THE UNIVERSITY OF
WARWICK

Individual Differences in Gratitude and Their Relationship with Well-Being

By

Alexander Mathew Wood

Thesis submitted in fulfillment of the requirements for the degree of

Doctor of Philosophy in Psychology

University of Warwick, Department of Psychology

May 2008

Dedication

To Stephen Joseph,

My mentor and friend.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGMENTS

This thesis is, in part, a the product of generous help, advice, and encourage-ment which I have received from a large number of people.

First and foremost, I would like to thank Stephen Joseph (now of the Univer-sity of Nottingham) who took the primary supervisory role in this thesis. I could not have hoped for a more supportive or encouraging supervisor. Stephen always made himself available for advice, which was invariably of the highest quality. Moreover, through our discussions (in locations ranging from academic offices, coffee shops, cocktail bars, Washington DC restaurants, and on the banks of Lough Foyle) we have always had a lot of fun! I have no doubt that this thesis would not have been the same quality without his support and intellectual input, and I count it a privilege to say that Stephen is now one of my closest friends.

Neil Stewart (of the University of Warwick), as co-supervisor, has provided invaluable advice on academic skills, and has been very influential in my developing career. Neil has provided valuable advise on all of my papers, and helped greatly with conceptualizing this research, the process of publication, and getting started as an academic. Neil has been extremely generous with his time and effort, and has been very influential in this thesis. Neil, I'm sorry that I turned you into a social psy-chologist.

John Maltby (of the University of Leicester) has been very supportive since the beginning of this thesis, generously making available his classes and community links to help with data collection. John's kind support allowed the rapid progress of this research, and he has never hesitated to provide help.

Alex Linley (of the Center for Applied Positive Psychology and the University of Leicester) helped start me on an academic path, as my third year undergraduate

supervisor. Through our long discussions, he helped introduce me to the world of academia, and he continued to play an advisory role throughout my PhD.

Raph Gillett (of Leicester University) provided statistical advice for Chapter 6, and two incredibly capable undergraduates whom I supervised (Jo Lloyd and Sam Atkins) collected data for Chapter 8 as part of their third year projects.

My office mates have always been supportive over the last two and a half-years, and I'm lucky to have been with such a great group of people. Anna Cunningham has been exceptionally helpful, carefully proof-reading every one of my papers (often several times for the more arduous review processes). Anna's advice and academic comments have been very valuable, and have resulted in substantial changes to several of the papers. Chris Boyce has brought a high level of intellectual debate into the office, and I look forward to rowing with him for a long time to come. Everyone has contributed to the office being a fun place in which to work.

Space precludes thanking everyone who supported me through this thesis (though several good friends were certainly influential). Rather, to preempt the conclusions of Chapter 2, a lot of people have given help which is costly, valuable, and altruistic, and I'm grateful.

Alex Wood,

University of Warwick,

May 2008.

DECLARATION AND INCLUSION OF MATERIAL FROM A PRIOR THESIS

The work contained in this thesis has been carried out entirely by myself. The data used in Study 1 in Chapter 2 were previously used in my BSc Psychology dissertation—Chapter 2 provides a completely new reanalysis of the data. No other aspect of this thesis has been submitted for a prior degree.

NOTE ON INCLUSION OF PUBLISHED WORK

Certain chapters have previously been published in part or entirety during the period of PhD registration, and the copyright of these papers resides with the publishers (the reproduction of the papers as chapters in this thesis is permitted the terms of the copyright agreements). These papers are as follows:

Chapter 1: Wood, A. M., Joseph, S., & Linley, P. A. (2007). Gratitude. *The Psychologist, 20*, 18-21.

Chapter 2: Wood, A. M., Maltby, J. Stewart, N., Linley, P. A., & Joseph, S. (in press). A social-cognitive model of trait and state levels of gratitude. *Emotion.*

Chapter 3: Wood, A. M., Maltby, J., Stewart, N., & Joseph, S. (2008). Conceptualizing gratitude and appreciation as a unitary personality trait. *Personality and Individual Differences, 44*, 619-630.

Chapter 4: Wood, A. M., Joseph, S., & Maltby, J. (2008). Gratitude uniquely predicts satisfaction with life: Incremental validity above the domains and facets of the Five Factor Model. *Personality and Individual Differences, 45*, 49-54.

Chapter 6: Wood, A. M., Maltby, J., Gillett, R., Linley, P. A., & Joseph, S. (in press). The role of gratitude in the development of social support, stress, and depression: Two longitudinal studies. *Journal of Research in Personality.*

Chapter 7: Wood, A. M., Joseph, S., & Linley, P. A. (2007). Coping style as a psychological resource of grateful people. *Journal of Social and Clinical Psychology, 26*, 1108 - 1125.

Appendix: Wood, A. M., Linley, P. A., Maltby, J., Baliousis, M. & Joseph, S. (in press). The authentic personality: A theoretical and empirical conceptualization, and the development of the Authenticity Scale. *Journal of Counseling Psychology.*

Chapters 5 and 8 are currently under review.

NOTE ON SUPPORTING MATERIAL

The Appendix includes pre-published collaborative work (conduced during the period of PhD registration) in support of this thesis. The exact extent of the collaboration is indicated in the Appendix; the initial idea for the study and the scale items presented in Appendix Study 1 were developed by Alex Linley and Stephen Joseph. Appendix Study 2, and all analysis and write-up are entirely my own work.

LIST OF ABBREVIATIONS

AIC: Akaike Information Criterion
BFI: Big Five Inventory
CES-D: Centre for Epidemiologic Studies Depression Scale
CFA: Confirmatory factor analysis
CFI: Comparative Fit Index
EFA: Exploratory factor analysis
GRAT: Gratitude, Resentment, and Appreciation Test
GQ-6: Gratitude Questionnaire-6
IM: Impression management
KMO: Kaiser-Mayer-Olkin measure
MAP: Minimum average partial method
NEO: The NEO-PI-R measure of the Big Five
PCA: Principle components analysis
PTSD: Post-Traumatic Stress Disorder
PSS: Perceived Social Support
PSQI: Pittsburg Sleep Quality Index
PWB: Psychological well-being
RMSEA: Root-mean-square error of approximation
SDS-17: Social Desirability Scale-17
SED: Self-deception
SEM: Structural equation modeling
SHDS: Short Happiness Depression Scale
SRMR: Standardized root-mean-square error of approximation
SWB: Subjective well-being
SWL: Satisfaction with life

ABSTRACT

Throughout history, philosophical and theological perspectives have seen gratitude as important to individual well-being and the functioning of society, but the scientific study of gratitude in psychology is only just beginning. Ten studies are presented which show how and why individual differences in gratitude are related to well-being, with six key conclusions.

First, grateful people view the help they receive in everyday life as more costly, valuable, and altruistically intended. Cross-sectional ($n = 253$), multi-level daily process ($n = 113$), and experimental ($n = 200$) studies showed that these attributional biases explain why trait and state levels of gratitude are linked.

Second, trait gratitude involves the habitual focusing on the positive in the world, suggesting why gratitude is linked to well-being. Two studies ($n = 206$ and $n = 389$) presented exploratory and confirmatory factor analysis showing that each of the existing measure of gratitude and appreciation (the GQ-6, GRAT, and Appreciation Scale) assess the same latent construct.

Third, two studies ($n = 389$) and ($n = 201$) show that gratitude is uniquely linked to subjective well-being (satisfaction with life) and psychological well-being (personal growth, positive relationships with others, purpose in life, and self-acceptance), after controlling for the 30 facets of the Five Factor Model.

Fourth, two longitudinal studies ($n = 156$ and $n = 87$) showed that during a life transition, gratitude led to lower stress and depression, and higher perceived social support. Structural equation modeling disproved other models of causality, such as well-being leading to gratitude.

Fifth, grateful people were shown to use more adaptive coping strategies, characterized by seeking help from others and actively coping rather than avoiding the problem. Across two samples ($n = 236$) these adaptive coping strategies were shown to partially explain why grateful people feel lower level of stress in life.

Sixth, in a large community sample ($n = 401$, 40% with clinically impaired sleep) grateful people had a better quality of sleep, which was due to grateful people thinking more positive and less negative thoughts immediately prior to sleep ("pre-sleep cognitions").

Taken together, the ten studies show that individual differences in gratitude (1) are related to specific information processing biases, (2) involve a habitual orientation towards noticing and appreciating the positive in life, (3) uniquely predict well-being, (4) lead to well-being over time, (5) are related to positive coping, and (6) predict better sleeping quality.

CHAPTER 1

1. INTRODUCTION: GRATITUDE, POSITIVE PSYCHOLOGY, AND WELL-BEING

This thesis investigates individual differences in gratitude and their relationship to well-being. Gratitude is an emotion that most people feel frequently and strongly (McCullough, Emmons, & Tsang, 2002). The Gallup Organization conducted a representative telephone poll of around 1,000 adolescents (Gallup, 1999), and found that 67% of people reported expressing gratitude to other people "all of the time", and 60% of people said that this made them "very happy". This prevalence does not seem to be limited to western countries, and with some cultural variations, gratitude seems to be experienced in countries around the world (Naito, Wangwan, & Tani, 2005). Gratitude has also been a focus of recent public attention, with many people reporting increased gratitude and appreciation of life following vicarious exposure to the September 11th terrorist attacks (Peterson & Seligman, 2003).

Throughout history, gratitude has been given a central position in religious and philosophical theories (Emmons & Crumpler, 2000). The importance of gratitude has been a fundamental focus of religions including Buddhism, Christianity, Judaism, and Islam. Almost all of the Biblical psalms focus on the expression of gratitude towards God, and a representative Islam saying is 'the first who will be summoned to paradise are those who have praised God in every circumstance'. From a secular perspective, the importance of gratitude was emphasized by philosophers as early as Cicero (106 – 43 BC). Adam Smith, better known for his economic treatise "The Wealth of Nations", also wrote extensively on gratitude. He believed that gratitude was essential for society, motivating reciprocation of aid when no other legal or economic incentive encouraged its repayment.

Despite the traditional focus on gratitude in philosophical treatise and the con-

tinuing importance of gratitude in people's everyday lives, the study of gratitude has been traditionally neglected by psychology (McCullough, Kilpatrick, Emmons, & Larson, 2001). This may be part of a larger neglect of the positive aspects of life (see Linley, Joseph, Harrington, & Wood, 2006), and a lack of focus on character strengths (Seligman & Csikszentmihalyi, 2000). However, this picture is rapidly changing, with the positive psychology movement encouraging research into a variety of character strengths and positive aspects of life. Increasingly, positive psychology traits such as gratitude are becoming influential in the study of well-being (Park, Peterson, & Seligman, 2004).

1.1. Positive Psychology

The positive psychology movement developed in the late 1990s (Seligman & Csikszentmihalyi, 2000). The premise of the movement was that post-World War II psychology had developed a deficit orientation, where many areas of psychology focused nearly exclusively on the negative in life. This focus on the negative led to a unbalanced research field, with most research studying the negative aspects of life without considering the role of positive life aspects (Duckworth, Steen, & Seligman, 2005; Gable & Haidt, 2005; Linley et al., 2006; Maddux, Snyder, & Lopez, 2004; Sheldon & King, 2001). For example, whilst substantial attention had focused on how relationships help a person deal with occasional adversity (social support) (S. Cohen & Wills, 1985; Monroe, Connell, Bromet, & Steiner, 1986), almost no attention has focused on how relationships help people capitalize on their successes (Gable, Reis, Impett, & Asher, 2004). Whilst a vast literature has associated loneliness with depression (Shaver & Brennan, 1990), much less research has focused on positive relationships (Ryff, 1989) or love (Levin, 2000). Research into post-traumatic stress had attracted immense considerable clinical attention (e.g., Olff,

Langeland, Draijer, & Gersons, 2007), although very little attention has been paid to the positive meaning and benefit people can gain in overcoming their trauma (Joseph, 2004; Joseph & Linley, 2005). Huge literatures exist on depressive life outlooks (Beck, 1976; Evans, Heron, Lewis, Araya, Wolke, & ALSPAC Study Team, 2005), although almost no research had focused on appreciative and grateful outlooks (Adler & Fagley, 2005; McCullough et al., 2001)

1.1.1. Development of a Deficit Orientation

Within the positive psychology movement, the deficit focus of psychology is normally attributed to changes that occurred in the aftermath of World War II (Gable & Haidt, 2005; Linley et al., 2006; Seligman & Csikszentmihalyi, 2000; Sheldon, 2004). Prior to the war, psychology had the dual aims of curing mental illness and promoting excellence and positive communities. Faced with the immense suffering caused by the war, many psychologists saw the most urgent need as repairing damage. Governmental priorities promoted this focus, earmarking funding for research into repairing the psychological impact of the war. With the founding of the Veterans Administration in 1949 and the National Institute of Mental Health (which focused exclusively on disorder) in 1947, psychologists found unparalleled funding opportunities for studying disorder (Seligman & Csikszentmihalyi, 2000).

This deliberate focus on disorder created a substantial and valuable body of research into distress, although the focus had the side effect of transforming psychology into a healing discipline, based upon a medical model of disorder (Maddux, 2002; Maddux, Gosselin, & Winstead, 2005; Maddux et al., 2004). In many fields, psychology essentially became a sub-field of psychiatry, with psychologists working exclusively to treat distress. Psychology's orientation towards the negative persisted long after the war, with successive generations of psychologists being socialized into

the perception of psychology as disproportionately involving the study of disorder. Psychology became a profession effective at "learning how to bring people up from negative eight to zero, but not as good at understanding how people rise from zero to positive eight" (Gable & Haidt, 2005, p. 103). The positive psychology movement was self-consciously concerned at redressing the balance of focus within psychology, so that positive aspects of life were once again part of the mainstream research agenda in psychology (Seligman & Csikszentmihalyi, 2000).

1.1.2. The Need for Positive Psychology

I see a deficit focus as damaging to research and practice in four key ways. First, representative population surveys have repeatedly found that 90% of people report themselves as either "happy" or "very happy" (Myers, 2000), at least in developed countries (Howell & Howell, in press). By focusing disproportionately on disorder, psychology had become over focused on the 10% of people who have poorer well being, and the discipline can contribute less to the understanding of the average person. As Maslow (1970) had pointed out some decades earlier:

> The science of psychology has been far more successful on the negative than on the positive side. It has revealed to us much about man's shortcomings, his illness, his sins, but little about his potentialities, his virtues, his achievable aspirations, or his full psychological height. It is as if psychology has voluntarily restricted itself to only half its rightful jurisdiction, and that, the darker, meaner half (p. 354).

Second, psychology has neglected many topics which are of interest to people in society, or which have been traditionally considered to be of importance in phi-

losophical or theological accounts. For example, Peterson and Seligman (2004) identified 24 character traits which have been considered strengths throughout history in a number of cultures (see also Linley et al., 2007; Macdonald, Bore, & Munro, in press; Peterson & Seligman, 2003). These strengths include gratitude, authenticity, love, fairness, bravery, and vitality. Through a deficit orientation within psychology, the discipline can explain little about these traits. The discipline can thus not explain many phenomena which are important to people in society, and has neglected to take advantage of the many rich and testable hypothesis that have emerged from philosophical accounts of humanity.

Third, many aspects of life can be better predicted by positive variables than negative variables alone. Many negative aspects of life (such as depression) can be strongly predicted by the absence of positive traits (such as optimism, or gratitude: Carver, Scheier, & Weintraub, 1989; McCullough et al., 2002) and good relationships (Gable et al., 2004), even after controlling for negative traits and bad relationships. Given that high activation positive and negative emotions are orthogonal (Russell & Carroll, 1999; Watson, Clark, & Tellegen, 1988), studying positive emotions can explain additional variance in outcomes after controlling for negative emotions.

Positive emotions also have distinct benefits (Fredrickson, 1998, 2001). Whereas negative emotions focus attention on a specific threatening aspect of the world, positive emotions widen attentional span to broaden the scope of thinking and increase creativity (Fredrickson & Branigan, 2005). Positive emotions also help remove the impact of negative emotions, speeding a return to baseline heart rates after anger eliciting situations (Fredrickson, Mancuso, Branigan, & Tugade, 2000). It is ironic that psychology has focused nearly exclusively on the negative life aspects of

life when attempting to explain disorder, as it increasingly appears that positive life aspects are strong and unique (negative) predictors of human distress (Duckworth et al., 2005).

Forth, given that the psychology literature is so disproportionately negative, very rapid advances can be made in the understanding of positive life aspect using only limited resources (Gable & Haidt, 2005). With over 100,000 articles making reference to stress, providing an advance in stress research would either need a new paradigm or a very high level of resources. In contrast, with only a handful of studies on such emotions as gratitude, very rapid advances can be made with limited re-sources; thus research into positive psychology represents an improved cost/benefit ratio over many other areas of psychology.

1.1.3. The Positive Psychology Movement

With four clear reasons why positive psychology was need, in the late 1990s the climate was ripe for a zeitgeist change. As an ideological movement, positive psychology is often attributed to the work of Martin E. P. Seligman, who served as president of the American Psychological Association (APA) from 1998-1999 (see Linley et al., 2006). Seligman made the promotion of positive psychology his key presidential initiative of his term in office (Seligman, 1999). Seligman himself attrib-utes the movement to two key events in his own life (Seligman, 2002; Seligman & Csikszentmihalyi, 2000). The first was a moment with his daughter Nikki. After he had unfairly berated his 5-year old daughter for interrupting him whilst gardening, she allegedly responded "From the time I was three to the time I was five, I was a whiner. I whined every day. When I turned five, I decided not to whine any-more. That was the hardest thing I've ever done. And if I can stop whining, you can stop being such a grouch" (Seligman, 2002, p. 4). Seligman (Seligman, 2002; Seligman

& Csikszentmihalyi, 2000) reports that at this moment he realized that psychology should not be aimed at reducing weakness (which his daughter could do by herself), but rather at promoting strength. Seligman did not "invent" positive psychology. The term had been coined some decades earlier by Maslow (1970), counselling and community psychologists were already rejecting the deficit orientation and focusing on strengths (Cowen & Kilmer, 2002; Linley, 2006), gratitude was being studied before the start of the movement (Emmons, 2007), and other individuals in addition to Seligman played seminal roles (see Linley et al., 2006). However, as president of the APA Seligman made a substantial contribution by helping to integrate the efforts of a diverse group of researchers under the rubric of positive psychology, and by drawing substantial attention to the value of studying the positive.

Regardless of the precise timing or cause of the start of the positive psychology movement, between 1999 and 2006 the movement had become influential within psychology, with 16 special journal issues, a new dedicated journal, tens of millions of pounds of funding, at least eight international conferences, the development of Masters level courses across the world, and hundreds of articles in the popular press (Linley, 2006; Seligman, 2005b).

1.2. Gratitude

The systematic study of individual differences in gratitude began in earnest in 1999 with a US$363,000 grant from the John Templeton Foundation to Robert A. Emmons (University of California at Davis) and Michael E. McCullough (Sothern Methodist University). This led to a substantial body of work, including the production of a systematic review of the previous literature on gratitude (McCullough et al., 2001) and the development of a scale to measure trait gratitude, which exhibited excellent psychometric properties (McCullough et al., 2002). The study of gratitude

fitted in perfectly within the zeitgeist of the positive psychology movement, and between 1999 and the commencement of this thesis in 2005, there were substantial advances in understanding gratitude.

