it creates a sense of imbalance and inequity. This is supported by research conducted by Hall and Buzwell (2012), which recruited 205 students from an Australian university to study their attitudes toward group work. From the results of the study, students who reported group work

projects as negative experiences often faced the issue of free riding. Students with free-riding frustration reported that some of the group members were only willing to do minimal work or the tasks were not divided up evenly, which led to a negative impact on the contributing students in the group.

In addition, social loafing has a direct influence on performance, efficiency, and satisfaction at an individual and group level (Tosuntaş, 2020). O'Leary et al. (2017) stated that an individual's intrinsic involvement is negatively associated with social loafing. This can be explained as an individual does not have the same extent of diffused responsibility as the other group members. Hence, this affects their effort and contribution to the group task. Furthermore, it influences their group performance, group efficiency, and the satisfaction of other group members.

Self-Efficacy and Social Loafing

Self-efficacy is discussed as the belief in a person's ability to carry out and coordinate actions necessary to contribute to a specific achievement (Bandura, 1977). To generate actual performances, these beliefs are treated by cognitive, motivational, physical, and emotional states in different stages of life. In an article by Ackerman and Wolman (2007), the choices an individual makes are influenced by the persistence and effort they put forth in the face of failure. Less efficacious individuals are prone to avoiding challenging tasks, while more efficacious individuals are highly likely to face challenging tasks head-on (Stevens et al., 2004).

Du et al. (2018) conducted a multilevel analysis to examine individual and group-level variables that are related to self-efficacy in relation to online collaborative work. The participants of this research consisted of 204 graduates between the ages of 30 years old or less and 30 years old or more. According to the multilevel analyses, self-efficacy in group work is positively related at the student level. The results were able to identify that an

individual's willingness to take up challenging tasks is related to a group's willingness to handle collaborative work as well as an individual's self-efficacy. In addition, a group will be able to collaboratively try to solve challenges and come up with possible methods to solve them, whereas when confronting challenges individually, a certain task may be too much to handle as compared to a group (Kop, 2011). As an outcome, the extent of self-efficacy positively affected the achievements made in collaborative group work.

In a study by Ajiboye and Olubela (2020), they mentioned that self-efficacy plays an important role in achieving and accomplishing goals by influencing an individual's personal choices, motivation, and emotional reactions. A trait that allows an individual to benefit from experiences that bolster a sense of self-efficacy is when self-efficacy is associated with persistence. This study used purposive sampling to recruit its 500 participants. The results from the study conducted showed a significant relationship between self-efficacy and social loafing. Moreover, they stated that self-efficacy is likely to work with individuals who are more eager to be successful in their workplace performance. There is also evidence from a study conducted by Adebayo (2006), who stated that self-efficacy has a significant relationship with the ability to cope with pressure. In short, these studies were able to confirm that self-efficacy propels individuals to reduce social loafing and never give up on achieving their goals collectively.

Group Cohesion and Social Loafing

Researchers have mentioned that the concept of cohesion has played an important role in group dynamics literature over several decades (Evans & Jarvis, 1980; Mudrack, 1989). Previous studies have shown that cohesion is a contributing factor in various group processes such as productivity, behaviour change, and performance (Bednar et al., 1974; Martens & Peterson, 1971; Schachter et al., 1951). However, there are various definitions and theories of cohesion in many empirical and meta-analytic studies due to the fact that the constructs are

not easy to define precisely and consistently as well as hard to measure and manipulate (Mudrack, 1989). In general, theories of cohesion include a few components, which are: the attraction to the group, task commitment, group pride, sense of belonging, and bonding (McLeod & Von Treuer, 2013). In short, cohesion refers to the bonding of the group members, feelings of attraction to each other, and results in sticking together and remaining united (Carron, 1982). This can also refer to group cohesion or group cohesiveness.

Braun et al. (2020) conducted research that recruited a total of 126 undergraduate students from a Midwestern university. This study shows that cohesion and coordination have consistently predicted team performance across the team episodes. Furthermore, the result also indicates that a higher degree of team cohesion would lead to a higher level of performance. In short, cohesion is important for team performance outcomes. This is supported by another study which stated that strong team cohesion encourages team members to participate and work together in order to complete the task; hence, it leads to better team performance (Black et al., 2019). In other words, strong group cohesion may reduce social loafing because the group members are motivated to participate and work within the group.

According to Park et al. (2017), their study recruited 324 employees from an electronic component company in South Korea. The results of this study indicated that team efficacy was positively related to team cohesion and past team performance. In short, the results indicate that team efficacy and team performance are strong when the level of cohesion is high. Yoon and Leem (2021) showed that group members with strong cohesion have the same “mental model” toward the group’s tasks and complete the tasks together with efficient group functioning. Thus, individuals are less likely to engage in social loafing behaviour as long as the group members have a sense of commitment to the group to complete the task together (Fominaya, 2010).

Apart from that, a study conducted by Parke and Orasanu (2012) recruited 120 United States citizens to determine the contribution of individual behaviours to team cohesion and performance. The result of this study shows less cohesion in the team and more conflict between the team members was related to lower team performance. Furthermore, the teams with higher team performance demonstrated lower polarisation on the dominance dimension, which means each team member has equal participation as well as a more expressive centre of gravity. In summary, strong team cohesion leads to higher team performance because each member has an equal opportunity to share their opinion within the team, which reduces conflict. In other words, individuals find their value in the group and are less likely to engage in social loafing behaviours.

Task Interdependence and Social Loafing

Task interdependence can be operationalized as a degree of task-driven interaction that exists among group members in the completion of overall tasks (Shea & Guzzo, 1987). Conversely, Ven et al. (1976) construed task interdependence as a degree of reliance of team members on one another to complete the task. However, according to Langfred (2000), the task interdependence is governed by a structural feature of work which is known as an organisational task technology. In particular, the definition of task interdependence is interrelated in addressing how tasks are shared between team members to be assigned interdependently to complete the collaborative work.

Task interdependence can be categorised into two facets: high task interdependence and low task interdependence. A notion of interdependence level in a group can vary greatly along a continuum, although being in the same group (Thompson 1967; Ven et al.,1976) This is supported by Pearce and Gregerson (1991), who analyse the relationship between task interdependence and individual social loafing, resulting in acknowledging the task-driven interaction of each individual in a group. In different situations, high levels of task

interdependence and low levels of task interdependence in social loafing are appraised comparably.

Past findings have revealed that in high task interdependence, social loafing behaviour is most likely to occur (Harkins & Petty, 1982; Manz & Angle, 1986; Willaimson, 1975; Williams et al., 1981). It is so because when the task becomes difficult to accomplish, these individuals are not allowed to feel a sense of personal achievement in doing the group work. Addressing the individual's effort will be indistinct from the others in collaborative group work, the individual chooses to reduce effort in the group work. Nevertheless, Krol et al. (2004) argued that when task interdependence is high, social loafing behaviour is less likely to occur. This is because the group member's effort will be highly noticed when the completion of a task is unable to be fulfilled. Thus, declaring high task interdependence lowers the chances of engaging in social loafing behaviour in collaborative group work.

In addition to the online distance learning setting, Piezon and Donaldson (2005) asserted the significance of high task interdependence is vital. Due to the lack of face-to-face interaction, the challenges of task interdependence are elevated, likewise receiving unclear information and conflicting goals of collaborative work. This compels the personal contribution of university students to be low for collaborative work success (Hertel et al., 2004). It has been discussed in the article of "Managing distance by interdependence: Goal setting, task interdependence and team-based rewards in virtual teams", high task interdependence, impede one's own poor performance of other group members, which illustrates the individual would least likely engage in social loafing behaviour whereas when the task interdependence is low, a group member's poor performance may be compensated by others, most likely engaging in social loafing behaviour (Aubé et al., 2009; Simms & Nichols, 2014).

Theoretical Framework

Social Identity Theory (SIT). Henri Tajfel (1979) established the social identity theory, which imposes a social psychology perspective on analysing intergroup relations. This theory emphasises the idea of determining circumstances in which individuals perceive themselves as individuals or as members of groups. It also appraises the personal and social identities' influences on individual perceptions and collective behaviour in a social grouping (Tajfel, 1978; Tajfel & Turner, 1979).

The SIT investigated the structure of social identities, the motivation behind identification, the fluidity between distinct social identities, and the consequences of identity on individuals, groups, organizations, and larger social collectives (Islam, 2004). The SIT can be conceptualised as the social loafing behaviour of individuals during collaborative work among university students. Correspondingly, the SIT has not only been evaluated in hypothetical situations, but it has also been implemented in real-life situations. A collaborative working approach among university students is an essential social skill that is practised face-to-face and virtually, which may lead to the social loafing behaviour of individuals in a group. It is an important real-life situation to be addressed and alleviated using the SIT framework.

Past research on social identity signified the foundation for assigning individuals a collective identity to reinforce group-approved behaviour (Doosje et al., 1999; Tajfel & Turner, 1979). Social motivations such as intending to associate with a group in a positive way are indicative of a person's wanting to accomplish more for their group. This indicates that social loafing behaviour and social identity are inversely related. In addition, the SIT is able to contribute to explaining social loafing behaviour by identifying the causes of the "social loafer" behaviour and striving to reduce loafing (Liden et al., 2004). Hence, validating the social identity theory's contribution to understanding social loafing substantially.

Conceptual Framework

Figure 1

The Conceptual Framework of the Present Study

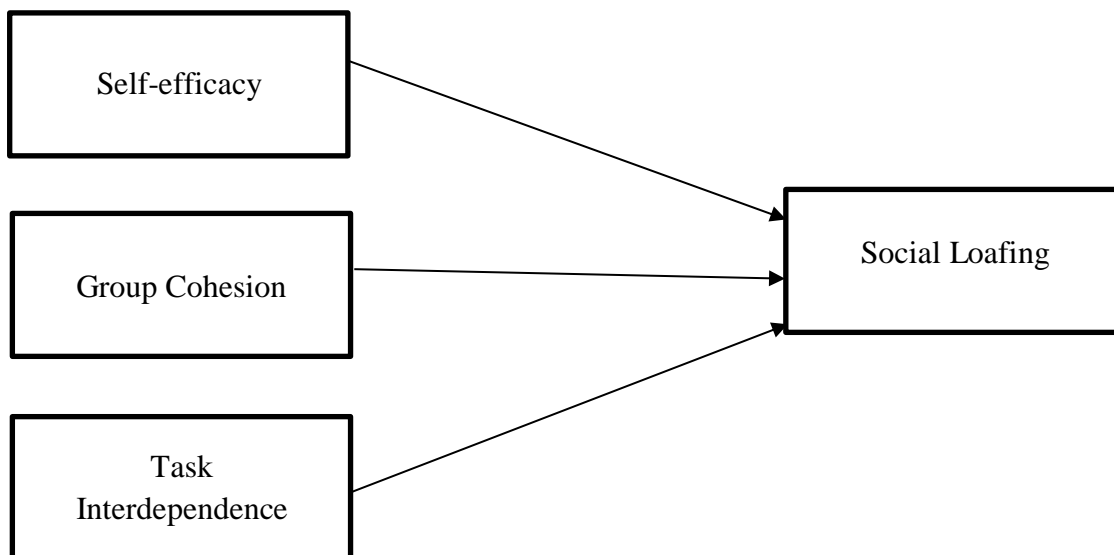


Figure 1 illustrates the conceptual framework of the present study on “Social Loafing Behaviour in Collaborative Group Work among University Students in Malaysia: Self-Efficacy, Group Cohesion, and Task Interdependence”. According to the framework, self-efficacy, group cohesion, and task interdependence positively predict the social loafing behaviour of university students in collaborative work.

The Self-Efficacy approach to SIT combines the desire to make a difference with beliefs about owning the tools, abilities, and resources required to contribute to collaborative work. Supported by Wood and Bandura (1989), self-efficacy is defined as the belief of an individual’s capacity to mobilise the motivation, cognitive resources, and sources of action needed to exercise control over events in their life. High self-efficacy individuals believe in their potential to influence positive social change by being persistent and engaging enough to perform well in social value-creating endeavours (Smith & Woodworth, 2012). Hence,

providing a composition of university students' social identity and self-efficacy to provide a contextualised guide to successful collaborative group work in university.

Furthermore, in understanding group cohesion with SIT, Tajfel and Turner (1979), noted that individuals establish social identities based on a sense of belonging to a social category in a group work they are in. Eventually, the social category they are in models their self-definition as self-defining, shaping the self-concept and behaviour of the individual. Cohesive social relationships between individuals are crucial in producing collective results. Based on a study by Purohit et al. (2012), a systematic theoretical grounding for group behaviour is formed by associating identity and cohesion dynamics into investigating interactions and individual behaviour. Thus, group cohesion with a great sense of belonging aids in reducing social loafing behaviour during collaborative group work.

According to Gundlach et al. (2006) empirical research, the SIT examines the relationship between individualism and collectivism and the importance of task interdependence and team identification. Consequently, team performance and team identification outcomes lead to team identity. As a result of the empirical research supported by Thompson (1967), high task interdependence prompts group members to communicate and work closely together to support and influence one another. Moreover, task interdependence is noted to have a favourable impact on the level of communication and collective planning to achieve and complete task integration. Therefore, social loafing behaviour can be analysed with task interdependence based on the social identity theory (SIT).

Chapter III

Methodology

Research Design

In the current study, a quantitative and cross-sectional research design has been selected to collect and analyse the data in determining whether self-efficacy, group cohesion, and task interdependence are predictors of social loafing in collaborative group work among university students in Malaysia. A quantitative research design has been chosen because it is able to provide valuable insight by involving a larger sample size within a limited time (Rahman, 2016). Additionally, a cross-sectional research design will allow for the collection of all the data from the participants at once, enabling us to assess the correlation between various variables using questionnaires administered through the online survey platform, Qualtrics (Appendix A). The quantitative and cross-sectional research design methods were adopted for this research because it is an efficient and convenient method for gathering information from participants from different regions in Malaysia. Online data collection is also time and cost-saving (Lefever et al., 2007). Along with these, participants were given a self-reported questionnaire that will be further analysed using statistical software, which is the Statistical Package for the Social Sciences (SPSS).

Sampling Procedures

Sampling Method

The purposive sampling method is used as the participant recruitment method in this study. In accordance with the qualities the participants acquire, purposive sampling makes use of these qualities as a deliberate decision of the participant (Etikan et al., 2016). To be precise, to collect the individuals that can and are willing to provide their knowledge for this study, the researcher only needs to decide what criteria needs to be known before proceeding further. The inclusion criteria for this study were university students in Malaysia who have

participated in collaborative work, be it physically or online, will be our research participants. However, as per the exclusion criteria, university students that have not experienced collaborative work were excluded from this study. Unlike random sampling, where participants are recruited from a diverse section of backgrounds, purposive sampling focuses on the sample with particular characteristics that will assist much more in this study (Etikan et al., 2016).

Location of Study

Using Qualtrics, a web-based tool that would allow users to build online surveys, a self-reported questionnaire was generated. It was disseminated on multiple platforms, namely LinkedIn, Microsoft Teams, few student representatives' councils, Facebook survey groups, WhatsApp, and Instagram. Our data collection is represented by university students from all the thirteen states and three federal territories in Malaysia

Ethical Clearance Approval

Ethical clearance approval was granted by Universiti Tunku Abdul Rahman (UTAR) Scientific and Ethical Review Committee (SERC) on December 30th, 2021, after the completion of our research proposal. The data collection procedures were commenced after receiving the ethical clearance approval in compliance with Universiti Tunku Abdul Rahman Research Ethics and Code of Conduct to ensure the present research was conducted in an ethically. (RE: U/SERC/299/2021).

