

**PRO-SOCIAL PERSONALITY TRAITS AND HELPING MOTIVATIONS: USING  
THE CONCEPT OF EGO-DEPLETION IN DISTINGUISHING BETWEEN  
INTRINSICALLY AND EXTRINSICALLY MOTIVATED HELPING**

by  
Lorena Ruci

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MA, Carleton University, 2005

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## Abstract

The goal of the present research was to infer helping motivations based on people's levels of pro-social traits. Using the framework of Self-Determination Theory, I proposed that people high in pro-social traits (referred to as altruists) help due to intrinsic motivations and people low in pro-social traits (referred to as egoists) help due to extrinsic motivations. I used the concept of *ego-depletion* in distinguishing between intrinsically and extrinsically motivated helping, assuming that intrinsic motivation is less depleting than extrinsic motivation. In Study 1, participants ( $N=93$ ) helped and their subsequent depletion levels were assessed by measuring blood glucose and performance on a Stroop task. Contrary to the hypothesis, altruists were more depleted after helping compared to egoists. In Study 2, I measured helping rates and persistence when participants ( $N=96$ ) were already depleted or not, based on random assignment. Contrary to the hypothesis, helping rates did not differ between altruists and egoists after being depleted, and when they chose to help altruists persisted less in the helping task compared to egoists. In Study 3, I attempted to manipulate participants' motivations by rewarding those who helped. All participants ( $N=91$ ) were rewarded with \$ 2 and afterwards were asked to help again. There were no differences in recurrent helping between altruists and egoists. Overall, the pattern of results from the three studies suggest that under some circumstances, altruists expend more resources when helping and they persist less compared to egoists, but these differences did not appear related to intrinsic or extrinsic motivation. The findings suggest that helping poses different self-regulation demands on altruists and egoists, and I propose future methodological improvements in exploring them.

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“If you are kind, people may accuse you of selfish, ulterior motives. Be kind anyway”.

*- Anjezë Gonxhe Bojaxhiu (Mother Teresa)*

Helping others is viewed as one of the most highly respected displays of human behaviour. Helping as an act of kindness, is revered as a virtue in many cultures and religious traditions. In the scientific realm however, helping has been subject to continuous inquiry with respect to the motivations that lead to it. Some of the questions examined are: Why do people help? Are people’s helping motivations influenced by personality traits? Most research has focused on trait empathy in inferring helping motivations. That is, depending on the way people react to the person in need, by experiencing sympathy or personal distress, empathy has been found to precede either altruistic or egoistic helping. The present research took a more expansive approach by focusing on several personality variables in attempting to answer questions on people’s helping motivations. I proposed that certain personality traits (e.g., empathy, social responsibility, perspective taking, moral reasoning, and self-report altruism) are important variables in informing us on people’s helping motivations. I proposed that the helping behaviour of altruists would be less depleting as it would rely on autonomous regulation, compared to the helping behaviour of egoists, which was proposed to rely on controlled regulation. This was based on the assumption that due to their personality, altruists would act on their innate predispositions when assisting others, whereas egoists would deliberate on whether the rewards of helping would offset the costs. I proposed

that the different deliberation process of altruists and egoists would be demonstrated in different levels of self-regulation. Hence, I proposed that altruists would self-regulate less compared to egoists and the differences in self-regulation would be indicative of their different helping motivations. In the present research, I review literature that has examined helping in different contexts and propose a framework in which helping motivations can be empirically tested by drawing on literature from the self-determination theory of motivation and the self-regulation literature.

### *Pro-social Behaviour and Altruism*

Human interpersonal relations have been the focus of scholarly examination for millennia. Human societies came into existence due to the need of individuals to collaborate and cooperate with others in order to survive and flourish. Because societies are organized on the principle of cooperation, (Nolan & Lenski, 2006) members of societies will aid others in times of crisis and, in return, individuals will contribute to the well-being and harmony of the group. Pro-social behaviour is considered an important interpersonal behavioural expression, which contributes significantly to social cohesion and strengthens human relationships. Pro-social behaviour represents a broad category of acts that are defined by society or one's social group as being beneficial to other people (Penner, Dovidio, Piliavin, & Schroeder, 2005). Pro-social behaviour encompasses a broad range of actions and can take many forms, including cooperation, sharing, helping behaviour, volunteering, voting and donating blood.

*Altruism* is sometimes confused with pro-social behaviour, though in fact they are considered two distinct concepts (Batson, 1987; Dovidio & Penner 2001; Penner, Dovidio, Piliavin, & Schroeder, 2005). Pro-social behaviour refers to a pattern of

action, whereas altruism refers to the selfless concern for the welfare of others (Batson, 1991; Bénabou & Tirole, 2004). In many cultures, especially collectivistic ones, altruism is considered one of the highest virtues and, accordingly, it is a central construct in many religious traditions. Altruism is defined as the willingness to act in the consideration of the interests of other persons, without the need for ulterior motives (Nagel, 1970). For example, someone who makes an anonymous donation to a person who is in need of funds for a life-saving operation, without expecting any recognition or praise, is said to behave altruistically. The donation itself is the pro-social action (regardless of motivation), and the selfless act devoid of the social praise and recognition makes this an example of altruism. The same pro-social behaviour could be characterised as a selfish act, if the person making the donation publicizes it with the conscious intention of reaping praise and social recognition.

With respect to the social implications of helping behaviour, many disciplines - including, social psychology- attempt to provide answers to the following question: Why do people help and what distinguishes those who behave altruistically from those who help for egoistic reasons? Since the helping behaviour itself appears to be the same to outside observers, how can we tell if the behaviour was engendered by altruism or ego-boosting? Many suggest that the answer to this question might lie in the personality domain (Carlo, Eisenberg, Troyer, Switzer, & Speer, 1991; Penner, Fritzsche, Craiger, & Freifeld, 1995; Penner, 2002; Staub, 1978; Rushton et al. 1981).

Individual differences in helping behaviour have been found to correlate with several personality characteristics, such as empathy, social responsibility, perspective taking, moral reasoning, self-esteem, and self-reported altruism (Davis, 1994; Penner,

Fritzsche, Craiger, & Freifeld, 1995; Rushton et al. 1981; Staub, 1978). Many similarities have been found between people who are more likely than others to consistently help across many situations even in the absence of external rewards, and this observation has led researchers to describe the “altruistic personality”.

“The altruistic personality” has been described as a set of traits that predispose a person to think and act altruistically across a broad range of situations (cross-situational consistency; Carlo, Eisenberg, Troyer, Switzer, & Speer, 1991; Penner, 2002). Evidence pointing to a relationship between personality and the “the altruistic personality” was initially demonstrated by a study by Staub (1974) which found that an aggregate dispositional measure of pro-social orientation (combining measures of feelings of personal responsibility, social responsibility, moral reasoning, pro-social values) was a good predictor of helping across different situations. Furthermore, it was found that the personality variable of empathy has been consistently correlated with helping (Batson, Bolen, Cross & Neuringer-Benefiel, 1986; Eisenberg & Miller, 1987; Dovidio, Allen, Schroeder, 1990; Fultz, Batson, Fortenbach, McCarthy & Varney, 1986). Also, studies have found that repeat blood donors score high on altruism scales (Boe & Ponder, 1981), and their donation is said to be motivated by a variety of intrinsic factors (e.g., acting in accordance with personal norms of benevolence, Switzer, Dew, Butterworth, Simmons, & Schimmel, 1997). Furthermore, Oliner & Oliner (1988) found that rescuers of Jews during the Holocaust scored higher on social responsibility and on ideals regarding a just world compared to non-rescuers. Also, even 40 years later, rescuers were found to engage more frequently in helping behaviours than non-rescuers. Lastly, people who score high on altruism, empathy and social responsibility consider helping

situations to be more rewarding than people low in these traits, and they also report high levels of helping behaviours in real life situations (e.g., traffic accidents, Bierhoff, Klein, & Kramp, 1991), self-reports, (Kerber, 1984, Ruci, 2005) and helping behaviours in the laboratory (Penner & Orom, 2009).

### *Theories of helping behaviour*

The considerable body of research on helping behaviour has identified a plethora of reasons and motivations that affect one's decision to help. When research on helping behaviour began to flourish in the 1960s (Bierhoff et al., 1991), some researchers sought to examine whether helping behaviours were determined by the factors confronting the potential helper (e.g., the situationist approach). Others focused on the influence of stable personality variables associated with individual differences in helping behaviour (Penner et al., 1995). The situationist approach accounted for many predictors of helping behaviour, with influential findings arising from the work of Latane and Darley (1969) on bystander interventions (Penner & Orom, 2009). Specifically, they found that as the number of bystanders increased, the amount of helping decreased, a finding attributed to the non-explicit assignment of responsibility to help, which led to the term "diffusion of responsibility" (Latané & Darley, 1969). Another situational factor that has been found to influence helping behaviour is population density (Levine, Martinez, Brase & Sorenson, 1994), because people in dense urban environments tend to pay less attention to those around them, and as a result are less likely to perceive a situation as an emergency. "Pluralistic ignorance" is another factor that influences helping behaviour and occurs when bystanders to an emergency give misleading cues to others by remaining calm and poised, thus giving

misleading cues to others as to whether helping is needed or not (Latane & Darley, 1969).

Although research examining the situationist approach has suggested many situational factors that might enhance or hinder helping behaviour, other research has reported on significant and replicable individual differences in the willingness to help someone in distress (Batson, 1987; 1991; Davis, 1994; Kerber, 1984; Penner, et al., 1995). The most prominent personality variable examined in the helping behaviour literature is empathy. Empathy has been associated with higher rates of pro-social behaviours (Vitaglione & Barnett, 2003)). The relationship of empathy with helping behaviour has been extensively examined by the pro-social literature. The Empathy-Altruism hypothesis offers evidence for altruistic reasons for helping (Batson, et al. 1981, 1990, Kruger, 2003; Frey & Meier, 2004) and the Negative-State relief model of helping offers evidence for egoistic reasons for helping (Baumann, Cialdini & Kenrick, 1981; Cialdini, Schaller, Houlihan, Arps, Fultz & Beaman, 1987; Cialdini, Darby & Vincent, 1973).

#### *The Empathy-Altruism Hypothesis*

An ongoing debate among social psychologists concerns the question of whether helping can be “truly altruistic” or whether helping is ultimately directed at self-benefit. Two schools of thought have emerged. On one side proponents of altruistic motivations proposed the Empathy-Altruism hypothesis (see Batson, 1987; 1991). According to this hypothesis, witnessing another person in distress produces empathic concern (e.g., sympathy, or compassion). The empathic concern motivates people to help in order to

relieve the other person's distress. In such an instance, helping is considered altruistic because it is performed out of a consideration of another's needs and involves other-regarding sentiments and the benefit of the person in need (Piliavin & Charng, 1990). Thus, "if benefiting the other is the ultimate goal and the self-benefits are unintended consequences, then the motive for helping is altruistic" (Batson, 1991, p. 65).

The Empathy-Altruism hypothesis has been tested and supported in many experiments (Batson & Coke, 1981; Batson, 1990; Batson & Weeks, 1996; Dovidio, Allen & Schroeder, 1990). Batson and his colleagues have been able to support the claim that people who choose to help do so out of altruistic reasons, and not out of ulterior motives or external rewards. In a classic experiment, (Batson et al. 1981), people were placed in a situation where they had the opportunity to help someone else or escape, as helping was made either easy or difficult. They manipulated empathy level (low vs. high) and escape opportunity (easy vs. difficult). The Empathy-Altruism hypothesis would predict that helping behaviour would be high in both the easy and difficult escape conditions among participants feeling high empathy. Helping would be an indication of people's altruism because it would be evident whether people would act out of concern for others, or would escape helping, and preserve their own self-interest. Furthermore it was hypothesized that helping would be lowest in the low empathy condition (because people low in empathy would not help for altruistic reasons). The results of this experiment (Batson et al. 1981) and several other experiments using the Escape x Empathy design (Batson et al. 1983; Batson et al. 1987; Batson et al. 1989) have supported the Empathy-Altruism hypothesis.

The main implication of the Empathy-Altruism hypothesis is that people who are predisposed to feel empathic concern as a response to others' needs engage in helping behaviour for the sheer benefit of the other person, without expecting any external rewards. Researchers investigating the Empathy-Altruism hypothesis have manipulated empathy in evoking other-oriented helping while other researchers (Piliavin & Charng, 1990), have looked at personality traits, such as high self-esteem, high competence, high internal locus of control, high moral development and low need for approval (Eisenberg & Fabes, 1991; Staub, 1978; Rushton, 1981) in explaining why some people are more likely than others to engage in helping behaviours. They have suggested that when altruists help, they are being prompted by deep-rooted predispositions and the helping behaviour is not dependent on external outcomes or rewards. In comparison, egoists are said to help only when helping is deemed beneficial to the self and their decision making is viewed as a cost-benefit process (Gintis, 2002). Rather, altruism is said to arise from an automatic process of acting on pro-social dispositions (e.g., dispositional empathy, social responsibility) and innate capacities (e.g., empathic concern, Gintis, 2002; Goldberg, 1992; Graziano & Eisenberg, 1997; Vitaglione & Barnett, 2003).

#### *The Negative State Relief Model*

On the other end of the spectrum, proponents of psychological egoism (Cialdini et al., 1997; Baumann, Cialdini & Kendrick, 1981) claim that people behave in ways that benefit themselves when helping. The egoistic approach has been elaborated by the Negative-State Relief model (Baumann, Cialdini & Kenrick, 1981; Cialdini, Schaller, Houlihan, Arps, Fultz & Beaman, 1987; Cialdini, Darby & Vincent, 1973) which

proposes that the empathic concern that arises when witnessing someone in need creates personal distress (negative mood, alarm) that needs to be removed. Thus, it is the egoistic desire to manage personal distress that causes the individual to engage in helping behaviour, and not the empathic concern for the person in need (Cialdini et al., 1973; Manucia, Baumann & Cialdini, 1984).

A crucial implication of the egoistic approach of helping that is posited by the Negative State Relief model is that the empathy creates a self-oriented response (e.g., negative mood), and that people monitor their mood states and engage in self-regulatory behaviour (e.g., helping) when those moods are unpleasant (Cialdini, Darby, & Vincent, 1973; Clark & Isen, 1982; Thayer, Newman, & McClain, 1994). The self-regulatory aspect of egoistic helping behaviour has been directly tested and validated by several studies of emotional self-regulation (Baumeister, 2002; Bushman, Baumeister, & Phillips, 2001; Manucia, Bauman & Cialdini, 1984; Tice, Bratslavsky, & Baumeister, 2001).

In a classic study testing the self-regulatory aspect of egoistic helping, Manucia, Baumann and Cialdini (1984) developed the “mood freeze” manipulation. Specifically, they gave participants a placebo pill and half of the participants were informed that a side effect of the drug would be a “freezing” of their present mood state, making it temporarily resistant to influence from external events. Afterwards they were presented with an opportunity to help. It was hypothesized that the “mood freeze” manipulation would make futile any efforts at emotional self-regulation and so, any behaviour that would be performed to regulate one’s mood would cease (Manucia, Baumann & Cialdini, 1984). On the other hand, if helping is not engendered by the desire to regulate

negative affect, there would not be any differences in helping rates due to the “mood freeze” manipulation.

Manucia et al., (1984) found that participants who did not take a placebo pill helped more in sad moods than in the neutral condition. However, the effect disappeared in the “mood freeze” condition. Specifically, participants in the sad mood in the “mood freeze” condition helped less compared to participants in the sad moods in the changeable mood condition. Based on these findings, the authors suggested that people help for egoistic reasons in order to self-regulate for the negative mood that arises when witnessing someone in distress (Baumeister, Vohs, DeWall, & Zhang, 2007; Manucia, Baumann, & Cialdini, 1984; Sprecher, Fehr, & Zimmerman, 2007).

Both the Empathy-Altruism hypothesis and the Negative-State relief hypothesis consider empathy as a vicarious affective response based on the observer’s distress of another’s condition. The difference lies in the incorporation of empathy in deriving the altruistic or the egoistic reasons for helping. The Empathy-Altruism hypothesis has manipulated empathy in evoking other-oriented concern, thus leading to altruistic behaviour. In contrast, the Negative-State Relief model manipulates empathy in order to engender self-oriented emotional distress and attributes the high helping rates associated with high levels of personal distress to the self-oriented goal of making oneself feel better (Batson, O’Quin, Fultz, Vanderplas, & Isen, 1983; Cialdini, et al., 1997; Eisenberg & Miller, 1987).

A common feature of both these approaches is the fact that they have examined state empathy (i.e., empathic response that varies across situations) rather than trait

empathy (i.e., empathic responses that are stable over time). As a result, both theories have been able to predict helping motivations (altruistic or egoistic) based on trait empathy. Specifically, when inferring altruistic reasons for helping, the variable manipulated is state *empathy* which prompts helping to benefit the person in need (Batson, 1991). Similarly, when inferring egoistic reasons for helping, state empathy is manipulated and is assumed to lead to personal distress and the subsequent helping rates have been found to vary as a result of personal distress (i.e., people who experience more personal distress tend to help more than people who experience less personal distress, Cialdini, Brown, Lewis, Luce, & Neuberg, 1997; Maner, Luce, Neuberg, Cialdini, Brown, Rice, & Sagarin, 2002).

The present study explored the personality correlates of helping behaviour from a trait perspective. There is substantial evidence that certain stable personality traits reliably predict helping behaviour across a variety of settings and points in time (Eisenberg & Fabes, 1991; Oliner, & Oliner, 1988; Staub, 1978; Rushton, 1981; Penner, Fritzsche, Craiger, & Freifeld, 1995). Furthermore, it attempted to demonstrate that people who have different levels of pro-social personality traits engage in helping behaviour for different motivations. Before outlining the theoretical argument that will help discern the helping motivations based on personality predispositions, a review of the findings that point to a pro-social personality is necessary.

#### *Individual differences in pro-social orientations*

The search for the *altruistic personality* has resulted in a considerable body of research, which has provided a cluster of interrelated dispositions that relate to pro-

social thoughts, feelings and behaviours (Batson, 1991; Davis, 1994; Penner & Orom, 2009; Penner, Dovidio, Piliavin, Schroeder, 2005; Preston & DeWaal, 2001). It should be noted that the terminology used to describe the cluster of the pro-social predispositions is sometimes referred to as the *pro-social personality* and sometimes as the altruistic personality. Although the term pro-social refers to any behaviour that is intended to benefit an individual or a group of people (Penner et al., 2005; Penner & Orom, 2009), the term altruism is almost exclusively used to denote a selfless act performed for the sole benefit of others. That is, pro-social would be correctly used to describe any act of helping, whether performed for altruistic or egoistic reasons, while the term altruistic would only be used to describe helping that is selflessly performed with the sole purpose of benefiting someone else (Batson & Coke, 1981; Batson, 1990; Dovidio, Allen, & Schroeder, 1990; Batson & Weeks, 1996). In the literature, the term pro-social is used more frequently because the term “altruistic” denotes motivation for a selfless act, a claim that has not been persuasively demonstrated by looking at personality correlates of helping (Penner & Orom, 2009). In the present study, I will be using the term pro-social personality traits, and will test the hypothesis that different levels of these pro-social personality traits could distinguish people who perform helping behaviours for intrinsic reasons (altruists) compared to those who perform the same helping behaviours for extrinsic reasons (egoists). For brevity’s sake, in the present research, people with high levels of personality traits will be called “altruists” and people with low levels of pro-social traits will be called “egoists” without making any inferences about their helping motivations. That is, the term “altruists” will be used to denote that those people have high levels of pro-social traits, without implying that

their motivation for helping is selfless. Similarly, the term “egoists” will be used to denote people who have low levels of personality traits, without making any inferences about their helping motivations. In a sense, the term “altruist” will be used in the present research to denote a categorical concept in that someone who is an altruist has high levels of pro-social traits and someone who is an egoist has low levels of pro-social traits.

The nature of the pro-social personality has been captured by six key constructs that have been found to consistently correlate with helping behaviour (Penner et al., 1995). These traits have been represented in the Pro-Social Personality Battery (Penner et al., 1995) and their validity has been systematically supported in the literature (Dovidio, Piliavin, Schroeder, & Penner, 2006; Graziano, Habashi, Sheese, & Tobin, 2007; Penner & Finkelstein, 1998; Penner, Finkelstein, & Brannick, 2005; Penner & Fritzsche, 1993). The six pro-social personality traits represented in the Pro-Social Personality Battery are *empathic concern*, *social responsibility*, *perspective taking*, *other-oriented moral reasoning*, *mutual concerns moral reasoning*, and *self-reported altruism* (Penner et al., 1995).

*Empathic concern* has been defined as the capacity to recognize and understand another's emotional state and this ability is internalized by experiencing the emotions of another person within oneself (Batson, Fultz, & Schoenrade, 1987; Penner et al., 1995; Preston & DeWall, 2002, Stinson & Ickes, 1992). Empathic concern arises when someone notices the emotional cues displayed by another person's distress (e.g., crying). Empathic emotions are proposed to be the most salient source of the altruistic motivation to help, as outlined by the Empathy-Altruism Hypothesis (Batson, 1990;

Batson & Coke, 1981, Batson & Weeks, 1996) Furthermore, it is proposed that feelings of empathy arise not only by perceiving someone's distress, but also by adopting the perspective of how it would feel to be in that situation – “to put oneself in someone else's shoes” (Batson et al , 1995) Empathy has been found to correlate with people's tendencies to engage in helping behaviours over time (Batson et al , 1995, Penner et al , 2005) For example, dispositional empathy has been found to correlate with volunteering (Davis et al , 1999) and furthermore, it has been shown that people high in dispositional empathy tend to frequently engage in real-life helping behaviours (Bierhoff, Klein, & Kramp, 1991) Correlations between pro-social orientations and empathy are reported to be stable over time, as indicated by self-reports and friends' reports over a 5-year period (Graziano & Eisenberg, 1997, Penner et al , 1995)

Dispositional empathy<sup>1</sup> has been shown to correlate with pro-social responding in children (Eisenberg et al , 1989) and recent evidence suggests that dispositional empathy, along with other pro-social tendencies (e g , social responsibility, perspective taking), are relatively stable across a person's life (Penner et al , 2005, Caspi et al 2003) For example, ratings of empathy and pro-social responding were found to be stable across a span of five years on a sample of young adults (Eisenberg et al , 2002) Further support for dispositional differences in empathy has been provided by studies on traffic accident victims In such a study, Bierhoff, Klein and Kramp (1991) found that among the traits that differentiated helpers from non-helpers was empathy, along with social responsibility Longitudinal personality data on heroic rescuers have

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<sup>1</sup> Dispositional empathy is another term used in the literature to denote trait empathy Similarly, the concept of empathic concern measures trait empathy

identified the personality characteristics, social responsibility and empathy, that best discriminated between rescuers and non-rescuers of Jews during the Holocaust (Fagin-Jones & Midlarsky, 2007; Midlarsky, Jones, & Corley, 2005; Oliner & Oliner, 1988).

*Social responsibility* has been defined as an internalized predisposition that describes a person's propensity to display concern for the welfare of others and ascribe responsibility for others to the self (Eisenberg et al., 1989; Penner & Orom, 2009). People who score high on social responsibility are more likely to act on their internalized obligation on behalf of other people by engaging in pro-social behaviours regardless of whether others will reciprocate on their acts (Carlo et al., 1991; Eisenberg et al., 1989; Penner et al., 1995). Peterson and Seligman (2004) reported strong associations between measures of social responsibility and "trait altruism" in their classification of character strengths and virtues. Furthermore, this predisposition has been found to correlate with pro-social thoughts and actions in several studies of helping behaviour (see Graziano & Eisenberg, 1997, for review; Eisenberg, Guthrie, Cumberland, Murphy, Shepard, Zhou, & Carlo, 2002). Social responsibility has also been shown to account for increased pro-social behaviour in laboratory settings. A study by De Cremer and Van Lange (2001) examined the influence of social responsibility in people's cooperation in a social dilemmas game. Participants were given five options of cooperating in a decision making game (with another participant who was unknown to them), and it was found that people with high levels of social responsibility demonstrated higher levels of cooperation (De Cremer & Van Lange, 2001).

Although dispositional empathy/empathic concern and social responsibility have been considered the most prominent aspects of the pro-social personality, a cluster of other predispositions comprised of *perspective taking*, *other-oriented moral reasoning* and *mutual concerns moral reasoning* have also been considered as core elements of the pro-social personality. These predispositions are not necessarily considered separate from dispositional empathy and social responsibility, but rather are considered as complementary to describing the pro-social personality (Graziano & Eisenberg, 1997; Penner et al., 1995). Furthermore, there is substantial convergence among investigators in their descriptions of pro-social individuals, which have been described as being predisposed to experience high levels of empathy in response to another's distress, feeling personal responsibility for the welfare of others, and engaging in other-oriented moral reasoning. These predispositions, along with *social responsibility* were combined to represent the factor of other-oriented empathy in Penner's Pro-social Personality Battery (Penner et al, 1995). People who score high on this factor are said to be empathetic to the needs of others, are predisposed to feel responsibility and concern for their welfare, and as a result are more prone to engage in helping behaviours (Davis, 1994; Eisenberg et al., 2002; Penner et al., 1995).

Whereas the other-oriented factor of the Pro-social Personality Battery primarily assesses cognitions and affect, the second factor, called helpfulness, primarily assesses behavioural tendencies. The helpfulness factor represents people's tendency to engage in pro-social actions, and is captured by measures of past helping (e.g., I have done volunteer work for a charity), as well as low ratings of personal distress. Personal distress is included in the factor of helpfulness as an indicator of pro-social

predisposition because it has been shown that reverse ratings on this affective factor tend to highly correlate with measures of past helping (Batson, 1991). Penner et al., (1995) included the personal distress scale (reversed scored) in the helpfulness factor because they found that among those people who score high on this factor, the discomfort was experienced as an other-oriented response to the other's distress rather than a self-oriented affective state. As a result, they deduced that this affective scale predicted helping to benefit the other, rather than predicting actions to manage the personal distress. People who score high on the helpfulness factor report being helpful in the past (Penner & Fritzsche, 1993) and they also report experiencing little egocentric emotional distress in response to the distress of others (Penner et al., 1995). Also, the helpfulness factor predicted helping behaviours over a time-span of several weeks (Penner & Menon, 1993) as well as volunteering and charity work (Penner et al., 2005). In conclusion, the Pro-Social Personality Battery comprising of the factors of other-oriented empathy and helpfulness have been found to provide reliable and valid measures of a wide variety of pro-social thoughts, feelings, and behaviours (Caspi et al., 2003; Colby & Damon, 1992; Eisenberg et al., 1989; Eisenberg et al, 2002; Penner et al., 1995).

The correlational studies mapping the pro-social personality have provided valuable insights in assessing the personality variables of people who engage in helping behaviour. However, attempts at ascribing motivations for people endowed with these pro-social personality predispositions for engaging in helping behaviours have been less successful. Research on the altruistic and the egoistic theories of helping has pointed to different motivations for helping by manipulating state empathy (e.g., Empathy-

Altruism hypothesis) or affective states (e.g., personal distress, Negative-State Relief model). However, inferring helping motivations from a personality-based perspective has been less fruitful. The present research will attempt to move beyond an aggregation of correlations between helping behaviour and personality variables. Instead, it tested the hypothesis that different levels of pro-social personality traits are related to different motivations for helping. Specifically, I hypothesize that people high in pro-social personality traits engage in helping behaviours due to the *intrinsic* motivations of acting on these pro-social traits and benefiting another person. Similarly, people low in pro-social personality predispositions sometimes choose to engage in helping behaviour, and they do so because of the *extrinsic* motivations of gaining self-rewards. I propose that the Self-Determination Theory of motivation (Deci & Ryan, 1985; Deci, Eghrari, Patrick, & Leone, 1994; Ryan & Deci, 2000) may be useful in uncovering the motivations that make some people help consistently over time even in the absence of external rewards (those displaying high levels of pro-social traits) from those who help some of the time (those displaying low levels of pro-social traits).

#### *Self-Determination Theory of Motivation*

The interplay between an individual's personal motivation and his/her social surroundings is the focus of Self-Determination Theory (Deci & Ryan, 1985, Ryan & Deci, 2000). The basic premise of Self-Determination Theory is that all humans are naturally active, and they constantly seek opportunities to learn and grow from their interactions with people and the broader social environment. Everyone who works, plays or cooperates with others is driven towards a goal, and the motivation that energizes such interactions is the fuel of human relationships. According to this theory,

when people make informed choices about their course of behaviour, they do so in order to fulfill their basic psychological needs of autonomy, relatedness and competence (Deci & Ryan, 2000).

In pursuing these goals, people have different levels of motivation (i.e., how much motivation) but also differ in the orientation of those motivations (i.e., what type of motivation; Ryan & Deci, 2000). The self-determination theory distinguishes between two basic types of motivation; *intrinsic* motivation, which refers to performing a behaviour because it is inherently enjoyable and interesting, and *extrinsic* motivation which refers to performing a behaviour because of some separate outcome arising from the behaviour or to avoid negative consequences (e.g., social criticism, Ryan & Deci, 2000; Vallerand et al., 1992). For example, someone with strongly-felt internalized values of cooperation and moral values who volunteers in their community and see their contribution as making the world a better place, is said to be intrinsically motivated. Conversely, a high-school student who volunteers in community projects in order to receive school credits is said to be extrinsically motivated. Extensive research findings have provided evidence that intrinsic and extrinsic motivation produce dissimilar qualities of experience (the former producing an experience characterised by inherent value, confidence and interest and the latter producing an experience that feels coerced, restrictive and controlling), mainly due to the functional differences of these two types of motivation (for review, see Deci, Koestner, & Ryan, 1999).

It is proposed that intrinsically motivated behaviours are performed out of interest and enjoyment, and such behaviours satisfy the innate psychological needs for competence, relatedness, and autonomy (Deci & Ryan, 1985; Ryan, 1995). These needs

are defined as *innate*, organismic necessities, rather than acquired motives. In the framework of the self-determination theory, they are defined at the psychological level as the “innate psychological nutrients that are essential for ongoing psychological growth, integrity, and well-being” (Deci & Ryan, 2000, p. 229). Furthermore, the self-determination theory states that the satisfaction of these needs will result in positive psychological consequences and that people who strive to achieve psychological growth and well-being will tend to pursue goals and relationships that will support the satisfaction of these needs. An intrinsically motivated person is said to act out of free will, views the behaviour as enjoyable and important to his/her moral values and would perform the behaviour even in the absence of external reinforcements or rewards (Deci & Ryan, 1985; Moller, Deci, & Ryan, 2006; Ryan & Deci, 2000). Intrinsically motivated behaviours appear to be spontaneous and not performed for instrumental reasons, and are associated with the positive feelings associated with exercising one’s capacities and innate predispositions (Ryan & Deci, 2000).

Extrinsic motivation, on the other hand, comprises aspects of motivation when an activity is performed in order to attain an external reward or a desired outcome (Deci & Ryan, 2000). The difference between intrinsic and extrinsic motivation lies in the fact that extrinsically motivated behaviours are instrumental for either obtaining a reward, or avoiding a negative outcome. Thus, spontaneity is not considered part of extrinsically motivated behaviours, but rather, such behaviours arise due to situational factors that the person wants to capitalize on for their own benefit.

The second sub-theory of self-determination theory, referred to as the Organismic Integration Theory, details the different contextual factors that outline the

conditions under which extrinsically motivated behaviours occur (Deci & Ryan, 1985; Rigby, Deci, Patrick, & Ryan, 1992; Ryan & Deci 2000). The Organismic Integration Theory sub-divides “extrinsic” motivation into four categories: External regulation, introjected regulation, identified regulation, and integrated regulation. The term *regulation* used to describe extrinsically motivated behaviours is comparable to the term *autonomy* for intrinsically motivated behaviours. That is, *autonomous* refers to the regulation performed by the self when performing intrinsically motivated behaviours whereas *controlled* regulation refers to the type of regulation that is enforced by the outside environment or inner impulses or demands made contingent on performing a specific behaviour (Ryan & Deci, 2006).

