9-27-2023 11:00 AM

Putting the 'A' in Prosocial: Development and Validation of a Measure of Trait Altruism

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A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Psychology

Abstract

Trait altruism reflects the tendency to perform behaviours with the goal of improving another's welfare. Altruism is commonly measured using scales that assess how frequently the test-taker has performed specific prosocial actions. However, these scales assume that these behaviours are altruistically motivated and fail to consider what is known in the literature about the attitudes, values, and emotions that characterize altruistic individuals. Accordingly, altruism research would benefit from a new scale that draws upon the large body of interdisciplinary research and follows current best practices in scale development, as summarized in Chapter 1. Chapter 2 presents a review of the altruism literature, identifying underlying elements of trait altruism, including behaviours. Chapter 3 summarizes the development and refinement of the preliminary item pool for the new Altruistic Tendencies Questionnaire (ATQ), which incorporated feedback from three expert raters. Chapter 4 reports a study testing the preliminary psychometric properties of the altruism items in university students and North American adults. Exploratory factor analysis supported a unidimensional factor structure, and correlations with theoretically related personality traits and prosocial COVID-19 behaviours provided evidence of convergent validity. Additionally, this study demonstrated that scores on the ATQ accounted for unique variance in predicting donation intention. Chapter 5 replicated the factor structure using confirmatory factor analysis and found a similar pattern of trait correlations in a sample of adults in the U.K. Using a variant of the Dictator Game, it also demonstrated that the ATQ could predict generosity towards a charity. Finally, the study in Chapter 6 found that scores on the ATQ differed significantly between students enrolled in academic majors where one would expect to see differences on altruism (i.e., known-groups validity). This study also broadened the ATQ's nomological network through additional correlational relationships with different personality traits than previously administered. Together, these studies provide preliminary evidence of construct validity for the ATQ, which can be used to advance the study of the altruistic personality and prosocial tendencies.

Keywords

altruism, prosocial behaviour, generosity, personality assessment, scale development

Summary for Lay Audience

Altruism refers to behaviour that is motivated by the concern for others' welfare and not by the expectation of rewards. From the perspective of personality psychology, researchers are interested in examining how people differ in their tendencies to act selflessly. Accurately assessing these tendencies is critical to furthering our understanding of altruism. However, there is a lack of personality scales that reflect our current understanding of altruism or rigorously follow best practices in scale development. Following a review of the altruism literature in personality psychology and other disciplines, I identified several characteristics of altruistic people, considering their emotions, values, and behaviours. Based on these characteristics, I drafted a pool of 50 statements ("items") and consulted other researchers for feedback. I then assessed the statistical properties of this initial group of items by collecting data from two large samples. Specifically, exploratory factor analysis tested which personality statements best reflected altruism. To provide evidence that my new scale measured altruistic tendencies, I also examined whether people who scored higher on altruism also tended to score higher on other prosocial personality traits—and, conversely, whether more altruistic individuals tended to score lower on socially aversive traits. Because data were collected during the COVID-19 pandemic, I also explored whether more altruistic individuals also complied more frequently with social distancing guidelines. Additionally, to see whether my altruism scale could predict generosity, I examined whether more altruistic individuals would be willing to contribute more of a gift card draw winnings to charity. In a follow-up study, I replicated this general pattern of results in a new sample. In my final study, I demonstrated that university students enrolled in different majors, such as nursing and business, were higher or lower in altruism as hypothesized. In general, the new altruism scale is a brief, well-designed tool intended to support research on altruism and prosocial tendencies.

Acknowledgments

Pursuing a PhD is a long journey—much like trekking across Middle Earth to drop the One Ring into the fires of Mount Doom, except you're producing a scholarly work instead of destroying an evil artifact. I could not have done it without the support of my family, friends, and coffee.

Thank you to my family. You always let me know that you were proud of me and supported me in all the non-academic ways that you could. You gave me a strong foundation to build on.

Thank you to my partner, Michael. Your insistence on self-care and well-intended threats to smash my laptop if I worked myself to death were much appreciated. All kidding aside, you were my anchor that helped me weather the storms of COVID-19 and other challenges. I rolled a Nat 20 with you!

Thank you to my friends, both those who've been with me from the beginning and those I made along the way. To my hometown besties, bookworms, D&D nerds, gaming friends, and terrific roommates over the years, you're an amazing bunch.

Thank you to my Pa Kua family. For readers who are unfamiliar with Pa Kua, it is a Chinese martial art that emphasizes circular movements and health-promoting practices. I joined the Pa Kua school in January 2020, just before the first COVID-19 lockdown. Through Pa Kua, I gained confidence and resilience, along with a host of new friends. *Iii!*

Thank you to my supervisors, Don and Alex. Your support and encouragement, especially in the final stretch of my dissertation, were especially valuable. In a similar vein, I extend my gratitude to my committee members, whose guidance focused my research topic and whose feedback strengthened the manuscript.

Thank you to my peers at Western. Many fellow graduate students impacted my journey, both within and outside the Department of Psychology. Go Mustangs (and SOGS!)!

Thank you to my colleagues at SIGMA Assessment Systems. Through my work with you, I have learned more about scale development and the real-world applications of our work. You're amazing to work with, and I look forward to our continued endeavours!

If I've missed anyone, then you're "et al."

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Chapter 1

1 Introduction

The Golden Rule of morality—treating others as you would want to be treated—is a principle common to many of the world's major religions and cultures (Apressyan, 2020). In psychology, this principle falls under the domain of prosocial behaviour. Prosocial behaviour refers to voluntary, intentional actions performed by an individual that benefit another person or group of people (Eisenberg & Miller, 1987; Penner, Dovidio, Piliavin, & Schroeder, 2005). Such actions can be planned (e.g., volunteering weekly for a non-profit) or spontaneous (e.g., helping someone who is struggling to carry a heavy object), and can occur in both non-serious situations (e.g., giving directions to a stranger) and emergencies (e.g., risking one's life to save another person). Although prosocial behaviours ultimately benefit other people, an individual's motivations for doing so may vary. One such motivation is altruism. Coined by Auguste Comte, the word "altruism" is derived from the Latin *alter*, meaning "other." Altruism is the voluntary performance of behaviours that improve the welfare of others; with cost to oneself in terms of time, resources, or effort; and without expectation of direct gain or benefit (Monroe, 1996). However, while all altruistic actions are prosocial, not all prosocial actions are altruistically motivated. As will be discussed later, inferring motivation from behaviour remains a challenge for the current assessment of altruism.

1.1 Early Attempts to Study the Altruistic Personality

Altruism is a concept that has garnered interest across disciplines, including biology, economics, philosophy, and psychology—especially concerning whether altruism truly exists and, if so, how it can be measured. Across subdomains of psychology, researchers have attempted to better understand why people may behave altruistically, rather than selfishly, across a variety of contexts.

Through the lens of personality psychology, researchers have studied how individuals differ on tendencies to engage in altruism. Research on altruism as a personality trait largely began in the 1950s and 1960s. Given the lack of measurement tools available,

early personality scholars relied on intuition and manifestations of altruistic behaviour to study the personality characteristics of altruistic individuals (Cattell & Horowitz, 1952; Friedrichs, 1960; Sawyer, 1966). What these early forays into altruism had in common was that they portrayed altruistic individuals as other-oriented. Indeed, these studies served as a promising beginning to the investigation of altruistic tendencies; however, the authors' definitions and operationalizations of altruism varied considerably. At this time, best practices for scale development were also limited, as Cronbach and Meehl's (1955) and Campbell and Fiske's (1959) seminal papers had only recently been published.

Mapping altruistic characteristics onto a 16-factor model of personality, Cattell and Horowitz (1952) theorized that altruistic individuals would be high on Warmth (A+; other-focused, caring), high on Social Boldness (H+; sociable, agentic), and low on Vigilance (L-; trusting, accommodating). In other words, an altruistic individual should be "[u]nselfish, kind, charitable, ready to forgive, easily moved to pity, [and someone who] consistently modifies [their] own conduct to accord with the interest of other people" (Cattell & Horowitz, 1952, p. 110). Friedrichs (1960) defined altruism as "the general degree to which an individual tends to inhibit (or control) [their] own impulses and desires in order to make it possible for others to express or satisfy theirs" (p. 498). Rather than inferring altruism by mapping it onto existing personality factors, as Cattell and Horowitz (1952) did, Friedrichs instead conducted a study asking participants to rate their altruism based on this definition and various prosocial behaviours. Finally, Sawyer (1966) took an economic approach to measure altruism and defined it as "the value one places upon the welfare of another in relation to [their] own" (p. 407). On Sawyer's Altruism Scale, respondents are asked to make self-other trade-offs in hypothetical payout matrices. More altruistic individuals are those who prefer payoffs that maximize the benefits others receive, even if they themselves would receive less than offered by alternative choices.

What popularized research on individual differences in altruism was the publication of the Self-Report Altruism Scale (SRA; Rushton, Chrisjohn, & Fekken, 1981), which was developed out of a need for a self-report tool for studying altruism. Although the SRA

followed a more rigorous test construction procedure than its predecessors, it also relied on specific instances of (assumed) altruistic behaviour.

Psychologists can understand altruistic behaviour as the interaction between situational factors and individual differences (e.g., personality traits). Most research on altruism has focused on situational factors, with a particular focus on prosocial or altruistic acts. The personality approach to altruism assumes that these tendencies differ between people; however, as previously stated, even attempts to assess altruism as a personality trait are largely limited to inventories of behaviours, such as the SRA (Rushton et al., 1981). Whether these behaviours are altruistic is unclear, given that motivations, emotions, and values are seldom incorporated into these assessments. Indeed, one criticism of behaviour-focused altruism scales is that we cannot infer the motivations of an actor purely from their behaviour (Krebs, 1982). Rather, there are multiple reasons why a person may help others, share resources, or act cooperatively that are not selfless. For example, a person might give their time to a charity because they genuinely care about its cause, but another individual volunteering at the same charity might be focused on strengthening their resumé and professional network. Both instances of volunteering are prosocial, but only the former could be considered altruistic.

1.2 Justification and Rationale

As previously stated, our understanding of altruism is limited by how it is currently measured. Existing scales, such as the SRA, tend to narrowly operationalize altruism using behaviours, to the detriment of a more holistic view of the construct. Because we cannot infer altruistic intent solely from behaviour, it is important to consider alternative ways of assessing altruism as a personality trait. As will be discussed in the literature review, altruism is a complex construct that merits a more nuanced investigation into its components.

Although the SRA served as a foundation for research into trait altruism, there is far more published research available, especially following the positive psychology movement of the early 2000s, which saw renewed interest in the study of positive qualities, including altruism (Pfattheicher, Nielsen, & Thielmann, 2022). Along with behavioural tendencies,

this large body of interdisciplinary literature has also linked altruism to various patterns of emotions, attitudes, and beliefs. To capture the breadth of the altruism construct, therefore, it is necessary to consider what emotional experiences, attitudes, values, beliefs, preferences, and cognitions characterize someone high on trait altruism in addition to behaviours alone.

Best practices in personality test construction, described later in this chapter, have also seen increasing refinement and rigor, facilitating the creation of higher quality assessments. In the development of more recent measures of other prosocial traits (e.g., compassion, gratitude, empathy), researchers have taken a more nuanced approach, incorporating theory, existing research, and considerations of underlying elements. However, this same rigour has not yet been applied to altruism. Therefore, a new measure of altruism is needed that meets these same conceptual and psychometric standards.

To address this gap in altruism research, the current dissertation brings clarification to the theory of altruism through the development of an assessment tool. Although altruism is undoubtedly influenced by situational factors, personality traits can help explain individual differences. For example, not everyone donates to a charity when they receive a flyer in the mail—and if people do, they vary in how often and how much. Because narrow traits tend to have more predictive potential than broad traits (Paunonen, Haddock, Forsterling, & Keinonen, 2003), a more nuanced approach to studying altruism is warranted. Therefore, the current dissertation used a personality approach, focusing on the assessment of differences in altruism between individuals, rather than situational factors that could influence altruistic behaviour. Further, this new scale emphasizes altruism towards strangers, rather than towards family members or friends, because individuals “discount” prosocial behaviour when considering unrelated, emotionally distant individuals (Curry, Roberts, & Dunbar, 2013; Osinski, 2009). In other words, individuals are less prosocial towards strangers than towards friends or relatives as a function of increased social distance.

The altruism scale developed in this dissertation contributes to the scientific community by providing an efficient and psychometrically sound tool for research on altruism and

prosocial behaviour, both within the study of personality and across a variety of disciplines. Scholars across disciplines could use this new altruism scale to help better understand how personality is related to monetary donations, such as those made to charitable organizations, humanitarian causes, or crowdfunding campaigns; or non-financial prosocial behaviours, such as volunteering for a cause or spontaneously helping strangers. Outside of psychology, the new altruism scale could help inform research in leadership (e.g., organizational citizenship behaviours), health (e.g., blood donation), philosophy (e.g., the nature of altruism), and sociology (e.g., in-group vs. out-group attitudes). The increasing research interest in altruism across disciplines further underscores the importance of a well-constructed assessment tool.

1.3 Best Practices in Scale Development

Self-report assessments are useful tools in research (e.g., personality), industry (e.g., personnel selection, talent development), and clinical settings (e.g., diagnostic aids). These assessments aim to measure abstract constructs (e.g., personality traits) that cannot be directly observed, rather than measuring concrete phenomena (e.g., weight, height). Instead, these latent constructs are quantified by having test-takers indicate their agreement with a series of statements, called items, using a numerical scale. Their responses are then combined to give the test-taker a score, which reflects an estimate of the level of the construct that the scale is intended to measure (DeVellis & Thorpe, 2022).

Personality scales are used to assess various constructs, ranging from broad personality dimensions (e.g., extraversion) to narrower, more specific traits (e.g., empathic concern). Higher quality scales assess their intended construct with less measurement error, meaning that the test-taker's score is a more accurate indication of their level of that personality trait. However, because personality traits are latent constructs that cannot be directly observed, it can be challenging to determine the accuracy of a given personality scale. For this reason, it is critical that sufficient effort and attention are invested in the scale development process. Research conducted using psychometrically poor scales is of limited scientific value, as any conclusions may be erroneous (Carpenter, 2018; DeVellis & Thorpe, 2022). In addition to improving the quality of the final measure, following

best practices also increases the likelihood that a scale development manuscript will be published in a peer-reviewed journal (Reynolds, 2010), and therefore that the scale will be disseminated to and used by the research community.

Broadly, scale development can be organized into three stages: item generation, pilot testing, and scale evaluation. The goal of these three phases is to establish what is known as construct validity—that is, whether a scale measures what it is intending to measure (Churchill, 1979; Morgado et al., 2018). The development for the new altruism scale follows DeVellis and Thorpe's (2022) guidelines for scale development and incorporates other best practices recommended in the literature, as described in the following sections.

1.3.1 Stage 1: Item Generation

The first phase of test construction concerns the creation of the initial pool of items from which the final assessment will be made. When researchers create new assessments, they should invest sufficient time and resources into creating a strong pool of items that, in future stages, will be refined to eventually form the final scale. Otherwise, scale development efforts fall prey to the "garbage-in, garbage-out" pitfall (Churchill, 1979; Clark & Watson, 2019), and revisions after the fact cost additional time and resources. Throughout the other stages of scale development, the initial pool of items is whittled down until an optimized scale length is achieved. The final scale should have strong psychometric properties and items that adequately sample all content domains of the construct under investigation. The ultimate quality of the scale depends on the items that operationalize the construct being assessed (Carpenter, 2018; Cronbach & Meehl, 1955; DeVellis & Thorpe, 2022; Worthington & Whittaker, 2006; Wright et al., 2017).

This first stage can be further subdivided into three components (Slavec & Drnovšek, 2012): (1) defining the construct and its dimensions; (2) generating the initial item pool, and (3) consulting experts to evaluate item quality.

1.3.1.1 Review of the Construct

Prior to writing items, aspiring scale developers should conduct an in-depth multidisciplinary literature review combining theory and empirical research (Clark &

Watson, 2019; DeVellis & Thorpe, 2022; Slavec & Drnovšek, 2012). This process informs researchers about what they are attempting to measure, which is especially important from a theoretical perspective for constructs with few or no existing scales. During the literature review, researchers can also identify and evaluate measures of the same construct, if available (Clark & Watson, 2019; DeVellis & Thorpe, 2022; Morgado et al., 2018; Slavec & Drnovšek, 2012).

Following the theoretical review of the target construct, researchers should clearly define what they are trying to measure. This step should include both a formally stated conceptual definition as well as the identification of potential dimensions that may underlie the target construct (Carpenter, 2018; Churchill, 1979; Clark & Watson, 2019; Hinkin, 1995). Because a scale's content should align with its definition, a well-defined construct with a strong theoretical foundation will help with writing high-quality items (DeVellis & Thorpe, 2022). Best practices also recommend specifying the boundaries of the construct (i.e., what the construct is *not*) to reduce inadvertently including content that assess related but distinct constructs (Churchill, 1979; Clark & Watson, 2019; DeVellis & Thorpe, 2022; Slavec & Drnovšek, 2012).

1.3.1.2 Initial Item Development

Writing items should only commence after completing the theoretical review of the construct under investigation, and once the construct and its various components have been outlined. As previously stated, the quality of the final scale is dependent on the initial quality of the items, which itself is dependent on how well the construct is defined (Carpenter, 2018; Clark & Watson, 2019; DeVellis & Thorpe, 2022). The goal of the item development phase is supporting the content validity of the new scale, which requires a solid theoretical framework.

For a scale to have content validity, it must represent all components of the latent construct being assessed but also avoid having construct underrepresentation and construct irrelevant variance (Clark & Watson, 2019). One strategy to support content validity is to use domain sampling, which involves breaking down a construct into smaller parts and then writing content targeting each domain (Hinkin, 1995; Reynolds,

2010). Domain sampling supports the content validity of an assessment by helping ensure that all relevant aspects of a construct have been covered, which is particularly useful for broad or multidimensional constructs. Domain sampling prior to writing items, combined with having expert judges sort items into their content domains, promotes content validity by "establishing a clear link between items and their theoretical domain" (Hinkin, 1995, p. 971). Further, the wording of individual items should reflect the definition of the construct of interest and its theoretical domain (Carpenter, 2018; Wright et al., 2017; Worthington & Whittaker, 2006). More detailed guidelines for developing items are described in the item generation step for the current dissertation (i.e., Chapter 3).

1.3.1.3 Expert Assessment

Once the initial pool of items has been drafted, subject matter experts (e.g., graduate students, faculty) should be consulted to analyze the item pool and provide feedback on the content validity, wording, and general quality of the items (Carpenter, 2018; DeVellis & Thorpe, 2022; Hardesty & Bearden, 2004; Hinkin, 1995; Morgado et al., 2018; Nunnally, 1967; Worthington & Whittaker, 2006). On a micro level, subject matter experts can flag items that can be clarified or have potential issues, such as social desirability or culture-specific content (Carpenter, 2018). On a macro level, expert feedback provides additional confidence in the content validity of the proposed item pool. Subject matter experts can evaluate if an item reflects its intended definition and is relevant to the construct of interest (DeVellis & Thorpe, 2022; Hardesty & Bearden, 2004). Ultimately, these individuals can provide feedback on the item pool, allowing refinement and revisions before resources are invested in testing the items.

1.3.2 Stage 2: Preliminary Testing

Once the initial pool of items has been developed and subjected to expert feedback, the refined items can be empirically tested. Ideally, the sample used in this stage is representative of the target population (Hinkin, 1995), although many scale development studies draw exclusively from convenience samples of university students, which limits the initial generalizability of the scale (Reynolds, 2010). Comparison scales should also be included to provide preliminary evidence of construct validity, which can be drawn

from related constructs identified in the literature review (Clark & Watson, 2019; DeVellis & Thorpe, 2022). Traits used for this purpose should be selected based on a combination of theoretical considerations and, where possible, results from previous studies comparing similar constructs.

1.3.3 Stage 3: Scale Evaluation

The final stage of scale development is to provide additional evidence of the scale's nomological network. A nomological network serves as a theoretical framework, whereby one identifies the construct and establishes which constructs should be related to it, and in what way. There are several ways scale developers can establish the nomological network for a new measure. First, they can examine a series of relationships regarding the new construct under investigation (i.e., being measured by the new scale) to provide "evidence of similarity between measures of theoretically related constructs" (DeVellis & Thorpe, 2022, p. 87), known as convergent validity. These constructs might be (a) existing measures of the same construct, (b) different constructs that should be positively correlated with the new scale, or (c) different constructs that should be negatively correlated with the new scale (Cronbach & Meehl, 1955; DeVellis & Thorpe, 2022). To ensure that the strength of the psychometric properties of the scale replicate across different samples and contexts, it is recommended that scale developers employ a multiple study approach when evaluating the validity of their new measure, rather than relying on the sample in the initial pilot study (Hinkin, 1994, 1998; Wright et al., 2017).

Scale developers can also investigate criterion validity by demonstrating that their scale correlates with a non-trait outcome (Churchill, 1979; Wright et al., 2017) or by comparing scores on the construct between two groups who should differ on this construct, called known-groups validation (Cronbach & Meehl, 1955; Churchill, 1979; DeVellis & Thorpe, 2022). For altruism, this means that the scale should be able to distinguish between two groups of individuals who, based on theory or previous empirical research, are expected to obtain different mean scores on altruism.

1.4 Plan of Research and Sequence of Studies

As will be discussed in-depth in the literature review (Chapter 2), one limitation of current altruism measures is the limited theoretical foundation in their development. Many existing altruism scales rely instead on lay interpretations of (assumed) altruistic behaviour. The current dissertation used a deductive approach to generating altruism items, which involved (a) thoroughly reviewing the literature on altruism to conceptualize the construct and (b) examining existing measures to examine how altruism has been previously operationalized. This approach leveraged previous research and information known about altruism to facilitate item generation. Specific components of altruism were identified, described, and defined in the literature review. Following this process, in the item generation stage (Chapter 3), items were written based on these domains and their definitions. In this way, key elements of altruism were included in the initial item pool. Further, subject matter experts in test construction and personality assessment sorted and provided feedback on the items.

This dissertation presents the development of a new measure of trait altruism that builds on existing measures, a broadened understanding of the construct in the literature, and best practices in scale development. Accordingly, the structure of this dissertation is as follows. First, the theoretical review of the altruism literature (Chapter 2) and the development of the initial item pool (Chapter 3) are described. The remaining chapters summarize the results of three studies supporting the validity of the new Altruistic Tendencies Questionnaire (ATQ). The study in Chapter 4 tests the initial pool of items, evaluates the factor structure of the ATQ, and presents correlations with related personality constructs to provide preliminary evidence of the convergent validity of the ATQ. Criterion-related validity with prosocial behaviour was examined through correlations with self-reported behaviours during the COVID-19 pandemic as well as an index of generosity. In Chapter 5, additional validity evidence collected on an independent sample provides additional support for the psychometric properties and factor structure of the ATQ identified in Chapter 4. This study also included two economic games as proxies for reciprocity and generosity. Finally, in Chapter 6, known-

groups validation of the ATQ was supported by comparing altruism scores between students enrolled in specific academic majors.

Scale validation is an on-going process. As a result, no scale is ever fully “validated”; rather, there becomes an increasing amount of evidence in support of a scale’s validity and strength of its psychometric properties (Clark & Watson, 2019; Cronbach & Meehl, 1955; DeVellis & Thorpe, 2022). The current dissertation, therefore, aimed to provide sufficient evidence of the validity of the Altruistic Tendencies Questionnaire as a new measure of trait altruism, specifically towards strangers.

Chapter 2

2 Literature Review

As described in the Introduction (Chapter 1), scale development should begin with a thorough review of the literature. The goal of this chapter, therefore, is to define altruism and its potential dimensions. To this end, this chapter first introduces interdisciplinary perspectives on altruism in humans (Section 2.1) and the rationale for studying altruism from the psychological perspective (Section 2.2). Two theories of altruism and their support in the altruism literature are highlighted: the empathy-altruism hypothesis and the felt-oneness hypothesis. Once this foundation has been established, existing definitions of altruism are briefly reviewed (Section 2.3). Finally, the definition and elements of trait altruism that guided the new scale's item development are presented (Section 2.4).

2.1 Perspectives on Altruism

The study of altruism has garnered interest across several disciplines, including biology, philosophy, economics, and psychology. Each of these disciplines has taken a different approach to the study of altruism, answering different research questions and lending themselves to different methodologies. The current dissertation focuses on altruism from a psychological perspective, as other perspectives do not as effectively permit research on altruism towards strangers or on individual differences in altruistic tendencies. Biological perspectives emphasize behavioural outcomes and evolutionary fitness, while economic perspectives consider "altruism" to be ultimately motivated by selfishness, rather than genuine concern for others' welfare. A brief description of these non-psychological perspectives is presented first, followed by a more in-depth description of the psychological perspective (Section 2.2). Limiting the scope of inquiry to the psychological perspective allows for a focus on altruism as a personality trait, which subsequently permits an examination on how a new measure can build on existing scales.

2.1.1 Biological Perspective

Given that altruistic behaviour often comes at a cost, whether it is resources, time, or personal risk, evolutionary theorists have attempted to explain altruistic behaviour. The

biological (or evolutionary) perspective considers altruism to be motivated by evolutionary fitness, either directly through the individual's survival, or indirectly through their genes. Biological perspectives largely focus on two kinds of altruism: kin altruism and reciprocal altruism. Kin altruism refers to altruistic behaviour that benefits genetically related family members (Hamilton, 1964a, 1964b). According to kin altruism, people are expected to behave altruistically towards family members, especially those who are more closely related genetically. However, kin altruism does not explain why people will act altruistically towards individuals who are not genetically related. To address this, Trivers (1971) proposed a model of reciprocal altruism, which assumes that people act altruistically towards others because they expect that, in the future, the people they help will return the favour. Although kin altruism and reciprocal altruism explain prosocial behaviour towards family members and friends, they fail to explain the existence of altruistm towards strangers, where no reciprocity is expected, nor do they explain why some people—more than others—are helpful or generous towards strangers. Because biological perspectives focus on outcomes, rather than motivations or intentions, they are limited in how well they explain altruistic tendencies (Clavien & Chapuisat, 2013; De Waal, 2008).

2.1.2 Economic Perspective

The economic view of altruism is transactional, defining altruism as the "notion that another's utility enters directly into an individual's utility function" (Farmer & Kali, 2018, p. 124). In this vein, economic perspectives challenge whether altruism truly exists, or if it is ultimately driven by self-serving motivation, such as pleasure-seeking, status-seeking, or virtue signalling. Similarly, under the economic perspective, even vicarious joy and concern for others are also considered selfish, because "one is oneself pleased at others' pleasure and pained at others' pain, and the pursuit of one's own utility may thus be helped by sympathetic action" (Sen, 1977, p. 326). From this perspective, for a behaviour to be purely altruistic, the actor must receive no rewards from doing so. Intrinsic rewards, including positive emotions, contaminate altruism. With regards to charitable donations, Andreoni (1989, 1990) differentiates between "pure altruism," "impure altruism," and "warm-glow giving." For pure altruism, the only motivation is the

money that the charity receives, which ultimately benefits others. In contrast, warm-glow givers contribute because they want to experience the positive emotions associated with giving, which is considered an egotistical motive. Impure altruism is a combination of altruism that includes feelings of warm glow. From this perspective, donating blood can be considered selfish because people tend to feel good after giving blood (Ferguson, Atsma, de Kort, & Veldhuizen, 2012). A more in-depth history of the economic perspective is detailed in Fontaine (2012).

2.2 Psychological Approach

When considering whether a given prosocial behaviour counts as altruism, the psychological perspective emphasizes the role of motivations and intentions. Motivations for prosocial behaviour may be other-focused, neutral, or self-focused (Eisenberg & Miller, 1987; Krebs, 1982). Individuals may engage in prosocial behaviours to obtain extrinsic rewards, such as donating for a tax receipt, volunteering for career advancement, or enhancing their reputation, but these motivations would not be considered altruistic. What is key to altruism from the psychological perspective is that it is motivated by a genuine concern for others (Clavien & Chapuisat, 2013). Unlike with the economic perspective, personal benefits associated with engaging in altruism, such as experiencing pleasure (i.e., warm glow) or pride, are considered unintended consequences, rather than the ultimate goal of the actor, and therefore do not detract from altruistic intent (Batson & Shaw, 1991). To summarize, altruistic individuals should help people for other-oriented reasons (e.g., to improve another person's well-being), rather than being motivated to help others for self-oriented reasons (e.g., to bolster their own reputation) (Clavien & Chapuisat, 2013).

2.2.1 Empathy-Altruism Hypothesis

The leading hypothesis concerning altruistic behaviour focuses on emotional states. According to Batson's (1991) empathy-altruism hypothesis, concern for others is what drives altruistic behaviour. When witnessing someone in need, the altruistic actor experiences empathic concern and subsequently tries to reduce that person's suffering. Motivation to help through empathic concern is considered altruistic, whereas motivation

to obtain external rewards or avoid punishment is considered egotistic (Batson & Shaw, 1991). From the perspective of the empathy-altruism hypothesis, altruistic behaviour is strongly situation-dependent, with emotional arousal facilitating experiences of empathy and subsequent acts of altruism (Bierhoff & Rohmann, 2004). Evidence for the empathy-altruism hypothesis is supported through positive correlations between empathic concern and self-reported prosocial values (e.g., Persson & Kajonius, 2016), interpersonal helping in experimental manipulations (e.g., Batson & Ahmad, 2001; Bierhoff & Rohmann, 2004; Toi & Batson, 1982), offering social support (e.g., McAuliffe, Forster, Philippe, & McCullough, 2018), real-world prosocial actions (e.g., Farrelly & Bennett, 2018), and neurological activity in altruists (e.g., Sonne & Gash, 2018).

2.2.2 Felt-Oneness Hypothesis

A competing theory about altruism is the felt-oneness hypothesis (Cialdini, Brown, Lewis, Luce, & Neuberg, 1997), which appears in the literature with various labels, including "common humanity," "oneness with humanity," or "identification with humanity." According to this theory, oneness with humanity involves a "a sense of shared, merged, or interconnected personal identities" (Cialdini et al., 1997, p. 483).[1] Some scholars consider identification with humanity to be at the "heart" of altruism (Monroe, 1996), whereby an individual's in-group includes all people, not just those physically or emotionally close to them. From the perspective of the felt-oneness hypothesis, altruism is driven by this perceived overlap in identity with others, and the welfare of others becomes an extension of one's own welfare. Research has found oneness with humanity to be more predictive of altruism towards strangers than of altruism towards close others in terms of out-group helping (vs. in-group helping), global donations (vs. local donations), and attitudes towards helping humanity (vs. family members) (Reese, Proch, & Finn, 2015; Xi et al., 2016; Zagefka, 2022).

[1] Cialdini et al. (1997) argue that this experience of connectedness to others constitutes an egotistic motivation, rather an altruistic motivation. The crux of this argument is that helping and compassion for the other person becomes an extension of concern for the self, rather than the other person. This interpretation of shared identity as egotism is Western-centric. Western philosophical traditions focus on the individual (e.g., emotions, motivations) whereas Eastern philosophical traditions emphasize self-other relationships (e.g., interconnectedness with others; Ho, 2018). Scholars of Eastern traditions argue the contrary—that oneness and care for others are intricately linked. For example, Buddhist teachings promotes the letting go of the self, which interferes with caring for others, and instead promotes interconnectedness with others (Blum, 2018).

2.2.3 Altruistic Personality

Despite the body of literature supporting empathy-motivated helping, empathy alone does not easily explain altruism towards strangers (or abstract entities) in situations that are not emotionally evocative (Krebs, 1982). Some research indicates that empathy is less predictive of altruism towards members of socially distant out-groups (e.g., helping strangers in need; volunteering or donating to global non-profits) compared to the espousal of more abstract principles of oneness with humanity or a general moral obligation to help others in need (Faulkner, 2018; Maner & Gailliot, 2007; Ottoni-Wilhelm & Bekkers, 2010, Reese et al., 2015). Instead, empathy seems to be a better predictor of altruism towards close others, such as friends, family members, or romantic partners (e.g., Maner & Gailliot, 2007), or in situations with emotional appeals (e.g., Stürmer, Snyder, & Omoto, 2005). In contrast, oneness with humanity may be a stronger predictor of altruism than empathy when helping out-group members or more globally distant others, groups for which empathic emotions are less accessible (e.g., Reese et al., 2015; Stürmer, Snyder, Kropp, & Siem, 2006).

Research on the empathy-altruism hypothesis and the felt-oneness hypothesis treat tendencies towards empathy and oneness with others as separate mechanisms for altruistic behaviour. However, from the perspective of an altruistic personality, these hypotheses are not mutually exclusive. Empathic actors may be more altruistic in emotionally stimulating situations, while more cognitive factors (e.g., identification with others, moral principles) may promote altruistic behaviour in situations that evoke less immediate emotional arousal. Despite representing competing hypotheses, measures of empathic concern and oneness with humanity are not statistically orthogonal, but positively correlated (Beechler, 2018; Edinger-Schons, 2020; Hamer, McFarland, & Panczek, 2019; Maner et al., 2007; McFarland, Webb, & Brown, 2012; Reese et al., 2015). Identifying with others is also positively correlated with perceptions of intergroup empathy, which refers to empathizing with more distant others (Reysen & Hackett, 2015). This evidence suggests that these two theories may be complementary, rather than antithetical, in considering what underlies an altruistic disposition. Focusing on altruism

as a personality trait permits the integration of both perspectives as potential components of the altruistic personality.

The idea behind altruism as a personality trait is that some individuals are more inclined to be altruistic than others. Even in the same situation, people should behave differently because of differences in their personality traits. Some scholars argue against the utility of the altruistic personality (e.g., Latané & Darley, 1970; Piliavin & Charng, 1990), while other scholars have acknowledged altruism as belonging on a continuum that ranges from extreme selfishness to extreme selflessness (e.g., Krebs, 1982; Marsh, 2019; Sonne & Gash, 2018). In a similar vein, measuring trait altruism using a personality scale allows individuals to be scored along a continuum of altruistic tendencies (i.e., from more altruistic to less altruistic), rather than on a dichotomy (i.e., altruistic vs. not altruistic; Haski-Leventhal, 2009; Monroe, 1996).

2.3 Defining Trait Altruism

To understand how altruism has been defined previously, several definitions of altruism used by researchers or as described on altruism scales were reviewed. Table 1 presents a non-exhaustive list of these definitions and their commonalities. In general, the definitions reviewed converge on altruism as benefitting others, although the lack of expectation of reward is not always explicitly stated. Most definitions implied that helping is involved, which often has a cost (in time, resources, or effort), while others explicitly stated that there must be a cost. Generally, the motivation behind altruistic behaviour among these definitions was the improvement of another's welfare. Finally, it was usually implied that altruism must be performed voluntarily and intentionally. For example, if an individual bumped into a stranger, which happened to save that stranger from being hit by a car, the actor would not be considered altruistic.

Of the definitions reviewed, Monroe's (1996) was the most comprehensive and was the foundation for the definition of altruism used in this dissertation. Altruism was therefore defined as follows:

> Altruism refers to the voluntary performance of behaviours that improve the welfare of others, with cost to oneself in terms of time, resources and/or effort, and without expectation of direct gain or benefit.