Sample Size, Power and Precision

Sample Size

The sample size for this study was determined using the Krejcie and Morgan (1970) sample size table with a confidence level of 95% and a margin of error of 5%. According to the Department of Statistics Malaysia (DOSM), as of 2019, the population size of university students in public and private universities was more than 1,180,000 students. With reference

to the table (Appendix B), the ideal sample size of 384 participants was shown for a population of 1,000,000. However, a total of 400 individuals were targeted at the outset of our study to prevent extreme outliers, missing data, and incomplete responses in our data.

Actual Sample Size

A total of 363 responses were collected during the data collection period. However, we were unable to recruit enough participants to fulfill our large sample size of 384 university students. This is due to a number of factors, including survey fatigue from answering a lengthy questionnaire, lack of incentives for participation that lowers interest and motivation, and participant's lack of trust in survey participants' anonymity. The final sample size of the present study included 350 university students after 2 incomplete responses and 11 outliers that were discovered using the SPSS software were eliminated from further analysis.

Data Collection Procedures

Inclusion and Exclusion Criteria

In the present research, there were only two criteria for inclusion that participants had to meet. Participants eligible to participate in our study be required to meet the following inclusion criteria: (i) be a university student in Malaysia; and (ii) have participated in any collaborative group work at university, whether physical or online, as well as group assignments or group projects. As for the exclusion criteria, participants who are pursuing studies outside of Malaysia, not at university level, and those who provided incomplete responses were excluded.

Procedures of Obtaining Consent

Participants were given autonomy to provide their informed consent in Part A of our questionnaire, which was the Consent Form for Research Participation and Personal Data Protection. Information regarding the current study, such as the purpose of the study, voluntary participation, potential risks, concerns of confidentiality, the researchers' contact

information, and the inclusion criteria of participants were included in the consent form.

Participants were informed that their participation in the study is entirely voluntary and that they are entitled to withdraw at any stage, without having to provide an explanation.

Additionally, it was explicitly stated that all the data collected would be kept private and confidentially used solely for academic purposes only.

Description of Data Collection Procedures

In this study, university students in Malaysia who had been involved in collaborative group work such as group assignments and group projects were recruited as per the inclusion criteria to fill in an online survey questionnaire via purposive sampling through platforms such as LinkedIn, Microsoft Teams, a few student representatives' councils, Facebook survey groups, WhatsApp, and Instagram. Participants were also encouraged to disseminate the survey link to mutuals who fit the inclusion criteria. The online survey questionnaire was constructed using Qualtrics. The survey form consists of several parts, such as an informed consent form, demographic information, and the four measurements of the variables.

Firstly, a summary explanation of our research purpose and the requirements of participants was provided to the target population with the attached survey link. Participants are required to read through the informed consent form and click agree continue answering the survey questionnaire. This is to ensure that the study was conducted ethically, such as ensuring that the respondents participated voluntarily in the study and protecting the rights of the participants. In addition, if participants have any doubt, they are able to contact the researchers with the contact methods that are attached to the informed consent form. The data collection process lasted for almost 6 weeks, which was from June 19th, 2022, to July 27th, 2022. After the data collection, the outliers and incomplete data were removed, and the data was further analysed using SPSS software.

Pilot Study. Prior to the main study, a pilot one was executed. According to In (2017), to assess the feasibility of the study and the proposed methods, a pilot study will be conducted. The targeted number of participants in our pilot study was at least 38. In order to evaluate the feasibility of the instruments or generate statistical estimates for a broader study, it is advised per the basic guidelines to recruit more than 10% of the sample (Hertzog, 2008). However, we were able to recruit 63 participants in our pilot study to assess the reliability of our measures. In summary, the instruments in our study had high reliability, with the Cronbach's alpha reporting an acceptable range of .70 and above. As a result, the GSES, with a reliability of .812, increased after question 2 was removed; the GCS, with a reliability of .822; the SLTQ, with a reliability of .733; and finally, the GCS, with a reliability of .822, increased after question 7; excluding the Task Interdependence Scale. Moreover, it was done to improve the reliability and increase the completion rates of the questionnaire. The number of items and Cronbach's alpha value for the actual study are listed below. (see Table 3.1)

Table 3.1

Reliability of Instruments in Pilot Study (n=63)

Variable	Number of Items	Cronbach's alpha (after pilot study)
Self-efficacy	9	.833
Group Cohesiveness	6	.835
Task Interdependence	7	.865
Social Loafing Tendency	6	.747

Measures

Social Loafing Tendency

The Social Loafing Tendency Questionnaire (SLTQ) designed by Ying et al. (2014) was adapted into the English language to determine the social loafing variances among individuals. The self-reported questionnaire consists of seven items on a five-point Likert scale, ranging from "1=Strongly Disagree" to "5=Strongly Agree." The higher the score

represents greater social loafing tendency of the individual. The SLTQ scale yielded an internal consistency of .88 (Ferry & Eliana, 2018).

Self-Efficacy

A General Self-Efficacy Scale (GSES) will be used in this study to measure the individual level of self-efficacy. This scale was developed and adapted from the German version by Schwarzer & Jerusalem (1995). This 10-item instrument was designed based on Bandura's (1978) social cognitive theory. The participants were required to respond on a four-point Likert scale ranging from "1=Not at all true" to "4=Exactly true." The higher score indicated a higher sense of perceived self-efficacy. The internal consistency of the scale shown is .80 (Shrivastava et al., 2018; Yildirim & Ilhan, 2010).

Group Cohesion

The Group Cohesiveness Scale (GCS) was developed by Wongpakaran et al. (2012) to examine the cohesiveness of group members. The scale reveals the perspective of a group member, a leader or co-leader, and an observer. It is a seven-item, five-point Likert scale. The score of GCS ranges from "1=Strongly Disagree" to "5=Strongly Agree". The higher the score, represented higher group cohesion. The internal consistency of the scale yielded was .87 (Chang & Bordia, 2001).

Task Interdependence

The Task Interdependence Scale, adapted from Kiggundu (1983), was used to determine the generalised task interdependence, inclusive of received task and critical task interdependence. This scale is a seven-item scale with a nine-point Likert scale ranging from "1=Strongly Disagree" to "9=Strongly Agree". A higher score denotes the higher task interdependence of the scale. The internal consistency of the TIS scale revealed is .88 (Langfred, 2005).

Chapter IV

Results

Descriptive Statistics

Demographic Characteristics

According to Table 4.1, which contains demographic information about our research sample, our total number of samples is 350, ages ranging from 18 to 41 years, with a mean age of 22.71 years ($SD = 2.24$). Out of the 350 participants, 232 (66.3%) of them are female, and 118 (33.7%) are male. In addition, 47.1% of our participants are Chinese, 29.4% are Malay, 19.4% are Indian, and 4.0% are from other ethnicities. The majority of our participants (82.3%) studied for a Bachelor's Degree, 8.9% for Master's Degree, 7.7% for Foundation or Diploma, and 1.1% for PhD. Almost half of our participants (49.7%) were in Year 3, followed by Year 2 (22.0%), Year 4 and above (14.9%), and Year 1 (13.4%). 47.7% of our participants were from public universities, whereas 52.3% were private university students.

Table 4.1

Demographic Information of Research Sample (n = 350)

	<i>n</i>	%	M	SD	Min	Max
Gender						
Male	118	33.7				
Female	232	66.3				
Age			22.73	2.25	18	41
18	4	1.1				
19	7	2.0				
20	31	8.9				
21	36	10.3				
22	78	22.3				
23	115	32.9				
24	38	10.9				

25	20	5.7
26	9	2.6
27	1	0.3
28	3	0.9
29	3	0.9
30	1	0.3
31	1	0.3
32	1	0.3
36	1	0.3
41	1	0.3
Level of Foundation		
Foundation/Diploma	28	7.7
Bachelor's Degree	297	81.8
Master's Degree	32	8.8
PhD	4	1.1
Year of Study		
Year 1	47	13.4
Year 2	77	22.0
Year 3	174	49.7
Year 4	52	14.9
Type of Institution/University		
Public University	167	47.7
Private University	183	52.3

Topic-Specific Characteristics

Table 4.2 illustrates the frequency distribution that each participant in this study achieved for the topic-specific variables of self-efficacy, group cohesion, task interdependence, and social loafing behaviour. The mean for the self-efficacy variable is

27.39 ($SD = 4.10$), group cohesion mean is 23.90 ($SD = 4.04$), task interdependence is 49.79 ($SD = 7.07$) and social loafing mean is 13.01 ($SD = 2.87$).

Table 4.2

Frequency Distribution of Self-Efficacy, Group Cohesion, Task interdependence, and Social Loafing Behaviour

Variable	<i>n</i>	Min	Max	<i>M</i>	<i>SD</i>
Self-Efficacy	361	13	36	27.23	4.32
Group Cohesion	361	8	30	23.71	4.28
Task Interdependence	361	7	63	49.54	7.76
Social Loafing	361	6	23	13.09	2.95

Note: *n* = number of cases; Min = minimum value; Max = maximum value; *M* = Mean; *SD* = standard deviation

Data Diagnostic and Missing Data

Frequency and Percentages of Missing Data

Using SPSS software, a missing data of 2 (0.55%) was found and eliminated from further analysis. The calculated Krejcie and Morgan's minimum sample size was 384, however we were only able to obtain 363 responses. Therefore, after the removal of missing data, a total number of 361 data was processed in further analysis.

Criteria for Post-Data Collection Exclusion of Participants

All the participants were verified to meet the inclusion criteria specified by the researchers after reviewing the responses that had been gathered. Hence, there was no response excluded.

Defining and Processing Statistical Outliers

According to the boxplot generated from the normality tests via SPSS software (see Appendix C), the statistical outliers were detected. There were five outliers (Cases 127, 139, 235, 255 and 303) being revealed in the variable of self-efficacy. Three outliers (Cases 126, 215, 281 and 303) being detected in the variable of group cohesion. Furthermore, three

outliers (Cases 89, 212 and 303) being detected in the variable of task interdependence.

Lastly, two outliers (Cases 303 and 343) were found in the variable of social loafing. In short, the total number of valid data involved in the statistical analysis was 350 after removing these eleven outliers.

Data Transformation

The Social Loafing Tendency Questionnaire (SLTQ) was the only one of the three instruments employed in this study to have negative items (items 1, 3, 5 and 6). As a result, the scores of these negative items were reversed based on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). To illustrate, the response of 1 was reversed to 5, while the response of 5 was reversed to 1. The researchers then transformed these data before analysing the total score for subsequent statistical analysis.

Assumptions of Normality

Normality tests were conducted for all the variables presented, which includes general self-efficacy, group cohesiveness, task interdependence and social loafing in the research. The tests carried out were histogram, P-P plot, skewness and kurtosis and Kolmogorov-Smirnov (K-S) Test.

Histogram. The histogram for the variable general self-efficacy, group cohesiveness and task interdependence are negatively skewed as the graph is not symmetrical and to the right if cut down the middle. The histogram for the variable social loafing questionnaire is slightly positively skewed and the graph is slightly to the left if cut down the middle. Hence, this suggests the variables of general self-efficacy, group cohesiveness, task interdependence and social loafing are not normally distributed (see Appendix D)

P-P Plot. The normality of all the variables based on the P-P plot test falls closely or exactly on the ideal diagonal line. This indicates a good normality, and all the assumptions are met (see Appendix E).

Skewness and Kurtosis. The values of the skewness and kurtosis for all the variables of general self-efficacy, group cohesiveness, task interdependence and social loafing questionnaire do not violate the normality assumption as the results were within the acceptable range of ± 2 . (Field, 2009). The values were -.035 and -.218 for general self-efficacy, while for group cohesiveness were -.458 and -.193, -.175 and -.591 for task interdependence as well as .327 and -.341 for social loafing questionnaires. Therefore, it can be said all the variables are normally distributed. (see Table 4.3 and Appendix F)

Table 4.3

Skewness and Kurtosis

Variables	Skewness	Kurtosis
General self-efficacy	-.035	.218
Group cohesiveness scale	-.458	-.193
Task interdependence scale	-.175	-.591
Social loafing questionnaire	.327	-.341

Kolmogorov- Smirnov (K-S) Test. The Kolmogorov-Smirnov test indicates that the variables of general self-efficacy, $D(350) = 0.08$, $p = 0.000$, group cohesiveness, $D(350) = 0.11$, $p = 0.000$, task interdependence, $D(350) = 0.08$, $p = 0.000$, and social loafing questionnaire, $D(350) = 0.10$, $p = 0.000$ do not follow a normal distribution as the normality assumption was not violated based on the K-S test due to its non-significant results. This indicated there were no differences between the sample normality and population normality. (see Table 4.4)

Table 4.4*Kolmogrov-Smirnov Test (K-S)*

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Total_GSE	.082	350	.000	.985	350	.001
Total_GCS	.112	350	.000	.961	350	.000
Total_TIS	.081	350	.000	.974	350	.000
Total_SLTQ	.101	350	.000	.970	350	.000

Note: Total_GSE (general self-efficacy); Total_GCS (group cohesiveness); Total_TIS (task interdependence); Total_SLTQ (social loafing tendency questionnaire)

Conclusion of Assumptions of Normality. The variables of self-efficacy, group cohesion, and social loafing behaviour satisfied three out of five normality indicators, notably P-Plot, skewness, and kurtosis. As for the variable of Task Interdependence, two out of five indicators were satisfied which were P-Plot and Skewness. Since, more than half of the normality indicators were fulfilled by self-efficacy, group cohesion and social loafing behaviour, the normality of data distribution was met. However, only the Task Interdependence variable did not fulfil all the normality indicators, hence the normality of data distribution was not met.

Assumptions of Multiple Linear Regression

According to Berry (1993), in order for the regression model to be adapted, a number of assumptions must be met. Thus, four tests were carried out in this study to validate the assumptions of multicollinearity, independence of errors, multivariate outliers, and influential cases, along with normality and linearity of residuals and homoscedasticity.

Test on Multicollinearity. The Tolerance and the Variance Inflation Factor (VIF) is used to measure the multicollinearity statistic among the independent variables. According to Hair et al. (2010) and Pallant (2010), the cut-off threshold for Tolerance and VIF is $\leq .10$ and ≥ 10 accordingly. Based on Table 4.5 and Appendix G, the tolerance value of the independent

variables for general self-efficacy, group cohesiveness and task interdependence is $\leq .10$ while the variance inflation factor (VIF) is also not ≥ 10 . As a result, the multicollinearity assumption is not fulfilled.

Table 4.5*Test on Multicollinearity*

Model	Collinearity Statistics	
	Tolerance	VIF
Total_GSE	.856	1.168
Total_GCS	.719	1.391
Total_TIS	.808	1.238

Note: Total_GSE (general self-efficacy); Total_GCS (group cohesiveness); Total_TIS (task interdependence); Total_SLQ (social loafing questionnaire)

Test on Independence Error. The test of independence error must be met in order to demonstrate a correlation between the residuals. In our study, the assumption of independence errors was tested using the Durbin-Watson test. It has been postulated that the acceptable range of the Durbin-Watson test is $1 \leq \text{independence error} \leq 3$, and the value that is closer to 2 would be more congruent to the assumption (Field, 2009; Melchiorri et al., 2022). The value obtained from the Durbin-Watson test is 1.508 which does not violate the assumption of independence error and within the acceptable range (see Table 4.6).