The most heavily regulated type of extrinsic motivation is *external regulation*, which includes all those behaviours that make salient the rewards or punishments that might arise if the behaviour is not performed (Ryan & Deci, 2000). People who are subjected to externally regulated behaviours experience an external locus of causality (e.g., they feel that their actions are dictated by factors outside their control) and their behaviours are heavily dependent on external rewards. For example, a student who volunteers in the community in order to receive school credit is said to display externally regulated behaviour.

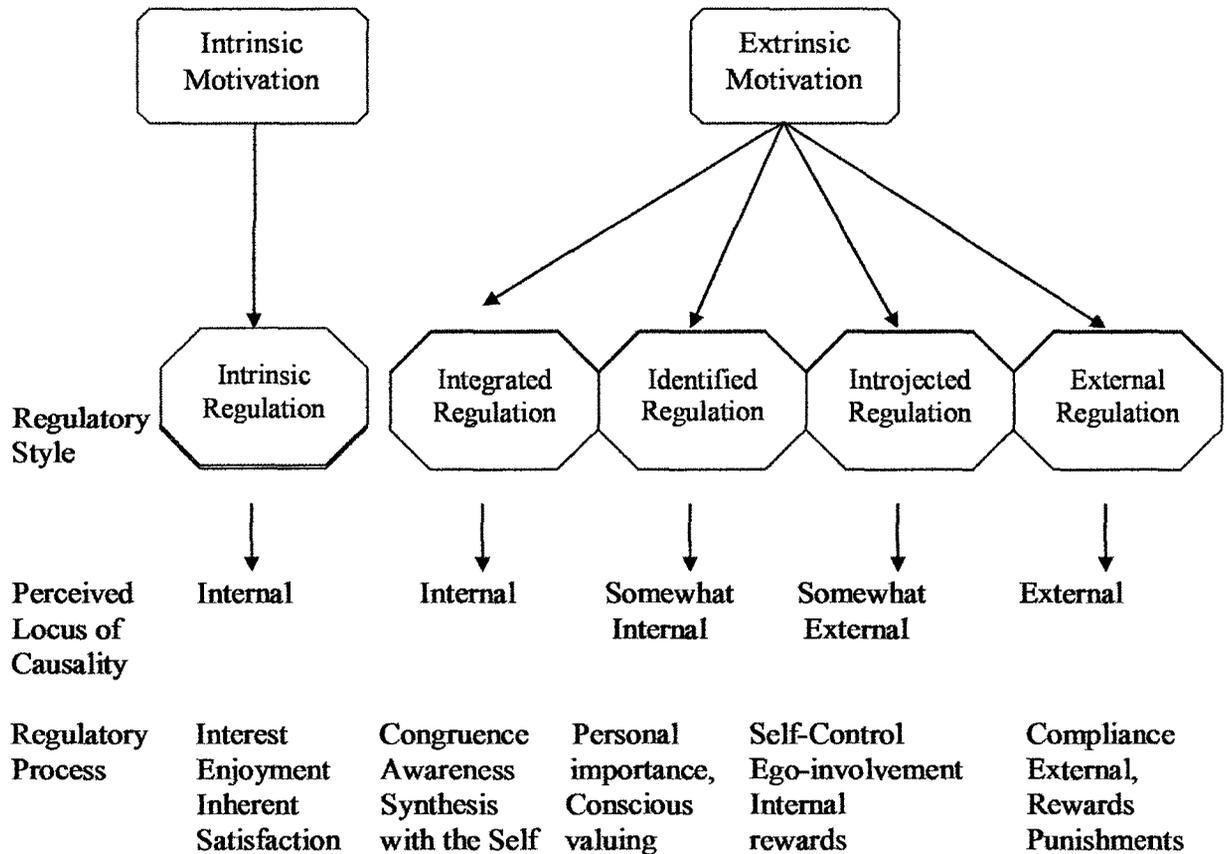
The second type of extrinsic motivation is called *introjected regulation*, which describes a type of internal regulation that is controlling because people perform the behaviours due to feelings of pressure, to avoid guilt, or to reap external rewards (Ryan, 1982; Ryan & Deci, 2000). People undergo introjected regulation when performing a behaviour that is expected to enhance their self-esteem and feelings of self-worth or to

avoid guilt or negative social attention (Elliot & Church, 1997; Nicholls, 1984; Ryan & Deci, 2000). Specifically, this kind of behaviour is not perceived as self-determined because the individual does not experience a sense of choice for engaging in the behaviour. For example, someone who engages in helping behaviour in order to avoid the guilt of not helping or to enjoy social approval is said to experience introjected regulation. In the pro-social literature, this type of motivation characterizes *egoistic* helping (Cialdini et al., 1997; Sorrentino, 1991).

The organismic integration theory also identifies two forms of regulation that are considered more autonomous than those driven by external and introjected regulation. A more self-determined form of extrinsic motivation is regulation through *identification* - known as *identified regulation*. That is, the person has recognized the importance of a specific behaviour and has accepted its regulation as his/her own (Ryan & Deci, 2000; Losier, & Koestner, 1999). For example, someone who volunteers in their church or community chooses these behaviours not necessarily because they enjoy volunteering in their church (e.g., teaching Sunday school) but because they recognize the value of such behaviours for the community and their relationships with others. Lastly, the most autonomous form of extrinsic motivation is called *integrated* motivation, which occurs when identified regulations have been fully assimilated within the self over a period of time (Ryan & Deci, 2000). This occurs when someone internalizes the reasons for performing the behaviour because the reasons for doing the behaviour have been fully integrated within the self. For example, someone who has been brought up to help and cooperate with others values and views these behaviours as important and has learned to internalize/identify with them. This form of motivation

shares many similarities with the intrinsically motivated behaviours in that they are both autonomous. However, behaviours that are performed through integrated regulation remain extrinsic because they are still instrumental in obtaining an outcome that is separate from the behaviour itself. In the example above, the internalization of the pro-social behaviour is a developmental process that continues to occur throughout the lifespan and continues to be internalized (Grant, 2008, Niemiec et al., 2006; Ryan & Deci, 2000). Please refer to Figure 1 for a visual representation of Self-Determination Theory of motivation.

Figure 1. The Self-Determination Continuum of Motivation, adapted from Deci & Ryan, (2000).



*Experimental support for Self-Determination Theory*

Self-Determination Theory proposes that people will attempt to spontaneously engage in behaviours that will satisfy their needs for autonomy, relatedness, and competence and that when these needs are supported, people will be more committed to these behaviours and will be consistent in performing them (Ryan & Deci, 2000). The notion of commitment has been examined in educational settings (Grolnick & Ryan,

1989; Williams & Deci, 1996), as well as organizational settings (Gagne & Deci, 2005; Mathieu & Zajac, 1990). Specifically, Grolnick and Ryan (1989) interviewed parents of elementary school children on their motivation and internalization in the classroom. The researchers also assessed whether the parents provided autonomy support and involvement, and how that affected children's intrinsic motivation in school-related activities. They found that parents who were more involved and provided more autonomy, had children who displayed more intrinsic motivation in the classroom, had higher academic performance, and reported experiencing more well-being.

Similar findings were replicated in adult populations in medical school settings (Williams & Deci, 1996). They found that when instructors were perceived as providing more autonomy to their students, students appeared to be more autonomously motivated to learn the course material and furthermore, they were more likely to internalize the core principles of the course. This internalization was present even after the course ended (Williams & Deci, 1996; Deci & Ryan, 2000). Other studies in the area of educational psychology suggest that college students who are intrinsically motivated enjoy their courses more and get higher grades than students who were more controlled in their motivation (Black & Deci, 2000). In addition, intrinsically motivated students tended to demonstrate greater conceptual understanding for their course material compared to students who were extrinsically motivated to study (Grolnick & Ryan, 1987). In summary, findings in educational psychology regarding the tenets of Self-Determination Theory have shown that those who pursue their goals and behaviours for intrinsic reasons tend to display higher behavioural persistence, greater value

endorsement and higher understanding than those operating under extrinsic reasons (Williams & Deci, 1996; Vallerand & Bissonnette, 1992; Deci & Ryan, 2000).

In organizational settings, Self-Determination Theory has provided a solid framework under which work motivation and organizational commitment have been studied. Researchers have found that employees' experiences of satisfaction of the need for autonomy, competence and relatedness in the workplace led to higher performance and well-being at work (Baard, Deci & Ryan, 2004). The satisfaction of these three needs has been examined in studies of employee-supervisor relations. Ilardi, Leone, Kasser, and Ryan (1993) studied employee and supervisor perceptions of the employees' level of environmental support and found that the three basic psychological needs were positively related to work satisfaction, psychological well-being, and self-esteem. Furthermore, higher levels of intrinsic motivation were demonstrated in the form of enhanced task performance and mental well-being.

The need satisfaction tenet of Self-Determination Theory has been supported in several contexts, such as education (Williams, Saizow, Ross, & Deci, 1997), mental health and well-being (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000), health care (Sheldon, Williams, & Joiner, 2003) and organizational settings (Deci, Connell, & Ryan, 1989; Spektor, 1982). However, there have been few attempts at investigating the relevance of the Self-Determination Theory in relation to pro-social behaviours. Due to the fact that pro-social behaviours and intrinsic motivation have been studied in two separate literatures, there have been very few attempts to integrate the understandings of these motivations and build a more integrated and comprehensive framework.

*Self-Determination Theory and Helping behaviour*

The relationship between pro-social traits and intrinsic motivation has been examined in organizational settings. Some organizational researchers argue that in certain cases, pro-social motivations (e.g., the desire to benefit other people) facilitate performance, persistence and productivity when those motivations make people more dedicated to their work (Bing & Burroughs, 2001; Grant, 2007; Thompson & Bunderson, 2003). This was proposed in a study by Grant (2008) who found that intrinsic motivations moderated the relationship between pro-social motivation and productivity in volunteers, with those high in intrinsic motivations reporting more dedication and more productivity in their fundraising efforts.

The results of this study suggest a framework in which pro-social behaviour could be informed by the Self-Determination theory of motivation. From the review of the pro-social literature, helping behaviour is characterized by the innate predispositions of empathic concern (Batson et al. 1989), deep-seated personal values (Piliavin, & Charng, 1990), high competence, and an internal locus of control (Eisenberg & Fabes, 1991; Staub, 1978; Rushton, 1981). Furthermore, some evidence suggest that people with high levels of altruism and empathy report anticipating feelings of enjoyment from self-reported helping behaviour (Ruci, 2005; Sprecher, Fehr, & Zimmerman, 2007; Williamson & Clark; 1989). Self-Determination Theory provides a similar description of intrinsically motivated behaviours. Specifically, intrinsically motivated behaviours are performed due to innate psychological needs, are carried out of free will and are viewed as enjoyable and performed in the absence of reinforcements or rewards (Deci & Ryan, 1985; Moller, Deci, & Ryan, 2006). Furthermore, intrinsically motivated

behaviours are said to arise spontaneously and to be associated with positive feelings (Ryan & Deci, 2000). Since the pro-social literature describes altruistic helping as a spontaneous, other-oriented behaviour that is engendered by pro-social personality traits (e.g., empathy) the motivation of performing an altruistic act appears to be similar to intrinsic motivation.

Likewise, egoistic helping is said to arise from the desire to self-regulate (Manucia, Baumann & Cialdini, 1984), to attain external rewards (Cialdini, Darby & Vincent, 1973) or to avoid guilt and social criticism (Batson, 1998; Freeman, 1997). The definition of extrinsically motivated behaviours offered by self-determination theory is very similar to the egoistic motivations of the pro-social literature. That is, extrinsic motivation is involved in performing an activity in order to attain an external reward (Deci & Ryan, 2000). The most specific form of extrinsic motivation that is comparable to the egoistic motivations of helping is *introjected* regulation. Introjected regulation describes the experience of control when someone performs a behaviour that is instrumental in either reaping benefits or avoiding punishments (Ryan, 1982; Ryan & Deci, 2000).

The pro-social literature has provided support for altruistic helping being separate from egoistic helping through deductive reasoning. Specifically, Batson and Shaw (1991) propose a two-step model in inferring pro-social motivations based on observed behaviour. First, they propose a conceptual analysis that can accommodate the various potential alternative goals for the person's action. The downside of this step is the fact that people might have a plethora of goals when doing a particular action, thus we would need to have some prior indication of people's preferences and

predispositions in order to limit the choices. Second, the observed behaviour has to occur with some regularity in order for some of the potential goals to be eliminated. Eventually, the person's ultimate goal, and hence, the motivation for the behaviour, would become apparent. These two steps have provided the basis of the empirical examination of pro-social motivations. However, this inferential process is flawed for two reasons. First, the self-report questionnaires that give us an indication of people's goals are of limited reliability because people are not very good at identifying and reporting their ultimate goals, motivations and mental processes (Nisbett & Wilson, 1977). Second, it is very difficult to replicate behaviour across different points in time, thus making the process of eliminating potential ultimate goals very difficult. These limitations call for a measure of pro-social motivation that is capable of distinguishing between the altruistic and egoistic helping by focusing on the regulatory process which leads to the behaviour. Self-Determination Theory provides the framework in which motivational forces of behaviour result in different self-regulatory demands.

### *Self-Determination Theory and Self-regulation*

Self-determination theory provides a solid background in the analysis of the self-regulatory process that people undergo when choosing to perform a specific behaviour. Self-regulation is defined as the process of controlling or modifying one's behaviours, thoughts, emotions and cognitions (Baumeister, Gailliot, & DeWall, 2006; Hoyle, 2006). The ability to self-regulate is very important for achieving short-term goals as well as long-term goals. For example, the ability to self-regulate one's impulses to procrastinate is beneficial in achieving the short-term goal of higher academic performance as well as the long-term goal of becoming an architect. Self-regulation is

conceptualized as varying along a continuum. Specifically, situations that make people feel that they can exercise their free will, and can act on their inner predispositions without feeling pressured by external outcomes (e.g., intrinsically motivated behaviours) are said to result in *autonomous* regulation (Deci et al, 1999; Moller, et al, 2006). On the other hand, when people feel coerced, controlled and have to overcome internal resistance in order to perform a behaviour (e.g., extrinsically motivated behaviours) the resulting regulation is called *controlled* regulation (Muraven, Rosman, & Gagne, 2007).

Autonomous regulation refers to the experience that a person undergoes when performing a behaviour that is deemed to be under one's control (i.e., internal locus of causality, Moller, Deci, & Ryan, 2006). This kind of regulation refers to intrinsically motivated behaviours, which are performed because of their inherent interest and enjoyment rather than for some separate outcome. For example, a student who invests a lot of time studying mathematics because of the inherent enjoyment and pure interest of the subject is said to be subject to autonomous regulation.

Controlled regulation, on the other hand, refers to the regulation that a person experiences when they perform a behaviour that stems from aspects that are less integrated with the self, but are nevertheless performed because of coercive, rigid or external pressures (Moller, Deci, & Ryan, 2006; Ryan & Deci, 2000). For example, a student who spends a lot of time studying science subjects in school only because of the financial rewards and social status of becoming a doctor is said to undergo controlled regulation. Behaviours that arise from either intrinsic or extrinsic reasons place different cognitive and physiological demands on the individual.

Self-Determination Theory suggests that pro-social behaviour can be based on different levels of autonomous regulation; the desire to benefit others can be autonomously supported by feelings of identification and value congruence arising from pro-social predispositions, or can it can be coerced by feelings of pressure, obligation or external rewards (Gagne & Deci, 2005). This distinction may have critical implications for understanding whether and when pro-social behaviours arise from altruistic or egoistic reasons (Grant, 2008). The incorporation of intrinsic motivation into the altruistic/egoistic motivational framework of pro-social behaviour is not arbitrary. The pro-social literature provides adequate theoretical background as well as the empirical findings to propose a relationship between the intrinsic nature of altruistic motivation and the extrinsic nature of egoistic motivation.

Research findings suggest that autonomously regulated behaviours are less cognitively demanding compared to behaviours that result due to controlled regulation (Moller et al, 2006; Muraven, Rosman, & Gagne, 2007). Having a measure of the cognitive demands of pro-social behaviours that arise from different motivations could provide a novel methodological tool in distinguishing between these motivations. The present research will test the hypothesis that people with different levels of pro-social traits (e.g., empathy, social responsibility) engage in helping behaviours for different motivations (i.e., intrinsic or extrinsic) and the resulting process leads to different levels of self-regulation (i.e., autonomous or controlled). The novel approach of the present research will use the concept of *ego-depletion* and its measurement tools in distinguishing between people's motivations for engaging in pro-social behaviours.

*Self-Regulatory Strength Model and Ego Depletion*

The Self-Regulatory Strength model posits that all attempts to regulate or control behaviour require mental efforts and use cognitive energy (Baumeister, 2002; Heatherton & Baumeister, 1996). The model posits that cognitive energy is limited in supply and when these supplies are used to the point that subsequent behaviours are impaired, the organism experiences a state of *cognitive fatigue* or *ego depletion* (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Muraven, Tice, & Baumeister, 1998). Ego depletion is defined as “a temporary reduction in the self’s capacity or willingness to engage in volitional action (including controlling the environment, controlling oneself, making choices, and initiating action), caused by prior exercise of volition” (Baumeister, Bratslavsky, Muraven, & Tice, 1998, p. 1253).

The ability to control or over-ride one’s thoughts, emotions and behaviours in order to attain a desirable outcome is described by the self-regulatory strength model as one of the most important and beneficial processes in the human personality structure (Baumeister, 2002; Baumeister, Gailliot, & DeWall, 2006; Gailliot, et al., 2007; Schmeichel, Baumeister, & Vohs, 2003). The benefits of exercising self-control are displayed in many domains, such as healthier interpersonal relationships (Finkel & Campbell, 2001), more effective coping skills (Gailliot, Schmeichel, & Baumeister, 2006), increased academic ability (Duckworth & Seligman, 2005), reduced aggression and attaining one’s goals in general (Tangney, Baumeister, & Boone, 2004; Vohs & Heatherton, 2000).

The proposition that behaviours that require self-control deplete cognitive resources has been supported in numerous studies. For example, participants who were instructed to suppress emotional reactions to emotional video-clips performed worse on

cognitive and physical performance tasks compared to participants who were not instructed to suppress their emotional reactions (Baumeister et al., 1998; Muraven et al., 1998). Also, suppressing thoughts (e.g., not to think of a white bear) or resisting the temptation of consuming cookies and candy caused participants to quit sooner on subsequent tasks (Muraven, et al., 1998; Gailliot & Baumeister, 2007), thus indicating that they had fewer cognitive resources to draw upon in order to persist in the task. In another study, Wallace and Baumeister (2002) showed that working on a Stroop task, which also requires self-control, impaired performance on a subsequent figure-tracing task (which required self-control) relative to a comparison group.

The self-regulatory strength model has been used to distinguish between intrinsic and extrinsic motivations as described by self-determination theory. Because intrinsically motivated behaviours are performed out of pure enjoyment and inherent satisfaction rather than for external pressures or rewards, such behaviours have been found not to rely much on self-regulatory resources (Moller, Deci & Ryan, 2006; Ryan & Connell, 1989). The explanation offered by the Self-Determination Theory has to do with the fact that intrinsically motivated behaviours are accompanied by feelings of autonomy and competence, which in turn have been found to energize behaviour instead of depleting inner resources (Deci, Eghrari, Patrick, & Leone, 1994; Zuckerman, Porac, Lathin, Smith & Deci, 1978). Extrinsically motivated behaviours, on the other hand, are performed to satisfy an external demand or obtain externally imposed rewards contingent on the behaviour, which would require the individual to conform their behaviour to externally imposed demands. As a result, extrinsically motivated

behaviours require self-control and would be subject to the depletion caused by controlled regulation (Baumeister, Bratslavsky, Muraven, & Tice, 1998).

These predictions have been supported by a study by Muraven, Rosmann and Gagne (2007) which showed different depletion rates between people undergoing autonomous regulation compared to those undergoing controlled regulation. Specifically, participants were given monetary rewards contingent on their performance on emotional self-regulation while watching a video-clip, and were found to be more ego-depleted compared to participants whose given rewards were not made contingent on their performance, which was suppressing laughter. The findings suggested that making rewards contingent on performance caused more depletion because the rewards caused participants to undergo controlled regulation. On the other hand, participants who were not given performance contingent rewards while watching the video-clip were found to be less ego-depleted, denoting autonomous regulation.

Attempts at identifying the precise nature of this cognitive energy source have pointed to blood glucose as one of the facets of the energy dynamics of self-control (Baumeister, 2002; Gailliot et al., 2007; Muraven et al., 1998). Glucose has been called fuel for the brain, as most brain activities rely on it for energy (Lund-Anderson, 1979; Gailliot et al., 2007; Gailliot & Baumeister, 2007). It has been suggested that nearly all of the brain's activities depend on glucose for their smooth operation and implementation, and some cognitive processes depend on glucose more than others (Gailliot et al., 2007; Inzlicht, McKay, & Aronson, 2006). Specifically, controlled and effortful processes that would require the individual to over-ride their natural tendencies rely more heavily on brain power (i.e., glucose) than processes that are habitual and are

carried out more automatically. Experimental support has shown that cognitively demanding tasks (e.g., Stroop task) lead to a greater state of ego depletion compared to less cognitively demanding tasks (e.g., a simple colour naming task, Benton, Owens, & Parker, 1994).

To summarise, the self-regulatory strength model predicts different levels of cognitive fatigue or ego depletion between autonomous regulation, which arises when behaviour is intrinsically motivated and controlled regulation, which arises when behaviour is extrinsically motivated. The differences in the self-regulatory capacities have been demonstrated with performance measures (e.g., Stroop task) as well as measures of blood glucose. In the present research I will use the tenets of the self-regulatory strength model in distinguishing the motivational aspects of helping behaviour.

### Present Research

In the present research, I proposed that peoples' helping motivations would differ depending on the level of their pro-social personality traits. I tested the hypothesis that people with high levels of pro-social traits (e.g., empathy, social responsibility) would engage in helping behaviours due to intrinsic motivations which would lead them to undergo autonomous self-regulation and experience less cognitive fatigue (or ego-depletion). Experimental evidence suggests that pro-social traits predict helping behaviours across a variety of settings and points in time (Eisenberg & Fabes, 1991; Oliner, & Oliner, 1988; Staub, 1978; Rushton 1981; Penner, Fritzsche, Craiger, & Freifeld, 1995). Similarly, I hypothesized that people with low levels of pro-social

personality traits would engage in helping behaviour due to extrinsic motivations, which would lead them to undergo controlled self-regulation and experience more cognitive fatigue.

Though the respective literatures have explained different helping motivations (e.g., altruistic vs. egoistic), the methodological paths of both literatures have only managed to infer the nature of the motivations from the displayed behaviour or from self-report questionnaires. The present research combined findings from the pro-social literature and Self-Determination Theory in order to explore the possibility that personality traits predispose people to have different motivations (intrinsic or extrinsic) when engaging in helping behaviours. Also, I tested the proposition that these motivations would pose different cognitive demands, as displayed by measures of ego-depletion. This prediction is supported by studies suggesting that intrinsically motivated behaviours are less ego depleting than extrinsically motivated behaviours (Moller, Deci, & Ryan, 2006; Muraven, Rosman, & Gagne, 2007).

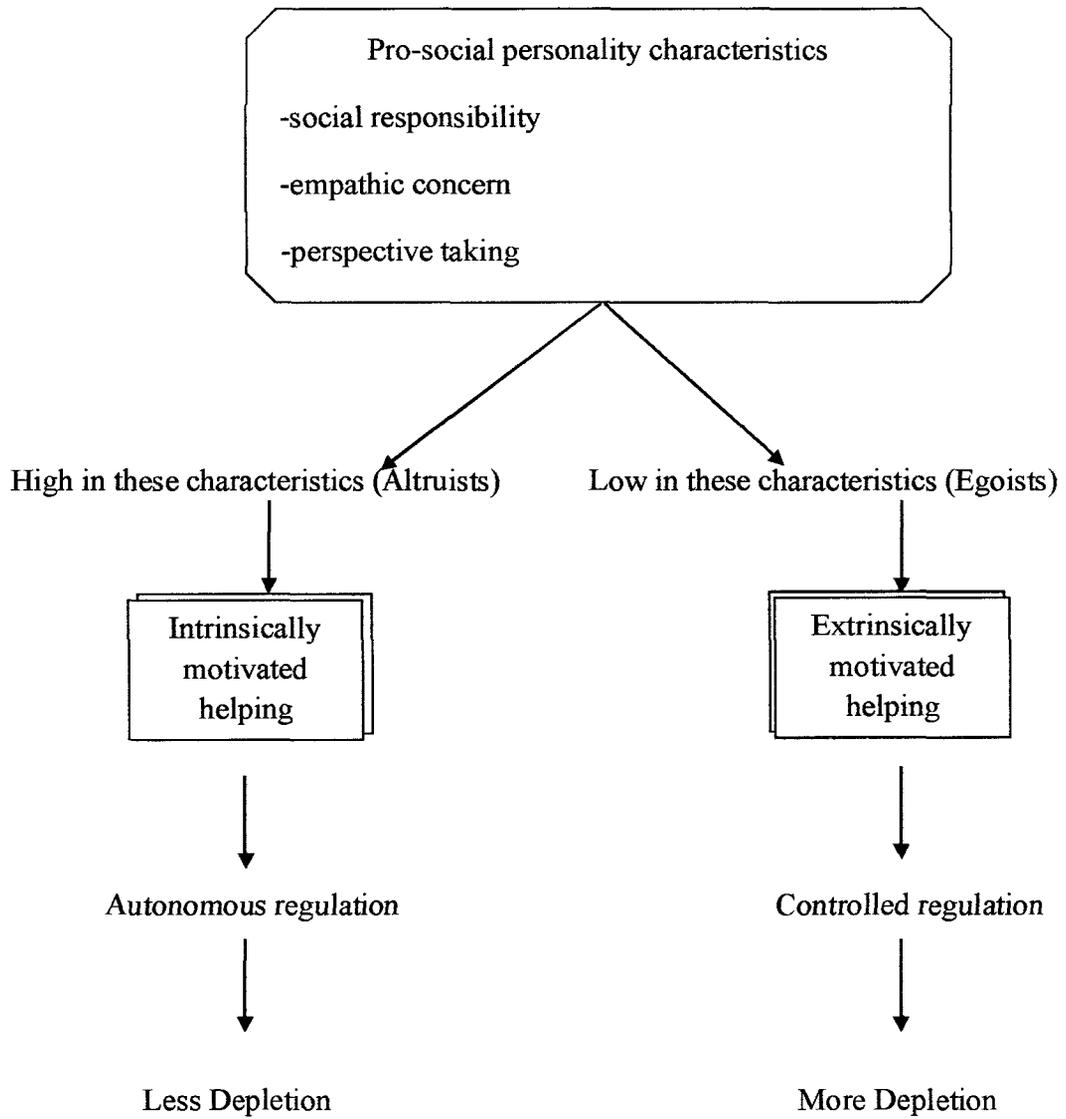
The present study explored the nature of helping motivations based on people's levels of pro-social personality traits. By adopting a trait perspective, the present research sought evidence that people who score high on these personality traits help because they are intrinsically motivated to act on their pro-social beliefs (e.g., moral reasoning, social responsibility) and capacities (e.g., empathic concern). Conversely, I proposed that people low in these pro-social personality traits would help because they are extrinsically motivated to either gain rewards or avoid punishment. Self-Determination Theory and the self-regulatory strength model predict that intrinsic

motivation leads to autonomous regulation and less cognitive fatigue (ego-depletion), and that extrinsic motivation leads to controlled regulation and more cognitive fatigue. I predicted that these differences in regulation would distinguish altruists (people high in pro-social traits) from egoists (people low in pro-social predispositions) because the underlying motivations for helping were hypothesized to be intrinsic and extrinsic respectively.<sup>2</sup> In summary, I proposed that helping behaviour is less ego-depleting for altruists compared to egoists.

The three studies that tested the hypotheses are presented below. In each study, I collected scores on the pro-social personality traits by using the Pro-social Personality Battery (Penner et al., 1995) and each study had a cover story unrelated to the real purposes of the present research in order to reduce demand characteristics. Participants were asked to engage in real helping behaviour (in contrast to indicating their behavioural choice to hypothetical helping scenarios), which was predicted to be less ego-depleting for people with high levels of pro-social traits (altruists) compared to people with low levels of pro-social traits (egoists). Ego depletion levels were assessed with performance measures (i.e., Stroop task), and blood glucose levels, which was assessed in Study 1 before and after the helping behaviour. I distributed questionnaires measuring intrinsic motivation after the helping behaviour occurred because I hypothesized that intrinsic motivation mediated the relationship between those high pro-social traits and ego-depletion. The main hypotheses of the present research are visually presented below.

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<sup>2</sup> The use of the terms “altruists” and “egoists” will describe people with high levels of pro-social traits and low levels of pro-social traits respectively, unless specifically noted otherwise.



## Study 1

The purpose of this study was to examine whether people who differ in pro-social personality traits engage in helping behaviours due to different motivations (intrinsic vs. extrinsic) and as a result experience different ego depletion rates. I hypothesized that helping behaviour that is intrinsically motivated would be less ego-depleting than helping behaviour that is extrinsically motivated, and these differences would vary according to levels of pro-social personality traits. Intrinsically motivated behaviour is less ego-depleting because it is said to be autonomously regulated, whereas extrinsically motivated behaviour is said to be more ego depleting because it is based on controlled regulation (Moller, Deci & Ryan, 2006; Ryan & Deci, 2008). This study measured intrinsic motivation with self-report measures and assessed its ability as a mediator in the relationship between pro-social personality traits and ego depletion. Ego depletion was assessed with physiological measures (glucose) and performance measures (Stroop task).

There was a helping condition and a control condition. The manipulation in the helping condition was expected to lead to a situation where everyone would help, but for different reasons (i.e., altruists were expected to help for intrinsic reasons, whereas egoists would face a situation where it would be difficult to refuse to help and hence help for extrinsic reasons). All participants provided baseline levels of the physiological measure of ego-depletion (i.e., glucose). Those in the helping condition provided another physiological measure of ego-depletion (i.e., glucose) and performance measure (i.e., Stroop task). Participants in the control condition also provided a second measure of ego-depletion (i.e., glucose) as well as completed the same Stroop task. The

procedure in both conditions was similar, with the exception of the helping request, and the same materials were used in both conditions. Hence, the only variable under manipulation was the helping behaviour.

*Hypothesis 1.* I predicted an interaction between pro-social personality traits and condition (help vs. no help) with respect to ego-depletion levels, as measured by glucose and performance measures (i.e., Stroop task). I hypothesized that altruists who helped would experience less ego depletion compared to egoists who helped and no difference compared to altruists in the control condition. I looked for differences in people's glucose levels, and expected to find higher glucose levels for altruists compared to egoists. I made the same prediction regarding the performance measure of ego-depletion (Stroop Task), with altruists either making fewer errors on the Stroop task or being faster at completing the task compared to egoists. I predicted differences in either Stroop errors or Stroop reaction times, considering the finding that improved performance accuracy would come at a cost in reaction times and improved speed comes as a cost in accuracy as more time is devoted to the task (Wickelgren, 1977; MacLeod, 1991).

*Hypothesis 2.* In the helping condition, intrinsic motivation will mediate the above relationship between pro-social traits and ego depletion, measured by glucose levels and performance measures (i.e., Stroop Task).

