

*Effects of Social Exclusion and Inclusion on Basic Needs Satisfaction, Self-Determined  
Motivation, the Orientations of Interpersonal Relationships, and Behavioural Self-Regulation*

Nathalie Ricard

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School of Psychology  
Faculty of Social Sciences  
University of Ottawa

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## ABSTRACT

How does the satisfaction (or the lack of satisfaction) of the innate need to have meaningful interpersonal relationships affects behavioural self-regulation? How does having/lacking interpersonal relatedness impact one's perception of future interpersonal relationships? This doctoral dissertation aimed to answer these two fundamental questions by integrating the views of two complementary theories, need to belong theory (NBT; Baumeister & Leary, 1995) and self-determination theory (SDT; Deci & Ryan, 1985, 2000). Using a series of two laboratory experiments and one longitudinal study, this thesis examined the effects of social exclusion and inclusion on satisfaction of basic psychological needs, self-determined motivation, and self-regulation of behaviours. In *Study 1* ( $N=72$ ), social exclusion and inclusion were manipulated in order to examine their effects on the satisfaction of the three basic psychological needs proposed by SDT, that is the needs for autonomy, competence, and relatedness. Findings from this first experiment revealed that social exclusion decreases satisfaction of the three needs, whereas social inclusion increases satisfaction of these needs when compared to the control condition. Furthermore, significant differences were found between the exclusion condition and the inclusion condition for the reported levels of satisfaction of the needs for competence and relatedness. The effects of social exclusion and inclusion on basic needs satisfaction were further investigated in *Study 2* ( $N=70$ ); also, the second study examined how self-determined motivation and behavioural self-regulation are affected. More specifically, it tested whether participants' persistence at a laboratory task, as well as their intentions for a future peer interaction (intentions to compete against a peer participant and intentions to collaborate with a peer participant) are influenced by social exclusion and inclusion, through the mediating effects of basic needs satisfaction and self-determined motivation. The results suggested that social exclusion, via the

effects of basic needs and motivation decreases peer collaboration, whereas social inclusion was shown to have an opposite effect on peer collaboration. The effect of condition via the mediating effects of basic needs satisfaction and motivation failed to predict persistence at the task and peer competition. Lastly, *Study 3* ( $N=624$ ) assessed naturally occurring social exclusion and inclusion in a population of junior high school students. This third study investigated the independent contributions of SDT and NBT in the prediction of academic motivation and high school dropout. Peer relatedness, perceived needs support from parents, and perceived needs support from teachers were examined as potential predictors of academic motivation and high school dropout. Findings suggested that peer relatedness plays an important role in the prediction of academic motivation, but, that perceived needs support from parents and perceived needs support from teachers are stronger predictors of that outcome. Results from this study also revealed that peer relatedness contributes to the prediction of high school dropout, beyond what can be explained by academic motivation, perceived needs support from parents, and perceived needs support from teachers. However, perceived needs support from parents was shown to be the most essential predictor of high school dropout. In sum, findings from this doctoral dissertation suggested that social exclusion has detrimental effects on one's motivation and behavioural self-regulation. In contrast, social inclusion fosters social support which promotes satisfaction of the basic psychological needs, self-determined motivation, and successful self-regulation. This doctoral thesis contributed to the application of SDT and NBT by comparing elements of the two complementary frameworks. It also offered an original contribution to research on social exclusion and inclusion by examining their impacts on self-determined motivation, and basic needs satisfaction, as well as testing them in both the laboratory setting and the natural setting.

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## CHAPTER ONE

### GENERAL INTRODUCTION

#### Problem Statement

The desire for positive and stable interpersonal relationships is one of the most fundamental and universal human needs (Baumeister & Leary, 1995; Deci & Ryan, 1985, 2000). Throughout their lifespan, human beings strive to become members of various social groups, so that they can feel part of something bigger and give higher meaning to their lives. Thus, interpersonal relationships do not only contribute to one's well-being, but a lack of interpersonal attachments and relatedness can have serious consequences on one's emotional and psychological functioning (Baumeister & Leary, 1995; Bowlby, 1969/1982; Bowlby, 1973; Deci & Ryan, 1985, 2000).

Relatedness to others is a central component in each stage of an individual's development (e.g. the bond between a baby and his mother/father, friendships, intimate relationships, work relations; Bowlby, 1969/1982). Over the course of one's life, one will interact with innumerable people and will form relationships with several of them. Most of these relationships will be short lived, some will have a limited purpose, while a few will be truly significant. Since every individual has preferences about who they wish to interact with, and given that some seem to attract more people around them than others, experiences of social exclusion are close to inevitable.

Social exclusion is indifferent to age, sex, and culture; but, its effects are always devastating. Our everyday life is filled with subtle and not so subtle examples of social exclusion (e.g. a child who is chosen last for a group activity, a young girl who is rejected by the boy she loves, a man who is fired from his job, or an elderly person who is rarely visited by her family

members). Occurrences of social exclusion can vary greatly in terms of severity and the impact it will have on its victims. For example, the various high school shootings that happened in recent years are serious real life instances of people who turned to violence to express their feelings of helplessness and frustration toward a society that did not seem to appreciate them (Leary, Kowalski, Smith, & Phillips, 2003).

Although it might seem apparent that social exclusion and inclusion will impact an individual's psychological functioning and social adaptation, what remain unclear are the underlying mechanisms involved. This doctoral thesis proposes to integrate elements of two theoretical frameworks: need to belong theory (NBT; Baumeister & Leary, 1995) and self-determination theory (SDT; Deci & Ryan, 1985, 2000) to better understand the effects of social exclusion and inclusion on basic needs satisfaction, self-determined motivation, and various behavioural outcomes. NBT suggests that thwarting of the need to belong affects an individual's ability to self-regulate its behaviour. Alternatively, SDT suggests that subjective satisfaction of the three basic psychological needs for autonomy, competence, and relatedness affects self-determined motivation, which in turn affects the self-regulation of behaviour.

Overall, this program of research aims to answer the following questions: Does social exclusion and inclusion affect only the need to belong or a combination of basic psychological needs, as proposed by SDT? Does social exclusion and inclusion affect self-determined motivation, and in turn task performance and the perceptions of a future interpersonal interaction (i.e. intentions to collaborate versus compete)? And lastly, are social exclusion and inclusion reliable predictors of academic motivation and high school dropout?

This thesis comprises five chapters. Chapter 1 presents a review of the literature on social exclusion (theories, paradigms, and empirical research) as well as an overview of the two

theoretical frameworks of interest, need to belong theory and self-determination theory. It also outlines the general goals and hypotheses of this thesis. The following three chapters each describe one of the three studies conducted to test those hypotheses. Chapter 2 describes the first study for which the primary goal was to examine the effects of social exclusion and inclusion on the satisfaction of basic psychological needs. Outlined in Chapter 3, the second study examines the effects of being social excluded or socially included on one's task performance and intentions for a future interpersonal interaction. The third study described in Chapter 4 examines the effects of naturally occurring social exclusion and inclusion on the prediction of academic motivation and high school dropout. Finally, the findings of the three studies are summarized and discussed in Chapter 5. Chapter 5 also addresses the limitations of the three studies, outlines the theoretical contributions and practical applications of this research program, and suggests future avenues for research.

### Operationalization of Social Exclusion

The empirical literature on social exclusion can, at times, be confusing due to the diversity of terms (often interchangeably) used to refer to this phenomenon. Social exclusion, social rejection, and ostracism are all terms that have been utilized by researchers examining this concept. Although these psychological constructs have been the focus of numerous investigations for over twenty years, a clear operational definition for each of these terms is still missing. Consensus regarding whether or not these constructs should be treated as equal or complementary phenomena has yet to be reached; this is due in part to the lack of empirical research demonstrating that social exclusion, social rejection, and ostracism have irrefutable distinctions (Williams, 2007a). The following section serves to define and differentiate these

terms from one another, based on the current literature (see also Blackhart, Nelson, Knowles, & Baumeister, 2010; Williams, 2007a).

### *Social Rejection*

To be a victim of social rejection is to be informed by an individual or group that they do not, or no longer want to interact or be in one's company (Williams, 2007a). It typically occurs when one seeks to form and/or maintain a connection with another person, while that person refuses to get or remain involved (Blackhart et al., 2010). Social rejection occurs when an interaction is followed by a separation that is unwanted by one of the individual involved (Williams, 2007a). In this sense, social rejection can result following a long or short term relationship, and be imposed by a loved one, an acquaintance or a complete stranger.

### *Social Exclusion*

This term is typically defined as being isolated or rejected by others, following a direct or indirect declaration of dislike or undesirability (Twenge, Baumeister, Tice, & Stucke, 2001; Williams, 2007a). Social exclusion is a more encompassing phenomenon than social rejection in the sense that it refers to any incidence in which one is led to believe that one is alone, one will end up alone later in life, or one is denied social contacts (Blackhart et al., 2010). Some researchers argue that the main distinction between social exclusion and social rejection lies in the desire of the excluded person to establish a relationship (Blackhart et al., 2010, Twenge et al., 2001). With social rejection, the rejected person has actively made an effort to connect with the other person or group, whereas with social exclusion, the excluded person is often times an innocent bystander (Blackhart et al., 2010).

### *Ostracism*

This phenomenon has been operationalized as the act of being ignored and/or excluded, often occurring without excessive explanation or explicit negative attention (Williams, 2007a). It results from direct refusals of social interactions, such as by being repeatedly and intentionally denied a response when trying to converse with another person (Baumeister, Brewer, Tice, & Twenge, 2007; Blackhart et al., 2010). Although many investigators have treated ostracism as just another form of social exclusion, Williams (2001, 2007a) has argued that it has different, multiple effects compared to social exclusion and social rejection, and thus has treated ostracism as a separate construct.

As previously mentioned, investigators have been using the terms social exclusion, social rejection, and ostracism interchangeably, while not consistently using a specific term for a specific operationalization (Williams, 2007a). Thus, for the sake of consistency, only the term social exclusion will be used from this point on, with the exception of referring to specific aspects of research on ostracism, as Williams stresses its distinctive nature to social exclusion.

### Theories of Social Exclusion

The tenets of two theoretical frameworks are frequently referred to in the literature on social exclusion, that is, Baumeister & Leary's (1995) need to belong theory and Williams' (2001) temporal examination of responses to ostracism. This section presents a brief overview of both theoretical approaches.

#### *Need to Belong Theory*

Baumeister and Leary's (1995) belongingness theory suggests that human beings are innately driven to form and maintain a minimum of quality mutual relationships that are frequent, pleasant, and long-term. This need to belong is considered the fundamental motivation

in one's desire for interpersonal interactions. According to this theory, in order for this need to be satisfied, interactions must take place in a context where each party involved is equally concerned by the other's welfare. As well, recurring interactions with the same person or groups of people will be more satisfactory than interactions in which the partners are always changing. Ultimately, a lack of relatedness to others should amount to a variety of severely damaging effects on one's behaviour, emotions and cognitive functioning (Baumeister et al, 2007; Baumeister, DeWall, Ciarocco, & Twenge, 2005; Baumeister & Leary, 1995).

Advocates of this theory have operationally defined social exclusion as the belief that one will end up alone later in life, following the indirect or direct rejection of others (Twenge, Catanese, & Baumeister, 2003). In other words, social exclusion may be experienced due to recurring rejection from social groups, and/or the absence of meaningful interpersonal relationships (Baumeister et al., 2005).

Previous work on need to belong theory (NBT) has examined how social exclusion and inclusion affect human functioning. Researchers have asserted that social inclusion – that is, having a fair number of stable and fulfilling interpersonal relationships – is associated with the satisfaction of the need to belong, while social exclusion is associated with the non-satisfaction of that need (Baumeister & Leary, 1995). Many studies using this theoretical framework have shown that leading individuals to believe that they will end up alone later in life, as opposed to informing them that they will always be surrounded by people that care for them, greatly influences how these individuals regulate their behaviour (for a review, see Baumeister et al., 2007). On the one hand, individuals who were put in situations in which their need to belong was thwarted repeatedly failed to adequately regulate their behaviours; on the other hand, situations

which promoted meaningful interpersonal relationships and facilitated the satisfaction of the need to belong were shown to have positive effects on individuals' behavioural regulation.

### *Temporal Examination of Responses to Ostracism*

Williams and colleagues have conducted numerous studies on the investigation of ostracism (for a review, see Williams, 2007b). Although ostracism is considered by many researchers as just another sub-type of social exclusion, Williams argues that ostracism significantly differs from social exclusion in its multiple effects and real-life implications (Williams, 2001, 2007a). More precisely, his studies have shown that, in addition to the need for belongingness, ostracism thwarts one's sense of control, decreases self-esteem, and diminishes one's perception that life is meaningful (Williams, 2007ab; Williams, Cheung, & Choi, 2000; Williams et al., 2002; Zadro, Williams, & Richardson, 2004).

Williams and colleagues' research investigates the automatic responses that directly follow an episode of ostracism, as well as the delayed reactions one may experience after a certain amount of time has gone by. These researchers also examine the cumulative and/or long term effects that result from frequent exposures to ostracism (Williams, 2007a). They have also repeatedly demonstrated that cyberostracism (i.e. being ostracized via a computer simulation) is sufficient enough to decrease self-esteem, belongingness, sense of control and sense of meaning (Williams & Jarvis, 2006; Williams et al., 2000). Laboratory experiments, such as the ball-tossing and cyberball paradigms (described in the next section), are typically used to assess the relatively short term effects of ostracism. Field research, using daily diaries and interviews, have also been conducted to further investigate the long term detrimental effects of ostracism (Williams, 2007ab; Williams, Wheeler, & Harvey, 2001; Williams & Zadro, 2005).

## Manipulations of Social Exclusion

Numerous laboratory procedures have been developed in order to manipulate social exclusion. It is indeed common for researchers to utilize different experimental procedures for testing each of their research hypotheses within the same paper (Baumeister et al., 2007; Blackhart et al., 2010). However, some investigators have argued that the use of such diverse methodologies in social exclusion research contributes to the occasional discrepancies observed in study findings, given that different manipulations may have different psychological impacts (Baumeister et al., 2007). The following section serves to present the most frequently used experimental manipulations of social exclusion (see also Baumeister et al., 2007; Blackhart et al., 2010; Williams, 2007a).

### *Get-Acquainted Paradigm*

This paradigm consists of informing participants of their ability to woo potential interaction partners. Following a get-acquainted conversation in which they discussed a variety of topics (e.g. favourite movies, university major, etc.), participants are individually asked to list the two participants they would like to work with the most during the second part of the experiment. Participants in the exclusion condition are told that no one selected them as a work partner, whereas participants in the inclusion condition are informed that all the other participants wanted to work with them (Baumeister et al., 2007; Bourgeois & Leary, 2001; Maner, DeWall, Baumeister, & Schaller, 2007; Twenge et al., 2001, 2003; Williams et al., 2000, 2002). An alternate version of this paradigm consists of telling participants that their interaction partner left suddenly. After being asked to share information about themselves with another participant, with whom they will later work, participants are told that the experiment is cancelled either because their interaction partner remembered a prior engagement and had to leave, or that

their interaction partner did not want to work with them and left (Baumeister et al., 2007; Williams, 2007a).

### *Future Life Alone Paradigm*

This paradigm consists of giving participants a prognosis of their future social life. Following the completion of a personality inventory, participants are given accurate feedback about their introversion/extraversion tendencies as well as false feedback about their future social life (future life alone paradigm; Baumeister, Twenge, & Nuss, 2002; Twenge et al., 2001). Participants in the future alone group (exclusion condition) are led to believe that they are likely to end up alone later in life (e.g. higher probability of divorce, disappearing relationships, and inability to form new relationships), whereas participants in the future belonging group (inclusion condition) are informed that they are likely to have a fulfilling social life. In the third condition, the negative-feedback control group, participants receive negative feedback (i.e. that they are accident-prone and will suffer from many accidents and injuries) that has nothing to do with their future social life. This condition was included in order to differentiate between the detrimental effects of social exclusion and the effects of a negative feedback (Baumeister et al., 2002, 2005, 2007; DeWall & Baumeister, 2006; Maner et al., 2007; Twenge et al., 2001, 2002, 2003, 2007; Williams, 2007a).

### *Imagined, Primed, or Relived Experience of Exclusion*

This paradigm consists of asking participants to write/think about a past real-life experience when they have been excluded (DeWall & Baumeister, 2006; Manner et al., 2007; Pickett, Gardner, & Knowles, 2004), or to write/think about a fictional scenario in which they are the target of social exclusion (Leary, Springer, Negel, Ansell, & Evans, 1998; Sommer & Baumeister, 2002; Sommer, Williams, Ciarocco, & Baumeister, 2001). A variation of this

procedure consists of inducing subliminal social exclusion. Participants are asked to perform a word identification task on the computer or to unscramble phrases that prime the concepts of exclusion or inclusion (Baldwin, Granzberg, Pippus, & Pritchard, 2003; Baldwin & Main, 2001; Baumeister et al., 2007, Blackhart et al., 2010; Sommer & Baumeister, 2002).

### *Ball-Tossing Paradigm*

This paradigm is typically used in ostracism research and consists of making participants feel ignored and excluded via a game of ball-tossing, which appears to be unrelated to the actual experiment (Williams, 2007a; Williams & Sommer, 1997). Upon their arrival to the testing room, three participants (two confederates and one participant) are asked to sit down and wait for the study to begin. While waiting, one of the confederates starts tossing a ball that just happens to be lying around. In the ostracism condition, the participant is initially included in the ball-tossing game, but is then ignored by the two confederates and never thrown the ball again, while the confederates continue playing until the experimenter arrives. Conversely, participants in the inclusion condition continue to receive the ball approximately one-third of the time until the game is interrupted by the experimenter (Baumeister et al., 2007; Williams, 2007a).

### *Cyberball Paradigm*

This procedure is a computerized version of the ball-tossing paradigm (Williams et al., 2000; Williams & Jarvis, 2006). Cyberball is more efficient and popular than the ball-tossing game since it does not require the collaboration of confederates (Williams, 2007a). Participants are asked to play the game of cyberball and told that its purpose is to test their mental visualization skills. The experiment mentions to the participants that they are playing with two other participants via the intranet server. As the game progresses, participants in the ostracism

condition receive the ball less and less until they completely stop receiving it, whereas participants in the inclusion condition continue receiving the ball frequently (Williams, 2007a).

### Research on Social Exclusion

There has been an emergence of empirical research on social exclusion over the last two decades. These studies have examined the detrimental effects of social exclusion on human functioning in various life domains. What follows is a review of the empirical research on social exclusion to date. The findings are presented according to the three main areas of investigation: (1) behavioural self-regulation and cognitive functioning, (2) interpersonal behaviours, and (3) emotions, moods, and self-esteem. The limitations of these previous studies are discussed in the last part of this section.

#### *Self-Regulation and Cognitive Functioning*

An important area of research in social exclusion is the examination of its numerous damaging effects on behavioural self-regulation (Baumeister et al., 2005). In a series of studies, Twenge, Catanese, and Baumeister (2002) examined the impact of social exclusion on self-defeating behaviours. Results revealed that excluded individuals had a tendency to have more self-defeating behaviours, such as taking unnecessary risks, choosing to eat unhealthy food, and procrastinating intensively. Accordingly, it was shown that being socially excluded impairs self-regulation in a variety of behaviours such as increases in overeating, loss of self-control, decreased persistence for problem-solving tasks, and decreased attention (Baumeister et al., 2005). The authors also observed that although excluded individuals are still capable of adequately self-regulating their behaviours, they are usually unwilling to make the necessary effort to do so. By making participants in the exclusion condition self-aware, as well as offering them a cash incentive to perform well at a task, the researchers were able to eliminate the

detrimental effects of social exclusion, and in turn facilitated self-regulation (Baumeister et al., 2007).

Social exclusion has also been found to cause significant impairments in cognitive functioning. It was associated with feelings of abandonment and aloneness causing important decrements in cognitive functions and intelligent thought, such as decreased performance on timed cognitive tests, impairment of recall tests, and impaired reasoning (Baumeister et al., 2002). For example, after being told that they were likely to end up alone later in life, individuals' score on an I.Q. test dropped drastically. Social exclusion appears to impair more controlled processes such as logical reasoning and extrapolation, but not automatic tasks, such as memory tasks.

In another set of studies, individuals who experience social exclusion have been shown to exhibit a state of cognitive deconstruction (i.e. an attempt to avoid self-awareness) which impairs self-regulation, and thus display an overestimation in the amount of time that has past, an inability to delay gratification, the perception that life is meaningless, slower reaction time, and escape behaviours from social awareness (Twenge et al., 2003). Thus, these findings suggest that social exclusion affects one's ability to adequately function cognitively.

### *Interpersonal Behaviours*

Past studies in this area of research have examined the effects of social exclusion on one's behaviours toward others. Investigators have been interested in better understanding the possible behaviour changes that can occur when excluded individuals are interacting with the initiator(s) of the exclusion, and new interaction partners. Research has also examined how excluded individuals' perceptions of new interactions can affect their behaviours, depending on

whether they perceive the new interaction as a potential threat for being rejected again, a chance to seek revenge, or an opportunity to form new social bonds (Baumeister et al., 2007).

Social exclusion has often been identified as an important factor in the occurrence of negative, unstable and antisocial behaviours. A study by Twenge, Baumeister, Tice, and Stucke (2001) showed that individuals who feel socially excluded or rejected tend to have more aggressive behaviours toward new interaction partners, including both partners that have previously provoked or insulted them, as well as neutral and passive others. In line with these findings, an analysis of case studies of American school shootings by Leary and colleagues (2003) demonstrated that in the vast majority of these violent incidents, social exclusion was the primary cause of the aggressive behaviours. More recent research further examined the link between aggression and social exclusion revealing that experiences of rejection can lead to increased activation of hostile cognitions, which in turn may result in an inclination toward aggressive behaviours (Crescioni & Baumeister, 2009; DeWall, Twenge, Gitter, & Baumeister, 2009). These findings clearly demonstrate the predominant relation between social exclusion and anti-social behaviours, which are often exhibited through acts of aggression.

Social exclusion has also been found to cause substantial decrements in prosocial behaviours (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007). More specifically, socially excluded participants donated less money to a charity fund, were unwilling to participate in future laboratory experiments, and were less likely to lend a helping hand to another student or to collaborate with him/her in a game. Alternatively, a study by Maner and colleagues revealed that the experience of social exclusion arouses one's desire for interpersonal reconnection with other people (Maner et al, 2007). Socially excluded individuals expressed more interest in making new acquaintances, favoured team work to working alone, and gave more positive

evaluation of their interaction partners. Furthermore, this study provided strong evidence that social exclusion can lead individuals to seek new sources of affiliation in order to fulfill their need for social connection. Concomitantly, Williams et al. (2000) and Gardner et al. (Gardner, Pickett, & Brewer, 2000; Gardner, Pickett, Jeffries, & Knowles, 2005; Pickett et al., 2004) respectively found that in wanting to connect with others, ostracised individuals conformed more to others' opinions, as well as remembered more personal information shared by their interaction partners. In sum, these findings suggest that social exclusion augments one desire for new interpersonal relationships, while also increasing the risk of hostile behaviours.