1.2.1. State Gratitude

Emotions can either be conceptualized on state or trait levels (Rosenberg, 1998). At the state level, emotions involve temporary affects or longer duration moods, which may have associated thought and action tendencies. At the trait level, emotions are characterized by individual differences in the average frequency with which affects and moods are experienced in daily life. Whilst there has been very little work on gratitude as an individual difference, McCullough et al. (2001) reviewed a substantial body of literature relevant to gratitude as a state. This literature shows that as an emotion, gratitude serves three pro-social functions.

First, gratitude operates as a *moral barometer*. This term is used to indicate that gratitude is sensitive to changes in social relationships, specifically occurring after a person has received aid. Tesser, Gatewood, and Driver (1968) provided participants with vignettes detailing pro-social situations, and showed that people believed they would experience more gratitude and indebtedness when the help was costly to provide, valuable, and provided altruistically rather than through ulterior motives. Okamoto and Robinson (1997) manipulated the costliness of an act provided to participants, and increased cost caused greater expressions of gratitude. In a series of studies, Weiner and colleagues found that people associated the emotion of gratitude with a successful action that was due to another person. This finding was observed when participants recalled situations from their lives (Weiner, Russell, & Lerman, 1979), responded to manipulated vignettes (Weiner, Russell, & Lerman, 1978), or attributed causes for people experiencing feelings of appreciation, grati-

tude, and modesty (Weiner et al., 1979). Converging evidence from these studies suggests that gratitude is an emotion that is sensitive to the aid that people receive (Okamoto & Robinson, 1997; Tesser et al., 1968; Weiner et al., 1978; Weiner et al., 1979).

Second, McCullough et al. (2001) argued that gratitude operates as a *moral motivator,* encouraging pro-social responses to aid. Watkins, Scheer, Ovnicek, and Kolts (2006) gave participants vignettes detailing situations in which they were hypothetically helped. Participant's expectations of feeling grateful were correlated with expectations of reciprocation towards their hypothetical benefactor (e.g., "I would feel like doing something for this person", p. 229). In contrast, people did not expect that feelings of indebtedness would lead to any positive responses. Tsang (2006) lead participants to believe they were engaged in several rounds of a resource distribution game with a second participant (who was actually fictitious). In early rounds, the control group were told that they had received extra resources due to chance, whilst the experimental group were told they confederate had chosen to give them some of his resources. In later rounds, the experimental group gave more resources to the other participant. Critically, this group stated the reason for this choice as being to express appreciation. This study was notable due to its psychological realism; resources were exchangeable for money at the end of the experiment (up to US$33), and manipulation checks indicated substantial changes in levels of pleasure and annoyance between the rounds. Together with Watkins et al. (2006), Tsang study provides support for the moral motivator function of gratitude.

Finally, McCullough et al. (2001) argues that gratitude has a *moral reinforcer* function, where being the recipient of gratitude encourages a person to provide additional aid in the future. Moss and Page (1972) found that if a confederate thanked a

participant for their help, the participant was more likely to help a second confederate who dropped their books in the hallway. Rind and Bordia (1995) found that writing "thank you" on restaurant bills caused an increase of 11% in tips. Further, it appears that sincere gratitude may be a greater moral reinforcer than insincere gratitude. Carey, Clicque, Leighton, and Milton (1976) phoned regular customers of a jewellery store either to just thank them for their custom, or to thank them and inform them of an upcoming sale. All participants who were phoned subsequently spent more in the store than people who were not called, but the people who were simply thanked spent the greatest amount of money.

The research discussed by McCullough et al. (2001) suggests that at the state level, gratitude is an important social emotion. However, there are several outstanding questions regarding state gratitude and its relationship with trait gratitude. It is not, for example, clear exactly which attributions lead to the experience of gratitude. An indication comes from the Tesser et al. (1968) study, in terms of the attributions of cost, value, and altruistic intention. However, the dependant variable confounds gratitude and indebtedness. In two separate items, Tesser et al. (1968) asked participants to what extent they would feel (1) grateful, and (2) indebted, and these two items were aggregated to form a single score. Tesser et al. reports this was performed because they were correlated at levels above statistical chance, although they do not report the size of the correlation. As Watkins et al. (2006) showed, they are indeed correlated, although only share about 6.5% of the same variance, arise from different appraisals, and motivate different thought-action tendencies. It is therefore unclear whether Tesser et al.'s (1968) measures would today be considered to assess accurately the grateful emotion.

It is also not clear how and why trait and state levels of gratitude are related.

How trait and state levels are linked form a critical aspect of how to conceptualize the emotion. It has recently been shown that trait gratitude is linked to the experience of gratitude on a daily basis (McCullough, Tsang, & Emmons, 2004). However, the mechanisms explaining this link are not clear. Such mechanisms which would form the centre part of any theory that incorporates both trait and state levels of gratitude. No theory has been suggested as to how and why trait gratitude, state gratitude, and social situations are linked, and this omission limits the understanding of gratitude as an emotion. It is intuitive that people higher in trait gratitude would feel more state gratitude after the help they receive in everyday life. But there is currently no indication of the cognitive mechanism explaining why this would occur. Chapter 2 presents a new model integrating trait and state levels of gratitude, and presents three studies which test this model.

1.2.2. Measuring Trait Gratitude

Substantial advances have recently been made in measuring trait gratitude. Three scales have been developed, the unidimensional GQ-6 (McCullough et al., 2002), the multidimensional Gratitude, Resentment, and Appreciation Test (GRAT) (Watkins, Woodward, Stone, & Kolts, 2003), and the multidimensional Appreciation Scale (Adler & Fagley, 2005).

The GQ-6 conceptualizes gratitude based on how frequently and intensely gratitude is experienced in everyday life, as well as the range of events which elicit gratitude. The GQ-6 was aimed as a measure of emotional gratitude, without particular reference to the precise situations or attributions which lead to the activation of the emotion. Of the three measures, the GQ-6 probably has the strongest psychometric properties (Watkins, 2004). Items were developed from an initial item pool of 39 items. An initial factor analysis indicated a clear one factor solution, and the highest

six loading items were selected to form the scale. The unifactorial structure was supported by four confirmatory factor analyses (CFA) performed using large samples. Discriminant validity was provided by a series of CFAs. In each of these analyses, models were tested where gratitude and another trait (e.g., optimism) formed (a) a single factor, or (b) two separate factors. In each case, the two factor models exhibited better fit, suggesting that gratitude is factorially distinct from scales of life satisfaction, vitality, subjective happiness, optimism, and hope. Further discriminant validity was provided by showing that gratitude was more than a simple linear combination of Big Five traits. Convergent validity was provided with peer-reports of gratitude, which showed that people's self-reports of gratitude were correlated with how their friends and parents considered them. Criterion validity was shown with a very wide range of personality traits and well-being variables. These relationships persisted when peer-rating of gratitude were correlated with peer-ratings of the participants personality and well-being. Finally, incremental validity was provided by showing that gratitude correlated with well-being and pro-social variables beyond the effect of the Big Five domains.

The GRAT was designed to measure an *a priori* three factor conception of gratitude. The three factor model was based on the author's conception of gratitude. This conception sees gratitude as comprising appreciation of other people, appreciation of the positive aspects of life, and a lack of resentment for negative aspects of life. The number of factors were decided upon prior to the factor analysis, and 42 items were developed to represent one or other of these factors. A forced three component principle component analysis (PCA) was performed to show that most items loaded highly and uniquely on one of the three components, and all items were retained. Items from each component were aggregated to provide three sub-scales of

gratitude. Convergent validity was provided through correlations with well-being, which were replicated several times with different samples. High test-retest reliability of the three sub-scales was demonstrated over two-week to two-month periods. In the absence of a factor analysis of a representative item pool, the GRAT is best considered as a measure of a conceptual three factor model of gratitude.

Finally, the Appreciation Scale was developed to measure an *a priori* eight factor model of gratitude, again based on how the authors saw the construct. The Appreciation Scale assesses eight dimensions: (1) appreciation of people, (2) possessions, (3) the present moment, (4) rituals, (5) feeling of awe, (6) social comparisons, (7) existential concerns, and (8) behavior which expresses gratitude. Each of these dimensions were theorized to be a separate aspect of gratitude. All of the initial 76 items were retained, and sub-scales were formed prior to factor analysis. A forced eight factor PCA was performed. Individual item loadings were not reported, but the eight latent factors were shown to correlate strongly with the totals of the eight sub-scales. Convergent validity was provided with well-being. Again, in the absence of a factor analysis of a representative item pool, the Appreciation Scale is best considered as a measure of a conceptual eight-factor model of gratitude.

The three scales of gratitude provide a way to conceptualize the construct and have proved seminal in the growth of gratitude research. The GQ-6 exhibited excellent psychometric properties and has been particularly influential in studying the construct. However, it is not clear how the three scales (and their constituent 12 sub-scales) inter-relate, and to date they have not yet been correlated or analyzed together.

The lack of knowledge about the relationships between the 12 conceptions of gratitude is hazardous to the developing gratitude literature. Two possibilities are

particularly concerning. First, literature reviews could assume that the 12 conceptions were assessing the same construct. If this were not the case, then the knowledge base of gratitude would be undermined. Second, separate research streams could develop based on different conceptions of gratitude. If each of the separate conceptions of gratitude were actually assessing the same latent construct, then separate streams of research would duplicate research effort.

At present, both possibilities appear to be occurring. First, research based on the GQ-6 and GRAT is being summarized together (e.g., Watkins, 2004), although the relationship between measures has yet to be demonstrated. Second, research based on the Appreciation Scale appears to be developing a separate literature, with the original development paper (Adler & Fagley, 2005) not citing either the GQ-6 or the GRAT, even though the underlying conceptions between the scales are highly similar. Thus for practical reasons, it is necessary to know more about how these scales inter-relate.

Conceptually, it is also important to know whether gratitude is a unitary personality trait. For example, if each of the sub-scales of gratitude were actually measuring the same latent construct, then this would provide a new wider conceptualization of the essence of gratitude. Alternatively, if the scales are indicators of multiple latent constructs, then this needs to be specifically represented in theories of gratitude. In two studies, Chapter 3 presents exploratory and confirmatory factor analysis to test whether each of the 12 sub-scales are assessing the same latent construct.

1.2.3. Correlations Between Gratitude and Well-being

There is now very good indication that gratitude is correlated with well-being. Each of the three scales of gratitude showed correlations with well-being. For example, the GQ-6 has positive correlations with depression, anxiety, positive and nega-

tive affect, hope, optimism, happiness, vitality, and life satisfaction between $r = |.20|$ and $r = |.67|$. Conventionally, effect sizes of $r = .30$ are defined as medium, whereas $r = .50$ are defined as large (J. Cohen, 1988, 1992). Adopting these conventions, it appears that gratitude is a reasonably substantial cross-sectional predictor of well-being. Indeed, Park, Peterson, and Seligman (2004) correlated 24 character strengths (e.g., hope, love, optimism) with satisfaction with life, and found that the size of the correlation between gratitude and satisfaction with life was amongst the strongest (at $r = .43$).

The size of the zero-order correlations between gratitude and well-being provides an early suggestion that gratitude may be an important aspect of well-being. However, two key questions are outstanding. First, almost all of the previous work has focused on gratitude and subjective well-being (SWB), with almost no work on gratitude and psychological well-being (PWB). SWB involves the balance of positive and negative affect, and a general satisfaction with life. A person would be said to be high in SWB if they were satisfied with their life, experienced frequent happiness and positive affect, and infrequent negative affect. Such individuals should also be free of stress, depression, and anxiety. In contrast, PWB is concerned with fulfilling human potential and engaging with the 'existential challenges of life (Keyes, Shmotkin, & Ryff, 2002, p. 1008). Ryff and Keys (1995) have operationalized PWB as involving autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Using various conceptions of SWB and PWB, research has shown that the two are empirically distinct (Compton, Smith, Cornish, & Qualls, 1996; Keyes et al., 2002; McGregor & Little, 1998; Waterman, 1993), with about 45% of people 'off-diagonal', that is, high on SWB and low on PWB or *vice versa*. A full consideration of gratitude and well-being would have to

include both SWB and PWB.

It is also not clear whether the relationship between gratitude and well-being is unique, or simply due to the effects of a third variable. McCullough et al. (2002) argued that the last 50 years of personality research has produced a myriad of measures of traits, all of which claim to predict well-being. Arguably, even if gratitude is only related to well-being through the effects of another trait, then the study of gratitude is still worthwhile, as many people are interested in gratitude in its own right. However, gratitude would have a much larger potential to provide understanding of personality if the relationship between gratitude and well-being was independent of other widely studied traits.

Early indication of a unique relationship between gratitude and well-being is provided by McCullough et al. who showed that gratitude is uniquely related to personality and well-being after controlling for the domains of the Big Five (extraversion, agreeableness, neuroticism, conscientiousness, and openness). However, more research is needed into whether gratitude is uniquely related to well-being above more specific measures of personality, (e.g., depression, anxiety, positive emotions, altruism). Whilst these are represented to some extent in the measures of the Big Five, aggregating the traits into the five domains loses the unique variance associated with each trait. To show that gratitude has a unique relationship with well-being above specific traits involves measuring each of these traits individually (Paunonen, 1998; Paunonen & Ashton, 2001; Paunonen, Haddock, Forsterling, & Keinonen, 2003; Schimmack, Oishi, Furr, & Funder, 2004). Chapter 4 presents a test of whether gratitude is related to satisfaction with life (an indictor of SWB) above the effects of the 30 Big Five facets. Chapter 5 builds on this study by testing whether gratitude is related to PWB, again testing whether this relationship is also

independent of the Big Five facets.

1.2.4 Causality Between Gratitude and Well-being

Causality between gratitude and well-being is indicated by four experiments, which have examined the effect of inducing people to focus on gratitude on a daily basis (Emmons & McCullough, 2003; Froh, Sefick, & Emmons, 2008; Lyubomirsky, Sheldon, & Schkade, 2005; Seligman, Steen, Park, & Peterson, 2005). Each of these studies have used a variant of the Emmons et al. methodology. In the experimental group participants are asked to write on a daily basis five things for which they are grateful. This exercise is continued on a regular basis, commonly every day for two weeks. A variety of control group procedures have been used, including only completing baseline and follow-up measures, listing hassles on a daily basis, and keeping a diary of how you compare favourably to other people (a placebo conditions).

The studies that have included hassles groups have invariably found that the experimental group had relatively higher levels of well-being, although the differences between the experimental condition and the other forms of control groups have not always reached statistical significance (although means are always in the expected direction). The strongest evidence for causality between gratitude and well-being come from Seligman et al. (2005) and Emmons et al. (2003) Study 3.

In Seligman et al. (2005), participants kept diaries each day for a week. In the experimental group, participants listed three good things in their lives, whereas the placebo group wrote about their earliest memories. At one-, three-, and six-month follow-up, the experimental group had very substantial decreases in depression and increases in happiness. This is remarkable as the participants were only asked to keep the diaries for one week. Anecdotal evidence suggested that the participants

found the activity self-reinforcing and chose to continue with it for much longer than the prescribed period (Seligman, 2005b). Seligman et al. (2005) also examined the effects of writing a delivering and letter of gratitude to a person who had been especially kind to the participant but who had never been properly thanked. Relative to the control group, this intervention had a very substantial effect on happiness and depression immediately post-test, which remained at one- and three-month follow up. However, at later periods happiness and depression returned to baseline levels. This suggests that any attempt to increase gratitude may need to be repeated on a regular basis to achieve sustained results.

In Emmons et al. (2003) Study 3, 65 patients with neuromuscular disorders either listed five things for which they were grateful each day for 21 days, or simply completed measures of well-being on each day. Observer reports were also obtained from the participant's partners. Self-report of positive affect, negative affect, life satisfaction, and optimism were significantly more positive for the gratitude group. Increases in gratitude were also shown to mediate the effect of group allocation on changes in positive affect, suggesting that increases in gratitude were responsible for the effectiveness of the intervention, at least for positive affect. Observer reports also indicated significant increases in the mean level of positive affect in the gratitude group. Finally, Emmons et al. asked self-report questions pertaining to the participants physical health, including physical pain, pain interference, exercise, functional status, hours of sleep, and refreshment on waking. The gratitude group scored significantly higher on both sleep questions (no other results were significant).

The results of the gratitude interventions suggest that gratitude may have a causal effect on well-being. However, questions remain about how gratitude is naturally related to well-being outside of an interventional setting, as no longitudinal

studies on gratitude have yet been conducted. Manipulating levels of gratitude provides causal evidence that gratitude leads to well-being. It does not necessarily follow that gratitude naturally leads to well-being over time. How gratitude interacts with well-being over time is a critical consideration in understanding causality between the constructs. For example, it is not known whether gratitude is an important predictor of changes in well-being during life transitions. This question also has an important applied focus, given that gratitude interventions are increasingly being promoted in a variety of settings (Bono, Emmons, & McCullough, 2004; Froh, Miller, & Snyder, 2007; Seligman, 2005b). These calls are based in part on the assumption that building gratitude will lead to an enduring cognitive resource, which will naturally lead to well-being over time; this assumption has yet to be empirically tested.

It is also not clear whether another model of causality would better represent how gratitude is related to well-being over time. For example, it could be that gratitude leads to well-being over time, as indicated by the experimental studies (causality). Alternatively, in general, it could be that well-being leads to gratitude (reverse causality). These options are not mutually exclusive; it could be that gratitude leads to well-being, and well-being leads to gratitude, with the constructs operating as an upward spiral (a feedback loop, or reciprocal causality). Chapter 6 presents two multi-wave longitudinal studies which test the rival models of causality using recent developments in structural equation modelling (Zapf, Dormann, & Frese, 1996).

1.2.5. Mechanism Underlying the Relationship Between Gratitude and Well-being

It is not known whether the relationship between gratitude and well-being is direct, or mediated by another variable. It is possible that the experience of gratitude

leads to well-being without any intermediate cognitive mechanisms. Gratitude has positive affective valance (Mayer, Salovey, Gombergkaufman, & Blainey, 1991), and on a daily basis is related to more positive and less negative affect (McCullough et al., 2004). Such constructs as satisfaction with life, happiness, and depression are related to the balance of positive and negative affect in daily life (Diener, 1984). Experiencing the positive emotion of gratitude may be directly related to well-being through effecting the daily balance of positive and negative affect. As the Gallup (1999) poll showed, 60% of adolescents report that experiencing the emotion of gratitude makes them "very happy".

Alternatively, gratitude may be related to well-being through an intermediate cognitive mechanism. The broaden-and-build theory of positive emotions (Fredrickson, 1998, 2001) suggests that positive emotions build enduring cognitive resources that are utilized in times of greater stress. Fredrickson (2004) suggests that the development of greater cognitive resources may be a mechanism explaining why gratitude is related to well-being. However, this has not currently been tested. Chapter 7 presents a test of whether gratitude is related to coping style, as a cognitive resource, and whether coping mediates the relationship between gratitude and certain aspects of well-being (such as low stress).