## Methods

### *Participants*

A total of 100 first year psychology students were recruited from the mass testing participation pool in the beginning of the 2008-2009 academic year. Participants signed up on the SONA system (see Appendix A) and received course credit for their participation. I included in the analyses 84 participants (39 males and 45 females) with ages ranging from 17 to 38, ( $M=19.7$ ,  $SD=3.39$ ). Of those, 35 participants were randomly assigned to the helping condition and 49 participants were randomly assigned to the control condition. In order to minimize glucose fluctuations throughout the day, I only tested participants in the morning hours between 8:30 AM to 12:30 PM and participants were instructed not to consume any food or sugary drinks, except for water, three hours prior to the commencement of the study. Sixteen participants were excluded from the final analyses due to incomplete responding on the mass testing questionnaire ( $n=4$ ), refusal to help ( $n=3$ ), figuring out the real purpose of the study ( $n=6$ ), or failure to follow instructions ( $n=3$ ) (e.g., consuming food and/or sugary drinks prior to the experiment).

### *Materials*

*Demographics.* After signing the consent form (see Appendix B), basic demographic information was collected at the beginning of the experiment. It included items asking about medical history, glucose intolerance and diabetes history. Participants with pre-existing medical conditions that would affect glucose readings were excluded from the analyses and only those participants who did not identify

themselves as suffering from glucose intolerance and diabetes were selected (see Appendix C).

*Pro-social Personality Battery.* The Pro-social Personality Battery (see Appendix D) was developed by Penner, Fritzsche and Craiger (1995), after exhaustive literature searches in identifying all personality scales that were found to correlate with pro-social affect, cognitions and actions (e.g., helping). The Pro-social Personality Battery has been reliably used in past research to identify several related personality measures that predict pro-social actions. It is comprised of seven subscales, including Social Responsibility ( $n=15$  items; e.g., If a good friend of mine wanted to injure an enemy of theirs, it would be my duty to try to stop them), Empathic Concern ( $n=7$  items; e.g., I often have tender, concerned feelings for people less fortunate than me), Perspective Taking ( $n=7$  items; e.g., When I'm upset at someone, I usually try to "put myself in their shoes" for a while), Personal Distress ( $n=5$  items; e.g., Being in a tense emotional situation scares me), Other-Oriented Reasoning ( $n=4$  items; e.g., I choose a course of action that maximizes the help other people receive), Mutual Concerns Moral Reasoning ( $n=4$  items; e.g., I choose a course of action that considers the rights of all people involved) and Self-reported Altruism ( $n=14$  items; e.g., I have donated goods or clothes to a charity).

The items are rated on a 5-point Likert-type scale (1=strongly disagree to 5=strongly agree). The scores on the individual scales are then combined into two factors. The first factor is called *Other-Oriented Empathy* and it has been found to represent pro-social feelings and thoughts. Measures of social responsibility, empathic concern, perspective taking (affective and cognitive empathy), and other-oriented moral

reasoning have been found to load on this factor (Penner & Orom, 2009; Penner, Fritzsche, Craiger, & Freifeld, 1995). The second factor is called *Helpfulness* and is comprised of the measures of personal distress and self-reported altruism. The helpfulness factor describes people's behavioural tendencies, with those scoring high on this factor reporting a history of engaging in helping behaviour and of being unlikely to experience self-oriented discomfort when seeing another person in distress. Measures of past helping behaviour tend to correlate highly with this factor. The structures of these two factors have been repeatedly validated across samples of university students, and community samples, with the correlations between them ranging from .25 to .40 (Penner, Fritzsche, Craiger, & Freifeld, 1995). The alpha coefficients of the scales reported by Penner et al., (1995) have been in excess of .80.

In the present study, I decided to analyse the two pro-social factors separately because they reflect two distinct, yet overlapping dimensions of the pro-social personality (Borman, et al., 2001; Eisenberg et al., 2002; Penner, et al., 1995). Specifically, the other-oriented empathy dimension has been said to capture pro-social thoughts and feelings and the tendency to experience cognitive and affective empathy (Penner et al., 1995). The second factor, helpfulness, is more likely to capture peoples' self-perceptions that they are helpful and competent, a notion that is also influenced by instances of past helping. Both these factors correlate with other indicators of pro-social behaviour, such as agreeableness (Graziano et al, 2007), dispositional empathy (Eisenberg et al., 2002), organizational pro-social behaviours (Borman, et al., 2002) and are considered characteristics of people who routinely engage in pro-social behaviour.

These factors correlate with other traits that describe individuals who have been identified as life-long altruists (Colbly & Damon, 1992), and Oliner's descriptions of individuals who rescued Jews during the holocaust (Oliner & Oliner, 1988). Considering the evidence for the associations of these clusters of pro-social personality and a wide array of pro-social behaviours, it was important to explore the predictive ability of each of the two pro-social factors in a helping behaviour that would occur in the laboratory. That is, I wanted to explore whether both pro-social traits and cognitions (Factor 1) and past helpfulness (Factor 2) would lead to differences in self-regulation levels across conditions.

*Intrinsic Motivation Scale.* The Intrinsic Motivation Inventory (see Appendix E) measured participants' subjective experiences relative to a target activity in laboratory experiments. This scale has 45 items and has been extensively used in experiments related to intrinsic motivation and self-regulation (Ryan, Koestner & Deci, 1991) and in the present study, a state version of the questionnaire was used to collect the intrinsic motivation scores. For all three studies in the present research, this questionnaire was adapted to capture people's motivations regarding helping behaviour. The inventory has six sub-scales assessing interest/enjoyment (7 items), perceived competence (6 items), effort, value/usefulness (7 items), felt pressure and tension (5 items), perceived choice (7 items) and relatedness (8 items) while performing a given activity.

In the present research, I used the interest/enjoyment, effort/importance, pressure/tension, perceived choice, value/usefulness, and relatedness subscales. Since helping behaviour that is intrinsically motivated is defined as the spontaneous

undertaking of an activity (helping) for its inherent satisfactions in exercising and extending ones' capacities rather than for separate consequences, it was expected that these subscales would reveal information about facets of intrinsic motivation in the context of helping behaviour as a multidimensional construct. However, only the interest/enjoyment subscale of the intrinsic motivation scale is considered to measure intrinsic motivation per se (Ryan, 1982; Ryan, Connell, & Plant, 1990). The other subscales have been found to be positive predictors of the self-report and behavioural measures of intrinsic motivation and are distributed together. For the purposes of the mediation analysis, the subscale of interest/enjoyment will be referred to as the measure of intrinsic motivation unless the other subscales are noted to be included in the analyses. The alpha coefficients for the interest/enjoyment subscale have been recorded to be above .90, and the alphas for the other scales have been recorded to be above .85 (Deci, Vansteekiste, 2003; McAuley, Duncan, & Tammen, 1987). In this study, the alpha coefficients ranged from .74 to .88.

*Social Desirability.* Social desirability was measured with the Balanced Inventory of Desirable Responding (Paulhus, 1991), which comprises of the construct of self-deceptive positivity (the tendency to give self-reports that are honest but positively biased) and impression management (deliberate self-presentation to an audience). The BIDR has 40 items (see Appendix F), which are stated as propositions, and respondents rate their agreement with each item on a 7-point scale. One point is added for each extreme response (6 or 7), thus computing self-deceptive positivity (20 items), and impression management (20 items). These two sub-scales can also be

combined into one overall social desirability score. Overall, this scoring ensures that high scores are attained only by subjects who give exaggeratedly desirable responses.

Past research has shown that social desirability is correlated with measures of self-reported altruism (Hansen, Vandenberg, & Patterson, 1995) as well as people's cognitive and affective empathy, due to the desire to appear morally superior and socially likeable (Archer, 1984; Eisenberg, et al., 1989; Hansen, Vandenberg, & Patterson, 1995). In the present study, I controlled for each social desirability subscale in all analyses.

*Stroop Task.* The performance measurement of ego depletion by the Stroop task, is a common methodological feature in the ego depletion literature (Inzlicht, McKay, & Aronson, 2006; Webb & Sheeran, 2002). The task was presented on a computer screen and participants indicated their choices on a response pad with different coloured keys matching the colours displayed on the screen. The task comprised of words that were displayed in colours that were different from the words that they actually named (incongruent trials) and other words that were displayed in colours that were named in the words (congruent trials). For the incongruent trials, participants had to manage their attentional capacities and/or inhibit their responses (read the word) in order to do something else (name the font color). Before the actual Stroop Task began, participants completed a short trial task in which they had to identify coloured circles on the screen. There were five trials of coloured circles representing the colours in which the subsequent words would appear (i.e., blue, red, green, yellow and purple). The purpose of this task was to identify colour-blind individuals. The second part of the task included the Stroop task, where participants were presented with colour words. In the

congruent trials, both the written word and the colour of the font of the word matched (e.g., the word *blue* written in *blue* font). On the incongruent trials, the colour of the font did not match the colour word written (e.g., the word *blue* was written in *green* font). For each trial, the participant pressed the colour key that matched the colour of the font, rather than the written word. The accuracy of the responses and overall response times was collected. The Stroop task comprised of 325 trials (i.e., 260 incongruent trials and 65 congruent trials). The accuracy of responses was assessed as a percentage of errors relative to the total number of trials, computed separately for congruent and incongruent trials. Furthermore, participants' mean response times were assessed for the trials they correctly identified. This would preclude trials in which participants were very fast, but incorrect. For the analyses, I combined participants' mean reaction times for both congruent and incongruent trials into one variable, which will be referred to as Stroop reaction times throughout the rest of the study. Before computing the variables of interest, I removed participants' responses on trials that were two standard deviations below or above the mean ( $M= 886$  ms,  $SD=373$  ms). This removed about 5 % of all responses on the Stroop task.

*Glucose.* Prior to the start of the study, baseline glucose levels were measured with a glucose meter (i.e., Ascensia Contour). This device extracted a blood sample from a fingertip, which was then analyzed by the glucose meter and provided blood glucose levels. The operation of the apparatus was relatively easy and all precautions were taken during the blood sample extraction to ensure participant's health safety, by using sterilizing pads, disposable lancets, and disposable test strips. This method is commonly used to monitor blood glucose levels in diabetic populations and is virtually

pain-free. This method of assessing ego depletion has been successfully used in previous studies (Gailliot & Baumeister, 2007; Meikle, Riby, & Stollery, 2004).

*Filler questionnaires.* In accordance with the cover story, the Big Five Factor personality questionnaire (John & Srivastava, 1999) was given to participants at the beginning of the experiment. Also, a physical health scale (Godin, 2004) inquired about physiological symptoms and other health related symptoms, an imagination questionnaire, which aided in verification of the cover story and other filler questionnaires that were unrelated to the purpose of the study (see Appendix G for all filler questionnaires).

*Helping task.* Participants completed a questionnaire package, which comprised of filler questionnaires, as part of the helping manipulation. The helping task was timed and capped at 15 minutes.

### *Procedure*

I collected the pro-social personality scores in the mass testing and not in the laboratory in order to make the cover stories more believable and participants less suspicious. Mass testing occurred at the beginning of the 2008-2009 academic year to obtain participants' pro-social scores and contact information. Participants signed up for the study called "Personality and Blood Glucose" through the online participant recruitment system (SONA system), or were contacted by phone or email. All participants were instructed not to consume any food or drinks (except for water) at least 3 hours prior to coming to the laboratory. Each experimental session occurred with one participant at a time and took approximately 45 minutes to complete.

Upon arrival, each participant was given the informed consent form (see Appendix B), and was told that the purpose of the study was to examine the effect of personality in blood glucose levels. After collecting the demographic information, a baseline measure of blood glucose was taken. Participants were randomly assigned to either the experimental or control condition and were given several trait questionnaires that included the Big Five personality inventory, the Social Desirability scale, and the Balanced Physical Health Scale. After the completion of the questionnaires, the experimenter entered the room and in the experimental condition delivered the following helping manipulation: *“You have now completed the first part of the experiment. Before we continue with the second part of the study, I want to extend a request, and you can feel free to refuse...if you want to. There is another experimenter, who is also running studies in this lab, and lately she has had trouble finding participants to complete her study. She has had very few sign ups and as a result, she’s having trouble collecting data for her thesis. So, she has asked me, to ask the participants who come to participate in my study if they would want to help her out by completing some questionnaires, for her study. Now, you would not gain anything from helping her, and you can spend as much time as you want filling her questionnaires. You are not obliged in any way to do this, and it would not make any difference to me if you help her or not, so it’s totally up to you.* At this point, the researcher awaits the participant’s response. If they have more questions regarding the study, the researcher either discloses the title of the “other experimenter’s study” which was “Personality and Imagination”. This title was in accordance to the cover story and the filler questionnaires, one of which was called “The Imagination Questionnaire”. Participants

who chose to help were given a new “fake” consent form about the “Personality and Imagination” study along with another set of filler questionnaires and were instructed to complete as many questionnaires as they wanted. They were told that they could stop at any point, and continue with the second part of the “Personality and Blood Glucose” study. If the participant refused to help, the study was over. It should be noted that only three of 37 participants in the experimental condition refused to help. They were fully debriefed, and were asked not to disclose the purpose or the study manipulation to anyone. Furthermore, due to the deception of the study, all participants were asked for their permission to use their data.

If the participant in the helping condition chose to help, the experimenter entered the room at the 15 minute mark, took the questionnaires of the “Personality and Imagination”, and informed the participant that they would continue on with the Blood Glucose and Personality study. They were informed that the second part of the experiment would begin by taking another blood glucose measurement, followed by a Stroop task. After taking the second glucose measurement, the participant was brought back in the room and started the Stroop task. The instructions for the Stroop task were presented on the screen before the task begun, and also the experimenter reviewed them verbally with the participant. In order to familiarize the participant with the task and also to screen for those participants who were colour-blind, there were 10 test trials prior to the actual task. After ensuring that the participant understood the instructions and demands of the Stroop task, he or she continued with the task after the experimenter left the room. After the completion of the Stroop task, in the helping condition, the experimenter checked for suspicion and partially debriefed the participant by telling

them that part of the study is about helping behaviours. The reason for the partial debriefing was the subsequent distribution of the intrinsic motivation questionnaire which asked participants about their specific helping motivations. Otherwise, it would not have made sense for participants to complete a questionnaire about helping behaviour if the purpose of the study was not previously disclosed. In the control condition, participants did not complete the intrinsic motivation questionnaire because they were not asked to help. After the completion of the study, all participants were fully debriefed (see Appendix H), thanked for their participation and were asked not to discuss the study with anyone. The time required to complete the study was approximately 45 minutes.

In the control condition, there was no helping manipulation, and the questionnaires that were completed as part of the helping behaviour were given to the participants as being part of the study. The questionnaire package took approximately 15 minutes to complete. After 15 minutes had passed, and if the participant was still completing the questionnaires, the experimenter interrupted the participant and continued with the rest of the experiment.

## Results

### *Preliminary analyses*

Reliability analyses were conducted on the pro-social personality battery, the intrinsic motivation scale and the social desirability scale. The alpha coefficients reveal moderate to high internal consistency of the sub-scales and the means and standard deviations are comparable with values reported by past studies (see Table 1).

*Table 1.* Reliability Analyses for Pro-social Scales, Intrinsic Motivation Scale, and Social Desirability.

Scales	Mean	S.D.	$\alpha$
<b>Pro-social Personality Battery</b>			
Social Responsibility	3.37	0.47	0.76
Empathic Concern	3.70	0.49	0.72
Perspective Taking	3.60	0.54	0.68
Other-Oriented Moral Reasoning	3.70	0.58	0.80
Mutual Concerns Moral Reasoning	3.80	0.54	0.64
Factor 1 (Other-Oriented Empathy) Total	3.56	0.36	0.85
<b>Personal Distress</b>			
Personal Distress	3.41	0.63	0.74
Self-Reported Altruism	3.53	0.57	0.81
Factor 2 (Helpfulness) Total	3.50	0.49	0.79
<b>Intrinsic Motivation</b>			
Interest/Enjoyment	5.06	1.05	0.88
Perceived Competence	5.07	0.92	0.83
Perceived Tension	1.98	0.72	0.59
Effort/Importance	4.63	0.72	0.75
Perceived Choice	6.36	0.61	0.78
Value/Usefulness	5.25	0.80	0.77
Relatedness	4.56	0.83	0.76
<b>Social Desirability</b>			
Self-deceptive positivity	5.69	3.20	0.67
Impression management	5.75	3.18	0.68
Total	11.45	5.35	0.76

#### *Pro-social Personality Battery*

The psychometric properties of the Pro-social Personality Battery reported by Penner et al., (1995) are comparable with the reliability statistics and inter-correlations of other-oriented empathy ( $\alpha=.85$ ) and helpfulness ( $\alpha=.79$ ) in the present study. The correlation between the two pro-social factors was positive and significant,  $r=.31$  at the  $p=.001$  level. The correlations of the subscales of each of the factors were significant

and the pattern of correlations is consistent with a two-factor model (see Appendix I). In order to examine the inter-relations between the personality measures, I computed correlations between each pro-social factor, and the social desirability subscales (see Table 2). The correlations of the two pro-social factors with the social desirability subscales are consistent with the scale validation correlations reported by Penner et al., (1995). That is, the other-oriented empathy factor is positively correlated with both subscales of the social desirability, whereas the helpfulness factor is only correlated with the self-deceptive positivity subscale (see Table 2).

*Table 2. Correlations between Pro-social Personality Traits and Social*

*Desirability Scales*

	Self-deceptive Positivity	Impression Management	Social Desirability Total
1. Social Responsibility	0.40**	0.41**	0.48**
2. Empathic Concern	0.10	0.20	0.13
3. Perspective Taking	0.20	0.15	0.21
4. Other-Oriented M. R.	0.10	0.22*	0.19
5. Mutual Concerns M. R.	0.10	0.16	0.16
6. Factor 1 Total	0.33**	0.38**	0.42**
7. Personal Distress	0.32**	0.02	0.21
8. Self-Reported Altruism	0.09	-0.15	-0.03
9. Factor 2 Total	0.23*	-0.12	0.07

\*\* $p < .01$  (two-tailed), \* $p < .05$  (two-tailed)

I conducted correlations between the pro-social personality sub-scales and the intrinsic motivation subscales. The correlations between the pro-social personality subscales and the intrinsic motivation subscales<sup>3</sup> do not reveal any significant

<sup>3</sup> In the correlations of the intrinsic motivation sub-scales, the correlations represent people in the helping condition where  $N=32$ , which could be the reason why some of the correlations did not reach significance.

relationship between the interest/enjoyment subscale and the pro-social subscales (see Table 3). Although the correlations did not reach significance, possibly because of the small sample size of the experimental condition, the size of the correlations and their trend deserves attention. Specifically, while most of the correlations of the subscales of Factor 1 and enjoyment are positive and moderate in strength, the opposite pattern is revealed with the Factor 2 subscales. Surprisingly, those who had high scores on the reversed personal distress scale (i.e., altruists) reported finding the helping task less enjoyable, less useful and reported feeling less related to the person who asked for help. The other significant correlations reveal that people in the helping condition who scored high on social responsibility experienced less tension while helping and reported making the choice to help on their own volition (see Table 3).

Table 3. Correlations between Pro-Social Personality Traits and Intrinsic Motivation<sup>4</sup>

	ENJ	COMP	TENS	IMP	CHOI	USE	REL
Social Responsibility	0.11	0.32	-0.60**	0.04	0.39*	0.04	-0.02
Empathic Concern	-0.09	-0.08	-0.29	-0.01	0.23	-0.01	0.01
Perspective Taking	0.26	0.28	0.11	0.16	-0.23	-0.19	0.13
Other-Oriented M. R.	0.21	0.16	-0.07	-0.02	0.18	0.19	0.08
Mutual Concerns M. R.	0.30	0.35	-0.06	0.25	0.23	0.06	0.13
Factor 1 Total	0.26	0.20	-0.48**	0.10	0.35	0.04	0.06
<sup>5</sup> Rev Personal Distress	-0.28	0.09	0.04	-0.41*	-0.12	-0.37*	-0.49**
Self-Reported Altruism	-0.02	-0.14	-0.02	-0.03	-0.10	-0.07	-0.02
Factor 2 Total	-0.11	-0.16	-0.03	-0.16	-0.08	-0.19	-0.18

\*\* $p < .01$ (two-tailed), \* $p < .05$  (two-tailed)

NOTE: These are the intrinsic motivation subscales: ENJ=Interest/Enjoyment, COMP=Perceived Competence, TENS=Perceived Tension, IMP=Effort/Importance, CHOI=Perceived Choice, USE=Value/Usefulness, REL=Relatedness

The hypotheses were tested with a series of regression analyses. The dependent variables of each regression differed because they measured different aspects of depletion (i.e., glucose, Stroop task), but the general strategy of each regression analysis was the same. Specifically, the variables in each regression analysis, including the interaction terms, represent centred variables (subtracting the mean from each score) in order to reduce multicollinearity. Also, the interaction terms of each regression were computed by separately multiplying the predictor of interest (e.g., other oriented empathy) with the condition variable (coded as control condition=0 and experimental

<sup>4</sup> For correlations between intrinsic motivation and social desirability, see Appendix I.

<sup>5</sup> As proposed by Penner et al., (1995), the Personal Distress Subscale is reversed scored, so that high scores on personal distress would denote altruists.

condition=1). I conducted separate regression analyses for each of the two pro-social factors and I controlled for the effects of the social desirability subscales in all analyses.

### *Glucose*

Participants in the helping condition provided a baseline glucose level, were asked to help and following the helping behaviour, their glucose levels were assessed again. I proposed that glucose levels would differ based on personality, such that after helping, altruists would have higher glucose levels compared to egoists. Glucose fluctuations were assessed by subtracting the second glucose measurement from the baseline glucose level. I conducted two multiple regressions, each having one of the pro-social factors as predictors, along with condition, and the social desirability subscales. In each of the regressions, I predicted a significant interaction between pro-social personality traits and condition on glucose level change.

First I assessed other-oriented empathy as a predictor in the model where glucose level change was the outcome variable. The multiple regression analysis was not significant,  $F(4, 78) = 1.26, p = .28, R^2 = .07$ . Also, neither the main effect of other-oriented empathy, nor the interaction was significant (see Table 4).

Table 4 Glucose Level Change by Other-Oriented Empathy

Step 1	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	0.02	0.11		0.98
Condition	0.07	0.09	0.09	0.41
Self-deceptive Enhancement	0.01	0.01	0.11	0.36
Impression Management	-0.03	0.01	-0.27	0.03
Other-oriented empathy	-0.02	0.14	-0.02	0.84
<i>F</i> = 1.49, <i>p</i> = .21, <i>R</i> <sup>2</sup> = .07				
Step 2	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	0.01	0.12		0.94
Condition	0.07	0.09	0.09	0.41
Self-deceptive Enhancement	0.13	0.01	0.10	0.42
Impression Management <sup>6</sup>	-0.03	0.01	-0.27	0.03
Other-oriented Empathy	0.04	0.17	0.03	0.82
Other-oriented Empathy by Condition	-0.16	0.27	-0.09	0.53
<i>F</i> =1.26, <i>p</i> = .28 <i>R</i> <sup>2</sup> = .07				

<sup>6</sup> I looked at Impression Management and glucose change by condition, and found that in the experimental condition, the baseline glucose levels were significantly correlated with the IM scale. No other correlations were detected. The significant effect of Impression Management comes as a result of the correlation of Impression Management and baseline glucose rather than glucose change per se.

A second regression assessed the helpfulness factor as a predictor and glucose level change as the outcome variable. The regression analysis was not significant  $F(4, 78) = 1.28, p = .28, R^2 = .07$  (see Table 5). The hypothesis was not confirmed with either pro-social factor, such that pro-social personality traits did not predict ego depletion levels as measured by glucose. There were no demonstrable differences in glucose levels between people high in pro-social traits and people low in pro-social traits across conditions<sup>7</sup>.

Table 5 Glucose Level Change by Helpfulness

Step 1	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	0.01	0.11		0.93
Condition	0.06	0.09	0.08	0.45
Self Deceptive Enhancement	0.01	0.01	0.12	0.32
Impression Management	-0.03	0.01	-0.29	0.02
Helpfulness	-0.04	0.08	-0.05	0.62
$F = 1.55, p = .19, R^2 = .07$				
Step 2	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	0.01	0.11		0.96
Condition	0.07	0.09	0.07	0.43
Self Deceptive Enhancement	0.01	0.01	0.13	0.30
Impression Management <sup>8</sup>	-0.03	0.01	-0.28	0.02
Helpfulness	-0.08	0.12	-0.11	0.48
Helpfulness by Condition	0.09	0.18	0.08	0.61
$F = 1.28, p = .28, R^2 = .07$				

<sup>7</sup> Note: The assumptions of linearity, heteroscedasticity and normality were met for all regression analyses.

<sup>8</sup> This significant effect is due to the correlation of Impression Management and baseline glucose levels in the experimental and not glucose change. No other correlations were detected.

*Stroop Task*

After the second glucose measurement, participants completed a Stroop task, which assessed depletion levels. Participants' performance on the Stroop task was predicted to vary as a result of pro-social traits, such that after helping, those high in pro-social traits would display better performance indicating less depletion, compared to people low in pro-social traits (e.g., fewer errors, faster reaction times, see Table 6).

*Table 6. Stroop Errors and Reaction Times by Condition*

Condition	Stroop Errors	Stroop RTs
Control	$M=1.54, SD=1.77$	$M=807.47, SD=84.52$
Helping	$M=1.16, SD=1.02$	$M=826.04, SD=89.73$
Total	$M=1.35, SD=1.39$	$M=815.26, SD=86.69$

First, I looked at Stroop reaction times as a measure of depletion. I conducted two regression analyses in testing the hypothesis that after engaging in helping behaviour, people high in pro-social traits would be faster on the Stroop task, indicating less depletion, compared to people low in pro-social traits. The ANOVA with other-oriented empathy as the predictor, was significant,  $F(4, 78) = 2.56, p = .03$ , and the R Square change after adding the interaction term, was significant,  $R^2 = .09, p = .01$  (see Table 7). The main effect of other-oriented empathy was marginally significant,  $\beta = -0.31, p = 0.06$ , indicating that participants scoring high on other-oriented empathy, regardless of condition, were faster at the Stroop task. The interaction between other-oriented empathy and condition was significant,  $\beta = .43, p = .01$ , but contrary to my

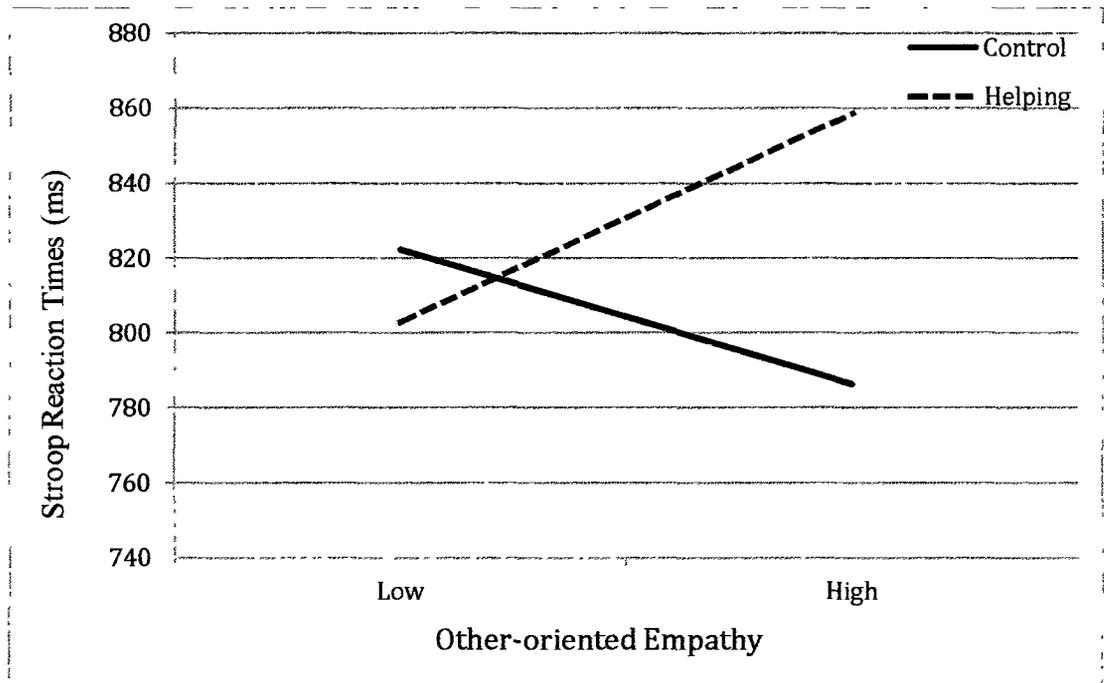
prediction, people who scored high on other-oriented empathy and who engaged in helping behaviour were slower in the Stroop task, compared to those who scored low (see Figure 2). This suggests that those who scored high on other-oriented empathy expended more resources while helping compared to those who scored low.