### *Emotions, Moods, and Self-Esteem*

The empirical literature on social exclusion, emotions, moods, and self-esteem holds important discrepancies (Blackhart et al, 2010; Baumeister et al., 2007). While some studies have shown that social exclusion significantly affects these psychological constructs, others have found no effects.

Prior research has shown that social exclusion increases feelings of loneliness, negative moods, jealousy, depression, and social anxiety, while concomitantly decreasing self-esteem (Baumeister & Tice, 1990; Leary, 1990; Leary et al., 1998). Numerous studies from Williams and colleagues have shown that ostracism reduces self-esteem, as well as the needs for belongingness, control and a meaningful existence (Williams, 2007b, Williams et al., 2000, 2002). This group of researchers also found ostracism to be associated with negative mood and considerable emotional distress (van Beest & Williams, 2006; Williams, 2001). A recent series of studies provided further support for these earlier findings by showing that social exclusion reduces individuals' global perception that life is meaningful (Stillman et al., 2009). These effects were found to be mediated by positive self-worth, purpose and moral value. Social

exclusion was found to have no significant effect on emotions and moods, however, and this was also the case for many other studies (Gardner et al., 2000; Twenge et al., 2001, 2002, 2003; Zadro et al., 2004).

In a related area of research, DeWall and Baumeister (2006) investigated the effects of social exclusion on pain tolerance and pain thresholds. More precisely, they examined whether emotional numbness caused by social exclusion would result in insensitivity to both physical and emotional pain. Findings revealed that socially excluded individuals have higher thresholds and tolerance for physical pain. It was also shown that social exclusion causes emotional insensitivity as demonstrated by reductions in affective responses of positive emotions as well as decreases in interpersonal empathy among excluded individuals (DeWall & Baumeister, 2006). In line with this idea, Eisenberger and colleagues (Eisenberger & Lieberman, 2004; Eisenberger, Lieberman, & Williams, 2003) examined the relation between ostracism and physical pain using an fMRI scanner. These researchers found that ostracism activates the same cerebral region that is activated when physical pain is experienced. These findings provided evidence that the psychological and emotional pain elicited by social exclusion is comparable to the pain caused by a physical injury (Leary et al., 1998).

Most recently, two meta-analytical reviews, the first conducted by Gerber and Wheeler (2009) and the other by Blackhart et al. (2010), further examined the relations between social exclusion, emotional reactions, and self-esteem. On the one hand, Gerber and Wheeler reported that social exclusion moderately lowers mood and self-esteem, but does not cause physical or emotional numbness. On the other hand, Blackhart and colleagues revealed that social exclusion elicits some emotional reactions, but no immediate emotional distress, and a decrease in self-esteem. More specifically, these researchers showed that included and excluded participants

significantly differed on the levels of emotional reaction and self-esteem they reported. However, Blackhart et al. revealed that the absolute levels of emotional reactions and self-esteem remained moderately high for both the experimental conditions, such that excluded participants still experienced more positive emotions than negative emotions and a moderately high level of self-esteem. Although the results from the two meta-analyses are relatively consistent, additional research is needed in order to fully grasp the effects of social exclusion on emotion, moods, and self-esteem since clear-cut conclusions regarding this matter have yet to be attained.

#### *Limitations of Previous Studies*

The literature reviewed above presents an overview of the numerous damaging effects of social exclusion on behavioural self-regulation and psychological functioning. However, very little is mentioned on how social exclusion and inclusion directly affects the satisfaction of the need to belong, since numerous studies failed to measure the direct effects of the experimental manipulations on the restoration or satisfaction of this need. Furthermore, research on need to belong theory (NBT) does not consider the possibility that social exclusion and inclusion might affect more than one innate psychological need. It is indeed possible that the description of the participants' personality type (i.e. the experimental manipulation) conveyed additional information about the person beyond information regarding one's ability to form and maintain interpersonal relationships, which in turn might affect the fulfilment of other fundamental human needs.

Consistent with this idea, Williams (2001, 2007) has argued that ostracism does not only affect the need for belongingness, but also one's need for control, and need for meaning. If that is correct, then the negative consequences of ostracism cannot solely be attributed to the thwarting of the need to belong, as they might be due to a lack of control and/or meaning, as well as

possibly stem from the non-satisfaction of other needs that have not yet to be assessed in relation to social exclusion.

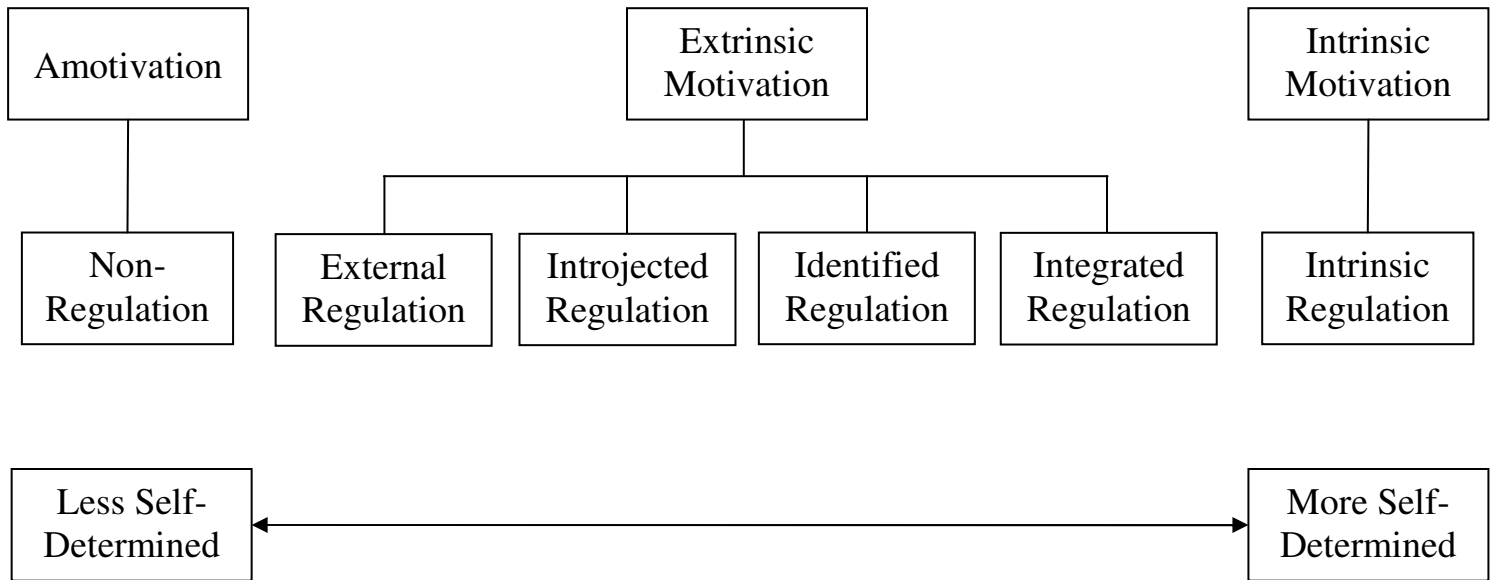
Another aspect of the research on social exclusion that remains unclear is the role that the satisfaction or the non-satisfaction of the need to belong plays on a subsequent behaviour or outcome. Prior studies have shown that the non-satisfaction of the need to belong motivates individuals to develop new interpersonal relationships, while the satisfaction of this need prompts individuals to maintain their current relationships (Baumeister & Leary, 1995; Maner et al., 2007; Twenge et al., 2007). In other words, research on NBT proposes that both the satisfaction and the non-satisfaction of the need to belong will lead to outcomes that involve seeking and/or maintaining interpersonal relationships. However, this research does not clearly specify if the nature of the relationships will be affected by the satisfaction or thwarting of the need to belong, and why individuals engage in these relationships.

In light of these findings, we hypothesized that it is not only the satisfaction or the non-satisfaction of ones' needs that will lead to behaviour, but also the reasons why the behaviour is carried out (i.e. the motivation for developing a particular type of relationship). An array of previous research has shown motivation to be a significant predictor of various behaviours, with a number of theories highlighting the fundamental role that motivation plays in human functioning (for a review, see Shah & Gardner, 2008). Among these theories, self-determination theory (SDT; Deci & Ryan, 1985, 2000, 2008) has been particularly influential. The following section presents an overview of SDT.

#### Self-Determination Theory

Self-determination theory proposes a conceptual model for the study of human motivation that stresses the importance of one's inner need for optimal personal development

and behavioural self-regulation. SDT portrays motivation as a multidimensional construct which suggests that different types of motivation are associated with different reasons underlying behaviour (Deci & Ryan, 1985, 2000). It is theorized that the type of motivation is more important than the total amount of motivation in predicting outcomes (Deci & Ryan, 2008). SDT suggests that motivation varies along a continuum of self-determination (see Figure 1). When motivation is more self-determined, behaviour is carried out with a full sense of autonomy and choice. In contrast, when motivation is less self-determined, behaviour is carried out under external constraints, in order to attain specific outcomes (Deci & Ryan, 1985, 2008).



*Figure 1.* The self-determination continuum, with types of motivations and types of regulations.

### *Self-Determination Continuum*

*Intrinsic motivation* represents the highest level of self-determination and it occurs when the behaviour is performed simply for the pleasure and inherent satisfaction brought upon by its accomplishment. Intrinsically motivated individuals engage in activities freely, and for their own interest value and enjoyment. Intrinsic motivation is not dependent on separable contingency or reinforcement. At the opposite end of the self-determination continuum, *amotivation* arises in the absence of reasons for performing an action; when the accomplishment of the action is not important. It is a state of complete lack of self-determined motivation. Amid intrinsic motivation and amotivation lies *extrinsic motivation*. Extrinsically motivated behaviours are performed for instrumental reasons, as a mean to an end. Extrinsically motivated individuals engage in an activity only to bring about a positive outcome or to avoid a negative outcome.

Unlike the other two broad types of motivation, extrinsic motivation can be categorized into four types of extrinsic regulation that represent different levels of self-determination. From lowest to highest self-determination, the four extrinsic regulatory styles are: external regulation, introjected regulation, identified regulation, and integrated regulation. *External regulation* represents the prototype of extrinsically motivated behaviours and refers to behaviours that are engaged in for external reasons, such as praise, rewards or constraints imposed by others. With *introjected regulation*, the formerly external source of motivation has been partially internalized, and the behaviour is performed because of self-imposed pressures such as guilt or anxiety. Even though introjection is more self-determined than external regulation, it is still considered a non self-determined form of regulation. The source of motivation in *identified regulation* is internal. In this third type of extrinsic motivation, the behaviour is performed for extrinsic reasons, but it is internally regulated and self-determined. Lastly, *integrated regulation* occurs when the

behaviour is so highly congruent with the self that it is perceived to be an integral part of an individual's self-concept, and coherent with the other aspects of one's life. Integration is the highest level of self-determined regulation among the four different forms of extrinsic motivation.

Research has shown that more self-determined or *autonomous* types of regulation (intrinsic, integrated and identified) are generally associated with positive psychological outcomes, whereas less self-determined or *controlled* types of regulation (introjected, external regulation, and amotivated) are generally associated with negative psychological outcomes (for a review, see Ryan & Deci, 2006).

### *Basic Psychological Needs*

SDT posits that individuals take an active role in their own lives and in the fulfillment of three innate psychological needs: the needs for autonomy, competence, and relatedness. Although human development is naturally inclined toward more autonomy, behaviours must be nurtured by experiences of autonomy, competence, and relatedness. The concept of needs as proposed in SDT refers to the innate psychological drives that must be fulfilled in order to promote growth, integrity, and personal well-being (Ryan & Deci, 2000). The need for *autonomy* refers to the experience of psychological freedom and volition; to being the source of one's own behaviour (deCharms, 1968; Deci & Ryan, 1985). The need for *competence* refers to the experience of effectance and a sense of confidence in one's interaction with the physical and social environment (Deci & Ryan, 2002). Finally, the need for *relatedness* refers to the experience of reciprocal care and feeling connected to others; to having a sense of belongingness with others and with one's community (Baumeister & Leary, 1995; Deci & Ryan, 2002).

People grow and flourish in environments that support the three basic psychological needs. Environment that satisfy these needs favour internalization and healthy psychological functioning, whereas thwarting of these needs leads to negative consequences. More specifically, autonomy supportive (as oppose to controlling) contexts support autonomy, well-structured (as opposed to unorganized and chaotic) contexts favour competence, and caring and responsive (as opposed to distant and neglectful) contexts facilitate relatedness (Deci & Ryan, 2002; Vansteenkiste, Niemiec, & Soenens, 2010). Ryan and Deci (2000) argue that the imperative value of the three basic needs is rooted in the fact that they are relevant to the generality of human experiences.

In sum, when basic psychological needs are less satisfied (or when they are thwarted), behaviours are more likely to be carried out for non self-determined reasons (i.e. controlled regulation), whereas when the needs are satisfied, behaviours will be carried out for self-determined reasons (i.e. autonomous regulation). Behaviours that are engaged in autonomously are associated with successful self-regulation and persistence, while controlled behaviours often lead to self-regulation problems and failures. According to SDT, motivation plays a mediating role amid the satisfaction of basic psychological needs and the behaviour or outcome that will result from it (Deci & Ryan, 1985, 2002).

#### *Effects of Social Exclusion on the Needs for Autonomy and Competence*

Research on NBT has repeatedly shown that social exclusion leads to a decrement in the satisfaction of the need to belong (or the need for relatedness). Intuitively, one could assume that social exclusion would lead to similar effects on the need for autonomy and the need for competence. The rationale for this argument is as follows. Social exclusion provides feedback on one's sense of social incompetence or inadequacy. In this sense, competence (or the lack of

competence) could be perceived as the cause for social exclusion (i.e. the person is being excluded because he/she is incompetent), and in turn lead to a subsequent decrement in the satisfaction of the need for competence. Social exclusion can also reduce one's sense of free choice and sense of purpose, that is the person can perceive that he/she is limited in the actions or behaviours he/she can do or even the people he/she can interact with as a result of being excluded, which could in turn affect the need for autonomy. In this sense, the decrement in the satisfaction of the need for autonomy could be perceived as a result of the effects of social exclusion on the needs for competence and relatedness. In other words, it is difficult for an individual to act in a manner that sustains his/her need for autonomy if that individual feels that he/she does not belong (need for relatedness) as a result to his/her social incompetency (need for competence).

In line with these propositions, Williams and colleagues (Williams et al., , 2007; Zadro et al., 2004) have shown that other potential needs or motives, such as the needs for control and meaning, are also thwarted by social exclusion and ostracism. Based on these results, one could expect that similar effects could be examined on the need for autonomy and the need for competence.

#### *Contributions of SDT to Social Exclusion Research*

Self-determination theory (SDT; Deci & Ryan, 1985, 2000) has been applied to a wide variety of life domains, such as education, health, and sports (for a review, see Deci & Ryan, 2008). It has also been the object of much attention in research examining the motivational processes involved in interpersonal relationships, such as between romantic partners and coworkers (La Guardia & Patrick, 2008; Patrick, Knee, Canevello, & Lonsbary, 2007). Thus, the

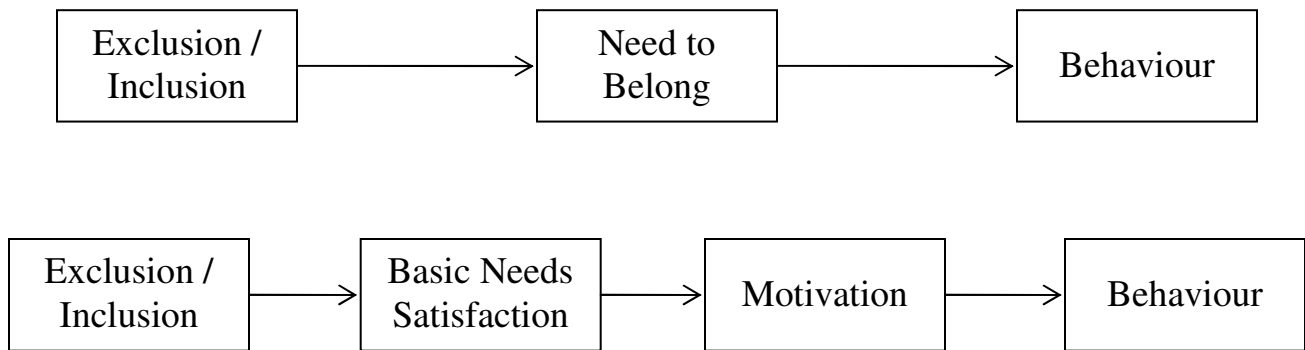
framework provided by this theory is fitting for the investigation of the effects of social exclusion and inclusion.

Need to belong theory (NBT; Baumeister & Leary, 1995) postulates that individuals have one innate need – the need to belong – and that the non-satisfaction of that need affects one’s ability to self-regulate. Alternatively, SDT posits the existence of three basic psychological needs – autonomy, competence, and relatedness – and suggests that behaviours are carried out for different motives. According to SDT, it is not only the satisfaction or the non-satisfaction of one’s needs that will lead to the behaviour, but also the reasons why the behaviour is carried out (i.e. the motivation). More specifically, satisfaction of the basic psychological needs will affect self-determined motivation, which in turn will affect behavioural self-regulation.

Although prior research on social exclusion have conferred great importance to the need to form and maintain significant relationships (i.e. need to belong or need for relatedness), SDT would significantly contribute to this investigation in terms of (1) the emphasis it places on the satisfaction as opposed to the non-satisfaction of the need for interpersonal relationships, (2) the importance it attributes to the quality of the relationships and not merely the feeling of being included, and (3) because it proposes the existence of underlying mechanisms (i.e. motivational orientation) as explanation of the effects of this particular need on the self-regulation of behaviour.

SDT has yet to examine the effects of social exclusion and inclusion on basic needs satisfaction, and, in turn, self-determined motivation and behavioural self-regulation. Thus, this doctoral dissertation proposes to investigate whether social exclusion and inclusion affect more than one basic psychological need, in opposition to what has been proposed in past research on NBT. Furthermore, this dissertation seeks to further examine the mediating effect of basic needs

satisfaction and self-determined motivation on social exclusion/inclusion and specific behavioural outcomes, as proposed by SDT. In sum, the primary objective of this thesis is to compare two complementary theoretical models; the first was proposed by NBT, while the second is based on propositions by SDT. The two theoretical models are presented in Figure 2.



*Figure 2:* Theoretical models as proposed respectively by need to belong theory and self-determination theory

## Goals of the Thesis

The over-arching goal of this doctoral dissertation is to examine how the propositions put forward by need to belong theory (NBT) and self-determination theory (SDT) can be combined to better explain the effects of social exclusion and inclusion on basic needs satisfaction, self-determined motivation, and behavioural self-regulation. Furthermore, it aims to contribute to a greater understanding of how having/lacking quality interpersonal relationships influence one's perception of future interpersonal relationships, more specifically collaborative relationships and competitive relationships. Three studies have been designed in order to reach these goals.

In Study 1, by means of an experimental design, social exclusion and inclusion were manipulated using the personality type descriptions developed by Twenge and colleagues (future life alone paradigm; Baumeister et al., 2005; Twenge & al., 2001). The effects of the manipulations on the satisfaction of the three basic psychological needs were examined.

The same design and manipulations as in the first experiment were used in Study 2. This second study examined how being socially excluded versus socially included influences one's motivation to execute a laboratory task that involves a peer interaction, and, in turn, one's persistence at the task and perceptions of a future interpersonal interaction (i.e. intentions to collaborate versus compete). The effects of basic needs satisfaction on these variables were also investigated.

Lastly, Study 3 investigated naturally occurring social exclusion and inclusion in a real-life setting and population. The objective of this third study was two-fold. Past studies on SDT and high school dropout have shown that academic motivation, perceived needs support from parents and perceived needs support from teachers all have a significant role to play in the prediction of school persistence and high school dropout; however, these studies have not

examined the role of peer relatedness (i.e. social exclusion/inclusion) on such outcomes. Therefore, the first goal of Study 3 was to test this effect. Furthermore, based on research on NBT and social exclusion, one could assume that peer relatedness could uniquely predict high school dropout; however, it is possible that academic motivation, parents' needs support and teachers' needs support could contribute to reducing this effect. Thus, the second goal of Study 3 was to test this prediction.

## CHAPTER TWO

### STUDY ONE

As previously mentioned, need to belong theory assumes the existence of one fundamental need: the need to belong (NBT; Baumeister & Leary, 1995). According to research based on this theoretical framework, the decrease in behavioural self-regulation following social exclusion can be exclusively attributed to the non-satisfaction of the need to belong. On the other hand, self-determination theory proposes three basic psychological needs, the needs for autonomy, competence, and relatedness (SDT; Deci & Ryan, 1985, 2000). This theory suggests that a decrease in behavioural self-regulation may be associated with a reduction in one of these three needs, or a combined effect of the reduction of the three needs. Since previous studies based on NBT did not include measures of the three needs proposed by SDT, we cannot know if the manipulations of social exclusion and inclusion, created by Twenge and colleagues (future life alone paradigm; Baumeister et al., 2002; Twenge et al. 2001), and used in those experiments solely affected the need for relatedness (or the need to belong), or if the observed effects were inimitably due to the non-satisfaction of that need. It is indeed possible that the manipulations also affected participants' needs for autonomy and competence, and that the effects observed in past research were partially due to variations in the satisfaction of these three needs. Consistent with this idea, Williams et al. (2000, 2002) and Zadro et al. (2004) have shown that other potential needs or motives, such as the needs for control and meaning, were also thwarted by social exclusion and ostracism.

Therefore, the primary goal of Study 1 was to examine if the experimental manipulations of social exclusion and inclusion, created by Twenge et al. (2005; Twenge & al., 2001), directly and exclusively affect the satisfaction of the need for relatedness or if it also affects the other two

needs. It was expected that the experimental manipulations would affect the level of satisfaction of the needs for autonomy, competence, and relatedness and not the need for relatedness exclusively. More specifically, it was hypothesized that participants in the exclusion condition would report the lowest levels of needs satisfaction, whereas participants in the inclusion condition would report the highest levels of needs satisfaction. In other words, we expected the experimental manipulation to decrease needs satisfaction of the excluded participants and increase needs satisfaction of the included participants. As for participants in the control condition, they were expected to report levels of satisfaction between the other two conditions as their needs satisfaction should not be affected since they were not exposed to the experimental manipulation. A secondary goal of this study was to further investigate the relations between social exclusion/inclusion, moods, and self-esteem, as previous studies have reported mixed findings.

## Method

### *Participants and Procedure*

Seventy-two undergraduate students (51 females, 21 males) enrolled in introductory psychology courses at the University of Ottawa participated in this study in partial fulfillment of a research participation requirement. Age ranged from 17 to 39 years ( $M = 20$ ,  $SD = 4.36$ ). Registration was completed through the School of Psychology's integrated system of participation in research (ISPR). The study was advertised as an investigation of the relationship between different characteristics of the personality and the ability to collaborate with another participant in order to solve 3D puzzles (SOMA puzzles; Pelletier & Vallerand, 1996). Participants had to complete pre-screen online measures available on the ISPR website before participating in the study.