An individual acting altruistically, based on this definition, is motivated to improve other people's welfare. Even if the individual feels good following an altruistic action—which could be considered a benefit—it is not their intent and therefore, based on the psychological perspective, this "benefit" does not detract from the primary altruistic motivation of helping another. Additional descriptions of altruism, such as the experience of warm glow, were derived from components of altruism described later in this section:

> Intrinsic rewards or secondary satisfaction (e.g., warm glow) may be obtained by the actor, but are a by-product of altruistic behaviour, rather than the motivation. Trait altruism reflects a tendency to universally care about the well-being of those in need, actively engage in behaviours that directly or indirectly enhance others' welfare, and experience intrinsic rewards associated with such behaviours (e.g., positive emotions).

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Table 1: Definitions and Conceptualizations of Altruism

Source	Definition	Elements of Definition				
		Benefits Others	No Expectation of External Rewards / Direct Benefit	Cost to Self (time, money, effort)	Motivation/ Goal	Voluntary
Friedrichs (1960)	"the general degree to which an individual tends to inhibit (or control) his own impulses and desires to make it possible for others to satisfy theirs" (p. 498)	Yes	—	Own desires	Allow others to achieve their desires	Implied
Sawyer (1966)	"the practice or principle of seeking the welfare of others" (p. 407)	Yes	—	—	Improve others' welfare	Implied
Rushton et al. (1981)	"there is a trait of altruism. That is, some people are consistently more generous, helping and kind than others" (p. 296); "[endorsing items on] measures of moral judgment, social responsibility, and moral knowledge, all of which, in turn, are related to more overt behavior" (p.301)	Yes	N/A	Implied ("generous, helping")	—	Implied
Eisenberg & Miller (1987)	"a subtype of prosocial behavior—as voluntary behavior intended to benefit another, which is not performed with the expectation of receiving external rewards or avoiding externally produced aversive stimuli or punishments" (p. 92)	Yes	Yes	—	Benefit another; reduce others' distress	Yes
Johnson et al. (1989)	"performing an act helpful to someone else without expectation of reward or repayment" (p. 855)	Yes	Yes	Implied ("helpful")	Unclear	Implied
Monroe (1996)	"behavior intended to benefit another, even when this risks possible sacrifice to the welfare of the actor. […] (1) Altruism must entail action [...].(2) The action must be goal-directed, although this may be either conscious or reflexive. (3) The goal of the act must be to further the welfare of another […]. (4) Intentions count more than consequences. […]. (5) The act must carry some possibility of diminution in my own welfare […]. 6) Altruism sets no conditions; its purpose is to further	Yes	Yes	Yes	Improve others' welfare	Yes

	the welfare of another person or group, without anticipation of reward for the altruist.					
Lee, Lee, & Kang (2003)	"Altruism is unselfish concern for the welfare of others. […] An altruistic person is concerned and helpful even when no benefits are offered or expected in return" (p. 555)	Yes	Yes	Implied ("helpful")	Improve others' welfare	Implied
	Directed altruism is "helping or comforting behavior directed at an individual in need, pain, or distress" (p. 281)	Yes	—	Implied ("helping")	Improve others' welfare; Reduce others' distress	Implied
De Waal (2008)	Altruistic impulse: "Spontaneous, disinterested helping and caring in reaction to begging or distress signals or the sight of another in pain or need" (p. 281)	Yes	Yes	Implied ("helping")	Reduce others' distress	Implied
	Intentionally altruistic altruism: "the altruist deliberately seeks to benefit either the other" (p. 281)	Yes	—	—	Improve others' welfare	Yes
Büssing et al. (2013)	"an attitude and commitment to help and care for others without expecting any rewards or direct benefit" (p. 336)	Yes	Yes	Implied ("helping")	Help others	Implied
Clavien & Chapuisat (2013)	Preference altruism: "An action is altruistic if it results from preferences for improving others' interests and welfare at some cost to oneself" (p. 131)	Yes	—	Yes	Improve others' welfare	Implied
	Behavioral altruism: A behaviour is altruistic if it brings any kind of benefit to other individuals at some cost for the agent, and if there is no foreseeable way for the agent to reap compensatory benefits from her behaviour" (p. 131)	Yes	Yes	Yes	Unclear	—
Oda et al. (2014)	"behavior by an individual that increases the fitness of another individual (recipient) while decreasing the fitness of the actor" (p. 206)	Yes	—	Yes	Improve others' welfare	—
Cheng et al. (2017)	"any behavior that is designed to increase another person's welfare, and particularly those actions that do not seem to provide a direct reward to the person who performs them" (p. 202)	Yes	Yes	—	Improve others' welfare	Implied

2.4 Proposed Elements of Altruism

Despite the growing interest in prosocial constructs—including altruism—and research into various behaviours associated with altruism (e.g., blood donation, charitable giving), the assessment of altruism has been limited by a vague conceptualization limited to behaviour-focused definitions, and lack of discussion on what constitutes the altruistic personality. While altruism has been historically investigated as a behaviour, some researchers have entertained the potential for an "altruistic personality" (e.g., Rushton et al., 1981) but have not invested sufficient research into identifying the elements that comprise it.

As previously mentioned, altruism has been defined in various ways (see Table 1) and investigated from interdisciplinary perspectives. Although scholars have discussed what characteristics and values may predispose individuals towards altruistic behaviour, these perspectives have yet to be unified into an assessment. Staub (2005) describes altruistic motivation as a combination of affective connections to others and moral values. Specific narrow qualities proposed for the altruistic personality have been numerous, but include: empathy (Allen & Rushton, 1983; Batson, 1991; Krebs, 1982; Staub, 2005; Marsh, 2019), faith in humanity (Allen & Rushton, 1983; Staub, 2005), extensivity (Einolf, 2010; Oliner & Oliner, 1988), moral reasoning (Krebs, 1982; Rushton et al., 1981), compassion and concern for others' well-being (Allen & Rushton, 1983; Marsh, 2019; Oliner & Oliner, 1988; Staub, 2005), sense of moral obligation or personal responsibility for those in need (Allen & Rushton, 1983; Krebs & Hesteren, 1994 Oliner & Oliner, 1988; Rushton et al., 1981; Staub, 2005), valuing equality (Krebs & Hesteren 1994; Oliner & Oliner, 1988), "inclusive" caring that extends to all humans (Staub, 2005), and a sense of oneness with humanity and universal love (Krebs & Hesteren, 1994).

Based on a review of the literature on the characteristics associated with altruistic and prosocial behaviour, the current dissertation aimed to develop an altruism scale based on a model of trait altruism that is composed of several elements: an intrinsic motivation to act altruistically, followed by feelings of warm glow or fulfillment (*intrinsic motivation*); positive attitudes towards others, including trust and compassion (*benevolent attitudes*); a

moral obligation to care for others (*principle of care*); connectedness to humanity in general as part of one's in-group (*universalistic moral perspective)*; beliefs that all people deserve equal rights and opportunities (*egalitarian values*); and tendencies to engage in behaviours perceived as altruistic, without expectation of reward or reciprocity (*behavioural tendencies*).

2.4.1 Intrinsic Motivation

The first proposed component of trait altruism is *intrinsic motivation.* Specifically, altruistic individuals should be internally motivated to improve the welfare of others, rather than be motivated by the promise of external rewards (e.g., social status, networking). Many altruistic individuals experience satisfaction or joy from helping others (Rachlin, 2002). These positive emotions are called "warm glow" (Andreoni, 1989, 1990), although other scholars have referenced the "joy of giving" (Ribar & Ottoni-Wilhelm, 2002). Experiences of positive emotions following altruistic behaviour have been identified as one of the mechanisms of philanthropy (Bekkers & Wiepking, 2011). Although challenged by supporters of "pure altruism" in the economic literature (e.g., Andreoni, 1989, 1990), the intrinsic reward of warm glow does not contaminate the other-oriented motivation of improving someone else's welfare. Most people expect altruistic individuals to experience positive emotions, as it may provide insight into their benevolent intentions (Barasch, Levine, Berman, & Small, 2014). On the other hand, a lack of emotion suggests other motives, such as social gains (i.e., reputation) or material gains (e.g., tax receipt). People who observe altruistic actors feeling good do not discount their altruistic actions as selfish; instead, they perceive feeling good as a sign that the individuals genuinely care.

Normative forms of altruism reflect altruistic actions that incur minimal cost to the donor, such as generosity, volunteering, and blood donation (O'Connell et al., 2019). In these contexts, warm glow is often observed as a by-product of low-cost altruistic actions (Büssing, Kerksieck, Günther, & Baumann, 2013). Experiences of positive affect, warm glow, and satisfaction have been observed in deciding to donate to charity in laboratory settings (e.g., Berman & Small, 2012; Harbaugh, Mayr, & Burghart, 2007), spending

money on another's behalf (e.g., Aknin et al., 2013; Dunn, Aknin, & Norton, 2008), volunteering with intrinsic motivation (e.g., Meier, & Stutzer, 2008; Schuermann, 2016), and donating blood (e.g., Ferguson, Farrell, & Lawrence, 2008). Additional cross-cultural evidence supports warm glow with other-oriented spending in non-Western samples, including South Africa (Aknin et al., 2013) and a rural community with little contact with the urban, Western world (Aknin, Broesch, Hamlin, & Van de Vondervoort, 2015).

Findings from neurological studies also link charitable giving to areas in the brain associated with reward and social attachment (Harbaugh, Mayr, & Burghart, 2007; Moll et al., 2006). Moll et al. (2006) reported that participants who sacrificed potential earnings to benefit a charity more frequently demonstrated greater neural activity in reward centres of the brain. In a similar study, Harbaugh et al. (2007) found that sensitivity to these warm-glow rewards differs between individuals. Some participants showed greater neural activity when the charity received money compared to when they did, while other participants showed the opposite pattern. These results support the connection between intrinsic motivation and altruistic tendencies. Warm glow seems particularly salient when individuals are provided the opportunity to act selfishly, but choose to act altruistically (Berman & Small, 2012; Ferguson & Flynn, 2016).

2.4.2 Principle of Care

The *principle of care* refers to the sense of duty or moral obligation to care for or help people in need, reflecting an internalized moral value (Bekkers & Ottoni-Wilhelm, 2016; Ottoni-Wilhelm & Bekkers, 2010). Altruistic individuals should feel responsible for others' well-being "not just because they feel bad for those in trouble, but also because they recognize helping as the morally right thing to do" (Bekkers & Ottoni-Wilhem, 2016, p. 240). Accordingly, the principle of care reflects a more cognitive component of altruism, including deliberate acts of benevolence and espousing universalistic values that extend an individual's sense of responsibility to more distant strangers. Prosocial values, such as the principle of care, have been identified as one of the mechanisms of philanthropy (Bekkers & Wiepking, 2011).

In their review of altruism, Piliavin and Charng (1990) highlight the link between internalized moral norms and altruism. Similarly, in their interviews of Holocaust rescuers, Oliner and Oliner (1988) report a theme of moral responsibility. Correlational research also supports perceptions of social responsibility—including the principle of care—to helping and charitable donations. Using data from the General Social Survey, Ottoni-Wilhelm and Bekkers (2010) found that the principle of care predicted several helping behaviours. Additionally, across four studies, Bekkers and Ottoni-Wilhelm (2016) demonstrated that the principle of care was positively associated with charitable giving. Another study reported that people with a greater perception of moral responsibility to others were both more likely to have donated in the past and to express greater intention to donate in the future (Knowles, Hyde, & White, 2012). Research has also shown that people who consider themselves personally responsible for helping others are more willing to engage in other-benefitting behaviours such as bone marrow donation (Briggs et al., 1986), blood donation (Zuckerman et al., 1977), planned helping (Amato, 1985), and charitable giving (Schuyt, Smit, & Bekkers, 2010). On a broader level, people who engage in moral reasoning also endorse more positive attitudes towards their country's investment in protecting human rights (McFarland & Mathews, 2005).

This idea of a duty-orientation component of altruism is not unique to Western perspectives. Karma-Yoga, a system of ethics in India, comprises three related dimensions: (a) duty-orientation (i.e., a sense of duty or obligation to help others), (b) indifference to reward (i.e., a sense of willingness to help others without expecting anything in return), and (c) equanimity (i.e., the ability to resist distractions and temptations; Mulla & Krishnan, 2014). Duty-orientation has conceptual parallels to the principle of care (e.g., "I feel it is my duty to contribute to others"), though it also extends to meeting obligations and promises, while indifference to reward reflects how motivated someone is by extrinsic rewards (e.g., When I am given a task, I first think about how I will benefit from it). In examining a measure of Karma-Yoga, Mulla and Krishnan (2014) reported that the dimensions of duty-orientation and indifference to reward were positively correlated. Although these constructs are not perfect parallels to principle of care, being broader in scope, this relationship suggests that individuals who feel a sense

of duty to others are less dependent on external rewards. This description is also in line with that of an altruistic individual, who helps others without any expectation of reward or personal benefit. The principle of care also has a parallel in Chinese culture in the norm of global *jiangyiqi*, which is the "willing[ness] to help common others 'simply because it is the right thing to do'" (Liang, Wu, & Zhang, 2018, p. 287). What these studies also suggest is that the principle of care is conceptually and empirically tied to altruism and prosocial behaviour, and that this component of altruism has cross-cultural roots that extend beyond Western perspectives.

2.4.3 Universalistic Moral Perspective

Another component of trait altruism is having a *universalistic moral perspective*. The idea of universalism refers to the "breadth of the community to which people apply moral values and rules of fairness" (Schwartz, 2007, p.711). Broadly, the universalistic moral perspective reflects a concern for all of humanity at a global level and perceptions that all of humanity belong to one's in-group. It reflects the belief that individuals should be concerned for others around the world, not just those they are emotionally or geographically close to. Most people demonstrate a bias for helping people close to them (e.g., family, friends) over close strangers (e.g., in the same community) and distant strangers (for a meta-analysis, see Balliet, Wu, & De Dreu, 2014).

Individuals who act altruistically towards strangers perceive an interconnectedness with others. They also consider all individuals worthy of care by virtue of being human, even if they do not know them or do not live close to them. This theme emerges across a variety of conceptually related concepts in the literature, including cosmopolitanism (i.e., belief that everyone belongs to a common community at the global level; Bechtel, Hainmueller, & Margalit, 2014; Kuhn, Solaz, & van Elsas, 2017), humanitarianism (i.e. valuing all people; Redford & Ratliff, 2018), moral expansiveness (i.e., breadth of who is worthy of moral concern; Crimston, Bain, Hornsey, & Bastian, 2016; Crimston, Hornsey, Bain, & Bastian, 2018), extensivity (Einolf, 2010; Oliner & Oliner, 1988), moral inclusiveness (i.e., who we ultimately view as worthy of moral values; Schwartz, 2007), common humanity (i.e., recognition of a shared human experience; Pommier et al.,

2019), and *ubuntu* (i.e., sense of interconnectedness; Nussbaum, 2003). Altruistic individuals may also experience a sense of oneness or shared identity with others, even people they have had minimal or no contact with, or even consider humanity more broadly as their in-group (Swann, Jetten, Gómez, Whitehouse, & Bastian, 2012; Beechler, 2018; Cialdini et al., 1997; Maner & Gaillot, 2007; McFarland, Webb, & Brown, 2012).

The label *universalistic moral perspective* is intended to encompass the broad themes of universalism, morality, and interconnectedness that underly these constructs. Cosmopolitanism refers to the ideology that everyone belongs to a common community at the global level, and that everyone should care for others regardless of where they come from or live (Kuhn et al., 2017). Cosmopolitanism reflects a global orientation, with greater interest and concern for distant individuals (Bechtel et al., 2014). The components of cosmopolitanism described by Pogge (1994) align with the general theme of interconnectedness and common humanity: individualism (i.e., that humans in general are the focus of concern), universality (i.e., that one's concern should apply to all humans equally), and generality (i.e., that all people are everyone's concern). Cosmopolitanism overlaps conceptually with humanitarianism, which concerns the welfare and moral worth of all people (Redford & Ratliff, 2018).

Another related construct is moral expansiveness, which refers to the "the breadth of entities deemed worthy of moral concern and treatment" (Crimston et al., 2016, p. 637). Individuals whose moral expansiveness is small tend to limit their concern to family members and friends, whereas individuals with large moral expansiveness may extend their concern to strangers in distant countries. Schwartz (2007) uses the term moral inclusiveness to describe the idea that everyone is within the scope of one's concern. In cosmopolitanism, humans are the "ultimate unit of moral concern" (Pogge, 1994, p.86), which includes everyone. Moral expansiveness has demonstrated moderate positive correlations with universalism values and sense of oneness with humanity, constructs which have already been described in this section (Crimston et al., 2016; 2018).

These perceptions of belonging and caring about a global in-group extends beyond Western philosophy and literature. Common humanity, originating from Buddhist philosophy, reflects an acknowledgement of the interconnectedness of oneself with other people and an "understanding [of] the universality of suffering" (Pommier et al., 2019, p.35), whereby one recognizes that other people also experience misfortune. A similar philosophy in African culture is *ubuntu*, which "addresses our interconnectedness, our common humanity, and the responsibility to each other that flows from our connection" (Nussbaum, 2003, p.4).

Correlational and empirical research supports a relationship between constructs related to the *universalistic moral perspective* with both giving and helping behaviours. Endorsing humanitarian values has been linked to concern and moral obligation towards out-group members, and has also been predictive of a preference for donating to out-group charities over in-group charities (Redford & Ratliff, 2018). In a similar vein, cosmopolitan attitudes have been correlated with generosity and general willingness to donate to non-local charities (Bechtel et al., 2014; Kuhn et al., 2017). Identifying with humanity has been linked to valuing humanitarian policy goals over nationalistic ones (McFarland, Webb, & Brown, 2012), as well to intergroup helping, to a sense of responsibility to help others, and to endorsing universalism (Reysen & Hackett, 2016). Perceptions of unity with other people (i.e., oneness) also predicts helping intentions towards strangers (Beechler, 2018; Cialdini et al., 1997; Maner & Gailliot, 2007).

Finally, qualitative research on living anonymous kidney donors, who are willing to donate their kidney to a stranger, provides further insight into the attitudes and motivations of altruistic individuals (Henderson et al., 2003). One theme that has emerged is a sense of connectedness to others (Clark, Mitchell, & Abraham, 2014). Individuals in Clark et al.'s (2014) study described a sense of responsibility that extended beyond the family circle to society more broadly, and that donating was "a natural extension of their identity and social responsibility" (p. 398). One participant likened recipients to brothers and sisters in a larger brotherhood, even though such individuals were strangers. Another participant equated the value of others' happiness and well-being with their own. In this sense, altruistic individuals should perceive strangers as closer to

them. Although representing a more extreme example of altruism, research on living anonymous kidney donors provides additional support for more altruistic individuals as extending their scope of concern for others' well-being more universally.

2.4.4 Benevolent Attitudes

The component of *benevolent attitudes* refers to a positive orientation towards others, including attitudes of kindness, forgiveness, trust, and compassion. This concept of a compassionate and caring orientation towards others is found in several religions and cultures, including Western (*agape; caritas*) and Buddhist (*metta, maitri*) traditions (Vieten, Amorok, & Schlitz, 2006). Although the component of benevolent attitudes builds on Batson's (1991) empathy-altruism hypothesis, the framing of benevolent attitudes reduces the emphasis on the immediate emotional responsivity to suffering and focuses instead on broader positive feelings towards others. Emotional sensitivity on its own can lead to self-focused motivations to alleviate personal distress, rather than help people in need (Carrera et al., 2013). *Benevolent attitudes* are conceptually and empirically linked to other components of altruism, particularly the *universalistic moral perspective*. Themes from interviews from expert practitioners in various spiritual traditions suggest that "altruism and compassion may arise as a natural consequence of experiences of interconnection and oneness, an altered worldview, and a resulting shift in the sense of self and self in relationship to others" (Vieten et al., 2006; p. 930).

Correlational findings also link altruistic behaviour to traits involving positive and caring attitudes towards others—including compassion (e.g., Piff, Dietze, Feinberg, Stancato, & Keltner, 2015), agreeableness (e.g., Corr, Hargreaves Heap, Seger, & Tsutsui, 2015; Habashi, Graziano, & Hoover, 2016), and faith in humanity (e.g., Kaufman, Yaden, Hyde, & Tsukayama, 2019). When solicited for charitable donations, individuals with more positive attitudes towards helping others also indicate greater donation intention (Costa, Pedro, Garzaro, Carvalho, & Vils, 2021). Similarly, dispositional empathic concern has been linked to willingness to sacrifice monetary earnings to reduce harm to others, as well as to areas in the brain linked to helping and prosocial behaviour (FeldmannHall, Dalgleish, Evans, & Mobbs, 2015). Other findings from neurological

research suggest there may be a “benevolence pathway” in the brain that promotes altruistic behaviour (Klimecki, Leiberg, Ricard, & Singer, 2014; Sonne & Gash, 2018). The “benevolence pathway” (Sonne & Gashe, 2018) or “care system" (Klimecki et al., 2014) refers to the activation of areas in the brain “typically associated with reward, love and affiliation” (Klimecki et al., 2014, p. 873), suggesting that acts of altruism and compassion are self-reinforcing and promote social connectedness.

Additionally, compassion training, which involves cultivating benevolence and loving-kindness towards others, has increased generosity and helping in laboratory paradigms. In one study, individuals who underwent compassion training donated more of their own endowment to redistribute wealth to a victim being treated unfairly (Weng et al., 2013). In another study, compassion training increased how helpful participants were towards others in a game, even in high-cost situations (Leiberg, Klimecki, & Singer, 2011). Together, these theoretical, correlational, and empirical results suggest that harbouring positive, caring attitudes towards others supports altruistic behaviour.

2.4.5 Egalitarian Values

One more peripheral component of altruism is *egalitarian values*, which reflects an endorsement of egalitarianism, values of fairness, and an aversion to inequality when someone else is disadvantaged. This component is considered less central to the altruism construct because “equity is directed toward the welfare of society as a whole [but] care is concerned with the welfare of people without necessary regard for fairness” (Oliner & Oliner, 1988, p. 163). Altruistic individuals should demonstrate social preferences that favour the welfare of others in need and seek to reduce discrepancies in equality.

Oliner and Oliner (1988) identified concerns about equity and fairness as one of the characteristics common to Holocaust rescuers. Similarly, economics research has linked both inequality aversion (“equity) and perceptions of connectedness to one’s partner (“care”) with increased generosity in the Dictator Game (Robson, 2021). Concern for others’ welfare (i.e., “pure altruism” in the economics literature) also interacts with a desire to reduce inequality for one’s partner, resulting in increased giving (Kohler, 2011). Individuals who give more in the Dictator Game score higher on measures of justice

sensitivity, which reflects aversive attitudes towards inequality, both when observing inequality, and when they are benefitting more than someone else (Baumert, Schlösser, & Schmitt, 2014). More generous individuals in the Dictator Game also perceive greater social responsibility and demonstrate a more cooperative social value orientation, which reflects the *principle of care* component of altruism discussed earlier (Baumert et al., 2014). To an extent, the component of *egalitarian values* overlaps with the *universalistic moral perspective*, but focuses on fairness, equality, and reciprocity (Nilsson, Erlandsson, & Västfjäll, 2020; Van den Bergh, Dewitte, & De Cremer, 2006). Accordingly, altruistic individuals are expected to value these principles.

2.4.6 Behavioural Tendencies

The final proposed component of trait altruism is *behavioural tendencies,* which reflects a willingness or tendency to engage in behaviours that could have altruistic motives (i.e., with the end goal of improving someone else's welfare). Table 2 summarizes categories of prosocial behaviours included in several existing altruism scales. Most of these scales include generosity (to specific people or charities) and helping (spontaneous helping or formal helping). Comforting and giving advice are less frequently included, possibly because of their association with compassion or sympathetic responses to distress. Risky behaviours were only included on one scale. Accordingly, the behaviours included on the new altruism scale are broad and reflect these patterns, which largely align with others' categorizations of prosocial behaviour (e.g., giving, sharing, comforting; Dunfield, 2014).

It is important to recognize, however, that altruism is one of several motivations for charitable giving, which includes tax benefits and reputation (Konrath & Handy, 2018). Although the social visibility of many acts of generosity can shape giving behaviours (e.g., donating to have a building named after you), genuine concern for the charity's cause can also motivate individuals to give. In a similar vein, individuals may volunteer with self-benefiting motives (e.g., to build their professional network) or other-benefitting motives (e.g., to help people). As mentioned previously, the psychological perspective emphasizes that other-focused motivations are what distinguish altruism from the broader category of prosocial behaviour.

Table 2: Behaviours Included on Other Altruism Scales

	Emotional support (e.g., comforting)	Solution-focused support (e.g., advice-giving)	Generosity (e.g., of goods, money) to a specific person	Donation (of goods, money) to an organization	Social niceties (e.g., delaying an elevator)	Informal Helping (e.g., spontaneous helping)	Formal Helping (e.g., volunteering)	Donation of blood or organs	Behaviours that risk or cost status	Behaviours that risk physical or psychological harm
SRA	—	—	X	X	X	X	X	X	—	—
AS-J	—	—	X	X	X	X	X	X	X	X
CAS	X	X	X	—	—	X	—	—	—	—
A-Index	X	—	X	X	X	X	X	X	—	—
GALS	X	X	X	X	—	X	—	—	—	—
HAS	—	—	X	X	—	X	X	X	—	—
MDS	—	—	X	X	—	—	—	—	—	—
HEXACO	—	—	—	X	—	—	—	—	—	—

Note. SRA = Self-Report Altruism Scale (Rushton et al., 1981). AS-J = Johnson et al.'s (1989) Altruism Scale. CAS = Compassionate Altruism Scale (Berry, O'Connor, Rangan, & Stiver, 2012). A-Index = Altruism Index (Cheng, Kwok, Cheung, & Yip, 2017). GALS = Generative Altruism Scale (Büssing et al., 2013). HAS = Helping Attitude Scale (Nickell, 1998). MDS = Altruism subscale from the Motives to Donate scale (Konrath & Handy, 2018). HEXACO = Altruism vs. Antagonism scale from the HEXACO-100 (Lee & Ashton 2018).

Chapter 3

3 Item Generation for the Altruism Scale

3.1 Domain Identification

Once the literature review has been conducted and the construct of interest has been defined, the next stage of the scale development process concerns the development of the initial item pool. As discussed in Section 1.3, this process helps ensure that no important elements of the construct are missing and that the items written align with what the author of the scale is attempting to measure (Boateng et al., 2018; DeVellis & Thorpe, 2023). Following these recommendations, Chapter 2 outlined the content domain of the Altruistic Tendencies Questionnaire, including the various elements theorized to underlie it (i.e., altruistic behaviours, intrinsic motivation, benevolent attitudes, egalitarian values, universalistic moral perspective, principle of care). Formal definitions for altruism and its theorized components are presented in Table 3. Note that these definitions were developed for content validity purposes when writing items (i.e., to ensure that the breadth of the altruism construct was being covered), rather than the creation of separate dimensions or subscales within the altruism measure.

Table 3: Definitions of Altruism and Its Components

Component	Definition
Altruism (General)	Altruism refers to the voluntary performance of behaviours that improve the welfare of others, with cost to oneself in terms of time, resources and/or effort, and without expectation of direct gain or benefit. Intrinsic rewards or secondary satisfaction (e.g., warm glow) may be obtained by the actor, but are a by-product of altruistic behaviour, rather than the motivation. Trait altruism reflects a tendency to universally care about the well-being of those in need, actively engage in behaviours that directly or indirectly enhance others' welfare, and experience intrinsic rewards associated with such behaviours (e.g., positive emotions).
Behavioural Tendencies	The tendency to engage in altruistic behaviours, including volunteering, spontaneous helping, and charitable giving, without expectation of reward or opportunities for reciprocity.
Intrinsic Motivation	The tendency to experience intrinsic rewards, such as positive emotions or personal fulfillment, from engaging in altruistic behaviour.
Principle of Care	The belief that one has a moral obligation to care about others or help those in need.
Universalistic Moral Perspective	The belief that all people are worthy of concern and that we all belong to a "common humanity," as well as feelings of connectedness with humanity in general (rather than just close others or one's in-group).

Benevolent Attitudes	Having a positive, well-meaning attitude towards others in general, including attitudes of kindness, forgiveness, trust, and compassion.
Egalitarian Values	The belief that all people deserve equal rights and opportunities.

3.1.1 Intended Population

Altruism falls along a "caring continuum" that ranges from psychopathy to extraordinary altruism, with most people somewhere in the middle (Marsh, 2019; Sonne & Gash, 2018). On the extreme end of altruism are acts that have high cost or risk to the actor (e.g., donating your kidney to non-kin; hiding Holocaust victims), whereas the middle reflects more normative forms of altruism, such as helping strangers. The Altruistic Tendencies Questionnaire developed in this dissertation is intended to assess tendencies to engage in normative altruism. Whether the ATQ can predict extraordinary altruism is an avenue for future research but is beyond the scope of the dissertation.

Some altruism scales also distinguish between targets of altruistic behaviour because factors such as familiarity, kinship, and liking influence altruistic behaviour. The ATQ measures altruistic tendencies towards strangers or out-group members. It is not intended to measure altruistic tendencies towards family (c.f. kin altruism) or friends (c.f. reciprocal altruism).

3.2 Item Generation

3.2.1 Domain Sampling

To ensure sufficient breadth of coverage of the altruism construct, domain sampling was used. Items were included in the initial pool that reflected each component of altruism identified in the literature review and that covered a combination of cognitions, emotions, and behaviours expected to be endorsed by altruistic individuals. Cognitions included altruistic attitudes, values, and beliefs (e.g., principle of care). Emotions included positive feelings (i.e., warm glow) and perceptions of meaning experienced when engaging in altruism. Behaviours reflected a range of altruistic actions (e.g., volunteering), but were kept broad to facilitate generalizability across contexts.

3.2.2 Advice for Writing Items

Guidelines for item writing were followed based on recommendations by Clark and Watson (2019) and DeVellis and Thorpe (2022). These authors advise that items should be clear, unambiguous, and at an appropriate reading level for the target population. Items should also avoid expressions and colloquialisms, which may not translate across cultures or ethnicities, as well as "double-barreled" questions (i.e., items that assess two topics but may warrant different responses). Further, items should solicit a range of responses. Items that are likely to be agreed with or disagreed with by everyone should be rephrased or deleted. Items with low variability contribute less information about the test-taker's true level of the trait (Hinkin, 1995; DeVellis & Thorpe, 2022; Wright et al., 2017). Although information about response distribution across the possible response options requires empirical testing, potential response variance can still be anticipated during the item-writing stage.

3.2.3 Reverse-Keyed Items

In developing personality measures, some test construction guidelines recommend including reverse-keyed items, also called negatively keyed items. Reverse-keyed items are statements that, if agreed with, reflect a low score on the trait instead of a high one. For example, if assessing Extraversion, endorsing a reverse-keyed item might reflect someone who is introverted, rather than outgoing (e.g., "I am a shy person"). Reverse-keyed items have traditionally been incorporated into scales to buffer against response patterns, such as acquiescence (i.e., a general pattern of agreement to items), careless responding, and inattention (DeVellis & Thorpe, 2022).

Despite the advantages of reverse-keyed items, they can also present statistical problems. For example, reverse-keyed items sometimes demonstrate artificially high correlations with other reverse-keyed items, which can lead to the unintentional assessment of a "reverse-keyed items" factor during factor analysis (Schmitt & Stults, 1985; van Sonderen et al., 2013). Additionally, reverse-keyed items are more susceptible to inattention and confusion by test-takers (van Sonderen, Sanderman, & Coyne, 2013; DeVellis & Thorpe, 2022). This is especially problematic for items that are simple

negations (e.g., I give to charity vs. I *do not* give to charity). Care must also be taken concerning what pole of a construct reverse-keyed items actual assess (i.e., the absence of the trait vs. the opposite of the trait). If reverse-keyed items are included, Hinkin (1995) recommends scrutinizing their psychometric properties.

Given the uncertainty surrounding the psychometric properties of reverse-keyed items, there was no set minimum number of reverse-keyed items to include in the final scale. Item inter-correlations and the overall factor structure of the scale were examined in Chapter 4 to flag potential issues with any reverse-keyed items piloted.

3.2.4 Size of Initial Item Pool

Because many items do not make it through the scale development process, a large pool of items is required in the initial stages, with the general recommendation being three to four times the desired final length of the scale (DeVellis & Thorpe, 2022). The original item pool contained 50 items in anticipation of a final scale length of 15 to 20 items.

3.3 Other Considerations

3.3.1 Rating Scale

A five-point Likert scale was chosen, with labels for each value (i.e., 1 = Strongly Disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly Agree). This decision follows recommendations by Boateng et al. (2018) and Revilla, Saris, and Krosnick (2014) for unipolar Agree-Disagree scales.

3.3.2 Scale Anchors

Five anchor points is considered sufficient for most assessments. Dichotomous "True/False" scales are limited in how well they discriminate between individuals, whereas Likert scales with five points permits such distinctions (Hinkin, 1995; DeVellis & Thorpe, 2002). However, using more than six anchor points does not substantially improve psychometric quality (Clark & Watson, 2019). For the Altruistic Tendencies Questionnaire, a midpoint of "Neither agree nor disagree" was also included. For a more

in-depth discussion of different scale anchors and wording options, see DeCastellarnau (2017) or DeVellis and Thorpe (2022).

3.3.3 Scale Polarity

A related issue in scale development to reverse-keyed items is whether a scale is unipolar or bipolar, which affects the interpretation of low scores on a scale and the writing of reverse-keyed items. A unipolar scale reflects a single trait on which a person is high or low (e.g., high altruism, low altruism). A bipolar scale uses two poles for conceptually opposed traits (e.g., altruism vs. egotism). For the Altruistic Tendencies Questionnaire, a low score reflects low altruistic tendencies, but not necessarily the presence of antisocial tendencies. This was decided because (a) there are multiple antisocial qualities that could be interpreted as the opposite of altruism (e.g., psychopathy, selfishness) and (b) unipolar scales are easier to interpret.

3.4 Expert Review and Q-Sort

To gather feedback on the initial pool of 50 items, graduate and post-graduate peers with backgrounds in personality research and test construction were invited to serve as expert raters. As recommended by DeVellis and Thorpe (2022), raters were presented with definitions for overall altruism as well as each proposed facet (see Table 3). They were asked to sort each item into one of the facets (following Hardesty & Bearden, 2004), or otherwise indicate that the item did not fit any of the facets (but still tapped altruism in general) or that the item did not tap altruism at all. Adapting from Zaichowsky's (1985) procedure and recommended by DeVellis and Thorpe (2022), raters were also asked to assess each item's relevance to altruism, based on the provided definitions, from a scale of 1 to 5 (1 = Completely disagree, 5 = Completely agree). Using the same scale, raters evaluated each item's clarity, neutrality (i.e., free from bias concerning age, gender, or culture) and suitability of reading level. Raters were also asked to evaluate the social desirability of the items; however, due to an ambiguity in the instructions, these ratings could not be interpreted. The instructions given to the raters are included in Appendix D.

Three female raters completed the feedback survey. These individuals were PhD candidates or post-doctoral researchers with backgrounds in personality assessment, test construction, and psychometrics. Their research areas included emotional intelligence, compassion, dark personality traits, intimate partner violence, and mental health. Average scores were computed for clarity, relevance, and neutrality (see

Appendix A); for reading level, ratings for all items were all "5."