Table 4.6*Test on Independence Error*

Model	R	R Square	Adjusted R Square	Std.Error of the Estimate	Durbin-Watson
1	.210 ^a	.044	.036	2.81784	1.561

Test on Normality and Linearity of Residuals and Homoscedasticity. The scatterplot featured an oval shape with residuals dispersed uniformly and randomly, as

illustrated in Appendix H. Thus, the assumptions of normality, linearity of residuals and homoscedasticity are all met.

Test on Multivariate Outliers and Influential Cases. Based on the case-wise diagnostics analysis in Appendix I which we conducted in SPSS, the following 14 out of 350 cases were identified to be potential outliers: 114, 148, 190, 218, 262, 299, 322, 333, 343, 344, 345, 346, 347, 349.

Mahalanobis distance, Cook's distance and Leverage's value were calculated and presented in the residual statistics which is our Appendix I to determine whether to exclude any of the potential outliers. The case would be eliminated if two out of three of the residual statistics were violated. Referring to Cook & Weisberg (1982), the cases do not demonstrate a violation due to the reason that the Cook's Distance values are < 1 . To get the value of the Leverage, we used the formula where p is the number of predictors and n is the sample size. Steven (1992) claimed that if the case > 3 times of Leverage's value could be a potential outlier. All the cases were retained because all cases obtained ≤ 3 times of Leverage's value (see Appendix J). Besides that, the conservative cut-off points of a sample of 500 was > 25 by following the rule of thumb for Mahalanobis Distance. In this case, the fourteen cases did not need to be removed since they met the criteria.

In summary, no potential outliers needed to be eliminated since each case satisfied at least two residual statistics. As a result, 350 datasets were used in subsequent statistical analysis.

Conclusion on Assumptions of Multiple Linear Regression. All the indicators of multicollinearity, independence of errors, Normality and Linearity of Residuals and Homoscedasticity and Multivariate Outliers and Influential Cases were met. Therefore, it can be concluded the assumptions test of the Multiple Linear Regressions were highly satisfactory.

Statistical Analyses

Multiple Linear Regression (MLR)

H₁: Self-efficacy, group cohesion, task interdependence predicts social loafing behaviour among university students in Malaysia.

A multiple linear regression analysis (MLR) was used to examine the predicting variables of self-efficacy, group cohesiveness and task interdependence on the dependent variable, social loafing behaviour. The independent variables in predicting social loafing behaviour, $F(3, 346) = 5.316, p = .001$, and the $R^2 = .044$ indicates that the model explains 4.4% of the variance only in social loafing behaviour among university students in Malaysia (see Table 4.7). All of the predicting variables, self-efficacy ($\beta = -.075, p = .062$) group cohesion ($\beta = -.054, p = .218$) and task interdependence ($\beta = -.040, p = .089$) individually do not significantly predict social loafing behaviour in collaborative group work among university students in Malaysia. However, the combined effects of self-efficacy, group cohesion and task interdependence together are significant predictors of social loafing behaviour.

Therefore, the current outcome does support H_1 .

Table 4.7

ANOVA Table for Regression Model

Model	Sum of Squares	ANOVA ^a			
		df	Mean Square	F	Sig.
Regression	126.637	3	42.212	5.316	.001 ^b
Residual	2747.317	346	7.940		
Total	2873.954	349			

a. Dependent Variable: Total_SLTQ

b. Predictors: (Constant), Total_TIS, Total_GSE, Total_GCS

Note: *Total_GSE* (general self-efficacy); *Total_GCS* (group cohesiveness); *Total_TIS* (task interdependence); *Total_SLQ* (social loafing questionnaire)

Pearson's Product-Moment Correlation (PPMC)

Pearson Correlation-Moment Coefficient (PPMC) test is done to further evaluate the bidirectional association between each of our dependent variables with social loafing behaviour (see Table 4.8 and Appendix K). On the basis of each hypothesis, the results will be discussed accordingly.

H₂: Self-efficacy associates negatively with social loafing behaviour among university students in Malaysia.

PPMC was conducted to test whether there is a correlation relationship between self-efficacy and social loafing. H₂ is accepted since there is a negative correlation between self-efficacy and social loafing ($r = -.155, p < .01$), which demonstrated in the same direction as hypothesized. This indicates that those who have high levels of self-efficacy are less likely to engage in social loafing in collaborative learning. Thus, the hypothesis is not rejected.

H₃: Group cohesion associates negatively with social loafing behaviour among university students in Malaysia.

The results for the PPMC analysis showed that there is a significant negative correlation between group cohesiveness and social loafing ($r = -.160, p < .01$). This indicates that the higher the group cohesiveness, the lower the likelihood to engage in social loafing in collaborative learning. Thus, the hypothesis is supported.

H₄: Task interdependence associates positively with social loafing behaviour among university students in Malaysia.

For the PPMC analysis, task interdependence and social loafing behaviour were found to be negatively correlated and statistically significant. ($r = -.154, p < .01$). This result indicates that a high task interdependence reduces the likelihood of university students in Malaysia engaging in social loafing behaviour. Hence, the result does not support the hypothesis.

Table 4.8

Pearson's Product Moment Correlation between Self-Efficacy, Group Cohesion, Task Interdependence and Social Loafing

Variable	<i>n</i>	Self-Efficacy	Group Cohesion	Task Interdependence	Social Loafing
Self-Efficacy	350				
Group Cohesion	350	.378**			
Task Interdependence	350	.192**	.437**		
Social Loafing	350	-.155**	-.160**	-.154**	

Note. *n*=Number of participants ***p*<.01

In summary, our findings revealed that the first three hypotheses were supported by the findings, but the fourth hypothesis was not supported. Despite the significance of Pearson correlation, the strength of the association of the three independent variables was all weak. As a result, it was discovered that self-efficacy, group cohesiveness, and task interdependence are significant predictors of social loafing behaviour when considered collectively rather than individually.

Chapter V

Discussion and Conclusion

The purpose of this research is to explore task interdependence, group cohesion, and self-efficacy as predictors of social loafing behaviour in collaborative group work among Malaysia university students as well as the relationship between the three variables with social loafing. According to our results, it was revealed that the three variables—self-efficacy, group cohesion, and task interdependence—failed to significantly predict social loafing behaviour individually, yet they are all collectively significant predictors of social loafing behaviour among university students in Malaysia. In addition, the first three variables showed a correlation, they were found to be negatively associated with social loafing behaviour and did not fail to reject our first three hypotheses. The following part will go into great depth on the findings.

Self-Efficacy and Social Loafing

Statistical analyses of self-efficacy as the predictor of social loafing behaviour among university students found that the variable was not significant on its own according to MLR. After all, the PPMC revealed that there is a negative correlation between self-efficacy and social loafing behaviour, thus H_2 was supported. Contrary to our current findings, past study indicate that self-efficacy is one of the predictors of social loafing behaviour (Pratama & Aulia, 2020). Several findings indicated that self-efficacy is significantly associated with social loafing behaviour (Ajiboye & Olubela, 2020; Mahmudi & Suroso, 2014; Purba & Eliana, 2018). Moreover, they discovered a negative relationship between self-efficacy and social loafing behaviour, which is consistent with our findings.

Mahmudi and Suroso (2014) stated that people who exhibit high self-efficacy traits adapt to different situations more readily than people who exhibit low self-efficacy traits. When someone has high self-efficacy, they persevere in finishing projects, have faith in their

skills, see obstacles as challenges rather than threats, like learning new things, set difficult objectives, and have a strong commitment to themselves. This includes putting out strong effort in what they do and increasing effort when they encounter failure, concentrating on their work, and thinking of positive outcomes.

According to Bhati and Sethy (2022), a person's level of self-efficacy refers to how strongly they believe they can carry out a course of action. Banduras' theory reveals that acquiring the necessary skills and talents are not sufficient for an individual to accomplish a task; the person must also have faith in their ability to complete the assigned task even under difficult circumstances. Moreover, people with high self-efficacy will persevere in completing activities even in the face of challenges, such as social laziness displayed by group members (Rakhmawati & Mustadi, 2019). According to studies on other self-efficacy qualities, people with high self-confidence can complete tasks in any setting both individually and in groups, and they are more responsible for obtaining the best outcomes while completing their group activities (Aulia & Saloom, 2013; Purba & Eliana, 2018). Thus, individuals with high self-efficacy less likely to portray social loafing behaviour.

Group Cohesion and Social Loafing

The statistical analyses of group cohesion as the predictor of social loafing behaviour among university students found that the variable was not significant on its own according to MLR. While in contrast, the Pearson's correlation showed that group cohesiveness negatively correlates with social loafing behaviour among university students in Malaysia which contradicts with the past findings. According to Carron et al. (2002), task cohesiveness was associated with effort and performance in a meta-analysis evaluating the relationship between cohesion and performance which does not affect social loafing. Thus, H₃ was supported.

According to a study by Høigaard et al. (2006), in relation to social cohesion, task cohesion and performance norms are significantly more influential on perceived social

loafing. The study also found that when there is strong social cohesion, low task cohesion, and low performance norms, the higher the level of perceived social loafing. The degree of perceived social loafing, however, significantly decreases when there is a rise in performance standard and achieves its lowest point in association with both high levels of task cohesion and social cohesion. Langfred (as cited in Høigaard et al., 2006) the combination of high cohesiveness and non-task norms was linked to poor results, whereas groups with high cohesiveness and task norms were more successful than other groups.

Based on findings from Karau and Hart (1998), results revealed that social loafing occurred among those in low-cohesiveness groups. The extent of social loafing was not significantly increased by the proportionate decrease in cohesion brought about by engaging in a competitively framed engagement. Women who had been shunned by a group put in more effort as a group than they had individually, but shunned males showed a negligible propensity for social loafing (Williams & Sommer, 1997). Significant interaction has demonstrated that members of high-cohesive groups put in a fair amount of effort whether they worked cooperatively or collectively. While working cooperatively or collectively, members of high-cohesive groups exerted a fair amount of effort, as seen by substantial interaction.

A study by Lam (2015), found that social loafing was not significantly influenced by the way teams were formed. Compared to randomly chosen or teacher-assigned groups, self-selected groups reported higher social loafing. Findings from Strong & Anderson (as cited in Lam, 2015) said this directly contradicts prior studies that claimed self-selected teams would exhibit more cohesiveness and less social loafing. In fact, task cohesiveness was not significantly impacted by the technique of team creation. Therefore, even though self-selected teams were more socially compatible from the beginning, this compatibility did not result in improved group cohesiveness or a decrease in social loafing.

Task Interdependence and Social Loafing

According to the findings of the current study, task interdependence did not predict social loafing behaviour among university students in Malaysia individually, but collectively, implying that H_1 was supported. The findings of our past research, which claims that task interdependence is one of the factors determining the prevalence of social loafing among group members, are at contrast with the findings of the study (Piezon & Ferree, 2007). This can be supported by Liden et al. (2004) who corroborates the contrary findings that students with low task interdependence, social loafing is least likely to occur because university students feel the need to increase recognition and not diminish their effort.

Alternatively, as opposed to H_4 , PPMC discovered a negative correlation between task interdependence and social loafing behaviour. This signifies an increase in task interdependence, decreases the likelihood of social loafing behaviour. Contrary to our earlier findings, task interdependence was found to be positively correlated with social loafing behaviour, which states that the increase in task interdependence increases the likelihood of social loafing behaviour (Harkins & Petty, 1982; Manz & Angle, 1986; Willaimson, 1975; Williams et al., 1981). This may be the case because the student may lose their sense of accomplishment when the task is more interdependent and withhold their effort because they perceive it is indistinguishable by other group members, leading them to socially loaf (Jones, 1984; Manz & Angle, 1986; Weldon & Gargano, 1988).

On the other hand, Krol et al. (2004) revealed that strong task interdependence induces low social loafing behaviour because students would seek to showcase their efforts to the other group members when the assigned task is unable to be completed. Likewise, as a result of the likelihood that each group member's effort and usefulness would be influenced by the other's performance, group members will collaborate better when task dependency is

substantial (Hoon & Tan, 2008). Therefore, university students are less likely to participate in social loafing behaviour when working in collaborative groups.

Implications

Theoretical implications for future research

The current study adds to a growing body of literature that highlights the social loafing behaviour among university students in relation to variables such as self-efficacy, group cohesion, and task interdependence. The theory used in our study was Social Identity Theory, which elucidates how an individual's personal and social identities play a role in a social grouping, such as collaborative group work in universities (Tajfel, 1978; Tajfel & Turner, 1979). Based on the results of the study, the theory was partially supported by the variables on social loafing behaviour. It showed a negative correlation between the independent variables of self-efficacy, group cohesion, task interdependence, and social loafing, the dependent variable; as one variable increases, the other variable decreases. As a matter of fact, the social identity theory to be used in this study verifies self-efficacy as the personal identity and group cohesion and task interdependence as the social identities. Hence, the results do consolidate the existing theory when determining its correlation with one another.

In addition, the present study is also able to fill in the research and knowledge gaps of studies on social loafing behaviour among university students. There are limited studies still compared to other mainstream destructive or negative behaviour of students in general, so social loafing behaviour is still prevalent and poorly addressed by research, researcher's and other experiences. Moreover, the present study was conducted in Malaysia, where university students from various states and backgrounds, fields of study, and even nationalities, are pursuing their higher education in the Asian region. Hence, this scope of study contributes to contemporary research on social loafing behaviour in Malaysia universities, an Asian-region

institution in comparison to other cultural and regional contexts. Based on the Individualism-collectivism cultural context differences implies that individual with the individualistic culture tend to act in their own self-interest, which leads to social loafing behaviour, whereas individuals in collective culture tend to work together to achieve shared goals and freely contribute, which reduces the likelihood of social loafing behaviour (Clark & Baker, 2011; Dorfman & Howell, 1988; Earley, 1989; Lai & Lam, 1986).

However, based on the findings of this study as well, it is imperative to do extended research that focuses on the predictors of social loafing behaviour. The findings revealed that the predictors do not significantly predict social loafing behaviour. Other predictors may have a greater significant effect on social loafing behaviours among university students in Malaysia, including perceived justice (De Backer et al., 2014), cynicism (Sarkaya & Tanriogen, 2019), perceived team member loafing, group size, visibility of contributions or tasks, and task nature (Naicker & Parumasur, 2018; Piezon & Ferree, 2008). Furthermore, by integrating the theoretical frameworks of the Ringelmann effect theory (Zhu & Wang, 2018) and the social learning theory (Almajed et al., 2016; Luo et al., 2021), which extend across effort and ideas in collaborative work as well as communicating outside of university settings, it may be feasible to best explain an individual's contribution to their collaborative work, thus in future research being able to investigate social loafing behaviour among university students more extensively.

Practical implications for programs and policies

The current study found a correlation between self-efficacy, group cohesion, and task interdependence and social loafing behaviour. The current supporting findings are essential in understanding productivity levels in collaborative group work to mitigate social loafing behaviour by reinforcing internal factors and integrating them with external factors. It is also important to know one's own working style when working on a project. This is because a

study by Ying et al. (2014) confirms that some individuals who exhibit significant social loafing tendencies perform far worse in groups yet appear to have a strong propensity to work much better alone. Hence, to refrain from unpleasant group dynamics and experiences, it is critical to comprehend self-efficacy, group cohesion, and task interdependence while managing different working styles in groups and social loafing tendencies.