Following their arrival to the laboratory, participants were randomly assigned to one of three conditions, control:  $n = 24$  (18 females and 6 males), exclusion:  $n = 24$  (19 females and 5 males), inclusion:  $n = 24$  (14 females and 10 males), and received a personality report that consisted of their true extraversion score, as well as a false personality type description which varied based on the condition they were assigned to (future life alone paradigm; Baumeister et al., 2005; Twenge & al., 2001; see Appendix A). The random assignment of participants was performed by the principal investigator by drawing participants' identification code from a box. To note that participants in the control condition only received their true extraversion score and not the false personality type description (i.e. the experimental manipulation of social exclusion/inclusion). The extraversion score was generated from participants' answers to the extraversion scale (Extraversion subscale, Eysenck Personality Questionnaire; Eysenck & Eysenck, 1975) previously completed as part of the online measures. This accurate feedback on participants' level of extraversion was used to help bolster the credibility of the false personality type description which was also said to be based on participants' answers on the extraversion scale. The first paragraph of the personality type description varied according to participants' extraversion score (low or high) and assigned condition (exclusion or inclusion), whereas the second paragraph varied based only on the condition they were assigned to (exclusion or inclusion; see Appendix A). After reading their personality report, participants were asked to complete a questionnaire which measured their basic needs satisfaction, moods, and self-esteem. Finally, participants were informed that they would not have to complete the visuo-spatial task which only served as a cover story for the study. They were then given a full debriefing during which the experimenter asked each participant to refrain from sharing any information related to the study with other students, as they might be potential participants.

### *Measures*

(The measures described below are presented in Appendix B)

*Extraversion score.* A short version of the extraversion subscale from the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975) was used to measure participants' level of extraversion, prior to their participation in the study. The items were selected based on how they related to the personality type descriptions. Each statement is answered by "yes" or "no". The extraversion score is determined by allotting one point for each "yes" response except for two items that are reverse scored; for these items one point is allotted for each "no" response. Sample items are as follows: "Do you enjoy meeting new people?," "Do you have many friends?," "Do you usually take the initiative in making new friends?" In this study, the sole purpose of the extraversion score was to enhance the credibility of the false personality type description.

*Basic needs satisfaction.* The Basic Need Satisfaction in Life Scale was adapted from a measure of need satisfaction at work (Basic Need Satisfaction at Work Scale; Ilardi, Leone, Kasser, & Ryan, 1993). This scale comprises 21 items subdivided into three subscales, which correspond to the three basic psychological needs for autonomy, competence, and relatedness identified in SDT. This scale has been found to have good psychometric properties and has shown predictive validity for prosocial behaviours (Gagné, 2003; Kashdan, Julian, Merritt, & Uswatte, 2006). Participants indicated the extent to which their needs for autonomy, competence, and relatedness are generally satisfied in their life on a seven-point Likert scale, ranging from "not at all true" (1) to "very true" (7). Sample items for each of the three subscales are as follows: autonomy – "I feel like I am free to decide for myself how to do things," competence – "I often do not feel very competent," relatedness – "I really like the people I interact with." The

items for each subscale were combined in order to create a separate composite measure for autonomy (6 items,  $\alpha = .75$ ), competence (6 items,  $\alpha = .70$ ), and relatedness (9 items,  $\alpha = .85$ ).

*Moods.* Ten items were included in the questionnaire in order to assess participants' positive and negative affects. Participants were asked, "When you think about your current mood, to what extent do you feel..." and ranked their responses from 1 (does not correspond at all) to 7 (corresponds exactly). The five positive affects items were combined to create a composite measure of positive mood ( $\alpha = .79$ ) and the five negative affects items were combined to create a composite measure of negative mood ( $\alpha = .84$ ).

*Self-esteem.* Five items taken from the Rosenberg Self-Esteem Scale (10 items scale; Rosenberg, 1965) were included in the questionnaire in order to assess participants' global self-esteem. The items were scored on a 7-point Likert scale ranging from 1 (does not correspond at all) to 7 (corresponds exactly). The items were combined in order to create a composite measure of global self-esteem ( $\alpha = .82$ ).

*Manipulation check.* The last two items in the questionnaire were used as manipulation check questions. The first item was designed to verify the extent to which participants perceived the extraversion score as truly indicative of their personality (e.g. "My extraversion score described me as the person I believe I am"). The second item was designed to verify that the cover story was believable (e.g. "I felt the experimenter was honest and truthful in describing the study"). Each statement was answered using a scale ranging from 1 (*I do not agree at all*) to 7 (*I agree completely*).

## Results

### *Preliminary Analyses and Manipulation Check*

Preliminary analyses consisted of a set of screening procedures designed to ensure that the assumptions of normality of sampling distributions, linearity, and homogeneity were met (Tabachnick & Fidell, 2001). The data was also screened for missing values and extreme outliers. Examination of the means and standard deviations revealed that their values were plausible, falling within the expected theoretical range. Since testing took place during three semesters, we also made sure that participants did not differ on any of the measures based on the semester they were tested. Zero-order Pearson bivariate correlations were computed in order to examine the relations between the variables of interest. Descriptive statistics and correlations among the variables are presented in Table 1.

Since prior research has reported mixed findings regarding the effects of social exclusion/inclusion on self-esteem and mood (for a review, see Blackhart et al., 2010), we further investigated these relations. Our analysis revealed no significant difference between the three conditions on the levels of self-esteem ( $F(2, 69) = 1.02, p > .10$ ), positive mood ( $F(2, 69) = .04, p > .10$ ), and negative mood ( $F(2, 69) = 1.01, p > .10$ ) reported by participants. Based on these results, the three variables were not included in any further analyses.

Finally, participants generally believed the cover story explained to them by the experimenter. Across all conditions, responses to the honesty manipulation check question ranged from 5 to 7 ( $M = 6.33, SD = .89$ ), with no significant differences observed. Results from the manipulation check also indicated that participants did not significantly differ across conditions in terms of the degree to which they perceived their extraversion score to be a true

indication of their personality. In general, participants reported that their extraversion score described them as the person they believed themselves to be ( $M = 5.25, SD = 1.42$ ).

Table 1

*Descriptive Statistics and Correlation Matrix (Study 1)*

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	2.	3.
1. Autonomy	5.09	.86	-.46	.33	.53**	.53**
2. Competence	5.45	.77	-.34	.88		.53**
3. Relatedness	5.51	.82	-.15	-.65		

\*\*  $p < .01$

### *Effects of Condition on the Satisfaction of the Three Basic Needs*

We tested the *a priori* hypothesis that participants in the exclusion condition would report lower levels of satisfaction of the three basic needs – autonomy, competence and relatedness – than participants in the inclusion condition; conversely, participants in the control condition would report levels of satisfaction between the other two groups. It was also expected that the level of satisfaction of each of the three needs would significantly differ across conditions. The results generally supported our hypotheses (see Table 2).

The reported mean levels of satisfaction for each of the three needs did follow the expected direction, with excluded participants reporting the lowest levels, included participants reporting the highest levels, and participants in the control condition reporting levels of satisfaction of the three needs in-between the other two groups. A one-way multivariate analysis of variance comparing the levels of satisfaction of the needs for autonomy, competence, and relatedness (the three dependent variables) across the three conditions (the independent variable) revealed a significant difference for competence and relatedness, but not for autonomy.

Examination of the Bonferroni *post-hoc* comparisons for competence showed that the exclusion condition significantly differed from the inclusion condition ( $p < .01$ ), while it did not differ significantly from the control condition ( $p > .10$ ). No significant difference was found between the inclusion condition and the control condition on the satisfaction of the need for competence ( $p > .10$ ). Examination of Bonferroni *post-hoc* comparisons for relatedness revealed a significant difference between the exclusion condition and the inclusion condition ( $p < .01$ ); in addition, a marginally significant difference was observed between the exclusion condition and the control condition ( $p < .10$ ). The inclusion condition and the control condition failed to differ significantly in terms of their reported levels of satisfaction of the need for relatedness ( $p > .10$ ).

Lastly, although no significant effect of condition was found on the satisfaction of the need for autonomy, examination of the effect sizes (see Table 3) for that need revealed medium effect sizes when comparing the two experimental conditions, as well as when comparing the control condition with the exclusion condition. This suggests that the absence of a significant effect of condition on the satisfaction of the need for autonomy is probably due to a lack of statistical power.

Table 2

*Effects of Condition on the Satisfaction of the Three Basic Needs (Study 1)*

	Exclusion		Control		Inclusion		Anova				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	Sum of Square	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>
Autonomy	4.83	.92	5.18	.76	5.26	.87					
Between groups							2.54	2	1.27	1.74	.183
Within groups							50.33	69	.73		
Total							52.87	71			
Competence	5.13 <sup>a</sup>	.71	5.43 <sup>ab</sup>	.60	5.79 <sup>b</sup>	.85					
Between groups							5.35	2	2.68	5.08	.009
Within groups							36.37	69	.53		
Total							41.72	71			
Relatedness	5.10 <sup>a</sup>	.76	5.61 <sup>b</sup>	.78	5.82 <sup>b</sup>	.80					
Between groups							6.52	2	3.26	5.39	.007
Within groups							41.79	69	.61		
Total							48.32	71			

*Note.* Means not sharing the same subscript are significantly different or marginally significantly different.

Table 3

*Effects Sizes for the Effects of Condition on the Satisfaction of the Three Basic Needs (Study 1)*

	Control versus Exclusion		Control versus Inclusion		Inclusion versus Exclusion	
	<i>d</i>	<i>r</i> Y1	<i>d</i>	<i>r</i> Y1	<i>d</i>	<i>r</i> Y1
Autonomy	.41	.20	.10	.05	.48	.23
Competence	.46	.22	.49	.24	.84	.39
Relatedness	.66	.31	.27	.13	.92	.41

## Discussion

The goal of this first study was to test the competing hypotheses of need to belong theory (NBT; Baumeister & Leary, 1995) and self-determination theory (SDT; Deci & Ryan, 1985, 2000) with respect to the effects of social exclusion and inclusion on the satisfaction of basic psychological needs. The results from Study 1 showed that the personality type descriptions developed by Twenge and colleagues (future life alone paradigm; Baumeister et al., 2005; Twenge et al., 2001) to manipulate feelings of social exclusion and inclusion do not solely affect the satisfaction of the need for relatedness (or the need to belong). Instead, it was observed in this study that the experimental manipulations had significant effects on the satisfaction of the need for competence, in addition to the satisfaction of the need for relatedness, which resulted in significantly higher levels of satisfaction of these two needs for participants in the inclusion condition compared to participants in the exclusion condition, which ultimately reported the lowest levels of satisfaction. These results are consistent with research findings from Williams and colleagues which showed that ostracism not only decreases the need for belongingness, but also lowers one's sense of control and sense of meaning (Williams et al., 2000, 2002; Zadro et al., 2004). It is noteworthy that a marginally significant difference was also found between the exclusion condition and the control condition for satisfaction of the need for relatedness.

As for the need for autonomy, the effects of the experimental manipulations failed to be significant, although the reported levels of satisfaction did follow the expected direction with excluded participants reporting the lowest levels, included participants the highest levels, and participants in the control condition reporting levels in-between the other two groups. Furthermore, medium effect sizes were found for the need for autonomy when comparing the two experimental conditions, as well as when comparing the control condition with the exclusion

condition. These results suggest that the absence of a significant effect of manipulation on the need for autonomy is probably due to a lack of statistical power, and that with a larger sample future studies could find significant differences between conditions on the satisfaction of the need for autonomy.

Another possible explanation for why the need for competence was significantly affected but not the need for autonomy could be that the personality feedback led participants to believe that they were rejected as a consequence of their social incompetency, but it did not affect their sense of control over their own behaviour. More specifically, it appears that participants perceived the personality feedback they received to pertain more to their personal characteristics in relation to their future relationships than their ability to perform a task in an autonomous way.

Lastly, this first study also demonstrated that social exclusion did not significantly lower self-esteem and moods. These results offer some support to certain previous research (Gardner et al., 2000; Twenge et al., 2001, 2002, 2003), but are not consistent with findings from the meta-analyses which showed that social exclusion elicits some emotional reactions and a slight decrease in self-esteem (Blackhart et al., 2010; Gerber & Wheeler, 2009). This inconsistency in the findings may be a result of the measures used in this present study to assess moods and self-esteem.

In sum, these findings provide support for the propositions from SDT and Williams et al. which suggest that the decrease in behavioural self-regulation observed in past research on NBT and social exclusion could possibly not be exclusively attributed to the non-satisfaction of one need (i.e. relatedness), but rather the non-satisfaction of a combination of needs (i.e. relatedness and competence). The effects of social exclusion/inclusion and basic needs satisfaction on self-determined motivation and behavioural self-regulation were investigated in Study 2.

## *CHAPTER THREE*

### STUDY TWO

The primary goal of Study 2 was to investigate the relations between social exclusion and inclusion, basic needs satisfaction, motivation to accomplish a laboratory task, and self-regulation of behaviours (i.e. persistence at a task and interpersonal behaviours). First, to provide additional support for findings from Study 1, the effects of social exclusion and inclusion on the satisfaction of the three basic needs were further investigated. The associations between the basic needs and motivation were also examined. It was expected that social exclusion would thwart basic needs satisfaction, which would lead to lower self-determined motivation, whereas social inclusion would increase basic needs satisfaction, and, in turn, higher self-determined motivation.

Second, the relations between social exclusion and inclusion, motivation to accomplish a laboratory task, and persistence at the task were investigated. Participants in the exclusion condition were expected to have lower levels of self-determined motivation resulting in low persistence at the task; while participants in the inclusion condition were expected to have higher levels of self-determined motivation resulting in high persistence at the task. It was hypothesized that these relations would be mediated by basic need satisfaction.

Third, the relations between social exclusion and inclusion, motivation to accomplish a laboratory task, and interpersonal behaviours (i.e. intentions to compete against a peer participant and intentions to collaborate with a peer participant) were examined. It was hypothesized that participants' intentions to compete against a peer participant would be predicted by social exclusion. Conversely, it was hypothesized that participants' intentions to collaborate with a peer participant would be predicted by social inclusion. It was also expected that these relations

would be mediated by basic needs satisfaction and self-determined motivation. Finally, as in the first study, a secondary goal of Study 2 was to further investigate the relations between social exclusion/inclusion, mood, and self-esteem as prior research has reported mixed findings.

## Method

### *Participants and Procedure*

Seventy first year psychology undergraduate students participated in this study in partial fulfillment of an experimental participation requirement for a psychology course. There were 45 females and 25 males, with ages ranging from 17 to 38 years ( $M = 19$ ,  $SD = 3.05$ ). Participants were randomly assigned to either the exclusion condition ( $n = 35$ , 24 females and 11 males) or the inclusion condition ( $n = 35$ , 21 females and 14 males). The random assignment of participants was performed by the principal investigator by drawing participants' identification code from a box. It is noteworthy that no control condition was included in this study, as we were mainly interested in comparing the two experimental conditions.

The experimental procedure for Study 2 was very similar to the one used in the first study with the exception that participants were asked to perform a visuo-spatial task. Participants registered for the study online through the ISPR website, after having completed the required online pre-screen measures. Participants were told that the purpose of the study was to examine the relationship between different characteristics of the personality and the ability to collaborate with another participant in order to solve various 3D-puzzles (SOMA puzzles; Pelletier & Vallerand, 1996). At their arrival to the laboratory, participants received their personality report (i.e. their true score of extraversion) and a randomly assigned, false personality type description (future life alone paradigm; Baumeister et al., 2005; Twenge & al., 2001; see Appendix A).

Participants were then asked to complete a first questionnaire which measured their basic needs satisfaction, mood, and self-esteem.

Next, participants were asked to perform the visuo-spatial task. They were informed that they would first perform the task on their own, and again afterwards with another participant. In reality, they would only perform the task once, individually. Participants were asked to solve five 3D-puzzles (SOMA puzzles; Pelletier & Vallerand, 1996): three for which solutions were provided and two without solutions (see Appendix A). They were asked to start with the puzzles that had solutions, to try to solve all the puzzles, and not to spend too much time on the puzzles they were not able to solve. They were told that they could take as much time as they wanted to accomplish the task, but that in order to complete the experiment in a reasonable period of time, they would eventually have to be stopped. Participants were actually given 25 minutes to do the task. At this point, the experimenter reiterated to participants that the purpose of the experimental task was to prepare for a later collaboration with another participant, in which they would be asked to solve more complex 3D-puzzles without solutions. The peer interaction component was included in the experiment in order to measure the participants' motivation to successfully complete a task that involves a social component. More specifically, it was expected that socially included participants would experience more self-determined motivation which would lead them to spend more time practicing the task than socially excluded participants. The experimenter recorded the amount of time participants spent practicing the task.

Once participants completed the task (or were asked to stop by the experimenter) they filled out another questionnaire which assessed their reasons for doing the task (measure of situational motivation) as well as their intentions for the upcoming interaction with the other participant. Participants were then informed that the peer interaction would not take place.

Participants finally received a full debriefing during which the experimenter asked each participant to refrain from sharing any information related to the study with other students, as they might be potential participants.

### *Measures*

(The measures described below are presented in Appendix C)

*Extraversion score.* As in Study 1, participants' level of extraversion was measured prior to their participation in the study. Participants' true extraversion score was used to enhance the credibility of the false personality type description (see Study 1 for the complete description).

*Basic needs satisfaction.* Participants completed the Basic Needs Satisfaction in Life Scale, which measured their general level of satisfaction for autonomy ( $\alpha = .70$ ), competence ( $\alpha = .72$ ), and relatedness ( $\alpha = .85$ ; see Study 1 for the complete description).

*Moods and self-esteem.* As in Study 1, items assessing participants' moods (positive affects,  $\alpha = .82$ ; negative affects,  $\alpha = .82$ ) and self-esteem ( $\alpha = .85$ ) were included in the questionnaire (see Study 1 for the complete description).

*Motivation to accomplish a task.* The Situational Motivation Scale (SIMS; Guay, Vallerand, & Blanchard, 2000) assesses participants' reasons for engaging in an activity at a specific moment in time based on SDT. For the purpose of this study, it was used to assess participants' motivation to accomplish the laboratory task. The SIMS consists of 17 items subdivided into six subscales, which correspond to the constructs identified in SDT (intrinsic motivation, integrated, identified, introjected, and external regulation, as well as amotivation). The statements related to the reasons why participants were planning to do the laboratory task. Participants were asked to rate the degree to which they agreed with each statement on a seven-point Likert scale, which ranged from "I do not agree at all" (1) to "I agree completely" (7).

Sample items for each of the six motivational types are as follows: intrinsic motivation – “Because I like interesting challenges,” integrated regulation – “Because I’m the type of person who likes to help,” identified regulation – “Because I think it is a good idea to do it,” introjected regulation – “Because I want to prove that I can do it,” – “Because I feel I have to,” amotivation – “I’m not sure anymore. I think maybe I should not do it.”

To measure participants’ general levels of self-determination in a parsimonious model, a number of studies have shown the usefulness of combining the scores of each subscale into a self-determination index (SDI; Blais, Sabourin, Boucher, & Vallerand, 1990; Ryan & Connell, 1989; Vallerand & Bissonette, 1992). Following the steps outlined in past literature (Blais et al., 1990), scores from each subscale were weighed based on their position in the self-determination continuum (intrinsic motivation (IM), +3; integrated regulation (INTEG), +2; identified regulation (IDEN), +1; introjected regulation (INTRO), -1; external regulation (ER), -2; amotivation (AMO), -3). Participants’ global score of situational motivation was measured using the weights of the 6 regulatory styles according to the following formula: situational motivation =  $3*IM + 2*INTEG + IDEN - INTRO - 2*ER - 3*AMO$ . The theoretical range for the index varies from -36 to 36. A low index indicates lower levels of situational motivation, whereas a high index indicates higher levels of situational motivation. Cronbach’s alpha for the combined items forming the self-determination index in this sample was .80.

*Peer collaboration and peer competition.* Four items were developed for the purpose of this study, which measured participants’ intentions to collaborate with the other participant, as well as participants’ intentions to compete with the other participant during the peer interaction. The items offered answers to the question, “When interacting with the other participant, I will...” Participants were asked to rate their responses from 1 (I do not agree at all) to 7 (I agree

completely). Sample items are as follows: collaboration – “I will concentrate on how we could learn interesting new skills together”, and competition – “I will try to see if I am better than the other participant at the task.” A composite measure was created for each of the two constructs (collaboration,  $\alpha = .76$ ; competition,  $\alpha = .81$ ).

*Persistence at the task.* The experimenter recorded the amount of time that participants spent practicing the task, out of a total of 25 minutes.

*Manipulation check.* As in Study 1, two items were used as manipulation check questions. These items were designed to measure the reliability of the extraversion score given to participants and the cover story (see Study 1 for complete description).

## Results

### *Preliminary Analyses and Manipulation Check*

Preliminary analyses consisted of a set of screening procedures designed to ensure that the assumptions of normality, linearity, and homogeneity were met (Tabachnick & Fidell, 2001). The data was also screened for missing values and extreme outliers. Examination of the means and standard deviations revealed that their values were plausible, falling within the expected theoretical range. Since testing took place during three semesters, we also made sure that participants did not differ on any of the measures based on the semester they were tested. Our analysis revealed that participants did not significantly differ on these measures. Zero-order Pearson bivariate correlations were also computed in order to examine the relations between the variables of interest. Descriptive statistics and correlations among the variables are presented in Table 4.

As in the first study, we further investigated the effects of social exclusion/inclusion on self-esteem and moods. In accordance with findings from Study 1 and certain previous research

(for a review, see Blackhart et al., 2010), the two conditions failed to significantly differ on the levels of self-esteem ( $F(1, 62) = 1.12, p > .10$ ), positive mood ( $F(1, 62) = 1.07, p > .10$ ), and negative mood ( $F(1, 62) = 1.02, p > .10$ ) reported by participants. The variables were thus excluded from the following analyses.

Finally, participants generally believed the cover story explained to them by the experimenter. Across all conditions, responses to the honesty manipulation check question ranged from 4 to 7 ( $M = 5.58, SD = .92$ ), with no significant differences observed. Results from the manipulation check also indicated that participants did not significantly differ across conditions in terms of how they perceived their extraversion score to be a true indication of their personality. In general, participants reported that their extraversion score described them as the person they believed themselves to be ( $M = 5.36, SD = 1.35$ ).

Table 4

*Descriptive Statistics and Correlation Matrix (Study 2)*

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	2.	3.	4.	5.	6.	7.
1. Autonomy	5.64	.82	-.76	-.06	.30*	.25*	.31*	.08	.17	-.13
2. Competence	5.64	.78	-.21	-.57		.40**	.34**	.27*	.35**	.06
3. Relatedness	5.54	.80	-.45	.14			.29*	.15	.41**	-.12
4. Motivation to accomplish a task	13.10	11.87	-.67	.17				.10	.39**	-.25*
5. Persistence at the task	23.69	6.95	.41	.28					.09	.08
6. Intentions to collaborate	4.83	1.46	-.38	-.63						.18
7. Intentions to compete	3.95	1.71	-.15	-.89						

*Note.* \*  $p < .05$ , \*\*  $p < .01$

*Effects of Condition on the Satisfaction of the Three Basic Needs*

This analysis served to provide further support for findings from the first study. In agreement with our predictions, we tested the *a priori* hypothesis that participants in the inclusion condition would report higher levels of satisfaction of the needs for autonomy, competence and relatedness, compared to participants in the exclusion condition. It was also expected that the level of satisfaction of each of the three needs would significantly differ across conditions. The results partially supported our hypotheses (see Table 5).