Each item was either accepted as-is, modified, or deleted based on the average rating on each criterion. Eleven items were discarded, reflecting items that were redundant (n = 2), had an average relevance rating of less than four (n = 7), or had a neutrality score of less than four (n = 2). One item with a lower neutrality score was retained following revisions. Other minor revisions were made based on specific comments to improve item clarity or neutrality. For example, one rater commented that the item "People need to look after themselves and not overly worry about others" (R) was double-barrelled, so it was split into two items (i.e., "People need to look after themselves first and others later" (R) and "People should not worry about the needs of others" (R)). At the end of this stage, 40 items remained.

3.5 Reading Level Analysis

Because the overall audience of the scale is adults in the general population, the level of language used should be accessible to most adults and avoid erudite language (Clark & Watson, 2019). Reading level is of particular concern among children or adolescents, who are not the target population of the scale; however, having an accessible reading level also applies to individuals who (a) are less educated, (b) do not speak English as their first language, or (c) have learning disabilities. If the content of the items is overly erudite, it may only be accessible to more educated samples of fluent English speakers. Further, overly complex sentences can introduce unnecessary error through potential misinterpretation of scale items. An eighth-grade reading level can be understood by most literate American adults (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993).

To assess reading level, the pool of 40 altruism items was entered into the Text Readability Consensus Calculator (https://readabilityformulas.com/freetests/six-readability-formulas.php), a website that provides free readability assessments across a variety of indices. Three indices were averaged for an overall readability score of the item pool: the Flesch-Kincaid Reading Level, the SMOG Index, and the New Dale-Chall Formula. The Flesch-Kincaid Reading Level (Flesch, 1948) is the most common readability index. It estimates grade level based on sentence length and average syllable count per word. The SMOG Index (McLaughlin, 1969) produces an estimated grade level based on the number of polysyllabic words. Unlike the other two readability indices, the New Dale-Chall Formula (Chall & Dale, 1995) estimates the readability of a text based on the difficulty of its vocabulary, not only sentence length or syllable count. Table 4 summarizes the grade level for each of these readability indices.

Table 4: Reading Level for the Initial Pool of 40 Items

Readability Index	Grade Level
Flesch-Kincaid Reading Level	6.6
SMOG Index	6.9
New Dale-Chall Formula	5.9
Average	**6.5**

Averaging across these indices, the 40 altruism items had an average reading level of 6.5 (between Grade 6 and Grade 7), indicating that the items were easy to read and should therefore be accessible to all or almost all literate adults. This is consistent with the judgments made by the expert raters, who indicated that all items were an appropriate reading level. The average reading level is also similar to those reported for other personality assessments. Using the Flesch-Kincaid Reading Level, Schinka and Borum (1994) reported that the reading level of the California Psychological Inventory (CPI; Gough, 1987), Personality Research Form – Form E (PRF-E; Jackson, 1984), NEO Personality Inventory – Revised (NEO-PI-R; Costa & McCrae, 1992), and the 16 Personality Factor Questionnaire (16PF; Cattell, Eber, & Tatsuoka, 1970) is approximately fifth or sixth grade.

Chapter 4

4 Preliminary Testing of the Altruistic Tendencies Questionnaire

This chapter summarizes a study that tested the pool of 40 altruism items developed in the previous chapter for the Altruistic Tendencies Questionnaire (ATQ). The primary goal of the study was to evaluate the psychometric properties of these potential items for inclusion in the ATQ and their underlying factor structure. The best-performing items from this initial pool were selected based on data from two independent samples. A secondary goal of the study was to gather preliminary evidence of convergent validity based on patterns of correlations with related personality constructs. Because the study was conducted during the COVID-19 pandemic, in a similar vein, the study also examined whether scores on the ATQ were significantly correlated with groups of COVID-19 behaviours, including preventative measures, socializing, and helping. To this end, the study was framed in the context of the COVID-19 pandemic during data collection. The final purpose of the study was to provide preliminary evidence of criterion validity for the ATQ, with donation intention serving as a proxy for actual donation behaviour.

4.1 Altruism, Personality, COVID-19 Behaviours, and Charitable Donations

4.1.1 Altruism and Existing Measures

The Self-Report Altruism Scale (SRA; Rushton et al., 1981), the Compassionate Altruism Scale (CAS; Berry et al., 2012; O'Connor, et al., 2015), and the Generative Altruism Scale (GALS; Büssing et al., 2013) were all developed to measure altruism, although their item content differs considerably. Both the SRA and the CAS focus on specific instances of behaviour. In contrast, the GALS asks about broader types of behaviours, such as volunteering. Because any behavioural items on the ATQ are also broad, the new altruism scale should be most strongly related to the GALS. Accordingly, the following relationships were hypothesized:

H_{1a}: The ATQ will be positively correlated with existing measures of altruism (i.e., SRA, CAS, GALS)

H_{1b}: The ATQ will have a stronger correlation with the GALS than it will with the SRA or the CAS

4.1.2 Altruism and Related Personality Constructs

4.1.2.1 Honesty-Humility

One of the six broad HEXACO factors, Honesty-Humility is characterized by tendencies to act in ways that are sincere and unentitled, placing little value on displays of wealth or social status (Lee & Ashton, 2018). Of the broad traits in the literature, Honesty-Humility demonstrates the most robust pattern of correlations with a variety of prosocial behaviours (Thielmann et al., 2020). Accordingly, the following relationship was hypothesized:

H_2: The ATQ will be positively correlated with Honesty-Humility

4.1.2.2 Gratitude

Dispositional gratitude reflects the "generalized tendency to recognize and respond with grateful emotion to the roles of other people's benevolence in the positive experiences and outcomes that one obtains" (McCullough, Emmons, & Tsang, 2002, p. 112). Research on gratitude and prosocial behaviour suggests that gratitude encourages future benevolence, both towards one's benefactor (i.e., direct reciprocity) and towards strangers (i.e., upstream reciprocity), by promoting generosity, trust, and cooperation with non-family (Bartlet & DeSteno, 2006; McCullough et al., 2002; McCullough, Kimeldorf, & Cohen, 2008; Tsang, 2006). Other research supports positive relationships between gratitude and peer-reported prosocial statements, including volunteering and generosity. Using economic games, Yost-Dubrow and Dunham (2017) also observed that trait gratitude predicted increased donations in the Charity Game (a measure of generosity), as well as sharing more of an endowment in the Trust Game (a measure of reciprocity or cooperation). To summarize, the research supports gratitude as an

"adaptation for reciprocal altruism […] and upstream reciprocity" (McCullough et al., 2008, p. 281). Accordingly, the following relationship was hypothesized:

H_3: The ATQ will be positively correlated with gratitude

4.1.2.3 Sadism

Sadism, one of the four socially aversive personality traits that comprises the Dark Tetrad of personality, is characterized by the enjoyment of causing or witnessing others' suffering through physical pain, subjugation, or humiliation (Johnson, Plouffe, & Saklofske, 2019; Plouffe et al., 2017). Previous research indicates that sadistic tendencies are negatively related to empathic concern, perspective-taking, and agreeableness (Kowalski, Di Pierro, Plouffe, Rogoza, & Saklofske, 2020). Because harming others is conceptually opposite to improving others' welfare, the following was hypothesized:

H_4: The ATQ will be negatively correlated with sadism

4.1.2.4 Social Dominance Orientation

Individuals high on social dominance orientation believe that hierarchies are beneficial to society and that some groups deserve to dominate others, even if this results in inequality (Sidanius, Kteily, Sheehy-Skeffington, Ho, Sibley, & Duriez, 2013). Previous research suggests that individuals who espouse such attitudes tend to be callous, low on empathy, and prejudiced (Bäckström & Björklund, 2007; Sidanius et al., 2013). These individuals also tend to be less prosocial and place lower value on equality, universalism, and benevolence (Politi, Van Assche, Caprara, Phalet, in press). In contrast, altruistic individuals are expected to value equality and consider all groups worthy of concern, especially those who are disadvantaged or in need. For this reason, the following relationship was hypothesized:

H_5: The ATQ will be negatively correlated with social dominance orientation

4.2 Altruism and COVID-19 Behaviours

In early March 2020, amid an escalation of cases of novel coronavirus (COVID-19) the World Health Organization (WHO) declared a global pandemic (WHO, 2020). To curb the spread of the coronavirus, the WHO released advice to the public related to slowing the transmission of COVID-19, including staying at least six feet away from others (i.e., "social distancing"), wearing a mask around others, and washing or sanitizing one's hands frequently. Because people can be asymptomatic carriers of COVID-19, engaging in these protective measures reduced the likelihood of catching the virus and unintentionally spreading it to others in their household, social circle, or community.

Mask-wearing, social distancing, and sanitizing can be considered prosocial because these behaviours protect others. Although research suggests that these behaviours are linked to concern for others and a desire to protect at-risk groups, which could be considered altruistic motivation, people may have also complied with these guidelines for more selfish reasons (Coroiu, Moran, Campbell, & Geller, 2020; Jordan, Yoeli, & Rand, 2021; Liefkefett & Becker, 2021). For example, individuals may have worn a mask out of self-protection (e.g., fear of getting sick), social pressure (e.g., not wanting to seem selfish), or rule-compliance (e.g., not wanting to violate store mandates). However, they also come at a cost to the actor, offering opportunity for altruistic intent. Mask-wearing is uncomfortable; social distancing can become lonely; and frequent sanitizing requires time, effort, and materials. Further, many high-risk activities, such as dining in restaurants and gathering with friends, are enjoyable.

The COVID-19 pandemic and these types of preventative behaviours provided a unique context in which to study prosocial traits, such as altruism. Other-focused personality traits have been associated with prosocial behaviour during the pandemic. Moral identity has been positively linked to engaging in prosocial acts, such as donating supplies (Tse, Lau, Hong, Bligh, & Kakarina, 2022). Individual differences in fairness and gratitude have been positively associated with the compliance with health recommendations and the prioritization of saving lives over saving the economy (Syropoulos & Markowitz, in press). Results from qualitative research describe prosocial and altruistic actions taken to

support others during the pandemic, including providing resources, emotional support, and assistance to others (Tekin, Sager, Bushey, Deng, & Uluğ, 2021). Motivations for doing so centered on a sense of community and on with people in need, which is conceptually similar to altruistic themes of common humanity and identification with others. Conversely, personality traits associated with risk-taking and callousness towards others (e.g., psychopathy, sadism) have been linked to engaging in fewer preventative COVID-19 behaviours (Konc, Petrović, & Dinić, in press), being less concerned about the seriousness of the pandemic (Monteiro et al., in press), and having less intention of being vaccinated (Li & Cao, in press).

Taken together, the following were hypothesized concerning COVID-19 behaviours:

> **H_6:** The ATQ will be positively correlated with preventative behaviours (i.e., social distancing, sanitizing) and with helping others for reasons related to the pandemic
>
> **H_7:** Honesty-Humility and gratitude will be positively correlated with preventative behaviours (i.e., social distancing, sanitizing) and with helping others for reasons related to the pandemic
>
> **H_8:** Sadism and social dominance orientation will be negatively correlated with preventative behaviours (i.e., social distancing, sanitizing) and with helping others for reasons related to the pandemic

4.2.1 Altruism and Charitable Donations

One classic example of prosocial behaviour often assumed to have altruistic intent is donating. Charitable donations have been assessed in several ways in laboratory studies. Some studies rely on self-reported accounts of past donation behaviour, based either how often or how much an individual has donated in a set timeframe (e.g., the past year). Other scholars have employed donation intention paradigms, which simulate a solicitation for donating to a charity. Broadly, this involves giving participants information about one (or more) charities and asking them to report how much they will (or would) give the charity, based either on a hypothetical scenario (e.g., to imagine that they have received a windfall), a definite scenario (e.g., they are told they will receive bonus compensation), or potential winnings (e.g., money in a gift card draw). In addition to Honesty-Humility (Thielmann et al., 2020), previous research has linked an increased

willingness to donate to various prosocial qualities conceptually related to altruism, including integrity (Kowalski et al., in press), sympathetic emotions towards disadvantaged others (Lay, Zagefa, González, Álvarez, & Valdenegro, 2020), and cosmopolitan attitudes (Dalman & Ray, 2022). Accordingly, the following was predicted:

> **H_9:** The ATQ will significantly predict donation intention beyond Honesty-Humility

4.3 Method

4.3.1 Participants

Many scales are limited in their initial development by reliance on university student samples, which are not representative of the general adult population (Reynolds, 2010). To address this concern, two samples were collected, including a non-student sample recruited from Prolific, an online crowdsourcing platform for research participants.

4.3.1.1 Student Sample

For the student sample, undergraduate and graduate students were recruited from Western University in Fall 2021. A total of 1473 participants consented, and following data inspection (see Table 6), responses from 1295 participants were retained. Participant ages ranged from 17 to 59 years (M = 20.44, SD = 5.57), but most participants (70%) were between the ages of 17 and 19. Approximately 83% of the sample was enrolled in an undergraduate program; of these, 81% were first-year students. The proportion of women and undergraduate students recruited was similar to that of the university's 2020-2021 proportion of full-time students, of whom approximately 80% were women and 19% were graduate students (Western University, 2021). Finally, 50.1% of the sample was White, 31.5% was Asian, 6.8% indicated multiple ethnicities, and 5.8% preferred to self-describe. The remaining categories accounted for less than 5% of the sample.

4.3.1.2 Prolific Sample

For the Prolific sample, recruitment was restricted to those who (a) currently resided in Canada or the United States and (b) spoke fluent English. Recruitment took place in late December 2021. A total of 314 participants consented to participate in the study.

Following data inspection (see Table 6), responses from 302 participants were retained. Participant ages ranged from 18 to 77 years (M = 35.82, SD = 12.46). A balance of men and women were requested from Prolific during recruitment; accordingly, about half of the sample (48%) were women. Finally, 65.2% of the sample was White and 20.5% of the sample was Asian. The remaining categories accounted for less than 5% of the sample.

4.3.1.3 Sample Size Rationale

Rules of thumb concerning minimum sample sizes for exploratory factor analysis (EFA) vary widely. While some scholars recommend a minimum sample (e.g., 150, Guadagnoli, Velicer, & Masters, 1988; 200, Guilford, 1954; 300, Clark & Watson, 2019; 300, Tabachnick & Fidell, 1996), others propose a minimum participants-to-variables ratio (e.g., 5:1; Carpenter et al., 2018; 5:1, Comrey & Lee, 1992; 10:1, Everitt; 1975). More recent research suggests that adequate sample size for EFA and related analyses is contingent on several elements, including the number of factors, the number of items per factor, and the size of the commonalities (Hogarty, Hines, Kromrey, Ferron, & Mumford, 2016; Mundfrom, Shaw, & Ke, 2005). If the items-to-factor ratio exceeds 7:1, Mundfrom et al. (2005) argue that even 150-180 participants would be sufficient. However, for untested scale items, which may have lower-than-desirable factor loadings, Gorsuch (1997) recommends a minimum sample of 300. Both the Prolific and student samples exceeded this minimum of 300 participants.

4.3.2 Materials

Participants in both samples completed the same materials, except for some demographic questions specific to each sample. A detailed breakdown of demographics for each sample is presented in Table 5.

Table 5. Summary of Sample Demographics

	Student (*N* =1295)		Prolific (*N* = 302)	
	#	%	#	%
Gender				
Male	344	26.6 %	151	50.0 %
Female	931	71.9 %	145	48.0 %
Non-Binary	16	1.2 %	5	1.7 %
Prefer to Self-Describe	3	0.2 %	0	0.0 %
Prefer Not to Say	1	0.1 %	1	0.3 %
Race/Ethnicity				
White or Caucasian	649	50.1 %	197	65.2 %
Black or African American	38	2.9 %	12	4.0 %
Hispanic or Latino/Latinx	21	1.6 %	13	4.3 %
Asian or Pacific Islander	408	31.5 %	62	20.5 %
Indigenous or Aboriginal	3	0.2 %	1	0.3 %
Multiple Ethnicities	88	6.8 %	10	3.3 %
Prefer to Self-Describe	75	5.8 %	4	1.3 %
Prefer Not to Say	14	1.1 %	3	1.0 %
Not Specified	1	0.1 %	0	0.0 %
Program				
Undergraduate	1080	83.4 %	--	--
Masters	123	9.5 %	--	--
PhD	49	3.8 %	--	--
Post-Graduate	9	0.7 %	--	--
Other	35	2.7 %	--	--
Not Specified	1	0.1 %	--	--
Country of Residence				
Canada	--	--	166	55.0 %
U.S.	--	--	136	45.0 %

4.3.2.1 Altruistic Tendencies Questionnaire

The 40 altruism items developed in Chapter 3 for the Altruistic Tendencies Questionnaire (ATQ) under development were administered in a random order. Participants rated each item using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

4.3.2.2 Self-Report Altruism Scale

The Self-Report Altruism Scale (SRA; Rushton et al., 1981) is a popular measure used for assessing altruistic behaviour. Participants were asked to rate how frequently they had engaged in 20 examples of behaviour (e.g., “I have donated goods or clothes to a charity”), with instructions modified to specify during the past year rather than an unspecified timeframe. Items were rated using a 5-point Likert scale (0 = Never, 1 =

Once; 2 = More than once; 3 = Often; 4 = Very often). The psychometric properties of the SRA were originally reported in Rushton et al. (1981), where it demonstrated good reliability (α = .78 to .87) and small positive correlations with several prosocial traits.

4.3.2.3 Compassionate Altruism Scale

The Compassionate Altruism Scale (CAS; Berry et al., 2012), based on a measure of social support (Vaux et al., 1987), was used to assesses the frequency of 45 altruistic behaviours performed for strangers. Like the SRA, instructions for the CAS were modified to specify a precise time period. Specifically, participants were asked to rate how frequently they had engaged in each behaviour towards a stranger over the past year (e.g., "Helped [a stranger] think about a problem"). Items were rated using a 5-point Likert scale (0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Often, 4 = Very Often), The psychometric properties of the CAS are reported in Berry et al. (2012), with high internal consistency across all subscales (i.e., family, friends, strangers; all α's > .95).

4.3.2.4 Generative Altruism Scale

The Generative Altruism Scale (GALS; Büssing et al., 2013) assesses altruism using seven items (e.g., "When I see suffering, I try to find ways to alleviate it"). Participants rated each item using a 4-point Likert scale (0 = Never, 1 = Sometimes, 2 = Often, 3 = Very Often). The psychometric properties of the GALS in adult samples have demonstrated good reliability (α = .79) and positive correlations with related traits, including compassion and gratitude (Büssing, Baiocco, & Baumann, 2018).

4.3.2.5 Honesty-Humility

The 16-item scale from the HEXACO-100 (Lee & Ashton, 2018) was used to assess Honesty-Humility, one of the broad dimensions from the HEXACO model of personality. Honesty-Humility has four facets: Sincerity (e.g., "I wouldn't pretend to like someone just to get that person to do favors for me"), Fairness (e.g., "I would never accept a bribe, even if it were very large"), Greed Avoidance (e.g., "Having a lot of money is not especially important to me"), and Modesty (e.g., "I am an ordinary person who is no better than others"). Individuals high on Honesty-Humility are fair and sincere, while

individuals low on Honesty-Humility are willing to manipulate others and possess a sense of entitlement. Participants rated items on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The psychometric properties of this version of the scale are reported in Lee and Ashton (2018), and meta-analytic research on Honesty-Humility has demonstrated that this broad personality factor is consistently correlated with a range of prosocial and antisocial traits and behaviours (Thielmann et al., 2020).

4.3.2.6 Gratitude Questionnaire – Six-Item Form

The Gratitude Questionnaire – Six-Item Form (GQ-6; McCullough et al., 2002) is a brief measure of dispositional gratitude (e.g., “I have so much in life to be thankful for”). Participants rated items using a 7-point Likert scale (1 = Strongly Disagree, 7 = Strongly Agree). The GQ-6 has previously demonstrated high internal consistency ($\alpha = .82$) and evidence of convergent validity with related traits, including forgiveness and optimism, as well as positive correlations with prosocial behaviour (McCullough et al., 2002).

4.3.2.7 Assessment of Sadistic Personality

The Assessment of Sadistic Personality (ASP; Plouffe et al., 2017) is a nine-item measure of subclinical sadism (e.g., “When I mock someone, it is funny to see them get upset”). Participants rated items on a 5-point Likert-scale (1 = Strongly Disagree, 5 = Strongly Agree). Previous research supports the psychometric properties of the ASP, including strong reliability and convergent validity ($\alpha = .83$ to $.87$; Plouffe et al., 2017; Plouffe, Smith, & Saklofske, 2019).

4.3.2.8 Social Dominance Orientation

The Social Dominance Orientation scale (SDO; Pratto, Sidanius, Stallworth, & Malle, 1994) is a 16-item measure of intergroup attitudes that assesses how much an individual believes in the importance of hierarchy between groups (i.e., that some groups are better than others) compared to the importance of equality between groups (i.e., that all groups should be treated the same). Participants rated items on a 7-point Likert scale (1 = Strongly Disagree, 7 = Strongly Agree). One sample item is, “Some groups of people are simply inferior to other groups.” In its development, the SDO demonstrated very high

internal consistency (α = .91) and moderate correlations with political attitudes, including the support for the death penalty (positive) and civil rights (negative) (Pratto et al, 1994).

4.3.2.9 Balanced Inventory of Desirable Responding – 16 Item

Best practices in scale development recommend assessing the social desirability of a new scale to ensure that self-reported responses are not contaminated by socially desirable responding (DeVellis & Thorpe, 2022; Morgado et al., 2018). The 16-item version of Paulhus' (1999) Balanced Inventory of Desirable Responding (BIDR-16; Hart, Ritchie, Hepper, & Gebauer, 2015) measures two components of social desirability: self-deceptive enhancement (i.e., unconsciously responding in a genuine but overly positive way; e.g., "I never regret my decisions") and impression management (i.e., deliberately responding in ways that "look good"; e.g., "I sometimes tell lies if I have to" [reverse-scored]). Each subscale includes eight items measured on a 7-point Likert scale (1 = Strongly Disagree, 7 = Strongly Agree). The psychometric properties of this scale are evaluated in Hart et al. (2015), demonstrating adequate reliability (α = .64 to .84) and convergence with other measures of social desirability.

4.3.2.10 COVID-19 Behaviours Survey

The COVID-19 survey comprised 20 items asking about behaviours related to social distancing (e.g., "I acted in accordance with social distancing protocols"), sanitization (e.g., "I disinfected the packaging of products I bought in the store"), and helping (e.g., "For reasons related to the COVID-19 pandemic, I delivered food or supplies to someone"), largely adapted from questions used by published COVID-19 studies (for a breakdown, see Appendix D). To reduce the potential impact of impression management, the survey was framed as asking about "behaviours during the COVID-19 pandemic," which is more neutral language than asking about compliance with guidelines, regulations, or restrictions. Based on feedback gathered during the student sample, in the Prolific sample, additional instructions were added to clarify that these behaviours were for non-work or non-essential purposes. Using a 5-point Likert scale (0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Often, 4 = Very often or always), participants rated how frequently they had engaged in each behaviour during the past year. Following

exploratory factor analyses (EFA) conducted on both samples, items were grouped into four subscales, reflecting Social Distancing (4 items), High-Risk Activities (5 items), Sanitizing (4 items), and Pandemic-Related Helping (5 items).

4.3.2.11 Charity Description

Participants were presented with an excerpt of the description of the Against Malaria Foundation (see Appendix E) from Charity Intelligence Canada (2020). The Against Malaria Foundation is a charity that distributes anti-malaria nets to developing countries, where malaria is one of the leading causes of death. This charity was chosen in part because it was expected to be unfamiliar to participants and, as a global charity, aids geographically distant strangers (vs. a local charity).

4.3.2.12 Donation Intention

Following methodology used by Kowalski et al. (in press), participants were informed that as an additional thank you for their time, they would have the opportunity enter a draw for a $50 (CAD) gift card at the end of the study. Those who wished to enter were asked how much of the gift card, if they won, they would be willing to have donated on their behalf to the Against Malaria Foundation (from $0 to $50).

4.3.3 Procedure

University students were recruited using the undergraduate psychology participant pool or through a mass recruitment email sent to all students at the university. The crowdsourced sample was recruited through Prolific. All data were collected online using Qualtrics, with separate surveys used for each sample. Individuals who expressed interest were presented with the Letter of Information online and indicated consent by checking a box stating, “YES, I consent to participate in this study.” After completing a brief demographics questionnaire, participants completed the COVID-19 survey, the SRA, and the CAS. For these three questionnaires, participants were asked to reflect on their behaviour over the past year. This time frame was chosen because these three measures target specific behaviours, which were expected to differ in frequency during the pandemic compared to before the pandemic. Each of the remaining personality surveys

was administered in a random order. The order of presentation for the items on the ATQ were also randomized.

In the final part of the study, participants were presented with a description of the Against Malaria Foundation. Then participants were reminded of the gift card draw and asked how much of the $50 gift card they would be willing to have donated on their behalf, should they win the draw. Participants who wanted to enter the draw were directed to a separate survey to enter their email address. Because email addresses could not be linked to their responses, how much the winner wished to have donated could not be determined; accordingly, the winners of each draw (i.e., student, Prolific) each received the full $50 gift card. At the end of the study, participants were presented with a Debriefing Letter. For the student sample, the median completion time was approximately 25 minutes (29 minutes after excluding incomplete responses). For the Prolific sample, the median completion time was 20 minutes.

4.4 Results

4.4.1 Data Inspection

Prior to data analyses, data for each sample were screened based on insufficient data, failure on two or more of the instructed response checks, and examination of careless responding using the Landers' (2020) LongString macro in Excel. A more detailed breakdown is presented in Table 6. The student sample had higher levels of incomplete data compared to the Prolific study, potentially because the length of the study was not sufficiently incentivized for participants recruited through the mass email recruitment, who were eligible for the $50 gift card draw but not research credits (c.f. students recruited from the research participant pool) or other compensation (c.f. Prolific sample).

4.4.1.1 Missing Data

Excluding incomplete cases (N=104; 8.0% of sample), missing item data on the personality measures in the student sample ranged from 0.0% to 0.2%, indicating that very few values were missing. Little's Missing Completely at Random (MCAR) test was significant ($p < .001$), indicating that the missing values were not completely missing at

random. For the Prolific sample, there were no incomplete cases. Missing item data on the personality measures ranged from 0.0% to 0.7%, indicating that very few values were missing. Little's Missing Completely at Random (MCAR) test was not significant (p = .213), indicating that the missing values were completely missing at random.

Missing data points were estimated using the estimation-maximization (EM) technique. Imputing values using EM is recommended over listwise deletion, pairwise deletion, or mean imputation when data are not MCAR (Kang, 2013; van der Heijden, Donders, Stijnen, & Moons, 2006). For participants missing more than 25% of items on a scale, missing responses were not replaced; instead, the associated scale score was not computed. For the ATQ, missing data points were estimated only for the purpose of calculating a scale score once the items on the scale were finalized. They were not imputed for analyses examining the psychometric properties of the preliminary item pool. To maximize useable data, pairwise deletion was used for all analyses; as a result, exact values of n vary between analyses.

Table 6: Data Inspection Procedure

	Sample	
	Student	Prolific
Consented to participate	**1473**	**314**
Returned submission	--	11
Insufficient Data	138	0
Inattention	12	0
Careless Responding (LongString)	11	0
Self-Exclusion	13	0
Age < 17	1	0
Flagged as spam	0	1
Test cases	3	0
Final sample size	**1295**	**302**

Note. Insufficient data refers to incomplete submissions that (a) consented but completed no questionnaires, (b) only completed demographics, or (c) quit before completing the Self-Report Altruism Scale. Inattention refers to participants who failed two or more instructed response checks.

4.4.2 Variable Descriptives

Descriptive statistics for each variable were computed in *SPSS* Version 27 (see Table 7).

4.4.2.1 Tests of normality

Tests for normality were conducted for each variable. The Shapiro-Wilk test was significant for all study variables in the student sample, and significant for all but Self-Deceptive Enhancement, Impression Management, and Honesty-Humility in the Prolific sample. Skewness, kurtosis, and a visual inspection of the Q-Q plots and histograms of the frequency distributions were also examined.

All variables in the student sample had values for skewness and kurtosis between -1.5 and +1.5, which fall within acceptable limits for a normal univariate distribution (Tabachnick & Fidell, 2012). In the Prolific sample, scores on the CAS and Social Distancing factor of the COVID-19 survey exceeded the acceptable limits for skewness and/or kurtosis. In the student sample, based on visual inspection, scores on the SDO, ASP, GQ-6, and donation amount deviated from a normal distribution. In the Prolific sample, a visual inspection of the scores on the SRA, CAS, ASP, SDO, GQ-6, COVID-19 Social Distancing, and donation intention suggested that these variables also deviated from a normal distribution. Despite these violations, according to the Central Limit Theorem, the sampling distribution will be approximately normal in large samples, even if the variables themselves are not normally distributed. Taken together, given the large samples used in the current study, and the robustness of the analyses conducted, the non-normality of these variables should not pose major problems.

Table 7: Descriptive Statistics of Study Variables

			Student Sample								Prolific Sample							
Variable	Items	Scale	α	*ω*	*M*	*SD*	c_v	Skew.	Kurt.	*n*	α	*ω*	*M*	*SD*	c_v	Skew.	Kurt.	*n*
ATQ	14	1 - 5	.87	.87	3.63	0.56	15.5	-0.40	0.52	1220	.91	92	3.43	0.67	19.6	-0.54	1.11	302
SRA	20	0 - 4	.88	.88	1.18	0.59	50.3	0.62	0.04	1294	.91	.91	0.76	0.59	77.9	1.14	0.54	302
CAS	45	0 - 4	.97	.97	0.82	0.65	78.9	1.00	0.67	1247	.97	.97	0.52	0.52	100.8	1.64	3.15	301
GALS	7	0 - 3	.82	.82	1.64	0.53	32.7	0.22	-0.34	1207	.86	.86	1.38	0.57	41.4	0.53	0.13	301
H-H	16	1 - 5	.82	.81	3.29	0.59	17.8	-0.02	-0.02	1216	.84	.82	3.52	0.61	17.4	-0.10	-0.02	302
Sincerity	4	1 - 5	.72	.72	3.08	0.83	26.8	0.11	-0.47	1216	.68	.68	3.31	0.81	24.4	0.19	-0.26	302
Fairness	4	1 - 5	.74	.75	3.45	0.90	26.0	-0.24	-0.43	1216	.79	.80	3.63	0.96	26.4	-0.37	-0.53	302
Gr. Av.	4	1 - 5	.76	.77	2.85	0.88	30.9	0.02	-0.57	1216	.77	.78	3.19	0.91	28.7	-0.16	-0.56	302
Modesty	4	1 - 5	.67	.67	3.79	0.74	19.5	-0.38	-0.10	1216	.75	.76	3.94	0.77	19.6	-0.59	-0.05	302
SDO	16	1 - 7	.91	.91	2.35	1.00	42.5	0.74	0.23	1218	.95	.95	2.20	1.15	52.2	1.18	1.19	302
Sadism	9	1 - 5	.84	.84	1.77	0.67	37.7	0.90	0.30	1210	.88	.87	1.62	0.65	40.2	1.20	1.08	302
Gratitude	6	1 - 7	.77	.77	5.79	0.86	14.8	-0.91	1.05	1213	.85	.85	5.41	1.07	19.8	-1.00	1.48	302
BIDR-SDE	8	1 - 7	.68	.68	3.64	0.87	24.0	0.28	0.15	1219	.81	.81	4.06	1.04	25.5	0.22	-0.22	302
BIDR-IM	8	1 - 7	.73	.72	4.14	0.96	23.3	-0.05	-0.22	1219	.75	.74	4.45	1.00	22.5	0.16	0.12	302
COVID-19																		
Soc. Dis.	4	0 - 4	.80	.83	3.07	0.70	22.8	-0.89	0.81	1292	.88	.88	3.28	0.76	23.2	-1.58	2.78	301
Activities	5	0 - 4	.81	.81	1.57	0.79	50.0	0.47	-0.07	1289	.79	.79	1.13	0.71	62.9	0.98	1.40	300
Sanitizing	4	0 - 4	.73	.73	2.44	0.87	35.9	-0.29	-0.37	1293	.77	.77	2.29	0.88	38.3	-0.15	-0.33	301
Helping	5	0 - 4	.71	.70	1.86	0.77	41.6	0.10	-0.08	1286	.73	.72	1.29	0.78	60.2	0.34	-0.47	298
Donation Amt.	--	0 - 50	--	--	31.34	17.46	55.7	-0.21	-1.42	1077	--	--	24.19	16.68	69.0	0.36	-1.08	285

Note. Values of *n* for each scale vary due to participant attrition and/or excessive missing responses on individual scales. Means and standard deviations reflect the average item response for each scale. c_v = coefficient of variance. ATQ = Altruistic Tendencies Questionnaire. SRA = Self-Report Altruism Scale. CAS = Compassionate Altruism Scale. GALS = Generative Altruism Scale. H-H = Honesty-Humility. Gr.Av. = Greed Avoidance. SDO = Social Dominance Orientation. BIDR = Balanced Inventory of Desirable Responding. SDE = Self-Deceptive Enhancement. IM = Impression Management. Activities = High-Risk Activities. Helping = Pandemic-Related Helping. Soc. Dis. = Social Distancing. Amt. = Amount.

4.4.2.2 Common Method Variance

Common method variance was assessed post-hoc using Harman's one-factor test (Podsakoff & Organ, 1986). Harman's one-factor test involves conducting an exploratory factor analysis with all the study variables. If the first Eigenvalue accounts for over 50% of the variance, then common method variance is considered problematic. According to Fuller et al. (2016), this technique is the most popular and can detect common method variance at levels that would bias results, although it is unlikely to be an issue in most research conditions. In the current study, Harman's one-factor test was computed in *SPSS* Version 27 using Maximum Likelihood estimation for all self-report questionnaires. The Eigenvalue for the first factor was 26.74 in the student sample (13.7% of the variance) and 30.84 in the Prolific sample (15.8% of the variance). Given that this was well below the 50% variance threshold, it was unlikely that common method variance was problematic in either sample.

4.4.3 Refining the Altruism Scale

4.4.3.1 Initial item screening

Following recommendations from Clark and Watson (2019) and Morgado et al. (2018), items in both the student and Prolific samples were screened for skewness, response frequency distribution, and social desirability (see Appendix F and Appendix G). Items with high means ($M > 4.00$), high skewness (skew > |1|), and correlations > .25 with either subscale of the BIDR-16 were flagged. Items where more than 80% of participants endorsed an item positively (i.e., responded "Agree" or "Strongly Agree") or negatively (i.e., responded "Disagree" or "Strongly Disagree") were also flagged, although these items also had high means. Items with high skewness and unbalanced distributions (i.e., where most participants respond similarly) provide little information and have attenuated inter-item correlations (Clark & Watson, 2019). Further, items with larger correlations with social desirability indicate that responses to the item were contaminated by a response pattern (Morgado et al., 2018); however, because altruism is a socially desirable quality (Friedrichs, 1960), correlations with social desirability up to $r = .25$ were

permitted. If an item was flagged in both samples, it was removed. In total, five items were removed at this stage from the original pool of 40 items (see Table 8).