Besides, the current study contributes to making higher education educators and institutions aware of the significance of providing Malaysian university students a positive learning experience through collaborative groups. Instead of being classified as just a graded assignment, collaborative group work is vital to achieving milestones like cultivating higher level learning outcomes, maximising opportunities for critical thinking, responding to peers' criticism, and encouraging learning (Aggarwal & Obrien, 2008; Ettington & Camp, 2002; Qin et al., 1995). It is important for educators and institutional bodies to modify teaching plans and curriculum, create performance-measurements, systemize peer evaluations or originate engaging and compelling group work and projects that act effectively and efficiently for their students' varying levels of self-efficacy, group cohesiveness, and task interdependence, as well as other significant predictors to optimise collaborative group learning while monitoring student participation in their group to minimise the likelihood of social loafing behaviour.

In summary, the current study supported new insights by noting there may be more significant predictors of social loafing behaviour among university students than self-efficacy, group cohesiveness, and task interdependence, as well as a correlation between both variables that reinforces the need to explore further to validate the findings strongly. Moreover, the study provides empirical support of the correlation for oneself, educators, and institutional bodies to transform the curriculum of education to reduce social loafing

behaviour that would persist upon graduation and upon entering the workforce, which will eventually have an influence on the productivity of the organisation and team performance.

Limitations of the study

A few limitations have been discovered in this research. First of all, there were limited studies discussing the relationship between the three predictors and social loafing tendency. Hence, we were facing difficulties to obtain information and further elaborate the relationship between the three predictors and social loafing tendency in literature review.

Furthermore, an online self-report questionnaire was used to collect data from our participants. In research conducted by Bergomi et al. (2012), they reported that the validity of self-report assessments in the evaluation of mindfulness was generally rejected. This is because understanding one's own states of mindfulness and appropriately responding to mindfulness items may need a certain level of awareness. Therefore, it would be deceptive to generalise the results given as different participants may have different understandings of each item in the questionnaire. Social desirability bias may be included in online self-report questionnaires because individuals may portray themselves in a way that is perceived to be socially acceptable but is not entirely reflective of actual reality (Bergen & Labonté, 2019; Caputo, 2017). As an example, in the Social Loafing Tendency Questionnaire (SLTQ), the first item, "In a team, I will try as hard as I can," asked participants to rate their perspective of agree or disagree with this statement. Consequently, some participants might give false answers because they believe that if they evaluate themselves as strongly disagreeing with this statement, it might imply they are an irresponsible team member.

Besides, during the phase of data collection of this study, the non-probability sampling method recognized as purposive sampling was applied. This sampling method was used in order to meet the criteria of being readily available and easy to obtain. However, this might be owing to the researcher's bias in selecting samples. In other words, the researchers'

subjective and selective selection of the research sample may cause not all the members of the population to be given equal chance to be chosen in our research (Acharya et al., 2013; Etikan et al., 2016). Non-probability sampling methods might provide biased results and will generate inappropriate generalisation of the population (Etikan & Bala, 2017; Wisniowski et al., 2020). Therefore, this restriction applied to the generalizability of current study.

Recommendations for future research

The current study applied a non-probability sampling, known as purposive sampling which poses a risk of bias in the results and not giving the population an equal opportunity in participating in the study. To avoid repeating this in the future, a probability sampling is suggested. A cluster sampling method is an appropriate design for estimating the population attributes and generalizing the results of the study to the target population (Nelson, 2014). According to Sarstedt et al. (2017), the reason probability sampling is the recommended sampling method is due to its selection process being random, before the selection procedure really begins, it is feasible to determine all prospective samples of a specific size that may be taken from the population and there is a known likelihood that each potential population sample will be chosen for the sample, and this probability is not zero.

Another recommendation would be to the instrument used to measure social loafing, (SLTQ) can use statements which would be easier to relate to the participants. Statements which would not bring out a biased result due to the participants' sense of not being aware of reality and insisting on their actions being socially acceptable. For example, the statement "In a team, I will try as hard as I can," may be altered to "In a team, I ensure I work hard to give the best quality work". This statement may be more relatable to what the instrument is trying to imply.

Finally, to apply this current study to investigate the differences of social loafing tendency in physical mode and online classroom mode. The results may vary depending on

the mode of study the participants have been involved in. There may be different results for those participants that have only been involved in physical mode, online mode or hybrid of physical and online mode. That said, participants may not have experienced enough group collaborative work depending on how their university conducted their classes throughout their mode of study.

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Appendices

Appendix A

Online Survey Form



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Personal Data Protection Notice

Please be informed that in accordance with Personal Data Protection Act 2010 ("PDPA") which came into force on 15 November 2013, Universiti Tunku Abdul Rahman ("UTAR") is hereby bound to make notice and require consent in relation to collection, recording, storage, usage and retention of personal information.

1. Personal data refers to any information which may directly or indirectly identify a person which could include sensitive personal data and expression of opinion. Among others it includes:

- a) Name
- b) Identity card
- c) Place of Birth
- d) Address
- e) Education History
- f) Employment History
- g) Medical History
- h) Blood type
- i) Race
- j) Religion
- k) Photo
- l) Personal Information and Associated Research Data

2. The purposes for which your personal data may be used are inclusive but not limited to:

- a) For assessment of any application to UTAR
- b) For processing any benefits and services
- c) For communication purposes
- d) For advertorial and news
- e) For general administration and record purposes
- f) For enhancing the value of education
- g) For educational and related purposes consequential to UTAR
- h) For replying any responds to complaints and enquiries
- i) For the purpose of our corporate governance
- j) For the purposes of conducting research/ collaboration

3. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and appointed outsourcing agents for purpose of fulfilling our obligations to you in respect of the purposes and all such other purposes that are related to the purposes and also in providing integrated services, maintaining and storing records. Your data may be shared when required by laws and when disclosure is necessary to comply with applicable laws.

3. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and appointed outsourcing agents for purpose of fulfilling our obligations to you in respect of the purposes and all such other purposes that are related to the purposes and also in providing integrated services, maintaining and storing records. Your data may be shared when required by laws and when disclosure is necessary to comply with applicable laws.

4. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance with our retention policy applicable for us in the event such information is no longer required.

5. UTAR is committed in ensuring the confidentiality, protection, security and accuracy of your personal information made available to us and it has been our ongoing strict policy to ensure that your personal information is accurate, complete, not misleading and updated. UTAR would also ensure that your personal data shall not be used for political and commercial purposes.

Consent Form for Research Participation and Personal Data Protection

Title of Project: Social Loafing Behaviour in Collaborative Group Work among University Students in Malaysia: Self-Efficacy, Group Cohesion and Task Interdependence

NOTE: This consent form will remain with the UTAR researchers for their records.

I understand I have been asked to take part in the research project specified above by UTAR students for the purpose of their course assignment for UAPZ3013 Final Year Project I and UAPZ3023 Final Year Project II. I have had the project explained to me, and I have read the Explanatory Statement, which I keep for my records.

6. By submitting or providing your personal data to UTAR, you had consented and agreed for your personal data to be used in accordance to the terms and conditions in the Notice and our relevant policy.

7. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact you or to assist you in respect of the purposes and/or for any other purposes related to the purpose.

I acknowledge that if I do not consent or subsequently withdraw my consent to the processing and disclosure of my personal data, UTAR will not be able to fulfil their obligations or to contact me or to assist me in respect of the purposes and/or for any other purposes related to the purpose.

For any inquiry regarding this online survey the researchers can be reached at:

Dheenosheeni A/P Maganthrin Kumar (*mkdheenosheeni@utar.my*)

Khoo Jing Wen (*KJW.1999@utar.my*)

Kishuvan A/L Marimuthu (*mkishuvan@utar.my*)

Acknowledgment of Personal Data Protection Notice

I understand that:

- I will be asked to complete a questionnaire about self-efficacy, group cohesion and task interdependence as predictors of social loafing behaviour in collaborative group work among university students in Malaysia.
- My participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without being penalised or disadvantaged in any way.
- I may ask at any time for my data to be withdrawn from the project.
- No information I have provided that could lead to the identification of any other individual will be disclosed in any reports on the project, or to any other party.
- I will remain anonymous at all times in any reports or publications from the project.
- It is my sole responsibility to look after my own safety for the above project.
- In the event of any misfortune or accidental injury involving me, whether or not due solely to personal negligence or otherwise, I hereby declare that UTAR shall not be held responsible.

I have been notified by you and that I hereby understood, consented and agreed per UTAR above notice.

I disagree, my personal data will not be processed.

0% Survey Completion 100%



Age

Gender

Male

Female

Ethnicity

Malay

Chinese

Indian

Others

Nationality

Malaysian

Non-Malaysian (please specify your nationality)

Type of Institution/University

Public University

Private University

Level of Education

 Foundation/Diploma Bachelor's Degree Master's Degree PhD

Course of Study (e.g.: Psychology)

Year of Study

 Year 1 Year 2 Year 3 Year 4 and above

Have you experienced collaborative group work at your university?

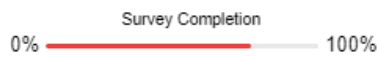
Note: Group collaborative work is when **two or more people (often groups) work together** through idea sharing and dividing the work to accomplish a common goal for the course of study, such as **group assignments or group presentation** either in physical or online classes.

 Yes No

Part B: General Self-Efficacy Scale (GSES)

Instruction: Please rate your perception about the following statements contributing to general self-efficacy.

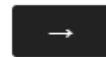
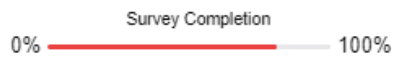
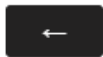
	Not at all true	Hardly true	Moderately true	Exactly true
I can always manage to solve difficult problems if I try hard enough.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy for me to stick to my aims and accomplish my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I could deal efficiently with unexpected events.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thanks to my resourcefulness, I know how to handle unforeseen situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can solve most problems if I invest the necessary effort.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can remain calm when facing difficulties because I can rely on my coping abilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am confronted with a problem, I can usually find several solutions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I am in trouble, I can usually think of a solution.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can usually handle whatever comes my way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Part C: Group Cohesiveness Scale (GCS)

Instruction: Please rate how strongly do you agree with each of the following statements concerning your experience with the collaborative group work (**eg: group assignments**) so far?

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I feel accepted by the group.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In my group, we trust each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The members like and care about each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The members try to understand why they do the things; try to reason it out.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The members feel a sense of participation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The members appear to do things the way they think will be acceptable to the group.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



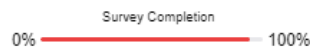


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Part E: Social Loafing Tendency Questionnaire (SLTQ)

Instruction: Please rate your perception about the following statements contributing to social loafing tendency.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
In a team, I will try as hard as I can.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In a team, I will contribute less than I should.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In a team, I will actively participate in the discussion and contribute ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In a team, it is okay even if I do not do my share.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In a team, it does not matter whether or not I try my best.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In a team, given my abilities, I will do the best I can.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Appendix B

Krejcie and Morgan Sample Size Table

TABLE 1
Table for Determining Sample Size from a Given Population

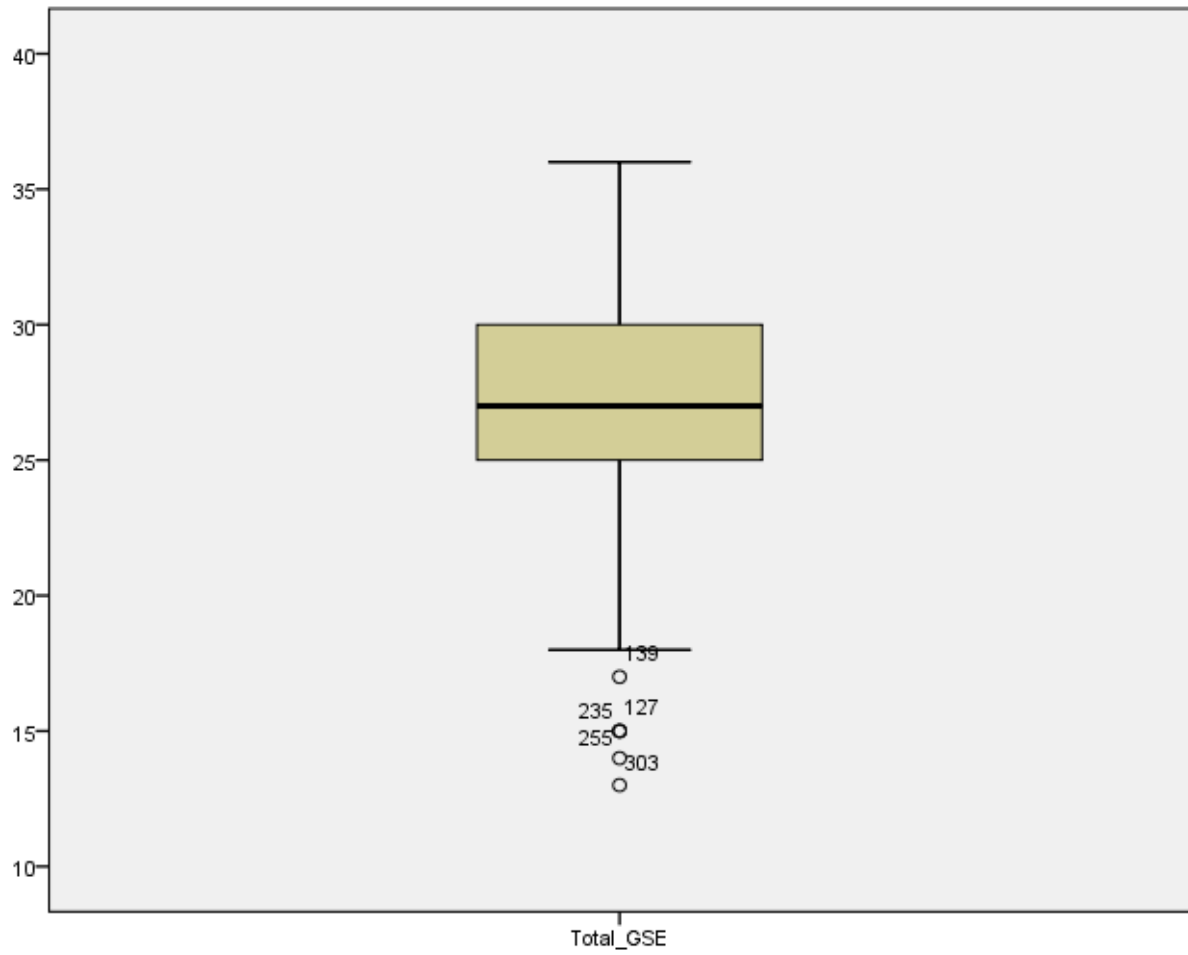
<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size.
S is sample size.