1.2.6. Gratitude and Physical Health

The previous study of gratitude has concentrated primarily on gratitude and mental well-being. However, the intervention by Emmons et al. (2003) suggests that gratitude may also be linked to physical health. Specifically, they found that the gratitude intervention caused greater hours of sleep and refreshment upon waking. Sleep is related to a very large variety of important life outcomes, including mental well-being (Pilcher, Ginter, & Sadowsky, 1997), immune function (Motivala & Ir-

win, 2007), cognitive and motor performance (Pilcher & Huffcutt, 1996), and academic performance (Gray & Watson, 2002). The direct costs of assessing and treating insomnia cost the US alone $14 billion dollars a year (see Espie, 2002). Given the importance of sleep, the link between gratitude and sleep is a promising lead for gratitude research. There are three immediate lines of inquiry needed. First, it needs to be established whether trait gratitude is linked to sleep, to show that Emmons et al.'s findings generalize to individual differences in gratitude. Second, sleep has several components, including sleep quality, sleep latency (how long it takes to get asleep), sleep duration, sleep efficiency (hours spent asleep relative to those spent in bed), sleep disturbances, use of sleep medicine, and daytime dysfunction (e.g., difficulty staying awake during the day). It needs to be showed which, if any, of these components of sleep are related to gratitude. Third, the mechanisms explaining this relationship need to be explored; to date no such mechanisms have been suggested. Chapter 8 presents and tests a new model of the relationship between gratitude and sleep to address these three questions.

1.3. Overview of Thesis

This thesis aims to answer the six key outstanding questions about gratitude as indicated in the above brief review. First, a new social cognitive model is developed, which integrates trait and state levels of gratitude, as well as the effect of social situation. This is tested with three empirical studies (Chapter 2). Second, two studies test whether the three measures of gratitude (and their constituent 12 sub-scales) are assessing the same construct, and whether gratitude is conceptually a single or multifactorial construct (Chapter 3). Third, two separate studies test whether gratitude is uniquely related to SWB (Chapter 4) and PWB (Chapter 5), above the effects of other personality traits. Fourth, two longitudinal studies test the direction of the rela-

tionship between gratitude and well-being (Chapter 6). Fifth, a multi-sample study tests whether an adaptive coping style is a mechanism which explains why gratitude is linked to various aspects of well-being (Chapter 7). Sixth, a new model is developed specifying the mechanisms underlying the relationship between gratitude and sleep, which is tested with a large community sample (Chapter 8). Finally, an overview is provided of how these 11 empirical studies provide answers to six key outstanding questions about gratitude and a discussion of the new lines of inquiry that arise from this research (Chapter 9).

CHAPTER 2

2. A SOCIAL-COGNITIVE MODEL OF TRAIT AND STATE LEVELS OF GRATITUDE

2.1. Abstract

Three studies tested a new model of gratitude, which specified the generative mechanisms linking individual differences (trait gratitude) and objective situations with the amount of gratitude people experience after receiving aid (state gratitude). In Study 1 all participants ($N = 253$) read identical vignettes describing a situation where they received help. People higher in trait gratitude made more positive beneficial appraisals (seeing the help as more valuable, more costly to provide, and more altruistically intended), which fully mediated the relationship between trait and state levels of gratitude. Study 2 ($N = 113$) replicated the findings using a daily process study, where participants reported on real events each day for up to 14 days. In Study 3, participants ($N = 200$) read vignettes experimentally manipulating objective situations to be either high or low in benefit. Benefit appraisals were shown to have a causal effect on state gratitude, and to mediate the relationship between different prosocial situations and state gratitude. The three studies demonstrate the critical role of benefit appraisals in linking state gratitude with trait gratitude and the objective situation.

2.2. Introduction

Throughout history, philosophical and theological discussions have viewed gratitude as fundamental to understanding people, their relationships, and the operation of society (Emmons & Crumpler, 2000). In contemporary society gratitude seems still to play an important role, with most people reporting feeling gratitude very frequently (McCullough et al., 2002). However it is only recently that psychological research has begun systematically to study gratitude (McCullough et al., 2001), possibly in part due to the traditional neglect of positive emotions in psychology (see Linley et al., 2006).

Emotions can be conceptualized on state and trait levels (Rosenberg, 1998). At the state level, emotions involve temporary affects or longer duration moods, which may have associated thought and action tendencies. At the trait level, emotions are characterized by individual differences in the average frequency with which affects and moods are experienced in daily life. The study of gratitude has almost exclusively focused on one or other of these levels, and there is little knowledge about how trait and state levels of gratitude interact (McCullough et al., 2004).

Trait gratitude has been shown to have unique associations with other prosocial traits (e.g. McCullough et al., 2002; Wood, Joseph, & Linley, 2007a; Wood, Maltby, Stewart, & Joseph, 2008) and to be a causal predictor of well-being (Emmons & McCullough, 2003; Lyubomirsky et al., 2005; Seligman et al., 2005). State gratitude is an affect which occurs after a person has been helped, and which motivates the reciprocation of aid (Bartlett & DeSteno, 2006; McCullough et al., 2001; Tsang, 2006). Using a daily process methodology, McCullough et al. (2004) have shown that higher trait levels of gratitude are related to more frequent and intense experiences of state gratitude in daily life. However, the mechanisms which

explain why trait gratitude is related to state gratitude have not yet been demonstrated. If two people receive help in an identical situation, it is intuitive that the person higher in (trait) gratitude would feel more (state) gratitude. There is currently no explanation of why this might occur.

We propose a model where characteristic interpretive biases in appraising prosocial situations mediate the relationship between trait and state levels of gratitude. First, we suggest that after a person is helped he or she makes several attributions about the nature of the aid, and the attributions naturally group together to form a benefit appraisal. Second, we suggest that the benefit appraisals cause the experience of state gratitude. Third, we suggest that characteristic interpretive biases lead people higher in trait gratitude to make more positive benefit appraisals. Fourth, we suggest that more positive benefit appraisals explain why trait and state levels of gratitude are linked. This model is presented in Figure 2.1.

Two previous studies suggest which attributions may compose a benefit appraisal. Tesser, Gatewood, and Driver (1968) gave participants three vignettes detailing a hypothetical situation in which they were given help by another person. The vignettes were manipulated to provide low, medium or high perceptions of (a) the value of the help, (b) how much it cost the benefactor to provide the help, and (c) to what extent the benefactor genuinely wanted to help them (as opposed to having ulterior motives). Participants rated their attributions of the situation in terms of value, cost, and genuinely helpfulness, and indicated how they would feel on a composite
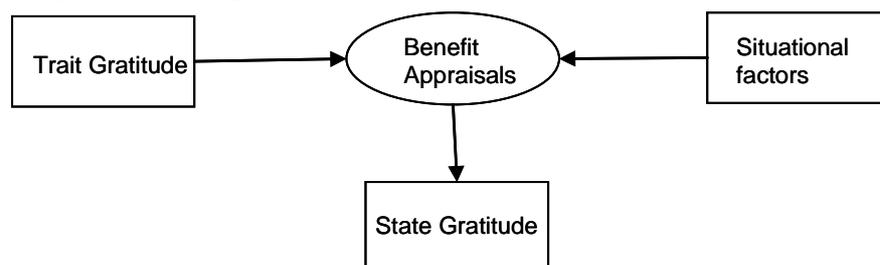
Figure 2.1: A theoretical model of trait and state levels of gratitude

variable of gratitude and indebtedness. Manipulating the vignettes led to different attributions, suggesting that these attributions are in part caused by the objective situation. Complex interactions were seen between the manipulations, where manipulating one appraisal affected perceptions of other appraisals (e.g., manipulating value additionally led to higher perceptions of genuine helpfulness, and manipulating genuine helpfulness additionally led to higher perceptions of value). This suggests that these appraisals are not independent, but perhaps operate as part of a wider benefit appraisal. Manipulating perceptions of value, cost, and genuine helpfulness caused increases in gratitude/indebtedness, and perceptions of these variables jointly accounted for between 52% and 64% of the variance in the gratitude/indebtedness variable.

Tesser et al. (1968) should be treated with caution as gratitude and indebtedness have since been shown to be distinct emotions, with different causes and associated action tendencies (Watkins et al., 2006). However, confidence in the findings is increased by Lane and Anderson (1976), who demonstrated similar findings through a similar methodology by manipulating value and the benefactor's good intentions. Taken together, these two studies present evidence for which attributions may combine to form a benefit appraisal. They also provide support for our model's predictions that benefit appraisals are in part caused by situational factors and that benefit appraisals cause state gratitude (see Figure 2.1).

If benefit appraisals are the proximal causal agents of state gratitude, then these appraisals are the likely mechanism with which to explain the relationship between trait and state levels of gratitude. We expect trait gratitude to be related to characteristic interpretive biases in benefit appraisals. Essentially, we suggest that people who feel a lot of gratitude in life have specific appraisal tendencies which

lead them to characteristically appraise the benefits of help-giving situations more positively than less grateful people.

Previous research has suggested that people process information about others in such a way that is consistent with their own self-identity (Bargh, Lombardi, & Higgins, 1988; Markus, 1977). For example, highly masculinity is associated with a bias in information processing which emphasizes the masculine characteristics of others (Markus, Smith, & Moreland, 1985), even when the other people's behavior is irrelevant to the issue of masculinity (Higgins & Brendl, 1995). We suggest that a similar process occurs where grateful people have specific appraisal tendencies leading to gratitude relevant interpretations of the behavior of other people. Specifically we suggest that grateful people make distinct benefit appraisals, perceiving the help they receive as more costly to the benefactor, more genuinely intended to help them (rather than ulteriorly motivated), and more valuable. Broadly, this would also be consistent with the large body of work showing that there are distinct attributional biases associated with depression (e.g. Bodner & Mikulincer, 1998), and emotions more generally (Beck, 1976). The current studies aim to test whether more positive benefit appraisals represent distinct attributional biases of grateful people, and whether these biases are the mechanism explaining why grateful people feel more gratitude in social situations. These predictions lead to the model presented in Figure 2.1. This model is fundamentally social-cognitive in nature (cf. Bandura, 1999; Cervone, 2004) as it integrates social situations, individual differences, and the mediating cognitive mechanisms.

Three studies are presented which test this social-cognitive model of gratitude. In Study 1 identical vignettes were presented to participants to test whether, when faced with the same situation, people higher in trait gratitude appraise the situation

as more beneficial, and whether benefit appraisals mediate the relationship between trait and state levels of gratitude. Study 2 replicates the first study using a daily-process methodology, where people reported on real events which happened over a two week period. This methodology also revealed the extent to which state gratitude was determined by situational factors relative to stable individual differences. In Study 3 benefit appraisals are directly manipulated to see whether benefit appraisals are affected by objective situation, and whether benefit appraisals have a causal effect on state gratitude. Together these three studies provide a full test of the model in Figure 2.1.

2.3. Study 1

2.3.1. Introduction

Study 1 used structural equation modeling to test the social-cognitive model of gratitude. Benefit appraisal was defined as a latent variable, with the attributions of cost, value, and genuine helpfulness as indicators. The core test of Study 1 focused on whether benefit appraisals mediated the relationship between trait and state levels of gratitude.

2.3.2. Method

2.3.2.1. Participants

Two hundred fifty three undergraduates (214 females, 39 males) at a British university participated in return for course credit. Several alternate options for course credit were available for students who did not want to participate. Participants' ages ranged from 18 to 38 ($M = 19. 53$, $SD = 2. 62$), with 94% aged between 18 and 21. Participants were predominantly of a White (78%) or Indian (10.3%) ethnic background.

2.3.2.2. Design and Procedure

Each participant filled out the same questionnaire. This questionnaire contained three vignettes, each of which was followed by five questions. Each of the vignettes detailed a situation where the participant had been helped by another person. The topics of the vignettes were being assisted with coursework, requesting and receiving a job reference and being assisted by another customer in a supermarket (see the Appendix for a sample vignette). The situations described were designed to be ambiguous, and not to suggest any particular attribution.

Participants were asked to imagine that they were being helped in the way the vignette had described. They were then asked to answer the five questions that followed presentation of the vignette on the six point scales:

1. "How much benefit do you think that the person expected to get in return for helping you?" (1 = 'no benefit', 6 = 'a lot of benefit'). This item was reverse coded, and measured the extent to which participants believed that their benefactor did not expect to gain anything from providing the help, which we termed *selflessness*.

2. "How much was this person motivated by a sincere desire to help you?" (1 = 'not at all motivated', 6 = 'totally motivated'). This assessed perceptions of the benefactor's *genuine helpfulness*.

3. "How much did it cost the person to help you (in terms of time, effort, financial cost etc.)?" (1 = 'nothing', 6 = 'a great deal'). This assessed perceived *cost*.

4. "How valuable do you think that this person's help was to you?" (1 = 'not at all valuable', 6 = 'extremely valuable'). This assessed perceived *value.*

5. "How much gratitude would you feel towards this person?" (1 = 'no gratitude', 6 = 'a very lot of gratitude'). This assessed *state gratitude*.

Each of the responses to these five questions were averaged over the three vignettes, so each participant had one score for each of the study variables. The self-

lessness question showed a very poor pattern of correlations with all of the other variables, and was omitted from subsequent analysis.

Participants also completed the *Gratitude Questionnaire - 6* (GQ-6; McCullough et al., 2002), as a measure of trait gratitude. The GQ-6 is a six item self-report inventory rated on a 1 ('strongly disagree') to 7 ('strongly agree') scale. Two items are reverse scored, and potential scores range from 6 to 42, with higher scores representing higher levels of trait gratitude. Items measure how frequently people feel gratitude (e.g. , "Long amounts of time can go by before I feel grateful to something or someone" [reverse coded]), the intensity of the gratitude felt (e.g., "I feel thankful for what I have received in life"), and the range of events or people that elicit gratitude (e.g., "I feel grateful to a wide variety of people"). Good internal consistency has previously been shown (alpha = .82), and the GQ-6 is comprised of a robust one factor solution (McCullough et al., 2002). The order of the presentation of the GQ-6 was counterbalanced, so participants received the GQ-6 either before or after the presentation of the vignettes.

2.3.3. Results

Covariance structural equation modeling (SEM) was performed using AMOS (Arbuckle, 2006). Model fit was tested with the chi-squared test, the comparative fit index (CFI), and the standardized root-mean-square residual (SRMR). Based on their Monte Carlo analysis, Hu and Bentler (1999) suggest that good fit is indicated when CFI > .95 and SRMR < .08, and the least sum of Type I and Type II errors is present when using a combinational rule of CFI > .95 and SRMR < .09. Full correlation/ covariance tables and descriptive statistics for each study are available from the first author.

The SEM model was designed to test whether benefit appraisals mediated the

relationship between trait and state levels of gratitude. The basic model is presented in Figure 2.2, and showed an excellent fit (χ^2 [$df = 4$] = 6.90; CFI = .99; SRMR = .03).

To test mediation, we used Baron and Kenny's (1986) three steps and Sobel's (1982) test. Baron and Kenny's (1986) first step requires the predictor to be related to the outcome. An standard univariate regression analysis showed that trait gratitude predicted state gratitude ($\beta = .23$, $p < .001$). The second and third steps were tested with the SEM model in Figure 2.2. This model shows that the predictor (trait gratitude) is related to the mediator (benefit appraisal). The model also shows that mediator (benefit appraisal) is related to the outcome (state gratitude) controlling for the predictor (trait gratitude). This fulfills Baron and Kenny's second step.

The model further shows that controlling for the benefit appraisals substantially reduced the relationship between trait and state levels of gratitude (from $\beta = .23$, $p < .001$ to $\beta = .02$, $p = .65$). Sobel's (1982) test shows whether this reduction in beta is statistically significant. This test is mathematically equivalent to testing the significance of the mediated pathway from trait gratitude to state gratitude through benefit appraisals (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). The
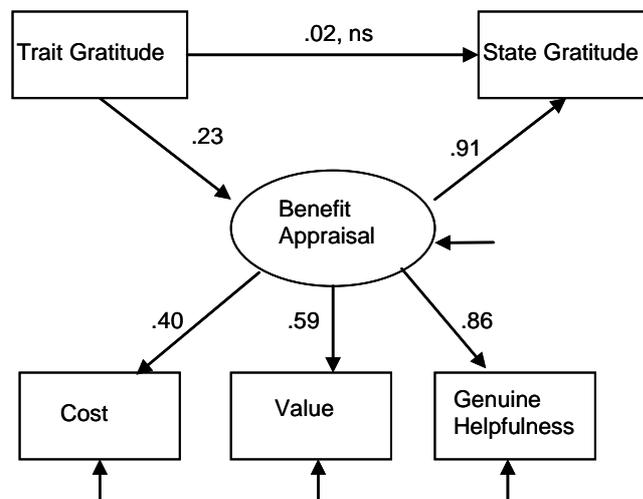
Figure 2.2: A structural equation model, Study 1. All values are standardized. *ns* = non significant, all other paths significant at $p < .001$. Model fit: χ^2 ($df = 4$) = 6.09; CFI = .99; SRMR = .03.

Sobel test was significant ($z = 3.60$, $p < .001$) indicating that mediation had occurred.

To test whether mediation was complete we compared the model in Figure 2.2 with

a second model where there was no direct path from trait to state gratitude. The fit of

the second model was excellent (χ^2 [$df = 5$] = 7.09; CFI = .99; SRMR = .03), and not

significantly worse than the basic model in Figure 2.2 ($\Delta\chi^2 = .19$; $\Delta df = 1$; $p = .66$).

Thus on the basis of parsimony the second model is to be preferred, and full media-

tion was indicated. The demonstration of full mediation completes Baron and

Kenny's third step.

2.3.4. Discussion

Study 1 presented preliminary support for the social-cognitive model of grati-

tude. Cost, value, and genuine helpfulness were shown to be good indicators of a

latent benefit appraisals construct. When measured without error, the benefit apprais-

als that people made explained 83% of the variance in state gratitude. When faced

with identical hypothetical situations, people higher in trait gratitude made more

positive benefit appraisals, and believed that they would feel more state gratitude.

Benefit appraisals fully mediated the relationship between trait and state levels of

gratitude.

2.4. Study 2

2.4.1. Introduction

Although widely used the vignette approach above suffers from some limita-

tions, which we addressed in Study 2. The validity of vignette studies rests on the

assumption that participants are both able to imagine the situation described, and that

they have sufficient knowledge to accurately assess how they would think and feel in

the given situation. Research into affective forecasting has shown that people are not

always able to predict how they will feel in future situations (Gilbert, Lieberman,

Morewedge, & Wilson, 2004; Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998).

It is therefore possible that Study 1 only assessed people's perceptions regarding the

appraisals they would make and the amount of gratitude they would feel rather than

the level of these variable they would actually experience in real life.

To rule out the possibility that we were only assessing perceptions of grati-

tude rather than actual appraisals, in Study 2 we used a daily-process methodology

(Bolger, Davis, & Rafaeli, 2003), where people reported on real events which had

recently occurred. Each day for 15 days participants were asked to record a real in-

stance where they had been helped during that day. They then rated the help in terms

of cost, value, and genuine helpfulness, as well as rating the amount of gratitude they

had felt when the event occurred. A daily process methodology also enabled the esti-

mation of the proportion of the variance in state gratitude that was due to within per-

son (situational) variability, and the proportion of variance due to between person

(individual difference) variability (Nezlek, 2001). This will demonstrate whether

most of the variance in state gratitude is situational variability (which may be par-

tially predicted from benefit appraisals) or whether most of the variance is between

person variability (which may be partially predicted by personality). The results

were analyzed with multilevel data techniques, which permitted the examination of

the interactions between trait gratitude and the daily experience of benefit appraisals

and state gratitude (Luke, 2004; see also McCullough et al., 2004).

2.4.2. Method

2.4.2.1. Participants

One hundred and thirteen (85 females, 28 males) first year undergraduates

from a major British university participated in the study as part of training in re-

search methods. Participants were not penalized if they chose not to participate in

the study. Ages ranged between 18 and 26 years ($M = 18.68$, $SD = 1.23$). Participants

were predominantly of a White (84.1%) or Chinese (5.3%) ethnic origin.