4.4.3.2 Exploratory Factor Analysis

Exploratory factor analysis (EFA) on the remaining 35 items was conducted separately for each sample to assist with initial item refinement. A summary of the item refinement steps using EFA is presented in Table 8. All EFAs were conducted using *Mplus* Version 7 statistical software (Muthén & Muthén, 2012) with Maximum Likelihood estimation and Promax rotation; however, the Kaiser-Meyer-Olkin (KMO) statistic and Bartlett's test of sphericity were computed in *SPSS*, as it was not provided in the *Mplus* output. The KMO statistic was .947 in the Prolific sample and .955 in the student sample, and Bartlett's test was significant in both samples ($p < .001$), indicating that these data were suitable for factor analysis.

Table 8: Summary of EFA Item Refinement Steps

Step		Item	Reason for Removal	Remaining
Initial Item Screening	1	ACT_7R	Correlates too strongly ($r \geq .25$) with social desirability	35
		IM_5	Mean >4 and skewness > |1|	
		IM_7R	Mean >4 and skewness > |1|	
		PC_9R	Mean >4 and skewness > |1|	
		UMP_4	Mean >4 and skewness > |1|	
One-Factor EFA & Inter-Item Correlations	2	PC_8R;	Low general factor loading (<.40) in both samples; low inter-item correlations (M_r = .17 to .22)	29
		MIX_6R	Low general factor loading (<.40) in both samples; low inter-item correlations (M_r = .05 to .11);	
		IM_8R	Low general factor loading (<.40) in Prolific sample samples; low inter-item correlations (M_r = .21 to .25)	
		BA_2R	Low general factor loading (<.40) in both samples; low inter-item correlations (M_r = .18 to .24)	
		EG_1R	Low general factor loading (<.40) in both samples; low inter-item correlations (M_r = .21 to .25)	

		MIX_3R	Low general factor loading (<.40) in student sample; low inter-item correlations (M_r = .21 to .32)	
Communalities	3	ACT_1	Extracted communality < .20 in student sample	27
		UMP_1	Extracted communality < .20 in student sample	

Note. ACT = Behavioural Tendencies. IM = Intrinsic Motivation. PC = Principle of Care. BA = Benevolent Attitudes. EG = Egalitarian Values. UMP = Universalistic Moral Perspective. MIX = Multiple facets. Labels reflect majority of categorization by the subject-matter-experts during the Q-sort.

To assess how well the items grouped onto a general altruism factor, a one-factor solution was examined with the pool of 35 items in both the Prolific and student samples (see Appendix H). This general factor had an Eigenvalue of 13.878 in the Prolific sample (10.831 in the student sample). Items that loaded poorly (< .40) onto the one-factor solution were screened out. As recommended by Carpenter (2018), the inter-item correlation matrix for all items was also examined to screen for items that correlated poorly with other items (average r < .30) or to identify undesirable patterns of correlations (e.g., a reverse-keyed item only correlating with other reverse-keyed items). If items correlate poorly with each other, it suggests that they do not adequately tap the target construct of interest (Churchill, 1979). Accordingly, items that loaded poorly in either of the two samples and had low inter-item correlations were removed from further analyses, resulting in the elimination of six additional items.

Table 9: Eigenvalues and Variance Accounted for in EFA Solutions (29 items)

	Student			Prolific		
Factor	Eigenvalue (PA)	Eigenvalue (Obs.)	% Variance Accounted For	Eigenvalue (PA)	Eigenvalue (Obs.)	% Variance Accounted For
1	0.31	10.12	34.84	0.74	13.14	45.33
2	0.27	1.61	5.54	0.65	1.54	5.32
3	0.24	1.39	4.79	0.57	1.27	4.38
4	0.22	1.18	4.08	0.50	1.08	3.71
5	0.19	1.06	3.64	0.45	0.95	3.33

Note. PA = Parallel Analysis. Obs. = Observed.

Parallel analysis was used on the remaining items to examine the suggested number of factors to extract. Relying solely on the Eigenvalue >1 criterion tends to over-extract factors, leading to less parsimonious solutions (Horn, 1965; Patil, Singh, Mishra, & Donavan, 2008). In contrast, parallel analysis compares the Eigenvalues with a

simulation, recommending the extraction of factors with Eigenvalues that exceed those extracted from randomly generated correlation matrices. In the current study, parallel analysis was conducted using an online tool developed by Patil, Singh, Mishra, and Donovan (2017) on both samples, which suggested that a maximum of four factors could be viable (five in the student sample), as reported in Table 9, after also considering the Eigenvalue > 1 criterion. Scree plots were also visually inspected to examine where the Eigenvalues plateaued, which indicates diminishing returns in parsimony for the factor structure (i.e., decreased variance accounted for by the factors). In both samples, the slope sharply plateaued after the general factor (see Figure 1 and Figure 2). Eigenvalue ratios between the first and second factor were 8.53 in the Prolific sample and 6.29 in the student sample. Accordingly, in the interest of parsimony, multiple factor solutions were not considered, as each contributed little additional variance beyond the general altruism factor.

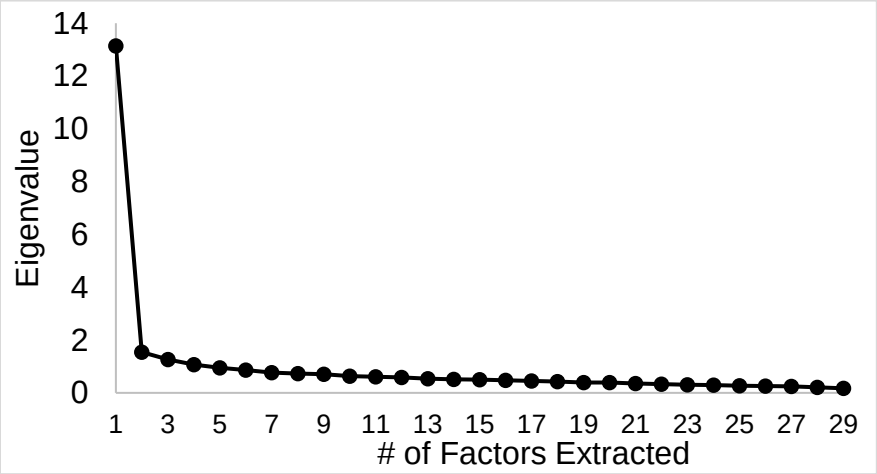

Figure 1: Scree Plot of the EFA in the Prolific Sample (29 Items)

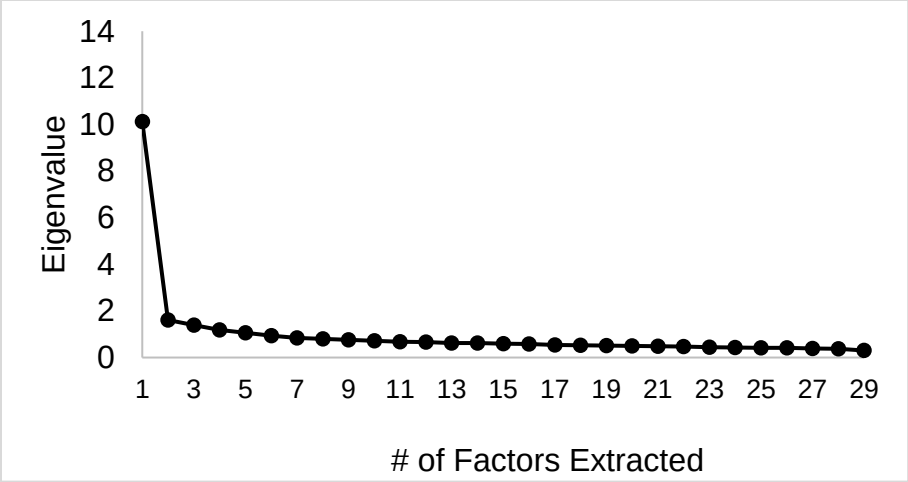

Figure 2: Scree Plot of the EFA in the Student Sample (29 Items)

Finally, the extracted communalities of the remaining 29 items were examined across both samples. Extracted communalities reflect the proportion of variance in each item accounted for by the factor, with higher values indicating that the factor is explaining more variance. Although there is no consensus in the literature regarding minimum communalities, values above .40 are ideal (Carpenter, 2018), and Child (2006) recommends eliminating items where communalities are below .20. Using this minimum, two additional items were eliminated (see Table 8).

4.4.3.3 Further item reduction

Factor analysis alone is insufficient to determine which items to retain when developing a new assessment (Hinkin, 1995; Nunnally, 1978). When making item retention decisions, it is also important to consider item content. Because the remaining altruism items loaded well on the general altruism factor, further item refinement decisions focused on item wording and facet coverage. This stage reflected an attempt to select the best-performing items, balancing scale length with adequate content coverage.

Ideally, a scale should only contain as many items as it needs to in order to (a) adequately sample the content domain and (b) demonstrate strong psychometric properties while (c) not overly fatiguing participants (Hinkin, 1995). Clifton (2020) recommends that care be taken when writing and selecting items so that reliability is not artificially inflated by

semantic redundancy (i.e., error variance). For example, items with similar stems (e.g., “I feel that”) tend to be responded to more similarly than other items. Instead, Clifton (2020) recommends varying nouns, verbs, and sentence structures as much as possible.

Accordingly, to avoid artificially inflating reliability and to optimize the scale length, decisions were made based between items with similar content or wording, choosing the item with the better psychometric properties across both samples. Items with similar content (e.g., “I would stop to help a stranger in need, even knowing I will never see them again” vs. “If I see a stranger who is struggling, I feel compelled to help them”) were contrasted on their psychometric properties. The best-performing items were those that (a) had greater response variability, (b) smaller correlations with BIDR-16 subscales, and (c) higher loadings on the EFAs, considering information from both the Prolific and student samples. Additional decisions were made such that each component of altruism had 2-3 items as well as a balance of emotions, thoughts, and behaviours across the scale as a whole (see Appendix J). At the end of this stage, the ATQ was reduced to 15 items.

4.4.4 Other Psychometrics

4.4.4.1 Measurement Invariance

To examine whether the Altruistic Tendencies Questionnaire was invariant across groups, measurement invariance was conducted. Measurement invariance allows researchers to statistically examine whether two groups—such as men and women—are interpreting items on a scale in the same way (Leitgöb, Seddig, Asparouhov, Behr, Davidov, De Roover, Jak, Meitinger, Menold, Muthén, Rudnev, Schmidt, & van de Schoot, in press). If an assessment demonstrates invariance, it permits meaningful interpretations between these groups.

During this process, several types of invariance are assessed, each with increasing restrictions imposed on the model. Configural invariance tests the overall fit of the model and provides a baseline for determining if the items on an assessment are measuring the same general construct across groups. Metric invariance (also called “weak invariance”) introduces an additional constraint in the model, requiring factor loadings to be the same across groups. If items have similar loadings across groups, it suggests that the groups are

interpreting the items in a similar way. Finally, with scalar invariance ("strong invariance"), a final constraint is imposed that also forces item intercepts to be identical across models. Although residual invariance ("strict invariance") can also be assessed, it is rarely done in practice because it does not add to the comparability of scale scores across groups (Leitgöb et al., in press).

4.4.4.1.1 Invariance Across Gender

To examine whether men and women were interpreting items on the ATQ in the same way, the ATQ was tested for measurement invariance across gender. Measurement invariance was analyzed in *Mplus* for both the student and Prolific samples. In the initial set of measurement invariance analyses, one item was found not to be invariant ("It's hard for me to feel compassion for someone if I don't know them well"), with men and women responding to the item differently. When the measurement invariance analyses were re-run without this item, the ATQ achieved weak invariance in the student sample and scalar invariance in the Prolific sample. A summary of this new analysis is described below and presented in Table 10.

Table 10: Invariance Testing for the 14-item ATQ between Men and Women

Model	Fit Indices						*p*	ΔRMSEA	ΔCFI	ΔSRMR
	χ^2	*df*	*p*	RMSEA	CFI	SRMR				
Student										
Configural	596.661	154	.000	.069	.898	.046				
Metric	613.835	167	.000	.067	.897	.052	.1915	-.002	-.001	.006
Scalar	656.433	180	.000	.066	.890	.054	.0001	-.001	-.007	.002
Prolific										
Configural	318.198	154	.000	.085	.915	.052				
Metric	334.532	167	.000	.082	.913	.071	.2315	-.003	-.002	.019
Scalar	354.023	180	.000	.081	.910	.070	.1087	-.001	-.003	-.001

Note. Group sizes for men were *N*=151 in the Prolific sample and *N*=324 in the student sample. Group sizes for women were *N*=141 in the Prolific sample and *N*=884 in the student sample.

First, a CFA without restrictions was conducted to examine whether the single-factor structure for the ATQ had good enough fit to serve as a baseline. In both samples, fit indices were good for the RMSEA (< .08) and the CFI (> .90). Comparisons with the configural model examined whether the ATQ had the same factor structure for both men

and women. Comparisons with the metric model indicated that when factor loadings were constrained, the model did not fit significantly differently between men and women in the student sample (χ^2 (13) = 17.174, p = .1915) or in the Prolific sample (χ^2 (13) = 16.334, p = .2135). Comparisons with the scalar model indicated that when residuals were also constrained, the model fit significantly worse between men and women in the student sample (χ^2 (13) = 42.598, p = < .001), but did not fit significantly worse in the Prolific sample (χ^2 (13) = 19.490, p = .1087). However, the CFI value did not deteriorate beyond the cut-off of .01 in either sample compared to the metric model, so scalar invariance is still supported in the student data (Leitgöb et al., in press). To summarize, the altruism scale demonstrated strong (scalar) invariance across gender in both samples.

4.4.4.1.2 Invariance Across Samples

Invariance analyses were also conducted across samples to examine whether participants in the student and Prolific samples were responding to the 14 items on the ATQ in a similar way (see Table 11). For configural invariance, model fit was acceptable-to-good across indices. Comparisons with the metric model indicated that when factor loadings were constrained, the model did not fit significantly worse (χ^2 (13) = 11.1339, p = .5824). Comparisons with the scalar model indicated that when intercepts were also constrained, the model fit significantly worse (χ^2 (13) = 45.227, p < .001). However, changes in the RMSEA, CFI, and SRMR were all below the cut-offs mentioned above, supporting invariance between the Prolific and student samples.

Table 11: Invariance Testing for the 14-item ATQ Across Samples

Model	Fit Indices						p	ΔRMSEA	ΔCFI	ΔSRMR
	χ^2	*df*	*p*	RMSEA	CFI	SRMR				
Configural	708.198	154	.000	.069	.917	.042				
Metric	719.537	167	.000	.066	.917	.046	.5824	-.003	-.000	.004
Scalar	764.764	180	.000	.065	.912	.048	.0000	-.001	-.005	.002

Note. Group sizes were *N*=302 in the Prolific sample and *N*=1226 in the student sample.

4.4.4.2 Final ATQ Items

The final 14 items on the ATQ are listed in Table 12. As previously mentioned, these items were selected with the goal of capturing sufficient breadth (i.e., 2-3 items per component) and a balance of emotions, cognitions, and behaviours.

Note that no items for the Egalitarian Values component were retained in the final ATQ. Most of the items originally written for this component were judged by the SMEs as unrelated to altruism. The remaining items did not load onto the general altruism factor in the initial EFA in either sample and were subsequently screened out. In retrospect, Egalitarian Values may be neither a necessary nor sufficient feature of altruism. From this perspective, valuing equality is not essential to an altruistic personality. The espousal of these values may be more central to constructs like politeness or cooperation, which emphasize respect for others and compliance with social norms of sharing. As previously described in Section 2.4.5, caring for others is more closely tied to improving the welfare of people, rather than to ensuring equal outcomes within or between groups (Oliner & Oliner, 1988). Some research suggests, for example, that politeness is key to egalitarian distributions in economic games (e.g., Zhao, Ferguson, & Smillie, 2016; Zhao, Ferguson, & Smillie, 2017). For these reasons, additional items for the Egalitarian Values component originally proposed for trait altruism were not developed in the remaining studies testing the Altruistic Tendencies Questionnaire.

Table 12: Final ATQ Item List

Item	Wording	Component
IM_2	It is personally rewarding to give my time for a worthy cause.	Intrinsic Motivation
IM_3	I am happiest when I've made a positive difference in a stranger's life.	Intrinsic Motivation
PC_3	If I see a stranger who is struggling, I feel compelled to help them.	Intrinsic Motivation
UMP_2	I feel an emotional bond with all of humanity.	Universalistic Moral Perspective
MIX_4	I care deeply about improving the lives of people in poor communities.	Universalistic Moral Perspective
PC_7R	People in other communities who need aid are not my concern.	Universalistic Moral Perspective
BA_1	Showing compassion for others is an essential part of my identity.	Benevolent Attitudes
BA_3	My friends would describe me as someone who is generous and kind to others.	Benevolent Attitudes
PC_5R	I have no obligation to help people who cause their own problems.	Principle of Care
PC_2	We all have a duty to help those who are less fortunate than us.	Principle of Care
PC_1	I feel morally responsible for making the world a better place.	Principle of Care
ACT_6	Volunteering is an important source of meaning in my life.	Altruistic Tendencies
ACT_4	I would give resources to a stranger going through difficult times.	Altruistic Tendencies
MIX_1	Even if I really didn't like someone, I would still help them in a crisis.	Altruistic Tendencies

Note. Some items were re-assigned to other components based on inter-item correlations. ACT = Behavioural Tendencies. IM = Intrinsic Motivation. PC = Principle of Care. BA = Benevolent Attitudes. UMP = Universalistic Moral Perspective. MIX = Multiple facets. Labels reflect majority of categorization by the subject-matter-experts during the Q-sort.

4.4.4.3 Reliability

One of the most reported (and recommended) psychometrics for assessments is internal consistency reliability (Clark & Watson, 2019). This value, also called Cronbach's alpha, provides an indication as to whether items on a scale are statistically measuring the same thing. It is recommended that scales achieve an internal consistency reliability of at least .70 (Nunnally, 1976), with above .80 being ideal (Clark & Watson, 2019). Internal consistency of the ATQ was high, exceeding .85 in both samples (see Table 7). Additionally, the average inter-item correlation was .44 (.32 in the student sample), well above the Clark and Watson's (2019) recommended minimum of .15 to .20 for broader constructs.

4.4.4.4 Convergent Validity

To provide support for convergent validity, bivariate correlations were calculated between the ATQ and (a) existing altruism measures, (b) prosocial traits, and (c) socially aversive traits. Correlations between all personality variables across both samples are presented in Table 13. As hypothesized, the ATQ was positively correlated with existing measures of altruistic behaviour, including the SRA ($r_{Student}$ = .28; $r_{Prolific}$ = .34) and the CAS ($r_{Student}$ = .31; $r_{Prolific}$ = .29). Consistent with expectations, the correlation was strongest with the GALS ($r_{Student}$ = .65; $r_{Prolific}$ = .69), which has less emphasis on specific behaviours than the SRA or CAS. The ATQ was also positively correlated with both Honesty-Humility ($r_{Student}$ = .34; $r_{Prolific}$ = .32) and dispositional gratitude ($r_{Student}$ = .30; $r_{Prolific}$ = .43). Finally, the ATQ was negatively correlated with both sadism ($r_{Student}$ = -.40; $r_{Prolific}$ = -.30) and social dominance orientation ($r_{Student}$ = -.45; $r_{Prolific}$ = -.40). Taken together, these relationships provide evidence for the nomological network of the ATQ.

4.4.4.5 Social Desirability

One concern in test construction, particularly when assessing positive qualities through self-report, is that socially desirable responding will contaminate test scores and negatively impact the scale's validity (Morgado et al., 2018). As such, social desirability was considered at both the item level and the scale level using a short version of the BIDR. Across both samples, there was a small positive correlation with the Impression Management subscale ($r_{Student}$ = .29; $r_{Prolific}$ = .23), which is intended to assess the conscious desire to maintain a positive reputation with others. No significant correlation was observed with the Self-Deceptive Enhancement subscale of the BIDR-16, which is intended to assess an unconscious desire to present a positive image of the self.

The correlation between the ATQ and the Impression Management subscale may be explained by considering previous research on impression management and true virtue. Not all researchers agree that impression management scales assess response bias. Instead, some research suggests that impression management scales are contaminated by true virtue (de Vries, Zettler, & Hilbig, 2014; Müller & Moshagen, 2019; Uziel, 2010). The Impression Management subscale of the BIDR-16 is other-oriented, and its items ask about honesty (vs. lying), forgiveness (vs. getting even), and other desirable qualities. From a content perspective, qualities such as honesty and forgiveness are expected to be higher in prosocial individuals. In a similar vein, laboratory studies using behavioural indices have linked higher impression management scores to genuine honesty (Müller & Moshagen, 2019), as well as self- and other-ratings of Honesty-Humility (de Vries, et al., 2014). Like de Vries et al. (2014), positive correlations in the current study were also observed between Impression Management on the BIDR-16 and Honesty-Humility (*r*'s = .48 to .56). Based on these findings, Impression Management on the BIDR-16 may be confounded with genuine prosocial tendencies, which may explain the pattern of results between the ATQ and the two social desirability subscales of the BIDR-16.

In contrast, the BIDR-16 Self-Deceptive Enhancement scale is more self-oriented. Its items ask about self-confidence, self-awareness, emotional control, and decisiveness. This difference in content may explain why a stronger relationship between the ATQ and

BIDR-16 Impression Management was observed compared to BIDR-16 Self-Deceptive Enhancement. Accordingly, the ATQ was not overly saturated with socially desirable responding.

Table 13: Pearson Correlations between Personality Scales

	Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	ATQ	--	.34	.29	.69	.32	.23	.33	.13	.21	-.40	-.30	.43	-.01	.23
2.	SRA	.28	--	.62	.37	-.04	-.05	.04	-.01	-.09	-.03	.11	.14	.11	.02
3.	CAS	.31	.60	--	.39	-.10	-.01	-.09	-.07	-.12	.09	.19	.06	.00	-.04
4.	GALS	.65	.32	.38	--	.18	.15	.15	.07	.13	-.20	-.21	.33	.02	.14
5.	Honesty-Humility	.34	-.07	-.08	.23	--	.69	.71	.73	.70	-.30	-.54	.31	.15	.56
6.	Sincerity	.17	-.01	-.02	.13	.70	--	.40	.29	.31	-.15	-.31	.15	.17	.47
7.	Fairness	.34	-.03	-.05	.22	.71	.39	--	.28	.27	-.19	-.49	.35	.23	.50
8.	Greed Avoid.	.18	-.09	-.06	.14	.72	.31	.28	--	.48	-.12	-.23	.11	.10	.35
9.	Modesty	.26	-.08	-.09	.15	.67	.27	.26	.42	--	-.42	-.51	.27	-.13	.26
10.	SDO	-.45	.02	.03	-.25	-.43	-.15	-.28	-.32	-.47	--	.45	-.18	.15	-.16
11.	Sadism	-.40	.08	.07	-.25	-.50	-.27	-.45	-.25	-.42	.46	--	-.39	-.05	-.40
12.	Gratitude	.30	.06	.06	.24	.15	.07	.21	-.02	.15	-.15	-.26	--	.25	.20
13.	BIDR-SDE	-.05	.04	.02	-.03	.02	.11	.06	.00	-.14	.05	-.03	.21	--	.45
14.	BIDR-IM	.29	.00	-.02	-.20	.54	.48	.43	.29	.30	-.27	-.49	.18	.24	--

Note. In the student sample (lower diagonal), correlations above .05, .07, and .10 are significant at $p < .05$, $p < .01$, and $p < .001$, respectively. In the Prolific sample (upper diagonal), correlations above .10, .15, and .18 are significant at $p < .05$, $p < .01$, and $p < .001$, respectively. ATQ = Altruistic Tendencies Questionnaire. SRA = Self-Report Altruism Scale. CAS = Compassionate Altruism Scale. GALS = Generative Altruism Scale. SDO = Social Dominance Orientation. BIDR = Balanced Inventory of Desirable Responding. SDE = Self-Deceptive Enhancement. IM = Impression Management. Greed Avoid. = Greed Avoidance.

4.4.4.6 Gender Differences

Previous research has indicated that for prosocial and antisocial traits, men and women tend to demonstrate significant differences on mean scores on self-report questionnaires. For example, men tend to score higher on traits like sadism (Plouffe et al., 2021), manipulativeness (Kowalski et al., in press), and social dominance orientation (Zakrisson, 2008), whereas women tend to score higher on traits like empathy (Baez et al., 2017), gratitude (Kasdhan, Mishra, Breen, & Froh, 2009), and integrity (Kowalski et al., in press).

To examine gender differences within each sample, a one-way ANOVA including all variables was conducted in *SPSS*. Although some variables were not normally distributed, ANOVA is robust to violations of normality (Blanca, Alarcón, Arnau, Bono, & Bendayan, 2017; Schmider, Ziegler, Danay, Beyer, & Bühner, 2010). Effect sizes were reported using Cohen's *d*, with values of *SD* pooled weighted by the sample size of each group. Values of Cohen's *d* reflect mean differences in standard deviation units and are traditionally interpreted in terms of small ($0.20 < d < 0.50$), medium ($0.50 < d < 0.80$) and large ($d > 0.80$) effect sizes (Cohen, 1988).

In general, observed gender differences were small, with some moderate-to-large differences observed in the student sample (see Table 14). Consistent with previous research, men scored higher than women on social dominance orientation ($d_{Student} = 0.75$; $d_{Prolific} = 0.30$) and sadism ($d_{Student} = 0.80$; $d_{Prolific} = 0.39$). Men also scored higher in self-deceptive enhancement ($d_{Student} = 0.29$; $d_{Prolific} = 0.34$). In contrast, women scored higher than men on Honesty-Humility ($d_{Student} = -0.39$; $d_{Prolific} = -0.27$) and gratitude ($d_{Student} = -0.22$; $d_{Prolific} = -0.30$) in both samples. Female university students also scored higher on most of the Honesty-Humility subscales than male students.

Table 14: Gender Differences on Study Variables

	Student Sample						Prolific Sample					
	Men		Women				Men		Women			
	M	*SD*	*M*	*SD*	*d*		*M*	*SD*	*M*	*SD*	*d*	
ATQ	3.41	0.58	3.72	0.52	-0.57	***	3.37	0.68	3.51	0.66	-0.22	
SRA	1.18	0.61	1.19	0.59	-0.01		0.73	0.58	0.80	0.61	-0.12	
CAS	0.81	0.67	0.83	0.64	-0.02		0.50	0.55	0.53	0.48	-0.07	
GALS	1.50	0.52	1.69	0.53	-0.36	***	1.33	0.59	1.44	0.56	-0.19	
Honesty-Humility	3.13	0.59	3.35	0.57	-0.39	***	3.45	0.60	3.61	0.62	-0.27	*
Sincerity	3.09	0.79	3.08	0.84	0.01		3.26	0.79	3.37	0.82	-0.14	
Fairness	3.17	0.96	3.56	0.85	-0.44	***	3.56	0.95	3.77	0.94	-0.22	
Greed Avoidance	2.69	0.89	2.90	0.87	-0.25	***	3.17	0.90	3.22	0.93	-0.06	
Modesty	3.56	0.76	3.87	0.71	-0.42	***	3.80	0.79	4.08	0.74	-0.37	**
SDO	2.88	1.05	2.17	0.91	0.75	***	2.38	1.20	2.04	1.07	0.30	**
Sadism	2.13	0.73	1.63	0.58	0.80	***	1.74	0.68	1.49	0.61	0.39	**
Gratitude	5.66	0.87	5.85	0.85	-0.22	***	5.27	1.06	5.59	1.04	-0.30	**
BIDR-SDE	3.82	0.87	3.57	0.86	0.29	***	4.25	1.03	3.91	1.01	0.34	**
BIDR-IM	4.12	0.94	4.16	0.97	-0.04		4.46	0.96	4.48	1.03	-0.02	
COVID-19 Survey												
Social Distancing	2.84	0.82	3.15	0.63	-0.45	***	3.34	0.72	3.22	0.81	0.16	
Activities	1.75	0.86	1.52	0.75	0.29	***	1.08	0.66	1.20	0.76	-0.17	
Sanitizing	2.16	0.95	2.55	0.82	-0.45	***	2.20	0.92	2.38	0.83	-0.20	
Helping	1.78	0.78	1.91	0.77	-0.17	**	1.28	0.79	1.30	0.77	-0.03	
Donation Amount	28.96	18.70	32.21	16.93	-0.19	**	24.76	16.83	23.81	16.58	0.06	

Note. Positive values of Cohen's *d* indicate that men scored higher. Pooled standard deviation was weighted by sample size. ATQ = Altruistic Tendencies Questionnaire**.** SRA = Self-Report Altruism Scale. CAS = Compassionate Altruism Scale. GALS = Generative Altruism Scale. SDO = Social Dominance Orientation. BIDR = Balanced Inventory of Desirable Responding. SDE = Self-Deceptive Enhancement. IM = Impression Management. Activities = High-Risk Activities. Helping = Pandemic-Related Helping. * $p < .05$, ** $p < .01$, *** $p < .001$.

Gender differences in the COVID-19 behaviour subscales indicated that female students tended to score higher than male students on prosocial (i.e., Pandemic-Related Helping) and protective behaviours (i.e., Social Distancing, Sanitizing), and lower than male students on risky activities (i.e., High-Risk Activities); however, no significant gender differences were observed in the Prolific sample. Finally, women scored higher than men on the GALS ($d_{Student}$ = -0.36; $d_{Prolific}$ = -0.19), which is consistent with the literature on self-report altruism (e.g., Russell, Ariail, Smith, & Smith, 2020; Xiao, Hashi, Korous, & Eisenberg, 2019). However, significant gender differences on the ATQ were only observed in the student sample ($d_{Student}$ = -0.60).

In comparison, recent findings by Dargan and Schermer (in press) on the SRA and CAS suggest that we would expect men to score higher on these two scales than women, given the risk associated with helping strangers. However, no significant gender differences emerged for the SRA and CAS, potentially as a result of their very low means. This likely occurred because both measures focus on specific behaviours, and the current study was conducted during the COVID-19 pandemic, where concerns about catching coronavirus and social distancing restrictions limited opportunities to perform these behaviours. Consistent with this interpretation, some participants commented that because of social distancing, they could not engage in certain behaviours (e.g., holding the elevator door open for someone). Accordingly, gender differences may have been attenuated for the SRA and CAS.

4.4.5 COVID-19 behaviours

Prior to running the correlational analyses, the 20 items on the COVID-19 survey were subjected to exploratory factor analysis to examine their underlying factor structure. Maximum Likelihood estimation was used with Promax rotation. Items for the current study were initially selected to fall under three categories (i.e., social distancing, sanitizing behaviours, helping behaviours); however, four factors were more interpretable, splitting the social distancing items into high-risk activities (e.g., “I had visitors at my house, or visited someone else”) and protective behaviours (e.g., “I covered my face (e.g., with a mask) when going out in public”). Two items with weak loadings

("I coughed or sneezed into a tissue, or the inside of my elbow" and "I shared news updates or information with others") were omitted prior to subscale calculations. The four factors were labelled as follows: Social Distancing, High-Risk Activities, Pandemic-Related Helping, and Sanitizing. For a summary of the factor loadings, refer to Table 15.

Table 15: Exploratory Factor Analysis of the COVID-19 Behaviour Survey

	Item	F1 Social Distancing	F2 High-Risk Activities	F3 Pandemic-Related Helping	F4 Sanitizing
1	I acted in accordance with social distancing protocols.	**.70 / .77**	-.15 / -.23	-.04 / -.07	-.05 / .04
2	I avoided public spaces unless it was necessary to go out.	**.63 / .57**	-.30 / -.36	.03 / .01	-.05 / .06
3	I avoided being closer than 2 meters (6 feet) to other people (other than those I live with).	**.70 / .74**	-.16 / -.22	-.02 / .01	-.02 / .03
4	I covered my face (e.g., with a mask) when going out in public.	**.41 / .39**	-.09 / -.35	-.01 / .07	.08 / .09
5	I had visitors at my house, or visited someone else.	-.08 / -.14	**.71 / .62**	-.02 / .04	-.07 / -.02
6	I ate or drank at a restaurant, bar, or food court.	-.11 / -.05	**.66 / .70**	-.05 / -.03	.03 / .02
7	I exercised at a gym or other fitness facility.	.00 / -.05	**.50 / .47**	-.05 / .09	.03 / -.03
8	I gathered with people outside my household at an outdoor location.	.01 / -.01	**.71 / .64**	.09 / .06	-.06 / .01
9	I attended social gatherings in groups of more than 10 people.	-.07 / .06	**.75 / .80**	.00 / -.04	.02 / .06
10	I washed my hands for 20 seconds, especially after touching any frequently used item or surface.	.19 / .15	.00 / .09	-.02 / -.09	**.43 / .70**
11	I coughed or sneezed into a tissue, or the inside of my elbow.	.28 / .07	.05 / .13	.07 / -.19	.03 / **.46**
12	I disinfected frequently touched surfaces in my house.	-.06 / -.13	.03 / .04	.03 / .10	**.85 / .84**
13	I disinfected the packaging of products I bought in the store.	-.12 / -.10	-.13 / -.20	.06 / .29	**.69 / .52**
14	I avoided touching my face.	.26 / .11	.09 / -.06	-.06 / .06	**.44 / .56**
15*	I provided someone with emotional support.	.10 / .23	.02 / .18	**.56 / .41**	-.01 / .01
16*	I delivered food or supplies to someone.	-.04 / -.08	.13 / .06	**.47 / .66**	.10 / .05
17*	I provided someone assistance with medical care.	-.05 / -.12	.00 / -.09	**.40 / .68**	.08 / .03
18*	I helped someone with school/work responsibilities.	-.05 / .10	-.03 / .09	**.72 / .53**	-.08 / -.09
19*	I helped someone with family/home responsibilities.	-.05 / -.03	-.07 / -.09	**.66 / .67**	.03 / .00
20*	I shared news updates or information with others.	.11 / .15	.05 / .08	.39 / .39	-.01 / -.01
	Eigenvalue	4.88 / 5.21	3.22 / 3.47	1.40 / 1.61	1.13 / 1.20

	F1	F2	F3	F4
Social Distancing (F1)	--	.38	-.24	.53
High-Risk Activities (F2)	-.50	--	.24	-.21
Pandemic-Related Helping (F3)	.15	.25	--	.29
Sanitizing (F4)	.56	-.12	.40	--

Note. Factor loadings and Eigenvalues are presented for both the student sample (left) and Prolific sample (right). Maximum Likelihood estimation was used with Promax rotation. Factor loadings >.40 are presented in bold. Factor correlations in the upper diagonal reflect the Prolific sample. Factor correlations in the lower diagonal reflect the student sample. *Item stem begins, "Over the past year, for reasons related to the COVID-19 pandemic, I…"

Broadly, it was expected that the ATQ would be positively correlated with prosocial COVID-19 behaviours and that the reverse pattern would be observed for antisocial traits (i.e., sadism, social dominance orientation). In general, these hypotheses were supported, with positive correlations observed between the ATQ and the Social Distancing *($r_{Student}$* = .17; $r_{Prolific}$ = .23), Sanitizing (r_{Student} = .22; $r_{Prolific}$ = .31), and Pandemic-Related helping ($r_{Student}$ = .28; $r_{Prolific}$ = .26) factors (see Table 16).