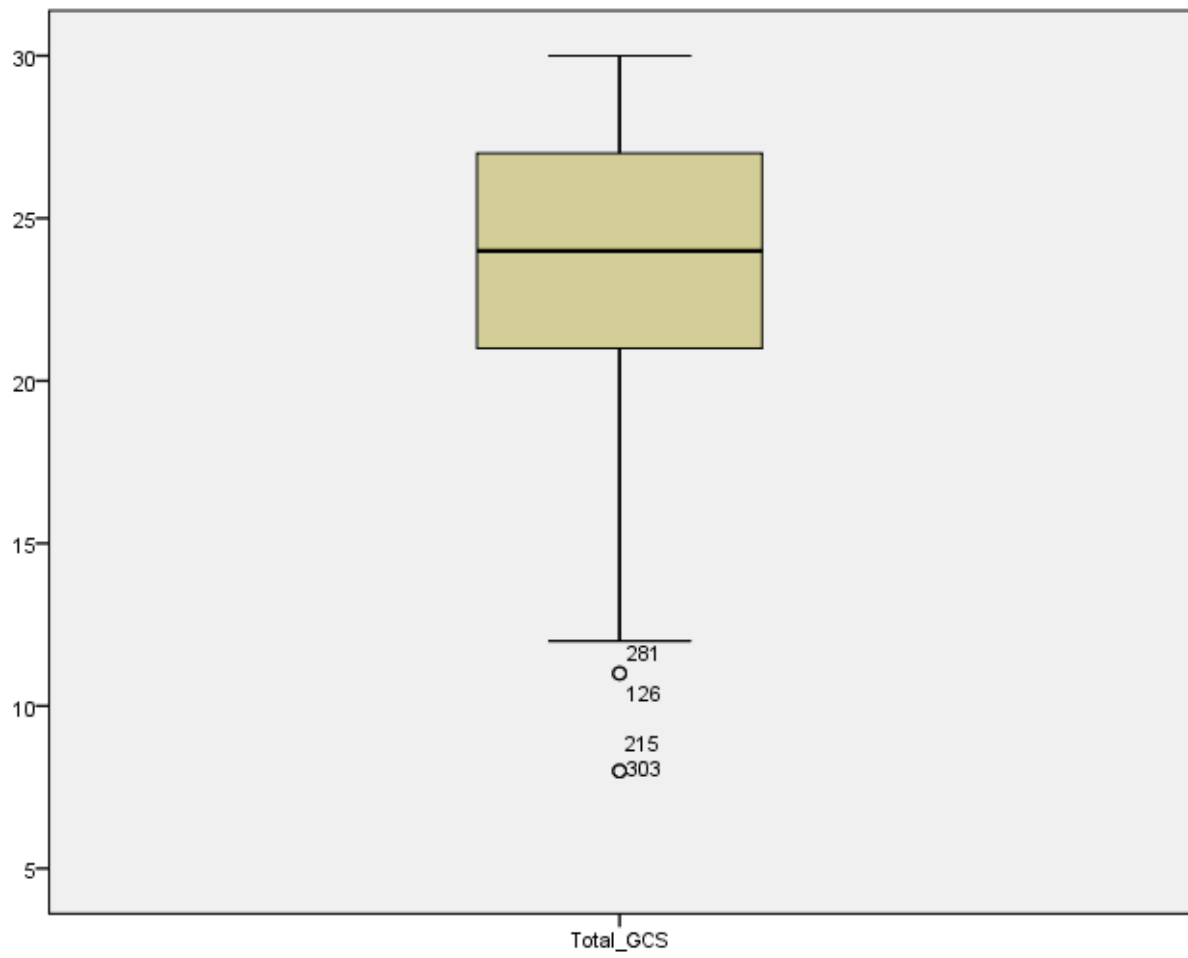
Appendix C

Boxplot

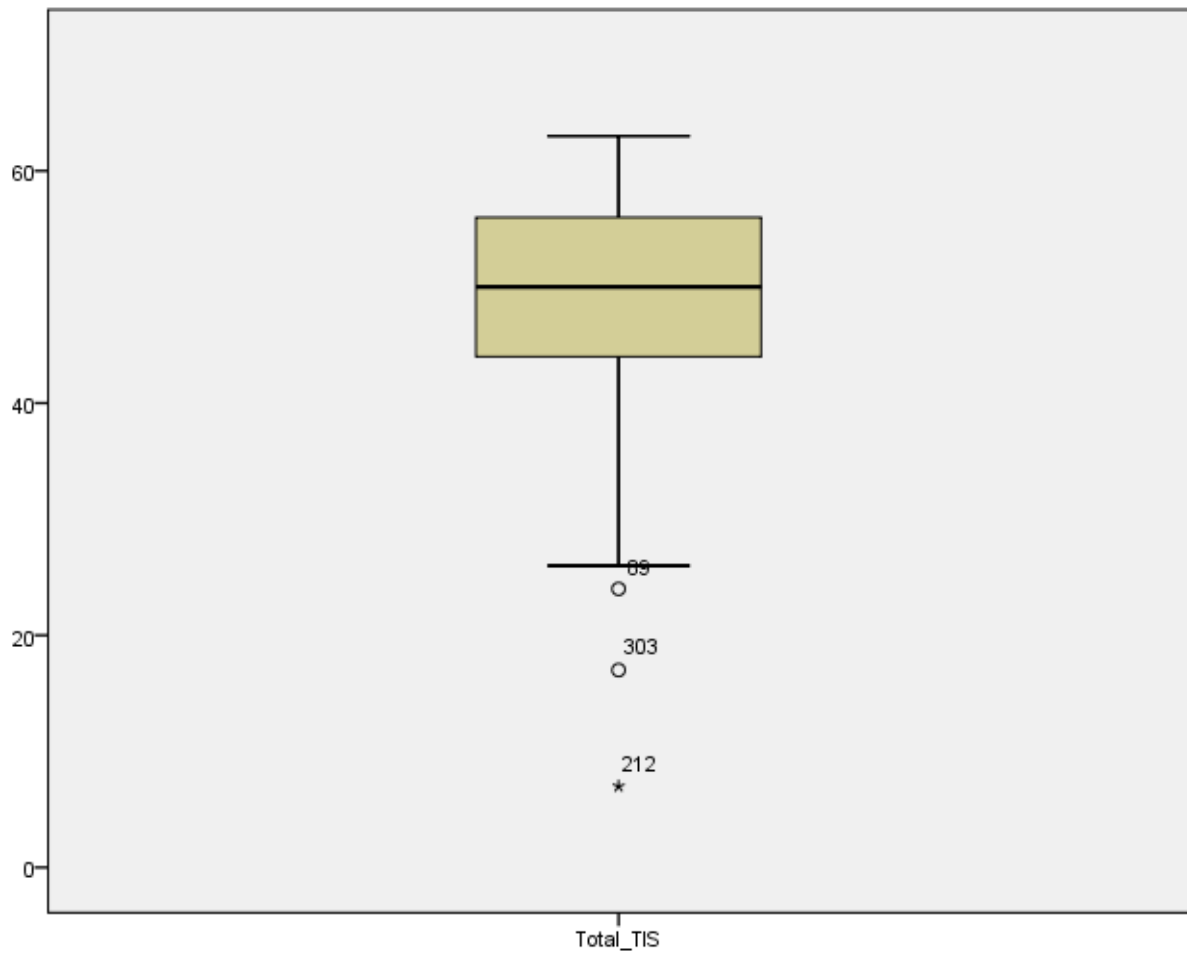
Self-Efficacy



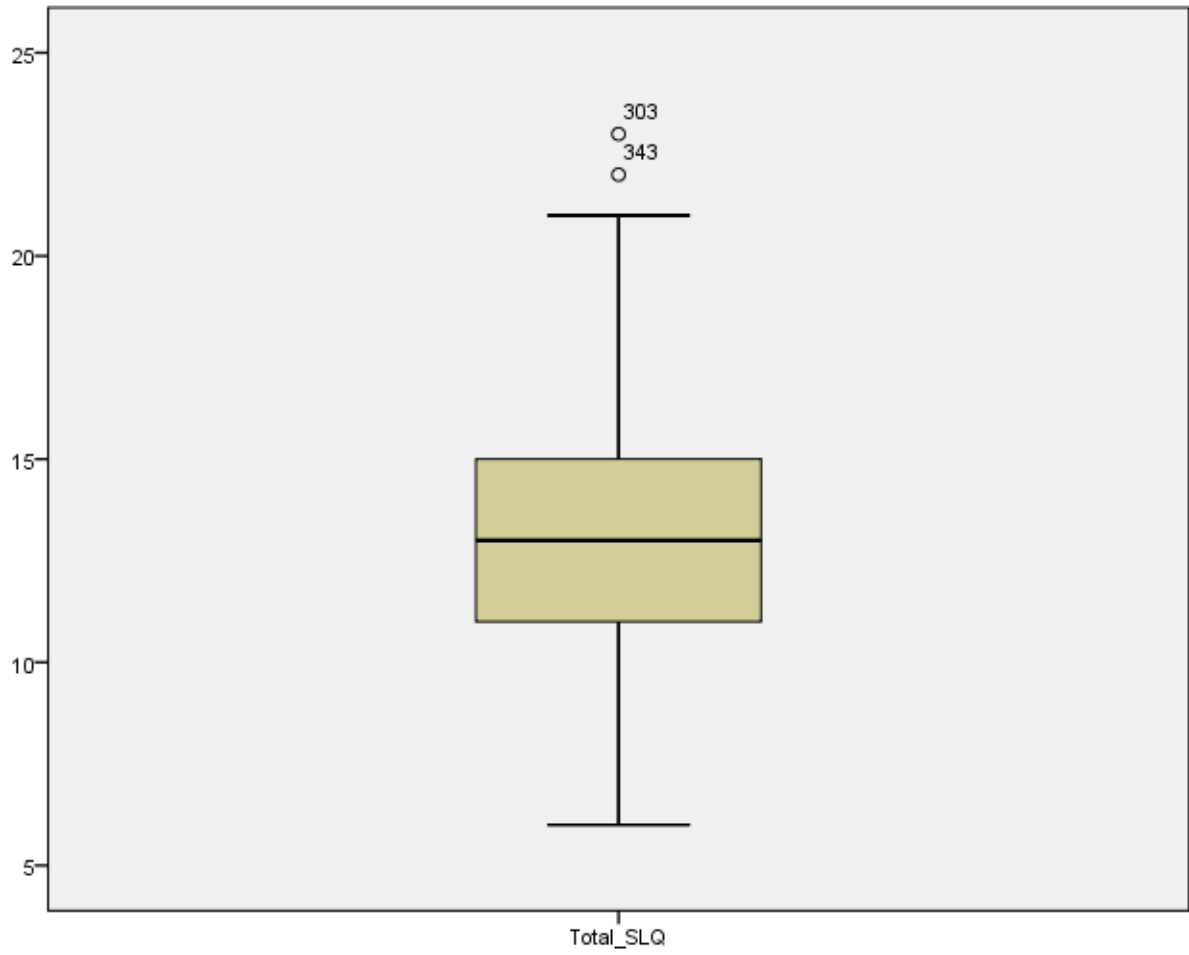
Group Cohesion



Task Interdependence



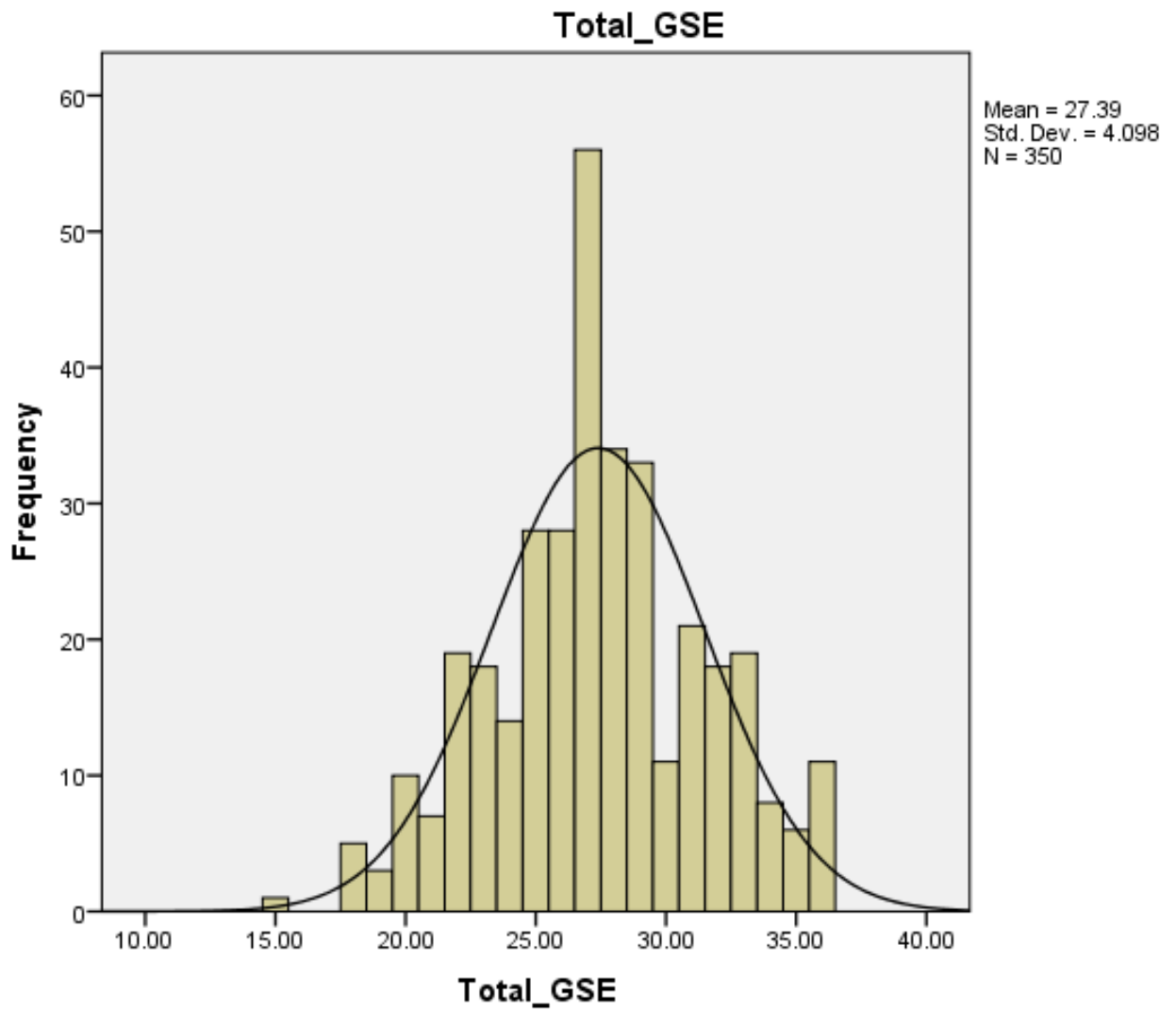
Social Loafing



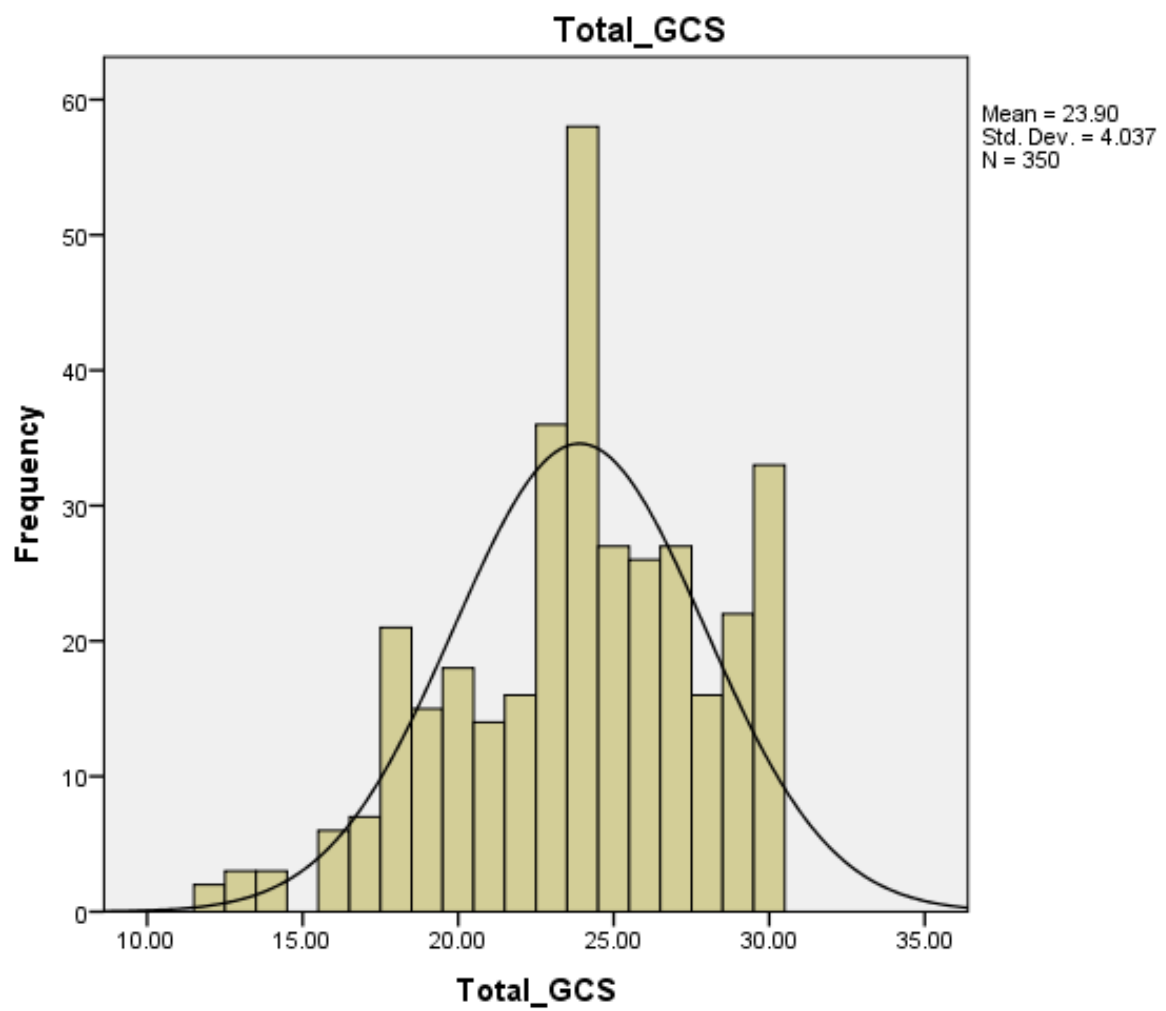
Appendix D