2.4.2.2. Design and procedure

The study used a diary methodology, where participants were asked to com-

plete a questionnaire each day for 15 days. Diary studies allow people to report on

real events that have happened to them, within a time frame that limits retrospective

bias. Given the high response burden on participants, it is particularly important to

ensure compliance, particularly regarding whether people complete the question-

naires on the correct day, rather than completing all questionnaires at the end of the

study (Bolger et al., 2003). To address this issue we created an internet page on the

university network. Participants logged onto this page each day using their university

e-mail address as an unique identifier. Computers are readily available throughout

the campus, and participants could additionally log on remotely using the internet.

The time and date of the daily questionnaire submission was automatically encoded

by the server following submission, making false reporting of the time of submission

near impossible.

Participants were asked to try and complete an entry for every day, but told

that if they forgot or were unable to complete a daily entry, then they should con-

tinue as normal the next day. The number of days participants completed ranged

from 1 to 15 days ($M = 8.92$, $SD = 3.87$). This represents a 59.4% compliance rate,

which is comparable with other diary studies where submission time was collected

electronically. For the data techniques used it was not necessary for all participants

to complete the same number of days, so no participant was excluded for low re-

sponse rate (Nezlek, 2001).

2.4.2.3. Measures

On the day immediately before the start of the diary study participants completed the measure of GQ-6 measure of trait gratitude, as in Study 1. On each subsequent day participants were first asked to provide a paragraph that would "describe one event that occurred today where someone did something for you (e.g., lent you money, given you a lift)". These responses were not coded, but rather were intended to act as a cue for the participants to better remember the event. Participants were then asked the same four questions as in Study 1, designed to measure the state appraisals of cost, value, and genuine helpfulness. They were also asked how much gratitude they had felt when the event had occurred.

2.4.2.4. Data analysis

The data had a hierarchical structure, where each of the daily observations are nested within individuals. Multilevel modeling was performed using the HLM 6 software (Raudenbush, Bryk, Cheong, & Congdon, 2004). Multilevel modeling allows the simultaneous modeling of within person (Level 1) daily models, between person (Level 2) models of individual differences, as well as the interactions between the levels (Nezlek, 2001). Conceptually, multilevel modeling computes separate regression intercepts and slopes for each of the participants, on each of the days. The average (between person estimates) of these intercepts and slopes is estimated and modeled as a function of between person variables (for a description of the mathematical process see Luke, 2004). As HLM does not model latent variables, we restricted the analysis to a path model of observed variables.

2.4.3. Results

We first examined what proportion of the variance in state gratitude and the appraisals could be accounted for by (a) within person (state or situational) determinants, and (b) between person (stable or dispositional) determinants. The interclass

correlation coefficient (ICC) was obtained for state gratitude and each of the appraisals by dividing the between person variance by the sum of the between and within person variance. The ICC for state gratitude was .22 (so 22% of the variance in state gratitude is attributable to between person factors, and 78% of the variance is within person, situational variability). The ICC was .18 for value, .16 for cost, and .25 genuine helpfulness. It seems that the vast majority of variance in state gratitude and in the attributions are accounted for by situational factors, with a moderate proportion of variance (between 16% and 25%) accountable to between person differences.

2.4.3.1. Path model

Multilevel modeling was used to test mediation, using the Baron and Kenny (1986) steps and the Sobel (1982) test. The application of these tests to multilevel designs is outlined by Krull and MacKinnon (2001). A multilevel regression showed that trait gratitude predicted daily experiences of state gratitude following help ($b = .03$, $SE = .01$, $\beta = .12$, $p < .01$), fulfilling Baron and Kenny's first step. Further multilevel regressions were performed to create the path diagram presented in Figure 2.3.

Trait gratitude led to appraisals of value and genuine helpfulness. Appraisals of value and genuine helpfulness led to state gratitude, controlling for trait gratitude. This fulfills the Barron and Kenny's second step. Controlling for value and genuine
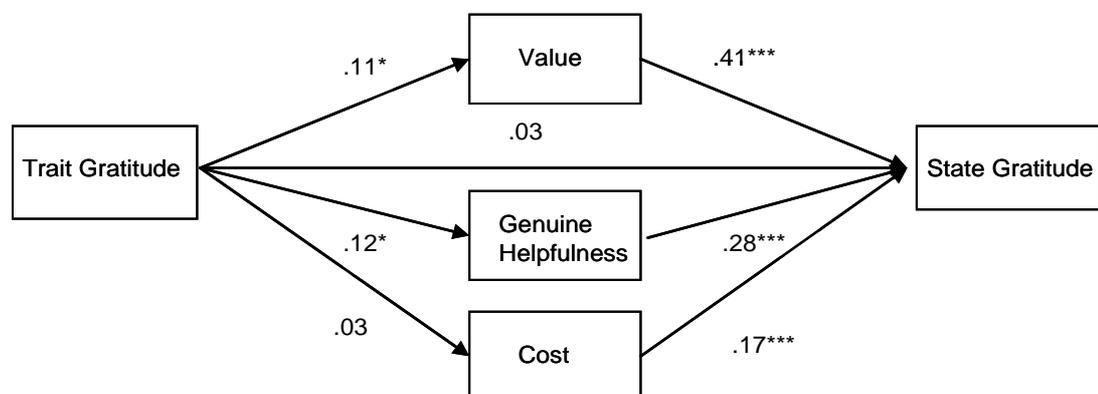
Figure 2.3. A path diagram based on multilevel modeling, Study 2. *$p < .05$, *** $p < .001$.

helpfulness reduced the relationship between trait and state gratitude from a significant β of .12 ($p = .03$) to a non-significant β of .02. This fulfills Baron and Kenny's third step, and indicated full or very substantial mediation. The Sobel (1982) test indicated that the mediated pathway from trait gratitude to state gratitude through value was significant ($z = 2.12$, $p = .03$), as was the mediated pathway through genuine helpfulness ($z = 2.05$, $p = .04$).

2.4.4. Discussion

Study 2 provided further support for the social-cognitive model of gratitude by fully replicating Study 1 using real events rather than hypothetical scenarios. Additionally, the vast majority of the variance in benefit appraisals was shown to be due to within person (situational) causes, rather than between person individual differences. It seems that state gratitude is largely determined by situations (and their interpretations), with trait gratitude being a smaller but robust determinant of state (through the mediating mechanism of benefit appraisals). The convergence of the results from Study 1 and 2 support the use of a vignette methodology for gratitude research.

2.5 Study 3

2.5.1. Introduction

Study 1 presented cross-sectional support of the social-cognitive model. Study 2 provided support for the predicted direction of the relationship between trait gratitude and both benefit appraisals and state gratitude, as the measurement of trait gratitude temporally preceded the events on which the appraisals and emotional reaction was based. Study 3 completed the test of the social-cognitive model, through experimentally manipulating the objective situation to test whether situations have a causal effect on benefit appraisals, and whether benefit appraisals have a causal effect on

state gratitude. The latent benefit appraisal was manipulated by presenting two groups of participants with vignettes that were either high or low in each of the factors of cost, value, and genuine helpfulness.

In Study 3 we also aimed to see whether trait gratitude had an unique relationship with the benefit appraisals, or whether this relationship was due to a third personality variable. Gratitude has been shown to correlate moderately with the Big Five personality traits (McCullough et al., 2001), which appear to represent personality at the highest level of abstraction (Costa & McCrae, 1995; Goldberg, 1993; McCrae & Costa, 1999). The Big Five traits of extraversion and agreeableness both represent outgoing and prosocial tendencies (Costa & McCrae, 1995), which could be the real explanation of why grateful people make positive benefit appraisals after they have been helped. Alternatively, the appraisals of grateful people may lie in trait positive or negative affect, given the effects of mood on cognition (see Eich, Kihlstrom, Bower, Niedenthal, & Forgas, 2000). If this were the case, then the relationship between gratitude and state appraisals should not exist independently of the Big Five traits of extraversion, which includes trait positive affect, or neuroticism, which includes trait negative affect (Costa & McCrae, 1995). In Study 3 we administered the Big Five Inventory (John & Srivastava, 1999) along side the measure of trait gratitude, with the purpose of assessing whether trait gratitude was related to state gratitude and benefit appraisals above and beyond the effect of other broad personality variables.

2.5.2. Method

2.5.2.1. Participants

Two hundred participants (102 male, 98 female) were recruited from a local college of further education. Participants were aged between 18 and 59 ($M = 32.52$,

SD = 9.79), and were predominantly White (63%), Indian (5%), or Black Caribbean (7%).

2.5.2.2. Design and procedure

Participants were randomly assigned to one of two groups. Both groups completed a questionnaire packet and read six vignettes. The vignettes that the participants received differed by group. We used a uni-factorial design where participants received vignettes either high or low in each of the factors of cost, value, and genuine helpfulness. Manipulating these factors together produced the largest possible difference between groups. A multi-factorial design was not viable, as each of the factors were shown in the first two studies to be indicators of the same latent construct, and the theoretical interest is in the causal effect of the latent construct and not in the unique effects of its constituent factors. Additionally, Tesser et al. (1968) showed that manipulating one factor (e.g., value) lead to changes in another factor (e.g., genuine helpfulness), suggesting that a multifactorial design would be confounded.

In Group 0 each of the vignettes detailed a situation with objectively low benefit, and in Group 1 each of the vignettes detailed a situation with objectively high benefit. All of the vignettes followed the same form. Both groups received the same first sentence describing a general hypothetical situation in which the participants were helped. The second sentence manipulated value (Group 0 = low, Group 1 = high). Both groups received the same third sentence, which was simply a filler sentence. The fourth sentence manipulated genuine helpfulness (Group 0 = low, Group 1 = high), and the fifth sentence manipulated cost (Group 0 = low, Group 1 = high). An example of the vignettes given to both groups is presented in the Appendix. In essence, participants in Group 0 received six vignettes which each described a situa-

tion low in objective benefit (operationalized as low in value, cost, and genuine help-fulness) and participants in Group 1 received six vignettes which each described a situation high in objective benefit (operationalized as high in value, cost, and genuine helpfulness). Any difference between the groups should be directly attributable to the objective value of the situation described.

2.5.2.3. Measures

2.5.2.3.1. Measures from Study 2. All participants completed the GQ-6 (McCullough et al., 2002), and following presentation of the vignettes answered the same questions on benefit appraisals and state gratitude as in Study 2.

2.5.2.3.2. Big Five. The Big Five Inventory (BFI; John & Srivastava, 1999) was used to measure the traits of neuroticism, agreeableness, extraversion, openness, and conscientiousness. The 44 item BFI has between 8 and 10 items for each trait, and for each trait Cronbach's alpha and test-retest reliability have been shown to range from .79 to .90 (John & Srivastava, 1999). The BFI also has very high convergent validity with other measures of the Big Five. Correcting for unreliability, each of the sub-scales correlates with the corresponding scales of the other widely used measures at between $r = .83$ and $r = .99$ (mean $r = .94$).

<div align="center">

2.5.3. Results

</div>

2.5.3.1. Experimental Analysis

We tested whether (a) the situational manipulation had increased state grati-tude, (b) whether the manipulation had successfully increased benefit appraisals, and (c) whether the manipulation had led to increased state gratitude because of increased benefit appraisals. Essentially Step *a* represents a test of the experimental effect of the IV (between group manipulation of the objective benefit of the situation) on the DV (state gratitude), Step *b* represents a manipulation check, and Step *c*

represents a test of whether the experimental effect was due to the intended manipu-

lation. Conceptually, this test is equivalent to testing whether benefit appraisals me-

diate the relationship between the objective situation and state gratitude.

The group variable was dummy coded 0 (low benefit) or 1 (high benefit). A

standard univariate regression analysis showed that the manipulation had increased

state gratitude ($\beta = .53$, $p < .001$), fulfilling Barron and Kenny's (1986) first step of

mediation. The second part of the analysis is presented in the structural equation

model in Figure 2.4a. The fit of this model was excellent (χ^2 [$df = 4$] = 3.2; CFI

= .99; SRMR = .01).

The group manipulation led to higher levels of benefit appraisals, showing that

the manipulation was successful. Whilst controlling for the group manipulation,

benefit appraisals led to state gratitude. This fulfils Barron and Kenny's second step.

The model further shows that controlling for benefit appraisals substantially reduced

the relationship between the group manipulation and state gratitude (from $\beta = .53$, p

< .001 to $\beta = -.06$, $p = .32$). This reduction in β was statistically significant ($z = 6.87$,

$p < .001$) according to Sobel's (1982) test. To test whether mediation was complete

we compared the model in Figure 2.4a with a second model where there was no di-

rect path from the group manipulation to state gratitude. The fit of the second model

was excellent (χ^2 [$df = 5$] = 4.2; CFI = .99; SRMR = .01), and not significantly

worse than the basic model in Figure 2.4a ($\Delta\chi^2 = 1.0$; $\Delta df = 1$; $p = .32$). Thus on the

basis of parsimony the second model is to be preferred, and full mediation was indi-

cated. The demonstration of full mediation completes Baron and Kenny's third step.

2.5.3.2. Moderation

We tested whether trait gratitude moderated the relationship between the group

manipulation and state gratitude or the benefit appraisals. Moderation would occur,

Figure 2.4a
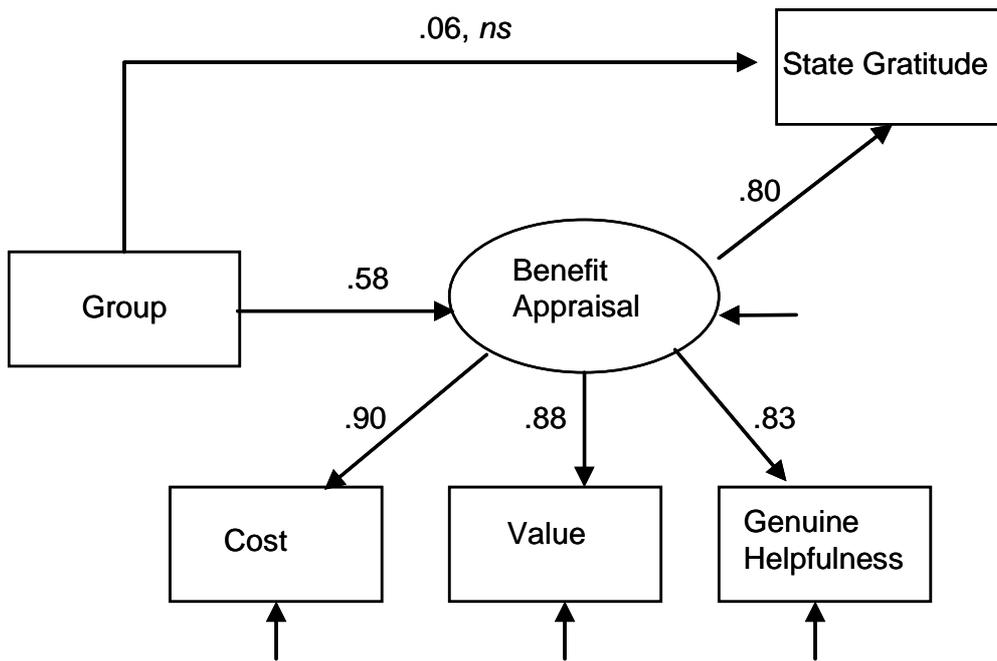
Figure 2.4b
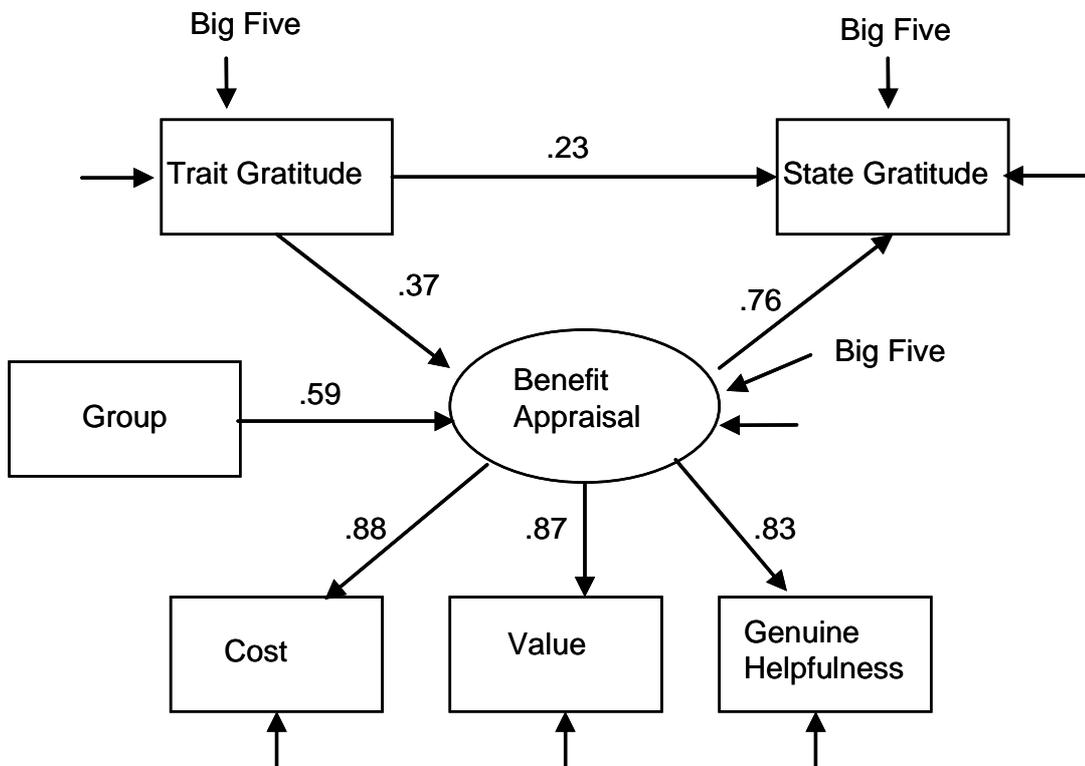
Figure 2.4. Two structural equation models, Study 3. All values are standardized. *ns* = non significant, all other paths significant at $p < .001$. Model 4a fit: χ^2 (*df* = 4) = 3.23; CFI = .99; SRMR = .01; Model 4b fit: χ^2 (*df* = 23) = 44.5; CFI = .98; SRMR = .04.

for example, if people lower (or higher) in trait gratitude were more susceptible to the effect of the situational manipulation. Moderation was not predicted by the model, but would invalidate the mediational findings if present. Using the procedures described by Aiken and West (1991), four multiple regressions were performed to sequentially test whether different levels of trait gratitude (the moderator) changed the magnitude of the relationship between the manipulation (the predictor) and the outcome variables of state gratitude, cost appraisals, genuine helpfulness appraisals, and value appraisals. In each of these analyses the outcome was regressed on the predictor (which was effects coded), the moderator (which was standardized), and an interaction variable formed by multiplying the predictor and the moderator. In each of the tests the interaction variable was not significant (largest $\beta = -.04$, $t = -.670$, $p = .50$). Additionally, removing the interaction variable from the multiple regression lead to non-significant decreases in R^2 (largest $\Delta R^2 = .001$, $\Delta F = .45$, $p = .50$). These analysis indicated that moderation had not occurred.