Contrary to expectations, however, scores on the ATQ were unrelated to engaging in high-risk activities, and scores on the SRA ($r_{Student}$ = .20; $r_{Prolific}$ = .33) and CAS ($r_{Student}$ = .20; $r_{Prolific}$ = .21) were positively correlated with these behaviours, which increase one's likelihood of contracting and spreading the coronavirus. These relationships may have been observed because the behaviours on the SRA and CAS often involve contact with strangers; accordingly, individuals who spent more time around other people would have had more opportunities to engage in both the high-risk behaviours and the prosocial behaviours on the SRA and CAS. A similar pattern was observed for the Pandemic-Related Helping factor, with the SRA and CAS demonstrating stronger correlations than the ATQ or the GALS. Again, this was likely because of the behaviour-specific nature of the items on the SRA and CAS and the framing on the instructions for these two scales to reflect the past year of the pandemic.

Table 16: Bivariate Correlations with COVID-19 Behaviour Factors

	COVID-19 Survey							
	Social Distancing		High-Risk Activities		Sanitizing		Pandemic-Related Helping	
ATQ	.17***	/ .23***	-.07*	/ -.06	.22***	/ .31***	.28***	/ .26***
SRA	-.05	/ .02	.20***	/ .33***	.24***	/ .28***	.48***	/ .52***
CAS	-.11***	/ -.03	.20***	/ .21***	.10***	/ .16**	.41***	/ .41***
GALS	.08**	/ .17**	.02	/-.01	.20***	/ .27***	.31***	/ .28***
Honesty-Humility	.28***	/ .13*	-.30***	/-.21***	.11***	/ .15**	-.08**	/ -.09
Sincerity	.16***	/ .15**	-.14***	/-.20***	.09**	/ .16**	-.03	/ -.04
Fairness	.25***	/ .10	-.24***	/ -.07	.16***	/ .18**	-.03	/ -.02
Greed Avoid.	.18***	/ .03	-.27***	/ -.11*	-.01	/ .06	-.08**	/ -.08
Modesty	.19***	/ .10	-.18***	/ -.22***	.07*	/ .01	-.08**	/ -.13*
SDO	-.31***	/ -.30***	.27***	/ .28***	-.14***	/ -.14*	-.02	/ .07
Sadism	-.29***	/ -.14*	.22***	/ .26***	-.16***	/ -.09	.02	/ .15**
Gratitude	-.02	/ .06	.08**	/ .03	.09**	/ .09	.11***	/ .12*
BIDR-SDE	-.01	/ -.01	.06*	/ .08	.00	/ .12*	-.05	/ .01
BIDR-IM	.27***	/ .08	-.23***	/ -.13*	.22***	/ .22***	-.04	/ -.03

Note *p < .05, ** p < .01, and *** p < .001. Greed Avoid. = Greed Avoidance. ATQ = Altruistic Tendencies Questionnaire. SRA = Self-Report Altruism Scale. CAS = Compassionate Altruism Scale.

GALS = Generative Altruism Scale. SDO = Social Dominance Orientation. BIDR = Balanced Inventory of Desirable Responding. SDE = Self-Deceptive Enhancement. IM = Impression Management.

4.4.6 Predicting Donation Intention

To examine whether the Altruistic Tendencies Questionnaire could predict how much participants were willing to donate to charity, multiple regression was conducted. Several models were tested. The first block contained demographics (i.e., age, gender), the second block contained Honesty-Humility, the third block contained the SRA, and the last block contained the ATQ. Because high correlations between the ATQ and the GALS (r = .65 to .69), and between the SRA and CAS (r = .60 to .62) were causing multicollinearity issues (e.g., a negative regression coefficient on the CAS in the Prolific sample), the GALS and CAS were omitted from the analysis. Correlations between altruism, Honesty-Humility, and donation intention are presented in Table 17. The final models are presented in Table 18 (student sample) and Table 19 (Prolific sample).

Table 17: Bivariate Correlations with Donation Amount

Scale	Donation Amount		
Altruistic Tendencies Questionnaire	.20***	/	.30***
Self-Report Altruism Scale	.06*	/	.16**
Compassionate Altruism Scale	.06*	/	-.06
Generative Altruism Scale	.13**	/	.26***
Honesty-Humility	.19***	/	.25***

Note. * p < .05, ** p < .01, and *** p < .001. Correlations for the student and Prolific samples are to the left and right, respectively.

Across both samples, Honesty-Humility ($\beta_{Student}$ = .14; $\beta_{Prolific}$ = .18) and the ATQ ($\beta_{Student}$ = .13; $\beta_{Prolific}$ = .22) were significant predictors of donation intention in the final regression model (Model 4). Importantly, this demonstrates that the ATQ accounted for unique variance in intended donation amount beyond Honesty-Humility, which is one of the most robust personality predictors of prosocial behaviour (Thielmann et al., 2020). To clarify the practical implications of these results, we can turn to the unstandardized regression coefficients, which present the magnitude of the predictions in the same units as the criterion variable. Specifically, for every 1.00 mean item response increase on the ATQ, there was an associated $5.42 increase in intended donation amount ($4.20 in the

student sample). The final model accounted for 11.8% of the variance in predicted donation amount (5.2% in the student sample).

Table 18: Regression Results for the Student Sample

	Coefficients				Model Change			
	B	*SE*	*β*	Sig.	*R*	R^2	Adj. R^2	Sig.
Model 1					.086	.007	.005	*
Constant	24.297	2.835	--	***				
Age	0.076	0.096	0.024	*ns*				
Gender	3.178	1.206	0.081	**				
Model 2					.194	.038	.035	***
Constant	11.424	3.576	--	**				
Age	-0.081	0.098	-0.026	*ns*				
Gender	2.052	1.204	0.052	*ns*				
H-H	5.472	0.949	0.184	***				
Model 3					.207	.043	.039	*
Constant	8.199	3.803	--	*				
Age	-0.063	0.099	-0.020	*ns*				
Gender	1.996	1.201	0.051	*ns*				
H-H	5.588	0.948	0.188	***				
SRA	2.179	0.889	0.074	*				
Model 4					.238	.057	.052	***
Constant	0.399	4.266	--	*ns*				
Age	-0.055	0.098	-0.018	*ns*				
Gender	1.005	1.220	0.026	*ns*				
H-H	4.239	1.002	0.142	***				
SRA	0.967	0.935	0.033	*ns*				
ATQ	4.197	1.068	0.125	***				

Note. For Gender, 1 = Male, 2 = Female. H-H = Honesty-Humility. SRA = Self-Report Altruism Scale. ATQ = Altruistic Tendencies Questionnaire.

Table 19: Regression Results for the Prolific Sample

	Coefficients				Model Change			
	B	*SE*	*β*	Sig.	*R*	R^2	Adj. R^2	Sig.
Model 1					.090	.008	.001	*ns*
Constant	20.908	4.552	--	***				
Age	0.115	0.081	0.086	*ns*				
Gender	-0.567	2.014	-0.017	*ns*				
Model 2					.257	.066	.056	***
Constant	2.556	6.271	--	*ns*				
Age	0.006	0.083	0.004	*ns*				

Gender	-2.075	1.992	-0.062	*ns*				
H-H	6.967	1.687	0.256	***				
Model 3					.312	.097	.084	**
Constant	-1.966	6.348	--	*ns*				
Age	0.032	0.082	0.024	*ns*				
Gender	-2.353	1.964	-0.071	*ns*				
H-H	7.017	1.661	0.258	***				
SRA	5.013	1.628	0.178	**				
Model 4					.386	.134	.118	***
Constant	-12.165	6.906	--	*ns*				
Age	0.053	0.081	0.040	*ns*				
Gender	-2.579	1.928	-0.077	*ns*				
H-H	4.962	1.737	0.183	**				
SRA	2.929	1.710	0.104	*ns*				
ATQ	5.417	1.585	0.219	***				

Note. For Gender, 1 = Male, 2 = Female. H-H = Honesty-Humility. SRA = Self-Report Altruism Scale. ATQ = Altruistic Tendencies Questionnaire.

Although there is still a considerable proportion of variance unaccounted for, these results are consistent with Kowalski et al. (in press), whose donation intention paradigm was adapted for the current study. In their study on narrow personality traits, integrity (β = .15) and humorousness (β = .15) significantly predicted donation amount, and the final model accounted for 5.7% of the variance. In an imagined donation paradigm, Wong and Yang (2021) observed similar results for the emotions of sympathy (β = .12) and solidarity (β = .12), both of which are conceptually related to facets of altruism (i.e., benevolent attitudes, universalistic moral perspective). Further, the correlations observed in the current study for Honesty-Humility ($r_{Student}$ = .19; $r_{Prolific}$ = .25) and the ATQ ($r_{Student}$ = .20; $r_{Prolific}$ = .30) with donation intention are similar in magnitude to meta-analytic correlations for Honesty-Humility ($\hat{\rho}$ = .26) and altruism ($\hat{\rho}$ = .14) with generosity in the Dictator Game, in which the participant decides how much of an endowment to give another part (Thielmann et al., 2020). Overall, this pattern of results is consistent with the literature and provides support for the criterion validity of the new altruism scale.

4.5 Discussion

To summarize, this chapter presented the results of the item decisions for the new Altruistic Tendencies Questionnaire and preliminary evidence of its validity as a measure of trait altruism. In both samples, the final 14-item scale demonstrated a unidimensional structure with overall strong loadings and high internal consistency. Correlational evidence with related personality constructs, both positive and negative, supported the convergent validity of the ATQ. The relationships observed were in the hypothesized direction and of appropriate magnitude, but without being too strong ($r > .70$), which would indicate scale redundancy or excessive construct overlap.

Additional support for convergent validity was obtained through positive correlations with preventative COVID-19 behaviours and with pandemic-related helping, suggesting that more altruistic individuals sought to help others while also reducing their risk of contracting and spreading the coronavirus. Finally, scores on the ATQ predicted increased donation intention, even after accounting for Honesty-Humility and demographic variables, providing preliminary evidence that the ATQ can predict relevant prosocial outcomes. Overall, this chapter provides a solid foundation for the psychometric properties of the ATQ. The studies presented in Chapter 5 and Chapter 6 use this 14-item scale to collect additional evidence of construct validity.

4.5.1 Limitations

First, the exclusive use of self-report limits the ecological validity of the study. Additionally, with the SRA and CAS, social distancing restrictions from the COVID-19 pandemic likely influenced participants' responses to the study. Several participants left comments at the end of the study, explaining that because of social distancing, they did not help strangers as much as they would have before the onset of the pandemic. Modifications to the instructions of the SRA and CAS were made to keep the time frame consistent across participants and to avoid mixing pre- and mid-pandemic behavioural frequencies; however, this change may have altered the psychometric properties of these scales. Because the SRA and CAS were not administered with their default instructions, participants were not completing them with the same mindset as the scales were

developed for. Accordingly, results obtained for the SRA and the CAS may have been different had they been completed under the default instructions. Further, presenting these two scales first, alongside the COVID-19 survey, may have primed responding for the remaining questionnaires.

Additionally, although the survey was anonymous and online, participants may not have wished to report violating social distancing protocols. Essential workers (e.g., nurses, cashiers), whose professions required them to interact with others, may also have endorsed behaviours even though they may not engage in them outside of work. Correlations with the COVID-19 behaviours, therefore, may also have been attenuated.

Finally, the donation intention task was not a perfect proxy for generosity. Because it was asked at the end of the study, it is possible that participants may have guessed the nature of the study given the nature of the personality questionnaires. Accordingly, participants may have reported a higher intended donation amount in order to appear more prosocial.

Chapter 5

5 Additional Validation Support of the ATQ in a Representative Sample

Best practices in scale development recommend testing the psychometric properties and factor structure of a new scale across multiple independent samples (e.g., Carpenter, 2018; Morgado et al., 2018; Wright et al., 2017). Accordingly, this chapter summarizes a study that aimed to replicate and expand on the results of the study in Chapter 4. A representative sample of residents of the United Kingdom was recruited to test the unidimensional nature of the ATQ in a non-North American sample. Correlational analyses were also conducted using the same prosocial traits (i.e., Honesty-Humility, gratitude) and socially aversive traits (i.e., sadism, social dominance orientation). In addition to replicating the results of Chapter 4, this study also aimed to provide further evidence of criterion validity. To this end, two economic games were used to assess generosity and reciprocity, both of which have established relationships to prosocial personality traits from meta-analytic research (Thielmann et al., 2020).

5.1 Replication of Relationships in Chapter 4

Theoretical and empirical justification for the relationships between altruism and Honesty-Humility, gratitude, sadism, and social dominance orientation can be found in Chapter 4. The same pattern of correlations was hypothesized:

> **H_1:** The ATQ will be positively correlated with dispositional gratitude and Honesty-Humility
>
> **H_2:** The ATQ will be negatively correlated with sadism and social dominance orientation

5.2 Altruism and Objective Measures of Prosociality

In Chapter 4, generosity was assessed by asking participants how much of a $50 gift card they would want donated if they won the draw. In support of criterion validity, the new Altruistic Tendencies Questionnaire predicted self-reported donation intention above and beyond Honesty-Humility. Building on these findings, the current study employed

variations of two economic games to avoid relying exclusively on self-report. Economic games simulate social interactions and can assess prosocial behaviour using real (or perceived) outcomes and consequences. Incorporating economic games into personality research offers several advantages over the traditional reliance on self-report measures, such as greater objectivity and reduced influence of social desirability (Thielmann et al., 2021). The current study took advantage of two such economic games, one involving the unconditional concern for another's welfare in the context of generosity (i.e., the Dictator Game), and the second involving conditional concern for another's welfare in the context of reciprocity (i.e., the Trust Game) (Thielmann et al., 2021).

5.2.1 Altruism and the Dictator Game

Traditionally, the Dictator Game presents a scenario in which one participant must distribute a sum of money between themselves (the *dictator*) and a second player (the *recipient*), who has no say on how the sum is divided. The Dictator Game offers an opportunity for exploitation on the part of the dictator, as selfish players can maximize their payoff by keeping the entire sum of money without any risk of retaliation by their partner (Thielmann et al., 2020, 2021). Decisions reflect a trade-off between benefitting the self (i.e., keeping more money) and benefitting the other person (i.e., giving away more money). As a result, more generous allocations by the dictator can be interpreted as prosocial.

One variant of the Dictator Game, called the Charity Game, replaces the human recipient with a charitable organization, simulating real-world donation decisions where individuals may be asked to donate money (Grossman & Eckel, 2015; Thielmann et al., 2021). Theoretically, less altruistic individuals should allocate more money to themselves, and more altruistic individuals should allocate more money to the charity (Thielmann et al., 2021). Generally, about one third of dictators keep the entire endowment, one third give less than 50%, and one third give 50% or more (Engel, 2011). Meta-analytic research has found that prosocial traits, such as Honesty-Humility, are associated with moderate increases in amount given (Thielmann et al., 2020). Altruism as measured by the ATQ should follow a similar pattern in donations in the Charity Game:

H_3: Scores on the ATQ will positively predict the amount given in the Charity Game condition

5.2.2 Altruism and the Trust Game

Another economic game, the Trust Game, presents a scenario in which one individual receives a sum of money from the experimenter (i.e., the *trustor*) and gives a portion of that sum to a second player (i.e., the *trustee*), which is multiplied by a constant before being added to the trustee's endowment. The trustee can then return a portion of that sum to the trustor. Although both parties can exploit their partners by keeping the entire sum, the trustee can demonstrate reciprocity by modifying how much they return to their partner. Theoretically, selfish trustees should keep more of the endowment, and altruistic trustees should return more to the trustor (Thielmann et al., 2021). Trustors typically give one third of their endowment to trustees, although personality traits and other factors can moderate this amount (Johnson & Mislin, 2011; Thielmann et al., 2020). Like with the Dictator Game, individuals who care more for others' welfare tend to return a greater sum of money to the trustor, although the magnitude of the relationship is smaller (Thielmann et al., 2020). In the current study, only the behaviour of the trustee was of interest because reciprocity was of concern, rather than trust.

H_4: Scores on the ATQ will positively predict the amount given in the Trust Game condition

5.3 Method

5.3.1 Participants

A sample of 300 English-speaking residents of the United Kingdom was recruited on the Prolific platform using their representative sampling feature to collect participants representative of the national U.K. census. Following data inspection, a total of 297 cases were retained, after removing two cases for excessive LongString values (i.e., straight-lining) and one participant who self-reported their disbelief concerning the Trust Game condition. Participant ages ranged from 18 to 79 (M = 46.3, SD = 15.5) and 50.5% of the sample were women. Most participants (84.5%) were White; additionally, 5.7% were Asian, 4.4% were Black, 1.8% were Arab, and the remaining 3.7% indicated multiple

ethnicities, another ethnic group, or preferred not to indicate their ethnicity. More detailed demographics are presented in Table 20.

Table 20: Detailed Breakdown of Participant demographics (*N*=297)

	#	%
Gender		
Male	151	50.0
Female	145	48.0
Non-Binary	5	1.7
Prefer to Self-Describe	0	0.0
Prefer Not to Say	1	0.3
Race/Ethnicity		
White: English/Welsh/Scottish/Northern Irish/British	235	79.1
White: Irish	2	0.7
White: Gypsy or Irish Traveller	0	0.0
Other White	14	4.7
Black: English/Welsh/Scottish/Northern Irish/British	6	2.0
Black: Caribbean	5	1.7
Black: African	2	0.7
Other Black	0	0.0
Asian: Indian	6	2.0
Asian: Pakistani	5	1.7
Asian: Bangladeshi	0	0.0
Asian: Chinese	3	1.0
Other Asian	3	1.0
Other ethnic group: Arab	5	1.7
Another ethnic group	3	1.0
Multiple Ethnicities	5	1.7
Prefer to Self-Describe	1	0.3
Prefer Not to Say	2	0.7
Not Specified	0	0.0

Note. The race/ethnicity categories in this table match those on the 2011 U.K. Census.

5.3.2 Materials

In addition to the 14-item ATQ, the personality scales from Chapter 4 were administered: the Generative Altruism Scale (GALS; Büssing et al., 2013), the 16-item Honesty-Humility scale from the HEXACO (Lee & Ashton, 2018), the six-item Gratitude Questionnaire (GQ-6; McCullough et al., 2002), the Social Dominance Orientation Scale (SDO; Pratto et al., 1994), the Assessment of Sadistic Personality (ASP; Plouffe et al., 2017), and the Balanced Inventory of Desirable Responding – 16-item (BIDR-16; Hart et

al., 2015). Communal narcissism was also assessed as part of the questionnaire battery; however, because the hypothesized direction of the relationship between altruism and communal narcissism was unclear, its relationship with the ATQ is not discussed.

5.3.3 Procedure

Participants were recruited using the Prolific crowdsourcing software, advertising a study on "personality and decision-making." After signing up for the study and reading the Letter of Information, participants indicated consent by checking a box stating, "I consent to participate in this study." Following the demographics survey, participants were randomly assigned to the Charity Game condition (to assess generosity) or the Trust Game condition (to assess reciprocity). In the Charity Game condition, participants were told that they have been given a bonus £0.50 for participating. They were then asked how much (if any) they would like to donate of this bonus compensation, choosing from among three real charities (British Red Cross Society, Global Giving Climate Action Fund, Room to Read). Each charity was accompanied with a brief description (see Appendix K).

In the Trust Game condition, participants were told that they would be randomly assigned to either a "Trustor" or "Trustee" role. Participants were presented with descriptions of each role, followed by knowledge checks to confirm they understood how the payout worked (see Appendix L). Participants assigned the Trustor role would receive £0.50 compensation and asked how much, if any, they would want to give a future participant, understanding that this amount would be doubled by the experimenter. For example, if the Trustor gave £0.30 of their £0.50 bonus, the Trustee would receive £0.60. Participants assigned the Trustee role would then have the option to return a portion of this amount, which would also be doubled. For example, if the Trustee returned £0.10 of their £0.60 bonus, the Trustor would receive £0.20 back. In this example, the Trustee would receive £0.50 total and the Trustor would receive £0.40 (£0.20 kept + £0.20 received). However, all participants were actually "assigned" the Trustee role and told that their ostensible "Trustor" had given them £0.25 (doubled to £0.50). Participants were then asked how

much of this amount they would return to their partner, if any. The amount "received" by participants was fixed by the researcher.

Following the economic games, participants completed the ATQ and a random subset of three of the remaining personality questionnaires. At the end of the study, participants were shown the Debriefing Letter, informing them about the deception and the true purpose of the study. All participants received £1.50 for participating in the study, plus the £0.50 bonus compensation at the end of the study, regardless of their decisions in the economic game. In total, the study took approximately 15 minutes.

5.3.4 Results

5.3.4.1 Data Inspection

Prior to data analyses, data were screened based on insufficient data, failure on two or more of the instructed response checks, and examination of careless responding using the Landers' (2020) LongString macro in Excel. Based on these criteria, two participant responses were removed. A third participant was excluded for indicating disbelief in the study's manipulation. Because participants only completed the ATQ and a subset of the remaining personality measures, pairwise deletion was used for the correlational analyses. Missing data points were estimated using EM in *SPSS* Version 27.

Due to a validation error when programming the Qualtrics survey, participants in the Charity Game condition were unable to enter values for the Climate Action Fund. Nine participants reported this in their comments to the researcher at the end of the survey, with several mentioning that they selected "I do not wish to donate any of my compensation" simply to proceed with the survey. For participants who indicated that they had tried to donate, their charity and donation amount (if specified) were updated manually. However, some participants likely proceeded without reporting issues on the survey. An inspection of the number of page clicks suggested that those who indicated they had tried to donate to the Climate Action Fund had more clicks (Median = 22) than those who selected the British Red Cross Society (Median = 4), Room to Read (Median = 5), or no charity (Median = 2). Accordingly, prior to further analyses, participants in the Charity Game condition who had 10 or more clicks on the Charity Game page were

counted as donators to the Climate Action Fund (*N*= 13 who selected the British Red Cross Society, *N*=12 who selected Room to Read, *N*=8 who did not select a charity). For participants who originally selected "I do not wish to donate," donation amount was treated as missing.

5.3.4.2 Descriptives

Descriptive statistics for each variable were computed in *SPSS* Version 27 (see Table 21).

Table 21: Descriptive Statistics of Study Variables

Variable	Items	Scale	α	ω	*M*	*SD*	c_v	Skew.	Kurt.	*n*
ATQ	14	1 - 5	0.91	0.91	3.49	0.63	18.05	-0.17	-0.17	297
GALS	7	0 - 3	0.84	0.84	1.53	0.54	35.46	0.69	-0.20	128
Honesty-Humility	16	1 - 5	0.83	0.81	3.62	0.57	15.72	-0.36	0.36	128
Sincerity	4	1 - 5	0.71	0.71	3.29	0.78	23.56	-0.13	-0.45	128
Fairness	4	1 - 5	0.80	0.81	3.71	0.94	25.44	-0.54	-0.39	128
Greed Avoid.	4	1 - 5	0.76	0.77	3.36	0.86	25.63	-0.25	-0.55	128
Modesty	4	1 - 5	0.67	0.68	4.13	0.66	15.93	-0.76	0.44	128
SDO	16	1 - 7	0.95	0.94	2.28	1.09	47.80	0.92	0.52	126
Sadism	9	1 - 5	0.83	0.83	1.54	0.56	36.73	1.34	1.66	128
Gratitude	6	1 - 7	0.87	0.87	5.44	1.09	20.13	-0.99	0.74	128
BIDR-SDE	8	1 - 7	0.74	0.74	3.87	0.91	23.61	0.30	0.21	126
BIDR-IM	8	1 - 7	0.77	0.76	4.41	1.00	22.58	0.09	-0.37	126

Note. Values of *n* for each scale vary because not every participant was administered all measures. Means and standard deviations reflect the average item response for each scale. c_v = coefficient of variance. ATQ = Altruistic Tendencies Questionnaire. GALS = Generative Altruism Scale. Avoid. = Avoidance. SDO = Social Dominance Orientation. BIDR = Balanced Inventory of Desirable Responding. SDE = Self-Deceptive Enhancement. IM = Impression Management.

5.3.4.2.1 Tests of Normality

Tests for normality were conducted for each personality assessment using the Shapiro-Wilk test, which was significant for the ATQ, SDO, GQ-6, ASP, and GALS, as well as the Modesty, Fairness, and Greed-Avoidance subscales of Honesty-Humility. Normality was also assessed through skewness, kurtosis, and a visual inspection of the Q-Q plots and histograms of the frequency distributions. Except for sadism, all personality variables had values for skewness and kurtosis between -1.5 and +1.5, which fall within acceptable limits for a normal univariate distribution (Tabachnick & Fidell, 2013). However, based on visual inspection, scores on the SDO, GQ-6, ASP, and GALS deviated considerably from a normal distribution. Additionally, the amounts given in the Charity Game and Trust Game conditions also violated normality based on significant results from the Shapiro-Wilk test, visual inspection of the histograms, and values for kurtosis.

Accordingly, given the non-normality of some variables, correlational analyses were calculating using both Pearson and Spearman-Brown correlations.

5.3.4.2.2 Common Method Variance

Common method variance could not be examined in the current study, given the small sample size collected for individual convergent validity measures. However, the study conducted in Chapter 4, which included the same personality variables, did not find evidence of problematic common method variance.

5.3.4.3 Confirmatory Factor Analysis

In scale development, it is common practice for the factor structure of a new scale to be tested using exploratory techniques in one sample (i.e., the calibration sample), and then have that factor structure re-assessed using confirmatory techniques in an independent sample (Worthington & Whittaker, 2006). Confirmatory factor analysis (CFA) allows researchers to evaluate how well the data fit a model specified *a priori* using a variety of fit indices. In the current study, CFA was conducted in *Mplus* Version 7 (Muthén & Muthén, 1998-2012) using Maximum Likelihood estimation to assess how well the items on the ATQ grouped onto the general altruism factor identified in Chapter 4.

5.3.4.3.1 Model Fit

As recommended by Kline (2016), overall model fit was assessed as well as three approximate fit indices. Overall model fit was examined using the chi-square (χ^2) test, which was significant ($\chi^2(77) = 227.159$, $p < .001$); however, because the χ^2 is sensitive to sample size, it is often significant in larger samples. Consequently, while reported, it is often followed up with additional fit indices, including the Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and the Standardized Root Mean Square Residual (SRMR). Values for the RMSEA below .08 indicate good fit, with values below .05 indicating excellent fit (Steiger, 1990). Values for the CFI above .90 indicate good fit, with values above .95 indicating excellent fit (Hu and Bentler, 1999). Generally, it is desirable to have values for the SRMR below .10, which indicates

acceptable fit (Hu & Bentler, 1999), or below .08, which indicates good fit. Values below .50 indicate excellent fit (Diamantopoulos & Siguaw, 2000).

By these metrics, values for the SRMR in the initial model were very good for the Altruistic Tendencies Questionnaire (SRMR = .048). The ATQ achieved a value of .912 for the CFI, also indicating good fit. The initial model approached the value for acceptable fit (RMSEA = .081; 90% CI [.069 - .093]). Finally, all standardized factor loadings exceeded .40 (see Table 22), and all values of R^2 exceeded .20, exceeding the minimum recommended by Hooper, Coughlan, and Mullen (2008). Overall, the fit indices suggest that the ATQ had good model fit for a unidimensional factor structure.

Table 22: Standardized Factor Loadings (Original Model)

Item Label	Loading	Sig.	R^2
ACT_4	.613	***	.376
ACT_6	.629	***	.396
IM_2	.651	***	.423
IM_3	.573	***	.328
PC_1	.664	***	.441
PC_2	.712	***	.507
PC_3	.636	***	.404
PC_5R	.655	***	.429
PC_7R	.669	***	.447
BA_1	.662	***	.438
BA_3	.492	***	.242
UMP_2	.696	***	.484
MIX_1	.482	***	.233
MIX_4	.814	***	.662

Note. *** $p < .001$.

5.3.4.3.2 Modifications

To examine if model fit could be substantially improved, local fit was assessed. First, correlated residuals were considered, as suggested by *Mplus*. Although correlating error terms can improve model fit, it is not recommended without strong theoretical justification (Hooper et al., 2008). Items IM_2 (“It is personally rewarding to give my time for a worthy cause”) and ACT_6 (“Volunteering is an important source of meaning in my life”) contain elements of both volunteering and intrinsic motivation. Adding this

correlated residual significantly improved model fit, $\chi^2(1) = 44.701$, $p < .001$, most notably for the RMSEA (see Table 23).

Table 23: Summary of Modifications

Model	Summary of Modification	χ^2(df)	$\Delta\chi^2$	RMSEA	CFI	SRMR
Original Model	N/A	227.159(77) $p < .001$	--	.081 [.069 - .093]	.912	.048
Modification 1	IM_2 with ACT_6	182.458(76) $p < .001$	44.701***	.069 [.056 - .081]	.937	.044

5.3.4.4 Other Psychometrics

5.3.4.4.1 Reliability

As in Chapter 4, internal consistency for the ATQ was high (> .90; see Table 21).

5.3.4.4.2 Convergent Validity

As in Chapter 4, bivariate correlations were calculated between the Altruistic Tendencies Questionnaire and related personality constructs to provide additional evidence for convergent validity (*n*'s = 126-128). Replicating Chapter 4's results, the ATQ was strongly and positively correlated with the GALS ($r = .69$, $p < .001$; $r_s = .69$, $p < .001$). The ATQ was also positively correlated with gratitude ($r = .39$, $p < .001$; $r_s = .37$, $p < .001$) and Honesty-Humility ($r = .36$, $p < .001$; $r_s = .31$, $p < .001$). At the facet level for Honesty-Humility, the ATQ was significantly correlated with Fairness ($r = .42$, $p < .001$; $r_s = .38$, $p < .05$) and Sincerity ($r = .33$, $p < .001$; $r_s = .27$, $p < .01$). Finally, the ATQ was negatively correlated with both sadism ($r = -.33$, $p < .001$, $r_s = -.34$, $p < .001$) and social dominance orientation ($r = -.54$, $p < .001$; $r_s = -.50$, $p < .001$). The direction and magnitude of these relationships are largely consistent with those observed in the student and adult samples from Chapter 4, further supporting the validity of the ATQ.

5.3.4.4.3 Social Desirability

Using the 16-item version of the BIDR, there was a moderate positive correlation with the Impression Management subscale ($r = .32$, $p < .001$, $r_s = .28$, $p < .01$). The

relationship with the Self-Deceptive Enhancement subscale was significant with a Pearson correlation (r = .18, p < .05), but not with the Spearman-Brown correlation (r_s = .13, p = .160), suggesting that this relationship was less robust in the current sample. The magnitude of these correlations is similar to results obtained in Chapter 4, which used a larger sample, and further supports that the ATQ is not contaminated by socially desirability.

5.3.4.4.4 Gender Differences

To examine gender differences, a one-way ANOVA including all variables was conducted in *SPSS* Version 27 (see Table 24). The pattern of gender differences observed largely replicated those in Chapter 4; however, some small differences found in the study in Chapter 4 (e.g., GQ-6, SDE) did not reach statistical significance in the current study, likely due to the smaller sample size of the convergent validity scales**.** Consistent with the study in Chapter 4, women scored significantly higher than men on the ATQ and on Honesty-Humility, and significantly lower than men on sadism and on social dominance orientation. Women also scored higher on the GALS, which was also significantly higher than Chapter 4's student sample (but not the Prolific sample). Effect sizes were reported in Cohen's *d*, with values of *SD* pooled weighted by the sample size of each group. Most gender differences were small-to-moderate, with the largest differences observed for sadism (d = .71) and Fairness (d = -.63).

Table 24: Gender Differences for Study Variables

Gender differences for study variables.

	Men			Women				
	M	*SD*	*N*	*M*	*SD*	*N*	*d*	
Altruism	3.33	0.68	144	3.65	0.54	150	-0.52	***
GALS	1.44	0.54	71	1.65	0.52	56	-0.38	*
Honesty-Humility	3.52	0.63	65	3.74	0.48	62	-0.40	*
Sincerity	3.19	0.84	65	3.40	0.70	62	-0.27	
Fairness	3.43	1.02	65	4.00	0.76	62	-0.63	***
Greed Avoid.	3.44	0.83	65	3.28	0.90	62	0.19	
Modesty	4.00	0.70	65	4.28	0.58	62	-0.44	*
SDO	2.55	1.25	56	2.07	0.91	69	0.45	*
Sadism	1.75	0.67	58	1.37	0.39	70	0.71	***
Gratitude	5.25	1.20	62	5.62	0.97	64	-0.33	
BIDR-SDE	4.00	0.95	67	3.74	0.87	58	0.29	
BIDR-IM	4.35	0.96	67	4.48	1.05	58	-0.13	

Note. Positive values of Cohen's *d* indicate that men scored higher. Pooled standard deviation was weighted by sample size. Greed Avoid. = Greed Avoidance. GALS = Generative Altruism Scale. SDO = Social Dominance Orientation. BIDR = Balanced Inventory of Desirable Responding. SDE = Self-Deceptive Enhancement. IM = Impression Management. * $p < .05$, ** $p < .01$, *** $p < .001$.

5.3.4.5 Criterion Validity in Economic Games

To examine whether the Altruistic Tendencies Questionnaire could predict prosocial decision-making, the current study used two economic games to assess generosity (Charity Game) and reciprocity (Trust Game). Correlations between the personality variables and donation decisions in these games are presented in Table 25.

Table 25: Spearman Correlations with Giving Decisions in Economic Games

Scale	Trust Game	Charity Game	
	Amount Returned	Donate (No/Yes)	Amount (None, Half, All)
ATQ	.14	.27**	.33***
GALS	.13	.24*	.38**
Honesty-Humility	.20	.11	.16
Sincerity	.20	.09	.06
Fairness	.16	.11	.22
Greed Avoidance	.11	-.06	-.05
Modesty	.19	.02	.08
SDO	-.27*	-.40***	-.32*
Sadism	-.21	-.16	-.25*
Gratitude	.28*	.02	.04
BIDR-SDE	.16	-.07	-.01
BIDR-IM	.06	.06	.09

Note. ATQ = Altruistic Tendencies Questionnaire. GALS = Generative Altruism Scale. SDO = Social Dominance Orientation. BIDR = Balanced Inventory of Desirable Responding. SDE = Self-Deceptive Enhancement. IM = Impression Management. * $p < .05$, ** $p < .01$, *** $p < .001$.

5.3.4.5.1 Charity Game

Approximately half of the participants assigned to the Charity Game condition exhibited generosity. Specifically, 71 (43%) chose to keep their entire bonus endowment of £0.50, while 94 (57%) chose to donate some or all of it. The proportion of participants who opted to give their entire endowment to a charity (29.1%) was similar to the meta-analytic results reported by Engel (2011) for deserving (human) recipients. Additionally, although participants were able to donate any amount from .00 to .50, almost all donors fell into one of two categories: donating half their endowment (28.7% of donors) or

donating all their endowment (51.1% of donors). For a more detailed breakdown of donation amount, see Table 26.

Table 26: Breakdown of Donation Amount in the Charity Game

Amount donated	*n*	% of sample	% of donors
None (.00)	71	43.0	N/A
.01 to .24	5	3.0	5.3
Half (.25)	27	16.4	28.7
.26 to .49	3	1.8	3.2
All (.50)	48	29.1	51.1
Unknown[a]	11	6.7	11.7

Note. [a] Due to a survey error, donation amount could not be determined.

Based on the Spearman correlations, both altruism scales, as well as social dominance orientation, were significantly associated with being a donor versus being a non-donor. The correlation between altruism and amount donated (r_s = .27) was larger than reported in Thielmann et al.'s (2020) meta-analysis (ρ = .14); this correlation may be larger than expected because unlike in the traditional Dictator Game, the recipient in this modified version was a charity, rather than a person (Engel, 2011). Individuals in the Dictator Game tend to be generous towards those who are deserving or in need, including charities (Eckel & Grossman, 1996; Engel 2011).