SPSS Output for Normality Assumption Testing (Histogram)

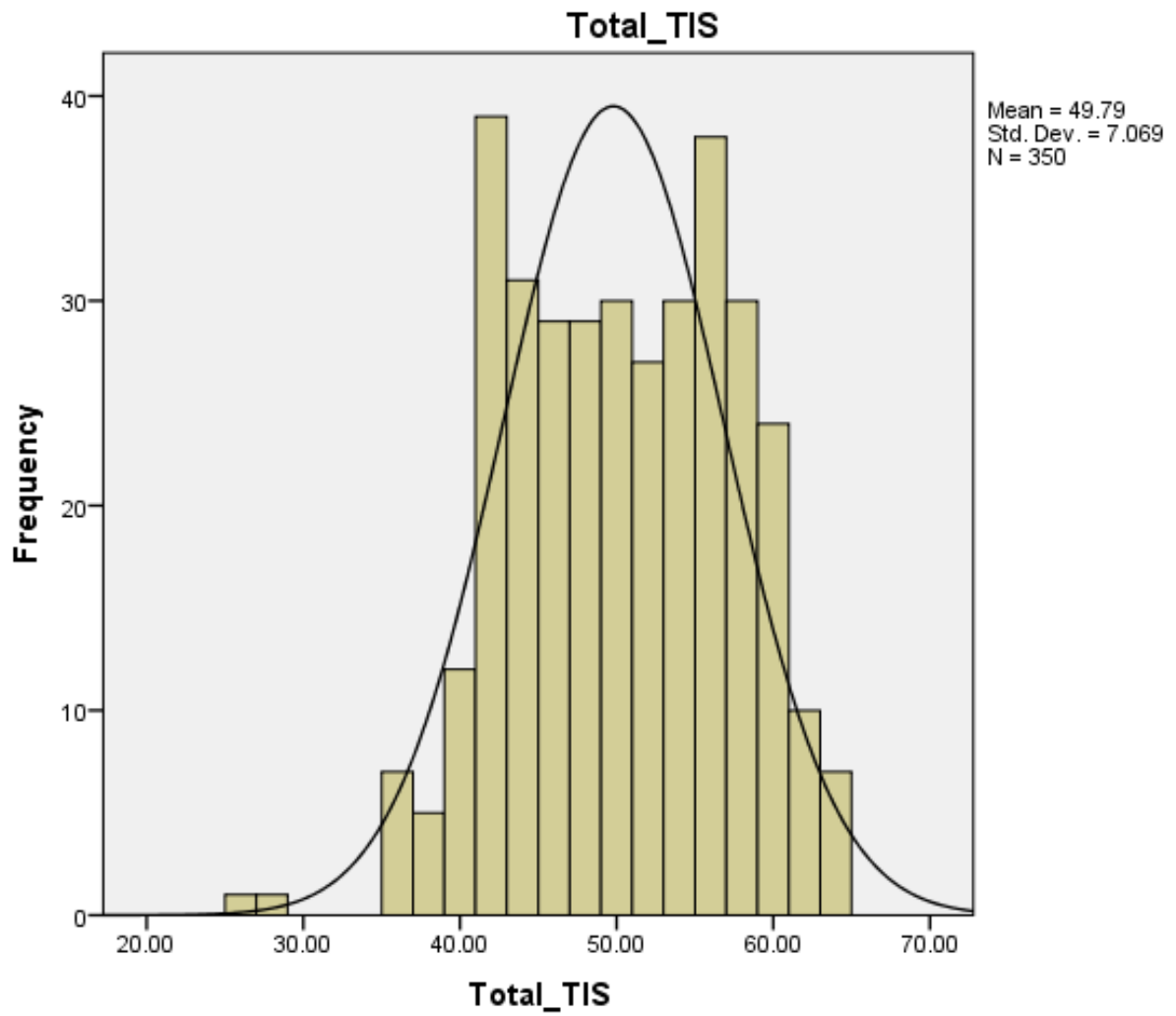
Self-Efficacy



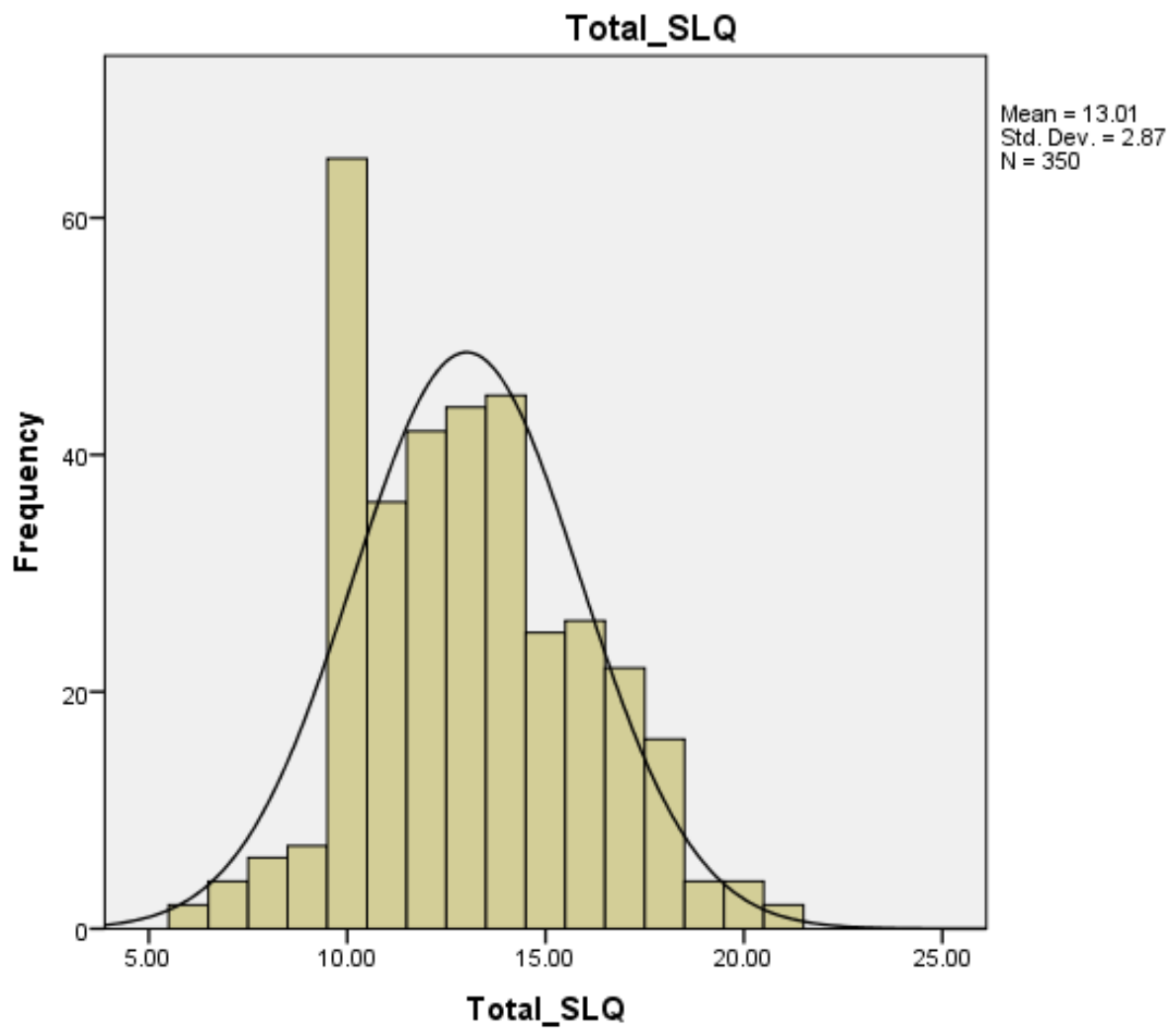
Group Cohesion



Task Interdependence



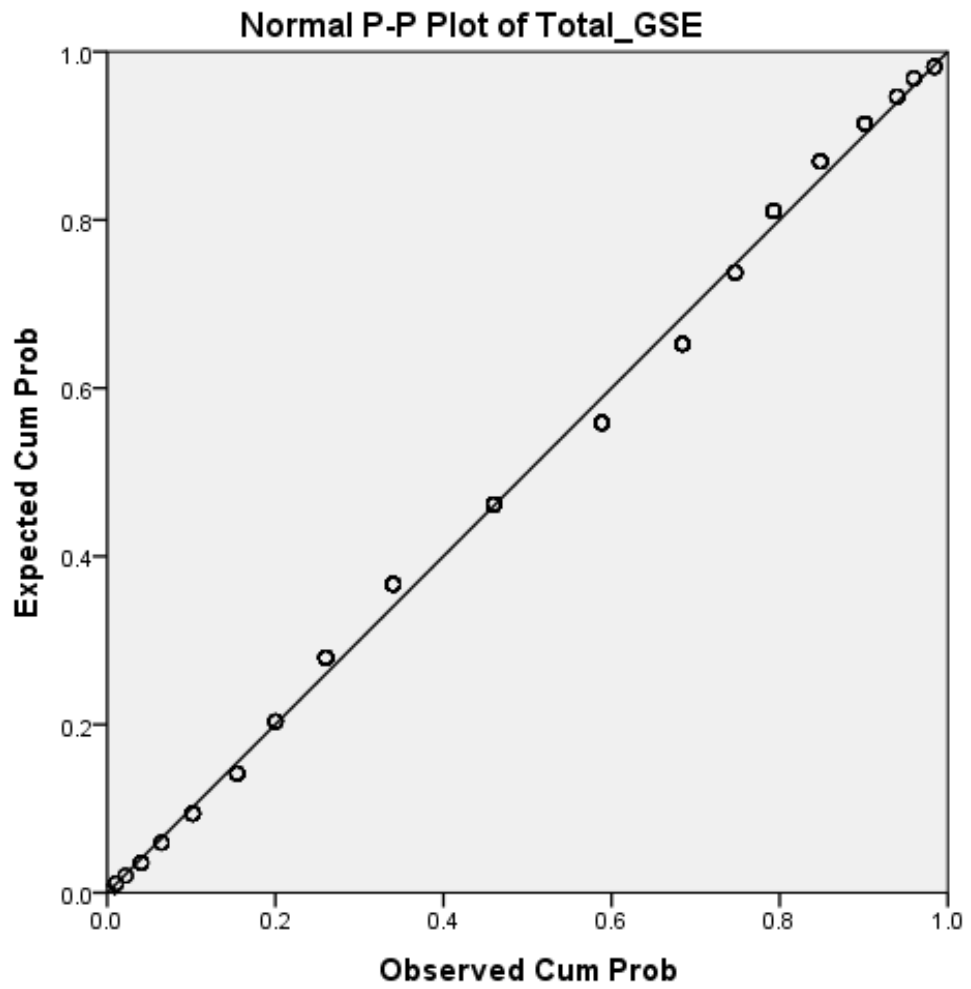
Social Loafing



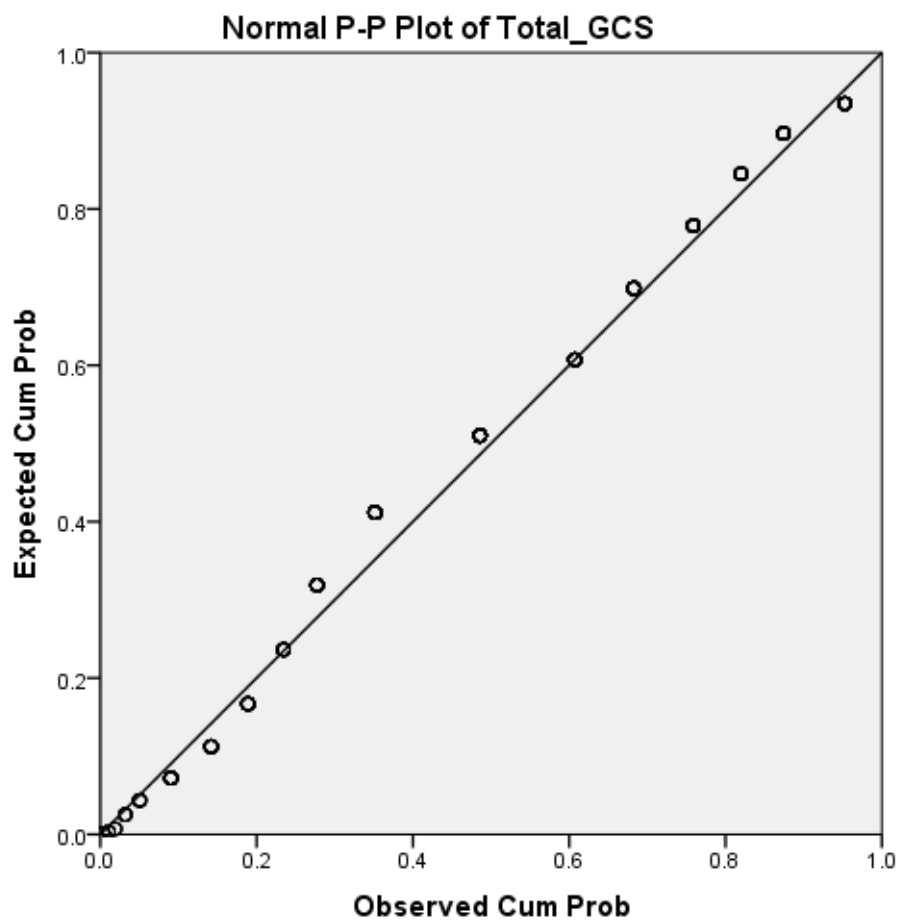
Appendix E

SPSS Output for Normality Assumption Testing (P-Plot)