The reported mean levels for each of the three needs did follow the expected direction, with included participants reporting the highest levels of satisfaction of the three needs and excluded participants reporting the lowest levels. A one-way multivariate analysis of variance comparing the levels of satisfaction for autonomy, competence, and relatedness (the three dependent variables) across the two conditions (the independent variable) revealed a significant difference between the exclusion condition and the inclusion condition for the needs for autonomy and relatedness. Contrary to the results obtained in the first study, no significant difference was found, on the satisfaction of the need for competence.

Table 5

*Effects of Condition on the Satisfaction of the Three Basic Needs (Study 2)*

	Exclusion		Inclusion		Anova				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	Sum of Square	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>
Autonomy	5.34	.95	5.94	.54					
Between groups					5.64	1	5.64	9.56	.003
Within groups					36.59	62	.59		
Totals					42.23	63			
Competence	5.58	.83	5.70	.73					
Between groups					.21	1	.21	.34	.560
Within groups					37.86	62	.61		
Totals					38.07	63			
Relatedness	5.30	.77	5.78	.77					
Between groups					3.61	1	3.61	6.10	.016
Within groups					36.70	62	.59		
Totals					40.31	63			

*Effects of Condition and Basic Needs Satisfaction on Motivation to Accomplish a Task*

A multiple mediation analysis assessing and comparing indirect effects (Preacher & Hayes, 2008) was performed in order to test the hypothesis that the satisfaction of the needs for autonomy, competence, and relatedness would mediate the effects of social exclusion/inclusion (the condition variable) on participants' motivation to accomplish the laboratory task (motivation). The condition variable was entered as the independent variable (coding: exclusion = 1, inclusion = 2), autonomy, competence, and relatedness were entered as the three mediators, and motivation was entered as the dependent variable.

This bootstrapping analysis does not rely on the assumption of a normal sampling distribution and reduces the likelihood of Type I error by minimizing the number of inferential tests (Preacher & Hayes, 2008). This analysis separates the total effect (i.e. the effect of the independent variable on the dependent variable, when not considering the mediators) into the direct effect (i.e. the effect of the independent variable on the dependent variable, when controlling for the mediators) and the indirect effect (i.e. the effect via the mediators).

A significant total effect of condition on motivation was observed,  $b = 8.25$ ,  $t = 2.94$ ,  $p < .01$ . When dividing this total effect into the direct effect of condition and the total indirect effects of all three mediators combined, the direct effect of condition on motivation was found to be significant,  $b = 6.25$ ,  $t = 2.10$ ,  $p < .05$ . The total indirect effect of condition on motivation was not significant,  $b = 1.99$ ,  $t = 1.23$ ,  $p > .10$ , nor was the unique indirect effects of each of the three mediators, which suggest that none of the three needs significantly contributed to the indirect effect of motivation (see Table 6).

Examination of the direct paths from the independent variable (i.e. the condition variable) to the mediators (i.e. autonomy, competence, and relatedness) revealed a significant effect of

condition on autonomy ( $p < .01$ ), and relatedness ( $p < .05$ ). (Note that this is a replication of the findings from the one-way MANOVA presented earlier). Finally, examination of the direct paths from the mediators (i.e. autonomy, competence, and relatedness) to the dependent variable (i.e. motivation) revealed a significant effect of competence on motivation ( $p = .05$ )

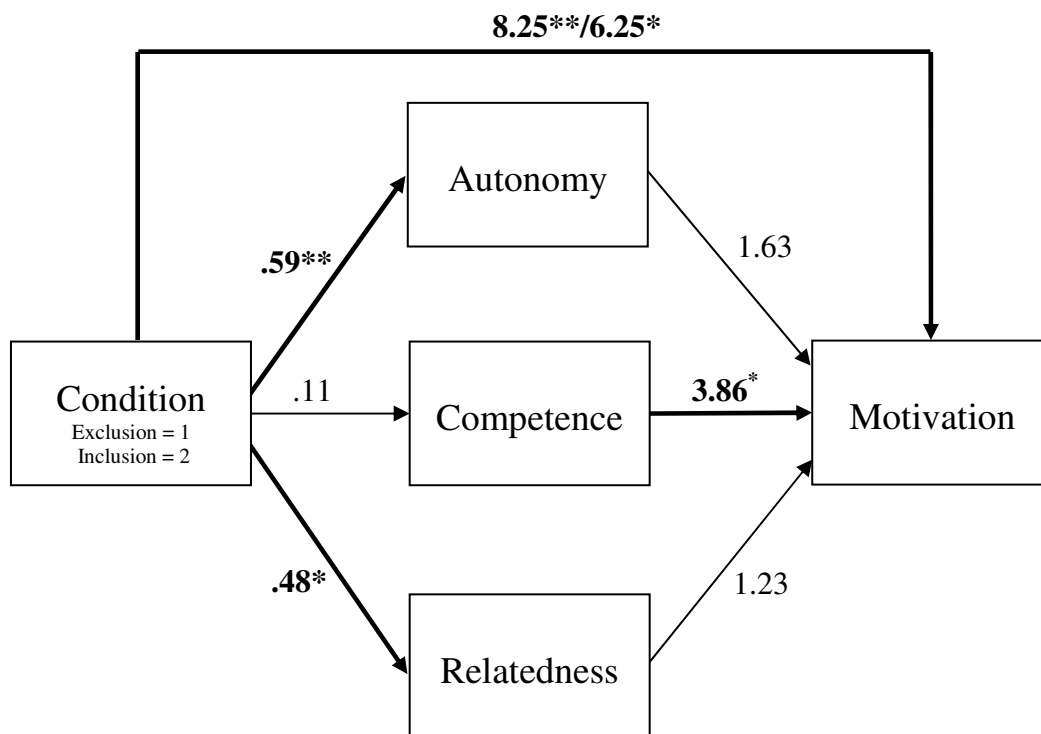
To summarize, results from this multiple mediation analysis showed that condition has a significant direct effect on motivation and a non-significant indirect effect through the satisfaction of the three needs. In addition, competence was found to have a significant effect on motivation. Figure 3 provides an overview of the direct effects of condition and the three basic needs on motivation to accomplish a task.

Table 6

*Mediation of the Effects of Condition on Motivation to Accomplish a Task through Autonomy, Competence, and Relatedness (Study 2)*

	Point Estimates	Product of Coefficients		Bootstrapping BC 95% CI	
		SE	Z	Lower	Upper
Indirect Effects					
Autonomy	.9673	1.1096	.8718	-1.0198	3.5705
Competence	.4418	.7781	.5678	-.6028	3.6868
Relatedness	.5837	.9158	.6374	-1.2943	2.9146
Total	1.9928	1.6189	1.2310	-1.6285	5.7387
Contrasts					
Autonomy vs. competence	.5256	1.3514	.3889	-2.8436	2.8477
Autonomy vs. Relatedness	.3836	1.4647	.2619	-2.1228	3.2912
Competence vs. Relatedness	-.1419	1.2072	-.1176	-2.0300	4.4334

*Note.* BC, bias corrected; 5000 bootstrap samples; an effect is statistically significant if the confidence interval does not overlap zero.



*Figure 3.* Effects of condition (total and direct) and direct effects of the three basic needs on motivation to accomplish a task (Study 2).

Note. \*  $p < .05$ , \*\*  $p < .01$ ; multiple mediation analysis uses unstandardized beta weights.

*Effects of Condition, Needs Satisfaction, and Motivation on Task Persistence*

We tested the hypothesis that the satisfaction of each of the three needs (autonomy, competence, and relatedness) and motivation to accomplish a task (motivation) would mediate the effects of social exclusion/inclusion (the condition variable) on participants' persistence at the task (persistence). A series of three sequential mediation analyses (Hayes, Preacher, & Myers, in press) were performed in order to test this hypothesis. Sequential mediation analysis estimates the total, direct, and indirect effects (i.e. via the mediators) of  $X$  on  $Y$ . For inference about the indirect effects, sequential mediation analysis generates percentile-based bootstrap confidence intervals and bootstrap estimates of standard errors (Hayes, Preacher, & Myers, in press). A separate analysis was performed for each of the three needs. Tables 7 to 9 display the estimates for the total, direct, and indirect effects via the mediators for the three sequential mediation analyses. Figure 4 presents each of the tested models with the direct effects.

The first sequential mediation analysis was performed on condition as the independent variable, autonomy and motivation as the mediators, and persistence as the dependent variable. Results only showed significant paths between condition and each of the two mediators (see Table 7).

For the second sequential mediation analysis, competence and motivation were entered as the mediators. Three significant paths were found, the first between condition and motivation, the second between the two mediators (competence and motivation), and the third between competence and persistence (see Table 8).

Relatedness and motivation were used as the mediators for the third sequential mediation analysis. Condition was found to have a significant effect on each of the two mediators. A

marginally significant effect was also observed between the two mediators (relatedness and motivation; see Table 9).

Table 7

*Mediation of the Effects of Condition on Persistence at the Task through Autonomy and Motivation to Accomplish a Task (Study 2)*

Model Path Estimates	Point Estimate	Product of Coefficients		
		<i>SE</i>	<i>t</i>	<i>p</i>
Condition – Autonomy	.5938	.1921	3.0914	.0030
Condition – Motivation	6.4890	2.9723	2.1832	.0329
Autonomy – Motivation	2.9615	1.8294	1.6188	.1106
Autonomy – Persistence	.1864	1.1903	.1566	.8761
Motivation – Persistence	.0345	.0816	.4233	.6736
Condition – Persistence (total)	1.7500	1.7375	1.0072	.3178
Condition – Persistence (direct)	1.3546	1.9663	.6889	.4935
Indirect Effects	Effect	Bootstrapping 95% CI		
		Lower	Upper	<i>SE</i>
Total	.3954	-1.5070	2.4276	.9576
Autonomy	.1107	-1.4071	1.3632	.6508
Motivation	.2241	-.5035	1.7839	.5783
Autonomy & Motivation	.0607	-.1602	.5304	.1656

*Note.* 5000 bootstrap samples; an effect is statistically significant if the confidence interval does not overlap zero.

Table 8

*Mediation of the Effects of Condition on Persistence at the Task through Competence and Motivation to Accomplish a Task (Study 2)*

Model Path Estimates	Point Estimate	Product of Coefficients		
		<i>SE</i>	<i>t</i>	<i>p</i>
Condition – Competence	.1146	.1954	.5865	.5596
Condition – Motivation	7.6979	2.6704	2.8827	.0054
Competence – Motivation	4.7955	1.7312	2.7700	.0074
Competence – Persistence	2.3960	1.1761	2.0372	.0460
Motivation – Persistence	-.0187	.0820	-.2282	.8203
Condition – Persistence (total)	1.7500	1.7375	1.0072	.3178
Condition – Persistence (direct)	1.6297	1.8225	.8942	.3748
Indirect Effects	Effect	Bootstrapping 95% CI		
		Lower	Upper	<i>SE</i>
Total	.1203	-1.1913	1.9092	.7975
Competence	.2745	-.7985	1.3216	.5013
Motivation	-.1440	-.9785	1.6538	.6564
Competence & Motivation	-.0103	-.1982	.1605	.0802

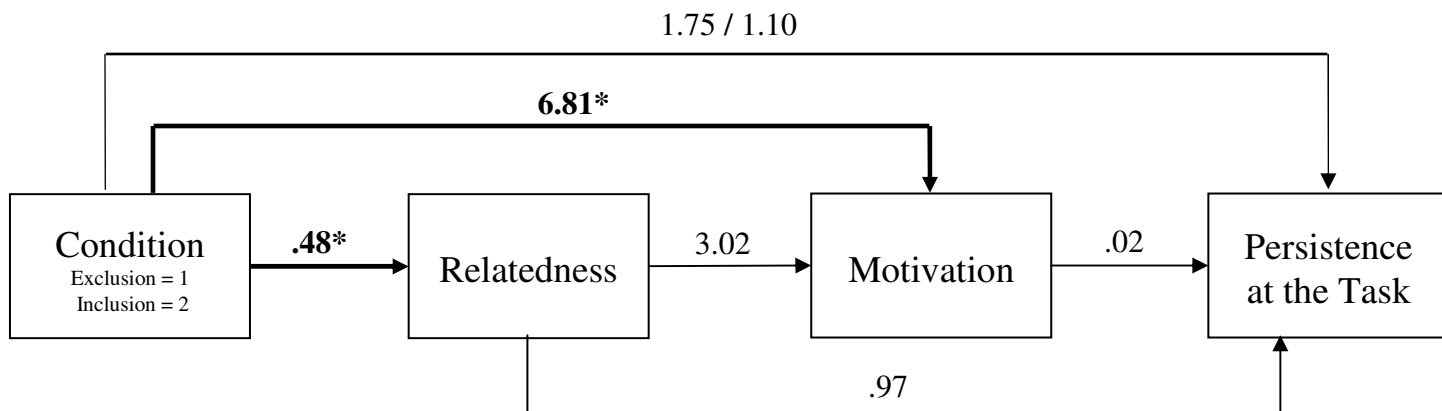
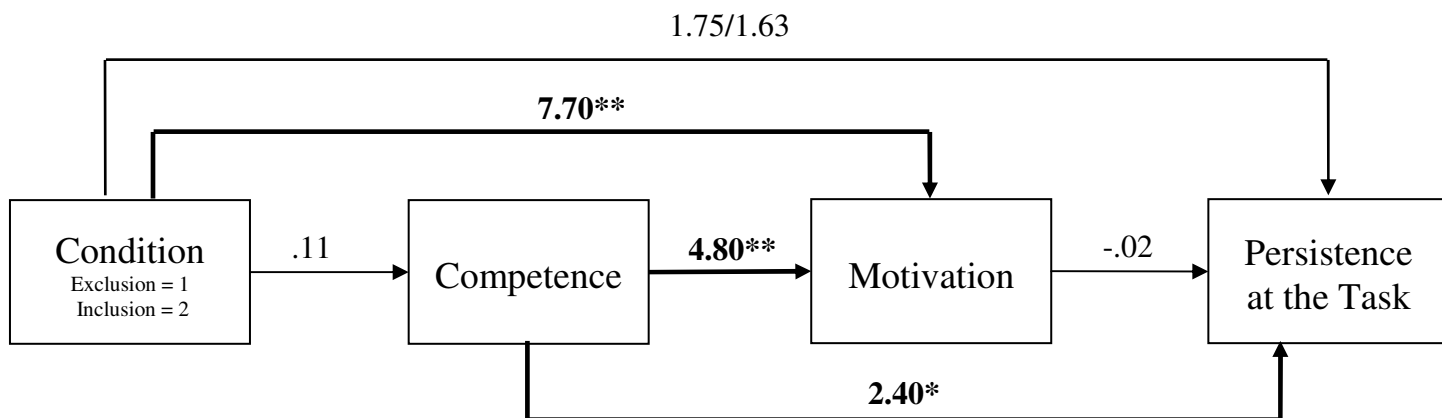
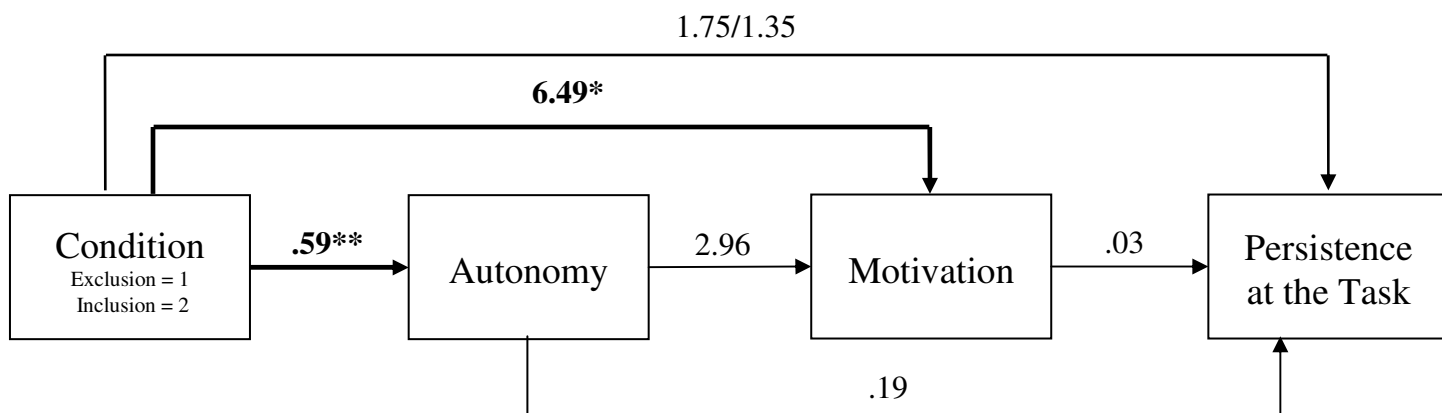
*Note.* 5000 bootstrap samples; an effect is statistically significant if the confidence interval does not overlap zero.

Table 9

*Mediation of the Effects of Condition on Persistence at the Task through Relatedness and Motivation to Accomplish a Task (Study 2)*

Model Path Estimates	Point Estimate	Product of Coefficients		
		<i>SE</i>	<i>t</i>	<i>p</i>
Condition – Relatedness	.4750	.1923	2.4695	.0163
Condition – Motivation	6.8126	2.8969	2.3517	.0219
Relatedness – Motivation	3.0205	1.8251	1.6550	.1031
Relatedness – Persistence	.9690	1.1834	1.1834	.4161
Motivation – Persistence	.0233	.0812	.0812	.7749
Condition – Persistence (total)	1.7500	1.7375	1.0072	.3178
Condition – Persistence (direct)	1.0973	1.9190	.5718	.5696
		Bootstrapping 95% CI		
Indirect Effects	Effect	Lower	Upper	<i>SE</i>
Total	.6527	-.6785	2.9332	.8816
Relatedness	.4603	-.6289	2.2512	.7096
Motivation	.1590	-.8552	2.0301	.6869
Relatedness & Motivation	.0335	-.2251	.4795	.1617

*Note.* 5000 bootstrap samples; an effect is statistically significant if the confidence interval does not overlap zero.



*Figure 4.* Mediation of the effects of condition on persistence at the task, through autonomy, competence, relatedness, and motivation to accomplish a task (Study 2).

Note. \*  $p < .05$ , \*\*  $p < .01$ ; sequential mediation analysis uses unstandardized beta weights.

*Effects of Condition, Needs Satisfaction, and Motivation on Intentions to Collaborate*

A series of three sequential mediation analyses (Hayes, Preacher, & Myers, in press) were performed in order to test the effects of social exclusion/inclusion (the condition variable) on participants' intention to collaborate with a peer participant (collaboration), through the three needs and motivation to accomplish a task (motivation). A separate analysis was performed for each of the three needs. Tables 10 to 12 display the estimates for the total, direct, and indirect effects via the mediators for the three sequential mediation analyses. Figure 5 presents each of the tested models with the direct effects.

The first sequential mediation analysis was performed on condition as the independent variable, autonomy and motivation as the mediators, and collaboration as the dependent variable. Results showed a significant effect of condition on each of the two mediators, as well as a significant effect of motivation on collaboration. The total indirect effect of condition on collaboration, via the two mediators was found to be significant. A unique indirect effect of motivation was also found (see Table 10).

For the second sequential mediation analysis, competence and motivation were entered as the mediators. Significant paths were found between condition and motivation, between the two mediators, as well as between motivation and collaboration. A marginally significant path was found between competence and collaboration. The total indirect effect of condition on collaboration, through competence and motivation was significant, while motivation uniquely contributed to the indirect effect of collaboration (see Table 11).

Relatedness and motivation were used as the mediators for the third sequential mediation analysis. A significant effect of condition was found on each of the two mediators. Separate significant effects of relatedness and motivation were found on collaboration. A significant total

indirect effect of condition on collaboration, through relatedness and motivation was found to be significant. Each of the two mediators also had a unique indirect effect on collaboration (see Table 12).

Table 10

*Mediation of the Effects of Condition on Intentions to Collaborate through Autonomy and Motivation to Accomplish a Task (Study 2)*

Model Path Estimates	Point Estimate	Product of Coefficients		
		<i>SE</i>	<i>t</i>	<i>p</i>
Condition – Autonomy	.5938	.1921	3.0914	.0030
Condition – Motivation	6.4890	2.9723	2.1832	.0329
Autonomy – Motivation	2.9615	1.8294	1.6188	.1106
Autonomy – Collaboration	.1121	.2324	.4823	.6314
Motivation – Collaboration	.0469	.0159	2.9467	.0046
Condition – Collaboration (total)	.4063	.3654	1.1117	.2706
Condition – Collaboration (direct)	-.0474	.3839	-.1234	.9022
Indirect Effects	Effect	Bootstrapping 95% CI		
		Lower	Upper	<i>SE</i>
Total	.4536	.0730	1.0080	.2421
Autonomy	.0665	-.2577	.3508	.1496
Motivation	.3045	.0283	.8298	.2095
Autonomy & Motivation	.0825	-.0273	.2494	.0686

*Note.* 5000 bootstrap samples; an effect is statistically significant if the confidence interval does not overlap zero.