2.5.3.3. Testing the full model

We tested whether benefit appraisals still mediated the relationship between trait and state levels of gratitude with the effects of the Big Five covaried. Gratitude was significantly correlated with extraversion ($r = .35$, $p < .001$), agreeableness ($r = .49$, $p < .001$), and neuroticism ($r = -.18$, $p = .01$), showing the importance of covarying these variables. We first conducted a standard univariate multiple regression, regressing state gratitude on trait gratitude and each of the Big Five. With the effects of the Big Five controlled, trait gratitude still predicted state gratitude ($\beta = .47$, $p < .001$), fulfilling Barron and Kenny's first step. The remaining steps were tested with the full model presented in Figure 2.4b. Each of the Big Five were included as observed variables, and paths from each of the Big Five led to trait gratitude, state

gratitude, and benefit appraisals. As such all of the results in Figure 2.4b are inde-

pendent of the effect of the Big Five. The fit of this model was very good (χ^2 [df =

23] = 44.53; CFI = .98; SRMR = .04).

As shown in Figure 2.4b trait gratitude was related to benefit appraisals. With

trait gratitude controlled, benefit appraisals were still related to state gratitude. This

fulfils Barron and Kenny's second step. Controlling for benefit appraisals substan-

tially reduced the relationship between trait and state levels of gratitude (from β

= .47, p < .001 to β = .23, p = .32), a reduction in b which Sobel's (1982) test

showed was statistically significant (z = 5.30, p < .001). This indicated substantial or

complete mediation. Demonstrating at least partial mediation completes Barron and

Kenny's (1986) third step. To test whether mediation was complete we compared the

model in Figure 2.4b with a second model where there was no direct path from trait

to state gratitude. The fit of the second model was good (χ^2 [df = 24] = 64.85; CFI

= .95; SRMR = .04), but was significantly worse than the basic model in Figure 2.4b

($\Delta\chi^2$ = 20.32; Δdf = 1; p < .001). It was concluded that mediation was substantial

but not complete. To test whether the use of the Big Five as covariates substantially

changed the results, all analysis was repeated without including the Big Five. Each

of Barron and Kenny's steps were still met, Sobel's test remained significant, and

the bs reported in Figure 2.4b changed by a maximum of β = .08. It appears that in-

cluding the Big Five as covariates did not substantially change the model.

2.6. General Discussion

Three studies provided support for the social-cognitive model of gratitude in

Figure 2.1. Studies 1 and 3 showed that following help, people's appraisals of cost,

value, and genuine helpfulness combined to form a latent benefit appraisal variable.

In each of the studies trait gratitude was robustly associated with benefit appraisals,

and in Study 3 this relationship was shown to be distinct from the Big Five personality traits. In each study, benefit appraisals were shown to substantially or completely mediate the relationship between trait and state levels of gratitude. This suggests that benefit appraisals are the generative mechanism which explain why grateful people feel more gratitude after they receive aid. Study 2 shows that this finding is method invariant, occurring both after people considered hypothetical vignettes, and following real events which occurred over a two week period. Finally, Study 3 showed that experimentally manipulating the objective benefit of the situation caused changes in state gratitude as the result of altered benefit appraisals. Together, the three studies provided full support for the social-cognitive model in Figure 2.1, where individual differences in trait gratitude and situational factors lead to benefit appraisals, and benefit appraisals lead to the experience of state gratitude.

Study 2 indicated the relative importance of situational factors and individual differences in determining state gratitude. Over 14 days, 78% of the variance in daily reports of state gratitude was due to unique, within person, situational variability on the individual days. Accordingly, 22% was due to stable, between person, individual differences in the experience of state gratitude. These findings explain the magnitude of the effects seen across the three studies (cf. Luke, 2004; Nezlek, 2001). If most of the variance in state gratitude is situational, then appraisals should be the primary predictor of state gratitude, in that they capture both the objective situation, and the individuals' perceptions of the objective situation. This is the pattern that was seen over the three studies, with benefit appraisals accounting for a very substantial amount of the variance in state gratitude (between 64% and 83% when measured without error). In a related vein, the situational manipulation had a large effect on state gratitude ($r = .53$).

If a small but reliable amount of variance in state gratitude is due to between person differences, then individual differences in gratitude should be a small but robust predictor of benefit appraisals and consequently of state gratitude. Across the three studies, trait gratitude was seen to be a small to moderate predictor of benefit appraisals and state gratitude. These findings add detail to the model in Figure 2.1, suggesting the relative importance of the variables. The most variance is accounted for by the situation and benefit appraisals, with individual differences playing a small but important role through exerting a characteristic bias over the appraisal of the situation. This relative importance is consistent with recent findings in the debate regarding the relative importance of personality and situation in determining behavior (Fleeson, 2004). Personality traits are now seen to be only a small predictor of behavior at any given moment, but they exert a subtle effect on behaviour, which when averaged across days, reliably distinguishes the person from others (Fleeson, 2001).

The results supported a mediational but not moderational model of gratitude. This is an important distinction (Baron & Kenny, 1986). Each study showed that benefit appraisals mediated trait and state levels of gratitude. Mediation suggests that benefit appraisals are *why* grateful people experience more state gratitude following help. Mediation is based on the assumption of linear relationships between the variables (where, for example, gratitude is equally as strongly related to benefit appraisals irrespective of whether a person has high, medium, or low gratitude). Study 3 ruled out that trait gratitude was a moderator between the objective situation and state gratitude. Moderation would occur if trait gratitude had a different relationship with benefit appraisals and state gratitude dependant on the objective situation. It was possible, for example, that people high in trait gratitude saw situations as more

beneficial only when the situation was low in objective benefit, but when the situation was high in objective benefit everyone made the same benefit appraisals irrespective of their levels of trait gratitude. Study 3 ruled out this possibility, and showed that gratitude leads to a positive bias in appraising benefit and experiencing state gratitude irrespective of the objective situation.

In Studies 1 and 3 the appraisals of cost, value, and genuine helpfulness were shown to form a robust latent variable. These variables appear to co-occur in a constellation. Future research is needed to investigate exactly what this constellation represents. Cost, value, and genuine helpfulness could be independent appraisals which naturally group together, lower-order indicators of a super-ordinate appraisal, or part of a gratitude schema. It is unlikely that the variables are independent appraisals, as Tesser et al. (1968) showed that manipulating one of the appraisals (e.g., value) led to changes in another appraisal (e.g., genuine helpfulness). It is not however clear whether the constellation of variables meet a definition of a schema, which would exist in only some people, involve individual difference in availability, and have unique perceptual, memory, and interpretive effects which would apply to a variety of perceptual and cognitive measures. Such a question has applied significance for the increasingly prevalent clinical interventions to increase gratitude (e.g., Seligman et al., 2005). The existence and malleability of a grateful schema would be an important consideration in therapeutically increasing gratitude. Potentially, such research could lead to a new schema focused therapy for increasing gratitude, with associated well-being benefits. Such an approach would have to be evaluated alongside the current successful approach of 'counting your blessings' (Emmons & McCullough, 2003).

The studies had a number of limitations. Principally the studies relied on self-

report of gratitude, and future research may consider using direct behavioral measures of gratitude (cf. Tsang, 2006). However, McCullough et al. (2002) provide strong support for the use of self-report measures of gratitude, showing that the GQ-6 is correlated with peer-reports, and that the measure is not confounded by social desirability. Whilst benefit appraisals substantially mediated trait and state levels of gratitude in Study 3, unlike the other studies mediation was not complete. Although partial mediation is the norm rather than the exception in personality psychology research (Baron & Kenny, 1986), this does raise the question of what other appraisals could mediate trait and state levels of gratitude. Another plausible appraisal regards the successfulness of the help (for example, if a friend attempts to help but failure still ensues).

Research into trait gratitude is just beginning, and there is vast scope for future study. Future research will likely focus on whether grateful people are more likely to help others, whether they have better social relationships, and the mechanisms by which trait gratitude is related to better well-being (see McCullough et al., 2002; McCullough et al., 2001; Wood, Joseph, & Linley, 2007b). From a social-cognitive point of view (Bandura, 1999) it will be important to consider these questions within a framework whereby individuals interact with their environments.

2.7 Appendix

Sample Vignettes

Sample Vignette From Study 1

You are queuing at a supermarket till and are late in meeting someone. Noticing that you appear to be in a hurry the person in front of you let you go first. You realize that this person is on your course, and although you do not know them personally you have seen them around the department. You accept the person's offer and leave the store faster than you would have otherwise. You meet the person you had arranged to without being late.

Sample Vignette From Study 3

High benefit version. You receive an unexpectedly high bill. You do not have the money to pay the bill and will get into a lot of trouble when the company contacts a debt collection agency. You receive a visit from your aunt, and tell her about your situation. She later phones you and offers to pay the bill. Your aunt is a generous woman and she genuinely wants to help you. Your aunt relies on her state pension and paying the bill will represent a considerable amount of money to her.

Low benefit version: You receive an unexpectedly high bill. You can afford to pay the bill with the money in your bank account without much of a problem. Your receive a visit from your aunt, and tell her about your situation. She later phones you and offers to pay the bill. She does not really care about helping you, but rather wants to raise your family's opinion of her, and will no doubt remind them of it for some time to come. Your aunt is very rich and the cost of the bill will seem like a very small amount of money to her.

CHAPTER 3

3. CONCEPTUALIZING GRATITUDE AND APPRECIATION AS AN UNITARY PERSONALITY TRAIT

3.1 Abstract

Gratitude and appreciation are currently measured using three self-report instruments, the GQ6 (1 scale), the Appreciation Scale, (8 scales) and the GRAT (3 scales). Two studies were conducted to test how these three instruments are inter-related, whether they exist under the same higher order factor or factors, and whether gratitude and appreciation is a single or multi-factorial construct. In Study 1 ($N = 206$) all 12 scales were subjected to an exploratory factor analysis. Both parallel analysis and the minimum average partial method indicated a clear one factor solution. In Study 2 ($N = 389$) multigroup confirmatory factor analysis supported the one factor structure, demonstrated the invariance of this structure across gender, and ruled out the confounding effect of socially desirable responding. We conclude gratitude and appreciation are a single-factor personality trait. We suggest integration of gratitude and appreciation literatures and provide a clearer conceptualization of gratitude.

3.2. Introduction

Gratitude has historically been a cornerstone of philosophical and theological accounts of human functioning and social life (Harpman, 2004). Within psychology, however, the study of gratitude has only attracted focused attention within the last five years (Emmons & Crumpler, 2000; Wood et al., 2007b), with research showing gratitude to be strongly related to well-being (e.g., Adler & Fagley, 2005; McCullough et al., 2002; McCullough et al., 2004; Watkins et al., 2003; Wood, Joseph, & Maltby, 2008).

Three measures of gratitude and appreciation have been developed: the unidimensional GQ6 (McCullough et al., 2002), the multidimensional Appreciation Scale (Adler & Fagley, 2005), and the multidimensional GRAT (Watkins et al., 2003). The GQ6 focuses on the emotional experience of gratitude, assessed according to the how frequently and intensely gratitude is experienced, as well as the range of events which elicit the emotion. The Appreciation Scale assesses eight dimensions: (1) appreciation of people, (2) possessions, (3) the present moment, (4) rituals, (5) feeling of awe, (6) social comparisons, (7) existential concerns, and (8) behavior which expresses gratitude. In the GRAT conception, gratitude involves: (1) appreciation of people, (2) appreciation of life, and (3) the absence of feelings of deprivation. Together these amount to 12 theoretically diverse conceptions of gratitude (see Table 3.1).

The designers of the three instruments used strong theoretical grounds to develop an *a priori* conception of gratitude and appreciation, and decided on the number of scales needed to assess the construct prior to factor analysis. A combination of exploratory and confirmatory factor analysis was then used to show that the items successfully grouped together into the previously designed scales. These scales have

Table 3.1
Description of the scales with characteristic items

Instrument	Scale	No. of items	Brief description	Characteristic item
GG-6	n/a	6	Assesses gratitude as a single factor, based on the frequency, intensity, and density of grateful affect.	I have so much in life to be thankful for
Appreciation Scale	"Have" focus	10	A focus on the positive tangible and intangible assets that a person possess.	I reflect on how fortunate I am to have basic things in life like food, clothing, and shelter
	Awe	6	Frequency of feelings of awe.	When I see natural beauty like Niagara Falls, I feel like a child who is awestruck
	Ritual	6	Performing regular behaviors to express gratitude.	I use personal or religious rituals to remind myself to be thankful for things
	Present moment	7	Regularly focusing positive aspects in a given moment.	I stop and enjoy my life as it is
	Self/Social Comparison	5	Positive feelings arising for appreciation of how life could be worse.	When I see someone less fortunate than myself, I realize how lucky I am
	Gratitude	10	Behaviors designed to express gratitude.	I say "please and "thank you" to indicate my appreciation
	Loss/Adversity	8	Appreciation arising from the understanding nothing is permanent.	Thinking about dying reminds me to live every day to the fullest
	Interpersonal	5	Gratitude towards other people.	I reflect on how important my friends are to me
GRAT	Appreciation of others	11	Gratitude towards other people.	I'm really thankful for friends and family
	Simple Appreciation	14	Gratitude towards non-social sources.	I think it's really important to "stop and smell the roses"
	Sense of Abundance	17	The absence of feelings of deprivation	I think life has handed me a short stick (reverse coded)

shown an excellent ability to predict well-being, and have been highly instrumental in the fast growth of gratitude research.

Implicitly, the 12 scales are conceptualized as lower order facets of a higher order gratitude construct. However, although both the Appreciation Scale and the GRAT used multiple scales to assess theoretically diverse conceptions of gratitude, neither showed that the scales assessed the same high order construct. Additionally, it is not clear whether this higher order construct is being assessed by both the Appreciation Scale, GRAT and GQ6. Indeed, to date no studies have tested for correlations between the three instruments, leaving open the question of whether the 12 scales are measuring multiple orthogonal higher order constructs. Knowing whether the 12 scales are assessing the same construct is important for theoretical and practical reasons.

There are clearly similarities between the conceptions, with both the GRAT and Appreciation Scale including two scales assessing gratitude towards people and appreciation of life, a conception that is also represented in the items of the GQ6. However, the Appreciation Scale considerably widens the conception of gratitude, including dimensions not represented in either instrument. Each of the 12 conceptions could be seen to be measuring the same latent concept, namely a grateful and appreciative outlook on life. If such a unifactorial model was supported, then this would encourage a new consensus in the field regarding what composes gratitude.

This paper reports two studies which examine the relationships between the 12 conceptions of gratitude and how many factors underlie the different conceptions. Study 1 reports correlations between the measures and an exploratory factor analysis (EFA). Study 2 reports a confirmatory factor analysis (CFA) to test the factor structure indicated in Study 1, and tests whether the factor structure is invariant across

gender.

3.3. Study 1

3.3.1. Method

3.3.1.1. Participants and Procedure

Participants (123 female, 83 male) were aged between 18 and 82 ($M = 26.07$, $SD = 16.19$), and were predominantly of White ethnicity (87.4%), with the next most frequently represented ethnic groups being Chinese (3.4%) and Indian (3.4%). Participants were either recruited during an undergraduate class on research methods, or were recruited from the local community by one of three research assistants. All participants completed paper-and-pencil measures in small groups not greater than 20 people. Participation was voluntary and all participants were debriefed.

3.3.1.2. Measures

3.3.1.2.1. GQ6. The GQ6 (McCullough et al., 2002) contains 6 items measuring an unifactorial conception of gratitude. Items were designed to assess emotional *intensity*, *frequency*, and *density*. Items are rated on a 1 ("strongly agree") to 7 ("strongly disagree") scale. Psychometric development included demonstrating item-level factor structure (through EFA, CFA, and three CFA replications), convergent validity peer reports, unique correlations with well-being (controlling for social desirability), and discriminate validity from related traits.

3.3.1.2.2. Appreciation Scale. The Appreciation Scale (Adler & Fagley, 2005) contains 57 items, and eight scales (for descriptions and sample items see Table 3.1). Questions are either answered on a 1 ("more than once a day") to 7 ("never") frequency scale, or a 1 ("strongly agree") to 7 ("strongly disagree") attitude scale. Psychometric development included item-level principal component analysis (PCA), correlations with well-being, known group validity (religious vs. non-religious), and

through a structural equation model of a nomological net of appreciation and other
variables.

    3.3.1.2.3. GRAT. The GRAT (Watkins et al., 2003) contains 44 items, and
three scales (for descriptions and sample items see Table 3.1). Items are rated on a 1
("strongly agree") to 5 ("strongly disagree") scale. Psychometric development in-
cluded item-level component structure (through PCA), correlations with well-being
(with several replications), and high test-retest reliability (over 2-weeks to 2-
months).

<div align="center">

3.3.2. Results

</div>

3.3.2.1. Preliminary Analysis

    Table 3.2 shows internal consistencies and intercorrelations between each of
the scales. Each of the scales showed good internal consistency. With the exception
of the Sense of Abundance scale, all the scales were intercorrelated (range $r = .21$
to .72). The Sense of Abundance scale showed low and/or non-significant correla-
tions with several of the other scales. Consistent with previous work (e.g., Linley et
al., 2007), gratitude was not substantially related to age. Gratitude was, however,
significantly related to gender, with females having higher mean levels of each of the
12 conceptions.

3.3.2.2. Factor Analysis

    The 12 scales of gratitude were submitted to a maximum likelihood EFA. Bart-
lett's test suggested that the data was suitable for an EFA (χ^2 [66] = 1352.35, p
< .001). There was a participant to variable ratio of 17:1 and the Kaiser-Meyer-Olkin
(KMO) measure indicated that there was an adequate N (KMO = .891). The eigen-
values were 5.99, 1.32, .84, .80, .70, .54, .43, .38, .32, .25, .23, .19, and respectively
accounted for 49.93%, 11.01%, 7.01%, 6.63%, 5.90%, 4.50%, 3.60%, 3.14%,

Table 3.2

Internal Consistencies and Intercorrelations in Study 1 (above diagonal) and Study 2 (below diagonal), with correlations corrected for unreliability in brackets.