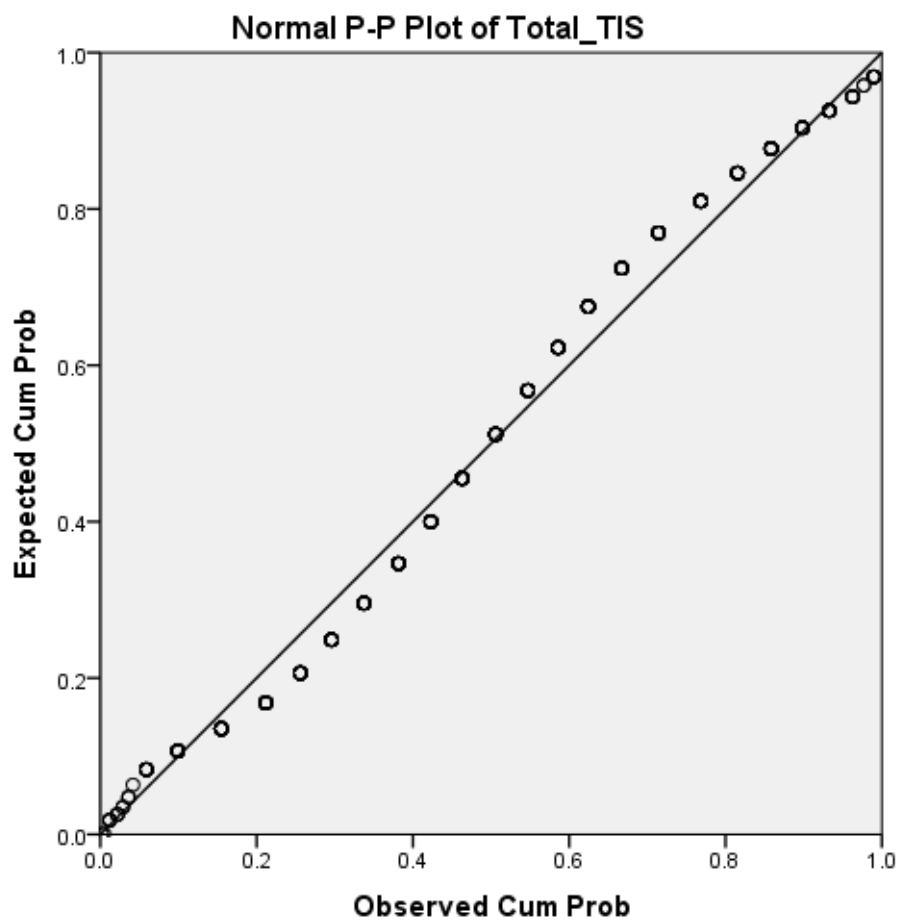
Self-Efficacy



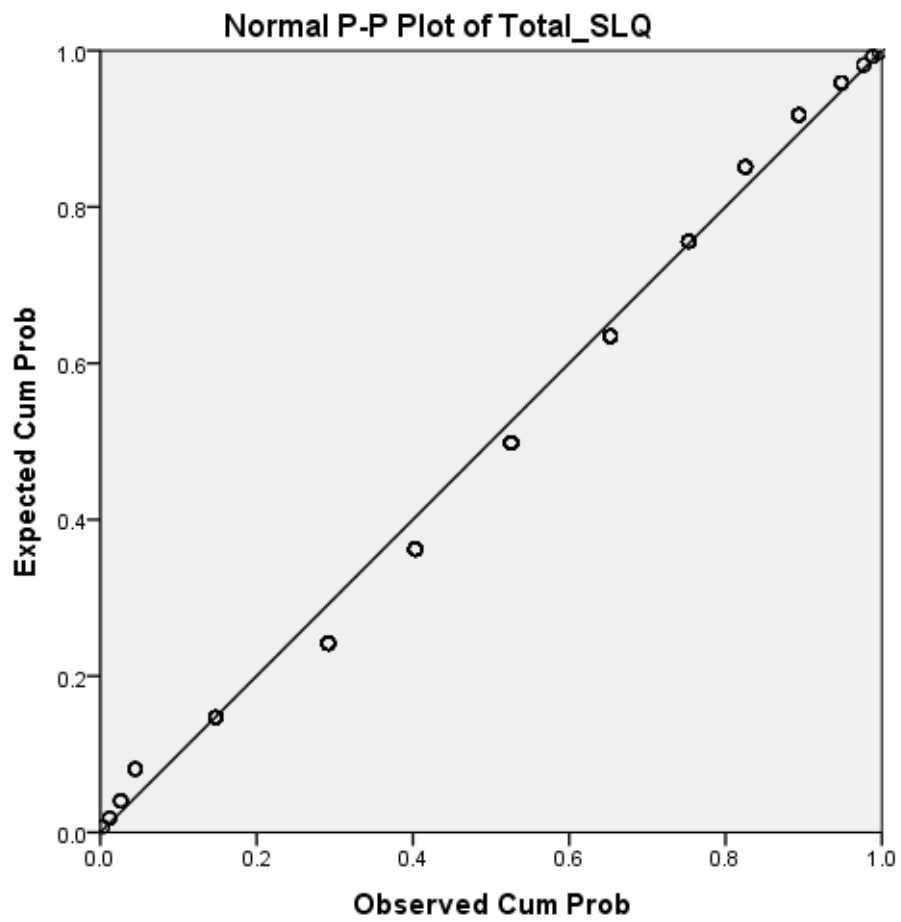
Group Cohesion



Task Interdependence



Social Loafing



Appendix F

Skewness and Kurtosis

Skewness and Kurtosis

Descriptives

			Statistic	Std. Error
Total_GSE	Mean		27.3943	.21902
	95% Confidence Interval for Mean	Lower Bound	26.9635	
		Upper Bound	27.8251	
	5% Trimmed Mean		27.4063	
	Median		27.0000	
	Variance		16.790	
	Std. Deviation		4.09752	
	Minimum		15.00	
	Maximum		36.00	
	Range		21.00	
	Interquartile Range		5.00	
	Skewness		-.035	.130
	Kurtosis		-.218	.260
Total_GCS	Mean		23.9000	.21578
	95% Confidence Interval for Mean	Lower Bound	23.4756	
		Upper Bound	24.3244	
	5% Trimmed Mean		24.0619	
	Median		24.0000	
	Variance		16.297	
	Std. Deviation		4.03690	
	Minimum		12.00	
	Maximum		30.00	
	Range		18.00	
	Interquartile Range		6.00	
	Skewness		-.458	.130
	Kurtosis		-.193	.260
Total_TIS	Mean		49.7914	.37783
	95% Confidence Interval for Mean	Lower Bound	49.0483	
		Upper Bound	50.5345	
	5% Trimmed Mean		49.8889	
	Median		50.0000	
Variance		49.965		

	Std. Deviation		7.06859	
	Minimum		26.00	
	Maximum		63.00	
	Range		37.00	
	Interquartile Range		12.00	
	Skewness		-.175	.130
	Kurtosis		-.591	.260
	Mean		13.0114	.15339
Total_SLQ	95% Confidence Interval for Mean	Lower Bound	12.7097	
		Upper Bound	13.3131	
	5% Trimmed Mean		12.9635	
	Median		13.0000	
	Variance		8.235	
	Std. Deviation		2.86964	
	Minimum		6.00	
	Maximum		21.00	
	Range		15.00	
	Interquartile Range		4.00	
	Skewness		.327	.130
	Kurtosis		-.341	.260

Appendix G

SPSS Output for Assumption Testing of Multiple Linear

Test on Multicollinearity**Coefficients^a**

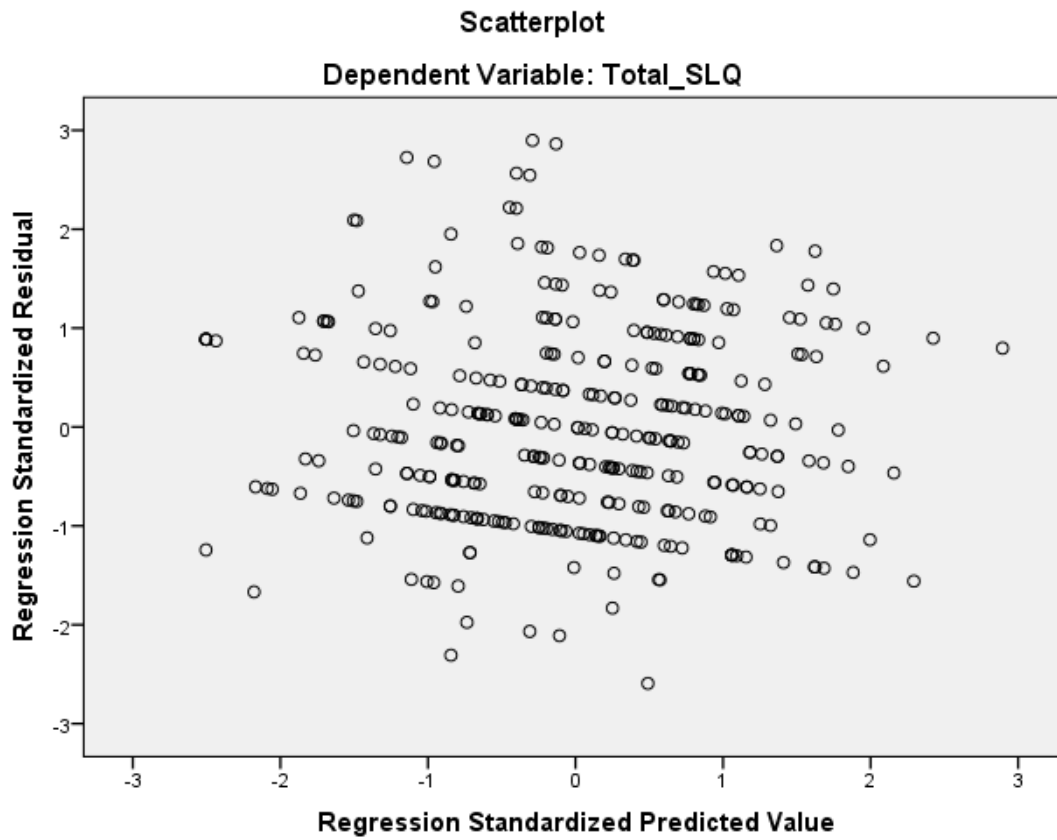
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	18.371	1.367		13.434	.000	15.681	21.060		
Total_GSE	-.075	.040	-.107	-1.876	.062	-.153	.004	.856	1.168
Total_GCS	-.054	.044	-.077	-1.235	.218	-.141	.032	.719	1.391
Total_TIS	-.040	.024	-.100	-1.704	.089	-.087	.006	.808	1.238

a. Dependent Variable: Total_SLQ

Appendix H

Scatterplot

Test on Normality and Linearity of Residuals and Homoscedasticity



Appendix I

Casewise Diagnostic

Test on Multivariate Outliers and Influential Cases

Casewise Diagnostics^a

Case Number	Std.Residual	Total_SLQ	Predicted Value	Residual
115	-2.088	7.00	12.96467	-5.96468
152	-2.269	6.00	12.4830	-6.48298
194	2.116	18.00	11.9535	6.04654
224	-2.557	6.00	13.3057	-7.30570
270	-2.032	7.00	12.8054	-5.80536
303	2.095	23.00	17.0135	5.98655
309	2.165	19.00	12.8148	6.18519
342	2.664	20.00	12.3882	7.61183
343	2.745	22.00	14.15645	7.84352
344	2.120	18.00	11.9421	6.05794
354	2.553	20.00	12.7064	7.293614
355	2.185	19.00	12.7564	6.243571
356	2.811	21.00	12.9688	8.031151
357	2.746	20.00	12.1534	7.846627
358	2.536	20.00	12.7553	7.244678
360	2.841	21.00	12.882380	8.117620

a. Dependent Variable: Total_SLQ

Appendix J

Case Summaries Table

Case Summaries ^a				
	Case Number	Mahalanobis Distance	Cook's Distance	Leverage Value
1	1	1.10199	0.00124	0.00306
2	2	2.48157	0.00195	0.00689
3	3	2.47228	0.00043	0.00687
4	4	0.85041	0.00005	0.00236
5	5	4.32504	0.00149	0.01201
6	6	5.27838	0.00092	0.01466
7	7	0.76984	0.00001	0.00214
8	8	3.23785	0.00115	0.00899
9	9	1.44123	0.00002	0.004
10	10	3.83255	0.00458	0.01065
11	11	0.49517	0.00002	0.00138
12	12	3.17746	0.00702	0.00883
13	13	6.09964	0.00422	0.01694
14	14	1.27037	0.00112	0.00353
15	15	2.46352	0.0012	0.00684
16	16	4.89884	0.00406	0.01361
17	17	0.49441	0.00125	0.00137
18	18	0.54484	0.00043	0.00151
19	19	5.22232	0.00421	0.01451
20	20	1.45981	0.00051	0.00406
21	21	2.34499	0.00514	0.00651
22	22	3.05342	0.00219	0.00848
23	23	0.91685	0.00268	0.00255
24	24	2.23327	0.0025	0.0062
25	25	1.21763	0.00161	0.00338
26	26	1.37043	0.0025	0.00381
27	27	2.6298	0.00053	0.00731
28	28	2.34499	0.00001	0.00651
29	29	3.03708	0.00193	0.00844
30	30	1.86529	0.00099	0.00518
31	31	4.7262	0.00352	0.01313
32	32	0.79068	0.00003	0.0022
33	33	0.58449	0.00169	0.00162
34	34	7.8485	0.01772	0.0218
35	35	4.11807	0.00336	0.01144
36	36	1.7848	0.00047	0.00496
37	37	0.17923	0.00012	0.0005
38	38	1.51055	0.00003	0.0042
39	39	3.23842	0.00332	0.009
40	40	2.8729	0.00435	0.00798
41	41	2.26985	0.00201	0.00631