Table 11

*Mediation of the Effects of Condition on Intentions to Collaborate through Competence and Motivation to Accomplish a Task (Study 2)*

Model Path Estimates	Point Estimate	Product of Coefficients		
		<i>SE</i>	<i>t</i>	<i>p</i>
Condition – Competence	.1146	.1954	.5865	.5596
Condition – Motivation	7.6979	2.6704	2.8827	.0054
Competence – Motivation	4.7955	1.7312	2.7700	.0074
Competence – Collaboration	.4510	.2306	1.9555	.0552
Motivation – Collaboration	.0380	.0161	2.3628	.0214
Condition – Collaboration (total)	.4063	.3654	1.1117	.2706
Condition – Collaboration (direct)	.0413	.3574	.1156	.9083
		Bootstrapping 95% CI		
Indirect Effects	Effect	Lower	Upper	<i>SE</i>
Total	.3649	.0297	.8923	.2182
Competence	.0517	-.1139	.2608	.0941
Motivation	.2924	.0274	.7983	.1971
Competence & Motivation	.0209	-.0558	.1144	.0421

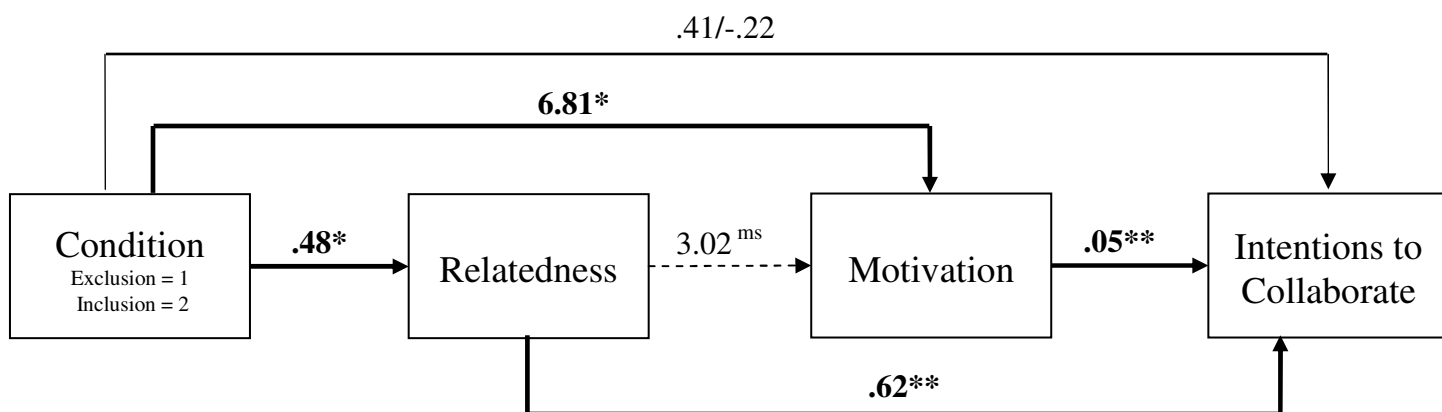
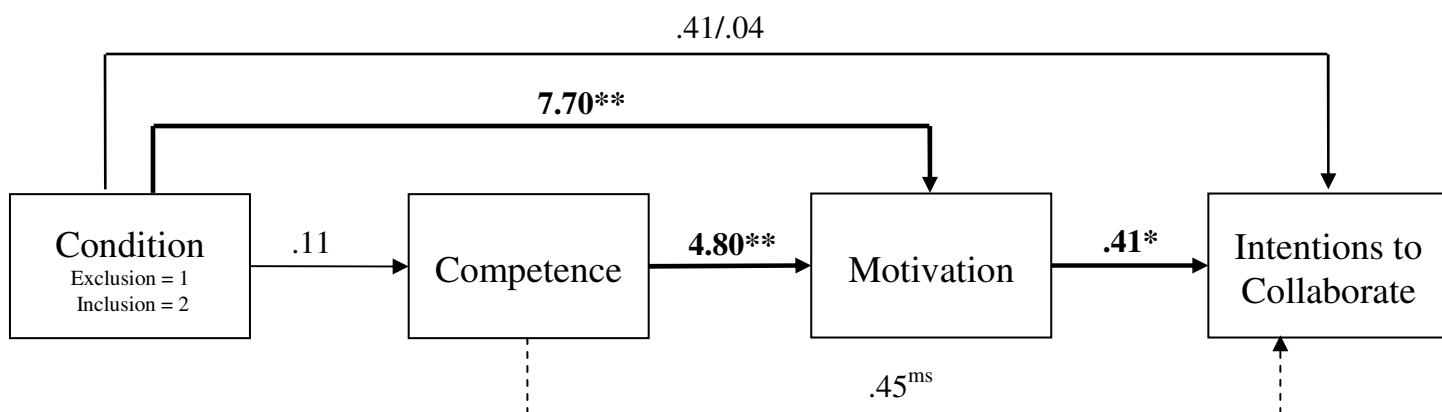
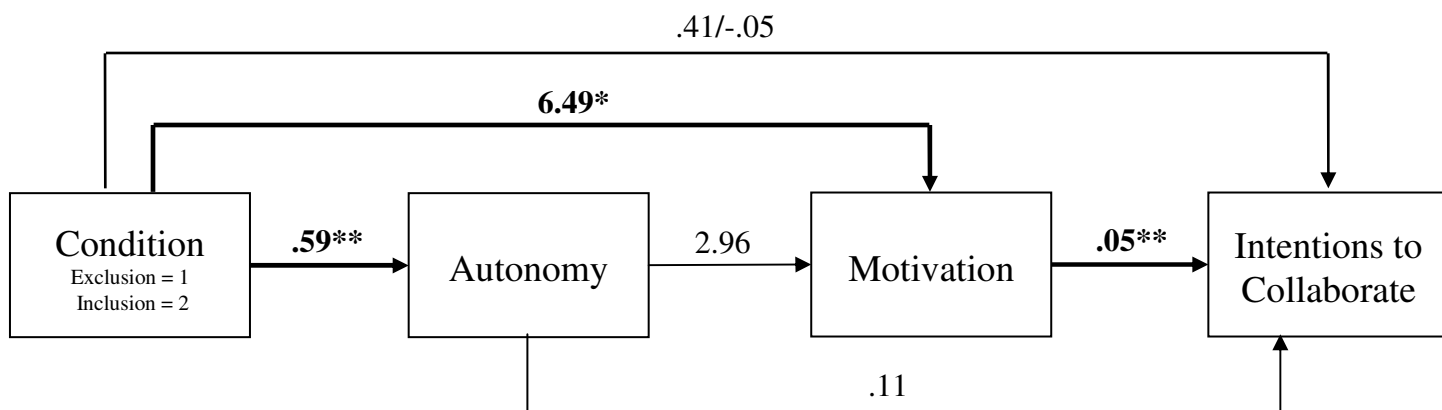
*Note.* 5000 bootstrap samples; an effect is statistically significant if the confidence interval does not overlap zero.

Table 12

*Mediation of the Effects of Condition on Intentions to Collaborate through Relatedness and Motivation to Accomplish a Task (Study 2)*

Model Path Estimates	Point Estimate	Product of Coefficients		
		<i>SE</i>	<i>t</i>	<i>p</i>
Condition – Relatedness	.4750	.1923	2.4695	.0163
Condition – Motivation	6.8126	2.8969	2.3517	.0219
Relatedness – Motivation	3.0205	1.8251	1.6550	.1031
Relatedness – Collaboration	.6221	.2184	2.8479	.0060
Motivation – Collaboration	.0396	.0150	2.6441	.0104
Condition – Collaboration (total)	.4063	.3654	1.1117	.2706
Condition – Collaboration (direct)	-.2162	.3542	-.6102	.5440
Indirect Effects	Effect	Bootstrapping 95% CI		
		Lower	Upper	<i>SE</i>
Total	.6224	.2419	1.1771	.2350
Relatedness	.2955	.0198	.7272	.1837
Motivation	.2701	.0429	.6395	.1553
Relatedness & Motivation	.0569	-.0187	.1680	.0484

*Note.* 5000 bootstrap samples; an effect is statistically significant if the confidence interval does not overlap zero.



*Figure 5.* Mediation of the effects of condition on intentions to collaborate, through autonomy, competence, relatedness, and motivation to accomplish a task (Study 2).

Note. \*  $p < .05$ , \*\*  $p < .01$ , <sup>ms</sup>  $p < .10$ ; sequential mediation analysis uses unstandardized beta weights.

*Effects of Condition, Needs Satisfaction, and Motivation on Intentions to Compete*

Using a series of three sequential mediation analyses (Hayes, Preacher, & Myers, in press), we tested the hypothesis that the satisfaction of each of the three needs (autonomy, competence, and relatedness) and motivation to accomplish a task (motivation) would mediate the effects of social exclusion/inclusion (the condition variable) on participants' intention to compete against a peer participant (competition). A separate analysis was performed for each of the three needs. Tables 13 to 15 display the estimates for the total, direct, and indirect effects via the mediators for the three sequential mediation analyses. Figure 6 presents each of the tested models with the direct effects.

The first sequential mediation analysis was performed on condition as the independent variable, autonomy and motivation as the mediators, and competition as the dependent variable. Results only showed significant paths between condition and each of the two mediators, as well as a marginally significant path between motivation and competition (see Table 13).

For the second sequential mediation analysis, competence and motivation were entered as the mediators. A significant association was found between condition and motivation, as well as between the two mediators. Motivation was shown to have a significant direct effect, as well as a significant indirect effect on competition (see Table 14).

Relatedness and motivation were used as the mediators for the third sequential mediation analysis. The condition variable was shown to be significantly associated with each of the two mediators. A marginally significant effect was also found between motivation and competition (see Table 15)<sup>1</sup>.

---

<sup>1</sup> In the last three sub-sections, separate sequential mediation analyses were performed on each of the three needs separately because the sample size was too small to conduct path analyses using SEM. Accordingly, due to a small male sample, statistical power was not sufficient for the analyses to be performed separately for males and females.

Table 13

*Mediation of the Effects of Condition on Intentions to Compete through Autonomy and Motivation to Accomplish a Task (Study 2)*

Model Path Estimates	Point Estimate	Product of Coefficients		
		<i>SE</i>	<i>t</i>	<i>p</i>
Condition – Autonomy	.5938	.1921	3.0914	.0030
Condition – Motivation	6.4890	2.9723	2.1832	.0329
Autonomy – Motivation	2.9615	1.8294	1.6188	.1106
Autonomy – Competition	-.1098	.2865	-.3832	.7029
Motivation – Competition	-.0330	.0196	-1.6808	.0980
Condition – Competition (total)	-.3594	.4289	-.8379	.4053
Condition – Competition (direct)	-.0220	.4732	-.0466	.9630
Indirect Effects	Effect	Bootstrapping 95% CI		
		Lower	Upper	<i>SE</i>
Total	-.3373	-.8264	.0889	.2302
Autonomy	-.0652	-.4659	.2767	.1732
Motivation	-.2141	-.5888	.0608	.1659
Autonomy & Motivation	-.0580	-.1799	.0374	.0536

*Note.* 5000 bootstrap samples; an effect is statistically significant if the confidence interval does not overlap zero.

Table 14

*Mediation of the Effects of Condition on Intentions to Compete through Competence and Motivation to Accomplish a Task (Study 2)*

Model Path Estimates	Point Estimate	Product of Coefficients		
		<i>SE</i>	<i>t</i>	<i>p</i>
Condition – Competence	.1146	.1954	.5865	.5596
Condition – Motivation	7.6979	2.6704	2.8827	.0054
Competence – Motivation	4.7955	1.7312	2.7700	.0074
Competence – Competition	.3569	.2893	1.2335	.2222
Motivation – Competition	-.0428	.0202	-2.1242	.0378
Condition – Competition (total)	-.3594	.4289	-.8379	.4053
Condition – Competition (direct)	-.0469	.4484	-.1047	.9170
Indirect Effects	Effect	Bootstrapping 95% CI		
		Lower	Upper	<i>SE</i>
Total	-.3124	-.6891	.0303	.1874
Competence	.0409	-.1625	.2372	.0941
Motivation	-.3298	-.6840	-.0216	.1745
Competence & Motivation	-.0235	-.1313	.0569	.0479

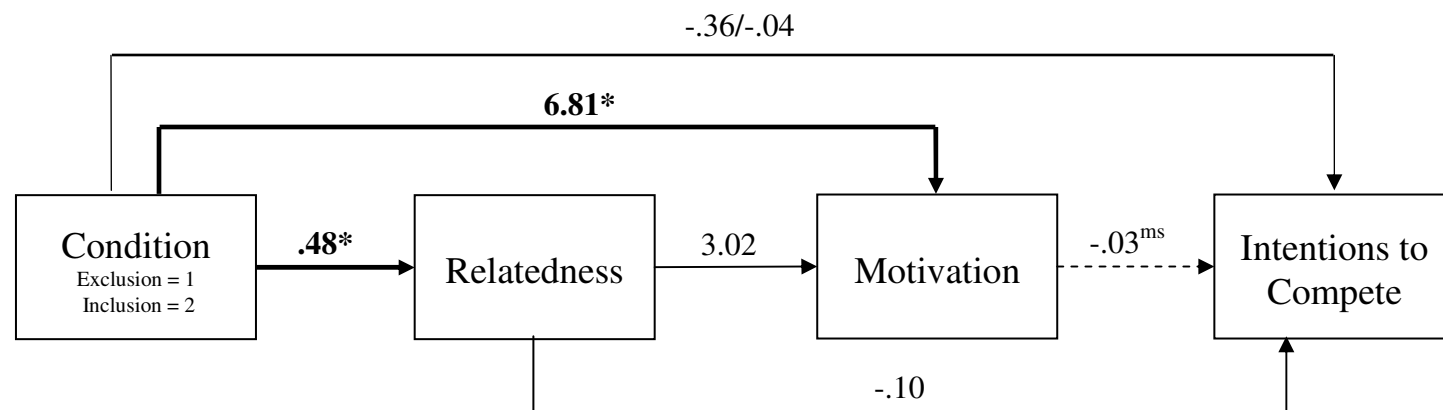
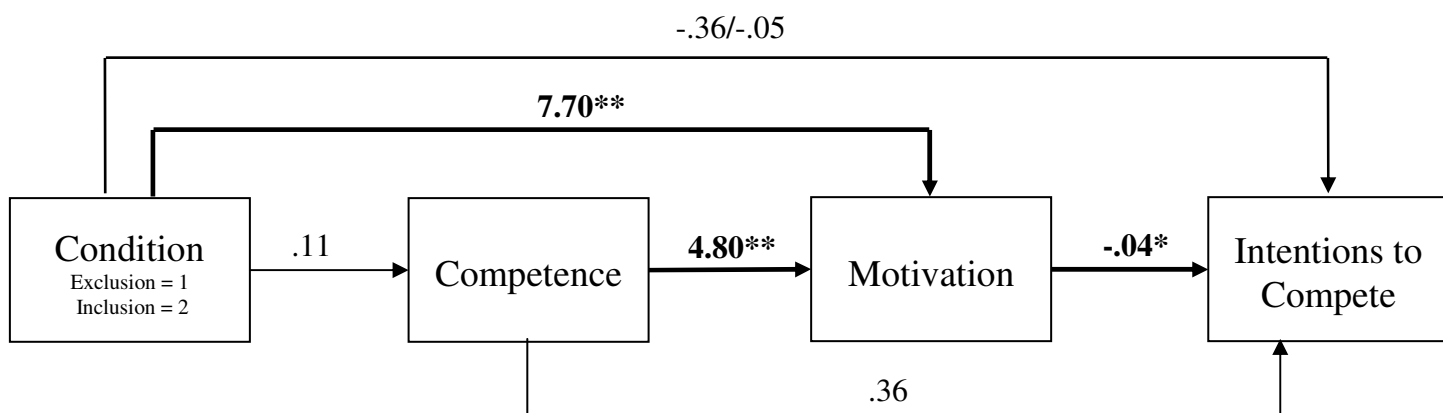
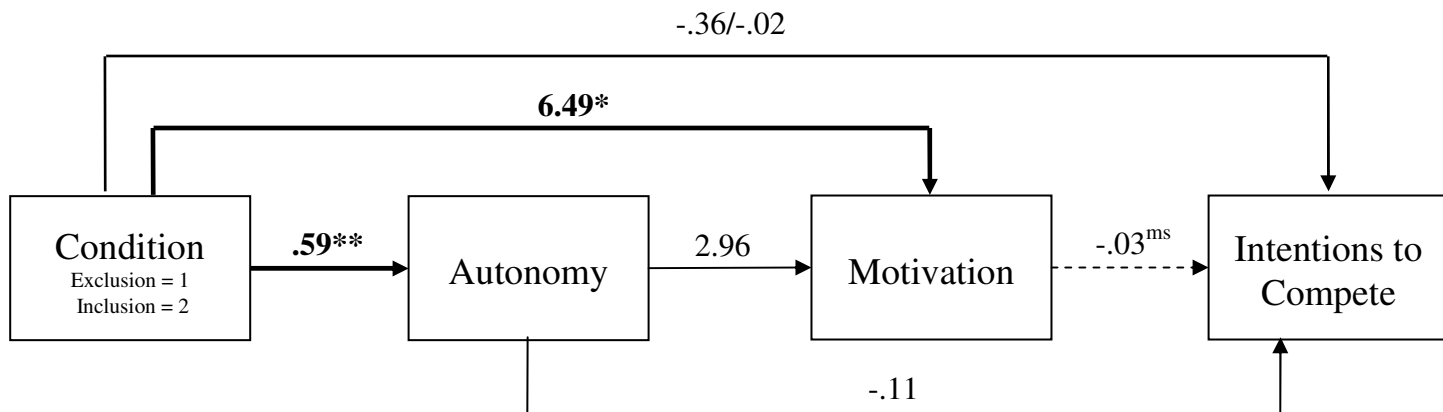
*Note.* 5000 bootstrap samples; an effect is statistically significant if the confidence interval does not overlap zero.

Table 15

*Mediation of the Effects of Condition on Intentions to Compete through Relatedness and Motivation to Accomplish a Task (Study 2)*

Model Path Estimates	Point Estimate	Product of Coefficients		
		<i>SE</i>	<i>t</i>	<i>p</i>
Condition – Relatedness	.4750	.1923	2.4695	.0163
Condition – Motivation	6.8126	2.8969	2.3517	.0219
Relatedness – Motivation	3.0205	1.8251	1.6550	.1031
Relatedness – Competition	-.1014	.2864	-.3539	.7246
Motivation – Competition	-.0331	.0197	-1.6832	.0975
Condition – Competition (total)	-.3594	.4289	-.8379	.4053
Condition – Competition (direct)	-.0384	.4644	-.0826	.9344
Indirect Effects	Effect	Bootstrapping 95% CI		
		Lower	Upper	<i>SE</i>
Total	-.3210	-.7283	.0986	.2118
Relatedness	-.0481	-.3578	.2076	.1379
Motivation	-.2254	-.5078	.0633	.1465
Relatedness & Motivation	-.0475	-.1538	.0241	.0455

*Note.* 5000 bootstrap samples; an effect is statistically significant if the confidence interval does not overlap zero.



*Figure 6.* Mediation of the effects of condition on intentions to compete, through autonomy, competence, relatedness, and motivation to accomplish a task (Study 2).

Note. \*  $p < .05$ , \*\*  $p < .01$ , <sup>ms</sup>  $p < .10$ ; multiple mediation analysis uses unstandardized beta weights.

## Discussion

Findings from Study 2 partially supported our hypotheses. The results obtained from the one-way MANOVA offered some partial support to findings from Study 1 and SDT. As in the first study, an effect of condition was found on more than just the need for relatedness, however, in this second study it was the need for autonomy that was significantly affected by the experimental manipulation, in addition to the need for relatedness, and not the need for competence as previously observed in Study 1. The discrepancy in the findings from these two studies may be due to the fact that since participants actually had to do the experimental task in this study, the experimenter may have unintentionally put more emphasis on explaining how the task was going to be performed when describing the experimental procedure to the participants. This having been followed by the experimental manipulation of social exclusion, participants might have experienced a decrease in autonomy due to the fact that they still had to perform a task with another participant, despite the negative personality feedback relating to their interpersonal skills they had just received. It is noteworthy that since Studies 1 and 2 were the first empirical investigations to examine the effects of social exclusion/inclusion on the satisfaction of basic psychological needs, more research are needed before we can know more accurately which needs are affected. A consistent finding between the first and second study was the replication of the effects of social exclusion/inclusion on the satisfaction of the need for relatedness, which provides strong support for NBT.

The results from the multiple mediation analysis revealed that social exclusion/inclusion had a significant direct effect on motivation to accomplish a task (in support of SDT); however, the needs for autonomy, competence and relatedness, were surprisingly not found to be significant mediators of that relationship. The multiple mediation analysis also showed a

significant direct effect of the need for competence on motivation to accomplish a task, which suggests that participants' motivation to do the task was strongly dependent on how competent they felt in their ability to perform the task.

Study 2 also tested whether participants' persistence at a laboratory task, as well as their intentions for a future peer interaction (intentions to compete versus collaborate) were influenced by social exclusion and inclusion, through the mediating effects of basic needs satisfaction and self-determined motivation. No significant direct and total effects of social exclusion/inclusion on neither task persistence, intentions to collaborate, or intentions to compete were found. The results suggested that social exclusion/inclusion, through the mediating effects of basic needs and motivation decreased peer collaboration. Furthermore, examination of the indirect effects showed that the need for relatedness (support for NBT) and motivation (support for SDT) were significant mediators of the relation between social exclusion/inclusion and peer collaboration. The effect of condition via the mediating effects of basic needs satisfaction and motivation failed to predict persistence at the task and peer competition; however, motivation (support for SDT) was shown to be a significant mediator of the relation between condition and peer competition. The non-significant effect on task persistence may be due to the fact that participants, indifferent to the condition they were in, wanted to be adequately prepared for the peer interaction, and thus practiced the task as long as they could. The non-significant effect on peer competition is harder to explain, but may be due to the fact that all the participants generally reported high levels of situational motivation.

Lastly, consistent with findings from the first study, Study 2 also found that social exclusion did not significantly lower self-esteem and moods. These results offer support to some previous research (Gardner et al., 2000; Twenge et al., 2001, 2002, 2003), but are not consistent

with the meta-analyses which showed that social exclusion elicits some emotional reactions and a slight decrease in self-esteem (Blackhart et al., 2010; Gerber & Wheeler, 2009). This inconsistent in the findings may be a results of the measures used in this study to assess moods and self-esteem.

In sum, by showing that the need for relatedness is systematically affected by the experimental manipulations of social exclusion and inclusion, this study offered support to NBT. However, in support of SDT, our findings also showed that social exclusion/inclusion affected self-determined motivation to accomplish a task, which in turn affected the regulation of interpersonal behaviours. Thus, findings from this second study suggest that NBT is incomplete and that propositions from SDT can contribute to the better understanding of the effects of social exclusion and inclusion on the self-regulation of behaviour. As an avenue for future research, the effects of social exclusion and inclusion on task persistence should be examined with and without telling the participants they will have to interact with another participant in the second half of the study. This would permit to (1) isolate the effects of social exclusion/inclusion on task persistence, and (2) determine if participants' persistence at the task is solely due to their desire to want to be adequately ready for the peer interaction (i.e. excluded participants may see the peer interaction as a way to compensate for their thwarted needs).

## CHAPTER FOUR

### STUDY THREE

SDT has previously been applied to the field of education and studies have shown that there is a natural decrease in intrinsic motivation and self-determined motivation, with a concomitant increase in extrinsic motivation and non self-determined motivation, as a student progresses through school years (e.g. Otis, Grouzet, & Pelletier, 2005). Furthermore, this theoretical framework has been especially useful in the prediction of high school dropout. Past research has demonstrated that academic motivation is an important factor in predicting both academic persistence and high school dropout (Vallerand, Fortier, & Guay, 1997; Vallerand & Bissonnette, 1992). More specifically, non self-determined academic motivation has been shown to be positively associated with high school dropout, whereas self-determined academic motivation has been shown to be positively associated with students' persistence in school.

Additional studies have examined the effects that parents, teachers, and peers have on a student's academic motivation and persistence in school (Flook, Repetti, & Ullman, 2005; Furrer & Skinner, 2003; Guay, Boivin, & Hodges, 1999; Ryan, Stiller, & Lynch, 1994). Within this area of research, studies have found that a student's sense of relatedness to parents and teachers can significantly predict their academic motivation and educational outcomes (i.e. school adjustment, persistence, performance, etc.). The findings on the effects of peer relatedness on academic motivation and persistence in school are, nonetheless, unclear, as past research has produced mixed results.