	S1 α	S2 α	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Gender	n/a	n/a	-	.06 (.06)	.20** (.24)	.21** (.25)	.17* (.20)	.22** (.25)	.19** (.21)	.26*** (.27)	.29*** (.32)	.24*** (.29)	-.07 (-.08)	.39*** (.42)	.18** (.20)	.15* (.16)
2. Age	n/a	n/a	.11* (.11)	-	.09 (.11)	.13 (.15)	-.04 (-.05)	.21** (.24)	.08 (.09)	.01 (.01)	.17* (.19)	-.12 (-.15)	.16* (.17)	.20** (.21)	-.17 (-.18)	.09 (.10)
3. Appreciation Scale-Have focus	.83	.71	.01 (.01)	-.02 (-.02)	-	.65*** (.91)	.54*** (.76)	.64*** (.87)	.64*** (.85)	.48*** (.58)	.65*** (.86)	.59*** (.85)	.34*** (.44)	.53*** (.67)	.50*** (.63)	.63*** (.82)
4. Appreciation Scale-Awe	.73	.72	.05 (.06)	.01 (.01)	.72*** (1.00)	-	.60*** (.84)	.69*** (.93)	.57*** (.76)	.34*** (.41)	.56*** (.74)	.39*** (.56)	.13 (.17)	.68*** (.86)	.42*** (.53)	.46*** (.60)
5. Appreciation Scale-Ritual	.81	.71	.10* (.12)	.05 (.06)	.64*** (.90)	.56*** (.78)	-	.47*** (.64)	.42*** (.56)	.34*** (.41)	.41*** (.54)	.37*** (.53)	.11 (.14)	.49*** (.62)	.50*** (.63)	.35*** (.46)
6. Appreciation Scale-Present moment	.76	.77	.09 (.10)	.01 (.01)	.75*** (1.00)	.73*** (.98)	.61*** (.83)	-	.52*** (.67)	.39*** (.46)	.60*** (.76)	.36*** (.50)	.32*** (.39)	.72*** (.88)	.42*** (.51)	.48*** (.60)
7. Appreciation Scale-Downward	.66	.79	-.08 (-.09)	-.01 (-.01)	.76*** (1.00)	.64*** (.85)	.66*** (.88)	.68*** (.87)	-	.34*** (.39)	.67*** (.84)	.38*** (.52)	.03 (.04)	.45*** (.54)	.36*** (.43)	.40*** (.49)
8. Appreciation Scale-Gratitude	.73	.95	.04 (.04)	.04 (.04)	.74*** (.90)	.60*** (.73)	.69*** (.84)	.69*** (.81)	.76*** (.88)	-	.41*** (.47)	.28*** (.35)	.33*** (.37)	.46*** (.51)	.53*** (.58)	.52*** (.59)
9. Appreciation Scale-Loss/Adversity	.78	.80	-.05 (-.06)	.00 (.00)	.70*** (.93)	.56*** (.74)	.65*** (.86)	.63*** (.80)	.78*** (.98)	.73*** (.84)	-	.37*** (.50)	.10 (.12)	.53*** (.64)	.42*** (.50)	.44*** (.54)
10. Appreciation Scale-Interpersonal	.72	.68	-.07 (-.08)	.01 (.01)	.69*** (.99)	.61*** (.87)	.60*** (.86)	.66*** (.91)	.70*** (.96)	.71*** (.88)	.66*** (.89)	-	.10 (.13)	.35*** (.46)	.34*** (.44)	.40*** (.53)
11. GRAT–Sense of Abundance	.93	.86	.03 (.03)	.00 (.00)	.81*** (1.00)	.76*** (.97)	.72*** (.92)	.81*** (1.00)	.78*** (.95)	.81*** (.90)	.73*** (.88)	.70*** (.92)	-	.21*** (.24)	.26*** (.30)	.51*** (.60)
12. GRAT-Simple Appreciation	.78	.87	-.10 (-.11)	-.40 (-.43)	.75*** (.95)	.63*** (.80)	.78*** (.99)	.69*** (.84)	.76*** (.92)	.84*** (.92)	.73*** (.88)	.68*** (.88)	.82*** (.95)	-	.55*** (.63)	.44*** (.52)
13. GRAT-Appreciation of others	.79	.88	-.02 (.02)	.01 (.01)	.76*** (.96)	.66*** (.83)	.64*** (.81)	.72*** (.87)	.80*** (.96)	.82*** (.90)	.74*** (.88)	.78*** (1.00)	.80*** (.92)	.79*** (.90)	-	.49*** (.57)
14. Gratitude Quesitonnaire-6	.70	.83	-.09 (-.10)	.01 (.01)	.45*** (.59)	.36*** (.47)	.38*** (.50)	.37*** (.46)	.48*** (.59)	.56*** (.63)	.39*** (.48)	.43*** (.57)	.47*** (.56)	.53*** (.62)	.57*** (.67)	-
15. Social desirability	n/a	.92	-.01 (-.01)	.10 (.10)	.01 (.01)	.00 (.00)	.01 (.07)	.06 (.07)	.02 (.02)	.03 (.03)	.01 (.01)	.07 (.09)	.00 (.00)	.04 (.04)	.06 (.07)	.06 (.07)

Note: $N = 224$; Downward is Downward Comparison; S1 α = Cronbach's Alpha (Study 1); S1 α = Cronbach's Alpha (Study 2); * $p < .05$; ** $p < .01$; *** $p < .001$; gender is dummy coded 0 (male) and 1 (female). Values in brackets are correlations corrected for attenuation due to unreliability.

2.69%, 2.08%, 1.93% and 1.58% of the variance.

The decision on the number of factors to extract was based on both parallel analysis and the minimum average partial method (MAP). Monte Carlo analyses by Velicier, Eaton, and Fava (2000) and Zwick and Velicier (1986) have shown that of all of the criteria for deciding on the number of factors to extract (e.g. scree plot, Kaiser criterion), parallel analysis and MAP provide the most accurate results. Consistent results from both approaches would increase confidence that the correct number of factors had been extracted. As neither procedure is currently represented in the common statistical packages, we used the SPSS syntax developed by O'Connor (2000).

Parallel analysis involves identifying how many factors have eigenvalues higher than values which may be expected to occur through chance. Ten thousand random datasets were created, each of which had 206 cases and 12 variables. In 95% percent of the randomly generated datasets, the first five eigenvalues were respectively equal or less than 1.52, 1.37, 1.27, 1.19, and 1.12. Only the eigenvalue of the first factor in the real dataset exceeded these chance values, suggesting that one factor underlies the measures of gratitude.

The MAP involves separating common and unique variance, and only retaining factors comprised of common variance (see O'Connor, , 2000). The MAP revealed average squared partial correlations of .215 with no components extracted, .036 with one component extracted, .041 with two extracted, and .050 with three extracted. The smallest ASPC was associated with the first component, again suggesting a one factor solution.

Based on the parallel analysis and the MAP, one factor was extracted. Table 3.3 shows factor loadings. All scales loaded at above .30. Sense of Abundance had

the lowest loading (.35), and all other scales loaded highly (range .53 to .84).

3.3.3. Discussion

Study 1 presented intercorrelations between the 12 conceptions of gratitude, and suggested that all of the conceptions appear to exist under a single higher order gratitude factor. With the exception of the Sense of Abundance scale, the conceptions of gratitude were significantly intercorrelated, and the size of the correlations were predominantly medium or large. The EFA revealed a clear single factor solution, as revealed through both parallel analysis and the MAP. Again with the exception of the Sense of Abundance scale, each of the measures of gratitude loaded highly on the single factor.

Taken together, with high intercorrelations between the scales, a strong indication of a one-factor structure and high factor loadings, Study 1 presents good preliminary evidence that each of the measures of gratitude are assessing a single unifactorial latent construct.

Table 3.3
Factor loadings for Study 1 and 2.

	Study 1	Study 2	
	All	Male	Female
Appreciation Scale-Have focus	.84	.88	.84
Appreciation Scale-Present moment	.80	.85	.79
Appreciation Scale-Awe	.78	.78	.72
GRAT-Simple Appreciation	.75	.89	.89
Appreciation Scale-Loss/Adversity	.72	.81	.84
Gratitude Quesitonnaire-6	.67	.56	.53
Appreciation Scale-Downward comparison	.66	.89	.86
Appreciation Scale-Ritual	.64	.78	.77
GRAT-Appreciation of others	.62	.89	.91
Appreciation Scale-Gratitude	.56	.88	.90
Appreciation Scale-Interpersonal	.53	.83	.77
GRAT–Sense of Abundance	.35	.94	.89

Note: Study 1, Maximum Likelihood Factor Analysis, $N = 206$; Study 2, CFA, Female $n = 194$, Male $n = 195$.

<center>3.4. Study 2</center>

<center>*3.4.1. Introduction*</center>

The first aim of Study 2 was to use multigroup CFA to test the fit and gender invariance of the one factor structure suggested by Study 1. In Study 1 gender was correlated with each of the 12 conceptions of gratitude, raising the possibility that the factor structure of gratitude may be different for men and women. Multigroup CFA has the advantage of replicating the CFA across groups, demonstrating the reliability of the factor structure. The multigroup CFA also tested whether the factor structure and the factor loadings were invariant across gender, to show whether a one factor model of gratitude was appropriate for both men and women.

The second aim of Study 2 was to test whether social desirability had confounded the one factor solution. In a recent paper using hierarchical factor analysis, Bäckström (2007) showed that a single factor existed above the Big Five personality traits. However, this latent factor had almost completely overlapping variance with a latent social desirability factor ($r = .98$). This demonstrates that where too many higher order factors are extracted, the highest order factor can sometimes only represent only social desirability (or methodological issues such as response set). In Study 1 we extracted a clear single factor. In Study 2 we aimed to demonstrate that this factor did not simply represent socially desirable responding.

<center>*3.4.2. Method*</center>

3.4.2.1. Participants and Procedure

Participants (194 female, 195 male) were aged between 18 and 55 ($M = 31.60$, $SD = 8.15$), and were predominantly of White ethnicity (73.5%), with the next most frequently represented ethnic groups being Black African (5.4%), Black Caribbean (4.9%), and Indian (4.9%). There was an approximately equal proportion of people

from minorities in each gender (24% of males, 29% of females; χ^2 [df = 1] = .262, p = .61). There were only small age differences between the genders, with females on average 1.83 years older (SE = .82, t [387] = 2.235, p = .26, d = .22). It does not appear that gender was confounded with either ethnicity or age.

Participants were recruited from a local college specializing in short, part-time, 'life long learning' educational courses. All participants completed measures in small groups not greater than 20 people. Participation was voluntary and all participants were debriefed.

3.4.2.2. Measures

3.4.2.2.1. From Study 1. All participants completed the Appreciation Scale, GRAT, and GQ6, as in Study 1.

3.4.2.2.2. Socially desirable responding. The Social Desirability Scale-17 (SDS-17: Stöber, 2001) was used to measure socially desirable responding. Participants rate sixteen items (seven reverse coded) on a 'true' or 'false' response scale. Each of the items provide a statement which most people would like to agree with, but are unlikely to be able to (e.g. "I always accept other's opinions, even when they don't agree with my own"). Higher scores indicate more socially desirable responding. The SDS-17 was developed due to concerns that items in older social desirability scales were no longer socially desirable. The scale shows good convergent validity with other measures of social desirability, high sensitivity to desirability provoking instructions (job applications), and all of the items have been recently rated as highly socially desirable (Stöber, 2001).

3.4.3. Results

3.4.3.1. Preliminary Analysis

Table 3.2 shows internal consistencies and intercorrelations between each of

the scales. Each of the scales showed good internal consistency. Each of the scales were significantly correlated (range r = .36 to .81).

3.4.3.2. Multigroup CFA

A maximum likelihood multigroup CFA was performed with covariance structural equation modeling using AMOS. A model was tested where one latent factor was defined by item parcels for each of the 12 gratitude scales, and error variances were not allowed to covary. The normalized Mardia's Coefficient showed that the data exhibited multivariate normality, fulfilling the assumptions of maximum likelihood CFA (coefficient = 1.57, p = .12). Multigroup CFA was preformed using the two-step approach outlined by Byrne (2004).

In the first step, separate CFAs are performed for each group (males and females). The fit of the model was tested with the chi squared test, the standardized root-mean-square residual (SRMR) and the comparative fit index (CFI). Hu and Bentler's (1999) Monte Carlo analysis demonstrated that the combinational use of the SRMR and the CFI leads to the lowest sum of Type I and Type II error. Conventional values suggest that good fit is indicated by SRMR values below .10 and CFI values above .90; very good fit is indicated by SRMR < .08 and CFI > .95 (Hu & Bentler, 1999). The one-factor model provided a good fit for both females (c^2 [df = 54] = 223.84; CFI = .92; SRMR = .04), and males (χ^2 [df = 54] = 196.28; CFI = .94; SRMR = .04). Factor loadings are presented in Table 3.3. Visual comparison of the loadings show considerable similarities for both men and women, and for both genders all loadings are high (ranging from .53 to .94). It appears that a one factor model of gratitude is viable when males and females are considered separately.

In the second step, invariance between gender was tested directly. The chi squared fit indices from both CFAs are added together to provide the fit of an

'unconstrained model', where factor loadings are free to assume different values in each group. A further CFA is performed where factor loadings are constrained to be equal across groups (the 'constrained model'). If the fit of the constrained model is not significantly worse than the unconstrained model, then factor invariance across groups is indicated.

The unconstrained model, where factor loadings are allowed to vary between men and women, provided a good fit (χ^2 [df = 108] = 419.66, CFI = .93, SRMR = .04). The constrained model, where factor loadings are constrained to be equal for both men and women, also provided a good fit (χ^2 [df = 119] = 463.77, CFI = .93, SRMR = .05). The fit of the constrained model was not significantly worse than the unconstrained model ($\Delta\chi^2$ = 17.11, Ddf = 11, p = .11). These set of analyses support a model where the 12 measures of gratitude assess the same latent gratitude construct, and show that this model is invariant across gender. Figure 3.1 presents loadings based on the full sample (including both men and women).

3.4.3.3. Social desirability

In order to test whether the latent gratitude factor represented socially desirable responding we used the methodology of Bäckström (2007). A latent social desirability factor was identified with each of the items of the SDS-17. This latent factor was correlated with the latent gratitude factor, which was defined by the 12 measures of gratitude as in the previous analysis. The latent variables were not significantly correlated for either females (r < .01, p = .97) or males (r = .07, p = .37). The fit of this two latent variable model was also very good for both females (χ^2 [df = 349] = 603.61, CFI = .93, SRMR = .05) and males (χ^2 [df = 349] = 540.87, CFI = .95, SRMR = .05). There was no support for the alternate hypothesis that the latent gratitude factor represented socially desirable responding.
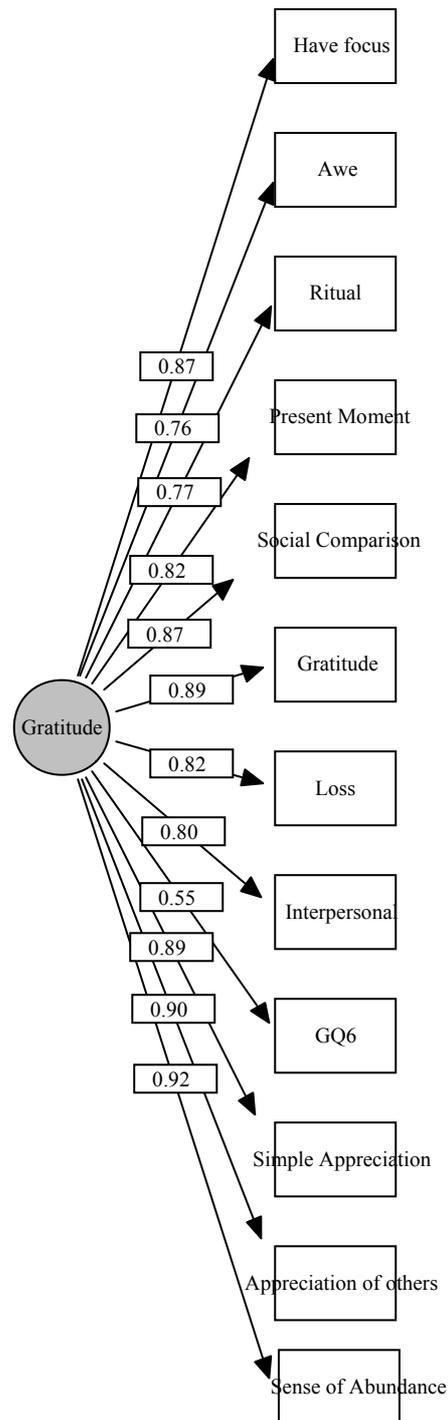
Figure 3.1. CFA using all Study 2 participants (*N* = 389). All values are standardized. Error variances omitted for clarity.

3.5. General Discussion

Two studies showed that the 12 scales from the GRAT, Appreciation Scale, and GQ6 are strongly intercorrelated, and that each scale is an indicator of the same latent gratitude construct. In Study 1 both parallel analysis and the minimum average partial method suggested that there was a single factor underlying the 12 measures of gratitude and appreciation. In Study 2 confirmatory factor analysis supported the factor structure and showed that the factor structure was invariant across gender. Additionally, Study 2 showed that the higher order gratitude factor was not confounded with socially desirable responding. This is the first study to show correlations between each 12 scales, and to suggest a higher order factor structure of gratitude and appreciation.

The results suggest an integration of the theoretical basis of the GQ6, Appreciation Scale, and the GRAT. As noted in the introduction, each of the scales was developed from different conceptions of gratitude. Through showing that each of the scales in Table 3.1 are indicators of the same latent construct, Table 3.1 can be used as an integrated definition of gratitude, which may be of use in planning future studies into gratitude.

Practically, establishing whether the 12 scales are measuring the same latent construct is necessary to accurately prepare literature reviews. The current trend appears to be to summarize research from the GQ6 and GRAT together (e.g., Watkins et al., 2006; Wood et al., 2007a), whilst the Appreciation Scale appears to be developing a separate literature, with the original development paper (Adler & Fagley, 2005) not citing either the GQ6 or the GRAT, and subsequent work using the GQ6 and the GRAT not citing the Appreciation Scale. The results support the integration of literature using the GQ6, the GRAT, and the Appreciation Scale.

The results are subject to two caveats. First, the demonstration of the gender invariance of the one factor model should be qualified by considerations of power. Multigroup CFA involves showing that factor loadings do not significantly differ between groups. Non-significance could represent either genuine invariance or a lack of power to detect the effect. However, although there is currently no accepted method of estimating power in multigroup modeling, there is indication that individually the CFAs were very stable for both men a women (per group samples sizes greater than 194, participant to variable ratios grater than 16:1, and very high communalities). If the individual CFAs are stable, and visual examination confirms only very small differences in the loading patterns of men and women, whilst we cannot rule out any differences between men and women in the one factor solution, such differences should be very small and not of theoretical importance.

The second caveat regards the loadings of the GQ6 and the Sense of Abundance scale on the higher order gratitude factor. It is curious that the GQ6 only loaded moderately, when it was designed to be a unifactorial measure, and probably had the strongest psychometric development of any of the measures. It may be that as the focus of the GQ6 is on the emotional experience of gratitude it does not fully measure the attitude aspect of gratitude, as defined by the Appreciation Scale. The Sense of Abundance scale behaved inconsistently across the two studies, loading very poorly in Study 1. There may be problems in the conceptualization of this aspect of gratitude, involving the absence of feeling of deprivation. Perhaps the inconsistency of this scale is due to problems inherent in defining a construct by what it is not. Alternatively, this conception may not truly be an indicator of gratitude. The scale is occasionally referred to by Watkins et al. (2003) as 'resentment' (reverse coded), and more research is needed into the relation between resentment and grati-

tude, i.e. whether these represent two separate constructs, or opposite ends of a bipolar continuum.

Our research is not designed to indicate that any one of the measures is psychometrically superior. Rather, the present study suggests that future research would benefit from considering each of the scales as indicators of a higher order gratitude construct, and through integrating their conceptual and theoretical positions.

CHAPTER 4

4. GRATITUDE UNIQUELY PREDICTS SATISFACTION WITH LIFE: INCREMENTAL VALIDITY ABOVE THE DOMAINS AND FACETS OF THE FIVE FACTOR MODEL

4.1. Abstract

The authors tested whether gratitude could explain variance in satisfaction with life (SWL) after controlling for both the domains and the facets of the Big Five. The GQ6 measure of gratitude, the NEO-PI-R measure of the Big Five, and the SWL Scale were completed by 389 adults. Gratitude was correlated with each of the Big Five domains, and at the facet level showed a distinctive profile whereby gratitude was most strongly correlated with the facets representing well-being and social functioning. Gratitude explained an additional 9% of the variance in SWL after controlling for the Big Five domains ($r = .30$), and an additional 8% after controlling for the facets ($r = .28$). The results support perspectives suggesting that gratitude has an unique relationship with SWL, and clarifies how gratitude relates to personality at the facet level.