*Table 7. Regression Analysis of Stroop Reaction Times by Other-Oriented Empathy*

Step 1	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	810.69	26.11		0.00
Condition	26.76	20.80	0.15	0.20
Self Deceptive Enhancement	4.41	3.58	0.16	0.22
Impression Management	-5.82	3.68	-0.21	0.11
Other-oriented Empathy	-1.86	30.70	0.01	0.95
<i>F</i> = 1.05, <i>p</i> =.38, <i>R</i> <sup>2</sup> =.05				
Step 2	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	809.21	24.94		0.00
Condition	32.12	19.94	0.18	0.11
Self Deceptive Enhancement	6.49	3.50	0.23	0.07
Impression Management	-6.96	3.53	-0.25	0.05
Other-oriented Empathy	-73.50	38.55	-0.31	0.06
Other-oriented Empathy by Condition	156.15	54.58	0.43	0.01
<i>F</i> = 2.56, <i>p</i> =.03, <i>R</i> <sup>2</sup> =0.15				

Figure 2. The Interaction of Other-Oriented Empathy by Condition in Stroop

Reaction Times



A second regression analysis examined the helpfulness factor (see Table 8). The model with the interaction term was significant,  $F(5, 74) = 2.74, p = .02$  and  $R^2 = .17, p = .02$ . The results show a marginal main effect of condition on Stroop reaction times. This effect was especially pronounced after adding the interaction term in the model. That is, people who were depleted (helping condition) were slower in completing the Stroop task compared to people who were not depleted (control condition). Also, in the model without the interaction term, helpfulness appears to have a significant effect on Stroop reaction times, with people who scored high on helpfulness being slower in the Stroop task compared to those who scored low, but this effect disappears with the addition of the significant interaction term (see Figure 3). Contrary to my prediction (but similar to the other-oriented empathy results), the interaction suggests that people

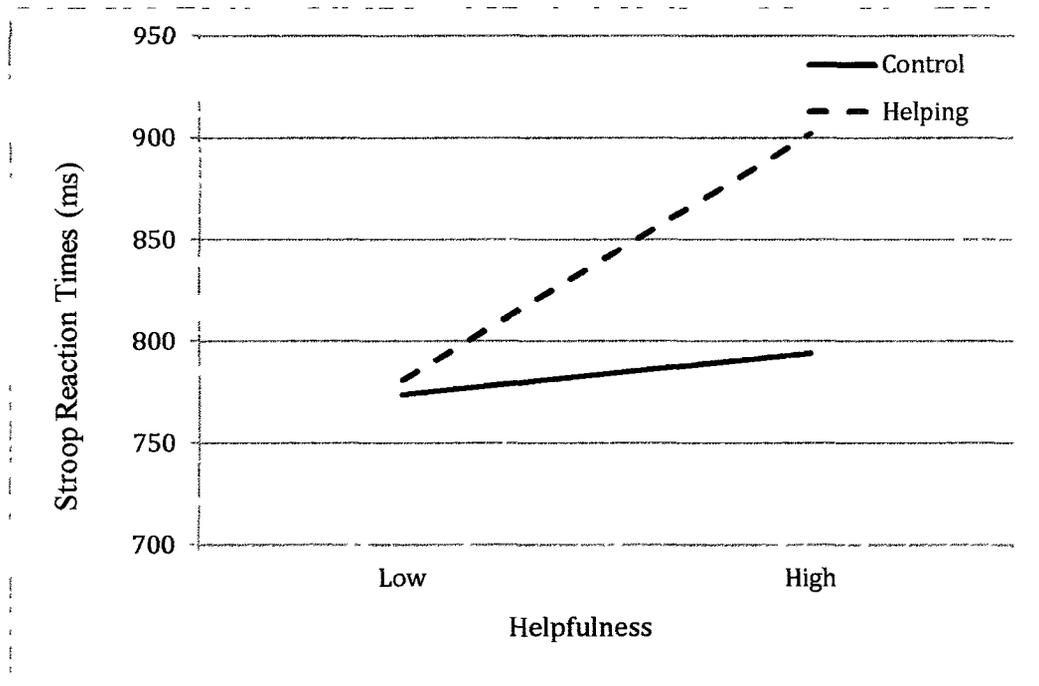
who scored high on the helpfulness factor in the helping condition performed more poorly on the Stroop task compared to people who scored low. Combined, the results of both pro-social factors indicate a depleting effect of helping behaviour on people high in pro-social traits, suggesting that they appear to have expended more resources while helping<sup>9</sup>

Table 8. Regression Analysis of Stroop Reaction Times by Helpfulness

Step 1	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	791.08	23.48		0.00
Condition	35.25	20.01	0.21	0.08
Self Deceptive Enhancement	2.15	3.33	0.08	0.52
Impression Management	-2.08	3.34	-0.08	0.53
Helpfulness	50.14	21.76	0.28	0.02
<i>F</i> = 1.90, <i>p</i> = .12, <i>R</i> <sup>2</sup> = .10				
Step 2	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	777.96	23.40		0.00
Condition	46.51	19.94	0.28	0.02
Self Deceptive Enhancement	4.61	3.39	0.18	0.17
Impression Management	-1.66	3.24	-0.06	0.61
Helpfulness	15.90	25.58	0.09	0.53
Helpfulness by Condition	116.43	49.32	0.37	0.02
<i>F</i> = 2.74, <i>p</i> = .02, <i>R</i> <sup>2</sup> = .17				

<sup>9</sup> I also conducted regression analyses with individual subscales of each of the pro-social factors. The pattern of the result follows the trend found with each of the pro-social factors. Although for most of the subscales, the main effects and the interactions did not reach significance, the signs of the coefficients conform to the coefficient signs of the analyses of the two factors. The low levels of significance of the pro-social subscales might be indicative of the lower reliability of the individual subscales, which also becomes apparent from the low reliability alpha coefficients (see Table 1)

Figure 3. The Interaction of Helpfulness and Condition in Stroop Reaction Times



Second, I looked at Stroop errors as a measure of depletion. The overall model was not significant with neither other-oriented empathy as a predictor,  $F(4, 70) = 1.30$ ,  $p = .27$ ,  $R^2 = .06$ , nor helpfulness,  $F(4, 70) = 1.46$ ,  $p = .22$ ,  $R^2 = .07$ . The hypothesis was not supported, as there was no difference in Stroop errors between people high in helpfulness and people low in helpfulness across the two conditions (see Appendix K for the full regression tables). It should be noted that I expected to find differences in either Stroop reaction times or Stroop errors. Given the pattern of significant findings regarding Stroop reaction times and the very low rate of Stroop errors (see Table 6), the lack of significant findings on Stroop errors is not surprising.

*Intrinsic Motivation as a Mediator*

I predicted a mediating effect of intrinsic motivation in the relationship between pro-social personality traits and ego depletion in the helping condition. Since there were no significant findings regarding glucose levels and Stroop errors, I only tested for mediation in the relationship between pro-social personality traits and Stroop reaction times. I used the bootstrapping analyses as described by Preacher and Hayes (2004) for estimating direct and indirect effects with one or multiple mediators. The small sample size in the helping condition made this an appealing option, in addition to having the possibility of testing multiple mediators<sup>10</sup>

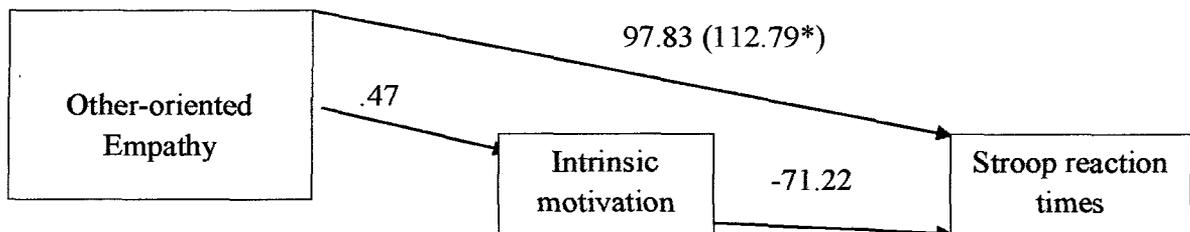
In the first mediation analysis, participants' Stroop reaction times were entered as the dependent variable, other-oriented empathy was entered as the predictor variable, and the intrinsic motivation scale (i.e., interest/enjoyment) was entered as the proposed mediator (see Figure 4). I used the SPSS macro created by Preacher and Hayes (2004) for bootstrap analyses. The bootstrap results indicated that the total effect of other-oriented empathy on participants' Stroop reaction times (c path), was not significant (total effect of "other-oriented empathy=97.83,  $p= .07$ ). Also, the effect of other-oriented empathy on intrinsic motivation (a path), was not significant,  $B= .47, p= .43$ , and the direct effect of intrinsic motivation on Stroop reaction times (b path), was not significant,  $B=-71.22, p= .06$ . Furthermore, the bootstrap analyses revealed that the total indirect effects of other-oriented empathy on Stroop reaction times, through intrinsic motivation as a mediator (c' path), was not significant,  $B=-14.95, SE=43.42$  with a 95

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<sup>10</sup> I examined all subscales of the intrinsic motivation scale as possible mediators to the relationship between pro-social traits and Stroop reaction times and the results were non-significant.

% confidence interval of -100.35 to 61.54. These findings reveal that intrinsic motivation did not have a mediating effect on the relationship between other-oriented empathy and Stroop reaction times.

*Figure 4. Bootstrap Mediation Model for Other-Oriented Empathy, Intrinsic Motivation, and Stroop Reaction Times.*

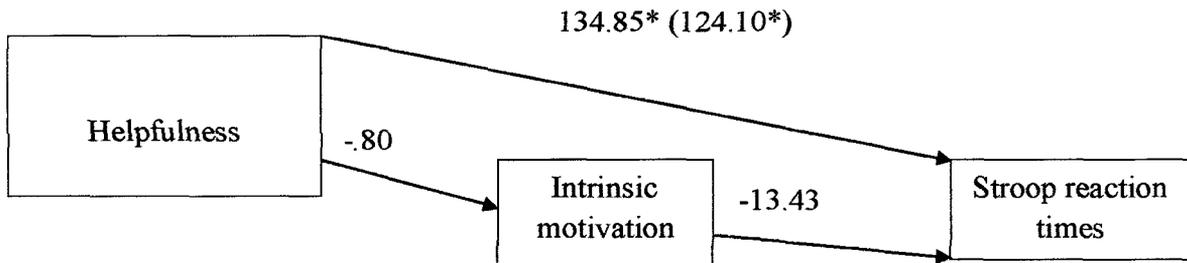


NOTE: Path values represent un-standardized regression coefficients. The value in the parenthesis represents the direct effect, from bootstrapping analyses of other-oriented empathy on Stroop reaction times, after the inclusion of intrinsic motivation. \* $p < .05$

The second bootstrap analysis (see Figure 5) with helpfulness as an independent variable revealed a significant total effect of helpfulness on participants' Stroop reaction times (c path, total effect of helpfulness=134.85,  $p=.01$ ). The effect of helpfulness to the intrinsic motivation (a path), was not significant ( $B=-.80$ ,  $p=.15$ ), the direct effect of intrinsic motivation on the Stroop reaction times (b path), was not significant,  $B=-13.43$ ,  $p=.38$  and the total indirect effects of helpfulness on Stroop reaction times, through intrinsic motivation as a mediator (c' path), was not significant,  $B=10.74$ ,  $SE=17.67$  with a 95 % confidence interval of -8.24 to 80.68. The combined findings of both pro-social factors did not support the hypothesis as intrinsic motivation was not found to

mediate the relationship between pro-social personality traits and ego depletion, as measured by Stroop reaction times<sup>11</sup>

Figure 5. Bootstrap Analyses for Helpfulness, Intrinsic Motivation, and Stroop Reaction Times




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NOTE: Path values represent un-standardized regression coefficients. The value in the parenthesis represents the direct effect, from bootstrapping analyses of helpfulness on Stroop reaction times, after the inclusion of intrinsic motivation. \* $p < .05$ .

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<sup>11</sup> I examined the motivation subscales (e.g., perceived choice, perceived tension, etc) in evaluating potential relationships between them and the pro-social personality subscales. The analyses did not reveal additional insights from these relationships.

## Discussion

The purpose of this study was to test whether people with different levels of pro-social traits would engage in helping behaviour for different motivations (intrinsic vs. extrinsic) indicated by different levels of ego-depletion. I proposed that altruists would be intrinsically motivated to help because of the desire to act on their pro-social traits and as a result experience less depletion compared to egoists. Contrary to the predictions, the findings revealed the opposite pattern when depletion was measured with Stroop reaction times. Altruists were slower at the Stroop task after engaging in helping, compared to egoists. This indicates that helping behaviour was more depleting for altruists compared to egoists. The results were not significant when depletion was measured with glucose levels and Stroop errors. Furthermore, intrinsic motivation was not found to mediate the relationship between pro-social traits and ego depletion, but given the fact that the results were in the direction opposite to the hypothesis, this finding is not surprising.

The unpredictable pattern of results regarding Stroop reaction times makes it challenging to uphold with confidence the predictions of the present research. Assuming that the Stroop task is a valid measure of ego depletion (Benton, Owens, & Parker, 1994; MacLeod, 1991; Wallace & Baumeister, 2002), the findings suggest that perhaps altruists are not intrinsically motivated to help. Moreover, the lack of a mediating effect of intrinsic motivation supports this notion. However, the present study tested one of the facets of the proposed relationship between pro-social traits and helping motivations. Before I delve into the theoretical implications of the present findings, I will evaluate the findings of Study 2. Therefore, I will postpone a detailed discussion of the

unexpected results until after I test the reverse relationships among pro-social personality traits, helping, and depletion in Study 2.

Before discussing the other results of this study, it is important to examine the validity of the pro-social measure. The main question that arises from the examination of the measure is: Are people who score high on the pro-social measure also helpful in real life, or do they just claim to be? The reason I chose the current questionnaire of pro-social traits is past experimental evidence attesting to its ability to capture pro-social thoughts and feelings as well behavioural tendencies across a variety of populations and situations. Recent research on pro-social behaviour (Carlo, Knight, McGinley, Zamboanga & Jarvis, 2010) differentiates between pro-social constructs that are specific to certain types of pro-social behaviours (e.g., helping) and constructs that assess pro-social behaviours more broadly (e.g., volunteerism). Although it has been found that some types of pro-social behaviour are more context-specific than others (e.g., emergency helping, anonymous helping, such as public donations, Batson, 1998; Carlo et al, 1991), most pro-social measures are designed to capture multi-dimensional features of pro-social behaviours rather than specific behaviours such as helping.

The current pro-social measure has been posited to capture more global rather than specific pro-social dispositions, and has been validated across samples of undergraduate students, volunteers and laypeople (Penner, 1995). This particular scale was validated with self-report pro-social acts (Penner & Fritzsche, 1993), real life volunteering (Penner & Finkelstein, 1998; Penner, 2002), and employee behaviour, such as concern for the organization and work persistence, (Rioux & Penner, 2001). For example, the two factors of the pro-social measure have been correlated with

memberships to volunteer organizations as well as with the amount of time a volunteer spends with a person with HIV or AIDS (Omoto & Snyder, 1995; Penner & Fritzsche, 1993; Penner & Finkelstein, 1998). Also, both factors have been related to the willingness to mentor others, both in laboratory and field studies (Allen, 2003). The empathy subscale of the other-oriented factor has been found to be correlated with pledging to help in real life settings (Graziano, et al, 2007) and the self-report altruism scale has been found to correlate to vignette helping (Ruci, 2005) and helping behaviour in organizational settings (Lee & Yun-Lee, 2010).

The literature support on the validity of the scale with a variety of helping behaviours is substantial. However, it is possible that the scale captured people's global *predispositions towards pro-social behaviours in general rather than their willingness to engage in real helping in the laboratory*. There is some evidence pointing to differences between children who help others when they are asked and those who engage in spontaneous helping (Eisenberg, Cameron, Tryon & Dodez, 1981), which suggest that measures examining spontaneous helping could be different from measures assessing other helping behaviours. Furthermore, other researchers (Carlo & Randall, 2002; Carlo et al., 1991) have suggested that global measures of pro-social behaviour, rather than situation-specific, might limit the ability to investigate and address questions about pro-social behaviours and its motivations. This is to say that in the present research, a *helping-specific measure might have captured more helping-specific predispositions but this does not necessarily mean that the current findings would have changed one way or another*. It should also be noted that if the pro-social measure was not adequately assessing pro-social traits, or was measuring constructs that were too general to be used

in the context of helping, the results would more likely be non-significant instead of opposite to the hypothesis. Although the findings regarding blood glucose as a measure of depletion were non-significant, I will offer other plausible explanations, which are more likely to account for them. In conclusion, the present reliability analyses as well as empirical evidence from previous studies offer adequate support for the present pro-social measure to be used in testing my hypotheses in subsequent studies.

Whereas it would be tempting to attribute the non-significant findings regarding blood glucose by questioning the validity of the pro-social measure, upon closer examination, these null results can be better explained by questioning the validity of blood glucose itself as a measure of depletion. Although some studies have reported evidence that blood glucose fluctuates as a result of self-regulation (Benton, Owens, & Parker, 1994; Gailliot, et al., 2007; Inzlicht, McKay, & Aronson, 2006; Lund-Anderson, 1979; Gailliot, & Baumeister, 2007), other studies have failed to find the effect (Allen, Gross, Aloia & Billingsley, 1996; Winder & Borrill, 1998; Green, Elliman & Rogers, 1997; Warburton, Bersellini, & Sweeney, 2001; Scholey & Kennedy, 2004; Cromer, Tamowski, Stein, Harton, & Paul, et al. 1990). In the context of the present study, the null results regarding blood glucose can be interpreted in two ways. First, it is possible that the helping behaviour was not powerful enough to have a physiological effect on people's glucose levels. Past studies that have found evidence for the effects of cognitive demand on glucose levels have used tasks that require intense cognitive processing, such as working memory use (Jonides et al, 1997), vigilance tasks (Benton, 1990), and incongruent Stroop tasks (Benton et al, 1994). In the present study, I proposed that for egoists, the psychological and cognitive demands of helping (e.g.,

cost-benefit analysis) would be powerful enough to cause a level of ego depletion that would have discernible physiological effects in glucose fluctuations. It is possible that, regardless of personality, the psychological and cognitive demands of making the decision and engaging in helping behaviour might not have been demanding enough to cause a change in glucose levels.

Second, the present methodology could not account for and monitor the complexity of the pathways that link self-regulation, cognitive performance, and blood glucose. While the notion that glucose is the brain fuel required for all cognitive processes that rely on the central executive has been experimentally supported by many studies, (for review see Gailliot & Baumeister, 2007; Gailliot, et al., 2006; Fairclough & Huston, 2004; Benton, Parker, & Donohoe, 1996), the mechanisms that make glucose available to the brain are quite complex and hence challenging to monitor. For example, when levels of blood glucose fluctuate, insulin secretion is affected which causes the release of other substances in the bloodstream such as catecholamines, glucagon, growth hormones and glucocorticoids, which then interact to achieve optimal glucose levels (Benton, Parker, & Donohoe, 1996; Donohoe & Benton, 1999). Also, during tasks of mental concentration and cognitive load, the release of adrenaline has been found to result in the breakdown of glycogen stores, which then increases glucose levels in the organism (Donohoe & Benton, 1999; Turner & Carroll, 1985). Since the dynamic relationships between cognitive load, self-regulation, and glucose were beyond the scope of the present research, the present methodology could not monitor and demonstrate subtle changes in glucose fluctuations, which constitute a limitation of the present study regarding glucose levels. Therefore, the null results regarding glucose

could mean that self-regulation has physiological effects on the organism, demonstrated in glucose levels, but more precise methods need to be employed in order to uncover those complex pathways.

I also predicted a mediating effect of intrinsic motivation in the relationship between pro-social traits and ego depletion. Intrinsic motivation was proposed to account for altruists' need to act on their pro-social dispositions when engaging in helping behaviour and as a result, the helping behaviour would not cause ego depletion. The results showed that intrinsic motivation did not mediate the relationship between pro-social traits and ego depletion as measured by Stroop reaction times. Given the pattern of results between pro-social traits and ego depletion, it comes as no surprise that intrinsic motivation was not found to mediate the relationship between pro-social traits and ego depletion. That is, since altruists performed worse on the Stroop task, indicating more depletion, it is unlikely that their helping motivation was intrinsic.

A possible explanation accounting for the null results of the mediation analysis and the unexpected Stroop results implicates the nature of the helping manipulation. That is, in the present study the helping situation might have been perceived as being coerced. While every effort was made for participants not to feel obliged to help, it would be reasonable to deduce that the artificiality of the laboratory setting along with the fact that the experimenter delivered the helping request, albeit on behalf of the "other experimenter", might have made the helping choice feel coerced. Past evidence adds support to this claim as some researchers have reported that children who perform coerced helping enjoy the behaviour less compared to children who engage in spontaneous helping (Eisenberg et al., 1981). The present data indicate inconsistent

patterns between the two pro-social factors and the enjoyment subscale of the intrinsic motivation scale. Although these correlations were not significant, probably due to the lack of power and the small sample size, the pattern of the relationships do not lend support for a definite trend. Furthermore, an inconsistent pattern emerges from the relationships of the perceived choice subscale and the pro-social subscales, where half the correlations were positive and the other half were negative. The inconsistent pattern of relationships of the present data neither negates nor supports the potentially coercive nature of the helping task. Also, the lack of statistical power poses challenges in evaluating the usefulness of these inconsistent correlations. However, even if the data fail to empirically support in either direction the proposed obligatory nature of the helping task, it is still possible that the nature of the task made it difficult for people to experience free will when helping. As a result, the lack of free will, which has been characterized as a precondition of intrinsically motivated behaviour (Moller, Deci, & Ryan, 2006), could compromise people's intrinsic motivation in engaging in helping behaviour.

The unexpected findings of Study 1 regarding pro-social personality traits and Stroop performance as well as the null results concerning intrinsic motivation as a mediator, open the floor for broader re-evaluations of the proposed theoretical synthesizing of the pro-social and self-regulation literatures. An interesting question that arises from the findings of Study 1 is whether the helping behaviour of people with high pro-social is instead a controlled process which consumes inner resources (e.g., creating cognitive fatigue) and if it is, why do altruists continue to help? Before I delve into these questions in more depth, I conducted Study 2, which tested whether pro-

social personality traits can predict helping rates when participants are already depleted. In other words, whereas Study 1 examined whether pro-social personality traits would predict depletion rates following helping behaviour, the purpose of Study 2 was to test the reverse of this relationship.

### Study 2

The purpose of Study 2 was to test whether pro-social personality traits would predict different helping when participants were already depleted. Past studies have shown that acts of self-control (e.g., acts that lead to ego-depletion) reduce helpfulness and other forms of pro-social behaviours (Finkel & Campbell, 2001; Gailliot, Maner, DeWall, & Baumeister, 2005). Given the unexpected findings of Study 1, the goal of Study 2 was to evaluate those findings by looking at the reverse relationship between pro-social personality traits and ego-depletion. However, even though the findings of Study 1 revealed the opposite pattern of results predicted by the hypotheses, those findings alone do not warrant a complete re-conceptualization of the theoretical premises of the present research. Therefore, the hypotheses of Study 2 stem from the original hypotheses of the present research, but concurrently, a major goal of Study 2 is to evaluate the findings of Study 1. That is, in Study 2 I hypothesized that helping rates of altruists would be less affected by a prior state of depletion compared to egoists. The study took place in the laboratory where half of the participants were depleted by completing a Stroop task and the other half were not. Afterwards all participants were asked to help.

*Hypothesis 1.* I predicted an interaction between pro-social personality traits and condition (depletion vs. no depletion) in participants' helping rates. Specifically, I hypothesized that depleted egoists will display lower helping rates compared to depleted altruists.

*Hypothesis 2.* I predicted an interaction between pro-social personality traits and condition (depletion vs. no depletion) in persistence (measured as time spent helping). I hypothesized that depleted egoists will spend less time on the helping task compared to depleted altruists.

## Methods

### *Participants*

A total of 116 first year psychology students were recruited from the mass testing participation pool in the beginning of the 2008-2009 academic year. They signed up for a study called "Colour Perception and Personality" (see Appendix L), and were given course credit for their participation. From those, 90 participants (24 males and 72 females) with ages ranging from 18 to 56, ( $M=21.42$ ,  $SD=6.30$ ) were included in the analyses. Of those, 48 participants were randomly assigned to the depletion condition and 42 participants were randomly assigned to the control condition. Twenty-six participants were excluded from the final analyses due to incomplete responding ( $n=6$ ), computer malfunctioning ( $n=3$ ), failure to follow instructions ( $n=4$ ), figuring out the real purpose of the study ( $n=11$ ), or being colour-blind ( $n=2$ ).

### *Materials*

*Demographics.* Basic demographic information was collected at the beginning of the experiment with the same demographics questionnaire used in Study 1. In accordance with the cover story, it included items asking about medical history, vision problems, etc., (see Appendix C).

*Pro-social Personality Battery.* Pro-social personality traits were collected during mass testing by using the Pro-social Personality Battery with the same procedure as Study 1 (see Appendix D).

*Intrinsic Motivation Scale.* The same state version of the questionnaire which was used in Study 1 was used in this study as well (see Appendix E).

*Social Desirability.* The same questionnaire used in Study 1 was used in this study as well (see Appendix F).

*Stroop Task.* Two different Stroop tasks were used in this study. Participants in the depletion condition completed an incongruent trial Stroop task whereas participants in the control condition completed a congruent trial Stroop task. The Stroop task of the depletion condition had the same format as Study 1, whereas in the control condition, the congruent trial Stroop was not meant to be cognitively depleting since there was no discrepancy between the colour and the word presented on the screen. Similarly to Study 1, the accuracy of the responses and overall response times was collected. In the experimental condition, the Stroop task comprised of a total of 650 trials (i.e., 520

incongruent trials and 130 congruent trials). In the control condition, there were a total of 350 congruent trials<sup>12</sup>

*Helping Task.* Participants were asked by the experimenter to complete a questionnaire package for another experimenter who was having trouble recruiting participants for her study. The script of the helping manipulation was similar to the one used in Study 1 but with some omissions. The script, as described below in the procedure, did not include phrasing “it would not make a difference to me [if you helped]”. For example, while in Study 1 the experimenter said at the end of the request: You are not obliged to do this *in any way*, only if you want to, in Study 2, the experimenter just said: *You are not obliged to do this, only if you want to.* Participants who helped with filling questionnaires for the “other experimenter” were timed. At the end of the questionnaire package, an unsolvable anagram was included. Participants’ persistence rates were hypothesized to indicate their level of depletion. Although they were told to spend as much time as they wanted on the helping task, participants were stopped at 20 minutes.

*Filler Questionnaires.* The same filler questionnaires as Study 1 were used in this study as well (see Appendix G).

### *Procedure*

Participants were selected through mass testing with the same procedure as Study 1. Upon arriving in the laboratory, participants signed the informed consent form

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<sup>12</sup> I conducted a manipulation check between the two conditions by comparing mean reaction times and the t test revealed that participants in the depletion condition had slower mean reaction times compared to those in the control condition,  $t(98)=2.63, p=0.01$ .

(see Appendix M) and were randomly assigned to either the control or the depletion condition. Participants were told that the purpose of the study was to assess the effect of personality on colour perception and they would have to complete personality questionnaires and a computer task. After reading and signing the consent form, they were given the demographics questionnaire, followed by the filler questionnaires measuring personality and physical symptoms. Afterwards, participants in the experimental condition completed the incongruent-trials Stroop task, which was predicted to deplete them, whereas in the control condition, participants completed the congruent-trials Stroop task.

Upon completion of the Stroop Task, all participants were asked to help. The experimenter entered the room and similarly to Study 1, said the following: *“You have now completed the first part of the experiment. Before we continue with the second part of the study, I want to extend a request, and you can feel free to refuse. There is another experimenter, who is also running studies in this lab, and lately she has had trouble finding participants to complete her study. She has had very few sign ups and as a result, she’s having trouble collecting data for her thesis. So, she has asked me, to ask the participants who come to participate in my study if they would want to help her out and complete some questionnaires, for her study. Now, you would not gain anything from helping her, and you can spend as much time as you want filling her questionnaires. You are not obliged to do this, only if you want to.* At this point, the researcher awaits the participant’s response. If they have more questions regarding the study, the researcher either discloses the title of the “other experimenter’s study” which was “Personality and Imagination”. The same cover story was used in Study 1.

Participants who chose to help were given a new “fake” consent form about the “Personality and Imagination” study along with the questionnaire package and were instructed to complete as many questionnaires as they wanted. The experimenter then left the room while participants started the helping task. Participants were instructed to complete as many questionnaires as they could and spend as much time as they wanted on the helping task, but were interrupted at the 20 minute mark. The helping task questionnaires were designed so that at the end of the questionnaire package, participants would spend time solving an unsolvable anagram that was designed to measure persistence. After participants made the decision to help and completed the questionnaires, the experimenter checked for suspicion before partially debriefing participants and administering the intrinsic questionnaire. The participants who were suspicious that the helping behaviour was not really for another experimenter but it was part of the study, and shared specific details about the hypotheses of the experiment, were marked as “suspicious” on the study log sheet and were afterwards removed from the analyses. After checking for suspicion, the experimenter partially debriefed participants by telling them that the study was also about helping behaviours. This partial debriefing was necessary for them to complete the intrinsic motivation questionnaire, which specifically asked about their specific motivations for helping. Without this partial debriefing, I would not be able to collect participants’ helping motivations. Participants in the control condition were given the same helping request after completing the congruent-trial Stroop task. Those participants that did not help in either condition did not continue the study. All participants were asked about general

impressions of the study, were debriefed (see Appendix N) were asked not to discuss the task with anyone, were thanked, and dismissed.

## Results

### *Preliminary analyses*

The reliability analyses and the inter-correlations that were conducted on the pro-social personality battery and the social desirability scale had similar values to the analyses performed in Study 1 (see Appendix O). I also conducted correlations between the intrinsic motivation scale and pro-social traits by condition (see Appendix P). In the control condition, people who had scored high on social responsibility and empathic concern reported greater enjoyment after helping. Also, high social responsibility correlated negatively with perceived tension, and those who scored low on personal distress reported more choice when helping. In the depletion condition, high social desirability was negatively correlated with tension and positively correlated with perceived choice. With the exception of the subscale of mutual concerns moral reasoning, the rest of the correlations reveal an inconsistent pattern of positive and negative relationships, which did not reach significance due to the low power (see Appendix P).

### *Helping Rates*

The purpose of this study was to examine the combined effect of depletion and pro-social personality traits on people's helping rates. The first hypothesis predicted that altruists would display higher helping rates in the depletion condition compared to

egoists. Similarly to Study 1, I analysed other-oriented empathy and helpfulness separately and controlled for the social desirability subscales in all analyses.

*Table 9. Helping Rates by Condition*

	Condition		
	Control	Depletion	Total
<b>Helping Rates</b>			
Yes	37 (90.2 %)	30 (62.5%)	67 (74.4%)
No	5 (9.8 %)	18 (37.5%)	23 (25.5%)
<b>Total</b>	<b>42 (100%)</b>	<b>48 (100%)</b>	<b>90 (100%)</b>

In the depletion condition, 37.5 % of participants refused to help compared to 9.8 % of participants in the control condition. I performed two logistic regression analyses (each with other-oriented empathy and helpfulness as predictors) to assess the probability that a participant would help, depending on their pro-social personality traits and condition (coded as control=0, depletion=1).

#### *Other-oriented Empathy*

The logistic regression was statistically significant,  $\chi^2(3, N=90) = 10.75, p = .01$ . The model was able to correctly classify 97 % of those who helped and 13 % of those who did not, with an overall success rate of 75.6 %. Employing a .05 criterion of statistical significance, the main effect of condition was significant, indicating that participants in the control condition were more likely to help compared to participants

in the depletion condition. Also, the main effect of other-oriented empathy was marginally significant ( $p=.07$ ), suggesting that altruists in general were more likely to help compared to egoists. The interaction between other-oriented empathy and condition was also significant ( $p=.04$ ) (see Table 10). The negative sign of the interaction of other-oriented empathy by condition was further explored with a visual representation in Table 11. As displayed in Table 11, there were no helping differences between altruists and egoists in the depletion condition. In the control condition however, people who helped scored higher on other-oriented empathy compared to people who did not help.

*Table 10.* Logistic Regression Predicting Helping Rates from Condition, Social Desirability, Other-oriented Empathy, and the Interaction of Other-Oriented Empathy by Condition.

Step 1	B (SE)	Wald $\chi^2$	p-value	95 % CI for Odds Ratio		
				Lower	Odds Ratio	Upper
Constant	1.37 (.81)	2.94	0.08		3.96	
Condition	-1.60 (.58)	7.50	0.01	0.06	0.21	0.63
Self Deceptive Enhancement	0.02 (.08)	0.08	0.76	0.87	1.02	1.19
Impression Management	0.09 (.09)	1.00	0.31	0.91	1.09	1.31
Other-oriented Empathy	0.54 (.95)	0.32	0.57	0.26	1.72	11.23
Step 2	B (SE)	Wald $\chi^2$	p-value	Lower	Odds Ratio	Upper
Constant	1.62 (.93)	3.03	0.08		5.06	
Condition	-2.22 (.78)	8.04	0.005	0.02	0.10	0.50
Self Deceptive Enhancement	0.05 (.08)	0.41	0.51	0.90	1.05	1.23
Impression Management	0.11 (.09)	1.43	0.23	0.92	1.12	1.35
Other-oriented Empathy	3.10 (1.73)	3.21	0.07	0.74	22.32	665.04
Other-oriented Empathy by Condition	-4.07 (2.08)	3.83	0.04	0.01	0.02	1.00

*Table 11. Other-Oriented Empathy Scores as a Function of Helping Rates across Conditions*

	Condition	
	Control	Depletion
Help	$M= 3.64, SD= 0.33, (n=37)$	$M= 3.61, SD=0.26, (n=30)$
No Help	$M= 3.27, SD=0.38, (n=5)$	$M= 3.62, SD=0.33, (n=18)$

### *Helpfulness*

I conducted a second logistic regression with helpfulness and the interaction of helpfulness with condition as predictor variables in the model. The test for the full logistic regression model was statistically significant,  $\chi^2 (3, N= 90) = 11.37, p = .01$ . The model was able to correctly classify 95.5 % of those who helped and 8.7 % of those who did not, with an overall success rate of 73.3 %. Results show a main effect of condition (see Table 12), with participants in the control condition being more likely to help compared to participants in the depletion condition. Also, the main effect of helpfulness was significant, indicating that altruists were more likely to help compared to egoists. Also, the interaction between helpfulness and condition was significant. The negative unstandardized coefficient of the interaction was further explored by a visual representation of the findings (see Table 13), which shows that when both altruists and egoists underwent depletion, there were no differences in their helping rates. However, in the control condition, altruists were more likely to help compared to egoists. The same trend became evident with both pro-social factors, which reveals a partial support

for the hypothesis. In the depletion condition, there was no difference in helping rates of altruists and egoists. However, altruists were more likely to help compared to egoists, but only if they were not previously depleted. It should be noted that the uneven sample sizes of helpers and non-helpers in each condition warrant cautious interpretation of these findings.