42	42	3.92579	0.00134	0.0109
43	43	0.60658	0.00299	0.00168
44	44	2.73089	0.00301	0.00759
45	45	3.22983	0.00006	0.00897
46	46	0.99116	0.00002	0.00275
47	47	3.55736	0.00072	0.00988
48	48	0.94421	0.0012	0.00262
49	49	0.46196	0.00051	0.00128
50	50	1.66384	0.00045	0.00462
51	51	0.42241	0.00012	0.00117
52	52	4.86546	0.00327	0.01352
53	53	0.27427	0.00018	0.00076
54	54	2.0185	0.00578	0.00561
55	55	0.52145	0.00032	0.00145
56	56	4.88556	0.00103	0.01357
57	57	1.78556	0.00436	0.00496
58	58	3.93633	0.00227	0.01093
59	59	1.98051	0.00001	0.0055
60	60	2.78789	0.00015	0.00774
61	61	3.16701	0.00303	0.0088
62	62	6.61106	0.00152	0.01836
63	63	0.41413	0.00074	0.00115
64	64	2.61341	0.00142	0.00726
65	65	2.57621	0.00119	0.00716
66	66	2.88327	0.00306	0.00801
67	67	3.88466	0.00152	0.01079
68	68	4.4814	0.00059	0.01245
69	69	4.28281	0.00535	0.0119
70	70	0.76006	0.0009	0.00211
71	71	0.35899	0.00129	0.001
72	72	3.13443	0.00403	0.00871
73	73	3.01306	0.00281	0.00837
74	74	6.17955	0.00092	0.01717
75	75	3.84431	0.00515	0.01068
76	76	1.78556	0.00002	0.00496
77	77	0.96688	0.00175	0.00269
78	78	4.02579	0	0.01118
79	79	7.68607	0.00275	0.02135
80	80	2.75282	0.00042	0.00765
81	81	0.82297	0.00089	0.00229
82	82	2.54839	0.00565	0.00708
83	83	0.01383	0.00037	0.00004
84	84	1.94215	0.00134	0.00539
85	85	1.58841	0.00239	0.00441
86	86	5.20812	0.00157	0.01447
87	87	3.21685	0.00081	0.00894
88	88	1.54862	0.00004	0.0043
89	90	4.34531	0.0069	0.01207
90	91	0.20939	0.00018	0.00058
91	92	3.01306	0.00281	0.00837

92	93	0.305	0.00007	0.00085
93	94	3.68775	0.00164	0.01024
94	95	4.626	0.0004	0.01285
95	96	1.53149	0.00126	0.00425
96	97	1.96931	0.00159	0.00547
97	98	2.06914	0.00548	0.00575
98	99	2.24373	0.00427	0.00623
99	100	1.82406	0.00008	0.00507
100	101	3.84913	0.00196	0.01069
101	102	1.07699	0.00262	0.00299
102	103	3.01024	0.00008	0.00836
103	104	6.83034	0.00356	0.01897
104	105	1.29014	0.00002	0.00358
105	106	2.24373	0.00427	0.00623
106	107	3.19564	0.00029	0.00888
107	108	3.59272	0.00637	0.00998
108	109	1.66559	0.00274	0.00463
109	110	4.00642	0.00104	0.01113
110	111	2.0059	0.00067	0.00557
111	112	1.41547	0.00175	0.00393
112	113	0.77217	0.00133	0.00214
113	114	3.7307	0.00142	0.01036
114	115	0.11295	0.00338	0.00031
115	116	0.63328	0.0009	0.00176
116	117	2.80444	0.00339	0.00779
117	118	1.933	0.00195	0.00537
118	119	4.38397	0.00105	0.01218
119	120	6.14964	0.00641	0.01708
120	121	4.93494	0.00109	0.01371
121	122	1.19746	0.00005	0.00333
122	123	0.22728	0	0.00063
123	124	0.78672	0.00013	0.00219
124	125	2.95128	0.00473	0.0082
125	128	0.44939	0.00018	0.00125
126	129	2.92347	0.00001	0.00812
127	130	3.39553	0.00277	0.00943
128	131	2.38248	0.00007	0.00662
129	132	0.54334	0.00001	0.00151
130	133	0.52807	0.00086	0.00147
131	134	0.41413	0.00003	0.00115
132	135	0.97805	0.00033	0.00272
133	136	0.86996	0.00082	0.00242
134	137	4.60577	0.00015	0.01279
135	138	4.01447	0.00002	0.01115
136	140	2.23015	0.00149	0.00619
137	141	1.9314	0.00044	0.00536
138	142	5.52561	0.00063	0.01535
139	143	1.41547	0.00092	0.00393
140	144	3.35207	0.0005	0.00931
141	145	3.93837	0.00044	0.01094

142	146	1.58131	0.0012	0.00439
143	147	3.72439	0.00198	0.01035
144	148	8.26719	0.01398	0.02296
145	149	1.09826	0.001	0.00305
146	150	6.14964	0.00502	0.01708
147	151	0.32116	0.00012	0.00089
148	152	2.7141	0.01355	0.00754
149	153	1.12276	0.00001	0.00312
150	154	1.44324	0.00044	0.00401
151	155	0.17793	0.00013	0.00049
152	156	2.35203	0.00176	0.00653
153	157	2.61107	0.00709	0.00725
154	158	3.05477	0.00058	0.00849
155	159	1.11126	0.00043	0.00309
156	160	7.62801	0.00948	0.02119
157	161	1.11535	0.00047	0.0031
158	162	3.60161	0	0.01
159	163	2.43579	0.00114	0.00677
160	164	2.75956	0.00074	0.00767
161	165	1.43633	0.00181	0.00399
162	166	0.55249	0.00222	0.00153
163	167	2.18018	0.00147	0.00606
164	168	2.45068	0.00264	0.00681
165	169	1.75486	0.00361	0.00487
166	170	2.07381	0.00101	0.00576
167	171	0.4319	0.00079	0.0012
168	172	1.2656	0.00033	0.00352
169	173	3.38903	0.0038	0.00941
170	174	6.67408	0.00611	0.01854
171	175	0.40807	0	0.00113
172	176	0.89758	0.00106	0.00249
173	177	2.34169	0.00031	0.0065
174	178	5.08695	0.00064	0.01413
175	179	2.07551	0.0031	0.00577
176	180	2.85229	0.00101	0.00792
177	181	3.33307	0.00109	0.00926
178	182	1.2656	0.00033	0.00352
179	183	1.6742	0	0.00465
180	184	6.14964	0.00502	0.01708
181	185	0.12686	0.00048	0.00035
182	186	1.91661	0.0004	0.00532
183	187	2.12353	0.0022	0.0059
184	188	2.4837	0.00004	0.0069
185	189	0.05021	0.00013	0.00014
186	190	2.81832	0.00341	0.00783
187	191	0.80573	0.00032	0.00224
188	192	0.95537	0.00157	0.00265
189	193	4.55455	0.00148	0.01265
190	194	2.26377	0.01033	0.00629
191	195	0.28845	0.00197	0.0008

192	196	2.20165	0.00664	0.00612
193	197	1.91462	0.00759	0.00532
194	198	2.28912	0.00012	0.00636
195	199	1.33406	0.00128	0.00371
196	200	2.63869	0.00002	0.00733
197	201	3.13449	0.00471	0.00871
198	202	1.06929	0.00003	0.00297
199	203	6.98878	0.00354	0.01941
200	204	2.51331	0.00763	0.00698
201	205	0.48301	0.00019	0.00134
202	206	5.24574	0.00075	0.01457
203	207	5.50146	0.00031	0.01528
204	208	1.52404	0.00401	0.00423
205	209	0.16153	0.00019	0.00045
206	210	4.74278	0.00024	0.01317
207	211	0.3372	0.00046	0.00094
208	213	1.06929	0.00003	0.00297
209	214	3.71551	0.00291	0.01032
210	216	5.07642	0.00655	0.0141
211	217	0.03244	0.00034	0.00009
212	218	4.59284	0.00968	0.01276
213	219	2.3076	0.00155	0.00641
214	220	1.18433	0.00102	0.00329
215	221	0.1276	0.00088	0.00035
216	222	3.76266	0.00003	0.01045
217	223	6.20684	0.00946	0.01724
218	224	2.81292	0.01767	0.00781
219	225	1.66228	0.00053	0.00462
220	226	2.08045	0.00107	0.00578
221	227	3.17211	0.00755	0.00881
222	228	5.83025	0.00461	0.0162
223	229	2.50428	0.00001	0.00696
224	230	0.17793	0.00035	0.00049
225	231	3.03708	0.00063	0.00844
226	232	19.80598	0.04042	0.05502
227	233	2.69214	0.00189	0.00748
228	234	2.09887	0.00004	0.00583
229	236	4.38168	0.00249	0.01217
230	237	1.74143	0.00049	0.00484
231	238	6.14964	0.00502	0.01708
232	239	0.82201	0.00005	0.00228
233	240	1.31702	0.00011	0.00366
234	241	2.48973	0.00004	0.00692
235	242	0.80573	0.00032	0.00224
236	243	0.91107	0.00021	0.00253
237	244	0.4503	0.00007	0.00125
238	245	0.02161	0.00007	0.00006
239	246	5.48882	0.00361	0.01525
240	247	1.66559	0.00274	0.00463
241	248	0.06761	0.00212	0.00019

242	249	9.18876	0.00004	0.02552
243	250	10.53326	0.00239	0.02926
244	251	7.05876	0.00081	0.01961
245	252	0.05021	0.00245	0.00014
246	253	4.32891	0.0003	0.01202
247	254	1.46942	0.00248	0.00408
248	256	3.03596	0.00536	0.00843
249	257	1.75498	0.00374	0.00487
250	258	4.63123	0.00061	0.01286
251	259	4.626	0.0004	0.01285
252	260	1.53149	0.00126	0.00425
253	261	3.07617	0.00186	0.00854
254	262	2.43629	0.00617	0.00677
255	263	2.24373	0.00427	0.00623
256	264	1.82406	0.00008	0.00507
257	265	1.50569	0.00004	0.00418
258	266	1.07699	0.0006	0.00299
259	267	0.61556	0	0.00171
260	268	7.85119	0.00283	0.02181
261	269	1.29014	0.00002	0.00358
262	270	0.54828	0.00447	0.00152
263	271	1.76903	0.00142	0.00491
264	272	2.80444	0.00339	0.00779
265	273	1.60759	0.00264	0.00447
266	274	3.31838	0.00018	0.00922
267	275	2.81877	0.00329	0.00783
268	276	2.51226	0.00485	0.00698
269	277	0.54334	0.00001	0.00151
270	278	0.12549	0	0.00035
271	279	0.86259	0.00014	0.0024
272	280	2.69509	0.00743	0.00749
273	282	4.8037	0.0039	0.01334
274	283	0.19052	0.00091	0.00053
275	284	2.75163	0	0.00764
276	285	0.76349	0.00124	0.00212
277	286	8.72845	0.00138	0.02425
278	287	1.9314	0.00044	0.00536
279	288	5.52561	0.00063	0.01535
280	289	1.41547	0.002	0.00393
281	290	3.35207	0.0005	0.00931
282	291	3.93837	0.00044	0.01094
283	292	1.58131	0.0012	0.00439
284	293	3.72439	0.00198	0.01035
285	294	8.26719	0.01398	0.02296
286	295	1.09826	0.00203	0.00305
287	296	6.14964	0.00502	0.01708
288	297	0.32116	0.00012	0.00089
289	298	2.07109	0.00484	0.00575
290	299	1.33171	0.00071	0.0037
291	300	1.44324	0.00126	0.00401

292	301	1.70192	0.00044	0.00473
293	302	2.35203	0.00006	0.00653
294	304	1.11535	0.00003	0.0031
295	305	3.60161	0.0016	0.01
296	306	2.43579	0	0.00677
297	307	2.75956	0.00008	0.00767
298	308	0.6237	0.001	0.00173
299	309	2.74865	0.01245	0.00764
300	310	2.18018	0.00013	0.00606
301	311	2.45068	0	0.00681
302	312	1.7906	0.00006	0.00497
303	313	2.68916	0.00016	0.00747
304	314	0.59347	0.00003	0.00165
305	315	2.05858	0.00199	0.00572
306	316	1.37043	0.0025	0.00381
307	317	2.6298	0.00053	0.00731
308	318	2.34499	0.00001	0.00651
309	319	3.03708	0.00193	0.00844
310	320	2.42618	0.00108	0.00674
311	321	4.7262	0.00352	0.01313
312	322	1.24136	0.00002	0.00345
313	323	0.54169	0.0012	0.0015
314	324	11.95597	0.02129	0.03321
315	325	4.69943	0.00432	0.01305
316	326	2.77461	0.00056	0.00771
317	327	0.85292	0.00026	0.00237
318	328	2.19445	0.00005	0.0061
319	329	3.23842	0.00332	0.009
320	330	3.46928	0.00427	0.00964
321	331	4.49202	0	0.01248
322	332	1.83907	0.00237	0.00511
323	333	2.08657	0.00698	0.0058
324	334	3.34814	0.00307	0.0093
325	335	1.37036	0.00198	0.00381
326	336	1.59036	0.00004	0.00442
327	337	3.44587	0.00003	0.00957
328	338	0.94358	0.00208	0.00262
329	339	0.74233	0.00019	0.00206
330	340	1.71522	0.00081	0.00476
331	341	4.507	0.0053	0.01252
332	342	4.24471	0.02661	0.01179
333	344	2.3478	0.01064	0.00652
334	345	1.3316	0.00431	0.0037
335	346	3.19645	0.01132	0.00888
336	347	1.26307	0.00521	0.00351
337	348	1.00055	0.00007	0.00278
338	349	1.82001	0.00349	0.00506
339	350	1.30705	0.00527	0.00363
340	351	3.30907	0.00508	0.00919
341	352	0.95259	0.00054	0.00265

	342	353	1.70048	0.00093	0.00472
	343	354	0.72656	0.00788	0.00202
	344	355	0.54334	0.00515	0.00151
	345	356	0.13431	0.00625	0.00037
	346	357	2.17726	0.01692	0.00605
	347	358	1.09217	0.00944	0.00303
	348	359	0.26492	0.00001	0.00074
	349	360	1.03061	0.0115	0.00286
	350	361	0.8141	0.00037	0.00226
Total	N		350	350	350
11.00	1	89	13.89702	0.00609	0.0386
	2	126	18.18093	0.01885	0.0505
	3	127	9.18876	0.00004	0.02552
	4	139	6.83182	0.00157	0.01898
	5	212	42.61785	0.00099	0.11838
	6	215	20.1922	0.04284	0.05609
	7	235	8.55466	0.00309	0.02376
	8	255	10.99417	0.00313	0.03054
	9	281	20.35797	0.03594	0.05655
	10	303	26.49305	0.09824	0.07359
	11	343	2.4582	0.01844	0.00683
		359	1.03061	359	359
		212	0.8141	0.00099	0.11838
		302	2.35203	0.00006	0.00653
Total	N		11	11	11
Total	N		361	361	361

Appendix K

Pearson Product-Moment Correlation

		Correlations			
		Total_GSE	Total_GCS	Total_TIS	Total_SLQ
Total_GSE	Pearson Correlation	1	.378**	.192**	-.155**
	Sig. (2-tailed)		.000	.000	.004
	N	350	350	350	350
Total_GCS	Pearson Correlation	.378**	1	.437**	-.160**
	Sig. (2-tailed)	.000		.000	.003
	N	350	350	350	350
Total_TIS	Pearson Correlation	.192**	.437**	1	-.154**
	Sig. (2-tailed)	.000	.000		.004
	N	350	350	350	350
Total_SLQ	Pearson Correlation	-.155**	-.160**	-.154**	1
	Sig. (2-tailed)	.004	.003	.004	
	N	350	350	350	350

** . Correlation is significant at the 0.01 level (2-tailed).