4.2. Introduction

Conceptually, trait gratitude should be strongly related to satisfaction with life (SWL) (Bono et al., 2004; Emmons & Crumpler, 2000; Lyubomirsky et al., 2005; Watkins, 2004; Wood et al., 2007b). Gratitude is an emotion which is directed towards an external agency, and occurs following aid which is interpreted as costly, valuable, and altruistically intended (Lane & Anderson, 1976; Tesser et al., 1968; Wood, Maltby et al., 2008). Trait gratitude represents individual differences in how frequently and intensely grateful affect is experienced, and the extent of the stimulation needed to elicit gratitude (McCullough et al., 2002). McCullough, Emmons, and Tsang (2002) argue that gratitude should be related to SWL as gratitude has a positive valiance, and the greater experience of positive emotions is related to SWL (Diener, 1984; Emmons & Diener, 1985; Keyes et al., 2002). Additionally, the emotion of gratitude acts as a moral barometer, drawing attention to the aid that people receive in everyday life (McCullough et al., 2001). Being more likely to notice daily acts of help is likely to lead to greater SWL over time. Finally, Watkins (2004) argue that regular feelings of gratitude make people less likely to habituate to the positive in their social environments, enabling greater long term SWL. In a related vein, Lyubomirsky et al. (2005) see gratitude as integral to SWL, as gratitude offers an alternative to the "hedonistic treadmill", where ever more possessions need to be purchased in order to maintain short term gains in happiness.

Whilst gratitude is predicted to be strongly related to SWL, the two concepts are not synonymous. Factor analytic studies have repeatedly shown that subjective well-being can be split into separate affective (positive and negative affect) and cognitive evaluation factors (SWL) (e.g., Stock, Okun, & Benin, 1986). The affective and cognitive factors have different patterns of correlations with socio-demographic

and interpersonal variables (Beiser, 1974), are impaired to different degrees in medical groups (De Haes, De Rulter, Tempelaar, & Pennink, 1992), and have different developmental patterns over time (De Haes, Pennink, & Welvaart, 1986). SWL represents the cognitive evaluative dimension of subjective well-being (Diener, Emmons, Larsen, & Griffin, 1985), based on an individual's global judgment of how they evaluate the quality of their life (Pavot & Diener, 1993). Trait gratitude involves individual differences in the experience of the positively valanced grateful affect (McCullough et al., 2002); hence gratitude and SWL may be expected to represent different components of subjective well-being. More directly, McCullough et al. tested whether gratitude and SWL were separate constructs through confirmatory factor analysis. A model where gratitude and SWL formed a single latent variable exhibited very bad fit, whilst an alternate model where gratitude and SWL were separate but correlated constructs exhibited a fit which was both vastly superior and met Hu and Bentler's (1999) criteria for a well-fitting model. Such findings are intuitive; it is possible to imagine a successful individual who has high life satisfaction, but is smug, self-satisfied, and ungrateful, because they do not attribute any of their success to an external agency. Thus, whilst gratitude is expected to be strongly related to SWL, the concepts are not synonymous and "off-diagonal" individuals can be imagined who epitomize the dissociation between the constructs.

In the last five years there has been considerable empirical research on the relationship between dispositional gratitude and SWL (e.g., Emmons & McCullough, 2003; McCullough et al., 2002; McCullough et al., 2004; Park et al., 2004; Wood et al., 2007a). This research has suggested that gratitude has one of the strongest relationships with SWL of almost any trait (e.g., Park et al., 2004), and that this relationship is causal (e.g., Emmons & McCullough, 2003). However, it is not clear whether

the relationship between gratitude and SWL is unique, or whether gratitude is simply related to SWL due to a third personality variable. For example, gratitude could simply be related to SWL because of the more general relationship between SWL and positive emotions. In their seminal paper on trait gratitude, McCullough et al. (2002) argue that as the last 50 years have lead to a proliferation of personality measures, it is necessary to show that gratitude effects outcome measures after controlling for other more widely researched traits.

In recent years the Five Factor Model (McCrae & Costa, 1999) has achieved a widespread acceptance in personality psychology. There is now reasonable consensus that the Big Five domains of extraversion, agreeableness, openness, conscientiousness, and neuroticism represent most of personality at the highest level of abstraction (Goldberg, 1993; John & Srivastava, 1999). These variables cover the breath of personality, including positive and negative affect (respectively existing under extraversion and neuroticism), and pro-social traits (under agreeableness). As may be expected from a social and well-being variable, gratitude is positively correlated with extraversion, agreeableness, openness, and conscientiousness, and negatively correlated with neuroticism (McCullough et al., 2002; McCullough et al., 2004; Wood, Maltby, Gillett, Linley, & Joseph, in press; Wood, Maltby, Stewart, Linley, & Joseph, in press); together these Big Five variables explain between 21% and 28% of the variance in gratitude (McCullough et al., 2002). The Big Five traits themselves explain about a third of the variance in SWL (Schimmack et al., 2004). The third variable effects of the Big Five thus offer an alternative explanation of why gratitude is related to SWL. Demonstrating that gratitude is related to SWL above the effects of the Big Five is an important test of theoretical perspectives which see gratitude as an unique aspect of well-being (Lyubomirsky et al., 2005; Watkins,

2004). As the Big Five represent some of the most studied personality traits in psychology (McCrae & Costa, 1999), if the study of gratitude is to progress, it is important to demonstrate that gratitude operates independently of the Big Five, to avoid unnecessary duplication of prior research efforts, and allegations of "reinventing the wheel" (c.f. McCullough et al., 2002).

McCullough et al. (2002) demonstrated that gratitude is related to SWL after controlling for the domains of the Big Five. However, the Five Factor Model suggests that personality is hierarchically organized, with lower order personality facets existing under each of the Big Five domains. For example, in the NEO PI-R operationalization (Costa & McCrae, 1992), six facets exist under each of the five domains, with 30 facets covering the entire Big Five. Thus, existing under the agreeableness domain are the six facets of trust, straightforwardness, altruism, compliance, modesty, and tender-mindedness (Costa & McCrae, 1995) (See Table 1 for a full list of the 30 facets). Gratitude is expected to be at the facet not the domain level of personality. As such, a full test of whether gratitude is uniquely related to SWL beyond the effects of the Big Five must control for the 30 facets, not only the five domains.

SWL was selected as an outcome variable for several reasons. First, there is the strong theoretical expectation that the gratitude would be uniquely important to SWL (e.g., Lyubomirsky et al., 2005; Watkins, 2004). Second, as SWL represents the cognitive appraisal dimension of subjective well-being, there is no domain overlap between SWL and the Big Five facets. This would not be true for other aspects of subjective well-being, such as happiness or depression, which are both represented as facets within the Big Five model. Third, SWL represents the participant's own evaluation of their life, rather than a conception of the 'good life' defined by a

researcher. Fourth, the Big Five facets are very good predictors of SWL (Schimmack et al., 2004). As such, this represents a strategy of comparing the predictive ability of gratitude with the facets on the latter's 'home turf', and a stringent test of the ability of gratitude to uniquely predict an outcome variable.

This paper reports on a test of whether gratitude has incremental validity in predicting SWL above the 30 Big Five facets. We were also interested in how gratitude related to the facets of the Big Five, as this has not previously been tested. Previous research examining how gratitude relates to Big Five domains has been somewhat inconsistent; for example, in three studies McCullough et al. (2002) showed that the correlation between gratitude and neuroticism ranged between $r = -.16$ and $-.42$ (a variation which exceeded statistical chance). This suggests that there may be a differential pattern of correlations between gratitude and the facet level of the Big Five. Showing how gratitude relates to both the domains and facets of the Big Five will provide a finer grained understanding of how gratitude is related to the facet level of personality.

4.3. Method

4.3.1. Participants and procedure

Three hundred and eighty nine participants (194 female, 195 male) were recruited from a local community college, which specializes in "life long learning courses". Participants were aged between 18 and 55 ($M = 31.60$, $SD = 8.15$), and were predominantly White (73.5%), Black African (5.4%), Black Caribbean (4.9%), or Indian (4.9%). All participants completed measures in small groups (not greater than 20 people), and were debriefed following completion of the questionnaires.

4.3.2. Measures

4.3.2.1. Gratitude. The GQ6 (McCullough et al., 2002) was used to assess

gratitude. Participants rate six statements on a 1 (strongly disagree) to 7 (strongly agree) scale, which assess how frequently and intensely participants experience gratitude (e.g., "I am grateful to a wide variety of people", and "I feel thankful for what I have received in life"). Psychometric development involved demonstrating a robust factor structure (through EFA, and four CFAs), convergent validity with peer reports, discriminate validity from related traits, and high internal consistency (α = .82) (McCullough et al., 2002).

4.3.2.2. Big Five. The 240-item Revised NEO Personality Inventory (NEO-PI-R) (Costa & McCrae, 1992) was used to measure the Big Five domains and facets. Each domain is represented by six lower level facet scale scores (listed in Table 1), resulting in a total of 30 facet scores. Responses are scored on a five-point scale ranging from 0 (strongly agree) to 4 (strongly disagree) for each domain. The NEO-PI-R is one of the most widely used measures of the Big Five and has very strong psychometric properties. Six year test-retest reliability range from .63 to .82, there is strong consensual validity between self, peer, and spouse reports of the test and the validity evidence for the scales has been suggested with personality and mental health domains (Costa & McCrae, 1992).

4.3.2.3. Satisfaction with Life. The Satisfaction with Life Scale (Diener et al., 1985) was used to measure the cognitive evaluative dimension of well-being. Items assess the participants' global assessments of how satisfied they are with their lives (e.g., "The conditions of my life are excellent"). Five items are rated on a 1 ("Strongly Disagree") to 7 ("Strongly Agree") scale. The scale has good test-retest stability (ranging from .82 over 2-months to .54 over 4-years), whilst the measure remains sensitive to changes in life satisfaction due to life events and undergoing therapy (Pavot & Diener, 1993).

4.4. Results

4.4.1. Correlations between gratitude, SWL, and the Big Five.

Gratitude and SWL were correlated at $r = .45$ ($p < .001$), replicating earlier findings (Wood et al., 2007a), and suggesting that gratitude can explain 20% of individual differences in SWL. Table 4.1 shows the correlation between the domains and facets of the Big Five and both gratitude and SWL. Gratitude was correlated with each of the domains of the Big Five. Grateful people were more extraverted, open, agreeable, conscientious, and less neurotic. However, as predicted, gratitude had varied relationships with the Big Five at the facet level. Gratitude was correlated with each of the openness facets. For the remaining facets, the results appeared to show a pattern whereby gratitude correlated most strongly with the facets most representative of well-being and social life.

Regarding neuroticism, gratitude was negatively correlated with anger/ hostility, depression, and vulnerability. Each of these dimensions represents socially orientated negative emotions, with depression and anger/hostility respectively involving internalizing or externalizing negative social events, and vulnerability being a predisposition towards having aversive emotional consequences from being in social situations (Beck, 1976). Interestingly, gratitude actually had a positive correlation with impulsivity (although impulsivity was itself positively correlated with the other neuroticism facets at between $r = .11$ and .29). Regarding the facets of extraversion, gratitude was most strongly related to the domains of warmth and gregariousness, which represent the positive relationship facets of extraversion, and positive emotions (Costa & McCrae, 1995). Gratitude was less strongly (or non-significantly) related to the remaining facets, which represent the behavioral activation facets of extraversion. Regarding agreeableness, gratitude was related to the trust, altruism,

Table 4.1

Correlations Between the NEO and Gratitude and SWL

NEO Variable	Gratitude	SWL
	Domains	
Neuroticism	-.11*	-.35***
Extraversion	.34***	.41***
Openness	.24***	.10
Agreeableness	.27***	.18***
Conscientiousness	.11*	.18***
	Facets	
N1: Anxiety	-.02	-.22***
N2: Anger Hostility	-.18*	-.18***
N3: Depression	-.13*	-.37***
N4: Self-Consciousness	-.08	-.25***
N5: Impulsiveness	.11*	.01
N6: Vulnerability	-.14**	-.42***
E1: Warmth	.34***	.36***
E2: Gregariousness	.26***	.25***
E3: Assertiveness	.10	.19***
E4: Activity	.12*	.25***
E5: Excitement Seeking	.11*	.23***
E6: Positive Emotions	.43***	.40***
O1: Fantasy	.15**	.06
O2: Aesthetics	.19**	-.03
O3: Feelings	.14**	.12*
O4: Actions	.23***	.11*
O5: Ideas	.16**	.09
O6: Values	.13*	.11
A1: Trust	.31***	.24***
A2: Straightforwardness	.09	.10
A3: Altruism	.26***	.28***
A4: Compliance	.11*	.04
A5: Modesty	.06	-.03
A6: Tender-Mindedness	.30***	.11*
C1: Competence	.16**	.22***
C2: Order	.01	.07
C3: Dutifulness	.15**	.10*
C4: Achievement Striving	.15**	.24***
C5: Self-Discipline	.03	.16**
C6: Deliberation	.01	.02

Note: * p<.05, ** p<.01

and tender-mindedness facets, which represent the relationship quality and pro-social aspects of agreeableness. Gratitude was weakly or non-significantly correlated with the remaining facets of agreeableness which tend to represent self-effacing, compliant, and straight talking behavioral patterns, which are less indicative of relationship quality. Of the conscientiousness facets, gratitude was only correlated with competence, dutifulness, and achievement striving, which are possibly the facets of conscientiousness that are most involved in social functioning. Across each of the Big Five domains, gratitude showed a pattern of facet correlations consistent with the conceptualization of gratitude as a personality trait important to social functioning and well-being.

4.4.2. Incremental Validity

Having shown that gratitude had a diverse relationship with Big Five facets, we tested whether gratitude could explain unique variance in SWL after controlling for the effects of the Big Five domains and facets. In the first test we performed a two-step hierarchical multiple regression to assess whether the GQ-6 had incremental validity from the domains of the NEO PI-R. In the first step, the five domains were entered, and a significant model emerged ($R^2 = .25$; $F(5, 383) = 25.37$; $p < .001$), accounting for 25% of variance in SWL. In the second step we entered both the five domains and the GQ6, which also lead to a significant model ($R^2 = .34$; $F(6, 382) = 32.91$; $p < .001$), accounting for 34% of the variance in SWL. The only difference between the two steps was the addition of the GQ6, suggesting that gratitude accounts for an additional 9% of the variance in SWL ($\Delta R^2 = .09$; $F(1, 382) = 53.26$; $p < .001$), above and beyond the effects of the Big Five domains. This result is consistent with McCullough et al. (2002).

In the second test, we conducted a second two-step hierarchical multiple regression, investigating whether the GQ-6 had incremental validity from the facets of

the NEO PI-R. In the first step, the 30 facets were entered, and a significant model emerged ($R^2 < .35$; $F (30, 358) = 6.46$; $p < .001$), accounting for 35% of variance in SWL. In the second step we entered both 30 facets and the GQ6, which also lead to a significant model ($R^2 = .43$; $F (31, 357) = 8.84$; $p < .001$), accounting for 43% of the variance in SWL. Adding the GQ6 accounted for an additional 8% of the variance in SWL ($\Delta R^2 = .08$; $F (1, 357) = 52.26$; $p < .001$).

4.5. Discussion

Gratitude explained additional variance in SWL after controlling for both the Big Five domains (9%) and facets (8%), supporting conceptions of gratitude as uniquely important to well-being and social life (e.g., Lyubomirsky et al., 2005; Watkins, 2004). Gratitude also showed a distinctive pattern of correlations with the Big Five facets, where gratitude appears to correlate most strongly with the facets that represent well-being and social functioning.

These results provide the most stringent test yet conducted of whether gratitude explains SWL above the effects of the Big Five. Gratitude was shown to have incremental validity above the 30 facets of the Five Factor Model, as operationalized by the NEO PI-R (Costa & McCrae, 1992). The 30 facets (see Table 1 for a list) represent some of the most studied personality traits in the last 50 years (Goldberg, 1993), and are strong predictors of SWL (Schimmack et al., 2004). Demonstrating that gratitude predicts SWL above the effects of these 30 variables provides a validation of positions which see gratitude as uniquely related to SWL (e.g., Lyubomirsky et al., 2005; Watkins, 2004), and suggests that the study of gratitude can provide a genuinely new contribution to the understanding of SWL.

The magnitude of the relationship between gratitude and well-being was notable. The zero-order relationship between gratitude and the SWL was $r = .45$, and gratitude was associated with SWL at $r = .28$ after controlling for the 30 facets of the

Big Five. Cohen (1988; , 1992) defines a medium effect size as $r = .30$, pointing out that most personality scales have zero-order intercorrelations of this magnitude; Cohen defines a large effect size as $r = .50$, considering that such effect sizes are rarely seen in personality psychology between non-overlapping constructs. Extending this approach, Hunsley and Meyer (2003) consider that an incremental validity of $r = .15$ should be considered "a reasonable contribution" (p. 451) when other variables are controlled (as in the current case). Based on these definitions it appears that (a) the zero-order correlation between gratitude and SWL approaches large, and (b) the size of the relationship between gratitude and SWL after controlling for the 30 facets is medium, as large as most zero-order correlations in personality psychology, and twice the size of the effect which Hunsley and Meyer consider a reasonable contribution.

The results also provide the first correlations between gratitude and the Big Five facets. Associating newly studied constructs with the Big Five allows positioning the new construct within the field of personality psychology; this positioning both help integrate the field and suggests new lines of research for the new construct (Watson, Clark, & Harkness, 1994). The correlations between gratitude and the Big Five facets seemed to show a pattern whereby gratitude was most associated with traits involved in well-being and social functioning; the strongest correlations were between gratitude and warmth, gregariousness, positive emotions, open actions, trust, altruism, and tender-mindedness. This is consistent with approaches which see gratitude as a fundamentally social variable (e.g., McCullough et al., 2001).

The study has some limitations, particularly the reliance on self report. Future work should consider using peer-ratings, or behavioral criteria (c.f. Tsang, 2006). All research using classical test theory is sample specific, and future work should consider whether the results generalize to other samples. Research in gratitude is in-

creasingly being studied with diverse samples, such as with Vietnam War veterans (Kashdan, Uswatte, & Julian, 2006), patients with neuromuscular disorders (Emmons & McCullough, 2003), and within school settings (Froh, Sefick, & Emmons, in press). We encourage future work to consider issues of incremental validity within these and other diverse settings (c.f. Hunsley & Meyer, 2003). SWL is an ideal outcome variable for showing incremental validity above the Big Five (Schimmack et al., 2004), but the question naturally arises of whether gratitude also uniquely leads to other outcomes which do not have overlap with the NEO facets. The Big Five facets are a logical place in which to start demonstrating incremental validity, as they encompass most of personality and as the Five Factor model acts as an integrative force in personality psychology (Watson et al., 1994). The selection of other variables to demonstrate incremental validity would have been subjective, as other researchers would almost certainly have selected other variables (and as it will never be possible to control for all variables which could conceivably share variance with gratitude). Nevertheless, future research should develop theory about which variables may be related to gratitude, to test whether gratitude has an unique, shared, mediated, or moderated effect on SWL. Psychological well-being is conceptually distinct from subjective well-being (Keyes et al., 2002; Ryan & Deci, 2001; Waterman, 1993), and involves such traits as involving autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance (Ryff & Keyes, 1995). While most previous research has focused on subjective well-being constructs such as SWL, future research should consider whether gratitude can provide incremental validity in explaining psychological well-being.

Gratitude is increasingly being seen as trait which is a major aspect of well-being (Wood, Maltby et al., 2008). This paper is part of a growing research area which shows that gratitude is integral to SWL (e.g., Emmons & McCullough, 2003;

McCullough et al., 2002; McCullough et al., 2004; Park et al., 2004; Wood et al., 2007a). This paper builds on previous research by suggests that gratitude has substantial incremental validity in the prediction of SWL above the domains and facets of the Big Five model.