*Table 12. Logistic Regression Predicting Helping Rates from Condition, Social Desirability, Helpfulness, and the Interaction of Helpfulness by Condition.*

Step 1	B (SE)	Wald $\chi^2$	p-value	95 % CI for Odds Ratio		
				Lower	Odds Ratio	Upper
Constant	1.41 (0.76)	3.42	0.06		4.11	
Condition	-1.65 (0.59)	7.76	0.01	0.06	0.19	0.61
Self Deceptive Enhancement	0.01 (0.08)	0.03	0.86	0.86	1.01	1.18
Impression Management	0.11 (0.08)	1.39	0.23	0.94	1.11	1.31
Helpfulness	0.65 (0.63)	1.07	0.30	0.55	1.92	6.64
Step 2	B (SE)	Wald $\chi^2$	p-value	Lower	Odds Ratio	Upper
Condition	-2.94 (1.14)	6.62	0.01	0.01	0.05	0.49
Self Deceptive Enhancement	-0.01 (0.08)	0.01	0.97	0.85	0.99	1.16
Impression Management	0.11 (0.08)	1.59	0.20	0.94	1.11	1.33
Helpfulness	3.85 (1.79)	4.61	0.03	1.40	47.42	1605.53
Helpfulness by Condition	-4.37 (1.95)	5.02	0.02	0.01	0.01	0.57

Table 13. Helpfulness Scores as a Function of Helping Rates across Conditions

	Condition	
	Control	Depletion
Help	$M= 3.48, SD=0.50, (n=37)$	$M= 3.40, SD=0.44, (n=30)$
No Help	$M= 2.81, SD=0.21, (n=5)$	$M= 3.44, SD=0.31, (n=18)$

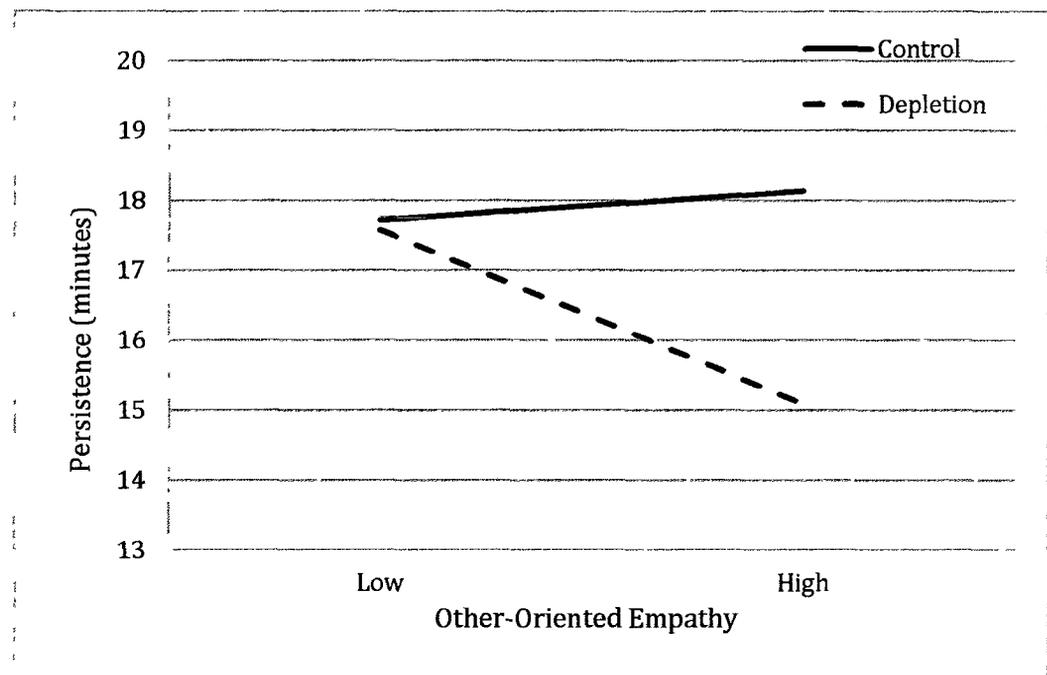
### *Helping Persistence*

Participants' persistence were indicative of their depletion level. I hypothesized that altruists would persist more in the helping task compared to egoists. I conducted two regression analyses in testing each of the pro-social factors. The ANOVA of the other-oriented empathy factor was marginally significant,  $F(5, 60) = 2.23, p = .06$ , and the R Square change after adding the interaction term, was significant,  $R^2 = .15, p = .04$  (see Table 14). Also, the main effect of condition was significant,  $\beta = -.28, p = .02$  which shows that those participants who helped in the depletion condition spent less time helping compared to non-depleted participants in the control condition. This comes as no surprise, considering the fact that people in the depletion condition would have already expended resources after completing the incongruent trials Stroop task. Also, the interaction between other-oriented empathy and condition was significant,  $\beta = -.30, p = .04$ . A visual representation of the interaction shows that contrary to the hypothesis, people who scored high on other-oriented empathy (i.e., altruists) and were in the depletion condition spent less time on the helping task compared to those who scored low (i.e., egoists) (see Figure 6).

Table 14. Regression Analysis of Persistence Rates by Other-oriented Empathy

Step 1	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	18.14	0.96		0.01
Condition	-1.66	0.70	-0.29	0.02
Self Deceptive Enhancement	-0.23	0.11	-0.02	0.83
Impression Management	0.13	0.12	-0.10	0.25
Other-oriented Empathy	-0.96	1.25	-0.10	0.44
<i>F</i> = 1.61, <i>p</i> =.18, <i>R</i> <sup>2</sup> =.09				
Step 2	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	17.92	0.94		0.01
Condition	-1.59	0.66	-0.28	0.02
Self Deceptive Enhancement	-0.01	0.10	-0.02	0.86
Impression Management	0.17	0.11	0.20	0.15
Other-oriented Empathy	0.52	1.41	0.06	0.71
Other-oriented Empathy by Condition	-4.91	2.36	-0.30	0.04
<i>F</i> = 2.23, <i>p</i> =.06, <i>R</i> <sup>2</sup> =.15				

Figure 6. Persistence by Other-oriented Empathy and Condition



A second regression tested the helpfulness dimension (see Table 15). The results showed that the effect of condition was significant,  $\beta = -.31$ ,  $p = .01$ , which confirms the effectiveness of the manipulation by showing that participants in the depletion condition spent less time helping compared to participants in the control condition. Also, the interaction between helpfulness and condition was significant,  $\beta = -.48$ ,  $p = .01$ . I plotted the interaction of helpfulness by condition (see Figure 7) and similarly to the other-oriented empathy finding, people who scored high on helpfulness in the depletion condition spent less time on the helping task compared to those who scored low<sup>13</sup>.

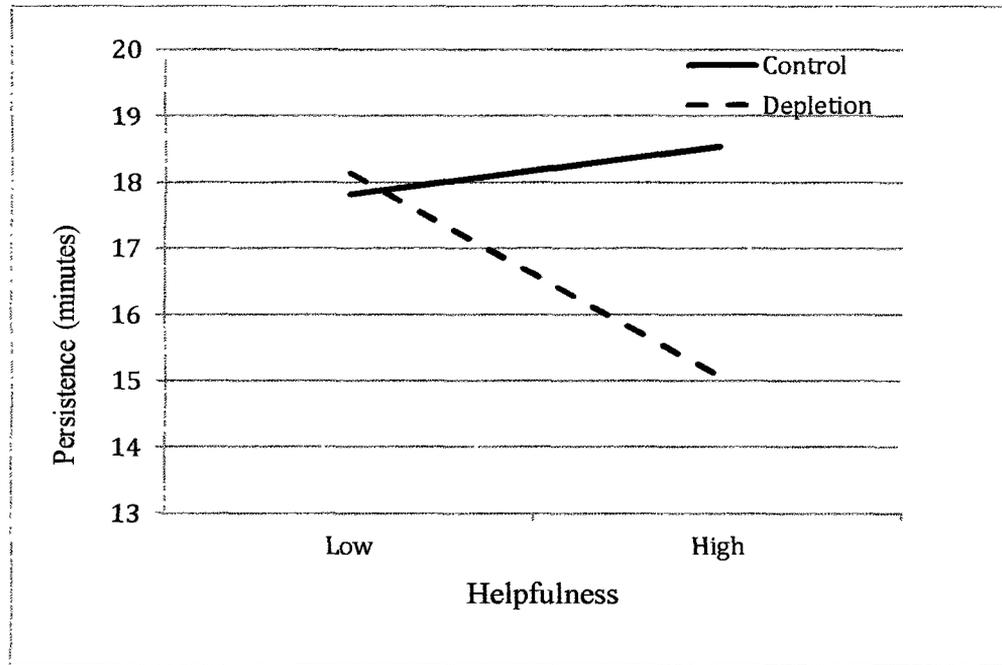
<sup>13</sup> Similarly to Study 1, I conducted regression analyses with the individual subscales of each of the pro-social factors. The pattern of the result follows the trend found with each of the two main factors. The

*Table 15. Regression Analysis of Persistence by Condition, Social Desirability, Helpfulness, and the Interaction of Helpfulness by Condition*

Step 1	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	18.24	0.90		0.01
Condition	-1.68	0.69	-0.29	0.02
Self Deceptive Enhancement	0.01	0.11	0.01	0.99
Impression Management	0.10	0.11	0.12	0.28
Helpfulness	-0.82	0.74	-0.13	0.28
<i>F</i> = 1.78, <i>p</i> =.14, <i>R</i> <sup>2</sup> =.10				
Step 2	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	18.24	0.85		0.01
Condition	-1.74	0.64	-0.31	0.01
Self Deceptive Enhancement	-0.08	0.11	-0.11	0.42
Impression Management	0.18	0.10	-0.11	0.10
Helpfulness	1.16	0.94	0.19	0.22
Helpfulness by Condition	-4.58	1.44	-0.48	0.01
<i>F</i> = 3.64, <i>p</i> =.006, <i>R</i> <sup>2</sup> =.23				

main effects and the interactions did not reach significance. However, the signs of the coefficients conform to the coefficient signs of the analyses of the two factors. The low reliability of the individual subscales as indicated by the low alpha coefficients, might help explain this trend (see Appendix O).

Figure 7. Persistence by Helpfulness and Condition



### Discussion

The purpose of this study was to explore the relationship between pro-social personality traits and helping motivations by manipulating people's ego-depletion levels. Specifically, it tested the hypothesis that pro-social personality traits would predict helping rates when participants were already depleted, such that after undergoing depletion, altruists would be more helpful compared to egoists. I also predicted an interaction between pro-social personality traits and condition (depletion vs. no depletion) in participants' persistence (measured as time spent helping), such that after undergoing depletion, altruists would spend more time on the helping task compared to egoists. The findings showed no differences in helping rates between depleted altruists and depleted egoists. However, altruists were more likely to engage in helping behaviour, but only if they were not previously depleted (i.e., in the control condition), which lends some support for the validity of the pro-social measure. Regarding persistence, the findings revealed that after undergoing depletion, altruists spent less time in the helping task compared to egoists.

The present findings conceptually replicate the findings of Study 1, by revealing that in addition to expending more resources when helping, depleted altruists tend to conserve their resources by investing less in helping behaviour compared to depleted egoists. The different persistence levels of depleted altruists and egoists might underlie different helping processes and/or decision making processes. These findings could be explained if we speculate that altruists' helping decision resulted from a more conscious deliberation process, which might have rendered them in a state of having fewer resources needed to persist longer in the helping task. Depleted egoists on the other

hand, might have engaged in helping behaviour for reasons other than moral commitment and social responsibility, such as appeasing the experimenter, or anticipated praise. As a result, egoists could have persisted more in the helping task because for an egoist, higher persistence in the helping task could be equated with more rewards. Although this explanation is speculative, it does become apparent from both Study 1 and Study 2, that not only does helping behaviour lead to more self-regulation for altruists, but these self-regulatory demands might be high enough for altruists to stop helping after it becomes too tiresome for them.

At first glance, the pattern of results across two studies appear to contradict decades of research findings in the pro-social literature, especially those stemming from the Empathy-Altruism hypothesis (Batson et al., 1997; Batson 1981, 1990; Frey & Meier, 2004; Kruger, 2003). The main premise of this hypothesis states that the helping behaviour of people high in pro-social traits is driven by other-focused motivation with the ultimate goal of benefiting the person in need, without considering potential consequences to oneself (Batson, 1991). In the present studies however, altruists seem to be involved in ego-depleting processes when helping, to the point that they stop helping.

The original formulation of the present research is contradicted by the results of the previous two studies. That is, the findings from Study 1 and Study 2 suggest that helping behaviour is more ego-depleting for altruists than egoists. One potential explanation for this might lie in the nature of the helping motivations (intrinsic vs. extrinsic) proposed by the original research hypotheses. Whereas in the previous studies

helping motivations were inferred and were not under experimental control, I conducted a third study with the purpose of directly examining motivation type.

### Study 3

The purpose of the present study was to directly manipulate the type of motivation that led to the helping behaviour and to examine whether this manipulation would have different effects on recurrent helping rates of altruists versus egoists<sup>14</sup>. While the findings of the previous two studies did not support the proposition that intrinsic motivation explains the helping rates and depletion levels of altruists and egoists, the type of motivation was inferred and not experimentally manipulated. Hence, any conclusions regarding motivational type were treated with caution. Nevertheless, the unexpected findings of the previous two studies suggest that the original formulation of the present research regarding motivation type could have been incorrect. That is, the findings of the previous two studies make it very difficult to deduce that altruists' motivation for engaging in helping behaviour is intrinsic and egoists' motivation is extrinsic. On the contrary, the findings suggest that altruists' motivation for helping might not have been intrinsic after all, which could explain why they appear to have self-regulated more after helping or chose to persist less on the helping task after being depleted. It is possible that, contrary to the original predictions of the present research, the proposed helping motivations (intrinsic or extrinsic) might be reversed for altruists and egoists respectively. Thus, the direct manipulation approach of the present study tests for the possibility that the helping motivations for altruists and egoists might

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<sup>14</sup> The design and hypotheses of Study 3 were proposed to test the original formulations and the proposed framework of the present research. For this reason, Study 3 was conducted concurrently with Study 1 and Study 2.

actually be extrinsic and intrinsic respectively. If I find evidence for a reversal of helping motivation type, the findings could reveal new ways of explaining the pattern of results of the previous two studies. If, on the other hand, I find no differences in recurrent helping rates as a result of the payment manipulation, this could indicate that in the context of helping behaviour, intrinsic motivation might not be involved in the relationship between pro-social personality traits and self-regulation.

In the present study, I attempted to undermine the proposed intrinsic motivations of altruists and strengthen the proposed extrinsic motivations of egoists by offering them a surprise reward after helping. After receiving the reward, participants were asked to help again. There is a substantial body of experimental evidence, which indicates that tangible rewards (e.g., money) tend to undermine people's intrinsic motivations for activities that they freely choose to perform (see Deci, Koestner, & Ryan, 1999 for review). Past research (Fabes, Fultz, Eisenberg, May-Plumlee, & Christopher, 1989) found that rewarding children for helping decreased their subsequent helping behaviour, and Kunda and Schwartz (1983) found that payments decreased undergraduates' helping behaviour by undermining their internalized sense of moral commitment to help.

In the context of helping behaviour, presenting participants with extrinsic incentives (e.g., money) after helping that is performed out of intrinsic motivation (e.g., self-perceived altruism) lowers their ratings on measures of altruism (Batson, Coke, Jasnosi & Hanson, 1978). The underlying explanation was that altruists were less likely to help in the future without similar rewards. That is, the extrinsic rewards might lead the intrinsically motivated helper to attribute the behaviour to the extrinsic reward

and not to the intrinsic motivation (e.g., kindness), and thus undermining the intrinsic motivation for helping. That is, it might temporarily make them feel like egoists.

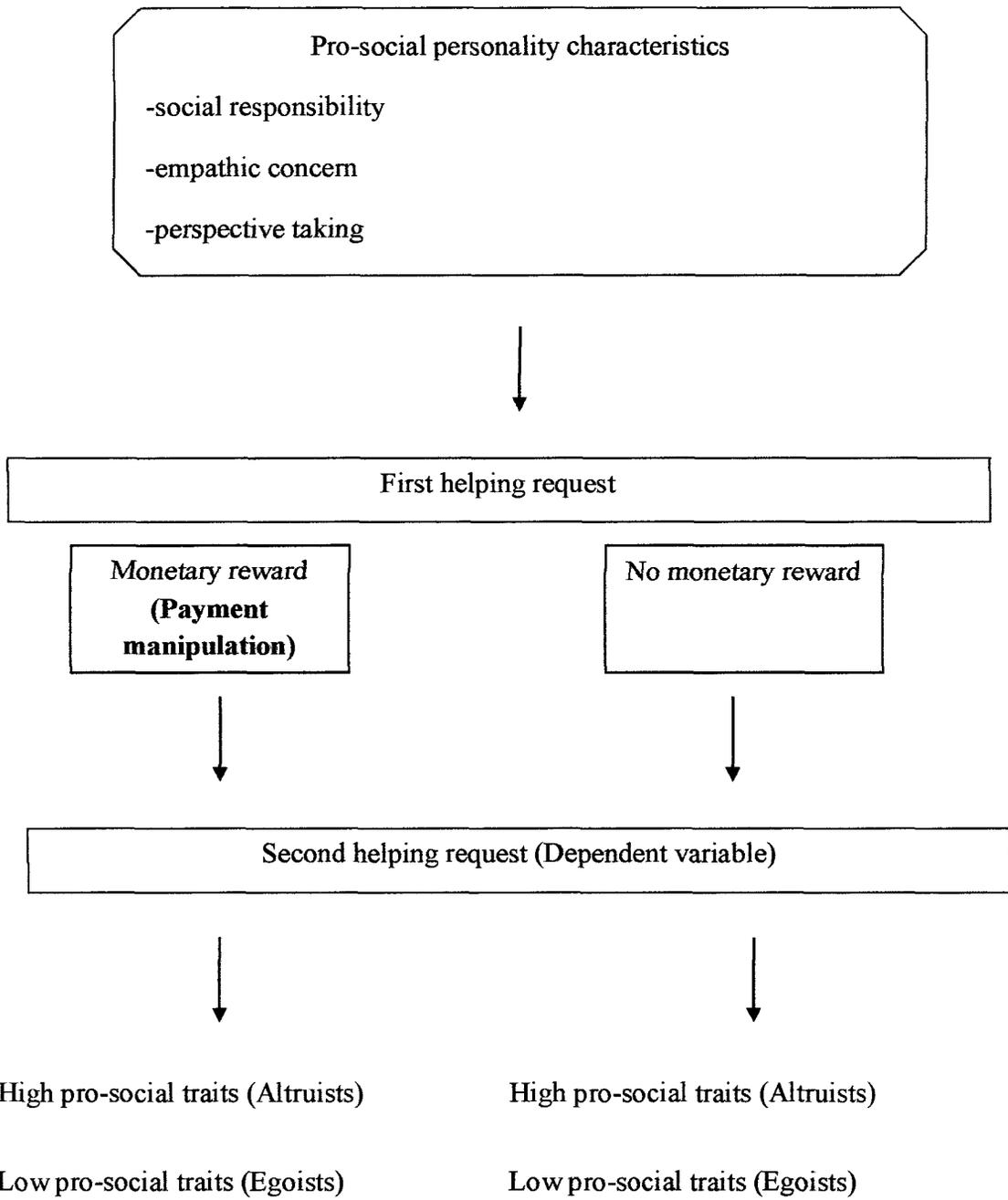
Whereas the previous two studies inferred the presence of the motivations based on the levels of pro-social personality traits (high vs. low), Study 3 used a manipulation that targeted motivation *per se*, and this was predicted to result in different behavioural outcomes based on pro-social personality differences. Ultimately, this study aimed to change people's behaviour by manipulating the motivation that was proposed to give rise to the behaviour.

Participants were asked to help twice. After the first helping behaviour I offered them an unexpected monetary reward, which was assumed to undermine the intrinsic motivation of altruists and strengthen the extrinsic motivation of egoists. Afterwards, I asked participants to help again and measured their recurrent helping rates. I predicted that if altruists helped because of intrinsic motivations and the intrinsic motivation was undermined by external rewards (e.g., money), their recurrent helping rates would drop. Conversely, the monetary reward was predicted to strengthen the extrinsic motivations of egoists and as a result, causing their recurrent helping rates to increase. The conceptual outline of Study 3 follows the main proposition of the present research regarding intrinsic motivation and the helping behaviour of people high in pro-social traits. However, the findings of the previous two studies cast doubts on the appropriateness of such predictions and hence I made them with restrained confidence.

*Hypothesis.* I predicted an interaction between pro-social personality traits and the payment manipulation (undermined vs. non-undermined) in people's recurrent helping rates. I hypothesized that altruists in the payment condition (undermined

intrinsic motivation) would demonstrate lower recurrent helping rates compared to egoists (rewarded extrinsic motivation). Furthermore, I predicted a condition manipulation, with altruists in the control condition (non-undermined) to demonstrate higher levels of recurrent helping rates compared to people with high levels of pro-social traits in the experimental condition. Please refer to Figure 8 for a visual representation of this hypothesis.

Figure 8. Visual Representation of Study 3 hypothesis.



## Methods

### *Participants*

A total of 103 first year psychology students were recruited through the mass testing pool at Carleton University during the 2008-2009 and 2009-2010 school years and they signed up on the Sona system (see Appendix Q). In the first helping task, 12 participants out of 103 refused to help and did not continue the experiment. From those, 91 participants, (30 males and 61 females) with ages ranging from 17 to 44 ( $M=20.6$ ,  $SD=2.04$ ) were included in the analyses. Of those, 49 participants were randomly assigned to the control condition and 42 were randomly assigned to the experimental condition.

### *Materials*

*Demographics.* Basic demographic information was collected prior to the beginning of the experiment with the same demographics questionnaire used in Studies 1 & 2 (see Appendix C)

*Pro-social Personality Battery.* Pro-social personality traits were collected in the mass testing during the 2008-2009 and 2009-2010 academic years, by using the Pro-social Personality Battery (see Appendix D) same as Studies 1 and 2.

*Intrinsic Motivation Scale.* The Intrinsic Motivation Inventory was used to measure participants' subjective experiences relative to a target activity in laboratory experiments same as Studies 1 and 2 (see Appendix E).

*Helping Task.* The first helping manipulation was similar to the previous two studies. Participants were asked to help another researcher by spending approximately 20 minutes completing filler questionnaires same as in Studies 1 and 2 (see Appendix G). The second helping request involved completing questionnaires for the same researcher.

*Social Desirability.* Social desirability was measured with the Balanced Inventory of Desirable Responding (Paulhus, 1991), as was the same as the previous two studies (see Appendix F).

*Filler questionnaires.* The same filler questionnaires that were used in the previous two studies were used in this study as well (see Appendix G).

### *Procedure*

Students from introductory psychology courses who had completed mass testing either signed up for the study by using the Sona system, or were contacted by phone to participate in a study about *Personality and Blood Pressure* (see Appendix Q). The title of the study provided the cover story in order to reduce any suspicion about the real purpose of the experiment. Upon arriving at the laboratory, participants were given the informed consent form and were informed about the demands of the experiment, which also involved blood pressure ratings. In reality, the use of the device was part of the cover story and did not provide any data for analysis. After completing the demographics questionnaire, a blood pressure rating was taken, followed by the physical symptoms filler questionnaire and the social desirability questionnaire.

Afterwards, the experimenter delivered the first helping request, which was intended to result in maximum helping rates from all participants: *“You have now completed the first part of the experiment. Before we continue with the second part of the study, I want to extend a request, and you can feel free to refuse...if you want to. There is another experimenter, who is also running studies in this lab, and lately she has had trouble finding participants to complete her study. She has had very few sign ups and as a result, she’s having trouble collecting data for her thesis. So, she has asked me, to ask the participants who come to participate in my study if they would want to help her out and complete some questionnaires, for her study. If you choose to help her, you can spend as much time as you want filling her questionnaires. You are not obliged in any way to do this, only if you want to, so the decision is totally up to you.* At this point, the researcher awaits the participant’s response. If they had more questions regarding the study, the researcher disclosed the title of the “other experimenter’s study” which was “Personality and Imagination” similar to Study 1 and Study 2. Participants who chose to help were given a new “fake” consent form (see Appendix S) about the “Personality and Imagination” study along with the questionnaire package and were instructed to complete as many questionnaires as they wanted. The experimenter then left the room while participants started the helping task. Participants were instructed to complete as many questionnaires as they could and spend as much time as they wanted on the helping task, but were interrupted at the 20 minute mark. Those participants who decided not to help did not continue the experiment, were debriefed, and received experimental credit.

After the 20 minutes had passed or the participant decided to stop the helping task, the experimenter entered the room and on behalf of the other experimenter, gave half of the participants a surprise \$2<sup>15</sup> reward for helping (payment manipulation condition). Those receiving the \$2 were told the following phrase: *“The other researcher had left aside a little fund for people that helped her, so she wanted to compensate you for helping her”*. The payment manipulation was assumed to undermine the intrinsic helping motivations for those with high levels of pro-social traits (altruists) and strengthen the extrinsic helping motivations for those with low levels pro-social traits (egoists).

After offering the reward, the experimenter says: *Also, the other researcher informed me that there is a second part of the study, unrelated to what you just completed, that she also needs your help with. She has told me that this second part is unrelated to the first part and involves completing some other questionnaires for a second part of her study, which would take about 10 minutes in the lab. You would take the rest with you at home, complete them at home and bring them back in the lab at some other point next week. It's up to you if you want to help her with the second part of the study. It doesn't make a difference to me. If you choose to help, you would start completing the questionnaires right now and for about 10 minutes, otherwise we would continue with the rest of my experiment<sup>16</sup>*. At this point, those participants who decided to help with the second task proceeded in completing another set of questionnaires for

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<sup>15</sup> The amount of \$2 was selected because I did not want the monetary reward to be too appealing to those with high pro-social traits (altruists) and too insignificant for those with low pro-social traits (egoists) This amount corresponds to \$6/hour

<sup>16</sup> This second script was the result of several modifications during pilot testing. It was ultimately used because it did not yield ceiling effects for the second helping request

10 minutes. When they finished, participants were checked for suspicion and were partially debriefed by disclosing that part of the study is about helping behaviour and proceeded to complete the intrinsic motivations questionnaire. The instructions on the intrinsic questionnaire asked participants to indicate their motivations for helping the second time. Prior to debriefing, participants were asked about general impressions of the study. Detailed oral and written debriefing (see Appendix T) followed at the end of the experiment and participants were given the choice of having their data removed from the analyses due to the deception of the study. No participant chose to remove their data from the analyses. Each experimental session was completed with one participant at a time and lasted approximately 45 minutes. All participants were asked not to discuss the task with anyone, were thanked, and dismissed.

## Results

### *Preliminary analyses*

The preliminary analyses on the means, standard deviations, and reliability analyses of the pro-social battery and social desirability subscales revealed the same pattern as in Study 1 and Study 2 (see Appendix U). Similarly to Studies 1 and 2, the two factors of the pro-social personality battery, other-oriented empathy and helpfulness, were significantly correlated with each other ( $r=.47, p<.001$ ). Similarly to Studies 1 and 2, I analyzed the two pro-social factors in separate analyses and controlled for the effects of social desirability.

*Manipulation Check*

I predicted differences in the interest/enjoyment subscale (a.k.a. intrinsic motivation) between altruists and egoists as a result of the payment manipulation. Specifically, I tested for an interaction of pro-social personality and condition in people's intrinsic motivations. Participants ( $n=50$ ) who helped in both conditions were included in the analyses. I conducted two regression analyses, each with one of the pro-social factors as predictors and the enjoyment subscale of the intrinsic motivation as the outcome. The results of the regression analysis with other-oriented empathy as the predictor,  $F(5, 45) = 1.75, p = .14, R^2 = .16$ , revealed a non-significant main effect for other-oriented empathy,  $\beta = .19, p = .23$ , and a non-significant interaction  $\beta = .08, p = .61$  (see Appendix V). The second regression with helpfulness as the predictor was not significant,  $F(5, 45) = 2.00, p = .10, R^2 = .18$ , with the main effect of helpfulness being non-significant,  $\beta = .35, p = .09$  and the interaction also being non-significant,  $\beta = -.08, p = .68$  (see Appendix W). These findings suggest that the payment manipulation was not effective in changing participants' intrinsic motivations based on personality. See Appendix X for the inter-correlations between the intrinsic scales and the pro-social personality scales by condition.

*Recurrent Helping Rates*

From a total of 91 participants that were asked for help in the second helping task, 39 participants (43 %) did not help and 52 participants (57%) chose to help. See Table 16 for a breakdown of recurrent helping rates by condition.

*Table 16. Recurrent Helping Rates by Condition*

	Condition	
	Control	Payment Manipulation
<b>Recurrent Helping Rates</b>		
Yes	29 (59.2 %)	23 (54.8%)
No	20 (40.8 %)	19 (45.2%)
<b>Total</b>	<b>49 (100%)</b>	<b>42 (100%)</b>

The purpose of this study was to examine the effect of a direct motivation manipulation on helping rates for people high and low on pro-social personality traits. I predicted an interaction between pro-social personality traits and payment manipulation in people's recurrent helping rates. I hypothesized that altruists in the payment manipulation condition would demonstrate lower recurrent helping rates compared to egoists. I also predicted a condition manipulation, with altruists in the control condition demonstrating higher levels of recurrent helping rates compared to altruists in the payment manipulation condition. I tested the hypotheses with separate regression analyses for each of the pro-social factors and controlled for the social desirability subscales in all analyses.

#### *Other-Oriented Empathy*

I predicted an interaction between pro-social personality traits and payment manipulation in people's recurring helping rates. This hypothesis was not supported

with regards to other-oriented empathy, as the logistic regression was not statistically significant,  $\chi^2 (4, N=90) = 1.67, p=.79$ . The model was able to correctly classify 10.5 % of those who did not help after the second helping request and 92.3 % of those who did help, with an overall success rate of 57.8 % (see Table 17).

*Table 17. Logistic Regression Analyses for Recurrent Helping Rates with Social Desirability Subscales, Condition, Other-Oriented Empathy and the Other-Oriented Empathy by Condition Interaction*

Step 1	B (SE)	Wald $\chi^2$	p-value	95 % CI for Odds Ratio		
				Lower	Odds Ratio	Upper
Constant	1.03 (.63)	2.62	0.10		2.80	
Condition	-0.29 (.43)	0.44	0.50	0.31	0.74	1.75
Self Deceptive Positivity	-0.04 (.07)	0.39	0.53	0.82	0.95	1.03
Impression Management	-0.04 (.06)	0.45	0.50	0.84	0.95	1.08
Other-oriented Empathy	0.01 (.65)	0.01	0.98	0.28	1.01	3.64
Step 2	B (SE)	Wald $\chi^2$	p-value	Lower	Odds Ratio	Upper
Constant	1.05 (.63)	2.71	0.09		2.86	
Condition	-0.30 (.43)	0.47	0.49	0.31	0.74	1.74
Self Deceptive Positivity	-0.04 (.07)	0.38	0.53	0.88	0.95	1.03
Impression Management	-0.04 (.06)	0.50	0.83	0.84	0.95	1.08
Other-oriented Empathy	-0.17 (.85)	0.41	0.83	0.15	0.84	4.46
Other-oriented Empathy by Condition	0.44 (1.29)	0.11	0.73	0.12	1.55	19.71

*Helpfulness*

The logistic regression for the helpfulness factor was not significant,  $\chi^2 (3, N=90) = 2.47, p=.48$  (see Table 18). The model was able to correctly classify 26.3 % of those who did not help after the second helping request and 86.5 % of those who did

help, with an overall success rate of 61.1 %. The helpfulness variable did not have a significant predictive effect in recurrent helping rates. Also, the interaction of helpfulness by condition was not significant. The results of Study 3 did not support the hypothesis, as people high on pro-social traits (i.e., other-oriented empathy and helpfulness) were no less likely to help after being rewarded for their first helping behaviour, compared to people with low pro-social traits.