Ryan and colleagues (1994) examined the impact of student's relationships to parents, teachers, and peers as predictors of academic motivation and self-esteem. Areas of specific interest were students' feelings of security, as well as emotional and school utilization (i.e.

utilization of others in respect to school problems). In the above mentioned study, 606 grade seven and eight students were asked to complete several self-report questionnaires in order to determine their sense of relatedness to others (i.e. parents, teachers, and peers). Results indicated that students' relationships to parents and teachers were significantly and positively interrelated to students' motivation and school adjustment, while relationships to peers were not. As well, it is noteworthy that students who indicated that they emulated parents and teachers showed more positive school adjustment, motivation, and self-esteem in comparison to students who emulated peers. In a study concerned with students' sense of relatedness as a factor in academic engagement and performance, Furrer and Skinner (2003) found similar results to the study previously discussed. Their research determined that when students had a high sense of relatedness to parents and teachers, then relatedness to peers did not significantly impact academic engagement and performance. However, it is worth mentioning that students' emotional experience in the classroom was affected by low relatedness to peers. Flook and colleagues (2005) found opposing results when looking at the peer variable in isolation. Their study looked at the longitudinal effects of classroom social experiences as predictors of academic performance in 677 fourth grade students. Flook and colleagues used teacher reports, student self-reports, and report card grades for math and reading in order to measure students' peer acceptance and academic performance. Their results indicated that there was a significant association between peer acceptance and academic performance. In addition, they found that low peer acceptance was negatively associated with academic performance, self-concept, and mental health. Similarly, a study by Guay and colleagues (1999) which examined whether the quality of students' interpersonal relationships with peers affect students' perceptions of academic

competence showed that peer rejection decreased students' feelings of peer relatedness, which in turn hampered students' academic achievement.

Evidently, previous research has shown that the peer variable yields different results when examined in isolation than when it is combined with the parent and teacher variables. For the purpose of this study, the peer variable was isolated from the parent and teacher variables in order to examine the unique contribution of peer relatedness on students' academic motivation and persistence in school, beyond the joint influence of parents and teachers.

Furthermore, both research on SDT and NBT have validated that meaningful interpersonal relationships have significant effects on behavioural self-regulation and personal well-being; however, they differ systematically in their operational definition of the need (need for relatedness versus need to belong). Previous works on SDT have operationally defined relatedness using self-report questionnaires, which may have resulted in a subjective measure of need satisfaction. This type of measure was also limited by the fact that it related to the perception of relationships with peers in general, and more specifically to the perception of young peers as those observed in the beginning of high school. In contrast, studies using NBT (as well as Studies 1 and 2 of this thesis) manipulated social exclusion and inclusion in a laboratory setting, which may have resulted in a more objective assessment of need satisfaction, but is still limited by the artificiality of the laboratory setting. For the purpose of this study, we decided to examine social exclusion and inclusion as it naturally occurs, that is in a real population of high school students. Moreover, we felt that it was important to examine whether social exclusion and inclusion affect academic motivation, and in turn students' persistence in school.

The general purpose of Study 3 was to independently test the role of SDT and NBT in the prediction of academic motivation and high school dropout, and in turn examine how

propositions from each theory can contribute to the other. The first set of hypotheses pertained to the prediction of academic motivation. We started by specifying a model based on SDT which tested whether peer relatedness (i.e. social exclusion/inclusion) was a significant predictor of academic motivation, just as perceived needs support from parents and perceived needs support from teachers. Past research on SDT suggests that parents' needs support and teachers' needs support are of primary importance in the prediction of academic motivation. Therefore, we first examined whether peer relatedness would represent a significant predictor of academic motivation, above and beyond parents' needs support and teachers' needs support. We then specified another model based on NBT which examined the effect of peer relatedness as a significant predictor of academic motivation, and in which the effects of parents' needs support and teachers' needs support were added to examine whether these two constructs would represent significant predictors of academic motivation, above and beyond the effect of peer relatedness. It was hypothesized that peer relatedness would significantly contribute to the prediction of academic motivation, but that its effect would be reduced by parents' needs support and teachers' needs support.

The second set of hypotheses pertained to the prediction of high school dropout. We first tested a model which examined whether peer relatedness contributed to the prediction of high school dropout, beyond what can be explained by SDT constructs (i.e. academic motivation, parents' needs support, and teachers' needs support). It was expected that peer relatedness would be a significant unique predictor of high school dropout. We then tested a second model which examined whether the contribution of peer relatedness in the prediction of high school dropout would be reduced when SDT constructs (i.e. academic motivation, parents' needs support, and

teachers' needs support) are entered in the equation. It was hypothesized that SDT constructs would reduce the effect of peer relatedness on high school dropout.

## Method

### *Participants and Procedure*

All tenth grade students from nine different French-speaking schools, from the Eastern-Ontario Catholic School Board, were asked to participate in the study. A total of 624 students were initially tested in grade 10, and their files were re-evaluated two years later with regards to their dropout status. Mean age of students was 15 years. The sample consisted of 308 females, 308 males, and 8 students who did not declare their gender.

With consent from both the school board and parents obtained prior to testing, students were invited to complete the questionnaire via the schools' intranet system. Students were assured that the testing was not an academic evaluation, would not influence their grades, that the information would remain confidential and that there was no right or wrong answers. The questionnaire took approximately 45 minutes to complete, and students answered the questions individually. Two years after the data collection, the school board informed us of the students who obtained their high school diploma, those who were still in school and those who did not complete their degree or were not in school anymore. Thus, for the purpose of this study, students were considered as having dropped out of school if they did not complete their high school degree without any interruptions (not including a sickness or a death in the family). The definition of dropout and school persistence were determined based on the criteria identified by the school board and the goals they wished to accomplish by getting involved in this study.

### *Measures*

(The measures described below are presented in Appendix D)

*Academic motivation.* The revised French version of the Academic Motivation Scale (AMS; Grouzet, Otis, & Pelletier, 2006; Otis et al., 2005), which was adapted from the original scale from Vallerand and colleagues (Vallerand, Blais, Brière, & Pelletier, 1989; for the English version, see Vallerand et al., 1992, 1993), was used to measure students' motivational orientation toward academic activities. This scale comprises 20 items ranked on a five-point Likert scale in which four items represent each of the five SDT motivational types. The items offer various answers to the question, "Why do you go to school?" Students were asked to rank their responses from 1 (does not correspond at all), to 5 (corresponds exactly).

Past research has demonstrated the validity and reliability of this scale, including its invariance in measurement across gender and grade level (Vallerand et al., 1993; Otis et al., 2005; Grouzet et al., 2006). Sample items are as follows: intrinsic motivation – "Because I experience pleasure and satisfaction while learning new things," identified regulation – "Because I think that my studies will help me better prepare for the career I have chosen," introjected regulation – "To show myself that I am an intelligent person," External regulation – "To have a better salary later on," and amotivation – "I can't see why I go to school and frankly I could not care less."

Students' responses from the AMS were used to create a global score of academic motivation called the Self-Determination Index (SDI). The SDI weights the measures of the five regulatory styles according to the following formula:  $SDI = 2*IM + IDEN - (INTRO+ER)/2 - 2*AMO$ . Scores theoretically range from -12, representing low motivation, to +12, representing high motivation. In past research (Blais et al., 1990; Fortier, Vallerand, & Guay, 1995; Grolnick & Ryan, 1987; Vallerand & Bissonnette, 1992), the SDI was found to be a valid and reliable measure of motivation, and it is commonly used in research (Green-Demers, Pelletier, &

Menard, 1997; Blanchard, Pelletier, Otis, & Sharp, 2004). Cronbach's alpha for the combined items forming the self-determination index in this sample was .83.

*Perceived needs support from parents and teachers.* A short version of the Interpersonal Behavior Scale (IBS; Beaudry & Pelletier, 2006; Otis & Pelletier, 2005) was used to measure students' perceived needs support from their parents and school teachers. Based on SDT, the original scale was designed to measure the extent to which participants perceived various members of their social network (e.g. best friend, employer, parents, romantic partner, etc.) to be supportive of their basic needs for autonomy, competence, and relatedness. For the purpose of this study, the items only pertained to students' perceptions of the support received from their parents and teachers. Sample items with Cronbach's alpha reliability coefficients in parentheses are as follows: Autonomy – My parents/teachers encourage me to be myself (items for parents  $\alpha = 0.63$ , items for teachers  $\alpha = 0.62$ ); Competence – The feedback I receive from my parents/teachers makes me doubt my abilities (inverse coding – items for parents  $\alpha = 0.73$ , items for teachers  $\alpha = 0.73$ ); Relatedness – My parents/teachers seem to really be interested in what I do (items for parents  $\alpha = 0.67$ , items for teachers  $\alpha = 0.69$ ). Responses ranged from 1 (never) to 5 (always). Items were computed in order to create two separate composite measures: one for parents perceived need support (12 items,  $\alpha = .79$ ), and another for teachers perceived need support (12 items,  $\alpha = .75$ ).

*Peer standing (measure of peer relatedness).* In the last section of the questionnaire students were asked to write the full name of three students in their grade level whom they considered their best friends. This procedure was developed for the purpose of this study and enabled us to operationalize the concept of peer relatedness by identifying students' peer

standing (i.e. socially excluded versus socially included)<sup>2</sup>. Excluded students corresponded to those who were not named by anyone as their best friend ( $n = 97$ ) and included students corresponded to those who were chosen by at least one student as a best friend ( $n = 527$ ). This dichotomous variable was coded as follows: -1 = social exclusion, 1 = social inclusion.

*Academic status.* In June 2009, the school board informed us of which students had obtained their high school diploma and which students did not. The school board contacted students who did not graduate to ensure that they were not attending high school elsewhere and that they had indeed dropped out. This information was used to classify students who graduated ( $n = 536$ ), and students who dropped out ( $n = 88$ ). As mentioned earlier, for the purpose of this study, students were considered to have dropped out of high school if they did not complete their high school degree without any interruptions (not including a sickness or a death in the family). This dichotomous variable was coded as follows: -1 = students who graduated, 1 = students who dropped out.

## Results

### *Preliminary Analyses*

Preliminary analyses consisted of a set of screening procedures designed to ensure that the assumptions for multiple linear regressions and logistic regressions were met (Tabachnick & Fidell, 2001). Therefore, prior to analyses, the data were examined for missing and outlying values, as well as distribution normality, linearity, homogeneity of variance, and homogeneity of regression. The percentage of missing data was less than 5% and a missing values analysis

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<sup>2</sup> It is noteworthy that studies taken place in schools are conducted under specific conditions determined by the school board and each of the schools involved. The measure of peer standing used in Study 3 represented a simple strategy which permitted us to meet the study objectives, and which was judged as acceptable by each of the school directors and the school board. The testing was performed online (intranet) as the school directors did not approve of us going into classes to measure students' sociometric status, but as a compromise they approved of the current measure of peer standing to be assessed online.

confirmed that it was missing at random. Multivariate outliers were found using the Mahalanobis distance criterion of  $p < .001$ . Multicollinearity and singularity were also inspected. Values of skewness and kurtosis were considered satisfactory as they were all below |2|. Examination of the means and standard deviations of the continuous variables revealed that their values were plausible, falling within the expected theoretical range. Lastly, zero-order Pearson correlations were computed in order to examine the relations among the variables of interest. All the variables correlated with one another significantly and in the expected direction. Descriptive statistics and correlation coefficients are presented in Table 16.

Table 16

*Descriptive Statistics and Correlation Matrix (Study 3)*

	<i>M</i>	<i>SD</i>	Skewn ess	Kurtos is	2.	3.
1. Academic motivation	3.79	2.94	-.94	.98	.37**	.40**
2. Needs support from parents	3.67	.66	-.67	.28		.27**
3. Needs support from teachers	3.13	.59	-.21	.35		

\*  $p < .05$ , \*\*  $p < .01$

*Predictors of Academic Motivation: SDT Model*

We first tested a model based on SDT which examined whether peer standing (i.e. social exclusion/inclusion) is a significant predictor of academic motivation, above and beyond perceived needs support from parents (parents' needs support) and perceived needs support from teachers (teachers' needs support). A hierarchical linear regression analysis was performed in which parents' needs support and teachers' needs support were first entered, adjusted  $R^2 = .23$ ,  $F(2, 620) = 96.19$ ,  $p < .001$ , and peer standing was added in a second step, adjusted  $R^2 = .24$ ,  $F(3, 619) = 65.82$ ,  $p < .001$ .

There was a significant change in explained variance when considering peer standing in addition to parents' needs support and teachers' needs support ( $p < .05$ ), showing that peer standing contributed something more to the variance in academic motivation than can be explained by parents' needs support and teachers' needs support. However, it is noteworthy that parents' needs support and teachers' needs support remained highly significant even after peer standing was entered in the equation; only a very minor decrease in the beta weight was observed for each of the two predictors. Overall, the results showed that parents' needs support, teachers' needs support, and peer standing are all significant positive predictors of academic motivation; however parents' needs support and teachers' needs support remain the stronger predictors. The beta weights,  $t$  statistics,  $p$ -values, and  $R^2$  change value are presented in Table 17.

Table 17

*Predictors of Academic Motivation: SDT Model (Study 3)*

Steps	Predictors	$\beta$	$t$	$p$	$\Delta R^2$
1	Needs support from parents	.28	7.71	.001	--
	Needs support from teachers	.33	9.01	.001	
2	Needs support from parents	.27	7.47	.001	.01*
	Needs support from teachers	.32	8.89	.001	
	Peer standing	.07	2.03	.043	

\*  $p < .05$

*Predictors of Academic Motivation: NBT Model*

We then tested a model based on NBT which examined whether peer standing is a significant predictor of academic motivation, and if so, if this effect can be reduced by parents' needs support and teachers' needs support. A hierarchical linear regression analysis was performed in which peer standing was entered in a first step, adjusted  $R^2 = .02$ ,  $F(1, 621) = 11.64$ ,  $p < .001$ , and parents' needs support and teachers' needs support were added in a second step, adjusted  $R^2 = .24$ ,  $F(3, 619) = 65.82$ ,  $p < .001$ .

There was a significant change in explained variance when considering parents' needs support and teachers' needs support in addition to peer standing ( $p < .001$ ), showing that these two predictors contribute something more to the variance in academic motivation than can be solely explained by peer standing. Although peer standing remained significant once parents' needs support and teachers' needs support were added in the equation, a moderate decrease in the beta weight and p-value was observed for peer standing, suggesting that the joint effect of parents' needs support and teachers' needs support contributed to reducing the effect of peer standing on academic motivation, and thus offering support to our hypothesis. Overall, the results showed that peer standing is a significant predictor of academic motivation, but this effect is reduced by the effects of parents' needs support and teachers' needs support. The beta weights,  $t$  statistics,  $p$ -values, and  $R^2$  change value are presented in Table 18.

Table 18

*Predictors of Academic Motivation: NBT Model (Study 3)*

Steps	Predictors	$\beta$	$t$	$p$	$\Delta R^2$
1	Peer standing	.14	3.41	.001	--
	Peer standing	.07	2.03	.043	
2	Needs support from parents	.27	7.47	.001	.22**
	Needs support from teachers	.32	8.89	.001	

$p < .001$

*Predictors of High School Dropout: SDT Model*

We tested a model which examined whether peer standing contributed to the prediction of high school dropout, above and beyond what can be explained by SDT constructs (i.e. academic motivation, parents' needs support, and teachers' needs support). A hierarchical logistic regression analysis was performed in which academic motivation, parents' needs support, and teachers' needs support were entered in the first block of the equation. Examination of the Chi-square value and log-likelihood value for this first block suggested that this first model was statistically reliable and had a good fit,  $\chi^2_{(3)} = 30.87, p < .001, log = 472.92$ . Academic motivation and teachers' needs support failed to be significant predictors of high school dropout, while parents' needs support was found to be a highly significant negative predictor of that outcome.

Peer standing was then entered in the second block of the equation. Examination of the Chi-square value and log-likelihood value revealed that the overall model was statistically reliable and fitted the data well,  $\chi^2_{(4)} = 47.29, p < .001, log = 456.50$ . Peer standing was found to be a significant negative predictor of high school dropout, while parents' needs support remained a highly significant negative predictor. Academic motivation and teachers' needs support failed to significantly contribute to the overall prediction of high school dropout, but, their associations with the outcome followed the expected direction as they were both negatively related to high school dropout. The results from this hierarchical logistic regression analysis suggested that peer standing contributes to the prediction of high school dropout, beyond what can be explained by SDT constructs. However, our analysis revealed that parents' needs support plays an essential role in the prediction of high school dropout. Table 19 shows regression coefficients, Wald statistics, odds ratios, p-values, and 95% intervals for odds ratio.

Table 19

*Predictors of High School Dropout: SDT Model (Study 3)*

Steps	Predictors	<i>B</i>	Wald test (z-ratio)	Odds ratio	<i>p</i>	95% confidence intervals for odds ratio	
						Lower	Upper
1	Academic motivation	-.06	1.97	.94	.161	.87	1.02
	Needs support from parents	-.80	19.59	.45	.001	.32	.64
	Needs support from teachers	-.01	.01	1.01	.984	.65	1.56
2	Academic motivation	-.05	1.05	.96	.307	.88	1.04
	Needs support from parents	-.75	16.41	.47	.001	.33	.68
	Needs support from teachers	-.03	.02	1.03	.896	.66	1.61
	Peer standing	-1.15	17.66	.32	.001	.19	.54

*Predictors of High School Dropout: NBT Model*

We then tested a second model which examined whether the contribution of peer standing in the prediction of high school dropout would be reduced when SDT constructs (i.e. academic motivation, parents' needs support, and teachers' needs support) are entered in the equation. A hierarchical logistic regression analysis was performed in which peer standing was first entered in the equation. Examination of the Chi-square value and log-likelihood value for this first block suggested that this first model was statistically reliable and had a good fit,  $\chi^2_{(1)} = 23.38, p < .001, log = 480.40$ . Peer standing was shown to have a significant negative total effect on high school dropout.

Academic motivation, parents' needs support, and teachers' needs support were then entered in the second block of the equation. Examination of the Chi-square value and log-likelihood value revealed that the overall model was statistically reliable and fitted the data well,  $\chi^2_{(4)} = 47.29, p < .001, log = 456.50$ . Parents' need support was found to be significant negative predictors of high school dropout, while peer standing remained a significant negative predictor of this outcome. Although the associations of academic motivation and teachers' needs support with high school dropout followed the expected direction, as they were both negatively related to it, both predictors failed to significantly contribute to the overall prediction of high school dropout. The results from this hierarchical logistic regression analysis suggested that peer standing is a highly significant predictor of high school dropout and remains so even when SDT constructs are added to the equation. Parents' needs support was also found to be a strong negative predictor of high school dropout, but, as academic motivation and teachers' needs support, it did not contribute to significantly decrease the effect of peer standing on high school

dropout. Table 20 shows regression coefficients, Wald statistics, odds ratios, p-values, and 95% intervals for odds ratio<sup>34</sup>.

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<sup>3</sup> Another set of regression analyses were performed in which an interaction term for peer standing and parents' support and an interaction term for peer standing and teachers' support were entered in the equation as a third step in order to examine whether parents' support and teachers' support could be used to buffer the effect of peer standing on academic motivation and high school dropout. These buffer variables failed to be significant and to reduce the effect of peer standing on both academic motivation and high school dropout.

<sup>4</sup> The analyses performed for Study 3 were also carried out while controlling for students' standardized test scores in French language competency, reading comprehension, and mathematical problem solving. Analyses using these covariables provided findings that were not significantly different from the global findings presented in this section. Statistical power was not sufficient for the analyses to be conducted separately for males and females, due to a small overall sample of excluded students.

Table 20

*Predictors of High School Dropout: NBT Model (Study 3)*

Steps	Predictors	<i>B</i>	Wald test (z-ratio)	Odds ratio	<i>p</i>	95% confidence intervals for odds ratio	
						Lower	Upper
1	Peer standing	-1.32	25.61	.27	.001	.16	.45
	Peer standing	-1.15	17.66	.32	.001	.19	.54
2	Academic motivation	-.05	1.05	.96	.307	.88	1.04
	Needs support from parents	-.75	16.41	.47	.001	.33	.68
	Needs support from teachers	-.03	.02	1.03	.896	.66	1.61

## Discussion

The objective of Study 3 was to investigate the independent contributions of SDT and NBT in the prediction of academic motivation and high school dropout, and in turn examine how the two theories can be combined to better explain these outcomes. We first tested two independent models pertaining to the prediction of academic motivation, the first specified based on SDT and the second based on NBT. The SDT model demonstrated that peer relatedness (or peer standing) contributed to the prediction of academic motivation beyond what can be explained by parents' needs support and teachers' needs support. This result is in accordance with findings from prior studies (Flook et al., 2005; Guay et al., 1999) which showed that peer relatedness was significantly associated with academic performance. Our results revealed that peer relatedness, parents' needs support and teachers' needs support were all significant positive predictors of academic motivation; however, in support of past research on SDT and findings by Furrer & Skinner (2003), our analysis showed that parents' needs support and teachers' needs support were the strongest predictors of academic motivation. Consistently, the NBT model we tested revealed that although peer relatedness remained a significant predictor of academic motivation when controlling for the joint effect of parents' needs support and teachers' needs support, these latter predictors contributed to decreasing the effect of peer relatedness on academic motivation. Overall, the examination of these two models suggested that in support of NBT & SDT, peer relatedness has undoubtedly an important role to play in the prediction of academic motivation, but, in further support of SDT and our hypothesis, parents' needs support and teachers' needs support represent the most considerable influences of students' school motivation.

Our second set of analyses pertained to the prediction of high school dropout and again we tested two models, one based on SDT and another based on NBT. Essentially, the two models led to the same results. Our analyses revealed that while academic motivation and teachers' needs support failed to be significant predictors of high school dropout, peer relatedness and parents' needs support were highly significant negative predictors of this outcome. Contrary to our hypothesis, SDT constructs (i.e. academic motivation, parents' needs support, and teachers' needs support) did not contribute to decreasing the effect of peer relatedness on high school dropout. Overall, findings from this second set of analyses suggested that in support of NBT, peer relatedness contributes to the prediction of high school dropout, beyond what can be explained by SDT constructs. However, in support of SDT research, parents' needs support plays the most essential role in the prediction of students' likelihood of dropping out of high school.

The findings from Study 3 raise some interesting questions. As our results failed to support previous studies that showed that academic motivation was a significant predictor of high school dropout (Vallerand et al., 1997; Vallerand & Bissonnette, 1992), it is possible to suggest that previous studies possibly overstated the role of academic motivation in the prediction of high school dropout and undervalued the contribution of other factors, such as peer relatedness and parents' needs support. The non-significant effect of teachers' needs support on the prediction of high school dropout also needs to be addressed. Considering the role that teachers play in students' academic experience, one may be surprised with the present finding. However, this finding is in accordance with previous research which has shown that since teachers change from year to year, in contrast to parents and peers whom remain more stable influences in a student's life, teachers' impact on students' academic success is not as important (Grolnick, 2009; Grolnick, Kurowski, Dunlap, Hevey, 2000).