To examine whether the ATQ could predict donation decisions in the Charity Game, ordinal logistic regression was conducted in *SPSS* Version 27 for three levels of the outcome variable (Did Not Donate, Donated Half, Donated All) with three predictors (gender, age, altruism). The correlation between gender and altruism was small (r = .25, p < .001), indicating that multicollinearity was unlikely to be an issue. Because of small cases in the categories between .01 and .24 (n = 5) and between .26 and .49 (n = 3), these values were omitted from the analysis, resulting in a total N = 146 usable cases. The parallel lines test was not significant ($\chi^2(3) = 1.661$, p = .646), indicating that the proportional odds assumption was not violated and that the relationship between each outcome group was the same.

The chi-square for the final model was significant ($\chi^2(3) = 30.865$, p < .001), indicating that the model was a significant improvement over the null model. Results from the

goodness-of-fit test using the Pearson chi-square statistic were not significant, indicating that the final model fit the data well ($\chi^2(279) = 263.258$, $p = .447$). The value for Nagelkerke's pseudo R^2 indicated that a model containing altruism, gender, and age explained 22.0% of variation between participants in their donation decision. In this model, a one-point increase in average score on the ATQ was significantly associated with 1.144 times (95% CI, 0.566 to 1.723) increased odds of being in a higher donation category, when other variables were held constant, Wald $\chi^2(1) = 15.023$, $p < .001$. In other words, being more altruistic was associated with donating more of one's bonus compensation to a charity. For gender, the odds of men being in a lower donation category were 0.984 (95% CI, 1.654 to 0.313) times that of women when other variables were held constant, a statistically significant effect, Wald $\chi^2(1) = 8.260$, $p < .01$. In other words, men donated less than women. Age had no significant relationship with donation category, Wald $\chi^2(1) = 1.308$, $p = .253$.

5.3.4.5.2 Trust Game

The Trust Game was set up such that a participant's "partner" split half of their supposed initial endowment. Most participants were generous trustees. Almost half of participants split their earnings approximately evenly (i.e., returned £0.20 to £0.30), even though this resulted in their "partner" earning a higher payout than them. Almost one quarter of participants (23.5%) returned an amount that, when doubled, would result in a close-to-equal payout for both parties (i.e., +/- £0.05). Only 7.6% of participants in the Trust Game condition returned nothing. Consistent with Johnson and Milsin (2011), who reported that trustees usually return about one third of their endowment on average, participants returned £0.18 to their partner (36% of their initial endowment), which would result in a payout of £0.32 for them, and a payout of £0.61 (£0.25 + £0.36) for their partner. For a summary of the range distribution of amount returned, refer to Table 27.

Table 27: Breakdown of Amount Returned in the Trust Game

£ Returned	N	% of sample	Self Payout	Partner Payout	Difference
.00 to .04	10	7.6	.50 to .46	.25 + (.00 to .08) = .25 to .33	+.25 to +.13
.05 to .09	7	5.3	.45 to .41	.25 + (.10 to .18) = .35 to .43	.10 to -.02
.10 to 14	33	25.0	.40 to .36	.25 + (.20 to .28) = .45 to .53	-.05 to -.17
.15 to .19	15	11.4	.35 to .31	.25 + (.30 to .38) = .55 to .63	-.20 to -.32
.20 to .24	21	15.9	.30 to .26	.25 + (.40 to .48) = .65 to .73	-.35 to -.47
.25 to .29	39	29.5	.25 to .21	.25 + (.50 to .58) = .75 to .83	-.50 to -.62
≥.30	7	5.3	.20 to .00	.25 + (.60 to 1.00) = .85 to 1.25	-.65 to -1.25

Note. Positive differences indicate that the participant had a higher payout than their "partner."

Contrary to expectations, scores on the Altruistic Tendencies Questionnaire were not significantly correlated with how much participants returned to their partner (r = .14, *ns*). Other variables, however, were consistent with theoretical expectations and with Thielmann et al.'s (2020) meta-analysis of predictors of prosocial behavior in economic games. For example, gratitude was positively correlated with amount returned (r = .28), suggesting that individuals who were naturally more appreciative were also more inclined to be generous to their partners. Additionally, social dominance orientation was negatively correlated with amount returned (r = -.27), suggesting that individuals who endorsed social hierarchies were less likely to value fairness or generosity. Although Honesty-Humility (r = .20, *ns*) and sadism (r = -.21, *ns*) trended in the expected direction and were similar to the values reported by Thielmann et al., 2020, they did not reach statistical significance in the current study.

5.4 Discussion

The goal of this chapter was to provide additional evidence of validity for the Altruistic Tendencies Questionnaire by testing the unidimensional factor structure, replicating the results of the initial validation study, and providing additional evidence for the utility of the scale in predicting prosocial outcomes relevant to altruism.

In general, the hypotheses of the current study were supported. Confirmatory factor analyses identified that the unidimensional factor structure of the ATQ fit the data well. Additionally, correlational relationships originally examined in Chapter 4 were successfully replicated with the same pattern and similar magnitude of correlation coefficients. Specifically, the ATQ correlated positively with another measure of altruism (i.e., the GALS) as well as other prosocial traits (i.e., Honesty-Humility, gratitude). Likewise, the ATQ was negatively correlated with social dominance orientation and sadism. Finally, the relationships with subscales of the BIDR-16 indicated that the ATQ was not saturated with socially desirable content. Replicating these results indicates that the results reported in Chapter 4 were not idiosyncratic to those samples.

Variations of two economic games were also used to simulate conditions of generosity and reciprocity. Because each game offered the potential for exploitation (either giving nothing to charity in the Charity Game or returning nothing to their partner as trustees in the Trust Game), it was expected that Altruistic Tendencies Questionnaire would predict increased giving in both games, based on Thielmann et al.'s (2020) theoretical framework. In the Charity Game condition, scores on the ATQ successfully predicted increased giving, such that people who gave half their endowment were significantly more altruistic than those who gave nothing, and that people who gave their entire endowment were significantly more altruistic than those who gave half. These results are consistent in direction and magnitude with the donation intentions assessed in Chapter 4.

However, contrary to study hypotheses, scores on the ATQ did not predict the amount returned in the Trust Game. Likewise, scores on the GALS, another measure of altruism, also failed to yield significant results. In contrast, gratitude and social dominance orientation had small but significant positive and negative correlations, respectively, with the amount returned. Both pairs of relationships make theoretical sense (i.e., people who are more grateful for the amount received return more; people high on social dominance orientation prefer inequality among social groups).

There are several reasons why a stronger relationship between altruism and amount returned was not observed. Behaviour in economic games is influenced by many factors in addition to personality, including instructions, payout matrices, and real versus simulated or anonymous partners (Johnson & Mislin, 2011). Accordingly, it is possible that the use of deception, rather than an actual partner, attenuated the relationship between altruism and reciprocity.[2] In their meta-analysis, Thielmann et al. (2020) reported significantly smaller relationships between altruism and prosocial decisions in economic games when deception was employed versus actual partners. Another meta-analysis suggests that multipliers also affect how much participants return in trust games (Johnson & Mislin, 2011). Accordingly, a different payout matrix (e.g., tripling the amount sent, not multiplying the amount returned) might have been better predicted by trait altruism. Although the bonus endowment was proportional to the compensation, the small amount may have affected the generosity of participants; that is, participants may have been comfortable giving more to their partner because they were already earning £3.00 for participating in the study, so generosity was less costly. Varying the sender endowment (e.g., increasing the total amount, making the sender stingier) or using a real partner (vs. deception about having a partner) would likely have affected the results.

[2] It is also possible that some participants did not believe that they were paired with another participant, as while participants were asked questions to ensure they understood the payout matrix, they were not administered a manipulation check. One participant explicitly mentioned in a comment to the researcher that they did not believe the study was real and therefore opted to maximize their earnings by keeping the full £0.50. Although this participant's data were excluded from the results, it is possible that other participants were also skeptical. Despite not using a manipulation check, many participants still returned an amount that would result in equal or other-benefitting payoffs.

The general small magnitude of the correlations between the personality variables and amount returned in the Trust Game indicates that considerable variance remains unexplained. Grossman and Eckel (2015) suggest that while giving to a charity is a familiar framework, giving to a stranger is not. Because the deservingness or need of one's "partner" was unknown, giving may have been motivated by factors other than altruism. As a result, there was no concern or explicit "need" to improve their partner's welfare, aside from concerns for fairness (i.e., not short-changing their partner) (Thielmann et al., 2020; Johnson & Mislin, 2011). Based on Thielmann et al. (2020), one would expect that reciprocity is a weaker outcome than generosity to a charity. Accordingly, while altruism was not significant, the fact that the Charity Game results aligned with expectations suggests that the outcomes of the Trust Game in the current study were better predicted by personal qualities other than altruism. Future research could investigate other factors involved in decision-making in the Trust Game.

5.4.1 Limitations & Future Directions

One strength of the current study was its sample, which was representative of the United Kingdom and avoided the limitations of university student samples. However, while the sample size was adequate for some analyses, smaller effects were not able to be detected reliably in the economic games. It is possible that the relationship between altruism and decisions in the Trust Game would have been significant with more participants. A follow-up study could explore different personality predictors of decisions in this game (e.g., competitiveness, inequality avoidance) with a larger sample.

The current study provided promising evidence of criterion-related validity for the Altruistic Tendencies Questionnaire by adapting two economic games and offered opportunities to demonstrate generosity to a charity and reciprocity to a stranger. However, economic games still lack the same ecological validity as someone who is prompted at the checkout to give to a charity from their own earnings or is asked by a stranger to spare some change. These situations have other factors involved (e.g., time pressure, spontaneity, perceptions of need). For the purposes of supporting the validity of

the ATQ, the economic games sufficed to provide evidence that the scale measures altruism and not some other construct (e.g., cooperativeness).

An additional consideration is the magnitude of the stakes used (£0.50) in the current study. Although this windfall sum was in line with previous research in economics games (e.g., Amir, Rand, & Gal, 2012) and was one-third of the participants' base earnings (£1.50), it still was small. Some research on the effectiveness of low ($1.00) stakes and economic games in online crowdsourced participants suggests that the allocation amounts obtained in low-stakes studies are similar in proportion to those in laboratory studies with larger bonuses (Amir et al., 2012). However, meta-analytic research on the Dictator Game indicates that generosity decreases when the stakes are higher (Larney, Rotella, & Barclay, 2019). Accordingly, the current results may not generalize to situations with more substantial stakes. Future studies could therefore simulate generosity in more realistic and ecologically valid ways, using the new Altruistic Tendencies Questionnaire to facilitate research on how trait altruism may contribute to altruistic and prosocial decision-making.

Chapter 6

6 Comparison of Altruism Across University Majors

This chapter summarizes the final study conducted as part of the preliminary validation of the Altruistic Tendencies Questionnaire. As mentioned in Section 1.3.3, another piece of evidence that can support the construct validity of a new scale is known-groups validity. Known-groups validity can be assessed by demonstrating that a scale measuring a given trait differentiates between groups known to differ on that trait (Cronbach & Meehl, 1955; Churchill, 1979; DeVellis & Thorpe, 2022). One convenient population where differences in personality profiles have been observed is university students. As will be discussed later in more detail, students higher in "darker" or self-oriented personality traits (e.g., Machiavellianism; Gruda, McCleskey, & Khoury, in press) tend to be enrolled in some academic majors, whereas students higher in "lighter" or other-oriented personality traits (e.g., altruism; Holzer et al., 2022) tend to be enrolled in other academic majors.

The primary goal of the present study was to establish known-groups validity for the ATQ by examining whether altruism scores differed as expected between university students enrolled in different academic majors. A second goal was to provide additional correlational evidence in support of the ATQ's nomological network, acknowledging the limits of generalizability in student samples.

6.1 Personal Characteristics and Choice of University Major

According to vocational choice models, individuals choose university majors and seek careers that align with their personality traits and values (Furnham, Petrides, Tsaousis, Pappas, & Garrod, 2005; Holland, 1985, 1997; Judge & Bretz, 1992; Judge & Cable, 1997). In a similar vein, university programs tend to attract students who differ on relevant personal characteristics, as these students are often trying to enter related careers following completion of their program. Multiple studies have observed differences in personality and choice of academic major with respect to both broad personality frameworks, such as the Big Five and HEXACO, as well as narrower individual

differences, such as specific traits and personal values (e.g., Balsamo, Lauriola, & Saggino, 2012; Gruda et al., in press; Lee, Ashton, & Novitsky, 2022; Vedel, 2016).

Although both traits and values vary between people and are expected to be relatively stable over time, they encompass distinct areas of the individual difference domain. Values are goals or principles that individuals perceive as important, desirable, and meaningful (Schwartz, 1994). In contrast to personality traits, which describe patterns of behaviours, thoughts, or emotions, values are motivation-based and can guide behaviour (Parks-Leduc, Feldman, & Bardi, 2015). Schwartz's (1994) theory of basic human values organizes personal values in a circumplex model: Self-Transcendence vs. Self-Enhancement and Conservatism vs. Openness to Change. This value framework is of particular relevance to the study of prosocial traits, as the first axis (Self-Transcendence vs. Self-Enhancement) contrasts other-focused and self-focused values. The first pole, Self-Transcendence, encompasses the values of benevolence and universalism. Both of these values emphasize cooperating and helping others but differ in their scope of concern. Benevolence values promote the benefitting of close others and "in-group" members, whereas universalism values promote the appreciation and helping of all people as well as the environment. Given its focus on more distant or abstract others, universalism is the value most conceptually related to altruism. Opposing benevolence and universalism are the Self-Enhancement values of power and achievement, which emphasize ambition and a desire for elevated social status, either in terms of influence (power) or success (achievement).

6.1.1 Contrasting Person-Oriented vs. Self-Oriented Academic Majors

As mentioned previously, individual differences have been linked to enrollment in specific university programs and vocational interests. Because altruism involves a desire to help others, it should be elevated in individuals attracted to person-focused careers, such as healthcare or education. Jobs in these fields "often requir[e] some degree of self-sacrifice, asking workers to accept modest pay and tolerate emotionally grueling duties for the greater good" (Lowrey, 2022, para. 4), which can be likened to the cost associated with performing acts of altruism. In contrast, altruistic individuals should be less attracted

to careers associated with power, prestige, or other personal gain. Accordingly, students in nursing, education, and medical science were expected to score higher on altruism, and students from business, economics, and engineering were expected to score lower on altruism. Related research on each group is summarized below, followed by the study's hypotheses.

6.1.1.1 High Altruism Majors

Previous research suggests that individuals who study medicine are intrinsically motivated to do so. High school seniors interested in medical fields reported more altruistic reasons for choosing their university major (i.e., to "help and heal people") and desired more personal fulfillment in their career compared to students in other fields (Holzer et al., 2022). Similarly, at the undergraduate level, students were more likely to major in biology/pre-medicine, social sciences, education, and health professions if they also sought a career that involved helping others (Quadlin, 2020). Nursing students have also reported prosocial motivations for entering their program, such a desire to care for other people (Eley, Eley, Bertello, & Rogers-Clark, 2012), help others regardless of who they are (Kaya, Işik, Şenyuva, & Kaya, 2017; Timmins et al., 2018), and preserve human dignity (Aydın et al., 2022; Kaya et al., 2017). Based on this research, students majoring in medical science and nursing were expected to score higher on prosocial traits, including altruism.

Teaching can also be considered an other-centred profession, as it involves working with youth and shaping their lives in a pedagogical capacity. One early meta-analysis reported that regardless of methodology, "the consistent pattern has been that altruistic, service-oriented goals and other intrinsic sources of motivation are the primary reasons entering teacher candidates report for why they chose careers in teaching" (Brookhart & Freeman, 1992, p. 46). More recent literature continues to support this theme of intrinsic and prosocial motivations in educators and pre-service teachers, especially in developed societies and in women (e.g., Brandmo & Nesje, 2017; Glutsch & König, 2019; König & Rothland, 2012; Sunley & Locke, 2012; Virat, Trouillet, & Favre, 2020). As such,

students majoring in education were expected to demonstrate a similar pattern of scores as the medicine and nursing students.

6.1.1.2 Low Altruism Majors

Previous research has reported that undergraduate students are more likely to major in business if they value having a high-income profession (Quadlin, 2020). In terms of broad personality factors, economics and business majors tend to score lower on Agreeableness, the Big Five trait most closely associated with prosocial behaviour (Habashi, Graziano, & Hoover, 2016; Thielmann, Spardo, & Balliet, 2020), compared to students who major in medicine, science, psychology, or the humanities (Vedel, 2016). Business and economics majors also tend to score lower on Greed-Avoidance, a facet of Honesty-Humility on the HEXACO, suggesting that they value wealth and social status more than students in other majors (Lee et al., 2022).

Narrower personal characteristics have also shown meaningful relationships with interests related to business and economics. Correlations with Schwartz's (1992) values indicate that enterprising types seek social influence and success but have less desire to help other people (Sagiv, 2002). According to O*NET categorizations, careers in business are underscored by Enterprising interests. Research using Holland's (1997) RIASEC model has reported that interest in Enterprising careers is associated with increased narcissism and psychopathy scores (Kowalski et al., 2017; Schneider et al., 2017). The relationship between Enterprising interests and Machiavellianism is less clear, with some researchers reporting positive relationships (Schneider et al., 2017) and others reporting non-significant (Kowalski et al., 2017) or even negative correlations (Jonason et al., 2014). However, this general pattern of relationships with "dark" traits and self-oriented values is consistent with the description of enterprising individuals as "prefer[ring] to manipulate people to attain organizational or financial goals" (Sagiv, 2002, p. 239).

At the undergraduate level, economics, business, and management programs tend to attract students higher on the Dark Triad traits relative to other majors (Gruda et al., in press; Krick et al., 2016; Vedel & Thomsen, 2017; Wilson & McCarthy, 2011).

Additionally, students in business or economic majors are less likely to have donated to a social cause when solicited at the beginning of course enrollment (Bauman & Rose, 2011), and make less generous allocations in economic games (Cappelen, Nygaard, Sørensen, & Tungodden, 2015; Grossman & Eckel, 2015), compared to students in other programs. Based on the literature summarized above, students interested in business and economics were expected to obtain elevated scores on Self-Enhancement values and Dark Triad traits, and lower scores on other-oriented values and traits—including altruism.

Engineering was another major expected to have comparatively lower altruism scores. Engineering students tend to endorse Realistic and Investigative interests (Ding, Wang, Hourieh, & Yu, 2020), suggesting they prefer working with things, rather than people (Realistic), and enjoy analytical thinking (Investigative). The reduced interest in working with people contrasts with other-oriented professions (e.g., nurses, doctors, teachers), where helping others directly plays a key role. Some research suggests that engineers are less sensitive to others' emotions (Lee et al., 2022; Williamson, Lounsbury, & Han, 2013), which may help explain this difference. O*NET categories for various types of engineering (e.g., civil engineering, mechanical engineering) also include Conventional interests. Although Investigative vocational interests have been positively correlated with universalism values in previous research, Conventional interests have shown the opposite pattern (Sagiv, 2002). Interest in logical and inquiring careers (c.f. Realistic and Investigative interests) has also been linked to small positive correlations with psychopathy and—for Inquiring interests—Machiavellianism (Sagiv, 2002; Schneider et al., 2017). Similarly, Machiavellianism scores are elevated in individuals in engineering programs (Gruda et al., in press). Based on these findings, students majoring in engineering were expected to demonstrate a similar pattern to the business and economics students, including lower altruism scores.

6.1.1.3 Study Hypotheses

Based on the research for the "high altruism" majors, the following were hypothesized:

H_1: Students majoring in nursing, education, and medical science should score higher on the ATQ than students majoring in business, economics, or engineering

H_2: Students majoring in nursing, education, and medical science should score higher on other prosocial traits (i.e., empathy, gratitude, compassion, Honesty-Humility) than students majoring in business, economics, or engineering

H_3: Students in nursing, education, and medical science programs should score higher on Self-Transcendence values (i.e., benevolence, universalism) than students majoring in business, economics, or engineering

Based on the research for the "low altruism" majors, the following were hypothesized:

H_4: Students majoring in business, economics, and engineering programs should score higher on the Dark Tetrad traits (i.e., narcissism, Machiavellianism, psychopathy, sadism) than students majoring in nursing, medical science, or education

H_5: Students majoring in business, economics, and engineering programs should score higher on Self-Enhancement values than students majoring in nursing, medical science, or education

Based on the research discussed above and in earlier chapters, the following relationships were hypothesized between the Altruistic Tendencies Questionnaire and prosocial traits, socially aversive traits, personal values, and motivations:

H_6: Scores on the ATQ should be positively correlated with prosocial traits (i.e., empathy, gratitude, compassion, Honesty-Humility) and with Self-Transcendence values (i.e., universalism, benevolence)

H_7: Scores on the ATQ should be negatively correlated with the Dark Tetrad traits (i.e., narcissism, Machiavellianism, psychopathy, sadism) and with Self-Enhancement values (i.e., power, achievement)

H_8: Scores on the ATQ should be positively correlated with intrinsic motivations for pursuing an academic major (e.g., helping others, personal fulfillment)

H_9: Scores on the ATQ should be negatively correlated with extrinsic motivations for pursuing an academic major (e.g., making money, prestige)

6.2 Method

6.2.1 Participants

A total of 804 university students consented to participate. Following data inspection, responses from 502 participants were retained. Participants were specifically recruited from undergraduate students enrolled in a major (or equivalent) in nursing (*N*=74; 86.5% female), education (*N*=19, 73.7% female), medical science (*N*=220, 75.0% female), engineering (*N*=62, 48.4% female), business (*N*=105, 71.4% female), or economics (*N*=22, 45.5% female). Participant ages ranged from 17 to 52 years (*M* = 19.4, *SD* = 3.3), but most participants (88.3%) were between the ages of 17 and 22. Most of the sample (56.4%) were first-year students, although a sizeable proportion were second-year students (18.1%). Finally, 36.7% of the sample was White, 21.5% was Chinese, 14.7% was South Asian, and 8.4% indicated multiple ethnicities. The remaining categories each accounted for less than 5% of the sample. A detailed breakdown of participant demographics is presented in Table 28.

Table 28: Summary of Sample Demographics

	#	%
Gender		
Man	135	26.9
Woman	358	71.3
Non-Binary	5	1.0
Prefer to Self-Describe	1	0.2
Prefer Not to Say	3	0.6
Race/Ethnicity		
Arab	19	3.8
Black	14	2.8
Chinese	108	21.5
Filipino	9	1.8
Japanese	0	0.0
Korean	11	2.2
Latin American	8	1.6
South Asian	74	14.7
Southeast Asian	12	2.4
West Asian (e.g., Iranian, Afghan)	7	1.4
White	184	36.7
Multiple Ethnicities	42	8.4
Prefer to Self-Describe	7	1.4

Prefer Not to Say	6	1.2
Not Specified	1	0.2
Academic Major		
Business	105	20.9
Economics	22	4.4
Education	19	3.8
Engineering	62	12.4
Nursing	74	14.7
Medical Science	220	43.8
Year of Study		
1	283	56.4
2	91	18.1
3	63	12.5
4	48	9.6
5+	13	3.2
Not Specified	4	0.8

6.2.2 Materials

6.2.2.1 Academic Majors Survey

At the beginning of the study, participants were asked a series of questions about their academic major, including the name of their program and their year of study. They also responded to an open-ended question about what motivated their decision to pursue their main program of study, and a close-ended question asking them to rate the importance of several factors from 1 (Not at all important) to 5 (Extremely important). Participants then indicated the factor that was the most important in their decision. These questions were based on factors related to intrinsic motivation (i.e., helping others, personal fulfillment) and extrinsic motivation (i.e., money, prestige, family obligations).

6.2.2.2 Altruistic Tendencies Questionnaire

Participants rated the 14 items on the Altruistic Tendencies Questionnaire using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

6.2.2.3 HEXACO

Broad personality traits were assessed using the HEXACO-60 (Ashton & Lee, 2009). The HEXACO-60 assesses six dimensions of personality with 10 items each: Honesty-Humility (e.g., “Having a lot of money is not especially important to me”), Emotionality (e.g., “I feel like crying when I see other people crying”), Extraversion (e.g., “In social situations, I’m usually the one who makes the first move”), Conscientiousness (e.g., “I often push myself very hard when trying to achieve a goal”), and Openness to Experience (e.g., “I like people who have unconventional views”). Participants rated each item using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The psychometric properties of the HEXACO-60 are reported in Ashton and Lee (2009), including high internal consistency for the six broad factors (α’s = .87 to .91).

6.2.2.4 Gratitude

Dispositional gratitude was assessed using the short form of the Gratitude Resentment and Appreciation Test (GRAT-16; Thomas & Watkins, 2003) originally developed by Watkins, Woodward, Stone, and Kolts (2003). Participants rated each of the 16 items on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). One sample item is “I think that it’s important to pause often to ‘count my blessings.’” The psychometric properties of the GRAT-16 are reported in Diessner and Lewis (2007), including high internal consistency for the total scale (α = .92).

6.2.2.5 Basic Values

Basic values were assessed using the short version of the Portrait Values Questionnaire (PVQ-21; Schwartz, 2003). This scale includes 21 statements, each reflecting one of 10 values (i.e., Power, Achievement, Hedonism, Stimulation, Self-Direction, Universalism, Benevolence, Tradition, Conformity, Security). Item wording was adapted to avoid gendered language (i.e., “I” instead of “he” or “she”). Participants rated each item on a scale of 1 (Not at all like me) to 6 (Very much like me). Internal consistency for the basic values is low (α’s = .40 to .65), given the scale brevity, but is higher when these values are organized into broader value dimensions, such as Self-Transcendence/Self-

Enhancement//Self-and Conservation/Openness to Change (α's = .70 and .74) (Verkasalo, Lönnqvist, Lipsanen, & Helkama. 2009).

6.2.2.6 Dark Tetrad

The Dark Tetrad traits (i.e., narcissism, Machiavellianism, psychopathy, sadism) were assessed using the Short Dark Tetrad (SD4; Paulhus, Buckels, Trapnell, & Jones, 2021), which includes 28 items, seven per trait. Participants rated each item using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The psychometric properties of the SD4 are presented in Paulhus et al. (2021), including good internal consistency reliability for each Dark Tetrad trait (α's = .75 to .81).

6.2.2.7 Compassion

The Sussex-Oxford Compassion Scale for Others (SOCS-O; Gu, Baer, Vacanagh, Kuyken, & Strauss, 2019) assesses compassionate tendencies based on the five elements of compassion proposed by Gu, Cavanagh, Baer, and Strauss (2017). Participants rated 20 items (e.g., "I connect with the suffering of others without judging them") using a 5-point Likert scale (1 = Not at all true, 5 = Always true). The psychometric properties of the SOCS-O are described in Gu et al. (2019), including very high internal consistency reliability for the total SOCS-O (α = .94).

6.2.2.8 Empathy

Empathy was assessed using the Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers, Corcoran, Drake, Shyrane, & Völlm, 2011). The QCAE includes 31 items distributed across five subscales. Cognitive empathy was assessed by combining Perspective-Taking (10 items) and Online Simulation (9 items) subscales. Affective (or emotional) empathy was assessed by combining the Emotional Contagion (4 items), Proximal Responsivity (4 items), and Peripheral Responsivity subscales (4 items). Participants rated each item using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The psychometric properties of the QCAE are described in Reniers et al. (2011), including excellent internal consistency reliability for most of the individual subscales (α's = .65 to .85).

6.2.2.9 Social Desirability

Social desirability was measured with the short form of the Balanced Inventory of Desirable Responding (BIDR-16), previously described in Chapter 4.

6.2.3 Procedure

Undergraduate students were recruited through a mass email sent in late March 2022 targeting students enrolled in a major (or equivalent) in Engineering, Business, Economics, Nursing, Medical Science, or Education. To increase sample size, two follow-up recruitment emails were sent in early June 2022 and early October 2022, along with additional recruitment efforts through the undergraduate psychology participant pool and university social media groups on Facebook and Discord. All data were collected online using Qualtrics. Individuals interested in the study were presented with the Letter of Information online and indicated consent by checking a box stating, “YES, I consent to participate in this study.” After completing a brief demographics questionnaire, participants responded to questions about their program of study and their reasons for enrolling in it. Each of the personality scales was then administered in a random order. The item presentation order for Altruistic Tendencies Questionnaire was also randomized. At the end of the study, participants were given the opportunity to enter a draw for one of several gift cards. Participants recruited through the participant pool also received 0.5 research credits. Finally, participants were presented with a Debriefing Letter. The median completion time was 34 minutes.

6.3 Results

6.3.1 Data Inspection

Prior to analyses, data were screened based on insufficient item responses, failure on both instructed response checks, and examination of careless responding using Landers’ (2020) LongString macro in Excel. For a more detailed breakdown, see Table 29.

Table 29: Data Inspection Procedure

	#
Consented to participate	**804**
Insufficient Data	112
Inattention	69
Careless Responding	32
Self-Exclusion	4
Age < 17	0
Suspicious responding	45
Not target major	39
Test cases	1
Final sample size	**502**

6.3.1.1 Missing Data

Excluding incomplete cases (N = 80; 15.9% of sample), missing item data on the personality measures ranged from 0.0% to 0.5%, indicating that very few values were missing. Little's Missing Completely at Random (MCAR) test was not significant (p = .111), indicating that data were missing completely at random. To maximize power, missing data points were estimated using the expectation-maximization (EM) technique.

6.3.2 Variable Descriptives

Descriptive statistics for each variable were computed in *SPSS* Version 27 (see Table 30). Internal consistency reliabilities were acceptable ($\alpha \geq .70$) for all scales except PVQ-21 values, psychopathy, and the BIDR-16 subscales.

Table 30: Descriptive Statistics of Study Variables

Variable	# Items	Scale	α	ω	*M*	*SD*	c_v	Skew.	Kurt.	*n*
ATQ	14	1 - 5	.87	.87	3.69	0.58	15.67	-0.36	0.32	432
HEXACO										
Honesty-Humility	10	1 - 5	.77	.76	3.23	0.68	20.98	-0.16	-0.25	439
Emotionality	10	1 - 5	.79	.78	3.49	0.67	19.21	-0.32	0.02	439
Extraversion	10	1 - 5	.79	.77	3.10	0.66	21.41	-0.09	-0.48	439
Agreeableness	10	1 - 5	.77	.76	3.10	0.63	20.20	-0.11	-0.23	439
Conscientiousness	10	1 - 5	.77	.76	3.64	0.59	16.31	-0.32	0.05	439
Openness to Exp.	10	1 - 5	.76	.76	3.31	0.68	20.52	-0.15	-0.54	439
Prosocial Traits										

Gratitude	16	1 - 5	.90	.90	3.90	0.48	12.39	-0.39	0.45	440
Compassion	20	1 - 5	.82	.81	4.12	0.45	11.01	-0.37	-0.05	442
Affective Empathy	12	1 - 5	.80	.80	3.55	0.59	16.60	-0.28	-0.05	442
Cognitive Empathy	19	1 - 5	.86	.85	3.75	0.49	12.98	0.39	0.99	442
Dark Tetrad traits										
Narcissism	7	1 - 5	.76	.76	2.97	0.69	23.10	0.01	-0.31	445
Machiavellianism	7	1 - 5	.71	.71	3.53	0.62	17.56	-0.38	0.27	445
Psychopathy	7	1 - 5	.69	.69	2.06	0.58	27.98	0.56	0.61	445
Sadism	7	1 - 5	.74	.73	2.50	0.75	29.81	0.29	-0.32	445
Social Desirability										
Self-Deceptive Enh.	8	1 - 7	.68	.66	3.71	0.85	22.96	0.27	-0.01	441
Imp. Management	8	1 - 7	.65	.64	4.05	0.91	22.57	-0.18	-0.11	441
Value Dimensions										
Individualistic values	11	1 - 6	.73	.72	4.86	0.57	11.67	-0.55	0.23	445
Collectivistic values	10	1 - 6	.71	.69	4.69	0.59	12.65	-0.36	-0.16	445

Note. Values of *n* for each scale vary due to participant attrition. Means and standard deviations reflect the average item response for each scale. c_v = coefficient of variance. ATQ = Altruistic Tendencies Questionnaire. Exp. = Experience. .Enh. = Enhancement. Imp. = Impression.

On the PVQ-21, reliabilities were well below acceptable levels for seven of the ten values Very low reliabilities for basic values on the PVQ-21 have been observed by other researchers (e.g., Balakrishnan, Plouffe, & Saklofske, 2017; Verkasalo et al., 2009). Accordingly, following Balakrishnan et al. (2017), two broader value dimensions were computed: (a) collectivistic values (universalism, benevolence, tradition, security, conformity; α = .71), combining Self-Transcendence and Conservation values; and (b) individualistic values (power, achievement, hedonism, self-direction, stimulation; α = .73), combining Self-Enhancement and Openness to Change values. These groups of values fall on opposite poles in the Schwartz Values Typology (Schwartz, 2003, 2013), and have been used by other researchers in the study of values (e.g., Balakrishnan et al., 2017; Jonason, Strosser, Kroll, Duineveld, & Baruffi, 2015).

6.3.2.1 Tests of Normality

Tests for normality were conducted for each variable using the Shapiro-Wilk test. Additionally, skewness, kurtosis, and a visual inspection of the Q-Q plots and histograms of the frequency distributions were examined. All personality variables had values for skewness and kurtosis between -1.5 and +1.5, which fall within acceptable limits for a

normal univariate distribution (Tabachnick & Fidell, 2013). However, results from the Shapiro-Wilk test and a visual inspection of the scores suggested that these variables all deviated from a normal distribution except for Honesty-Humility, Agreeableness, narcissism, and impression management.

6.3.2.2 Common Method Variance

Common method variance was assessed post-hoc using Harman's one-factor test (Podsakoff & Organ, 1986). Harman's one-factor test was computed in *SPSS* Version 27 using principal components analysis and including all personality questionnaires. The Eigenvalue for the first factor was 20.431 (9.87% of the variance). Given that this was well below the 50% variance threshold, it was unlikely that common method variance was problematic in this study.

6.3.3 Group Differences

Means and standard deviations for the personality traits and value dimensions are presented by gender in Table 31. Two (gender) by four (academic major) factorial analyses of variance (ANOVAs) were conducted using *SPSS* Version 27, using each of the personality traits and value dimensions as dependent variables. Because of the small samples of certain targeted majors, nursing (n = 74) and education students (n = 19) were collapsed into one group, and economics (n = 22) and business students (n = 105) were collapsed into another group. Table 32 summarizes the results of the ANOVAs.

Table 31: Means and Standard Deviations by Gender for Personality Traits and Value Dimensions

	Mean		Standard Deviation	
	Men	Women	Men	Women
ATQ	3.46	3.78	0.60	0.55
Gratitude	3.84	3.93	0.46	0.48
Compassion	3.98	4.18	0.47	0.43
Affective Empathy	3.24	3.67	0.61	0.54
Cognitive Empathy	3.69	3.78	0.49	0.48
Honesty-Humility	3.10	3.29	0.70	0.66
Emotionality	3.09	3.64	0.66	0.61

Extraversion	3.14	3.08	0.61	0.69
Agreeableness	3.14	3.09	0.58	0.64
Conscientiousness	3.49	3.70	0.60	0.59
Openness to Experience	3.29	3.31	0.65	0.69
Narcissism	3.10	2.92	0.64	0.70
Machiavellianism	3.70	3.47	0.60	0.62
Psychopathy	2.30	1.96	0.57	0.55
Sadism	3.03	2.29	0.72	0.65
Individualistic values	4.68	4.70	0.59	0.60
Collectivistic values	4.69	4.94	0.58	0.54

Note: N's = 121 to 123 for men and 302 to 314 for women. ATQ = Altruistic Tendencies Questionnaire.