*Table 18. Logistic Analyses for Recurrent Helping Rates with Social Desirability Subscales, Condition, Helpfulness, and the Helpfulness by Condition Interaction*

Step 1	B (SE)	Wald $\chi^2$	p-value	95 % CI for Odds Ratio		
				Lower	Odds Ratio	Upper
Constant	1.17 (.65)	3.25	0.07		3.18	
Condition	-0.33 (.43)	0.57	0.45	0.30	0.71	1.69
Self Deceptive Positivity	-0.06 (.07)	0.74	0.38	0.80	0.93	1.08
Impression Management	-0.04 (.06)	0.47	0.49	0.84	0.95	1.08
Helpfulness	0.42 (.44)	0.90	0.34	0.63	1.53	3.70
Step 2	B (SE)	Wald $\chi^2$	p-value	Lower	Odds Ratio	Upper
Constant	1.15 (.64)	3.21	0.07		3.18	
Condition	-0.33 (.44)	0.57	0.45	0.30	0.71	1.69
Self Deceptive Positivity	-0.05 (.04)	1.66	0.19	0.87	0.94	1.02
Impression Management	-0.04 (.06)	0.47	0.49	0.84	0.95	1.09
Helpfulness	0.40 (.69)	0.33	0.56	0.38	1.49	5.79
Helpfulness by Condition	0.04 (.88)	0.01	0.96	0.18	1.04	5.95

## Discussion

The main goal of this study was to experimentally manipulate helping motivations in testing the proposition that altruists and egoists have intrinsic and extrinsic motivations for helping, respectively. I proposed that the intrinsic motivation of altruists would be undermined by offering them monetary rewards, whereas the same monetary reward was proposed to strengthen the extrinsic motivation of egoists. There were no differences in people's recurrent helping rates in the payment condition, indicating that the payment manipulation was not effective.

The payment manipulation did not yield the expected results in the present study. There were no differences in recurrent helping rates between altruists and egoists as a result of the motivation manipulation as rewarded altruists did not help less compared to non-rewarded altruists. Also, there were no differences in the enjoyment subscale scores (a.k.a. intrinsic motivation) between altruists and egoists across conditions. While it is a challenging task to account for null results, it is possible that the experimental manipulation was not powerful enough in either undermining the helping motivations of altruists or strengthening the helping motivations of egoists. While the amount of the monetary reward was chosen to be comparable to a minimum hourly wage, ultimately, its effectiveness at manipulating helping motivations has not been empirically established.

Specific methodological details might explain the null results regarding the proposed intrinsic motivation of altruists. The setup of the helping request in particular, might have not presented altruists with a free choice to help, which would then preclude

the possibility of an intrinsically motivated behaviour. Similarly to Study 1 and Study 2, participants had to make the helping decision in a laboratory room, with the experimenter in a white coat waiting for their response. Although the helping request script included assurances that participants would not be penalized or reprimanded in any way and that their decision to help was entirely up to them, participants might have felt unintentionally pressured to help. In summary, it would be reasonable to deduce that because of the artificiality of the helping situation, neither altruists nor egoists responded to the helping request guided by their natural (altruistic or egoistic) inclinations.

Although methodological reasons might account for the null results of the present study, a more probable explanation has to do with the way that helping motivations of altruists and egoists were conceptualized. Based on the theoretical foundations of the helping literature and the findings from the self-determination literature, I proposed that altruists would be intrinsically motivated to help because they would act upon their innate pro-social traits. Likewise, I proposed that egoists would be extrinsically motivated when helping because of the availability of external rewards. The findings of Study 1 and Study 2, as well as the present findings do not support such a conceptualization. In the present study, altruists who received the monetary reward after the first helping request did not help less the second time compared to altruists who did not receive the monetary reward. Likewise, rewarded egoists were no more likely to respond to the second helping request with more helping. The null results of the present study do not allow for strong conclusions about intrinsic motivations. In

summary, the present study did not lend support for my originally proposed helping motivations of altruists and egoists.

## General Discussion

The objective of the present research was to differentiate between altruistic and egoistic helping. I drew on self-determination theory and research on ego depletion to provide a framework for inferring people's motivation (intrinsic vs. extrinsic). I hypothesized that altruists would require fewer resources when helping compared to egoists, as a result of proposed intrinsic or extrinsic helping motivations. The combined findings of Study 1 and Study 2 revealed the opposite pattern of results predicted by the hypothesis, whereas Study 3 did not support the proposition that helping motivations are intrinsic or extrinsic for altruists and egoists respectively.

Each of the three studies examined the motivation hypothesis from a different angle. Study 1 looked at ego depletion levels of altruists and egoists after having engaged in helping behaviour, expecting to find that altruists were less depleted after helping compared to egoists. The findings revealed the opposite pattern of results, with altruists being more depleted than egoists following helping, as shown by slower Stroop reaction times. Also, there was no support for a mediating role of intrinsic motivation in the relationship between pro-social traits and ego depletion. In Study 2, I measured helping rates and persistence after altruists and egoists had undergone depletion, expecting to find higher helping rates and higher persistence on the helping task for altruists compared to egoists. The findings revealed that altruists were more likely to help than egoists, but only if they were not already depleted. Furthermore, contrary to the hypothesis, altruists persisted less on the helping task compared to egoists when depleted. In Study 3, I attempted to alter helping motivations (intrinsic vs. extrinsic) after participants had already engaged in helping behaviour, and measured recurrent

helping rates. I expected to find lower recurrent helping rates for altruists with undermined intrinsic motivations compared to egoists with rewarded extrinsic motivations. The results of Study 3 did not support the hypothesis in either direction.

Combined, the present findings reveal that altruists do not always engage in helping behaviour for other-oriented reasons. This contradicts decades of research in the pro-social literature that claim a “selfless concern for the welfare of others” (Batson, 1991; Bénabou & Tirole, 2004; Nagel, 1970) as the main motivation for helping of altruists. In the present research, altruists seemed to expend more resources when helping, they were no more likely to help than egoists when depleted, and when in a state of depletion, they seemed to be conserving their own resources by spending less time helping compared to egoists. It was surprising to find that depleted altruists in the present research displayed self-focused tendencies demonstrated as spending less time helping, compared to egoists. These findings contradict the concept that certain pro-social traits (i.e., empathy) engender an “other-oriented” motivation for helping with the sole goal of benefitting others (Batson, 1991; Batson & Coke 1981; Batson, 1990; Batson & Weeks, 1996; Dovidio, Allen & Schroeder, 1990).

The altruists in the present research might not have engaged in helping behaviour with the sole intention of benefiting the person in need. If this was the case, altruists would have persisted more in the helping task, regardless of their previous state of depletion. If their motivation was other-focused, they would not be inclined towards conserving their own resources by spending less time on the helping task. These findings are puzzling, especially when juxtaposed with the findings that egoists persisted more on the helping task even though they were subjected to the same ego

depleting task as altruists (i.e., incongruent Stroop task). A plausible explanation for this discrepancy is based on the way that altruists and egoists could have reacted to the helping request, and it involves the concept of emotion regulation.

In the present studies, altruists may have reacted to the helping request with emotions like personal distress, which had to be regulated while engaging in the helping behaviour. Egoists on the other hand, may not have had the same emotional reaction because of their low level of pro-social traits (e.g., lack of empathy). Past research (Ahadi & Rothbart, 1994; Graziano & Eisenberg, 1997; Rothbart, Ellis, Rueda, & Posner, 2003) indicates that certain pro-social traits have originated by the need to control feelings of frustration or powerlessness when one is faced with an emergency situation. In such a situation, the person engages in helping behaviour in an effort to control, or regulate the emotional reaction that is elicited (Rothbart, Ellis, Rueda, & Posner, 2003). A similar process is proposed by the Negative State Relief hypothesis of helping behaviour (Baumann, Cialdini & Kenrick, 1981; Cialdini, et al, 1987; 1997), which posits that empathic concern creates personal distress, which is then managed by engaging in helping behaviour. However, the Negative State Relief hypothesis has not been used to predict differences in helping behaviour based on pro-social personality traits. In a sense, the findings of the present research could be explained by the notion of emotion regulation and expand on the Negative State Relief hypothesis by suggesting that pro-social personality traits moderate the relationship between emotion regulation and helping behaviour (i.e., to the extent that altruists were feeling more distress in my lab studies).

Altruists' helping may have been instrumental in regulating the negative emotional reaction elicited from the helping request. That is, altruists were more likely than egoists to have had an emotional reaction when faced with someone else's plight (Batson, Fultz, & Schoenrade, 1987; Penner et al., 1995; Preston & DeWall, 2002; Stinson, & Ickes, 1992), and their attempt at regulating the emotional response as well as engaging in helping behaviour would make them expend additional resources and leave them more depleted after helping. Thus, the additional resources expended from the emotion regulation while engaging in helping behaviour could have led to poorer performance on the Stroop task (Study 1). Egoists on the other hand, may not have engaged in the same emotional regulation process because their lower pro-social traits would make it unlikely for them to have had a negative emotional reaction. Without having to regulate, they were able to perform better on the Stroop.

The proposition that emotion regulation might have imposed additional strain on altruists and not on egoists, could also explain why there were no differences in helping rates between altruists and egoists after being depleted (Study 2), even though altruists helped more than egoists in the absence of depletion (Study 2). If altruists helped in order to regulate the negative emotional response, the additional regulatory effort of engaging in emotion regulation could have rendered them in a state where, intentionally or not, they were more focused on preserving or replenishing their resources after undergoing depletion. This could explain why they spent less time helping (Study 2), as well as the lack of differences in helping rates when they were depleted. Specifically, emotion regulation becomes less efficient when people are under a sub-optimal cognitive state after being previously depleted, as they have fewer resources available to

regulate their emotions (Baumeister & Heatherton, 1996; Berkowitz, 1989; Eisenberg & Fabes, 1992; Muraven & Baumeister, 2000). Egoists on the other hand, may not have been engaged in helping behaviour in order to regulate any negative emotional response. Rather, they may have helped in order to gain positive rewards (Baumann, Cialdini & Kendrick, 1981; Cialdini et al. 1997), avoid scorn (Becker, 1974), or due to perceived social pressure from the presence of the experimenter (Andreoni, 1990).

The present findings suggest that when altruists are emotionally and cognitively tired, they might not have an “other-oriented” focus when they engage in helping behaviour. This explanation is partly based on the assumption that altruists did indeed respond emotionally to the helping request, but in the present research, the evidence for participants’ affective states before and after the helping behaviour is lacking. There is ample evidence which suggests that empathy, which is one of the pro-social characteristics, creates a self-oriented response that is regulated by engaging in self-regulatory behaviour (Baumeister, 2002; Cialdini, Darby & Vincent, 1973; Clark & Isen, 1982; Thayer, Newman, McClain, 1994). Also, there is some evidence which suggests that perspective taking before helping leads to self-related cognitions (Davis et al., 2004). Past research has also demonstrated the affective outcomes of helping behaviour with or without the intention of reaping those benefits (Harris, 1977; Manucia, Baumann & Cialdini, 1984; Yinon & Landau, 1987; Williamson & Clark, 1989; Williamson & Clark, 1992). However, a crucial detail of the emotion regulation explanation is missing from the present findings, namely, affective measures. Since there were no experimental measures of altruists’ level of personal distress after they were asked to help, I cannot know whether there was a reduction in negative affect post-

helping. Hence, I can only base these assumptions on past research findings (Baumann, Cialdini & Kendrick, 1981; Cialdini et al. 1997; Williamson & Clark, 1992).

Nonetheless, the present findings suggest that cognitive and emotional self-regulation might be moderated by personality, such that when altruists find themselves in a helping situation, they are more prone to conserving their resources.

Another explanation accounting for the present findings has to do with the idea of “self-affirmation”. The concept of “self-affirmation” refers to any behavioural or cognitive event that enhances a person’s perceived integrity, adaptiveness and moral adequacy (Schmeichel & Vohs, 2009). Past research has found that self-affirmations counteract the effects of ego depletion (Schmeichel & Vohs, 2009; Sherman, & Cohen, 2006). Self-affirming events include receiving positive feedback, praise, social acceptance and other events that boost one’s positive view about themselves and reinforce the view to the self that one is a good person. As a result, self-affirmations can be seen as psychological defence mechanisms that are enacted as a response to ego threat (Baumeister, Heatherton, & Tice, 1993).

Self-affirmations counteract ego depletion by promoting high levels of mental construal (Fujita et al., 2006; Schmeichel & Vohs, 2009). Moreover, the level of mental construal has been found to be a catalyst in counteracting the effect of ego-depletion. Specifically, the self-affirmation of values important to the self is much more effective in counteracting ego-depletion effects, compared to affirming values not important to the self (i.e., low mental construal; Schmeichel & Vohs, 2009). In the context of the present research, it is more important for egoists than altruists to appear helpful and morally superior and this affirmation could be countering the effects of ego depletion

for egoists but not altruists. Although the presence of self-affirmations was not assessed in the present studies and can only be inferred, it is possible that depletion levels might have varied as a result of personality based differences in self-affirmations between altruists and egoists. The pro-social literature has established that egoists engage in helping behaviour in order to gain approval and maintain and project to others a positive view about themselves, all of which has also been identified as self-affirming events (Robinson, Schmeichel, & Inzlicht, 2010; Sherman & Cohen, 2006). It follows then, that egoists, by engaging in helping behaviour for self-affirming reasons and seeing the act of helping as a vehicle to enact those self-affirming tendencies and get self-affirming feedback, experienced less ego depletion.

Altruists on the other hand, might not have perceived the helping request as an opportunity to gain something. That is, the situational constraints, such as the presence of the experimenter in the white lab coat and the helping response expected to be made on the spot, might have overridden the natural response of altruists to help out of their own volition. The same constraining circumstances would not have deterred egoists because presumably they already have ulterior motives in engaging in helping behaviour. We could then deduce that helping might have been perceived as coerced by altruists and not egoists. Although the correlations of the perceived choice subscale across the three studies reveal inconsistent patterns with the subscales of the pro-social battery and no significant correlations with either the other-oriented empathy or the helpfulness factor, it is still possible that the helping situation was not devoid of demand characteristics. Assuming that altruists were more sensitive to the potentially coercive nature of the task compared to egoists, the helping behaviour then could not have led to

a self-affirming experience for altruists. On the contrary, coerced helping has been shown to have negative mood effects (see Batson, et al. 1989) and negative moods have been found to lead to controlled regulation (Muraven, Rosman & Gagne, 2007), which would have been demonstrated as slower performance on cognitive tasks (Study 1).

The self-affirmation hypothesis accounts for the unexpected findings of the present research by predicting personality based differences in ego depletion. However, a crucial tenet of self-affirmation theory, namely pursuing an action only because of the desire to achieve an enhanced level of self-worth, or to reduce ego-threats (Sherman & Cohen, 2006), cannot be exclusively attributed to egoists. Altruists, as well, are likely to engage in helping behaviour, not necessarily for self-enhancement reasons, but they might still gain something from the process of helping (c.f., Negative State Relief model). There is no way to ascertain from the data of the present research whether altruists responded emotionally to the helping request, due to a lack of a state measure of personal distress. This is to say that although self-affirmation theory predicts ego depletion differences as a result of self-affirmations, it does not predict personality based differences in people's use of self-affirmations. Lack of past research findings on personality-specific differences in the use of self-affirmations makes the present explanation stand on shaky grounds. As a result, I cannot draw strong conclusions regarding the validity of either the emotion regulation explanation, or the self-affirmation theory. The legitimacy of either explanation can be empirically determined by future research.

Another goal of the present research was to incorporate the tenets of the self-determination theory in inferring helping motivations. This did not prove successful as

there was no indication of intrinsic motivation driving the helping behaviour of altruists and egoists respectively. However, given the pattern of results of Study 1 and Study 2, this is not surprising. Furthermore, the findings of Study 3 failed to provide evidence for an undermined or strengthened motivation type as a result of the monetary reward. A combination of the findings regarding intrinsic motivation implies that, at least in the present research, intrinsic motivation and pro-social traits were independent of each other.

Although the significant findings did not confirm the hypothesis in the predicted pattern, the present research makes unique contributions in the field of pro-social motivations in two important ways. First, it introduces new methodologies in exploring helping motivations, which could ultimately lead to the development of novel measurement tools. That is, although the findings revealed the opposite predicted pattern, the introduction of self-regulation proved useful in examining pro-social motivations as a function of personality. Future studies could further explore the concept of self-regulation in empirically measuring helping motivations. For example, whereas altruists were found to conserve resources while helping by persisting less, future research could examine persistence after attempting to replenish the effects of self-regulation. Also, while past research has mostly used the concept of empathy in inferring helping motivations, by creating either other-centered or self-centered concern, the present research took a more expansive approach, by looking at broader pro-social factors in examining helping motivations. This more expansive approach was undertaken due to evidence on the multi-dispositional roots of altruism (Carlo et al., 1991; Davis, 1994; Penner, Fritzsche, Craiger, & Freifeld, 1995; Staub, 1978; Rushton

et al. 1981). Second, in the context of helping behaviour the present findings are the first to reveal personality based differences in people's helping behaviour as a result of a self-regulation manipulation. The present findings, although unexpected, suggest that under some circumstances, altruists might in fact engage in behaviour that has egoistic undertones, especially when people help less because they are prone to preserving their cognitive resources.

#### *Limitations and Future Directions*

The present research has a number of limitations, which restrict my ability in drawing definite conclusions, and as such, they merit further consideration. First, none of the studies included measures of affect. As a result, it is not possible to assess participants' affect fluctuations throughout the helping behaviour. Although affect was not part of the hypotheses, measures of affect would be crucial in evaluating the proposed emotion regulation explanation accounting for the unexpected findings. Future research should assess participants' affective states prior to engaging in helping behaviour, as well as after the helping has concluded. It is very possible that there were within-subject and between-conditions affect fluctuations from the initial delivery of the helping request throughout the duration of the helping process. Most theories of helping behaviour have documented the affect-eliciting properties of helping behaviour, either as unintended consequences or as a result of egoistic reasons for helping (Cialdini et al., 1997; Harris, 1977; Manucia, Baumann & Cialdini, 1984; Yinon & Landau, 1987). The inclusion of affective measures in the present studies, especially measures that would assess affect fluctuations, would evaluate the validity of the emotion regulation explanation as well as explore possible relationships between the affective

consequences of helping behaviour and ultimately reveal new ways of understanding helping motivations.

Another factor to consider when evaluating the present findings is recognizing possible sources of bias, especially social desirability, which is considered to be one of the most pervasive sources of error in experimental research (Paulhus, 1991; Peltier & Walsh, 1990). In the present studies, the correlations of other-oriented empathy and helpfulness with the social desirability subscales (i.e., self-deceptive positivity and impression management) reveal interesting patterns. Specifically, in all three studies, other-oriented empathy was positively correlated with both the self-deceptive positivity and impression management subscales, but the helpfulness factor was only correlated with self-deceptive positivity. This indicates that in the present research, people who scored high on helpfulness were not necessarily untruthful in their responses, but they did have the tendency to portray themselves in a positive light. Furthermore, those who scored high on other-oriented empathy, were more likely to view themselves in a favourable light, as well as engage in conscious self-presentation. These findings do not directly imply that for altruists, helping motivations have underlying needs for positive evaluations and approval seeking. The findings merely suggest that socially desirable responding might be inevitably present, the effects of which might be intertwined in the current measures of pro-social traits. It could also mean that the behavioural tendencies of altruists could not be devoid of egoistic tendencies. However, it should be noted that the effects of the social desirability subscales did not have any noticeable effects in the hypothesis testing after statistically controlling for them in all analyses. Even though the lack of statistical significance of the social desirability subscales in the hypothesis

testing limits the extent to which social desirability effects need to be accounted for in the explanations of the present findings, their presence cannot be ignored.

Another potential limitation of the present research is the nature of the helping task itself. The helping behaviour in the laboratory is inherently different compared to spontaneous helping in real life. In the present research, participants might have felt obligated to help and helping might have been perceived as being coerced, especially since the helping request was made by a power figure (i.e., the experimenter). Although in Study 1 and in the first helping request of Study 3 I aimed to create a situation where everyone would help, I tried to minimize demand characteristics and hoped that participants would not feel coerced. Though in the present research I studied a particular kind of helping which might have had embedded demand characteristics, future research could use other helping situations while taking precautions to minimize possible demand characteristics.

### *Conclusions*

The present research aimed at evaluating personality based helping motivations by examining people's self-regulation levels. A novel contribution of the present research was the introduction of the concept of ego depletion in differentiating between people's helping motivations. I predicted that helping behaviour would be less ego depleting for altruists compared to egoists. The findings revealed the opposite pattern, suggesting that altruists had fewer resources after helping and the state of ego depletion also affected their helping tendencies. More importantly, the present research revealed that altruists might be more prone to conserving resources when depleted, and this

became apparent in their low helping rates, their poorer performance on the Stroop task and their lack of persistence in the helping task.

From a broader perspective, the present findings raise interesting questions regarding the nature of human altruism by suggesting that helping behaviour is sometimes costly for altruists and furthermore, these costs (cognitive and/or emotional) affect behavioural displays of altruism. The important contribution of the present research is the introduction of the ego-depletion methodological tool in assessing people's self-regulation. Differences in self-regulation were inferred by looking at levels of resource conservation, which were then used as markers of different helping motivations in revealing personality based differences in helping. However, the unexpected pattern of results, as well as the null findings regarding the motivation manipulation prevents me from drawing definite conclusions regarding the nature of altruism. Although the present findings may conform to an egoistic approach to helping for altruists, future researchers should test this proposition by adding affective measures to their methodologies. On a final note, the findings of the present research should not be interpreted as downgrading the notion of being an "altruist". Even if future studies validate the present findings regarding the resources that altruists expend while helping, this should not detract from the value of the helping behaviour itself. On the contrary, the behaviour of people who have the personality predispositions which compel them to help others even after incurring costs themselves is truly commendable.

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Appendix A

Announcement for Recruitment (Sona System)

**Study Name** Personality and Blood Glucose

**Abstract** This is a study about personality characteristics and glucose levels.

**Description**

The purpose of this study is to better understand how people's personality might affect their physiology. We are interested in the ways the personality characteristics might affect people's blood glucose levels after performing simple everyday tasks, such as completing questionnaires or completing a computer task. For this study you will complete several questionnaires where you will answer questions about your personality and complete a computer task. Furthermore, two blood samples will be taken from the tip of your finger, a virtually painfree process. In order to get an accurate glucose reading, we ask you not to consume any food and drinks 3 hours prior to participating in the study. For participating you will receive a 1 % increase in your final grade.

**Eligibility Requirements** Must have participated in Mass Testing.

**Duration** 45 minutes

**Percentage** 1 Percentage increase

**Researchers** Lorena Ruci  
Office: HC 6111  
Phone: x1813  
Email:

## Appendix B

## Study 1- Informed Consent Form

The purpose of an informed consent is to insure that you understand the purpose of the study and the nature of your involvement. The informed consent must provide sufficient information such that you have the opportunity to determine whether you wish to participate in the study.

**Present study:** Personality and Blood Glucose

**Research personnel.** The following people are involved in this research project and may be contacted at any time: Dr. J. Zelenski (Faculty Sponsor, 520-2600 ext. 1609) or Lorena Ruci (Email: lruci2@connect.carleton.ca). Should you have any ethical or other concerns about this study then please contact Dr. Avi Parush, Chair, Carleton University Ethics Committee for Psychological Research, 520-2600, ext. 6026) or Dr. Janet Mantler (Chair, Dept. of Psychology, 520-2600, ext. 2648).

**Purpose.** The purpose of this study is to better understand how people's personality might affect their physiology. We are interested in the ways the personality characteristics might affect people's blood glucose levels after performing simple everyday tasks, such as completing questionnaires or completing a computer task.

**Task requirements.** The first experimental task will involve a glucose measurement. The experimenter will prick your finger with a sterilized device commonly used to collect a very small blood quantity, which will be further analyzed in a glucose meter. Afterwards, you will complete questionnaires about yourself followed by a computer task. After the computer task, another questionnaire will follow.

**Duration and locale.** The experimental session will last no more than 45 minutes. Testing will take place in the Human Computer Interaction building at Carleton University.

**Potential risk/discomfort.** Two blood samples will be collected from the tip of your finger. There is a possibility that you might experience slight discomfort during the procedure. However, it is unlikely that this discomfort will exceed that which people experience in day-to-day life (e.g., discomfort associated with a thorn prick). The sample will be used to measure glucose level and is commonly used in diabetic populations. The sample will be destroyed after collection

**What you will receive.** You will receive a 1 % increase in your final grade for participating in this study.

**Anonymity/confidentiality.** The data collected in this experiment are strictly confidential. All data are coded such that your name is not associated with the data. In addition, the coded data are made available only to the researchers associated with this project.

**Right to withdraw:** You may withdraw from the study at any time without academic penalty. You may also choose to skip questions you may find objectionable for any reason without academic penalty.

**Signatures**

I have read the above form and understand the conditions of my participation. My participation in this study is voluntary, and if for any reason, at any time, I wish to leave the experiment I may do so without having to give an explanation and with no penalty whatsoever. Furthermore, I am also aware that the data gathered in this study are confidential and anonymous with respect to my personal identity. My signature indicates that I agree to participate in the study.

Participant's Name: \_\_\_\_\_ Participant's Signature:

\_\_\_\_\_  
Researcher Name: \_\_\_\_\_ Researcher Signature:

\_\_\_\_\_  
Date \_\_\_\_\_

Appendix C

Demographics Questionnaire

General Information

Participant id: \_\_\_\_\_

Sex: Female/ Male (please circle one)

Age: \_\_\_\_\_

Have you been diagnosed with any blood pressure irregularities?

YES

NO

Do you have any problems with your vision?

YES

NO

Are you colour-blind?

YES

NO

Do you have any health conditions (e.g., allergies, Type 1 or 2 diabetes, glucose intolerance, etc.)?

---

Have you eaten in the last 3 hours?

YES

NO

If YES, what did you eat?

---

### Appendix D Pro-social Personality Battery (PSB)

Below are a number of statements which may or may not describe you, your feelings or your behavior. Please read each statement carefully and blacken in the space on your answer sheet which corresponds to choices presented below. There are no right or wrong responses

Use the following scale to indicate your answer:

1	2	3	4	5
Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree

1. If a good friend of mine wanted to injure an enemy of theirs, it would be my duty to try to stop them.
  2. I wouldn't feel that I had to do my part in a group project if everyone else was lazy. (R)
  3. When people are nasty to me, I feel very little responsibility to treat them well. (R)
  4. I would feel less bothered about leaving litter in a dirty park than in a clean one. (R)
  5. No matter what a person has done to us, there is no excuse for taking advantage of them.
  6. You can't blame basically good people who are forced by their environment to be inconsiderate of others. (R)
  7. No matter how much people are provoked, they are always responsible for whatever they do.
  8. Being upset or preoccupied does not excuse people for doing anything they would ordinarily avoid.
  9. As long as business people do not break laws, they should feel free to do their business as they see fit. (R)
  10. Occasionally in life people find themselves in a situation in which they have absolutely no control over what they do to others. (R)
  11. I would feel obligated to do a favor for someone who needed it, even though they had no shown gratitude for past favors.
  12. With the pressure for grades and the widespread cheating in school nowadays, the individual who cheats occasionally is not really as much at fault. (R)
  13. It doesn't make much sense to be very concerned about how we act when we are sick and feeling miserable. (R)
  14. If I broke a machine through mishandling, I would feel less guilty if it was already damaged before I used it. (R)
  15. When you have a job to do, it is impossible to look out for everybody's best interest. (R)
- Empathy Items (from Davis, 1980)
16. I often have tender, concerned feelings for people less fortunate than me. EC
  17. I sometimes find it difficult to see things from the "other person's" point of view. PT (R)
  18. Sometimes I don't feel very sorry for other people when they are having problems. EC (R)

- 19. In emergency situations, I feel apprehensive and ill-at-ease. PD
- 20. I try to look at everybody's side of a disagreement before I make a decision. PT
- 21. When I see someone being taken advantage of, I feel kind of protective towards them. EC
- 22. I sometimes try to understand my friends better by imagining how things look from their perspective.
- 23. Other people's misfortunes do not usually disturb me a great deal. EC (R)
- 24. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments. PT (R)
- 25. Being in a tense emotional situation scares me. PD
- 26. When I see someone being treated unfairly, I sometimes don't feel very much pity for them. EC (R)
- 27. I am usually pretty effective in dealing with emergencies. PD (R)
- 28. I am often quite touched by things that I see happen. EC
- 29. I believe that there are two sides to every question and try to look at them both. PT
- 30. I would describe myself as a pretty soft-hearted person. (EC)
- 31. I tend to lose control during emergencies. PD
- 32. When I'm upset at someone, I usually try to "put myself in their shoes" for a while. PT
- 33. When I see someone who badly needs help in an emergency, go to pieces. PD
- 34. Before criticizing somebody, I try to imagine how I would feel if I were in their place. PT

**PART 2:**

Below are a set of statements which may or may not describe how you make decisions when you have to choose between two courses of action or alternatives when there is no clear right way or wrong way to act. Some examples of such situations are: being asked to lend something to a close friend who often forgets to return things; deciding whether you should keep something you have won for yourself or share it with a friend; and choosing between studying for an important exam and visiting a sick relative. Read each statement and blacken in the space on your answer sheet which corresponds to the choices presented below.

1	2	3	4	5
Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree

- 35. My decisions are usually based on my concern for other people. O
- 36. My decisions are usually based on what is the most fair and just way to act. M
- 37. I choose alternatives that are intended to meet everybody's needs. M
- 38. I choose a course of action that maximizes the help other people receive. O
- 39. I choose a course of action that considers the rights of all people involved. M
- 40. My decisions are usually based on concern for the welfare of others. O
- 41. My decisions are usually based on my personal principles about what is fair and unfair. M
- 42. I choose alternatives that minimize the negative consequences to other people. O

**PART 3:**

Below are several different actions in which people sometimes engage. Read each of them and decide how frequently you have carried it out in the past. Blacken in the space on your answer sheet which best describes your past behavior. Use the scale presented below.

1	2	3	4	5
Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree

43. I have given directions to a stranger.
44. I have made change for a stranger.
45. I have given money to a stranger who needed it (or asked me for it).
46. I have donated goods or clothes to a charity.
47. I have done volunteer work for a charity.
48. I have helped carry a stranger's belongings (e.g., books, parcels, etc.).
49. I have delayed an elevator and held the door open for a stranger.
50. I have allowed someone to go ahead of me in a line (e.g., supermarket, copying machine, etc.)
51. I have given a stranger a lift in my car.
52. I have let a neighbor whom I didn't know too well borrow an item of some value (e.g., tools, a dish, etc.).
53. I have bought 'charity' Christmas cards deliberately because I knew it was for a good cause.
54. I have helped a classmate who I did not know that well with a homework assignment when my knowledge was greater than his or hers.
55. I have, before being asked, voluntarily looked after a neighbor's pets or children without being paid for it.
56. I have offered to help a handicapped or elderly stranger across a street.

Appendix E The post-experimental intrinsic motivation inventory

For each of the following statements, please indicate how true it is for you, using the following scale:

1	2	3	4	5	6	7
not at all			somewhat			very
true			true			true

**Interest/Enjoyment**

- I enjoyed the helping behaviour very much
- It was fun to help.
- Helping was boring. (R)
- I had to think about the decision to helping or not. (R)
- I was personally interested in helping.
- I enjoyed helping.
- While I was helping, I was thinking about how much I enjoyed it.