A major contribution of Study 3 is showing that social exclusion experienced by students in the 10<sup>th</sup> grade was significant enough to have a detrimental effect on students' school motivation and predict a higher incidence of high school dropout for these rejected students two years later. Findings from this study also suggest that friends, parents, and teachers all have their part to play in students' academic motivation and the prevention of high school dropout. Taken together, findings from Study 3 and past research on academic motivation and high school dropout could serve as evidences that self-determined academic motivation significantly contributes to students' persistence in school, whereas peer relatedness represents a significant factor in the prediction of academic motivation, and in turn high school dropout. Based on our findings, it is possible to argue that rejected students can be motivated to go to school, but the fact that their school environment does not provide them with this much needed sense of belongingness, they do not want to go to school and therefore end up dropping out. In other words, there is a difference between being motivated to go to school and not wanting to be in school because you feel you don't fit in or you are rejected.

Finally, the fact that this third study did not test one of the basic assumptions tested in Studies 1 and 2, that is whether social exclusion/inclusion affect the satisfaction of more than one basic psychological need, does represents a certain limitation. However, Study 3 holds the significant strength of having examined social exclusion/inclusion and self-determined motivation in a real-life setting and, thus, contributed to the better understanding of their impacts on an actual behavioural outcome.

*CHAPTER FIVE*

## GENERAL DISCUSSION

## Summary of Findings

This doctoral dissertation integrated propositions from need to belong theory (NBT) and self-determination theory (SDT) in order to address two fundamental questions. The first question was whether the satisfaction (or the lack of satisfaction) of the fundamental need to have meaningful interpersonal relationships (i.e. need to belong or need for relatedness) affects one's self-regulation of various behavioural outcomes. Prior research on NBT has shown that a lack of social connections deprives the need to belong which results in a variety of severe damaging effects on one's behaviour and cognitive functioning (Baumeister & Leary, 1995; Baumeister et al., 2005). Alternatively, SDT proposes that thwarting of the need for relatedness, as well as the needs for autonomy and competence, leads to non self-determined motivation, and in turn self-regulation problems, whereas fulfilment of these needs leads to self-determined motivation and successful behavioural self-regulation (Deci & Ryan, 1985, 2000).

The second question this doctoral dissertation proposed to explore was whether having/lacking quality interpersonal relationships influence one's perception of future interpersonal relationships. On the one hand, advocates of NBT have suggested that both the satisfaction and the non-satisfaction of the need to belong arouse one's desire for social reconnection which leads to outcomes that involve seeking and/or maintaining interpersonal relationships (Baumeister & Leary, 1995; Maner et al., 2007; Twenge et al., 2007). On the other hand, SDT argues that it is not only the satisfaction or the non-satisfaction of ones' needs that encourages social reconnection; but, also the motivation for developing that particular

relationship (i.e. the reasons why the interpersonal relationship is desired; Deci & Ryan, 1985, 2000).

A series of two laboratory experiments and one longitudinal study were designed to test these competing theoretical views and answer the above questions. More specifically, this thesis examined the relations between social exclusion and inclusion, basic needs satisfaction, self-determined motivation, and behavioural self-regulation. The specific goals and main findings of each study are summarized below.

### *Study 1*

In the first study, social exclusion and inclusion were manipulated in order to examine their effects on the satisfaction of the basic psychological needs for autonomy, competence, and relatedness. Study 1 served to compare NBT, which suggest that only one need is affected by social exclusion/inclusion, and SDT, which suggest that three needs – autonomy, competence, and relatedness – are affected by social exclusion/inclusion. In line with propositions from SDT and our hypothesis, results suggested that social exclusion significantly decreases satisfaction of the needs for competence and relatedness, whereas social inclusion significantly increases satisfaction of these two needs. However, no significant difference was found between the experimental conditions with respect to the need for autonomy. This first study offered support to NBT, by showing that social exclusion/inclusion affects satisfaction of the need for relatedness, and SDT, by showing that more than just the need for relatedness is indeed affected.

### *Study 2*

The second study provided some support for findings from the first study and SDT, by showing that the experimental manipulations of social exclusion and inclusion affect the satisfaction of more than one basic psychological need. A significant difference between

conditions was observed for the needs for autonomy and relatedness. Findings from Study 2 also revealed that social exclusion/inclusion has a significant direct effect on motivation to accomplish a task. Furthermore, this second study examined the relations between social exclusion and inclusion, satisfaction of the three basic needs, motivation to accomplish a laboratory task, and self-regulation of three behavioural outcomes. More specifically, it tested whether participants' persistence at a laboratory task, as well as their intentions for a future peer interaction (intentions to collaborate versus compete) were influenced by social exclusion and inclusion, through the mediation effects of basic needs satisfaction and self-determined motivation. The results suggested that social exclusion/inclusion, through the mediating effects of basic needs and motivation significantly affect peer collaboration. In other words, social exclusion, via the effects of basic needs and motivation decreases peer collaboration, while social inclusion has an opposite effect on peer collaboration. The effect of condition via the mediating effects of basic needs satisfaction and motivation failed to predict persistence at the task and peer competition.

### *Study 3*

The third study examined naturally occurring social exclusion and inclusion in a population of junior high school students. This third study investigated the independent contributions of SDT and NBT in the prediction of academic motivation and high school dropout. Peer relatedness, perceived needs support from parents, and perceived needs support from teachers were examined as potential predictors of academic motivation and high school dropout. Findings suggested that peer relatedness plays an important role in the prediction of academic motivation, but, that perceived needs support from parents and perceived needs support from teachers are stronger predictors of that outcome. Results from this study also revealed that

peer relatedness contributes to the prediction of high school dropout, beyond what can be explained by academic motivation, perceived needs support from parents, and perceived needs support from teachers. However, perceived needs support from parents was shown to be the most essential predictor of high school dropout.

Overall, results from these three studies offered support for both NBT and SDT. In Study 1 and Study 2, only the satisfaction of the need for relatedness was systematically influenced by the experimental manipulations of social exclusion and inclusion. This finding is consistent with propositions from NBT which suggest that social exclusion/inclusion directly impacts the fulfilment of the need to belong (Baumeister & Leary, 1995). In further support of NBT, Study 3 revealed that peer relatedness is a significant factor in the prediction of high school dropout, hence solidifying the NBT argument that social exclusion/inclusion via the satisfaction of the need to belong affects the self-regulation of behavioural outcomes.

Findings from these three studies also provided support for propositions from SDT suggesting that satisfaction of the three basic psychological needs and self-determined motivation represent important components in achieving successful self-regulation of behaviour. Whether it was with respect to behaviours of a cognitive or interpersonal nature as examined in Study 2, or a long-term behaviour measured in a real-life setting as observed in Study 3, our assessment revealed that individuals whose needs were satisfied reported higher self-determined motivation and tended to experienced greater behavioural self-regulation. Most importantly, our findings showed that social exclusion has detrimental effects on these aforementioned processes, whereas social inclusion has favourable effects on them.

### Theoretical Implications

This research program presents important theoretical implications which are discussed in the following section. A primary theoretical contribution of this doctoral thesis is integrating the views of two complementary theoretical frameworks in order to address the proposed research questions. More specifically, this thesis examined the potential underlying mechanisms influenced by social exclusion and inclusion. Our findings have shown that social exclusion and inclusion affect more than one fundamental need, conversely to what is argued by NBT, and further demonstrated that these social phenomena affect more than just needs, in addition to what studies on ostracism have shown (for a review see Williams 2001, 2007). In support of both SDT and NBT, our findings demonstrated the valuable role that the need for relatedness plays in the regulation of interpersonal behaviours (i.e. interpersonal relationships) and cognitive or performance behaviours (performance at a task and school persistence). Furthermore, this doctoral dissertation revealed that the propositions put forward by SDT effectively apply to the investigation of social exclusion and inclusion. In support of SDT, our findings revealed that failures and successes at self-regulation, resulting respectively from social exclusion and inclusion, are better explained through the examination of processes such as basic needs satisfaction and self-determined motivation.

Another major theoretical implication of this program of research is demonstrating that individuals seek or maintain social connections not exclusively for the fulfilment of their need for belongingness. In line with SDT, our findings revealed that individuals get involved in interpersonal relationships for different reasons or motives, and these influence the type of relationships individuals develop. More specifically, social exclusion and inclusion affect the satisfaction of the needs for autonomy, competence, and relatedness, which leads individuals to

engage in relationships out of different motivations, and these motivations influence the nature of the relationships. Thus, this doctoral thesis contributed to showing that as argued by NBT, the need to belong (or the need for relatedness) is a major factor in the understanding of the effects of social exclusion and inclusion on behavioural self-regulation; however, our findings also suggest that NBT is incomplete, since other basic psychological needs and self-determined motivation have been shown to also be underlying mechanisms of the relation between social exclusion/inclusion and self-regulation of behaviour.

From an empirical perspective, since the effects of social exclusion and inclusion on self-determined motivation had never been tested previously, this doctoral thesis offers an original contribution to research on motivation, as well as for the application of the postulates of SDT. Moreover, this doctoral dissertation provided support for prior research on NBT by showing that social exclusion has detrimental effects on three important domains of research, namely behavioural self-regulation, cognitive functioning, and interpersonal behaviours. This thesis also provided evidence that could contribute to eventually resolving the ongoing debate regarding the effects of social exclusion on emotions, moods, and self-esteem. Results from our first two studies echoed a number of previous investigations by revealing that social exclusion does not elicit emotional distress nor does it significantly lower self-esteem (Gardner et al., 2000; Twenge et al., 2001, 2002, 2003). These results, however, are inconsistent with other study findings that demonstrated the opposite effects (Blackhart et al., 2010; Gerber & Wheeler, 2009). Thus, further examination of this question is likely to be needed before we can put this debate to rest. This doctoral dissertation also provided clear evidence of the effects of social inclusion on self-regulation of behaviours, as well as basic needs satisfaction and self-determined motivation. Since a number of previous studies have failed to conduct in depth investigations of social

inclusion, our research program represents a significant empirical contribution to this domain of research.

Furthermore, findings from our third study which failed to show that academic motivation was a significant predictor of high school dropout, inconsistent with previous studies (Vallerand et al., 1997; Vallerand & Bissonnette, 1992), could suggest that prior research may have overstated the role of academic motivation in the prediction of high school dropout, and undervalued the contribution of other factors, such as peer relatedness and parents' needs support, which were found to be highly significant predictors of high school dropout in our investigation. Consistently, findings from this third study and other research on academic motivation and high school dropout, could serve as evidences that motivation significantly contributes to students' persistence in school, whereas peer relatedness represents a significant factor in the prediction of academic motivation, and in turn high school dropout. In other words, it could suggest that excluded students are motivated to go to school, but since their school environment does not support their need for belongingness, they do not want to go to school and therefore, end up dropping out.

Lastly, from a methodological perspective, Studies 1 and 2 of this doctoral thesis allowed for further validation of the experimental manipulations of social exclusion and inclusion developed by Twenge and colleagues (future life alone paradigm; Baumeister et al., 2005; Twenge et al., 2001) by applying it to a different theoretical framework (i.e. SDT). Study 3 presented a new methodology to assess social exclusion and inclusion by using a self-report method, which is very different from the various experimental manipulations used in prior research. Although this methodology requires further validation, it contributes to the advancement of empirical research on social exclusion and inclusion.

## Applications

This program of research provided some noteworthy practical applications. To start, this thesis provided a comparative analysis of two types of social exclusion and inclusion, specifically the anticipation of future social exclusion and inclusion in Study 1 and Study 2, as well as naturally occurring social exclusion and inclusion in Study 3. It is noteworthy that both types ultimately led to the same conclusions, which are that social exclusion results in self-regulation problems, that social inclusion leads to successful self-regulation, and that this contributes to the generalisation of the effects of social exclusion and inclusion to different contexts. Additionally, this program of research benefits from having used an experimental design in two of the studies and a longitudinal design in the other study. Our experimental designs made it possible to draw conclusion regarding causality and directionality of the observed relations, while our longitudinal design permitted us to examine the long term effects of social exclusion and inclusion, which very few studies have done.

The first study provided a direct examination of the effects of social exclusion and inclusion on the satisfaction of basic psychological needs. More specifically, not only did it assess the impact of these social phenomena on autonomy and competence, which had never been done before, but it also clarified their direct impact on the need for relatedness (or the need to belong). Indeed, although many studies examined the relationship between social exclusion/inclusion, the need to belong, and behavioural self-regulation, many of these studies failed to adequately measure their direct effect on the need to belong.

The second study contributed to the greater understanding of the effects of social exclusion and inclusion on one's perceptions of future interpersonal relationships, as well as further investigated the role of self-determined motivation in predicting the type of interpersonal

relationships one wishes to get involved in (i.e. collaborative relationships versus competitive relationships). Only a handful of studies on SDT have examined motivation in relation to prosocial behaviour (Weinstein & Ryan, 2010); however, as this concept is closely related to the way one will behave in the social environment, it represents a significant area of research in social psychology. Study 2 contributed to this investigation by providing an explanation of the underlying processes, such as self-determined motivation and non self-determined motivation, that are involved in deciding to engage in a certain type of interpersonal relationships more than another (i.e. collaborative relationships versus competitive relationships).

The third study holds the significant strength of investigating the impacts of naturally occurring social exclusion and inclusion in a real-life setting and population. Study 3 adds to the existing body of literature which examined the long-term effects of social exclusion and inclusion on students' behaviours and adjustment in school (Ladd, Herald-Brown, & Reiser, 2008; Parker & Asher, 1987, 1993); thus contributing to this important area of research. Furthermore, this study contributed to the investigation of some of the factors involved in the prediction of high school dropout. Our results suggested that interventions should aim at increasing students' academic motivation via the satisfaction of their basic psychological needs.

#### Limitations and Suggestions for Future Research

Despite providing valuable insight on social exclusion and inclusion, as well as the applications of SDT, this research program has some noteworthy limitations. A number of suggestions for future studies are also discussed in this section. To begin with, there are a few methodological limitations that should be considered. The two laboratory experiments used university student samples, while Study 3 was conducted in a population of junior high school students. As students represent a population with specific characteristics and thus not fully

representative of the general population, studies should be conducted on other types of samples in order to further validate the generalizability of the findings obtained from these student samples. Nevertheless, considering that social exclusion is a wide-spread social phenomenon in youth populations across North America (Leary et al., 2003), this current investigation is far from trivial.

Also, this program of research was unable to test for potential gender differences due to small male samples in the first two studies and a small global sample of socially excluded students in the third study. Past developmental psychology research (Blyth, Hill, & Smith-Thiel, 1982; Furman & Buhrmester, 1992) has shown some distinctions between males and females, most notably in younger populations, regarding the importance they confer to interpersonal relationships; thus, gender differences should be investigated in future studies on social exclusion and inclusion in order to take these findings into account. Along the same idea, national statistics (Statistics Canada's Center for Education Statistics, 2010) have shown that incidences of high school dropout are much higher in the male population than the female population; therefore the possibility of observing an interaction between peer standing and gender when predicting high school dropout is most plausible, and thus should be considered for future research. Lastly, some individuals may have decided not to participate in the studies for a number of reasons, such as personal interest or due to the topic under investigation, thereby limiting representation of the general population by the sample. It is noteworthy that this limitation only applies to the first two studies, since in Study 3, 100% of the students in grade 10 within the schools we targeted participated in our investigation.

Another methodological limitation is the fact that the experimental task used in Study 2 (i.e. the Soma puzzles) did not discriminate between the conditions as much as we expected.

Participants in the inclusion condition and the exclusion condition failed to differ significantly in the amount of time they spent practicing the task, with socially excluded participants spending slightly less time (note, a large number of participants took the 25 minutes allotted for the task). This result differs from studies by Twenge and colleagues (2003) that have shown that social exclusion leads to time distortion. These researchers have demonstrated that socially excluded participants are put in a state of mind where time seems to be passing faster, which leads participants to stop practicing a task sooner than participants in the inclusion condition, as they believe that they have been doing it for much longer than they actually were. The discrepancy between our findings and Twenge et al.'s findings may be due to a number of factors. One of these factors is the possibility that the chosen laboratory task was too difficult, most specifically the puzzles without solutions. Very few participants were able to solve the puzzles without solutions, whereas an average of 95% of the participants solved the puzzles with solutions, which made it impossible to assess the impact of participants' task performance on the variables of interest (only persistence was used in the analyses). Another factor may be that excluded participants were compensating for the negative feedback they had just received by trying to show that they were able to solve the puzzles, thus spending more time on it. Additionally, as the sample consisted solely of first year university students, social desirability bias may have contributed to this non-significant result in the sense that participants, indifferent to the condition they were in, wanted to please the experimenter and do what they were asked to the best of their ability by taking the total allotted time to do it (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Thus, other researchers should consider these possible interfering variables when developing their experimental design, as well as when recruiting their sample of participants. As an avenue for future research, the effects of social exclusion and inclusion on task persistence should be

examined with and without telling the participants that they will have to interact with another participant in the second half of the study. This would permit to (1) isolate the effects of social exclusion/inclusion on task persistence, and (2) determine if participants' persistence at the task is solely due to their desire to want to be adequately ready for the peer interaction (i.e. excluded participants may see the peer interaction as a way to compensate for their thwarted needs).

Some psychometric limitations also need to be mentioned. Firstly, most of the tested variables were measured using self-report. It must be taken into account that any research using self-reported measures, whether it involves socially sensitive issues or not, is limited by the occurrence of range restriction, self-selection bias, and social desirability bias (Podsakoff et al., 2003). In order for self-report measures to be reliable, participants must respond honestly and accurately. We tried to minimize such biases by making the questionnaires anonymous and confidential, as well as stating in the questionnaires that participants should answer the items as honestly as possible.

A further psychometric limitation relates to our measure of social exclusion and inclusion in Study 3 (i.e. asking students to write the name of their three best friends in their grade level). This measure does not account for the possibility that students may have friends who are in another grade level, as well as the likelihood that they have friends outside of school. However, a significant amount of time in a student's life is spent in school, even more so with students in their grade level; in this way, being an outcast in school, even though it is not the case in other contexts, will likely affect students' psychological functioning and general well-being. It is noteworthy that Study 3 examined the effects of social exclusion and inclusion on variables pertaining to academic success; therefore measuring students' peer standing in the school setting is fitting. That being said, in order to minimize the impact of this possible limitation, future

studies should consider including a measure of perceived needs support from friends in their life in general. Furthermore, other variables (such as grades, teen pregnancy, etc.) which have not been considered in our investigation could influence students' persistence in school and thus should be considered in future studies.

Finally, we recognize that the three studies conducted in this doctoral thesis yield some conflicting findings with prior research and/or propositions from SDT. These findings represent limitations and therefore some of the questions assessed in this research program would require further investigation. As previously discussed in more depth in their respective discussion section, these conflicting findings are, (1) the discrepancy in the results for Study 1 and Study 2 in regards to the effects of social exclusion/inclusion on the satisfaction of different basic psychological needs, (2) the insignificant effects of social exclusion/inclusion, via the mediating effects of basic needs satisfaction and self-determined motivation, on task persistence and peer competition in Study 2, (3) the insignificant effects of social exclusion/inclusion on emotions, moods and self-esteem in Studies 1 and 2, and (4) the insignificant effect of self-determined academic motivation on the prediction of high school dropout.

To conclude, we believe that a few other interesting avenues of research could be the focus of future investigations. To start, researchers could consider the usefulness of performing a meta-analysis that would compare multiple studies on social exclusion based on the experimental manipulation that was used and their different impacts on behavioural outcomes. Some investigators have argued that different behavioural impacts may result from the use of different experimental manipulations of social exclusion (Baumeister et al., 2007; Molden, Lucas, & Gardner, 2007), but no study has yet examined this question in much depth. Another methodological consideration would be to perform laboratory experiments involving

significantly large samples, which would increase statistical power and thus make it possible to use more sophisticated statistical analyses, such as structural equation modeling. Structural equation modeling would, in turn, permit researchers to consider the existence of equivalent or alternative models.

Future studies should also examine the specific motivational orientations and personality profiles of both the rejecters and the victims of rejection, more precisely, what characterises these individuals. One could expect that rejecters or bullies may have unsatisfied basic psychological needs and may be trying to compensate for this lack by denigrating others in order to gain a (false) sense of control and competency. Consistently, it is possible that victims of social exclusion possess specific individual characteristics that make them less desirable to others. One could assume that individuals with less self-determined motivational orientations, or unmotivated individuals, may be more likely to be potential victims of social exclusion, even more so in social contexts and settings that require team work.

Lastly, more applied research is needed in order to fully grasp the detrimental effects of social exclusion and examine whether the findings from this doctoral research may be extended to other behaviours and relational contexts. For example, Baumeister and Wotman (1992) have explored the harmful and heart wrenching effects of unrequited love, from both the perspective of the rejected person and the person who's doing the rejecting. It would be interesting to examine if findings from this program of research would be replicated in this context. This study would also advance the investigation of the applications of SDT in social exclusion research.

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## APPENDIX A

### *Materials Used in the Laboratory Studies*

## Personality Type Descriptions

### *Social Inclusion – High Extraversion Score*

Scoring high or fairly high on the extraversion scale means that you like people and people like you. Being an extravert is a really good thing for relationships.

You are the type of person who will have rewarding relationships throughout life. You are likely to have a long and stable marriage and have friendships that will last into your later years. The odds are that you will always have friends and people who care about you.

### *Social Inclusion – Low Extraversion Score*

Being an introvert can be a good thing for relationships. There has been some research showing that introverts have an easier time keeping relationships together. Instead of running around and meeting new people all the time, they are good at keeping the relationships they have.

You are the type of person who will have rewarding relationships throughout life. You are likely to have a long and stable marriage and have friendships that will last into your later years. The odds are that you will always have friends and people who care about you.

### *Social Exclusion – High Extraversion Score*

Scoring high or fairly high on the extraversion scale is a good thing for meeting people, especially when you are in university, but there has been some research showing that people who score high on the extraversion scale have trouble keeping their relationships stable later in life.

You are the type of person who will end up alone later in life. You may have friends and relationships now, but by mid-20s most of these will have drifted away. You may even marry or have several marriages, but these are likely to be short-lived and not continue into your 30s. Relationships do not last, and when you are past the age where people are constantly forming new relationships, the odds are you will end up being alone more and more.

### *Social Exclusion – Low Extraversion Score*

Being an introvert is not really a good thing for relationships. Once you get out of university, it becomes harder to meet people, so it is easier if you score really high on the extraversion scale. If you do not, it makes it more difficult to meet people.

You are the type of person who will end up alone later in life. You may have friends and relationships now, but by mid-20s most of these will have drifted away. You may even marry or have several marriages, but these are likely to be short-lived and not continue into your 30s. Relationships do not last, and when you are past the age where people are constantly forming new relationships, the odds are you will end up being alone more and more.