6.3.3.1 Gender Differences

Significant gender differences were observed for most of the variables: women scored higher than men on altruism, compassion, emotional empathy, Emotionality, and collectivistic values, whereas men scored higher than women on all four Dark Tetrad traits (i.e., narcissism, Machiavellianism, psychopathy, sadism). This pattern of gender differences has been previously observed in the literature for prosocial traits (women > men; e.g., Gu et al., 2020; Kaufman et al., 2019) and the Dark Tetrad traits (men > women; e.g., Neumann, Jones, & Paulhus, 2022; Tran, Kossmeier, Pietschnig, Stieger, & Voracek, 2018). Large gender differences on Emotionality have previously been observed for the HEXACO (Dinić & Wertag, 2018; García et al., 2022; Lee & Ashton, 2020).

Table 32: Two (Gender) by Four (Academic Majors) Analyses of Variance with Personality traits and Value Dimensions as the Dependent Variables

	Gender		Major		Gender x Major	
	F (df)	η^2_p	*F* (df)	η^2_p	*F* (df)	η^2_p
ATQ	12.770 (1, 417)***	.030	4.685 (3, 417)**	.033	0.566 (3, 417)	.004
Gratitude	0.343 (1, 429)	.001	2.115 (3, 429)	.015	0.491 (3, 429)	.003
Compassion	4.622 (1, 425)*	.011	3.685 (3, 425)*	.025	1.167 (3, 425)	.008
Affective empathy	22.292 (1, 427)***	.050	1.832 (3, 427)	.013	0.255 (3, 427)	.002
Cognitive empathy	0.459 (1, 427)	.001	5.950 (3, 427)***	.040	0.943 (3, 427)	.007
Honesty-Humility	3.396 (1, 424)	.008	3.528 (3, 424)*	.024	1.528 (3, 424)	.011
Emotionality	36.475 (1, 424)***	.079	2.198 (3, 424)	.015	0.344 (3, 424)	.002
Extraversion	3.450 (1, 424)	.008	5.639 (3, 424)***	.038	2.979 (3, 424)*	.021
Agreeableness	0.364 (1, 424)	.001	0.769 (3, 424)	.005	0.447 (3, 424)	.003

Conscientiousness	3.059 (1, 424)	.008	1.852 (3, 424)	.013	1.290 (3, 424)	.009
Openness to Exp.	0.789 (1, 424)	.000	7.181 (3, 424)***	.048	2.084 (3, 424)	.015
Narcissism	5.807 (1, 431)*	.013	1.957 (3, 431)	.013	2.427 (3, 431)	.017
Machiavellianism	4.679 (1, 431)*	.011	3.247 (3, 431)*	.022	1.378 (3, 431)	.010
Psychopathy	25.159 (1, 431)***	.055	4.062 (3, 431)**	.027	1.666 (3, 431)	.011
Sadism	62.277 (1, 431)***	.126	1.676 (3, 431)	.012	0.185 (3, 431)	.001
Individualistic val.	0.661 (1, 429)	.002	5.222 (3, 429)**	.035	0.751 (3, 429)	.005
Collectivistic val.	7.927 (1, 429)**	.018	4.632 (3, 429)**	.031	0.028 (3, 429)	.000

Note. ATQ = Altruistic Tendencies Questionnaire. Exp. = Experience. Val. = Values.
*** $p < .001$, ** $p < .01$, * $p < .05$

6.3.3.2 Academic Major

Post-hoc mean comparisons were computed using Tukey's HSD (Table 33). Levene's test was significant ($p < .05$) for Emotionality, Extraversion, and psychopathy; accordingly, following Vedel et al. (2015), bootstrapped confidence intervals were calculated for post-hoc tests for these traits. Nursing/education students and medical science students scored significantly higher on altruism compared to business/economics and engineering students, supporting H_1. They also scored higher on cognitive empathy (vs. engineering only), compassion, Honesty-Humility (vs. business/economics only), and collectivistic values, partially supporting H_2 and H_3.

Business/economics students and engineering students scored significantly higher on psychopathy and Machiavellianism than nursing/education and medical science students (but not narcissism or sadism), partially supporting H_4. Additionally, business/economics students (but not engineering students) scored significantly higher on individualistic values, partially supporting H_5.

Table 33: Means and Standard Deviations for Personality Traits and Value Dimensions by Academic Major

	Nursing/ Education		Medical Science		Business/ Economics		Engineering	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
ATQ	4.01[b,c,d]	0.47	3.72[c,d]	0.56	3.53	0.57	3.43	0.59
Gratitude	4.01	0.47	3.87	0.48	3.91	0.47	3.81	0.52
Compassion	4.21[c,d]	0.45	4.18[c,d]	0.43	4.02	0.46	3.88	0.42
Affective Empathy	3.73	0.53	3.59	0.59	3.43	0.58	3.35	0.59
Cognitive Empathy	3.85[d]	0.53	3.79[d]	0.45	3.74[d]	0.49	3.42	0.46

Honesty-Humility	3.57[b,c]	0.66	3.21	0.62	3.02	0.66	3.30	0.78
Emotionality*	3.70	0.54	3.52	0.66	3.42	0.67	3.13	0.84
Extraversion*	3.08	0.60	3.02	0.70	3.28[a,b]	0.62	3.06	0.68
Agreeableness	3.25	0.59	3.09	0.65	3.03	0.56	3.09	0.73
Conscientiousness	3.71	0.56	3.72	0.60	3.53	0.57	3.43	0.61
Openness to Exp.	3.46[b]	0.70	3.21	0.68	3.29	0.66	3.59[b]	0.61
Narcissism	2.75	0.72	2.99	0.68	3.12	0.68	2.88	0.58
Machiavellianism	3.20	0.72	3.59[a]	0.60	3.66[a]	0.52	3.54[a]	0.59
Psychopathy*	1.86	0.63	1.99	0.47	2.25[a,b]	0.63	2.26[a,b]	0.65
Sadism	2.24	0.69	2.46	0.73	2.60	0.73	2.88	0.78
Individualistic val.	4.43	0.66	4.71[a]	0.54	4.87[a]	0.59	4.62	0.58
Collectivistic val.	4.93[c,d]	0.58	4.96[c,d]	0.51	4.71	0.59	4.61	0.61

Note. Exp. = Experience. Val. = Values.
[a] The mean is higher than the mean for nursing/education at $p < .05$.
[b] The mean is higher than the mean for medical science at $p < .05$.
[c] The mean is higher than the mean for business/economics at $p < .05$.
[d] The mean is higher than the mean for engineering at $p < .05$.
* Bootstrapping was performed.

6.3.4 Bivariate Correlations

Because some variables were not normally distributed, both Pearson correlations and Spearman correlations were computed (see Table 34). In general, the results were similar, with slight differences in the exact magnitude of the relationship. Correlations with values were calculated at the broader factor level (i.e., individualistic and collectivistic; see Table 35). Supporting H_6, the ATQ correlated positively with prosocial traits and values, including gratitude (r_s = .37), compassion (r_s = .61), emotional empathy (r_s = .40), cognitive empathy (r_s = .40), Honesty-Humility (r_s = .37), and collectivistic values (r_s = .54). These results suggest that more altruistic individuals value more distant others and entities (i.e., universalism) as well as individuals close to them (i.e., benevolence). It also suggests that more altruistic individuals also tend to comply with social norms (i.e., conformity and tradition) and value social harmony and stability (i.e., security). This interpretation is consistent with the idea that prosocial behaviour is influenced by social and moral norms, also called "prosocial conformity" (e.g., Krupka & Weber, 2009; Nook, Ong, Morelli, Mitchell, & Zaki, 2016).

Table 34: Bivariate Correlations between Personality Scales

	Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1.	ATQ	--	.37***	.61***	.40***	.40***	.10*	-.19***	-.16**	-.28***	.37***	.23***	.23***	.23***	.18***	.15**	-.02	.22***
2.	Gratitude	.37***	--	.32***	.15**	.20***	.03	-.15**	-.28***	-.22***	.28***	.10*	.32***	.23***	.20***	.16***	.17***	.15**
3.	Compassion	.60***	.33***	--	.46***	.58***	.11*	-.05	-.19***	-.23***	.17***	.24***	.17***	.17***	.28***	.08	-.02	.10*
4.	Affective Emp.	.42***	.13**	.45***	--	.32***	-.06	-.10*	-.19***	-.21***	.09	.63***	-.09	-.05	.07	.09	-.32***	-.08
5.	Cognitive Emp.	.40***	.22***	.58***	.31***	--	.19***	.01	.00	-.09	.02	.09	.24***	.21***	.20***	.14**	.14**	.09
6.	Narcissism	.08	.04	.11*	-.06	.23***	--	.32***	.42***	.32***	-.35***	-.14**	.52***	-.05	.02	-.01	.29***	-.22***
7.	Mach.	-.21***	-.15**	-.05	-.10*	.01	.36***	--	.35***	.43***	-.49***	-.09	.03	-.19***	-.07	.04	.02	-.35***
8.	Psychopathy	-.13**	-.25***	-.20***	-.18***	.04	.42***	.34***	--	.51***	-.31***	-.33***	.18***	-.17***	-.33***	.10*	.11*	-.15**
9.	Sadism	-.30***	-.20***	-.22***	-.22***	-.07	.34***	.47***	.51***	--	-.41***	-.26***	.00	-.23***	-.17***	-.05	.08	-.31***
10.	Honesty-Hum.	.39***	.26***	.16**	.10*	.00	-.37***	-.50***	-.27***	-.43***	--	.05	-.09	.30***	.13**	.05	-.04	.56***
11.	Emotionality	.26***	.09	.25***	.64***	.07	-.16**	-.11*	-.32***	-.29***	0.08	--	-.16***	-.11*	.13**	-.07	-.37***	-.10*
12.	Extraversion	.20***	.34***	.18***	-.08	.28***	.53***	.03	.17***	.01	-.12*	-.16**	--	.11*	.00	.08	.44***	-.02
13.	Agreeableness	.23***	.23***	.15**	-.04	.20***	-.07	-.20***	-.16***	-.23***	.31***	-.11*	.12*	--	-.02	.09	.10*	.38***
14.	Conscientious.	.18***	.19***	.28***	.07	.22***	.03	-.08	-.32***	-.17***	.12*	.17**	.03	-.06	--	-.02	.16**	.11*
15.	Openness	.15**	.14**	.06	0.08	.14**	.03	.00	.10*	-.04	.05	-.09	.10*	.09	-.03	--	.05	.08
16.	BIDR-SDE	-.04	.19***	-.04	-.34***	.17***	.29***	.02	.10*	.09	-.04	-.39**	.43***	.11*	.17***	.06	--	.18***
17.	BIDR-IM	.24***	.18***	.11*	-0.08	.11*	-.22***	-.36***	-.13**	-.30***	.57***	-.09	-.00	.38***	.12*	.07	.23***	--

Note. ATQ = Altruistic Tendencies Questionnaire. Emp = Empathy. Hum = Humility. Conscientious = Conscientiousness. Openness = Openness to Experience. BIDR = Balanced Inventory of Desirable Responding. SDE = Self-Deceptive Enhancement. IM = Impression Management. Pearson correlations are in the lower diagonal. Spearman correlations are in the upper diagonal. *** $p < .001$, ** $p < .01$, * $p < .05$. N's = 424 to 445.

Additionally, the ATQ was negatively correlated with Machiavellianism (r_s = -.19), psychopathy (r_s = -.16), and sadism (r_s = -.28), generally supporting H_7. Contrary to expectations, the ATQ was not significantly correlated with individualistic values and had a small but significant positive correlation with narcissism (r_s = .10); however, given that the Pearson correlation with narcissism was non-significant, this correlation may not replicate in other samples.

Table 35: Correlations with Broad Value Dimensions

	Individualistic Values		Collectivistic Values	
Scale	*r*	r_s	*r*	r_s
ATQ	.06	(.09)	.54***	(.54***)
Gratitude	.09	(.09)	.33***	(.32***)
Compassion	.19***	(.19***)	.44***	(.43***)
Affective Empathy	.04	(.05)	.30***	(.26***)
Cognitive Empathy	.18***	(.17***)	.36***	(.33***)
Narcissism	.43***	(.41***)	.02	(.04)
Machiavellianism	.30***	(.31***)	-.09	(-.07)
Psychopathy	.17***	(.19***)	-.20	(-.20***)
Sadism	.18***	(.15**)	-.22	(-.23***)
Honesty-Humility	-.39***	(-.36***)	.31***	(.30***)
Emotionality	-.01	(.01)	.26***	(.21***)
Extraversion	.33***	(.32***)	.13**	(.15**)
Agreeableness	-.10*	(-.09)	.20***	(.20***)
Conscientiousness	-.02	(-.01)	.25***	(.21***)
Openness to Experience	.07	(.07)	-.01	(.02)
BIDR-SDE	.12**	(.11*)	.02	(.03)
BIDR-IM	-.20***	(-.20***)	.29***	(.26***)

Note. ATQ = Altruistic Tendencies Questionnaire. BIDR = Balanced Inventory of Desirable Responding. SDE = Self-Deceptive Enhancement. IM = Impression Management. Spearman correlations are in parentheses. *** $p < .001$, ** $p < .01$, * $p < .05$.

6.3.5 Motivations

Among intrinsic academic motivations, the Altruistic Tendencies Questionnaire was strongly positively correlated with a desire to help others (r_s = .48), supporting H_8 (see Table 36). Further supporting the intrinsic component of altruism, the ATQ was also positively correlated with seeking a career that was personally fulfilling (r_s = .23). Other prosocial traits (i.e., gratitude, compassion, empathy, Honesty-Humility) followed a similar pattern. In contrast, the Dark Tetrad traits (excluding narcissism) were negatively related to these intrinsic motivations.

Among extrinsic academic motivations, the ATQ was negatively correlated with desiring a high-income profession (r_s = -.20), supporting H_9. However, contrary to expectations, altruism was not significantly correlated with the other extrinsic motivations. In contrast to altruism, all four Dark Tetrad traits were positively related to choosing a major in order to enter a prestigious or high-income profession. These findings are consistent with other research that has found relationships between Dark Tetrad traits and dominance status-striving and between narcissism and prestige status-striving (Davis & Vaillancourt, in press).

Table 36: Correlations between Personality Scales and Academic Motivations

		Intrinsic Motivations		Extrinsic Motivations			
	Scale	Helping Others	Personal Fulfillment	Career Options	Money	Prestige	Family Obligations
1.	ATQ	.48***	.23***	.07	-.20***	-.05	.02
2.	Gratitude	.17***	.22***	.11*	-.07	-.04	.06
3.	Compassion	.37***	.27***	.10*	-.04	.06	.04
4.	Affective Empathy	.33***	.17***	.11*	-.08	.03	.00
5.	Cognitive Empathy	.21***	.11*	.07	-.03	.06	.11*
6.	Narcissism	-.07	.06	.01	.24***	.35***	.10
7.	Machiavellianism	-.20***	-.10*	.02	.30***	.26***	.09*
8.	Psychopathy	-.26***	-.19***	-.10*	.19***	.14**	.03
9.	Sadism	-.28***	-.14**	-.09*	.21***	.12**	.00
10.	Honesty-Humility	.28***	.11*	-.02	-.42***	-.34***	-.11*
11.	Emotionality	.20***	.14**	.19***	.00	.08	.06
12.	Extraversion	-.01	.05	.00	.09	.13**	.02
13.	Agreeableness	.06	.00	-.04	-.13*	-.17***	-.07
14.	Conscientiousness	.22***	.26***	.07	-.01	.08	-.01
15.	Openness to Exp.	.00	.05	.00	-.06	-.10*	-.10*
16.	BIDR-SDE	-.09*	-.05	-.08	.06	.10*	.02
17.	BIDR-IM	.18***	.06	-.06	-.19***	-.13**	-.02

Note. ATQ = Altruistic Tendencies Questionnaire. Exp. = Experience. BIDR = Balanced Inventory of Desirable Responding. SDE = Self-Deceptive Enhancement. IM = Impression Management. All correlations are Spearman correlations. *** $p < .001$, ** $p < .01$, * $p < .05$.

6.4 Discussion

The primary goal of the current study was to provide additional validation evidence for the Altruistic Tendencies Questionnaire by demonstrating that it was sensitive to differences between groups that should be higher (i.e., nursing/education and medical science students) or lower (i.e., business/economics and engineering students) on trait altruism. To further broaden the nomological network of the ATQ, additional correlations with altruism were explored for traits not previously examined, as well as values and motivations. Overall, most results were consistent with the study's hypotheses.

In line with expectations, nursing/education students scored significantly higher on the ATQ than did business/economics and engineering students, even when accounting for gender differences. On average, nursing/education students scored one standard deviation higher on the ATQ than business/economics students and engineering students (d_{BUS} = 0.94; d_{ENG} = 1.11). Group differences in the current study for nursing/education are much larger than those observed by Holzer et al. (in press), who observed moderate differences between students aspiring to study medicine on altruistic goals (d = 0.61) and intrinsic motivations (d = 0.53) compared to students aspiring to other professions. Given the significant effect of gender, the large proportion of women in the nursing/education group may have inflated the differences observed, as the effect sizes for medical science (d_{BUS} = 0.33; d_{ENG} = 0.48) were closer in magnitude to those observed by Holzer et al. (in press). As an alternative explanation, medical science is a more heterogenous major, and students may aspire to focus on different specializations that are more social (e.g., general practitioner) vs. technique-focused (e.g., surgeon), whereas nursing and education programs lead to a narrower range of career options. To summarize, these differences highlight that the ATQ is sensitive enough to distinguish between groups that should differ on trait altruism, supporting known-groups validity.

Additional evidence of convergent validity for the ATQ was obtained through positive correlations with prosocial traits and values. This pattern is consistent with a broader other-focused orientation found in previous research. At the broad personality level, Honesty-Humility is the trait mostly strongly and most consistently associated with

prosocial behaviour (Thielmann et al., 2020). In line with theoretical expectations and with Thielmann et al. (2020), the Altruistic Tendencies Questionnaire correlated most strongly with Honesty-Humility, as compared to the other HEXACO personality factors. At the narrow trait level, affective empathy, gratitude, and compassion may facilitate altruistic behaviour. Empathy and compassion may promote other-oriented concern and the subsequent helping of those in need (Batson, Duncan, Ackerman, Buckley, & Birch, 1981; Bethlehem et al., 2017; Weng et al., 2013), whereas gratitude may support altruism by encouraging individuals to engage in upstream reciprocity (i.e., paying it forward) and helping others (Karns, Moore, & Mayr, 2017; McCullough, Kimeldorg, & Cohen, 2008; Nowak & Roch, 2007). Finally, the pattern of relationships between the ATQ and collectivistic values is consistent with the profile of altruistic individuals as valuing prosociality, and aligns with other research that has linked self-transcendence values to prosocial behaviour and a more altruistic social-value-orientation (e.g., Caprara & Steca, 2007; Caprara, Alessandri, & Eisenberg, 2012; Heilman & Kusev, 2020).

Consistent with expectations, the Altruistic Tendencies Questionnaire also demonstrated negative correlations with Machiavellianism, psychopathy, and sadism. This pattern of negative relationships is consistent with the conceptualization of altruistic individuals as people who avoid manipulating, exploiting, or hurting others. Unexpectedly, narcissism had a small positive correlation with the ATQ. Narcissism, as measured by the SD4, contains items that reflect positive self-perceptions, which do not necessarily reflect extreme egotism (e.g., “People see me as a natural leader”). Some research suggests that self-esteem, which overlaps with the self-promotive elements of narcissism, is tied to prosocial behaviour (Hart, Tortoriello, & Richardson, 2019). Accordingly, narcissistic individuals may help others, but their motivations are selfish (e.g., status-seeking), rather than altruistic. However, the correlation observed in this study may not replicate in other samples, given that only the Spearman correlation, and not the Pearson correlation, was statistically significant. Further research is required to disentangle the narcissism-altruism relationship (or lack thereof), such as by contrasting agentic and communal narcissism (e.g., Nehrlich, Gebauer, Sedikides, & Schoel, 2019), or examining the role of self-esteem and self-promotion as they relate to altruistic values, emotions, and behaviours.

Taken together, the results of the current study provide additional validation evidence for the Altruistic Tendencies Questionnaire by demonstrating that it can detect differences in altruism on academic majors where one would expect to see differences and by providing additional correlational evidence with related personality traits and values.

6.4.1 Limitations

The current study used a cross-sectional design to examine relationships between personality, values, and motivations, which were collapsed across undergraduate students of all years of study. As a result, it cannot be determined to what extent the observed group differences were the result of pre-existing differences that attracted students to specific majors (i.e., "selection effects") or whether the culture of the program influenced their personality characteristics (i.e., "socialization effects"). Although some evidence supports the pre-existence of personality differences in choice of major (e.g., Balsamo et al., 2012), it is still possible that students in the current study were influenced by the culture of the program in which they were enrolled. Most students in the sample were in first or second year of their programs, so it is more likely that differences in ATQ scores between majors were due to selection, rather than socialization; however, causality cannot be established due to the study's cross-sectional design.

Longitudinal data collected from multiple universities, ideally those outside of Canada, would improve the generalizability of the results and allow for the examination of these effects over time. While disentangling selection from socialization effects was not the goal of the current study, this information would be relevant to counselling, given that students whose interests more closely fit their majors have better university outcomes (e.g., Allen & Robbins, 2010; Bai & Liao, 2019). Future studies could also examine if the observed differences in ATQ scores replicate outside of a university context (e.g., between teachers, doctors, nurses, engineers, and entrepreneurs), or if personality traits associated with academic majors at the undergraduate level—such as altruism—can also predict subsequent career selection and career satisfaction post-graduation. These future directions represent avenues of research that the ATQ could help explore.

Chapter 7

7 Discussion

In the Introduction (Chapter 1), trait altruism was defined as the tendency to engage in behaviours that aim to improve the welfare of others, without expectation of reward, and with some personal cost to the self in terms of effort, resources, or time. To broaden the traditional behaviour-focused perspective of altruism, several components of altruism were identified during the theoretical review (Chapter 2): demonstrating tendencies to perform acts of helping or generosity (behavioural tendencies); experiencing positive emotions following prosocial acts (warm glow); feeling personally responsible for improving the lives of others (principle of care); considering all of humanity as worthy of care and concern (universalistic moral perspective); and harbouring kind, forgiving, and optimistic attitudes towards other people (benevolent attitudes). The altruism scale developed in this dissertation contains statements that were written based on each of these above components, reflecting emotions, cognitions, and values, as well as context-general behaviours (e.g., volunteering, helping, donating). From this perspective, the new Altruistic Tendencies Questionnaire covers the content domain for trait altruism and improves upon the content coverage of frequency-based checklist of behaviours that characterize the most popular altruism measures. Content validity was supported through the in-depth literature review, identification of the elements of altruism, formalization of the definitions of altruism and these components, and solicitation of expert feedback (Chapters 2-3). Items tapping these underlying elements loaded on a unidimensional altruism factor, which emerged in Chapter 4 and replicated in Chapter 5.

It should be noted that egalitarian values, while initially identified in the theoretical review, was not retained in the final ATQ. This more peripheral component of altruism reflects a desire for equality among people. Although identified by Oliner and Oliner (1988) during their interviews of Holocaust survivors, references to egalitarian values appeared less frequently in the altruism literature compared to the other elements identified. Additionally, during item development, most of the items written for the egalitarian values component were not considered by the expert raters to as belonging to

altruism. The remaining items tapping egalitarian values demonstrated suboptimal psychometric properties during the empirical validation and were consequently removed during scale refinement. It is possible that elements of egalitarianism or inequality aversion are subsumed under the principle of care—that one feels a duty to those who are less fortunate, but not necessarily for others who are not in need. Said otherwise, it would be nice if everyone were *equal*, but the target of concern for altruistic individuals may be aiding those who have *less*. This division between targets of generosity may explain the differences in altruism as a predictor between the two economic games employed in Chapter 5, where altruism was observed to be a predictor of generosity towards a charity (i.e., which helps people in need), but not for another study participant (i.e., who is not explicitly in need). Additional research is needed to re-assess the role of egalitarian values and inequality aversion in altruistic behaviour.

7.1 Support for Psychometric Properties

7.1.1 Reliability and Measurement Invariance

The new Altruistic Tendencies Questionnaire demonstrated excellent internal consistency across all studies, with values for Cronbach's α and McDonald's Ω ranging from .87 to .91. High internal consistency indicates that the items on the ATQ are strongly intercorrelated. The remaining analyses focused on providing evidence that what the ATQ measures is trait altruism. In Chapter 4, the ATQ also demonstrated invariance between men and women in both students and North American adults, indicating that men and women were interpreting items on the ATQ in a similar way. Although outside the scope of the current dissertation, it would be of interest in future research to test the ATQ in other samples to provide further evidence of cross-cultural validity of the scale, especially in more collectivistic or non-English-speaking countries.

7.1.2 Convergent Validity

One central component of the nomological network for a new measure is to establish evidence of convergent validity through an examination of the inter-related constructs. This was done by examining correlations between the Altruistic Tendencies Questionnaire and existing measures of altruism. For this purpose, three altruism scales

were considered: the Self-Report Altruism Scale (SRA; Chapter 4), the Compassionate Altruism Scale (CAS; Chapter 4), and the Generative Altruism Scale (GALS; Chapter 4 to Chapter 6). The SRA is among the earliest altruism measures and remains the most popular. The CAS is similar to the SRA but focuses specifically on providing social support to others. Both the SRA and CAS focus on how frequently the test-taker reports engaging in specific behaviours, while the GALS is the most similar to the newly developed ATQ in terms of having broader item content. As demonstrated in Chapter 4, which was conducted during the height of the COVID-19 pandemic, the SRA and CAS are limited by their reliance on context and need for opportunities to perform a given behaviour. While the SRA and CAS still correlated positively with the ATQ, their items had a low endorsement rate and received negative feedback from participants. The GALS, which has theoretical origins in the literature on empathy, compassion, and spirituality (Büssing et al., 2013), demonstrated stronger correlations with the ATQ across studies.

In addition to correlating positively with existing measures of altruism, the ATQ also correlated positively with other personality traits that also involved other-oriented attitudes (e.g., compassion, Honesty/Humility). In contrast, the ATQ was negatively correlated with traits associated with harming others (e.g., sadism) or social inequalities (e.g., social dominance orientation). Evidence of convergent validity was obtained across all studies conducted. The study in Chapter 4 examined correlations between the ATQ and Honesty-Humility, gratitude, sadism, and social dominance orientation. These relationships were replicated in the study in Chapter 5. The positive correlation with Honesty-Humility is critical, as it is the broad personality factor most strongly associated with prosocial behaviour, as identified by Thielmann et al. (2020). The study in Chapter 6 examined a wider pool of personality traits, adding compassion, empathy, the Dark Tetrad, and the remaining personality factors from the HEXACO framework. Overall, the patterns of relationships observed with the ATQ were in line with predictions, theory, and previous research.

7.1.3 Criterion-Related Validity

Additional evidence for the construct validity of a new measure can be obtained by demonstrating that the scale can predict relevant outcomes, either concurrently to predict a simultaneous outcome (i.e., concurrent validity) or, ideally, using longitudinal methods to predict a future outcome (i.e., predictive validity). As will be discussed below, Chapter 4 demonstrated that the Altruistic Tendencies Questionnaire was associated with prosocial behaviours related to the COVID-19 pandemic, namely mask-wearing, helping, and sanitizing. It also demonstrated that more altruistic individuals were willing to give up more of their (potential) gift card winnings to a charity. Chapter 5 extended these results by demonstrating that more altruistic participants gave a larger proportion of a monetary endowment to charity. Future research using the ATQ could explore additional outcomes, but these results provide a promising foundation for its construct validity.

7.1.3.1 COVID-19 behaviours

The COVID-19 pandemic, which upended social norms and was accompanied by a host of restrictions and health guidelines, provided a unique opportunity to survey the relationship between the ATQ and various pandemic-related behaviours (Chapter 4). Compliance with social distancing guidelines and other regulations has previously been associated with prosocial behaviour, whereas violating those guidelines has been associated with selfishness and more malevolent personality traits (Konc, Petrović, & Dinić, in press; Li & Cao, in press; Monteiro et al., in press). Scores on the ATQ were associated with complying with social distancing guidelines, such as wearing a mask or maintaining six feet of distance from others. Mask-wearing can be considered an other-protective behaviour because doing so causes discomfort to the wearer, but an asymptomatic carrier who wears a mask reduces the risk that others will contract COVID from them. Although the COVID-19 survey used in the study was self-report, these observed relationships contribute to the concurrent validity of the ATQ by demonstrating a statistical relationship between altruism and behaviours that could be altruistically motivated (e.g., sacrificing comfort by mask-wearing, social reward by avoiding close proximity to others, and effort/time by disinfecting surfaces), with the goal of preventing the spread of the virus.

7.1.3.2 Charitable Donations

A considerable body of research has examined generosity as a prosocial outcome. One target of generosity is charitable organizations, which use donor contributions to improve the lives of others. Altruism is one of several motivations for charitable giving (Konrath & Handy, 2018). In the studies in Chapter 4 and Chapter 5, participants were asked about how much they would like to donate, either prospectively (i.e., intention) or from their bonus endowment (i.e., behaviour). In both studies, scores on the ATQ were positively correlated with donation intention (*r*'s = .20 to .30; Chapter 4) and donation amount (*r* = .28; Chapter 5). The ATQ contributed uniquely to the prediction of these outcomes beyond Honesty-Humility, indicating that altruism was not statistically redundant with this broad personality trait.

7.1.3.3 Trust Game

Although the relationship between the ATQ and the amount returned in the Trust Game in Chapter 5 did not reach statistical significance, it still demonstrated that altruism was a stronger predictor of charitable giving than it was of reciprocity towards an individual whose needs are unknown. As discussed previously, situational factors have the potential to greatly influence results in the Trust Game, and different circumstances might have been more sensitive to altruism than those in the current dissertation. Future research using the ATQ might explore under what circumstances altruism is a more robust predictor, such as when information is provided about the trustor (e.g., as someone in need vs. someone who is well-off).

7.1.4 Group Differences

The ATQ also demonstrated group differences consistent with theoretical expectations and research with similar scales, supporting known-groups validity. Women scored higher than men (Chapter 4, Chapter 5, Chapter 6), consistent with findings on other prosocial traits (e.g., Gu et al., 2020; Kaufman et al., 2019). Additionally, altruism scores differed across academic majors that were expected to attract more (or less) altruistic students (Chapter 6). Specifically, nursing, education, and medical science students scored much higher on the ATQ than engineering, business, or economics students.

Taken together with the other validation evidence provided, these group differences give additional confidence that the ATQ measures trait altruism.

7.2 Limitations and Future Directions

Although best practices were followed, the validity evidence gathered for the new Altruistic Tendencies Questionnaire should still be considered in light of its limitations. Given that some of the scales administered demonstrated less than optimal reliability (e.g., Collectivistic Values, Self-Deceptive Enhancement), correlations presented for these variables may be attenuated. Additionally, lthough a variety of non-student samples were collected (i.e., Canada, the U.S., the U.K.), samples were still drawn from WEIRD (White, Educated, Industrialized, Rich, Democratic) populations. It would be valuable to the cross-cultural generalizability of the ATQ to examine its psychometric properties in non-English speaking countries, particularly ones with different cultural norms.

It would also be valuable to explore the ATQ in prosocial contexts that do not involve volunteering or charity. Some participants in the study in Chapter 4 left comments explaining that they lacked the time to commit to volunteering or lacked the financial resources to donate, which suggests that situational factors may have played a stronger role in their decisions. Expanding the repertoire of prosocial outcomes in more ecologically valid contexts would provide valuable information about the criterion-related validity of the ATQ. For example, soliciting a donation directly from a pedestrian is a different context than soliciting a donation from a small windfall sum in a research study. The self-report nature of the outcomes assessed also allowed for socially desirable responding or wishful thinking, particularly if primed by the content of the other personality scales, which was relatively transparent to participants.

Another avenue of future research could be developing subscales for the ATQ to more precisely measure the individual components of altruism identified in the literature review. Although the goal of the present dissertation was to develop a brief measure of altruism for research purposes, the current scale could be expanded to allow for a more in-depth investigation of its specific components. Expanding the ATQ into specific subscales could also allow for the egalitarian values component to be revisited. As

previously mentioned, this component may be more peripheral to altruism and more central to related prosocial constructs like cooperation and reciprocity.

Applications of the ATQ could also facilitate research on altruism and prosocial behaviour. For example, interventions designed to cultivate positive attitudes towards others, such as compassion training, could also be explored using the ATQ. Previous research on compassion training suggests that it may help promote well-being, connectedness with others, sensitivity to others' suffering, and prosocial behaviour (Klimecki et al., 2014; Leiberg et al., 2011; Weng et al., 2013). In a similar vein, previous research also suggests engaging in lovingkindness meditation, which focuses on extending compassion and love to all people, may also help cultivate more altruistic attitudes (Kang, Gray, & Dovidio, 2015). Future research could test whether compassion training or lovingkindness meditation increases an individual's altruistic tendencies, as measured by the ATQ. Neurological studies could also examine whether scores on the ATQ correlate with brain activation in areas associated with the "benevolence pathway," such as reward or social connectedness (Klimecki et al., 2014; Sonne & Gashe, 2018). Finally, the ATQ could be used to inform research in other domains that touch on altruistic or prosocial elements, such as organizational citizenship behaviour, corporate social responsibility, and philanthropy.

7.3 Conclusion

The new Altruistic Tendencies Questionnaire has a solid theoretical foundation, demonstrates strong psychometric properties, and has undergone a more rigorous development process than existing altruism measures. Items for the ATQ were derived following a thorough literature review and were evaluated by subject matter experts. The final 14-item scale demonstrated high internal consistency across studies and a consistent unidimensional structure. Further, the nomological network of the ATQ was established with existing measures of altruism and conceptually related traits across multiple studies. The ATQ also demonstrated evidence of criterion-related validity and known-groups validity. Because scale validation is an ongoing process, additional studies would continue to improve confidence in the ATQ in other contexts and with other traits.

However, the evidence of the studies conducted supports the scale developed as a psychometrically sound measure of altruism. As a brief tool, the ATQ will assist scholars in furthering our understanding of trait altruism and how it relates to prosocial behaviour.