**Perceived Competence**

- I thought I was good at the helping task.
- I think I did pretty well at the helping task, if I was compared to other students.
- After finishing the helping task, I felt pretty competent.
- I am satisfied with my decision to help.
- I was pretty skilled at the helping task.
- The helping task was an activity that I couldn't do very well. (R)

**Effort/Importance**

- I put a lot of effort into helping.
- I didn't try very hard to do well at the helping task. (R)
- It was effortful for me to make the decision to help.
- It was important perform well at the helping task.
- I didn't put much energy into the helping task. (R)

**Pressure/Tension**

- I did not feel nervous at all when making the decision to help. (R)
- I felt very tense when making the decision to help.
- I was very relaxed while doing the helping task. (R)
- I was anxious while working on the helping task.
- I felt pressured when asked to help.

**Perceived Choice**

- I believe I had some choice about helping.
- I felt like it was not my own choice to help. (R)
- I didn't really have a choice about helping. (R)
- I felt like I had to help. (R)

I helped because I had no choice. (R)

I helped because I wanted to.

I helped because I had to. (R)

**Value/Usefulness**

I believe the helping behaviour could be of some value to me in the future.

I think that helping was good for my self-esteem.

I think that helping was an important thing to do because it made a difference to someone else.

I would be willing to help again because it had some value to me.

I think that helping made me feel like a better person

I believe that helping was beneficial to me.

I think that it was important to help.

**Relatedness**

I felt really distant to the person who asked me to help. (R)

I really doubt that the person who asked me to help and I would ever be friends. (R)

I felt like I could really trust the person who asked for help.

I'd like a chance to interact with the person who asked me for help more often.

I'd really prefer not to interact with the person who asked me for help in the future. (R)

I don't feel like I could really trust the person who asked me for help. (R)

It is likely that the person who asked for my help and I could become friends if we interacted a lot.

I feel close to the person who asked me for help.

## Appendix F

## Social Desirability Scale

Using the scale as a guide below, write a number beside each statement to indicate how much you agree with it.

- | 1           | 2 | 3 | 4                | 5 | 6 | 7            |  |
|-------------|---|---|------------------|---|---|--------------|--|
| Not<br>True |   |   | Somewhat<br>True |   |   | Very<br>True |  |
| ___         |   |   |                  |   |   |              | 1. My first impressions of people usually turn out to be right.                    |
| ___         |   |   |                  |   |   |              | 2. It would be hard for me to break any of my bad habits.                          |
| ___         |   |   |                  |   |   |              | 3. I don't care to know what other people really think of me.                      |
| ___         |   |   |                  |   |   |              | 4. I have not always been honest with myself.                                      |
| ___         |   |   |                  |   |   |              | 5. I always know why I like things.  |
| ___         |   |   |                  |   |   |              | 6. When my emotions are aroused, it biases my thinking.                            |
| ___         |   |   |                  |   |   |              | 7. Once I've made up my mind, other people can seldom change my opinion.           |
| ___         |   |   |                  |   |   |              | 8. I am not a safe driver when I exceed the speed limit.                           |
| ___         |   |   |                  |   |   |              | 9. I am fully in control of my own fate.   |
| ___         |   |   |                  |   |   |              | 10. It's hard for me to shut off a disturbing thought.                             |
| ___         |   |   |                  |   |   |              | 11. I never regret my decisions.   |
| ___         |   |   |                  |   |   |              | 12. I sometimes lose out on things because I can't make up my mind soon enough.    |
| ___         |   |   |                  |   |   |              | 13. The reason I vote is because my vote can make a difference.                    |
| ___         |   |   |                  |   |   |              | 14. My parents were not always fair when they punished me.                         |
| ___         |   |   |                  |   |   |              | 15. I am a completely rational person.   |
| ___         |   |   |                  |   |   |              | 16. I rarely appreciate criticism.   |
| ___         |   |   |                  |   |   |              | 17. I am very confident of my judgments.   |
| ___         |   |   |                  |   |   |              | 18. I have sometimes doubted my ability as a lover.                                |
| ___         |   |   |                  |   |   |              | 19. It's all right with me if some people happen to dislike me.                    |
| ___         |   |   |                  |   |   |              | 20. I don't always know the reasons why I do the things I do.                      |
| ___         |   |   |                  |   |   |              | 21. I sometimes tell lies if I have to.  |
| ___         |   |   |                  |   |   |              | 22. I never cover up my mistakes.  |
| ___         |   |   |                  |   |   |              | 23. There have been occasions when I have taken advantage of someone.              |
| ___         |   |   |                  |   |   |              | 24. I never swear.   |
| ___         |   |   |                  |   |   |              | 25. I sometimes try to get even rather than forgive and forget.                    |
| ___         |   |   |                  |   |   |              | 26. I always obey laws, even if I'm unlikely to get caught.                        |
| ___         |   |   |                  |   |   |              | 27. I have said something bad about a friend behind his or her back.               |
| ___         |   |   |                  |   |   |              | 28. When I hear people talking privately, I avoid listening.                       |
| ___         |   |   |                  |   |   |              | 29. I have received too much change from a salesperson without telling him or her. |
| ___         |   |   |                  |   |   |              | 30. I always declare everything at customs.  |
| ___         |   |   |                  |   |   |              | 31. When I was young, I sometimes stole things.                                    |
| ___         |   |   |                  |   |   |              | 32. I have never dropped litter on the street.                                     |
| ___         |   |   |                  |   |   |              | 33. I sometimes drive faster than the speed limit.                                 |
| ___         |   |   |                  |   |   |              | 34. I never read sexy books or magazines.  |
| ___         |   |   |                  |   |   |              | 35. I have done things that I don't tell other people about.                       |
| ___         |   |   |                  |   |   |              | 36. I never take things that don't belong to me.                                   |
| ___         |   |   |                  |   |   |              | 37. I have taken sick-leave from work or school even though I wasn't really sick.  |
| ___         |   |   |                  |   |   |              | 38. I have never damaged a library book or store merchandise without reporting it. |
| ___         |   |   |                  |   |   |              | 39. I have some pretty awful habits.   |
| ___         |   |   |                  |   |   |              | 40. I don't gossip about other people's business.                                  |

Appendix G

Filler Questionnaires: BFFI

Instructions: For each of the 44 characteristics listed below, rate how descriptive each characteristic is of you using the scale from 1 to 5 as shown below:

Disagree strongly 1	Disagree a little 2	Neither Agree nor disagree 3	Agree a little 4	Agree strongly 5
---------------------------	---------------------------	------------------------------------	------------------------	------------------------

**I see myself as someone who . . .**

- |  |   |
|--|---|
| <p>1. Is talkative</p> <p>2. <u>        </u> Tends to find fault with others</p> <p>3. <u>        </u> Does a thorough job</p> <p>4. <u>        </u> Is depressed, blue</p> <p>5. <u>        </u> Is original, comes up with new ideas</p> <p>6. <u>        </u> Is reserved</p> <p>7. <u>        </u> Is helpful and unselfish with others</p> <p>8. <u>        </u> Can be somewhat careless</p> <p>9. <u>        </u> Is relaxed, handles stress well</p> <p>10. <u>        </u> Is curious about many different things</p> <p>11. <u>        </u> Is full of energy</p> <p>12. <u>        </u> Starts quarrels with others</p> <p>13. <u>        </u> Is a reliable worker</p> <p>14. <u>        </u> Can be tense</p> <p>15. <u>        </u> Is ingenious, a deep thinker</p> <p>16. <u>        </u> Generates a lot of enthusiasm</p> <p>17. <u>        </u> Has a forgiving nature</p> <p><u>        </u></p> | <p>18. Tends to be disorganized</p> <p>19. <u>        </u> Worries a lot</p> <p>20. <u>        </u> Has an active imagination</p> <p>21. <u>        </u> Tends to be quiet</p> <p>22. <u>        </u> Is generally trusting</p> <p>23. <u>        </u> Tends to be lazy</p> <p>24. <u>        </u> Is emotionally stable, not easily upset</p> <p>25. <u>        </u> Is inventive</p> <p>26. <u>        </u> Has an assertive personality</p> <p>27. <u>        </u> Can be cold and aloof</p> <p>28. <u>        </u> Perseveres until the task is finished</p> <p>29. <u>        </u> Can be moody</p> <p>30. <u>        </u> Values artistic, aesthetic experiences</p> <p>31. <u>        </u> Is sometimes shy, inhibited</p> <p>32. <u>        </u> Is considerate and kind to almost everyone</p> <p>33. <u>        </u> Does things efficiently</p> <p>34. <u>        </u> Remains calm in tense situations</p> <p><u>        </u></p> |
|--|---|

- 35. Prefers work that is routine
- 36. Is outgoing, sociable
- 37. Is sometimes rude to others
- 38. Makes plans and follows through with them
- 39. Gets nervous easily
- 40. Likes to reflect, play with ideas
- 41. Has few artistic interests
- 42. Likes to cooperate with others
- 43. Is easily distracted
- 44. Is sophisticated in art, music, or literature

Filler Questionnaires:            People's Physical Health Scale

During the past two weeks how much have you been bothered by the following:

Responses:

Yes, a great deal

Yes, a fair amount

Yes, some

Yes, but only a little

No, not at all

Please indicate the extent to which you agree or disagree with the following statements:

Responses:

Strongly agree

Agree

Neither agree nor disagree

Disagree

Strongly disagree

PF1 Walking

PF2 Using stairs or inclines

PF3 Sitting for long periods

PF4 Standing for long periods

PF5 Standing up from a sitting position

PF6 Kneeling or stooping

PF12 Have you been limited physically in being able to do the things you want to do?

PH3 It has been over a year since I have had a cold or the flu.

PH4 When I do get sick, I recover quickly compared to my friends.

PH9 I get a cold or the flu at least once a year.

PH11 I seldom get sick.

PS6 Cold or flu

PH2 If I have to exert myself I find I have difficulty catching my breath.

PH7 I can run a couple of blocks without getting winded.

PH8 I can usually find the energy I need to exercise.

PS10 Shortness of breath

PS1 Indigestion/heartburn

PS9 Stomach aches

PS11 Diarrhea or constipation

PS14 Nausea or vomiting

Blood pressure

Eye infections

Eye strain

Irregular heartbeat

Filler Questionnaire: Imagination Questionnaire

Instructions: Answer each question by writing either T for true or F for false. At the end of each group, record only the total number of true statements in the space provided. Answer the questions in terms of how you feel most of the time. For example, if you've had a bad night's sleep and feel tired today, answer the questions that pertain to your energy levels based on how you feel on a more average day.

I have a good imagination \_\_\_\_ \_\_\_\_

I am easily irritated. \_\_\_\_ \_\_\_\_

I have thoughts of self-destruction. \_\_\_\_ \_\_\_\_

I have had suicidal thoughts in my life. \_\_\_\_ \_\_\_\_

I tend to dwell on ideas too much. \_\_\_\_ \_\_\_\_

I am sometimes so structured that I become inflexible. \_\_\_\_ \_\_\_\_

My imagination takes over. \_\_\_\_ \_\_\_\_

Fear grips me. \_\_\_\_ \_\_\_\_

I can't stop thinking about the meaning of life. \_\_\_\_ \_\_\_\_

I no longer want to take risks. \_\_\_\_ \_\_\_\_

The lack of meaning in my life is painful to me. \_\_\_\_ \_\_\_\_

I am sometimes speculative. \_\_\_\_ \_\_\_\_

Most people view me as thinking-oriented. \_\_\_\_ \_\_\_\_

I daydream and often fantasize. \_\_\_\_ \_\_\_\_

I like to read history and other nonfiction books. \_\_\_\_ \_\_\_\_

I admire ingenuity. \_\_\_\_ \_\_\_\_

I can be slow in identifying how people can cause trouble. \_\_\_\_ \_\_\_\_

I don't usually get tricked by people who say they need my help. \_\_\_\_ \_\_\_\_

Most people view me as innovative. \_\_\_\_ \_\_\_\_

People have thought I have had some strange ideas, but I can always explain the basis for them rationally. \_\_\_\_ \_\_\_\_

Filler Questionnaires:

GPBT Scale

*Instructions: Please indicate whether you think that the following statements are true for you, by circling T, or false for you, by circling F. Please answer every question.*

1. If I invested in stocks I would probably make money.  
T F
2. In light of all the crime in the world, I expect to be the victim of a mugging or an assault at some point during my life  
T F
3. It is likely that most of us will have a serious car accident at some point in our lives  
T F
4. Eventually we will have a world where no one will be hungry.  
T F
5. Most people cannot be trusted too far.  
T F
6. I usually find my work or study exciting or challenging.  
T F
7. Crime and violence are there but aren't really that common  
T F
8. Driving in fast-moving, crowded traffic makes me very uncomfortable.  
T F
9. I tend to be impulsively optimistic.  
T F
10. I lose more often than I win.  
T F
11. With all the impurities in food one must select foods very carefully.  
T F
12. I feel uncomfortable when a person whom I am talking with falls silent.  
T F
13. I hardly ever worry about whether my health will be good in the future.  
T F
14. Many people at a party seem to pretend they are having a good time when they are not really enjoying themselves.  
T F
15. I have great confidence in my future.  
T F
16. I tend to plunge right into the lively part of a party since I usually have no trouble finding someone interesting to talk to.  
T F
17. All I need to do in order to succeed in my work is to let my natural enthusiasm carry me along.  
T F
18. When I enter a new situation I am quick to notice where the danger lies.  
T F

19. I expect that I will rise to the top of any field of work I am or will be engaging in.  
T F
20. I am quick to perceive opportunities and take advantage of them.  
T F
21. I am usually surprised when people start talking about their concerns about getting cancer.  
T F
22. I automatically prepare myself for possible trouble when going into an empty or darkened house.  
T F
23. I am generally a cautious person.  
T F
24. When there is a disease going around, I worry about getting it.  
T F
25. When I look for a job, it is likely that it will take me a long time to find one.  
T F
26. Someday, I expect to see my achievements written up in a newspaper.  
T F
27. If I invested in stocks I would probably lose money.  
T F
28. Most people can be trusted.  
T F
29. I don't worry about whether I will get cancer.  
T F
30. I am usually completely at ease walking outside after dark.  
T F

Filler Questionnaires

BIS/BAS Scale

Each item of this questionnaire is a statement that a person may either agree with or disagree with. For each item, indicate how much you agree or disagree with what the item says. Please respond to all the items. Choose only one response to each statement. Please be as accurate and honest as you can. Respond to each item as if it were the only item. That is, don't worry about being 'consistent' in your responses. Choose from the following four response options:

(1= disagree, 2= disagree somewhat, 3= agree somewhat, 4= agree)

1. \_\_\_ A person's family is the most important thing in life.
2. \_\_\_ Even if something bad is about to happen, I rarely experience fear or nervousness.
3. \_\_\_ I go out of my way to get things I want.
4. \_\_\_ When I'm doing well at something I love to keep at it.

5. \_\_\_ I'm always willing to try something new if I think it will be fun.
6. \_\_\_ How I dress is important to me.
7. \_\_\_ When I get something I want, I feel excited and energized.
8. \_\_\_ Criticism or scolding hurts me quite a bit.
9. \_\_\_ When I want something I usually go all-out to get it.
10. \_\_\_ I will often do things for no other reason than that they might be fun.
11. \_\_\_ It's hard for me to find the time to do things such as get a haircut.
12. \_\_\_ If I see a chance to get something I want I move on it right away.
13. \_\_\_ I feel pretty worried or upset when I think or know someone is angry with me.
14. \_\_\_ When I see an opportunity for something I like I get excited right away.
15. \_\_\_ I often act on the spur of the moment.
16. \_\_\_ If I think something unpleasant is going to happen I usually get pretty 'worked up'
17. \_\_\_ I often wonder why people act the way they do.
18. \_\_\_ When good things happen to me it affects me strongly.
19. \_\_\_ I feel worried when I think I have done poorly at something important.
20. \_\_\_ I crave excitement and new sensations.
21. \_\_\_ When I go after something I use a 'no-holds-barred' approach.
22. \_\_\_ I have very few fears compared to my friends.
23. \_\_\_ It would excite me to win a contest.
24. \_\_\_ I worry about making mistakes.

Filler Questionnaires

Math and Verbal Scales

Please answer all the questions as truthfully as you can.

(1= disagree, 2= disagree somewhat, 3= agree somewhat, 4= agree)

**A. Math scales**

- I have high aptitude in mathematics. \_\_\_\_\_
- I am as talented in mathematics as other pupils in my class. \_\_\_\_\_
- I simply have no talent for mathematics. \_\_\_\_\_
- I can learn mathematics if I work hard. \_\_\_\_\_
- No matter how much I try, I shall have problems learning mathematics. \_\_\_\_\_
- I just cannot learn mathematics. \_\_\_\_\_
- I like mathematics. \_\_\_\_\_
- I look forward to mathematics lessons. \_\_\_\_\_
- I wish I did not have to take mathematics lessons. \_\_\_\_\_
- I hate mathematics. \_\_\_\_\_
- Mathematics lessons are boring. \_\_\_\_\_
- I wish we had more mathematics lessons in school. \_\_\_\_\_
- Working with mathematics is fun. \_\_\_\_\_
- In high school, I want to get on a track that has as little mathematics as possible.  
\_\_\_\_\_
- In my future education, I would like not to have to do mathematics. \_\_\_\_\_
- I don't mind a lot of mathematics in my further education. \_\_\_\_\_

- A further education with a lot of mathematics does not appeal to me. \_\_\_\_\_
- I would like an occupation where I can use mathematics. \_\_\_\_\_
- In the future, I would like to learn more mathematics. \_\_\_\_\_
- I want to avoid all mathematics in high school and college. \_\_\_\_\_
- I want a job where I do not have to do mathematics. \_\_\_\_\_
- I feel calm in mathematics lessons. \_\_\_\_\_
- I am tense in mathematics lessons. \_\_\_\_\_
- I feel safe in mathematics classes. \_\_\_\_\_
- I am nervous in mathematics lessons. \_\_\_\_\_
- I am worried in mathematics lessons. \_\_\_\_\_
- I am relaxed in mathematics classes. \_\_\_\_\_
- I am anxious when we have mathematics in school. \_\_\_\_\_
- I am always nervous when we have mathematics in school. \_\_\_\_\_
- I always do my homework in mathematics. \_\_\_\_\_
- I always prepare well for tests in mathematics. \_\_\_\_\_
- I always do my best in mathematics. \_\_\_\_\_
- I work hard with mathematics in school. \_\_\_\_\_
- I do as little as I can get by with where mathematics is involved. \_\_\_\_\_
- I give up quickly if I get a difficult mathematics problem. \_\_\_\_\_
- I do assignments in mathematics as quickly as I can. \_\_\_\_\_
- Even if I get a difficult mathematics problem, I do not give up. \_\_\_\_\_
- I have high aptitude in verbal arts. \_\_\_\_\_
- I am as talented in verbal arts as other pupils in my class. \_\_\_\_\_
- I simply have no talent for verbal arts. \_\_\_\_\_
- I can learn well in verbal arts if I work hard. \_\_\_\_\_
- No matter how much I try, I shall have problems learning verbal arts. \_\_\_\_\_
- I just cannot learn verbal arts. \_\_\_\_\_
- I like verbal arts. \_\_\_\_\_
- I look forward to lessons in verbal arts. \_\_\_\_\_
- I wish I did not have to take lessons in verbal arts. \_\_\_\_\_
- I hate verbal arts. \_\_\_\_\_
- Lessons in verbal arts are boring. \_\_\_\_\_
- I wish we had more lessons in verbal arts in school. \_\_\_\_\_
- Working with verbal arts is fun. \_\_\_\_\_
- In high school, I want to get on a track that has as little instruction in verbal arts as possible. \_\_\_\_\_
- In my further education, I would like as little reading and writing as possible. \_\_\_\_\_
- I don't mind a lot of verbal arts in my further education. \_\_\_\_\_
- A further education with a lot of reading and writing does not appeal to me. \_\_\_\_\_
- I would like an occupation where I can practice reading and writing. \_\_\_\_\_
- In the future, I would like to learn more verbal arts. \_\_\_\_\_
- I want to avoid studying verbal arts in high school and college. \_\_\_\_\_
- I want a job where I do not have to do reading and writing. \_\_\_\_\_
- I feel calm in lessons in verbal arts. \_\_\_\_\_
- I am tense when I have lessons in verbal arts. \_\_\_\_\_
- I feel safe in lessons in verbal arts. \_\_\_\_\_

- I am nervous when I have lessons in verbal arts. \_\_\_\_\_
- I am worried when I have lessons in verbal arts. \_\_\_\_\_
- I am relaxed when I have lessons in verbal arts. \_\_\_\_\_
- I am anxious when I have verbal arts in school. \_\_\_\_\_
- I am always nervous when I have verbal arts in school. \_\_\_\_\_
- I always do my homework in verbal arts. \_\_\_\_\_
- I always prepare well for tests in verbal arts. \_\_\_\_\_
- I always do my best in verbal arts. \_\_\_\_\_
- I work hard with verbal arts in school. \_\_\_\_\_
- I do as little as I can get by with where verbal arts are involved. \_\_\_\_\_
- I give up quickly if I get a difficult verbal arts problem. \_\_\_\_\_
- I do assignments in verbal arts as quickly as I can. \_\_\_\_\_
- Even if I get a difficult verbal arts problem, I do not give up. \_\_\_\_\_
- I often wish I did not have to go to school. \_\_\_\_\_
- I like all school subjects. \_\_\_\_\_
- I hate school. \_\_\_\_\_
- I find all school subjects interesting. \_\_\_\_\_

Filler Questionnaires:

EPQ

FOR EVERY QUESTION, CIRCLE JUST ONE RESPONSE

- YES NO 1. Do you have many different hobbies?
- YES NO 2. Do you stop to think things over before doing anything?
- YES NO 3. Does your mood often go up and down?
- YES NO 4. Have you ever taken the praise for something you knew someone else had really done?
- YES NO 5. Are you a talkative person?
- YES NO 6. Would being in debt worry you?
- YES NO 7. Do you feel "just miserable" for no reason?
- YES NO 8. Were you ever greedy by helping yourself to more than your share of anything?
- YES NO 9. Do you lock up your house carefully at night?
- YES NO 10. Are you rather lively?
- YES NO 11. Would it upset you a lot to see a child or animal suffer?
- YES NO 12. Do you often worry about things you should not have done or said?
- YES NO 13. If you say you will do something, do you always keep your promise no matter how inconvenient it might be?
- YES NO 14. Can you usually let yourself go and enjoy yourself at a lively party?
- YES NO 15. Are you an irritable person?
- YES NO 16. Have you ever blamed someone for doing something you knew was your fault?
- YES NO 17. Do you enjoy meeting new people?
- YES NO 18. Do you believe insurance plans are a good idea?
- YES NO 19. Are your feelings easily hurt?
- YES NO 20. Are all your habits good and desirable ones?

- YES NO 21. Do you tend to keep in the background on social occasions?
- YES NO 22. Would you take drugs which may have strange or dangerous effects?
- YES NO 23. Do you often feel "fed-up"?
- YES NO 24. Have you ever taken anything (even a pin or a button) that belonged to someone else?
- YES NO 25. Do you like going out a lot?
- YES NO 26. Do you enjoy hurting people that you love?
- YES NO 27. Are you often troubled about feelings of guilt?
- YES NO 28. Do you sometimes talk about things you know nothing about?
- YES NO 29. Do you prefer reading to meeting people?
- YES NO 30. Do you have enemies who want to harm you?
- YES NO 31. Would you call yourself a nervous person?
- YES NO 32. Do you have many friends?
- YES NO 33. Do you enjoy practical jokes that can sometimes really hurt people?
- YES NO 34. Are you a worrier?
- YES NO 35. As a child did you do as you were told immediately and without grumbling?
- YES NO 36. Would you call yourself happy-go-lucky?
- YES NO 37. Do good manners and cleanliness matter much to you?
- YES NO 38. Do you worry about awful things that might happen?
- YES NO 39. Have you ever broken or lost something belonging to someone else?
- YES NO 40. Do you usually take the initiative in making new friends?
- YES NO 41. Would you call yourself tense or "highly-strung"?
- YES NO 42. Are you mostly quiet when you are with other people?
- YES NO 43. Do you think marriage is old-fashioned and should be done away with?
- YES NO 44. Do you sometimes boast a little?
- YES NO 45. Can you easily get some life into a rather dull party?
- YES NO 46. Do people who drive carefully annoy you?
- YES NO 47. Do you worry about your health?
- YES NO 48. Have you ever said anything bad or nasty about anyone?
- YES NO 49. Do you like telling jokes and funny stories to your friends?
- YES NO 50. Do most things taste the same to you?
- YES NO 51. As a child did you ever talk back to your parents?
- YES NO 52. Do you like mixing with people?
- YES NO 53. Does it worry you if you know there are mistakes in your work?
- YES NO 54. Do you suffer from sleeplessness?
- YES NO 55. Do you always wash before a meal?
- YES NO 56. Do you nearly always have a "ready answer" when people talk to you?
- YES NO 57. Do you like to arrive at appointments in plenty of time?
- YES NO 58. Have you often felt listless and tired for no reason?
- YES NO 59. Have you ever cheated at a game?
- YES NO 60. Do you like doing things in which you have to act quickly?
- YES NO 61. Is (or was) your mother a good woman?
- YES NO 62. Do you often feel life is very dull?

- YES NO 63. Have you ever taken advantage of anyone?  
 YES NO 64. Do you often take on more activities than you have time for?  
 YES NO 65. Are there several people who keep trying to avoid you?  
 YES NO 66. Do you worry a lot about your looks?  
 YES NO 67. Do you think people spend too much time safeguarding their savings and insurances?  
 YES NO 68. Have you ever wished that you were dead?  
 YES NO 69. Would you dodge paying your taxes if you were sure you could never be found out?  
 YES NO 70. Can you get a party going?  
 YES NO 71. Do you try not to be rude to people?  
 YES NO 72. Do you worry too long after an embarrassing experience?  
 YES NO 73. Have you ever insisted on having your own way?  
 YES NO 74. When you catch a train do you often arrive at the last minute?  
 YES NO 75. Do you suffer from "nerves"?  
 YES NO 76. Do your friendships break up easily without it being your fault?  
 YES NO 77. Do you often feel lonely?  
 YES NO 78. Do you always practice what you preach?  
 YES NO 79. Do you sometimes like teasing animals?  
 YES NO 80. Are you easily hurt when people find fault with you or the work you do?  
 YES NO 81. Have you ever been late for an appointment or work?  
 YES NO 82. Do you like plenty of bustle and excitement around you?  
 YES NO 83. Would you like other people to be afraid of you?  
 YES NO 84. Are you sometimes bubbling over with energy and sometimes very sluggish?  
 YES NO 85. Do you sometimes put off until tomorrow what you ought to do today?  
 YES NO 86. Do other people think of you as very lively?  
 YES NO 87. Do people tell you a lot of lies?  
 YES NO 88. Are you touchy about some things?  
 YES NO 89. Are you always willing to admit it when you have made a mistake?  
 YES NO 90. Would you feel very sorry for an animal caught in a trap?

Filler Questionnaires

BMIS

Please use the following adjectives to report how you are feeling **RIGHT NOW**. Please circle the number that most describes the way you are feeling for each word.

definitely  
definitely

do not

slightly

do not feel  
feel

feel

feel

1

2

3

4

5

6

7

1. grouchy 7	1	2	3	4	5	6
2. tired 7	1	2	3	4	5	6
3. gloomy 7	1	2	3	4	5	6
4. happy 7	1	2	3	4	5	6
5. loving 7	1	2	3	4	5	6
6. calm 7	1	2	3	4	5	6
7. irritated 7	1	2	3	4	5	6
8. jittery 7	1	2	3	4	5	6
9. fed up 7	1	2	3	4	5	6
10. drowsy 7	1	2	3	4	5	6
11. sad 7	1	2	3	4	5	6
12. lively 7	1	2	3	4	5	6
13. caring 7	1	2	3	4	5	6
14. mad 7	1	2	3	4	5	6
15. energetic 7	1	2	3	4	5	6
16. nervous 7	1	2	3	4	5	6

17. angry 7	1	2	3	4	5	6
18. content 7	1	2	3	4	5	6
19. active 7	1	2	3	4	5	6

Filler Questionnaires

Satisfaction with Life Scale

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disagree
- 3 - Slightly disagree
- 2 - Disagree
- 1 - Strongly disagree

\_\_\_\_\_ In most ways my life is close to my ideal.

\_\_\_\_\_ The conditions of my life are excellent.

\_\_\_\_\_ I am satisfied with my life.

\_\_\_\_\_ So far I have gotten the important things I want in life.

\_\_\_\_\_ If I could live my life over, I would change almost nothing.

Filler Questionnaires

Trait Anger Scale

A number of statements people have used to describe themselves are given below. Read the statements below and indicate how you generally feel by placing the appropriate number next to each item.

1= Almost Never

2=Sometimes

3=Often

4=Almost always

\_\_\_ 1. I have a fiery temper.

\_\_\_ 2. I am quick tempered.

\_\_\_ 3. I am a hotheaded person.

\_\_\_ 4. I get annoyed when I am singled out for correction.

\_\_\_ 5. It makes me furious when I'm criticized in front of others.

\_\_\_ 6. I get angry when I'm slowed down by others' mistakes.

\_\_\_ 7. I feel infuriated when I do a good job and get a poor evaluation.

\_\_\_ 8. I fly off the handle.

\_\_\_ 9. I feel annoyed when I am not given recognition for doing good work.

\_\_\_ 10. People who think they are always right irritate me.

\_\_\_ 11. When I get mad, I say nasty things.

\_\_\_ 12. I feel irritated.

\_\_\_ 13. I feel angry.

\_\_\_ 14. When I get frustrated, I feel like hitting someone.

\_\_\_ 15. It makes my blood boil when I'm pressured.

Filler Questionnaires

State Anger Scale

A number of statements people have used to describe themselves are given below. Read the statements below and indicate how you feel *at the moment* by placing the appropriate number next to each item.

1= Almost Never

2=Sometimes

3=Often

4=Almost always

\_\_\_ 1. I am mad.

\_\_\_ 2. I feel angry.

\_\_\_ 3. I am bummed up.

\_\_\_ 4. I feel irritated

\_\_\_ 5. I feel frustrated.

\_\_\_ 6. I feel aggravated.

\_\_\_ 7. I feel like I'm about to explode.

\_\_\_ 8. I feel like banging on the table.

\_\_\_ 9. I feel like yelling at somebody.

\_\_\_ 10. I feel like swearing.

\_\_\_ 11. I am furious.

\_\_\_ 12. I feel like hitting someone.

\_\_\_ 13. I feel like breaking things.

\_\_\_ 14. I am annoyed.

\_\_\_ 15. I am resentful.

Filler Questionnaires

Subjective Happiness Scale

Instructions to participants: For each of the following statements and/or questions, please circle the point on the scale that you feel is most appropriate in describing you.

1. In general, I consider myself:



- |               |               |                |
|---------------|---------------|----------------|
| ___ Sad       | ___ Outrage   | ___ Depressed  |
| ___ Hostile   | ___ Gloomy    | ___ Irate      |
| ___ Miserable | ___ Irritated | ___ Down       |
| ___ Mad       | ___ Sorrow    | ___ Frustrated |
| ___ Blue      | ___ Wrath     | ___ Furious    |
| ___ Vengeful  | ___ Poignant  | ___ Dejected   |

Filler Questionnaires

CESD

Below is a list of ways you might have felt or behaved. Please circle how often you have felt this way during the past week.

Rarely or none of the time means *less than 1 day*;

Some or a little of the time means *1 to 2 days*;

Occasionally or a moderate amount of time means *3 to 4 days*; and

Most or all of the time means *5 to 7 days*.