## Participant Personality Report

**Code: EXH45210x****Study: Personality and Collaboration**

Date: 10/17/2008

**ID Code: 48387**

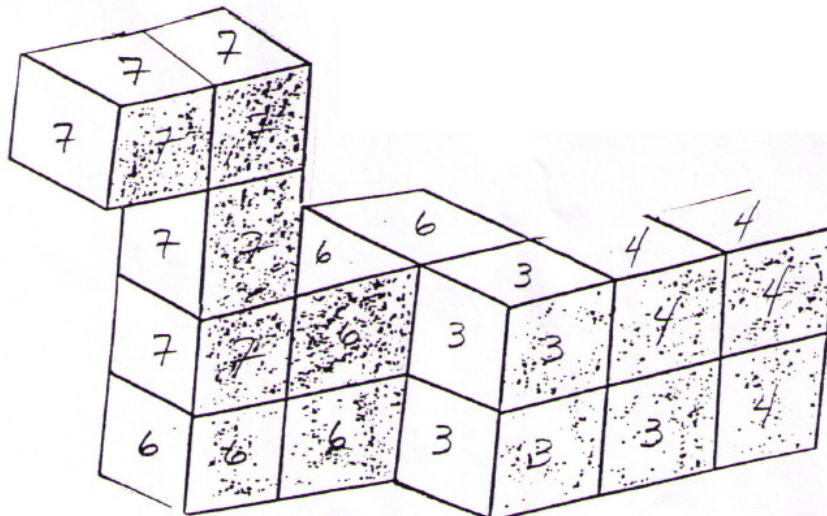
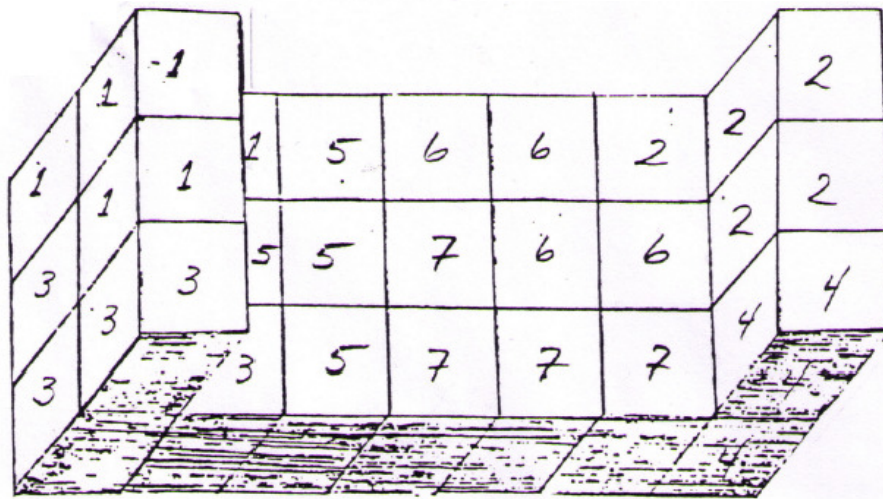
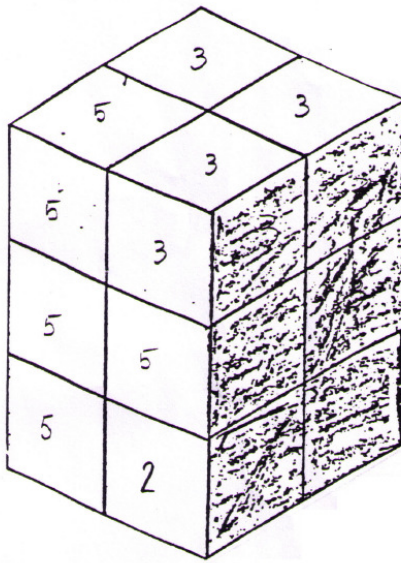
Extraversion score: 9

## Description of personality:

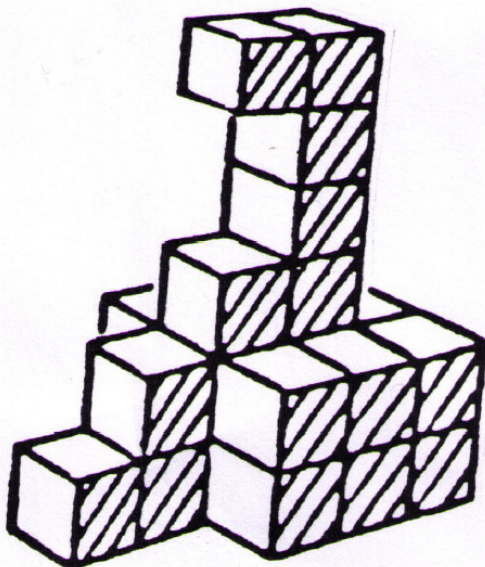
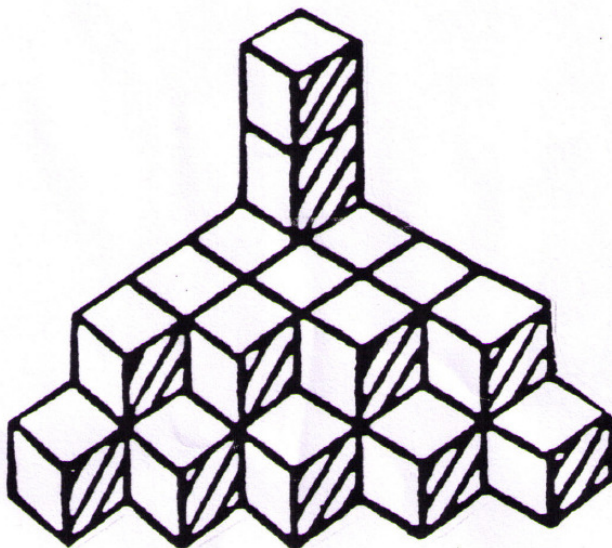
Scoring high or fairly high on the extraversion scale is a good thing for meeting people, especially when you are in university, but there has been some research showing that people who score high on the extraversion scale have trouble keeping their relationships stable later in life.

You are the type of person who will end up alone later in life. You may have friends and relationships now, but by mid-20s most of these will have drifted away. You may even marry or have several marriages, but these are likely to be short-lived and not continue into your 30s. Relationships do not last, and when you are past the age where people are constantly forming new relationships, the odds are you will end up being alone more and more.

Puzzles with Solutions



## Puzzles without Solutions



## APPENDIX B

*Measures Used in Study 1*

**Personality Inventory**

*Please answer each question by putting a circle around the "YES" or "NO" following the question. There are no right or wrong answer, and no trick questions.*

- |  |     |    |
|--|-----|----|
| 1. Are you a talkative person?   | YES | NO |
| 2. Are you rather lively?  | YES | NO |
| 3. Can you usually let yourself go and enjoy yourself at a lively party? | YES | NO |
| 4. Do you enjoy meeting new people?                                      | YES | NO |
| 5. Do you tend to keep in the background on social occasions?            | YES | NO |
| 6. Do you like going out a lot?  | YES | NO |
| 7. Do you have many friends?   | YES | NO |
| 8. Do you usually take the initiative in making new friends?             | YES | NO |
| 9. Are you mostly quiet when you are with other people?                  | YES | NO |
| 10. Do you like mixing with people?                                      | YES | NO |

### My thoughts and feelings at the moment

Below are some statements which you may or may not consider to be good descriptions of yourself. Please read each of the following items carefully, think about how it relates to you right now, and then indicate how true it is for you, using the 1-7 scale. There are no right or wrong answers, so please try to be as honest and accurate as you can in your responding.

	Does not corresponds at all		Corresponds moderately			Corresponds exactly	
	1	2	3	4	5	6	7
1. I feel that I have a number of good qualities.	1	2	3	4	5	6	7
2. I really like the people I interact with.	1	2	3	4	5	6	7
3. I do not feel very competent.	1	2	3	4	5	6	7
4. I feel like I am free to decide for myself how to do things.	1	2	3	4	5	6	7
5. There are not too many people that I am close to.	1	2	3	4	5	6	7
6. I feel that I am good at what I do.	1	2	3	4	5	6	7
7. I am able to do things as well as most other people.	1	2	3	4	5	6	7
8. I get along with people I come into contact with.	1	2	3	4	5	6	7
9. I feel free to express my ideas and opinions.	1	2	3	4	5	6	7
10. I consider the people I interact with to be friendly toward me.	1	2	3	4	5	6	7
11. I have been able to learn interesting new skills recently.	1	2	3	4	5	6	7
12. In my daily life, I frequently have to do what I am told.	1	2	3	4	5	6	7
13. I pretty much keep to myself and don't feel like having social contacts.	1	2	3	4	5	6	7
14. I take a positive attitude toward myself.	1	2	3	4	5	6	7
15. People around me care about me.	1	2	3	4	5	6	7
16. I feel a sense of accomplishment from what I do.	1	2	3	4	5	6	7
17. I feel pressured.	1	2	3	4	5	6	7
18. People I interact with tend to take my feelings into consideration.	1	2	3	4	5	6	7
19. On the whole, I am satisfied with myself.	1	2	3	4	5	6	7
20. I feel like I can pretty much be myself in my daily interactions.	1	2	3	4	5	6	7
21. I do not get much of a chance to show how capable I am.	1	2	3	4	5	6	7
22. People I interact with do not seem to like me much.	1	2	3	4	5	6	7

- |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 23. I do not feel very capable.   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24. There is not much opportunity for me to decide for myself how to do things. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25. People are pretty friendly towards me.                                      | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26. I feel that I am a person of worth, at least on an equal plane with others. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

When you think about your current mood, to what extent do you feel...

	Not at all		Moderately			Extremely	
1. Discouraged	1	2	3	4	5	6	7
2. Worried	1	2	3	4	5	6	7
3. Happy	1	2	3	4	5	6	7
4. Satisfied	1	2	3	4	5	6	7
5. Anxious	1	2	3	4	5	6	7
6. Optimistic	1	2	3	4	5	6	7
7. Lively	1	2	3	4	5	6	7
8. Sad	1	2	3	4	5	6	7
9. Frustrated	1	2	3	4	5	6	7
10. Calm	1	2	3	4	5	6	7

I believe...

- |  |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|
| 11. My extraversion score described me as the person I believe I am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. The experimenter was honest and truthful in describing the study | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

APPENDIX C

*Measures Used in Study 2*

**Personality Inventory**

*Please answer each question by putting a circle around the "YES" or "NO" following the question. There are no right or wrong answer, and no trick questions.*

- |  |     |    |
|--|-----|----|
| 1. Are you a talkative person?   | YES | NO |
| 2. Are you rather lively?  | YES | NO |
| 3. Can you usually let yourself go and enjoy yourself at a lively party? | YES | NO |
| 4. Do you enjoy meeting new people?                                      | YES | NO |
| 5. Do you tend to keep in the background on social occasions?            | YES | NO |
| 6. Do you like going out a lot?  | YES | NO |
| 7. Do you have many friends?   | YES | NO |
| 8. Do you usually take the initiative in making new friends?             | YES | NO |
| 9. Are you mostly quiet when you are with other people?                  | YES | NO |
| 10. Do you like mixing with people?                                      | YES | NO |

### My thoughts and feelings at the moment

Below are some statements which you may or may not consider to be good descriptions of yourself. Please read each of the following items carefully, think about how it relates to you right now, and then indicate how true it is for you, using the 1-7 scale. There are no right or wrong answers, so please try to be as honest and accurate as you can in your responding.

	Does not corresponds at all		Corresponds moderately			Corresponds exactly	
	1	2	3	4	5	6	7
1. I feel that I have a number of good qualities.	1	2	3	4	5	6	7
2. I really like the people I interact with.	1	2	3	4	5	6	7
3. I do not feel very competent.	1	2	3	4	5	6	7
4. I feel like I am free to decide for myself how to do things.	1	2	3	4	5	6	7
5. There are not too many people that I am close to.	1	2	3	4	5	6	7
6. I feel that I am good at what I do.	1	2	3	4	5	6	7
7. I am able to do things as well as most other people.	1	2	3	4	5	6	7
8. I get along with people I come into contact with.	1	2	3	4	5	6	7
9. I feel free to express my ideas and opinions.	1	2	3	4	5	6	7
10. I consider the people I interact with to be friendly toward me.	1	2	3	4	5	6	7
11. I have been able to learn interesting new skills recently.	1	2	3	4	5	6	7
12. In my daily life, I frequently have to do what I am told.	1	2	3	4	5	6	7
13. I pretty much keep to myself and don't feel like having social contacts.	1	2	3	4	5	6	7
14. I take a positive attitude toward myself.	1	2	3	4	5	6	7
15. People around me care about me.	1	2	3	4	5	6	7
16. I feel a sense of accomplishment from what I do.	1	2	3	4	5	6	7
17. I feel pressured.	1	2	3	4	5	6	7
18. People I interact with tend to take my feelings into consideration.	1	2	3	4	5	6	7
19. On the whole, I am satisfied with myself.	1	2	3	4	5	6	7
20. I feel like I can pretty much be myself in my daily interactions.	1	2	3	4	5	6	7
21. I do not get much of a chance to show how capable I am.	1	2	3	4	5	6	7
22. People I interact with do not seem to like me much.	1	2	3	4	5	6	7

- |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 23. I do not feel very capable.   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24. There is not much opportunity for me to decide for myself how to do things. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25. People are pretty friendly towards me.                                      | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26. I feel that I am a person of worth, at least on an equal plane with others. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

When you think about your current mood, to what extent do you feel...

	Not at all			Moderately			Extremely	
1. Discouraged	1	2	3	4	5	6	7	
2. Worried	1	2	3	4	5	6	7	
3. Happy	1	2	3	4	5	6	7	
4. Satisfied	1	2	3	4	5	6	7	
5. Anxious	1	2	3	4	5	6	7	
6. Optimistic	1	2	3	4	5	6	7	
7. Lively	1	2	3	4	5	6	7	
8. Sad	1	2	3	4	5	6	7	
9. Frustrated	1	2	3	4	5	6	7	
10. Calm	1	2	3	4	5	6	7	

### Why did you persist at the task?

*Below are statements that describe some of the reasons why you may have persisted at the task. Using the scale below, indicate the extent of your agreement for each statement.*

	I do not agree		I agree moderately			I agree completely	
1. Because I thought it was a good idea to do it.	1	2	3	4	5	6	7
2. Because I would have felt bad if I didn't.	1	2	3	4	5	6	7
3. Because I'm a type of person who likes to help.	1	2	3	4	5	6	7
4. I don't know. I had the impression I was wasting my time.	1	2	3	4	5	6	7
5. Because I like interesting challenges.	1	2	3	4	5	6	7
6. Because I wanted to prove that I could do them.	1	2	3	4	5	6	7
7. Because I felt I had to.	1	2	3	4	5	6	7
8. I'm not sure anymore. I thought maybe I should have stopped.	1	2	3	4	5	6	7
9. Because I really enjoyed it.	1	2	3	4	5	6	7
10. Because it was a sensible way to do something meaningful.	1	2	3	4	5	6	7
11. Because I would have felt guilty if I didn't.	1	2	3	4	5	6	7
12. Because I wanted to help the experimenter.	1	2	3	4	5	6	7
13. Because I really liked it.	1	2	3	4	5	6	7
14. Because experiencing new things is part of who I am.	1	2	3	4	5	6	7
15. Because that's what I was supposed to do.	1	2	3	4	5	6	7
16. Because I would have felt awful about myself if I didn't.	1	2	3	4	5	6	7
17. Because it was really fun.	1	2	3	4	5	6	7

### My interaction with the other participant

Please read each of the following items carefully, think about how it relates to you right now, and then indicate how true it is for you. Use the following scale to respond.

<i>When collaborating with the other participant...</i>	I do not agree		I agree moderately			I agree completely	
1. I will take into consideration the other participant's opinion when we will be working on the task.	1	2	3	4	5	6	7
2. I will try to see if I am better than the other participant at the task.	1	2	3	4	5	6	7
3. I will ask the other participant how he/she plans to handle the task.	1	2	3	4	5	6	7
4. I will be responsive to his/her needs.	1	2	3	4	5	6	7
5. I will discuss with him/her ways to solve the puzzles together.	1	2	3	4	5	6	7
6. I will pay attention to his/her goals.	1	2	3	4	5	6	7
7. I will try to determine how good he/she is at solving puzzles.	1	2	3	4	5	6	7
8. I will focus on having a good relationship with him/her.	1	2	3	4	5	6	7
9. I will concentrate on how we could learn interesting new skills together.	1	2	3	4	5	6	7

*I believe...*

11. My extraversion score described me as the person I believe I am.	1	2	3	4	5	6	7
12. The experimenter was honest and truthful in describing the study	1	2	3	4	5	6	7

APPENDIX D

*Measures Used in Study 3*

### Pourquoi vas-tu à l'école?

À l'aide des choix de réponse ci-dessous, indique dans quelle mesure chacune des phrases suivantes correspond aux raisons pour lesquelles tu vas à l'école.

	Ne correspond pas du tout	Correspond un peu	Correspond modérément	Correspond beaucoup	Correspond exactement
	1	2	3	4	5
1. Parce que j'éprouve du plaisir et de la satisfaction à apprendre de nouvelles choses.	1	2	3	4	5
2. Parce que, selon moi, mes études vont m'aider à mieux me préparer à la carrière que j'ai choisie.	1	2	3	4	5
3. Parce qu'avec juste des études élémentaires, je ne pourrais pas me trouver un emploi assez payant.	1	2	3	4	5
4. Pour me prouver que je suis une personne intelligente.	1	2	3	4	5
5. Je ne le sais pas; je ne parviens pas à comprendre ce que je fais à l'école.	1	2	3	4	5
6. Parce que mes études me permettent de continuer à en apprendre sur une foule de choses qui m'intéressent.	1	2	3	4	5
7. Parce que je crois que mes études vont augmenter ma compétence comme travailleur ou travailleuse.	1	2	3	4	5
8. Pour pouvoir décrocher un emploi plus important plus tard.	1	2	3	4	5
9. Parce que le fait de réussir à l'école me permet de me sentir important à mes propres yeux.	1	2	3	4	5
10. Je ne parviens pas à voir pourquoi je vais à l'école et franchement je m'en fous pas mal.	1	2	3	4	5
11. Pour le plaisir que j'ai à découvrir de nouvelles choses jamais vues auparavant.	1	2	3	4	5
12. Parce qu'éventuellement cela va me permettre d'aller sur le marché du travail dans un domaine que j'aime.	1	2	3	4	5
13. Parce que je veux pouvoir faire la «la belle vie» plus tard.	1	2	3	4	5
14. Honnêtement, je ne le sais pas; j'ai vraiment l'impression de perdre mon temps à l'école.	1	2	3	4	5

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 15. Pour le plaisir d'en savoir plus long sur les matières qui m'attirent.  | 1 | 2 | 3 | 4 | 5 |
| 16. Parce que je veux me prouver à moi-même que je suis capable de réussir dans les études.                               | 1 | 2 | 3 | 4 | 5 |
| 17. Parce que cela va m'aider à mieux choisir une carrière.   | 1 | 2 | 3 | 4 | 5 |
| 18. Pour avoir un meilleur salaire plus tard.   | 1 | 2 | 3 | 4 | 5 |
| 19. J'ai déjà eu de bonnes raisons pour aller à l'école, mais maintenant je me demande si je devrais continuer à y aller. | 1 | 2 | 3 | 4 | 5 |
| 20. Pour me prouver à moi-même que je suis capable d'aller plus loin que juste l'école élémentaire.                       | 1 | 2 | 3 | 4 | 5 |

### Tes parents

À l'aide des choix de réponse ci-dessous, indique à quelle fréquence tes parents, dans l'ensemble, ont les comportements présentés dans les énoncés qui suivent.

- |   | Jamais | Parfois | Assez souvent | Très souvent | Toujours |
|---|--------|---------|---------------|--------------|----------|
|   | 1      | 2       | 3             | 4            | 5        |
| 1. Je sens que mes parents se soucient vraiment de moi.   | 1      | 2       | 3             | 4            | 5        |
| 2. Mes parents se soucient peu que je réussisse ou que j'échoue.  | 1      | 2       | 3             | 4            | 5        |
| 3. Lorsque je demande à mes parents de l'aide pour solutionner un problème, ils me demandent mon avis avant de me donner le leur. | 1      | 2       | 3             | 4            | 5        |
| 4. Le feedback que je reçois de mes parents me fait douter de mes capacités.  | 1      | 2       | 3             | 4            | 5        |
| 5. Mes parents m'encouragent à être moi-même.   | 1      | 2       | 3             | 4            | 5        |
| 6. Je sens que mes parents aiment vraiment passer du temps avec moi.  | 1      | 2       | 3             | 4            | 5        |
| 7. Le feedback que je reçois de mes parents représente des critiques inutiles.  | 1      | 2       | 3             | 4            | 5        |
| 8. Mes parents semblent être sincèrement intéressés par ce que je fais.   | 1      | 2       | 3             | 4            | 5        |

9.	Mes parents me parlent uniquement de mes erreurs.	1	2	3	4	5
10.	Mes parents me laissent prendre les décisions pour ce qui me concerne.	1	2	3	4	5
11.	Mes parents m'envoient le message que je ne suis pas à la hauteur.	1	2	3	4	5
12.	Mes parents considèrent ouvertement mes pensées et mes sentiments bien qu'ils soient différents des leurs.	1	2	3	4	5

### Tes enseignantes et enseignants

*À l'aide des choix de réponse ci-dessous, indique à quelle fréquence tes enseignants et enseignantes, dans l'ensemble, ont les comportements présentés dans les énoncés qui suivent.*

	Jamais	Parfois	Assez souvent	Très souvent	Toujours	
	1	2	3	4	5	
1.	Je sens que mes enseignant-e-s se soucient vraiment de moi.	1	2	3	4	5
2.	Mes enseignant-e-s se soucient peu que je réussisse ou que j'échoue.	1	2	3	4	5
3.	Lorsque je demande à mes enseignant-e-s de l'aide pour résoudre un problème, ils me demandent mon avis avant de me donner le leur.	1	2	3	4	5
4.	Le feedback que je reçois de mes enseignant-e-s me fait douter de mes capacités.	1	2	3	4	5
5.	Mes enseignant-e-s m'encouragent à être moi-même.	1	2	3	4	5
6.	Je sens que mes enseignant-e-s aiment vraiment passer du temps avec moi.	1	2	3	4	5
7.	Le feedback que je reçois de mes enseignant-e-s représente des critiques inutiles.	1	2	3	4	5
8.	Mes enseignant-e-s semblent être sincèrement intéressés par ce que je fais.	1	2	3	4	5
9.	Mes enseignant-e-s me parlent uniquement de mes erreurs.	1	2	3	4	5
10.	Mes enseignant-e-s me donnent l'occasion de faire des choix en ce qui concerne mes travaux scolaires.	1	2	3	4	5

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 11. Mes enseignant-e-s m'envoient le message que je ne suis pas à la hauteur.   | 1 | 2 | 3 | 4 | 5 |
| 12. Mes enseignant-e-s considèrent ouvertement mes pensées et mes sentiments bien qu'ils soient différents des leurs. | 1 | 2 | 3 | 4 | 5 |