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Appendices

Appendix A: Initial Item Pool (50 items) and SME Ratings

Text	Direction	Clarity	Relevance	Neutrality
I regularly volunteer my time for causes I care about.	1	5.00	5.00	5.00
In general, I'd rather treat myself than donate to a charity.	-1	5.00	4.33	4.33
I go out of my way to show compassion and generosity for those who are less well-off.	1	4.67	5.00	5.00
I would rather give to others who need it than spend money on myself.	1	4.67	5.00	3.33
I would stop to help a stranger in need, even knowing I will never see them again.	1	5.00	5.00	5.00
My friends would describe me as someone who is generous and kind to others.	1	5.00	5.00	5.00
I regularly assist others without expecting anything in return.	1	5.00	5.00	5.00
I would be willing to give money to a stranger to help them during difficult times.	1	5.00	5.00	3.00
I rarely contribute money to charitable causes.	-1	5.00	4.33	3.33
Most people are genuinely good and kind.	1	5.00	3.00	5.00
I believe that many people do good deeds because they care for others' well-being.	1	5.00	3.50	5.00
Although there is both good and bad in people, humanity as a whole is basically good.	1	5.00	3.67	4.67
It would be satisfying if something bad happened to a person who has wronged me.	-1	5.00	3.33	5.00
It is not worth helping others because they will just take advantage of you.	-1	5.00	5.00	5.00
I usually feel like charities are just trying to "guilt-trip" me into donating to them.	-1	5.00	4.33	4.33
It breaks my heart to hear about disasters in other countries.	1	5.00	4.00	5.00
I find joy in improving the lives of other people, even if I don't know them.	1	5.00	5.00	5.00
Volunteering is an important source of meaning in my life.	1	5.00	4.67	5.00
It is personally rewarding to give my time for a worthy cause.	1	4.67	5.00	5.00
I am happiest when I've made a positive difference in a stranger's life.	1	5.00	5.00	5.00
It brightens my day to give money to someone in need.	1	5.00	5.00	3.67
It feels good to perform an act of kindness for a stranger.	1	5.00	5.00	5.00
One of the greatest satisfactions in my life comes from helping others.	1	5.00	5.00	5.00
I admit that volunteering often feels like a waste of my time.	-1	5.00	5.00	5.00
If I help someone, it's usually because it makes me look good to others.	-1	5.00	4.33	5.00
When invited to contribute to a cause, I mostly care about how it benefits me to do so.	-1	5.00	5.00	4.50
I feel morally responsible for making the world a better place.	1	5.00	4.33	5.00
We all have a duty to help those who are less fortunate than us.	1	5.00	5.00	5.00
If I see a stranger who is struggling, I feel compelled to help them.	1	5.00	5.00	5.00
I am concerned with the welfare of individuals in other communities.	1	5.00	3.67	5.00
It is important to share what I have with people who have less.	1	5.00	5.00	4.67
Helping strangers with their problems is not my responsibility to deal with.	-1	5.00	5.00	5.00
Showing compassion for others is an essential part of my identity.	1	5.00	4.67	5.00
Personally assisting those in trouble is very important to me.	1	5.00	5.00	5.00
People need to look after themselves and not overly worry about others.	-1	4.33	5.00	5.00
If I learn that someone needs help, I feel compelled to assist them if I can.	1	5.00	4.67	5.00
I have no obligation to help people who cause their own problems.	-1	5.00	4.00	5.00
I care deeply about improving the lives of people in poorer communities.	1	5.00	5.00	4.00
In life, it's natural that some people are worse off than others.	-1	5.00	4.00	4.00
The ideal society is one where everyone has access to equal opportunities in life	1	5.00	3.67	4.67
To get ahead in life, it is sometimes necessary to take advantage of other people.	-1	5.00	3.33	4.00
Helping my local community is more important than helping citizens in more distant communities.	-1	5.00	5.00	5.00
It is hard for me to feel compassion for someone if I don't know them well.	-1	5.00	4.67	5.00
All of humanity is worth caring about, not just my friends or family.	1	5.00	5.00	5.00
The lives of strangers are just as valuable as those of the people close to me.	1	4.67	5.00	5.00
Even if I don't get along with specific people, I feel an emotional bond with all of humanity.	1	4.33	4.67	5.00
People in other communities who need aid are not my concern.	-1	5.00	5.00	4.67
Even if I really didn't like someone, I would still help them in a crisis.	1	5.00	5.00	5.00
I am concerned as much about a stranger who is suffering as a friend who is suffering.	1	5.00	5.00	5.00
Simply because they are human, every person is worthy of care and concern.	1	5.00	5.00	5.00

Appendix B: Revised Item Pool (40 items)

Subscale	Label	Item Text	Direction
Behavioural Tendencies	ACT_1	I regularly volunteer my time for good causes.	1
Behavioural Tendencies	ACT_2	I would stop to help a stranger in need, even knowing I will never see them again.	1
Behavioural Tendencies	ACT_3	I regularly assist others without expecting anything in return.	1
Behavioural Tendencies	ACT_4	I would give resources to a stranger going through difficult times.	1
Behavioural Tendencies	ACT_5	Personally assisting those in trouble is important to me.	1
Behavioural Tendencies	ACT_6	Volunteering is an important source of meaning in my life.	1
Behavioural Tendencies	ACT_7	In general, I'd rather treat myself than donate to a charity.	-1
Intrinsic Motivation	IM_1	I find joy in improving the lives of other people, even if I don't know them.	1
Intrinsic Motivation	IM_2	It is personally rewarding to give my time for a worthy cause.	1
Intrinsic Motivation	IM_3	I am happiest when I've made a positive difference in a stranger's life.	1
Intrinsic Motivation	IM_4	It makes my day better to give to someone in need.	1
Intrinsic Motivation	IM_5	It feels good to perform an act of kindness for a stranger.	1
Intrinsic Motivation	IM_6	One of the greatest satisfactions in my life comes from helping others.	1
Intrinsic Motivation	IM_7	If I help someone, it's usually because it makes me look good to others.	-1
Intrinsic Motivation	IM_8	When invited to contribute to a cause, I mostly care about how it benefits me.	-1
Principle of Care	PC_1	I feel morally responsible for making the world a better place.	1
Principle of Care	PC_2	We all have a duty to help those who are less fortunate than us.	1
Principle of Care	PC_3	If I see a stranger who is struggling, I feel compelled to help them.	1
Principle of Care	PC_4	It is important to share what I have with people who have less.	1
Principle of Care	PC_5	I have no obligation to help people who cause their own problems.	-1
Principle of Care	PC_6	It's hard for me to feel compassion for someone if I don't know them well.	-1
Principle of Care	PC_7	People in other communities who need aid are not my concern.	-1
Principle of Care	PC_8	People need to look after themselves first and others later.	-1
Principle of Care	PC_9	People should not worry about the needs others.	-1
Benevolent Attitudes	BA_1	Showing compassion for others is an essential part of my identity.	1
Benevolent Attitudes	BA_2	I feel like charities are just trying to "guilt-trip" me into donating to them.	-1
Benevolent Attitudes	BA_3	My friends would describe me as someone who is generous and kind to others.	1
Egalitarian Values	EG_1	In life, some people deserve to be worse off than others.	-1
Universalistic Moral Perspective	UMP_1	The lives of strangers are just as valuable as those of the people closest to me.	1
Universalistic Moral Perspective	UMP_2	I feel an emotional bond with all of humanity.	1
Universalistic Moral Perspective	UMP_3	I am concerned as much about a stranger who is suffering as someone I care about who is suffering.	1
Universalistic Moral Perspective	UMP_4	Every person is worthy of care and concern.	1
Universalistic Moral Perspective	UMP_5	It breaks my heart to hear about disasters in other countries.	1
Multiple Facets	MIX_1	Even if I really didn't like someone, I would still help them in a crisis.	1
Multiple Facets	MIX_2	I go out of my way to show compassion and generosity for those who are less well-off.	1
Multiple Facets	MIX_3	It is not worth helping others because they will just take advantage of you.	-1
Multiple Facets	MIX_4	I care deeply about improving the lives of people in poor communities.	1
Multiple Facets	MIX_5	Helping strangers with their problems is not my responsibility.	-1
Multiple Facets	MIX_6	Helping my local community is more important than helping citizens in more distant communities.	-1
Multiple Facets	MIX_7	Volunteering often feels like a waste of my time.	-1

Note. ACT = Behavioural Tendencies. IM = Intrinsic Motivation. PC = Principle of Care. BA = Benevolent Attitudes. EG = Egalitarian Values. UMP = Universalistic Moral Perspective. MIX = Multiple facets. Labels reflect majority of categorization by the subject-matter-experts during the Q-sort.

Appendix C: Q-Sort Survey with Facet Definitions

Survey Introduction Text
You are being invited to serve as a rater for the preliminary item pool of a new measure of dispositional altruism. The goal of this is to obtain feedback on the item pool before administering the items in a study.

On the next page, you will be shown the definition of altruism and several facets of altruism that the scale aims to assess. For each item, you will be asked to:

(a) sort the items into their facets
(b) rate the item for clarity and relevance to altruism
(c) identify if the item seems neutral (i.e., free of bias), and
(d) provide any additional comments or suggestions for the item.

Note that some items are negatively keyed. These will be indicated with an (R).

Demographics
Please complete the following demographic questions so that the group of raters can be broadly described:

- Your name:
- Your field of work (if applicable):
- Your current or most recent program of study (e.g., PhD in Psychology)
- Your areas of expertise
- Your research interests

Instructions
Please categorize the proposed scale items based the definition of altruism below and the following proposed facet labels. Note that each item will be presented in a randomized order.

Definition of Altruism
Altruism refers to the **voluntary performance** of behaviours that **improve the welfare of others**, with **cost to oneself** in terms of time, resources and/or effort, and **without expectation of direct gain or benefit**. Intrinsic rewards or secondary satisfaction (e.g., warm glow) may be obtained by the actor, but are a by-product of altruistic behaviour, rather than the motivation. Trait altruism reflects a tendency to **universally care about the well-being of those in need**, actively engage in behaviours that directly or indirectly enhance others' welfare, and **experience intrinsic rewards** associated with such behaviours (e.g., positive emotions).

Facet Categories

Behavioural Tendencies: The tendency to engage in altruistic behaviours, including volunteering, spontaneous helping, and charitable giving, without expectation of reward or opportunities for reciprocity.

Benevolent Attitudes: Having a positive, well-meaning attitude towards others in general, including attitudes of kindness, forgiveness, trust, and compassion.

Egalitarian Values: The belief that all people deserve equal rights and opportunities.

Intrinsic Motivation: The tendency to experience intrinsic rewards, such as positive emotions or personal fulfillment, from engaging in altruistic behaviour.

Principle of Care: The belief that one has a moral obligation to care about others or help those in need.

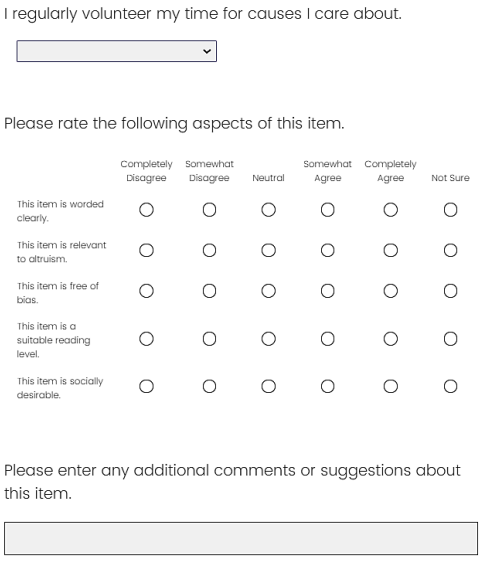
Universalistic Moral Perspective: The belief that all people are worthy of concern and that we all belong to a "common humanity," as well as feelings of connectedness with humanity in general (rather than just close others or one's in-group).

Other Categories

Other: Use this category if an item does not seem to belong to any of these facets, but still aligns with the definition of altruism.

Does Not Belong: Use this category if item does not reflect the definition of altruism or any facets.

Sample Item :



Appendix D: COVID-19 Behaviours Survey

Instructions:
We are interested in learning about various behaviours or activities you may have engaged in during the COVID-19 pandemic. Think back to how frequently you may have engaged in each of these 20 behaviours **over the past year**. Then, using the scale below, respond to each statement.

0 = Never
1 = Rarely
2 = Sometimes
3 = Often
4 = Always or very often

Please answer honestly. There are no right or wrong answers.

#	Question Text	Final Factor	Adapted From	Comments
1.	I acted in accordance with social distancing protocols.	Social Distancing	Syropoulos & Markowitz (in press)	Removed "CDC" (U.S. organization)
2.	I avoided public spaces unless it was necessary to go out.	Social Distancing	Syropoulos & Markowitz (in press)	
3.	I avoided being closer than 2 meters (6 feet) to other people (other than those I live with)	Social Distancing	Bogg & Milad (2020)	
4.	I covered my face (e.g., with a mask) when going out in public.	Social Distancing	Syropoulos & Markowitz (in press)	
5.	I had visitors at my house, or visited someone else.	High-Risk Activities	West et al. (2021)	
6.	I ate or drank at a restaurant, bar, or food court.	High-Risk Activities	Bogg & Milad (2020)	Reversed item direction
7.	I exercised at a gym or other fitness facility.	High-Risk Activities	--	Added as a high-risk activity
8.	I gathered with people outside my household at an outdoor location.	High-Risk Activities	West et al. (2021)	
9.	I attended social gatherings in groups of more than 10 people.	High-Risk Activities	Bogg & Milad (2020)	Reversed item direction
10.	I washed my hands for 20 seconds, especially after touching any frequently used item or surface.	Sanitizing	Bogg & Milad (2020)z	
11.	I coughed or sneezed into a tissue, or the inside of my elbow.	--	Bogg & Milad (2020)	
12.	I disinfected frequently touched surfaces in my house.	Sanitizing	Bogg & Milad (2020)	Modified from "items" to "surfaces"
13.	I disinfected the packaging of products I bought in the store.	Sanitizing	Dinić & Bodroža (2021)	
14.	I avoided touching my face.	Sanitizing	Bogg & Milad (2020)	

The final 6 questions had the following stem:

For reasons related to the COVID-19 pandemic, I…

15.	… provided someone with emotional support.	Pandemic-Related Helping	Sin et al. (2021)	
16.	… delivered food or supplies to someone.	Pandemic-Related Helping	Sin et al. (2021)	
17.	… provided someone assistance with medical care.	Pandemic-Related Helping	Sin et al. (2021)	
18.	… helped someone with school/work responsibilities.	Pandemic-Related Helping	Sin et al. (2021)	
19.	… helped someone with family/home responsibilities.	Pandemic-Related Helping	Sin et al. (2021)	
20.	… shared news updates or information with others.	--	Sin et al. (2021)	Added “news updates”

Appendix E: Description of the Against Malaria Foundation

Please read the following section below describing the Against Malaria Foundation.

Founded in 2006, Against Malaria Foundation Canada (AMFC) raises money to buy mosquito nets, working to prevent the spread of malaria. Malaria kills half a million people every year and 400 million fall ill. The charity reports that before bed nets were made available, it was three or more times that. Of those who die, 90% are people in sub-Saharan Africa and 70% are children under five. AMFC highlights that 100% of public donations buy long-lasting insecticidal nets (LLINs). AMFC is a fundraising branch of Against Malaria Foundation GB (AMF), based in United Kingdom.

Insecticidal nets are treated using a chemical that kills mosquitos, making the nets 99% effective even if there are holes. The charity pays approximately $2 per net which lasts up to four years and protects an average of two people. AMF reports having distributed 8.9 million nets in F2018 in Malawi, Ghana and Papua New Guinea. It pays grants to local partners in disease-endemic areas, including Global Health, Rotary Clubs, and local health departments, that distribute the nets to households and evaluate the net use.

The Against Malaria Foundation has received international recognition as a recommended charity from GiveWell, Giving What We Can, and The Life You Can Save. Total donations to the global charity have increased from US $3.9m in 2012 to US $33.1m in 2018.

Excerpt from:

Charity Intelligence Canada. (2020). *Against Malaria Foundation Canada.* https://www.charityintelligence.ca/charity-details/908-against-malaria-foundation-canada

Appendix F: Item Properties (Student Sample)

Item	Flag	*M*	*SD*	Skewness	Kurtosis	r_{SDE}	r_{IM}
ACT_1		2.93	1.06	0.13	-0.80	0.02	0.15
ACT_2		3.94	0.80	-0.83	1.12	-0.05	0.08
ACT_3		3.87	0.81	-0.69	0.55	-0.02	0.20
ACT_4		3.69	0.81	-0.64	0.59	-0.05	0.11
ACT_5		3.72	0.84	-0.55	0.18	-0.03	0.14
ACT_6		3.16	1.06	-0.11	-0.75	-0.05	0.14
ACT_7R	Desirability	3.00	0.98	0.18	-0.65	-0.01	**0.29**
IM_1		3.99	0.78	-0.75	0.87	-0.07	0.12
IM_2		3.99	0.73	-0.72	1.19	-0.05	0.15
IM_3		3.64	0.97	-0.43	-0.42	-0.05	0.17
IM_4	Mean	**4.01**	0.76	-0.81	1.31	-0.06	0.13
IM_5	Mean	**4.31**	0.63	-0.80	1.96	-0.05	0.11
IM_6		3.70	0.95	-0.51	-0.34	-0.03	0.19
IM_7R	Mean; Skewness	**4.10**	0.82	**-1.10**	1.76	0.01	0.23
IM_8R		3.83	0.89	-0.83	0.52	0.02	0.23
PC_1		3.55	1.03	-0.48	-0.42	-0.03	0.20
PC_2		3.74	0.96	-0.69	0.20	-0.06	0.18
PC_3		3.67	0.84	-0.71	0.54	-0.08	0.15
PC_4		3.68	0.90	-0.72	0.39	-0.10	0.13
PC_5R		3.09	1.06	-0.15	-0.72	-0.07	0.18
PC_6R		3.54	1.06	-0.52	-0.50	-0.02	0.16
PC_7R		3.86	0.85	-0.75	0.70	-0.05	0.17
PC_8R		2.37	0.97	0.55	-0.06	-0.03	0.11
PC_9R	Mean; Skewness	**4.10**	0.84	**-1.00**	1.32	-0.05	0.11
BA_1		3.85	0.93	-0.69	0.13	-0.06	0.21
BA_2R		3.56	1.04	-0.50	-0.41	0.03	0.15
BA_3		3.94	0.79	-0.68	0.71	0.07	0.19
EG_1R		3.71	1.12	-0.51	-0.72	-0.04	0.19
UMP_1		3.39	1.19	-0.33	-0.92	-0.03	0.17
UMP_2		3.15	1.10	-0.13	-0.79	0.05	0.24
UMP_3		2.68	1.05	0.35	-0.68	-0.04	0.21
UMP_4	Mean; Skewness	**4.40**	0.79	**-1.49**	2.37	-0.08	0.12
UMP_5	Mean; Skewness	**4.12**	0.88	**-1.13**	1.48	-0.10	0.15
MIX_1		3.85	0.91	-0.95	0.96	-0.04	0.17
MIX_2		3.43	0.92	-0.25	-0.40	-0.06	0.13
MIX_3R		3.89	0.83	-0.71	0.73	0.00	0.16
MIX_4		3.66	0.90	-0.45	-0.01	-0.05	0.18
MIX_5R		3.23	1.00	-0.16	-0.55	-0.07	0.16
MIX_6R		2.94	0.95	0.07	-0.49	-0.03	0.07
MIX_7R		4.04	0.87	-0.94	0.86	0.02	0.15

Note. ACT = Behavioural Tendencies. IM = Intrinsic Motivation. PC = Principle of Care. BA = Benevolent Attitudes. EG = Egalitarian Values. UMP = Universalistic Moral Perspective. MIX = Multiple facets. Labels reflect majority of categorization by the subject-matter-experts during the Q-sort.

Appendix G: Item Properties (Prolific Sample)

Item	Flag	*M*	*SD*	Skewness	Kurtosis	r_{SDE}	r_{IM}
ACT_1		2.57	1.06	0.44	-0.51	0.12	0.13
ACT_2		3.77	0.81	-0.86	1.32	0.01	0.13
ACT_3		3.65	0.94	-0.75	0.37	0.02	0.11
ACT_4		3.48	0.85	-0.84	0.99	-0.11	0.07
ACT_5		3.43	0.93	-0.45	0.16	-0.01	0.16
ACT_6		2.78	1.12	0.22	-0.71	0.11	0.20
ACT_7R	Desirability	2.83	1.04	0.06	-0.47	0.09	**0.26**
IM_1		3.73	0.87	-0.86	1.32	-0.08	0.15
IM_2		3.74	0.80	-0.90	1.49	-0.07	0.11
IM_3		3.45	0.99	-0.33	-0.33	0.01	0.11
IM_4		3.80	0.81	-0.82	1.37	-0.08	0.13
IM_5	Mean; Skewness	**4.09**	0.67	**-0.99**	3.26	-0.07	0.07
IM_6		3.62	0.96	-0.65	0.38	-0.12	0.11
IM_7R	Mean; Skewness	**4.04**	0.96	**-1.07**	0.82	-0.04	0.19
IM_8R		3.84	0.95	-0.88	0.74	0.06	0.22
PC_1		3.35	1.10	-0.40	-0.61	0.02	0.17
PC_2		3.61	0.97	-0.78	0.54	-0.10	0.06
PC_3		3.50	0.94	-0.59	0.29	-0.08	0.08
PC_4		3.46	0.96	-0.74	0.31	-0.03	0.16
PC_5R		2.95	1.09	0.15	-0.62	-0.03	0.16
PC_6R		3.41	1.09	-0.31	-0.74	0.01	0.22
PC_7R		3.67	0.91	-0.60	0.37	-0.11	0.12
PC_8R		2.49	0.95	0.54	0.00	0.00	0.15
PC_9R	Mean; Skewness	**4.03**	0.87	**-1.13**	1.79	-0.20	0.00
BA_1		3.64	0.98	-0.64	0.19	0.03	0.20
BA_2R		3.30	1.11	-0.28	-0.70	0.05	0.13
BA_3		3.76	0.88	-0.77	0.76	0.14	0.20
EG_1R		3.86	1.10	-0.82	0.00	-0.05	0.20
UMP_1		3.43	1.16	-0.47	-0.66	-0.02	0.19
UMP_2		3.13	1.08	-0.14	-0.63	0.06	0.24
UMP_3		2.89	1.07	0.07	-0.88	0.08	0.22
UMP_4	Mean; Skewness	**4.19**	0.87	**-1.36**	2.47	-0.05	0.12
UMP_5		3.93	0.89	-0.95	1.28	-0.05	0.12
MIX_1		3.59	0.90	-0.88	0.87	0.09	0.23
MIX_2		3.30	1.00	-0.38	-0.34	0.04	0.16
MIX_3R		3.82	0.93	-0.58	0.00	-0.02	0.18
MIX_4		3.42	1.02	-0.46	-0.16	-0.06	0.21
MIX_5R		3.15	1.03	-0.09	-0.50	-0.05	0.11
MIX_6R		2.72	0.95	0.14	-0.22	-0.12	-0.04
MIX_7R		3.81	0.95	-0.73	0.28	-0.06	0.10

Note. ACT = Behavioural Tendencies. IM = Intrinsic Motivation. PC = Principle of Care. BA = Benevolent Attitudes. EG = Egalitarian Values. UMP = Universalistic Moral Perspective. MIX = Multiple facets. Labels reflect majority of categorization by the subject-matter-experts during the Q-sort.

Appendix H: Initial General Factor EFA (35 items)

Item	Student Sample		Prolific Sample	
	Factor Loading	Average Inter-Item Correlation	Factor Loading	Average Inter-Item Correlation
ACT_1	**0.431**	0.22	**0.514**	0.35
ACT_2	**0.506**	0.26	**0.570**	0.31
ACT_3	**0.534**	0.28	**0.611**	0.35
ACT_4	**0.588**	0.31	**0.672**	0.36
ACT_5	**0.682**	0.35	**0.783**	0.39
ACT_6	**0.515**	0.27	**0.607**	0.46
IM_1	**0.668**	0.34	**0.745**	0.44
IM_2	**0.567**	0.29	**0.699**	0.41
IM_3	**0.605**	0.31	**0.706**	0.40
IM_4	**0.626**	0.32	**0.728**	0.43
IM_6	**0.651**	0.33	**0.714**	0.41
IM_8R	**0.442**	0.25	0.302	0.21
PC_1	**0.567**	0.29	**0.634**	0.37
PC_2	**0.628**	0.33	**0.741**	0.44
PC_3	**0.612**	0.32	**0.731**	0.44
PC_4	**0.642**	0.33	**0.725**	0.43
PC_5R	**0.510**	0.28	**0.542**	0.34
PC_6R	**0.523**	0.28	**0.573**	0.37
PC_7R	**0.593**	0.32	**0.631**	0.40
PC_8R	0.307	0.17	0.306	0.22
BA_1	**0.642**	0.33	**0.727**	0.43
BA_2R	**0.323**	0.18	**0.352**	0.24
BA_3	**0.478**	0.25	**0.602**	0.35
EG_1R	0.372	0.21	0.372	0.25
UMP_1	**0.446**	0.24	**0.560**	0.35
UMP_2	**0.540**	0.28	**0.722**	0.43
UMP_3	**0.477**	0.25	**0.569**	0.35
UMP_5	**0.536**	0.28	**0.700**	0.42
MIX_1	**0.465**	0.25	**0.505**	0.31
MIX_2	**0.627**	0.25	**0.712**	0.31
MIX_3R	0.383	0.21	**0.488**	0.32
MIX_4	**0.671**	0.35	**0.781**	0.47
MIX_5R	**0.575**	0.31	**0.611**	0.39
MIX_6R	0.198	0.11	0.073	0.05
MIX_7R	**0.521**	0.29	**0.551**	0.35

Note. Factor loadings > .40 are presented in bold. ACT = Behavioural Tendencies. IM = Intrinsic Motivation. PC = Principle of Care. BA = Benevolent Attitudes. EG = Egalitarian Values. UMP = Universalistic Moral Perspective. MIX = Multiple facets. Labels reflect majority of categorization by the subject-matter-experts during the Q-sort.

Appendix I: One-Factor Solution (29 items)

Item	Student Sample			Prolific Sample		
	Factor Loading	Commonality (Extracted)	Average Inter-Item Correlation	Factor Loading	Commonality (Extracted)	Average Inter-Item Correlation
ACT_1	**0.441**	0.194	0.25	**0.520**	0.271	0.35
ACT_2	**0.507**	0.256	0.29	**0.572**	0.330	0.38
ACT_3	**0.532**	0.282	0.30	**0.614**	0.377	0.40
ACT_4	**0.588**	0.344	0.33	**0.674**	0.454	0.44
ACT_5	**0.690**	0.476	0.38	**0.787**	0.619	0.51
ACT_6	**0.524**	0.275	0.30	**0.615**	0.378	0.41
IM_1	**0.673**	0.452	0.37	**0.746**	0.556	0.48
IM_2	**0.571**	0.325	0.32	**0.704**	0.496	0.46
IM_3	**0.619**	0.383	0.34	**0.718**	0.516	0.46
IM_4	**0.639**	0.409	0.36	**0.732**	0.536	0.48
IM_6	**0.659**	0.434	0.36	**0.723**	0.521	0.47
PC_1	**0.570**	0.322	0.32	**0.639**	0.408	0.41
PC_2	**0.624**	0.386	0.35	**0.737**	0.544	0.48
PC_3	**0.619**	0.382	0.35	**0.736**	0.539	0.49
PC_4	**0.642**	0.413	0.36	**0.726**	0.527	0.47
PC_5R	**0.489**	0.240	0.28	**0.528**	0.279	0.35
PC_6R	**0.509**	0.259	0.29	**0.558**	0.309	0.37
PC_7R	**0.570**	0.325	0.32	**0.611**	0.372	0.40
BA_1	**0.649**	0.421	0.36	**0.732**	0.539	0.48
BA_3	**0.480**	0.229	0.27	**0.609**	0.372	0.40
UMP_1	**0.437**	0.191	0.25	**0.555**	0.309	0.37
UMP_2	**0.546**	0.296	0.31	**0.719**	0.516	0.47
UMP_3	**0.481**	0.232	0.28	**0.568**	0.323	0.38
UMP_5	**0.532**	0.283	0.30	**0.698**	0.487	0.46
MIX_1	**0.455**	0.205	0.26	**0.498**	0.248	0.33
MIX_2	**0.641**	0.411	0.26	**0.716**	0.517	0.33
MIX_4	**0.673**	0.453	0.38	**0.779**	0.609	0.51
MIX_5R	**0.560**	0.314	0.32	**0.598**	0.359	0.40
MIX_7R	**0.504**	0.254	0.29	**0.536**	0.287	0.36

Note. Factor loadings > .40 are presented in bold. ACT = Behavioural Tendencies. IM = Intrinsic Motivation. PC = Principle of Care. BA = Benevolent Attitudes. EG = Egalitarian Values. UMP = Universalistic Moral Perspective. MIX = Multiple facets. Labels reflect majority of categorization by the subject-matter-experts during the Q-sort.

Appendix J: Additional Item Decisions

Comparison Items	Retained	Removed
IM_1, IM_2, IM_3, IM_4, IM_6	IM_1, IM_2	IM_4: Content overlap ("helping"); higher mean, lower *SD* IM_6: High mean in student sample
ACT_2, PC_3	PC_2	ACT_2: Higher mean; higher kurtosis; lower loading on general factor
IM_1, MIX_4	MIX_4	IM_1: Lower mean; less response variability across samples; higher skewness and kurtosis;
PC_6R, BA_1, MIX_2	PC_6R, BA_1	MIX_2: Redundant with BA_1; large proportion of midpoint responses (~30%); generosity overlap with BA_3;
ACT_6, MIX_7R	ACT_6	MIX_7R: Less response variability across samples; higher mean, lower *SD*, higher skewness
PC_5R, MIX_5R	PC_5R	MIX_5R: Similar psychometrics but word "helping" is over-represented
ACT_3	--	ACT_3: Oversaturation of "assisting" and "helping" items; more socially desirable
ACT_5	--	ACT_5: Oversaturation of word "important"; already correlates several items already selected; potential redundancy with IM items
PC_4	--	PC_4: Redundant with ACT_4 in content; more socially desirable
UMP_3	--	UMP_3: Wordier than other items; higher correlation with social desirability
UMP_5	--	UMP_5: Wordier than other items; many affect items already selected

Note. ACT = Behavioural Tendencies. IM = Intrinsic Motivation. PC = Principle of Care. BA = Benevolent Attitudes. UMP = Universalistic Moral Perspective. MIX = Multiple facets. Labels reflect majority of categorization by the subject-matter-experts during the Q-sort.

Appendix K: Charity Game Instructions

We are interested in understanding how personality influences decision-making with organizations. As part of your participation in this study, you will be receiving a bonus compensation of **£0.50.**

Below are the descriptions of three charities. If you are interested in donating any of your compensation, then select one charity and indicate how much you would like donated from your bonus compensation (max £0.50). For example, if you select the **British Red Cross Society** and indicate **0.25**, then this charity will receive £0.25.

Alternatively, you can choose not to donate and keep the £0.50 bonus compensation.

( ) **British Red Cross Society:** The British Red Cross Society is the United Kingdom body of the worldwide neutral and impartial humanitarian network the International Red Cross and Red Crescent Movement. The society was formed in 1870, and is a registered charity with more than 17,200 volunteers and 3,400 staff. At the heart of their work is providing help to people in crisis, both in the UK and overseas. The Red Cross is committed to helping people without discrimination, regardless of their ethnic origin, nationality, political beliefs or religion.

If selected: How much would you like to donate (e.g., 0.25): £ ____

( ) **Global Giving Climate Action Fund**: GlobalGiving connects vetted nonprofits, donors, and companies to accelerate community-led change. Across the globe, climate action led by the communities most affected by this global crisis is often underfunded and overlooked. By providing ongoing support for local leaders who understand the challenges facing their communities, the Climate Action Fund is redefining business-as-usual.

If selected: How much would you like to donate (e.g., 0.25): £ ____

( ) **Room to Read:** Room to Read seeks to transform the lives of millions of children in low-income communities by focusing on literacy and gender equality in education. Working in collaboration with local communities, partner organizations, and governments, Room to Read develops literacy skills and a habit of reading among primary school children, and supports girls to complete secondary school with the relevant life skills to succeed in school and beyond.

If selected: How much would you like to donate (e.g., 0.25): £ ____

( ) **I do not wish to donate any of my bonus compensation**

Appendix L: Trust Game Instructions

We are interested in how personality influences decision making in social interactions. This next task will involve making a decision involving a partner. For this task, you will be paired with another participant in this study.

You will either be assigned the role of **Trustor** or **Trustee**.

- In the role of **Trustor**, you will be awarded bonus compensation equal to **£0.50**. You can choose to keep this sum, or give a future participant some or all of this amount. Whatever amount you indicate will be **doubled** before being given to the Trustee. Once a future participant has been matched with you and completes their portion of the study, you will receive bonus compensation equal to how much you initially kept, plus however much they return to you.

- In the role of **Trustee**, you will be matched with someone who has previously completed this study. You will be told how much your partner (the Trustor) chose to give. You will then have the opportunity to return some or all of this amount. This amount will be **doubled**. This new amount will be added this individual's bonus compensation. The amount you keep will be your bonus compensation, which will be awarded to you at the end of the study.

Example:
Sam has been assigned the role of **Trustor**, and **Alex** has been assigned the role of **Trustee**.
In the first step, Sam gives £0.30 to Alex (and keeps £0.20). This amount is doubled, so Alex receives a total of £0.60 from Sam. In the second step, Alex chooses to return £0.20 to Sam (and keeps £0.40). This amount is doubled, so Sam receives £0.40 in total from Alex.

Alex's final bonus compensation is £0.40, and Sam's final bonus compensation is £0.60 (£0.20 + £0.40).

Before proceeding, please complete these questions to ensure you understand the instructions.

1. If I am the **Trustor** and I indicate that I am giving **£0.20**, how much will a future participant receive? *[Correct answer: £0.40]*
2. If I am the **Trustee**, and I receive **£0.30**, what amount did a previous participant choose to send?
   [Correct answer: £0.15]
3. If I am the **Trustee** and I indicate that I am giving **£0.10** to my partner, how much will this individual actually receive? *[Correct answer: £0.20]*

[Next page]

You have been assigned the role of **Trustee.** You have been matched with a participant who previously completed this study and was assigned the role of Trustor.

Your partner has given you **£0.25**, which was doubled by the experimenter--meaning you have received **£0.50** potential bonus compensation in total**.**

How much, if any, would you like to return to your partner? Keep in mind that this value will be doubled by the experimenter. For example, if you send £0.10, your partner will receive £0.20 back.

Please enter a value between **.00** and **.50**.
£_____

Curriculum Vitae

Name:	Laura Kathleen Deirdre Johnson
Post-secondary Education and Degrees:	University of Western Ontario London, Ontario, Canada 2011-2016 Honors B.A. The University of Western Ontario London, Ontario, Canada 2016-2018 M.Sc.
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Refereed Journal Articles

Jain, N., Kowalski, C. M., Johnson, L. K., & Saklofske, D. H. (in press). Dark thoughts, dark deeds: An exploration of the relationship between the Dark Tetrad and aggression. *Current Psychology*.

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Johnson, L. K., & Dave, H. P. (2021). Narcissism, Assessment of. In B. J. Carducci, C. S. Nave, J. S. Mio, & R. E. Riggio (Eds.), *The Wiley-Blackwell Encyclopedia of Personality and Individual differences: Vol. II. Research methods and assessment techniques* (p. 225-230). Hoboken, NJ: John Wiley & Sons.

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Plouffe, R. A., Walker, D. L., Johnson, L. K., Kowalski, C. M., & Forchuk, C. A. (2023). The Assessment of Sadistic Personality. In Jonason, P. K. (Editor-in-Chief), *Shining light on the dark side of personality: Measurement properties and theoretical advances* (pp. 173 - 183). Boston, MA: Hogrefe.