	Rarely	Little	Moderate	Most
1. I was bothered by things that usually don't bother me.	0	1	2	3
2. I did not feel like eating; my appetite was poor.	0	1	2	3
3. I felt that I could not shake off the blues even with help from my family or friends.	0	1	2	3
4. I felt that I was just as good as other people.	0	1	2	3
5. I had trouble keeping my mind on what I was doing.	0	1	2	3
6. I felt depressed.	0	1	2	3
7. I felt that everything I did was an effort.	0	1	2	3
8. I felt hopeful about the future.	0	1	2	3
9. I thought my life had been a failure.	0	1	2	3
10. I felt fearful.	0	1	2	3
11. My sleep was restless.	0	1	2	3
12. I was Happy.	0	1	2	3
13. I talked less than usual.	0	1	2	3
14. I felt lonely.	0	1	2	3

15. People were unfriendly.	0	1	2	3
16. I enjoyed life.	0	1	2	3
17. I had crying spells.	0	1	2	3
18. I felt sad.	0	1	2	3
19. I felt that people disliked me.	0	1	2	3
20. I could not get "going".	0	1	2	3

Filler Questionnaires

Word Search

Please find the words listed below this word-search. You can stop at whichever point you feel comfortable.

I	F	K	F	V	N	H	Q	P	Y	L	B	N	U	Z	F	I	A	N	P	O
K	W	C	Y	H	K	M	I	C	R	O	W	A	V	E	J	R	M	N	E	O
Z	E	L	T	R	J	H	U	R	R	P	S	G	E	L	Q	R	Q	J	G	L
E	E	U	J	M	U	V	B	S	H	E	Z	K	Y	Q	W	M	Q	L	L	D
P	R	Z	X	M	Z	O	E	F	E	U	T	K	K	Z	L	K	I	D	H	S
T	R	N	D	G	E	H	L	P	R	Q	G	S	W	G	U	C	R	Q	F	U
L	L	D	C	M	N	C	N	E	P	W	E	N	A	M	O	T	T	O	U	E
O	R	K	O	L	B	L	W	J	N	X	M	P	U	O	X	Z	T	U	C	Q
U	G	Z	U	G	T	H	E	O	O	I	N	G	M	N	T	M	Q	B	J	R
C	H	V	C	P	R	I	D	P	A	U	T	M	U	G	L	T	M	U	B	J
M	I	X	H	W	N	I	C	G	I	G	Q	L	A	N	B	N	U	S	V	K
K	S	D	X	B	M	E	X	E	N	X	X	Q	Z	D	T	B	L	B	Q	M
Z	B	F	I	J	Q	A	Z	S	J	V	D	D	N	O	A	D	Z	J	Z	R
H	F	P	P	N	N	P	G	Q	G	T	L	J	Z	Y	N	N	C	M	X	E
Q	Y	T	P	I	D	E	W	T	K	Q	W	C	K	E	U	H	A	C	U	B
X	I	A	A	K	A	R	A	D	N	A	L	G	N	E	E	I	Y	C	I	M
L	M	B	Y	F	U	N	W	Q	I	D	O	T	R	C	Y	H	K	Q	G	E
X	E	L	R	P	I	S	O	R	D	M	U	S	B	T	R	U	M	P	E	T
E	G	E	P	H	B	Q	H	C	R	A	M	O	P	D	W	Q	E	P	Z	P
D	K	I	C	H	S	B	B	L	X	S	J	T	F	N	V	F	V	T	E	E
C	M	Q	W	E	O	H	Z	C	P	D	J	P	B	D	H	N	E	A	B	S

4 countries: - Canada, - England, - China, - India

**3 pieces of furniture:** - Couch, - Ottoman, - Table

**3 appliances:** - Toaster, - Blender, - Microwave

**3 instruments:** - Drums, - Trumpet, - Piano

**4 months:** March, September, April

## Appendix H Study 1-Personality and Blood Glucose: Debriefing Sheet

**What are we trying to learn in this research?**

This project aims to clarify the relationships among pro-social personality traits and helping motivations. This research proposes that people with differences in a specific personality trait (e.g., prosocial) will have different helping motivations. That is, those who score high in such traits focus on the other person's need while helping whereas those who score low in such traits have dual motivations when helping (e.g., they focus on themselves and the other person when helping). Furthermore, research suggests that people who are other-focused when helping tend to experience less cognitive fatigue (e.g., mental tiredness) compared to people who are both other focused and self-focused when helping. One of the questionnaires you completed during mass testing assessed your level of pro-social personality traits. Depending on people's levels of pro-social traits, it is predicted that they will experience less cognitive fatigue when scoring high on those traits compared to those scoring low. Cognitive fatigue was measured by the blood glucose levels and your performance on the computer task. In the grand scheme of things, this research allows us to examine the relationship between pro-social traits and people's motivations when engaging in helping behaviour.

**Why is this important to scientists or the general public?**

Evidence suggests that certain personality variables, such as empathy, are good predictors of people's helping behaviours. Evidence also suggests that people's motivations lead to different levels of cognitive fatigue. The present research is attempting to reconcile these two literatures in the context of helping behaviour. By examining the ways toward an integrative understanding on how personality affects helping motivations, the present research might provide answers concerning the nature of human altruism.

***What are our hypotheses and predictions?***

It is predicted that people who score high on pro-social personality traits will be less cognitively fatigued after helping compared to those who score low on pro-social personality traits.

***Where can I learn more?***

You may want to look at the following article:

Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin*, 126, 247-259.

**Right to withdraw:** All data will be destroyed following data analyses. However, you have the right to immediately withdraw your data and have it destroyed without incurring any penalty.

***What if I have questions later?***

If you have any remaining concerns, questions, or comments about the experiment please feel free to email Lorena Ruci at [lruci2@connect.carleton.ca](mailto:lruci2@connect.carleton.ca) or talk to Dr. John Zelenski (520-2600 x1609). If you have any ethical concerns you can also discuss them with Dr. Avi Parush, Chair, Carleton University Ethics Committee for Psychological Research, 520-2600, ext. 6026) or Dr. Janet Mantler (Chair, Dept. of Psychology, 520-2600, ext. 2648).

Is there anything that I can do if I found this experiment to be emotionally draining?

If you are experiencing any residual adverse affects due to the mood manipulation in this experiment (i.e. from listening to music and remembering emotional events from your past), you can contact one or both of the following resources at your disposal: University Health Services, 520-6674, Distress Centre of Ottawa and Region, 238-3311



## Appendix J

## Study 1

## Correlations between Intrinsic Motivation Scales and Social Desirability Scales

	Self-deceptive Positivity	Impression Management	Social Desirability Total
1. Interest/Enjoyment	0.18	0.26	0.27
2. Perceived Competence	0.05	0.15	0.12
3. Perceived Tension	-0.12	-0.46**	-0.36*
4. Effort/Importance	0.35*	0.26	0.37*
5. Perceived Choice	0.16	0.35*	0.31
6. Value/Usefulness	0.09	0.09	0.11
7. Relatedness	0.06	-0.07	-0.01

\*\* $p < .01$ (two-tailed), \* $p < .05$  (two-tailed)

Appendix K

Study 1

Stroop Errors by Other-Oriented Empathy

Step 1	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	1.99	0.33		0.000
Condition	-0.33	0.26	-0.15	0.20
Social Desirability	-0.04	0.02	-0.22	0.07
Other-oriented Empathy	-0.01	0.41	0.01	0.98
<i>F</i> = 1.71, <i>p</i> =.17, <i>R</i> <sup>2</sup> =.07				
Step 2	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	1.99	0.33		0.000
Condition	-0.33	0.26	-0.15	0.21
Social Desirability	-0.04	0.02	-0.22	0.08
Other-oriented Empathy	-0.12	0.52	-0.03	0.81
Other-oriented Empathy by Condition	0.28	0.77	0.05	0.71
<i>F</i> = 1.30, <i>p</i> =.27, <i>R</i> <sup>2</sup> =.06				

## Appendix K-Continued

## Stroop Errors by Helpfulness.

Step 1	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	2.00	0.32		0.000
Condition	-0.35	0.27	-0.16	0.19
Social Desirability	-0.05	0.02	-0.23	0.05
Helpfulness	-0.06	0.29	0.02	0.82
<i>F</i> = 1.73, <i>p</i> =.16, <i>R</i> <sup>2</sup> =.06				
Step 2	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	1.92	0.33		0.000
Condition	-0.26	0.29	-0.11	0.37
Social Desirability	-0.04	0.02	-0.19	0.12
Helpfulness	-0.23	0.35	-0.09	0.51
Helpfulness by Condition	0.58	0.71	0.13	0.40
<i>F</i> = 1.46, <i>p</i> =.22, <i>R</i> <sup>2</sup> =.07				

Appendix L Study 2-Announcement for Recruitment (Sona System)

**Study Name** Colour Perception and Personality

**Abstract** This is a study about personality characteristics and colour perception.

**Description** The purpose of this study is to better understand how people's personality might affect their colour perception. We are interested in the ways the personality characteristics might affect the way they perceive colours. Specifically, we are interested in the ways personality characteristics might affect people's tendencies in being more prone to perceiving warm colours (e.g., yellow) compared to colder colours (e.g., dark blue). For this study you will complete several questionnaires where you will answer questions about your personality and complete a computer task. For participating you will receive a 1 % increase in your final grade.

**Eligibility Requirements** Must have participated in Mass Testing.

**Duration** 45 minutes

**Percentage** 1 Percentage increase

**Researchers** Lorena Ruci  
Office: HC 6111  
Phone: x1813  
Email:

## Appendix M

## Informed Consent Form

The purpose of an informed consent is to insure that you understand the purpose of the study and the nature of your involvement. The informed consent must provide sufficient information such that you have the opportunity to determine whether you wish to participate in the study.

---

**Present study:** Colour Perception and Personality

**Research personnel.** The following people are involved in this research project and may be contacted at any time: Dr. J. Zelenski (Faculty Sponsor, 520-2600 ext. 1609) or Lorena Ruci (Email: lruci2@connect.carleton.ca). Should you have any ethical or other concerns about this study then please contact Dr. Avi Parush, Chair, Carleton University Ethics Committee for Psychological Research, 520-2600, ext. 6026) or Dr. Janet Mantler (Chair, Dept. of Psychology, 520-2600, ext. 2648).

**Purpose.** The purpose of this study is to better understand how people's personality might affect the way they perceive colours.. We are interested in the ways the personality characteristics might affect people's tendencies in being more prone to perceiving warm colours (e.g., yellow) compared to colder colours (e.g., dark blue).

**Task requirements.** The first experimental task will require you complete a computer task in which you will complete a computer task on colour recognition. Afterwards, you will complete questionnaires about yourself.

**Duration and locale.** The experimental session will last no more than 45 minutes. Testing will take place in the Human Computer Interaction building at Carleton University.

**Potential risk/discomfort.** There is no risk or discomfort associated with participating in this study.

**What you will receive.** You will receive a 1 % increase in your final grade for participating in this study.

**Anonymity/confidentiality.** The data collected in this experiment are strictly confidential. All data are coded such that your name is not associated with the data. In addition, the coded data are made available only to the researchers associated with this project.

**Right to withdraw.** You may withdraw from the study at any time without academic penalty. You may also choose to skip questions you may find objectionable for any reason without academic penalty.

---

Signatures

I have read the above form and understand the conditions of my participation. My participation in this study is voluntary, and if for any reason, at any time, I wish to leave the experiment I may do so without having to give an explanation and with no penalty whatsoever. Furthermore, I am also aware that the data gathered in this study are confidential and anonymous with respect to my personal identity. My signature indicates that I agree to participate in the study.

Participant's Name: \_\_\_\_\_ Participant's Signature:

\_\_\_\_\_  
Researcher Name: \_\_\_\_\_ Researcher Signature:

\_\_\_\_\_  
Date \_\_\_\_\_

## Appendix N Study 2- Colour Perception and Personality: Debriefing Sheet

***What are we trying to learn in this research?***

This project aims to clarify the relationships among pro-social personality traits and helping motivations. This research proposes that people who score high on pro-social traits will have different helping motivations compared to those who score low on pro-social traits. That is, those who score high in such traits focus on the other person's need while helping whereas those who score low in such traits have dual motivations when helping (e.g., they focus on themselves and the other person when helping). Furthermore, research suggests that people who are other-focused when helping tend to experience less cognitive fatigue (e.g., mental tiredness) compared to people who are both other focused and self-focused when helping. One of the questionnaires you completed during mass testing assessed your level of pro-social personality traits. Depending on people's levels of pro-social traits, it is predicted that they will experience less cognitive fatigue when scoring high on those traits compared to those scoring low. The computer task you completed was designed to cause cognitive fatigue and was manipulated across conditions in order to assess its effect in people's willingness to engage in helping behaviour. In the grand scheme of things, this research allows us to examine the relationship between pro-social traits and people's motivations when engaging in helping behaviour.

***Why is this important to scientists or the general public?***

Evidence suggests that certain personality variables, such as empathy, are good predictors of people's helping behaviours. Evidence also suggests that people's motivations lead to different levels of cognitive fatigue. The present research is attempting to reconcile these two literatures in the context of helping behaviour. By examining the ways toward an integrative understanding on how personality affects helping motivations, the present research might provide answers concerning the nature of human altruism.

***What are our hypotheses and predictions?***

It is predicted that people who score high on pro-social personality traits and are cognitively fatigued will help more compared to those who score low on pro-social personality traits and are cognitively fatigued.

***Where can I learn more?***

You may want to look at the following article:  
Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin*, 126, 247-259.  
Right to withdraw. You have the right to withdraw your data from the analyses and have it destroyed without incurring any penalty.

***What if I have questions later?***

If you have any remaining concerns, questions, or comments about the experiment please feel free to email Lorena Ruci at [lruci2@connect.carleton.ca](mailto:lruci2@connect.carleton.ca) or talk to Dr. John Zelenski (520-2600 x1609). If you have any ethical concerns you can also discuss them with Dr. Avi Parush, Chair, Carleton University Ethics Committee for Psychological Research, 520-2600, ext. 6026) or Dr. Janet Mantler (Chair, Dept. of Psychology, 520-2600, ext. 2648).

Is there anything that I can do if I found this experiment to be emotionally draining? If you are experiencing any residual adverse affects due to the mood manipulation in this experiment (i.e. from listening to music and remembering emotional events from your past), you can contact one or both of the following resources at your disposal: University Health Services, 520-6674, Distress Centre of Ottawa and Region, 238-3311

## Appendix O

## Study 2

Reliability Analyses for Pro-social Scales, the Intrinsic Motivation Scale, and Social Desirability.

Scales	Mean	S.D.	$\alpha$
<b>Pro-social Personality Battery</b>			
Social Responsibility	3.41	0.37	0.60
Empathic Concern	3.77	0.50	0.70
Perspective Taking	3.60	0.53	0.70
Other-Oriented Moral Reasoning	3.70	0.58	0.74
Mutual Concerns Moral Reasoning	3.94	0.51	0.74
Factor 1 (Other-Oriented Empathy) Total	3.60	0.31	0.81
Personal Distress	3.34	0.58	0.71
Self-Reported Altruism	3.42	0.54	0.78
Factor 2 (Helpfulness) Total	3.40	0.46	0.78
<b>Intrinsic Motivation</b>			
Interest/Enjoyment	5.35	0.92	0.80
Perceived Competence	5.30	0.90	0.78
Perceived Tension	1.98	0.80	0.58
Effort/Importance	4.83	0.83	0.57
Perceived Choice	6.30	0.64	0.68
Value/Usefulness	5.61	0.99	0.86
Relatedness	4.71	0.99	0.84
<b>Social Desirability</b>			
Self-deceptive positivity	6.43	3.53	0.71
Impression management	6.57	3.52	0.72
Total	13.01	5.85	0.78

## Appendix P

## Study 2

Intrinsic correlations and pro-social personality traits for the control condition (n=38)

	ENJ	COMP	TENS	IMP	CHOI	USE	REL
Social Responsibility	0.38*	0.20	-0.50**	0.01	0.17	-0.01	0.20
Empathic Concern	0.60**	0.12	-0.07	0.01	-0.22	0.02	0.01
Perspective Taking	-0.04	-0.01	0.22	-0.15	-0.04	0.10	0.30
Other-Oriented M R	0.06	-0.03	-0.20	-0.08	-0.25	-0.07	0.08
Mutual Concerns M R	-0.05	-0.16	-0.21	-0.15	-0.17	-0.15	-0.10
Factor 1 Total	0.17	0.09	-0.29	-0.08	-0.08	-0.01	0.10
<sup>17</sup> Rev Personal Distress	0.12	0.15	-0.09	-0.01	0.45**	0.01	0.10
Self-Reported Altruism	0.12	0.15	-0.09	-0.17	-0.02	0.06	0.15
Factor 2 Total	0.14	0.13	-0.17	-0.14	0.12	0.05	0.16

\*\* $p < .01$ (two-tailed), \* $p < .05$  (two-tailed)

Intrinsic correlations and pro-social personality traits for the depletion condition (n=29)

	ENJ	COMP	TENS	IMP	CHOI	USE	REL
Social Responsibility	0.10	0.11	-0.44*	0.22	0.42*	-0.03	-0.14
Empathic Concern	-0.08	-0.06	0.21	0.02	-0.06	0.16	0.24
Perspective Taking	-0.05	-0.15	-0.08	0.02	0.09	0.17	-0.03
Other-Oriented M R	0.14	0.15	-0.05	0.18	0.07	0.22	0.05
Mutual Concerns M R	0.26	0.40*	0.01	0.33	0.08	0.25	0.21
Factor 1 Total	0.06	0.05	-.23	0.23	-0.09	0.20	-0.01
Rev Personal Distress	0.10	-0.11	-0.17	0.01	-0.09	0.20	-0.01
Self-Reported Altruism	0.12	0.08	0.14	0.13	-0.05	0.33	0.18
Factor 2 Total	0.13	0.03	0.06	0.11	-0.05	0.34	0.14

\*\* $p < .01$ (two-tailed), \* $p < .05$  (two-tailed)

<sup>17</sup> As proposed by Penner et al., (1995), the Personal Distress Subscale is reversed scored, so that high scores on personal distress would denote altruists. The reason for this is that high scores on the self-report altruism subscale also denote altruists.

Appendix Q

Announcement for Recruitment (SONA System)

**Study Name** Personality and Blood Pressure

**Abstract** This is a study about personality characteristics and colour perception.

**Description** The purpose of this study is to better understand how people's personality might affect their blood pressure. We are interested in the ways the personality characteristics (e.g., extraversion) might affect blood pressure fluctuations. For this study you will complete several questionnaires where you will answer questions about your personality and provide a blood pressure measurement. For participating you will receive a 1 % increase in your final grade.

**Eligibility Requirements** Must have participated in Mass Testing.

**Duration** 45 minutes

**Percentage** 1 Percentage increase

**Researchers** Lorena Ruci  
Office: HC 6111  
Phone: x1813  
Email:

## Appendix R

## Informed Consent Form

The purpose of an informed consent is to insure that you understand the purpose of the study and the nature of your involvement. The informed consent must provide sufficient information such that you have the opportunity to determine whether you wish to participate in the study.

---

**Present study:** Personality and Blood Pressure

**Research personnel.** The following people are involved in this research project and may be contacted at any time: Dr. J. Zelenski (Faculty Sponsor, 520-2600 ext. 1609) or Lorena Ruci (Email: lruci2@connect.carleton.ca). Should you have any ethical or other concerns about this study then please contact Dr. Avi Parush, Chair, Carleton University Ethics Committee for Psychological Research, 520-2600, ext. 6026) or Dr. Janet Mantler (Chair, Dept. of Psychology, 520-2600, ext. 2648).

**Purpose.** The purpose of this study is to better understand how people's personality might affect their physiology. Specifically we are interested in the ways the personality characteristics might affect people's blood pressure.

**Task requirements.** The first experimental task will require a blood pressure measurement followed by a series of questionnaires about personality and physical symptoms.

**Duration and locale.** The experimental session will last no more than 45 minutes. Testing will take place in the Human Computer Interaction building at Carleton University.

**Potential risk/discomfort.** There is no risk or discomfort associated with participating in this study.

**What you will receive.** You will receive a 1 % increase in your final grade for participating in this study.

**Anonymity/confidentiality.** The data collected in this experiment are strictly confidential. All data are coded such that your name is not associated with the data. In addition, the coded data are made available only to the researchers associated with this project.

**Right to withdraw.** You have the right to withdraw your data from the analyses and have it destroyed without incurring any penalty.

---

## Signatures

I have read the above form and understand the conditions of my participation. My participation in this study is voluntary, and if for any reason, at any time, I wish to leave the experiment I may do so without having to give an explanation and with no penalty whatsoever. Furthermore, I am also aware that the data gathered in this study are confidential and anonymous with respect to my personal identity. My signature indicates that I agree to participate in the study.

Participant's Name: \_\_\_\_\_ Participant's Signature:

\_\_\_\_\_

Researcher Name: \_\_\_\_\_ Researcher Signature:

\_\_\_\_\_

Date \_\_\_\_\_

## Appendix S

## Informed Consent Form

The purpose of an informed consent is to insure that you understand the purpose of the study and the nature of your involvement. The informed consent must provide sufficient information such that you have the opportunity to determine whether you wish to participate in the study.

**Present study:** Personality and Imagination

**Research personnel.** The following people are involved in this research project and may be contacted at any time: Dr. J. Zelenski (Faculty Sponsor, 520-2600 ext. 1609) or Andrea Martell (Graduate student, [amartell@connect.carleton.ca](mailto:amartell@connect.carleton.ca)). Should you have any ethical or other concerns about this study then please contact Dr. Janet Mantler, Chair, Carleton University Ethics Committee for Psychological Research, 520-2600, ext. 2251) or Dr. Mary Gick (Acting Chair, Dept. of Psychology, 520-2600, ext. 2648).

**Purpose.** The purpose of this study is to better understand differences in how people use and understand language. These differences may related to individual differences (personality characteristics) or contextual differences (e.g., music, setting).

**Task requirements.** The experiment is split into a few different tasks. In the first task, you will be asked to fill out a number of questionnaires about yourself. In the second, you will be asked to put on headphones and listen to a narration. In the third task, you will watch words flash on a computer screen and then make judgments about those words (e.g., was the word positive or neutral?).

**Duration and locale.** The experimental session will last about 30 minutes. Testing will take place in the HCI Building at Carleton University.

**Potential risk/discomfort.** It might be discomforting to listen to a narration recounting potentially unpleasant situations. However, it is unlikely that this discomfort will exceed that which people experience in day-to-day life.

**Anonymity/confidentiality.** The data collected in this experiment are strictly confidential. All data are coded such that your name is not associated with the data. In addition, the coded data are made available only to the researchers associated with this project.

**Right to withdraw.** You may withdraw from the study at any time without academic penalty. You may also choose to skip (i.e., not answer) questions you find objectionable for any reason without penalty.

### Signatures

I have read the above form and understand the conditions of my participation. My participation in this study is voluntary, and if for any reason, at any time, I wish to leave

the experiment I may do so without having to give an explanation and with no penalty whatsoever. Furthermore, I am also aware that the data gathered in this study are confidential and anonymous with respect to my personal identity. My signature indicates that I agree to participate in the study.

Participant's Name: \_\_\_\_\_ Participant's Signature:

\_\_\_\_\_  
Researcher Name: \_\_\_\_\_ Researcher Signature:

\_\_\_\_\_  
Date \_\_\_\_\_

## Appendix T Personality and Blood Pressure: Debriefing Sheet

***What are we trying to learn in this research?***

This project aims to clarify the relationships among pro-social personality traits and helping motivations. This research proposes that people who score high on pro-social traits will have different helping motivations compared to those who score low on pro-social traits. That is, those who score high in such traits focus on the other person's need while helping whereas those who score low in such traits have dual motivations when helping (e.g., they focus on themselves and the other person when helping). Furthermore, research suggests that people who are other-focused when helping tend to experience less cognitive fatigue (e.g., mental tiredness) compared to people who are both other focused and self-focused when helping. One of the questionnaires you completed during mass testing assessed your level of pro-social personality traits. Depending on people's levels of pro-social traits, it is *predicted that they will experience less cognitive fatigue when scoring high on those traits* compared to those scoring low. We also predict that when people's other-oriented motivations to help are undermined they tend to help less compared to people who have other and self-oriented helping motivations. In the grand scheme of things, this research allows us to examine the relationship between pro-social traits and people's motivations when engaging in helping behaviour.

***Why is this important to scientists or the general public?***

Evidence suggests that certain personality variables, such as empathy, are good predictors of people's helping behaviours. Evidence also suggests that people's motivations lead to different levels of cognitive fatigue. The present research is attempting to reconcile these two literatures in the context of helping behaviour. By examining the ways toward an integrative understanding on how personality affects helping motivations, the present research might provide answers concerning the nature of human altruism.

***What are our hypotheses and predictions?***

It is predicted that people who score high on pro-social personality traits and whose motivations are undermined will help less compared to those who score low on pro-social personality traits and are undermined.

***Where can I learn more?***

You may want to look at the following article:

Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources:

Does self-control resemble a muscle? *Psychological Bulletin*, 126, 247-259.

**Right to Withdraw:** You have the right to immediately withdraw your data and have it

destroyed without incurring any penalty.

***What if I have questions later?***

If you have any remaining concerns, questions, or comments about the experiment please feel free to email Lorena Ruci at [lruci2@connect.carleton.ca](mailto:lruci2@connect.carleton.ca) or talk to Dr. John Zelenski (520-2600 x1609). If you have any ethical concerns you can also discuss them with Dr. Avi Parush, Chair, Carleton University Ethics Committee for Psychological Research, 520-2600, ext. 6026) or Dr. Janet Mantler (Chair, Dept. of Psychology, 520-2600, ext. 2648).

Is there anything that I can do if I found this experiment to be emotionally draining?

If you are experiencing any residual adverse affects due to the mood manipulation in this experiment (i.e. from listening to music and remembering emotional events from your past), you can contact one or both of the following resources at your disposal:

1. University Health Services, 520-6674
2. Distress Centre of Ottawa and Region, 238-3311

## Appendix U

## Study 3

Reliability Analyses for Pro-social Scales, Intrinsic Motivation Scale, and Social Desirability.

Scales	Mean	S.D.	$\alpha$
<b>Pro-social Personality Battery</b>			
Social Responsibility	3.41	0.37	0.60
Empathic Concern	3.77	0.50	0.70
Perspective Taking	3.60	0.53	0.70
Other-Oriented Moral Reasoning	3.70	0.58	0.74
Mutual Concerns Moral Reasoning	3.94	0.51	0.74
<b>Factor 1(Other-Oriented Empathy) Total</b>	<b>3.60</b>	<b>0.31</b>	<b>0.81</b>
<b>Intrinsic Motivation</b>			
Interest/Enjoyment	5.35	0.92	0.80
Perceived Competence	5.30	0.90	0.78
Perceived Tension	1.98	0.80	0.58
Effort/Importance	4.83	0.83	0.57
Perceived Choice	6.30	0.64	0.68
Value/Usefulness	5.61	0.99	0.86
Relatedness	4.71	0.99	0.84
<b>Social Desirability</b>			
Self-deceptive positivity	6.43	3.53	0.71
Impression management	6.57	3.52	0.72
<b>Total</b>	<b>13.01</b>	<b>5.85</b>	<b>0.78</b>

## Appendix V

## Study 3

## Regression Analysis with Other-Oriented Empathy on the Enjoyment Subscale of the Intrinsic Motivation Questionnaire

Step 1	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	4.77	0.39		.01
Condition	-0.01	0.25	-0.01	.97
Self Deceptive Enhancement	0.01	0.04	0.02	.86
Impression Management	0.09	0.04	0.30	.03
Other-Oriented Empathy	0.64	0.35	0.24	.08
<i>F</i> = 2.16, <i>p</i> = .09, <i>R</i> <sup>2</sup> = .15				
Step 2	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>p</i> -value
Constant	4.77	0.39		.01
Condition	-0.01	0.25	-0.01	.96
Self Deceptive Enhancement	0.01	0.05	0.04	.76
Impression Management	0.08	0.04	0.28	.06
Other-Oriented Empathy	0.52	0.43	0.19	.23
Other-Oriented Empathy by Condition	0.41	0.83	0.08	.61
<i>F</i> = 1.75, <i>p</i> = .14, <i>R</i> <sup>2</sup> = .16				

## Appendix W

## Study 3

## Regression Analysis of Helpfulness on the Enjoyment Subscale of Intrinsic Motivation

Step 1	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i> -value
Constant	4.94	0.39		.01
Condition	-0.05	0.25	-0.03	.82
Self Deceptive Enhancement	-0.02	0.05	-0.07	.59
Impression Management	0.09	0.04	0.30	.03
Helpfulness	0.57	0.28	0.28	.05
<i>F</i> = 2.50, <i>p</i> =.06, <i>R</i> <sup>2</sup> =.17				
Step 2	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>p</i> -value
Constant	4.93	0.40		.01
Condition	-0.04	0.25	-0.02	.86
Self Deceptive Enhancement	-0.02	0.05	-0.07	.58
Impression Management	0.09	0.04	0.31	.03
Helpfulness	0.70	0.40	0.35	.09
Helpfulness by Condition	-0.22	0.53	-0.08	.68
<i>F</i> = 2.00, <i>p</i> =.10, <i>R</i> <sup>2</sup> =.18				

## Appendix X

## Study 3

## Correlations between the Pro-Social Personality Traits and Intrinsic Motivation Subscales (No Payment Condition=27).

	ENJ	COMP	TENS	IMP	CHOI	USE	REL
Social Responsibility	-0.04	-0.20	-0.01	-0.43*	-0.08	-0.09	0.06
Empathic Concern	0.49**	0.38**	-0.12	-0.09	-0.06	0.29	0.44*
Perspective Taking	0.01	0.12	-0.20	0.04	0.12	-0.12	0.12
Other-Oriented M. R.	0.07	-0.15	0.27	0.02	-0.15	-0.27	0.01
Mutual Concerns M. R.	-0.15	-0.17	0.05	-0.22	0.01	-0.13	0.03
Factor 1 Total	-.02	-0.31	-0.03	0.03	-0.03	0.09	0.17
Rev Personal Distress	-0.08	0.04	-0.23	-0.13	0.54**	-0.18	0.03
Self-Reported Altruism	0.37	0.21	0.10	0.15	-0.02	0.13	0.49**
Factor 2 Total	0.29	0.20	0.01	0.08	0.18	0.06	0.44**

\*\* $p < .01$ (two-tailed), \* $p < .05$  (two-tailed)

## Correlations Between the Pro-Social Personality Traits and Intrinsic Motivation Subscales (Payment Manipulation Condition=23).

	ENJ	COMP	TENS	IMP	CHOI	USE	REL
Social Responsibility	-0.08	-0.12	-0.21	-0.24	0.18	-0.20	-0.18
Empathic Concern	0.26	0.10	-0.19	0.28	-0.04	0.40*	0.09
Perspective Taking	0.30	-0.09	-0.36	-0.11	0.44*	-0.19	-0.07
Other-Oriented M. R.	0.54**	0.29	-0.28	-0.08	0.26	0.41*	0.06
Mutual Concerns M. R.	0.45*	0.06	-0.19	-0.18	0.45*	0.09	-0.31
Factor 1 Total	0.39	0.02	-0.31	-0.08	0.33	0.11	-0.10
<sup>18</sup> Rev Personal Distress	0.03	0.25	-0.46*	0.09	0.50*	-0.08	-0.23
Self-Reported Altruism	0.34	0.29	-0.69**	0.36	0.41*	0.06	0.35
Factor 2 Total	0.31	0.32	-0.74**	0.33	0.51*	0.03	0.25

\*\* $p < .01$ (two-tailed), \* $p < .05$  (two-tailed)

<sup>18</sup> As proposed by Penner et al., (1995), the Personal Distress Subscale is reversed scored, so that high scores on personal distress would denote altruists. The reason for this is that high scores on the self-report altruism subscale also denote altruists.