CHAPTER 5

5. GRATITUDE PREDICTS PSYCHOLOGICAL WELL-BEING ABOVE THE BIG FIVE FACETS

5.1 Abstract

This study tests whether gratitude predicts psychological well-being above both the domains and facets of the Five Factor Model. Participants ($N = 201$) completed the NEO PI-R measure of the 30 facets of the Big Five, the GQ-6 measure trait gratitude, and the Scales of Psychological Well-being. Gratitude had small correlations with autonomy ($r = .17$), and medium to large correlations with environmental mastery, personal growth, positive relationship, purpose in life, and self-acceptance (rs ranged from .28 to .61). After controlling for the 30 facets of the Big Five, gratitude explained a substantial amount of unique variance in most aspects of psychological well-being ($r_{equivalent} = .14$ to .25). Gratitude is concluded to be uniquely important to psychological well-being.

5.2. Introduction

Throughout history, religious, theological, and philosophical treatise have viewed gratitude as integral to well-being (Emmons & Crumpler, 2000; Harpman, 2004). The systematic study of individual differences in gratitude has traditionally been neglected in psychology (McCullough et al., 2001), probably due to a more general neglect of research into positive emotions (Gable & Haidt, 2005; Linley et al., 2006).

Conceptually, gratitude should be expected to be strongly related to well-being. Gratitude represents the quintessential positive personality trait, being an indicator of a worldview orientated towards noticing and appreciating the positive in life (Wood, Maltby et al., 2008). Grateful people feel more frequent and intense grateful affect (McCullough et al., 2002; McCullough et al., 2004), have more positive views of their social environments (Wood, Maltby, Stewart et al., in press), utilize productive coping strategies (Wood et al., 2007a), have more positive traits (McCullough et al., 2002; Wood, Joseph et al., 2008; Wood, Linley, Maltby, Baliousis, & Joseph, in press) and continually focus on the positive in their environments, with greater appreciation of their life and their possessions (Wood, Maltby et al., 2008). Such a life orientation towards the positive can be can be contrasted with a depressive worldview which typically involves a focus on the negative aspects of the self, world, and future (Beck, 1976). From a slightly different perspective, Lyubomirsky et al. (2005) see gratitude as integral to well-being, as it offers an alternative to the "hedonistic treadmill", where ever more possessions need to be purchased in order to maintain short term gains in happiness.

Considerable recent empirical work has focused on showing empirically that gratitude is related to well-being (e.g., Emmons & McCullough, 2003; Kashdan et al., 2006; McCullough et al., 2002; McCullough et al., 2004; Park et al., 2004; Wood

et al., 2007a). This research has suggested that gratitude is as strongly correlated with well-being as other positive traits (Park et al., 2004), and suggested that this relationship is causal (Emmons & McCullough, 2003; Wood, Maltby, Gillett et al., in press). However, with one exception (Kashdan et al., 2006) research has focused on subjective well-being (SWB) and ignored the potential relationship between gratitude and psychological well-being (PWB).

The distinction between subjective and psychological well-being was first discussed by Aristotle (see Ryan & Deci, 2001). In the Aristotelian view, well-being can be dissociated into *hedonistic* and *eudemonic* components. Hedonistic well-being focused on the experience of momentary pleasure, whereas eudemonic well-being involved acting in a way which is constructive, socially beneficial, and lead to personal growth. In more recent conceptions, hedonism is operationalized as SWB, and involves the frequent experience of positive affect, rare experience of negative affect, and a feeling of satisfaction with life (Diener, 1984). In contrast, PWB is normally operationalized as involving self-acceptance, positive relationships with others, personal growth, purpose in life, environmental mastery, and autonomy (Ryff, 1989; Ryff & Keyes, 1995). A large number of factor analytic studies have shown that PWB and SWB are correlated but distinct aspects of well-being (e.g., Compton et al., 1996; Keyes et al., 2002; McGregor & Little, 1998), which have different patterns of correlates (Waterman, 1993). Conceptually, SWB measures a emotionally pleasant life, whereas PWB measures a life full of meaning, constructive activity, and growth.

SWB is important, as it represents the balance of positive and negative affect and people's life satisfaction (Diener, 1984). However, the positive psychology movement (see Linley et al., 2006) has drawn attention to the importance of lives

which are meaningful in addition to simply pleasant (King, Eells, & Burton, 2004). Theoretical conceptions of gratitude would also predict gratitude to be related to PWB. If gratitude were only related to SWB then this would suggest that gratitude is simply a pleasant emotion, which does not play a role in the leading of a eudemonic life. In contrast, philosophical treatments have considered gratitude to be a fundamental aspect of a meaningful life which is purposefully lived (Emmons & Crumpler, 2000). We suggest that gratitude is linked to both SWB and PWB, representing both the positive valiance of the emotion and the importance of gratitude to a life full of construction, meaning, and growth.

In contrast to the large number of studies into gratitude and SWB, only one previous study has showed that gratitude is related to any aspect of PWB. Kashdan et al. (2006) showed that trait gratitude is related to daily self-regard, rewarding social activity, and the pursuit of intrinsically motivating activity. These relationships were shown to be exist after removing the effects of dispositional positive and negative affect, suggesting that gratitude is not simply related to these PWB variables due to affective valiance. We expand on this study by examining whether gratitude is related to the full range of PWB variables, and by testing whether gratitude has an unique relationship with PWB, or whether gratitude is only related to PWB due to the confounding effect of the Big Five personality facets.

In recent years the there has been a consensus that the Big Five traits of extraversion, neuroticism, conscientiousness, openness, and agreeableness represent most of personality at the highest level of abstraction (Goldberg, 1993; John & Srivastava, 1999). These variables cover the breath of personality, including such variables as pro-sociality (under agreeableness); positive emotions, social-outgoingness, and energy (under extraversion); and negative emotions, depression, and anxiety (under

neuroticism) (Costa & McCrae, 1995). As may be expected from a well-being variable, gratitude is positively correlated with extraversion, agreeableness, openness, and conscientiousness, and negatively correlated with neuroticism (e.g., McCullough et al., 2004; Wood, Joseph et al., 2008; Wood, Maltby, Stewart et al., in press); together the Big Five variables explain between 21% and 28% of the variance in gratitude (McCullough et al., 2002). The Big Five variables are correlated with PWB (Schmutte & Ryff, 1997), raising the possibility that gratitude is only linked to PWB because of the third variable effects of the Big Five. The Big Five traits represent some of the most studied variables over the last 50 years (Goldberg, 1993; John & Srivastava, 1999). McCullough et al. (2002) argued that for gratitude research to have an impact on personality psychology it is necessary to show that the variable has incremental validity above the effects of the Big Five personality traits.

This paper reports on a test whether gratitude is linked to PWB after removing the effects of the facets of the Big Five. Several previous studies have shown that gratitude is related to social and well-being variables after controlling for the domains of the Big Five (e.g., McCullough et al., 2002; McCullough et al., 2004; Wood, Maltby, Gillett et al., in press; Wood, Maltby, Stewart et al., in press). However, in the Five Factor Model personality is assumed to be hierarchically organized, with other personality traits existing underneath each of the Big Five (McCrae & Costa, 1999; Paunonen, 1998). In the NEO PI-R operationalization (Costa & McCrae, 1992), six personality facets are measured for each of the five domains, with a total of 30 personality measures assessing the facet level of personality. For example, the domain "agreeableness" has the six facets of trust, straightforwardness, altruism, compliance, modesty, and tender-mindedness. As gratitude is expected to be at the facet not the domain level of personality, a stronger test of the incremental

validity of gratitude would control for the 30 NEO PI-R facets, rather than just the five domains. A large literature is developing which shows that a variety of outcomes can be better predicted by measuring each of the 30 facets rather than just using global measures of the Big Five domains (e.g., Ekehammar & Akrami, 2007; Paunonen & Ashton, 2001; Paunonen et al., 2003; Reynolds & Clark, 2001). Showing that gratitude is related to well-being above the effects of the domains may simply be a result of including a facet level variable in the regression equation.

In the only previous study to show that gratitude is related to any variable above the effects of the Big Five facets, Wood et al. (2008) showed that gratitude has an unique relationship with satisfaction with life. To show incremental validity above the effects of the Big Five facets, it is necessary to select outcome variables which are not confounded with the facets (for example depression would not be an appropriate outcome variable as it is one of the facets of neuroticism). Satisfaction with life is one such variable (Schimmack et al., 2004), and Wood et al. identified PWB as a similarly appropriate variable for future research. Thus, in addition to testing whether gratitude is uniquely related to PWB, the current paper provides one of the first tests of whether gratitude can predict *any* outcome above the effects of the facets of the Big Five. If gratitude was only linked to outcome variables because of shared variance with the Big Five facets, then the study of gratitude may still be valuable in understanding how people with particular Big Five facet configurations view the world (cf., McCullough et al., 2002). However, for gratitude to have an unique impact on personality psychology it is necessary to show that gratitude can explain variance in outcome variables above the Big Five facets.

5.3. Method

5.3.1. Participants and Procedure

Participants were 201 undergraduate students (128 female, 78 male). Ages ranged from 18 to 26 and ethnicity was predominantly White (75%) or Indian (13%). After agreeing to complete the study, participants were directed to a secure university web-site where all measures were completed in a single sitting.

5.3.2. Measures

5.3.2.1. Gratitude was assessed with the Gratitude Questionnaire-6 (GQ-6: McCullough et al., 2002). Six items assess the frequency and intensity of gratitude, as well as the range of events which cause the emotion. Items are rated on a 1 ("Strongly Disagree") to 7 ("Strongly Agree") scale. The GQ-6 has a unifactorial structure (shown through three confirmatory factor analysis), non-significant correlations with social desirability, good convergent validity with well-being and peer-ratings, and high test-retest reliability (McCullough et al., 2002; Wood, Maltby, Gillett et al., in press).

5.3.2.2. PWB was measured with the 18-item Scales of Psychological Well-being (Ryff & Keyes, 1995). Items assess self-acceptance, positive relationships with others, personal growth, purpose in life, environmental mastery, and autonomy. Items are rated on a 1 ("strongly disagree") to 7 ("Strongly Agree") scale. These scales have been used extensively in previous research, which has shown their independence from measures of SWB (Keyes et al., 2002; Ryff & Keyes, 1995).

5.3.2.3. The *Domains and Facets of the Big Five* were measured with the NEO-PI-R (Costa & McCrae, 1992). The 240-item measure provides domain scores for extraversion, agreeableness, neuroticism, openness, and conscientiousness. Additionally, six facet level sub-scales are provided for each domain (see Table 1), resulting in 30 facet scores which cover the entire Big Five domain (Costa & McCrae, 1995). Participants rate items on a 0 ("Strongly Agree") to 4 ("Strongly Disagree")

scale. The NEO-PI-R is one of the most widely used measures of the Big Five. The measure has six-year test-retest reliability ranging from .63 to .83, strong consensual validity between, self, peer, and spouse reports, and has good convergent validity with other personality and well-being measures (Costa & McCrae, 1992).

5.4. Results

5.4.1. Correlations Between Gratitude and the Big Five

Correlations between the Big Five facets, gratitude, and PWB are presented in Table 5.1. Overall, gratitude was positively correlated with certain facets from the extraversion, openness, agreeableness, and conscientiousness domains, and negatively correlated with certain neuroticism facets. In line with Wood et al. (2008), gratitude appeared to show a distinctive pattern of correlations with the Big Five facets, correlating most strongly with the facets which represented subjective well-being and social life (absolute correlations were strongest with positive emotions, depression, warmth, and altruism). The Big Five facets were also strongly correlated with PWB, highlighting the importance of covering the facets when examine the relationship between gratitude and PWB (for example, vulnerability was negatively correlated with both gratitude and each of the PWB variable at between -.27 and .61).

5.4.2. Correlations Between Gratitude and PWB

Cohen (1988; 1992) defined effect sizes as small at $r = .10$, medium at $r = .30$, and large at $r = .50$. Adopting these definitions, gratitude had a small zero-order correlation with autonomy ($r = .17$, $p < .05$), medium correlations with environmental mastery ($r = .38$, $p < .001$) and purpose in life ($r = .28$, $p < .001$), and large correlations with personal growth ($r = .50$, $p < .001$), positive relationships with others ($r = .54$, $p < .001$), self acceptance ($r = .61$, $p < .001$). These correlations suggest that

Table 5.1
Correlations Between the Facets of the Big Five and Gratitude, PWB, and Satisfaction with Life

	Gratitude	Autonomy	Environmental Mastery	Personal Growth	Positive Relationships	Purpose in Life	Self Acceptance
N1: Anxiety	-.03	-.16*	-.53***	-.15*	-.13	.09	-.21**
N2: Anger Hostility	-.20**	.07	-.31***	-.23**	-.27***	-.03	-.21**
N3: Depression	-.31***	-.10	-.64***	-.20**	-.35***	-.06	-.56***
N4: Self-Consciousness	-.12	-.13	-.54***	-.16*	-.25***	-.09	-.42***
N5: Impulsiveness	.02	.14*	-.13	-.01	-.06	-.08	-.02
N6: Vulnerability	-.27***	-.22**	-.61***	-.40***	-.29***	-.26***	-.44***
E1: Warmth	.44***	.09	.22**	.36***	.47***	.18*	.39***
E2: Gregariousness	.26***	-.12	.20**	.14*	.34***	.14	.25***
E3: Assertiveness	.16*	.24**	.35***	.22**	.17*	.30***	.36***
E4: Activity	.24***	.13	.26***	.27***	.22**	.18*	.39***
E5: Excitement Seeking	.12	.07	.16*	.15*	.18*	.04	.23**
E6: Positive Emotions	.51***	.17*	.43***	.37***	.45***	.09	.62***
O1: Fantasy	.13	.24**	-.08	.01	.08	.00	.03
O2: Aesthetics	.01	.20**	-.13	.29***	.05	.03	.00
O3: Feelings	.33***	.20**	.05	.36***	.34***	.21*	.24**
O4: Actions	.03	.12	.13	.25***	.09	.04	.02
O5: Ideas	.15*	.40***	.04	.41***	.04	.21**	.09
O6: Values	.18*	.29***	.04	.29***	.17*	.07	.13
A1: Trust	.26***	-.11	.23**	.10	.38***	-.17*	-.20**
A2: Straightforwardness	.17*	-.06	-.07	.11	.26***	-.02	-.10
A3: Altruism	.40***	.14	.12	.40***	.55***	.27***	.27***
A4: Compliance	.06	-.20**	-.08	.09	.19**	-.05	-.04
A5: Modesty	.02	-.01	-.20**	.02	.01	-.06	-.29***
A6: Tender-Mindedness	.18*	.00	-.12	.14*	.20**	-.06	-.11
C1: Competence	.24**	.22**	.35***	.40***	.21*	.48***	.34***
C2: Order	.055	.01	.046	-.010	.054	.23***	.061
C3: Dutifulness	.28***	.09	.16*	.29***	.27**	.34***	.15*
C4: Achievement Striving	.20**	.10	.22**	.32***	.20**	.51***	.24**
C5: Self-Discipline	.27***	.09	.29***	.22***	.29***	.39***	.29***
C6: Deliberation	-.038	-.06	-.11	.10	.04	.25***	-.06

Note: $* p < .05$, $** p < .01$, $*** p < .001$.

gratitude is an important predictor of PWB.

5.4.3. Incremental Validity of Gratitude in Predicting PWB

Table 5.2 shows the extent to which gratitude can improve the prediction of PWB beyond what can be predicted by the 30 Big Five facets. Six two-step hierarchical multiple regressions were preformed, respectively predicting each of the PWB variables. For each of these regressions, in the first step the 30 Big Five facets were entered. In the second step gratitude was entered in addition to the 30 facets. As the inclusion of gratitude represents the only change between the steps, any changes in the prediction of the outcome can only be due the effects of gratitude. Gratitude had incremental validity in predicting personal growth, positive relationships with others, purpose in life, and self-acceptance (R^2 increased by between .02 and .08, equivalent to an incremental increase for between $r = .14$ and .25). Such values are conventionally interpreted as substantial incremental validities (Hunsley & Meyer, 2003). However, gratitude did not uniquely predict autonomy or environmental mastery.

5.5. Discussion

The study provided the first indication that gratitude is related to a full range of PWB variables, supporting theoretical positions that gratitude is related to a life that is meaningful rather than simply hedonistically pleasant (Emmons & Crumpler, 2000). The relationship between gratitude and several PWB variables (i.e., personal growth, positive relationships, purpose in life, and self-acceptance) was independent of the effects of the 30 facets of the Five Factor Model, suggesting that gratitude may be uniquely important to PWB.

The size of the correlations between gratitude and PWB was notable. Zero-order correlations ranged from $r = .17$ to .61. Adopting conventional definitions (J. Cohen, 1988, 1992), gratitude had small correlations with autonomy (r = .17), and

Table 5.2
Summary of Six Hierarchical Multiple Regressions to Test the Incremental Validity of Gratitude.

Outcome Variable	Step 1		Step 2		Change Statistics		
	R^2	$F_{(30, 170)}$	R^2	$F_{(31, 169)}$	ΔR^2	$F_{(1, 169)}$	$r_{equivalent}$
Autonomy	.40	3.72***	.40	3.60***	.00	0.287	.03
Environmental Mastery	.62	9.08***	.62	9.04***	.01	3.655	.09
Personal Growth	.54	6.55***	.60	8.18***	.06	27.06***	.25
Positive Relationships with Others	.54	6.70***	.56	7.06***	.02	8.82**	.15
Purpose in Life	.46	4.80***	.48	5.01***	.02	6.55*	.14
Self Acceptance	.62	9.31***	.68	11.72***	.06	32.45***	.25

Note: In Step 1 the outcome variable is regressed on the 30 Big Five Facets, in Step 2 the outcome variable is regressed both onto the 30 Big Five facets and gratitude. * $p < .05$, ** $p < .01$, *** $p < .001$.

medium to large correlations with environmental mastery, personal growth, positive relationship, purpose in life, and self-acceptance (rs ranged from .28 to .61). Correlations of this size suggest that gratitude is an important predictor of PWB. Additionally, the incremental validity after controlling for the 30 Big Five facets was reasonably substantial. Gratitude explained between 2% and 6% additional variance in PWB (equivalent to rs between .14 and .25). Whilst these would be considered small to medium zero-order correlations, Hunsley and Mayer (2003) argue that incremental validates of .15 should be considered "a reasonable contribution" (p. 451) as they represent estimates of the unique contribution of a variable, whereas conventional definitions of effect size assume that correlation includes both unique contribution and the contribution due to third variables. Adopting these definitions, gratitude made a reasonable incremental contribution to both purpose in life and positive relationships with others, and a contribution to self-acceptance and personal growth of a magnitude almost twice what Hunter and Murray would consider reasonable.

The study had some limitations, particularly the reliance on self report. Future research should examine whether the findings persist when using peer-reports (c.f., Schimmack et al., 2004) or behavioral ratings of gratitude (c.f., Tsang, 2006). The sample consisted purely of students and the findings may not generalize to other samples. With positive psychology constructs increasingly being considered in clinical settings (Duckworth et al., 2005), we encourage gratitude to be examined as a potential contributor of unique variance to PWB in diverse populations. Finally, the methodology can only show incremental validity with regard to the particular variables included in the study. The 30 facets of the Big Five seemed the optimal selection of variables to use as covariates as the Five Factor Model has become an integrative force in personality psychology (Watson et al., 1994), and these variables

represent some of the most studied variables in last 50 years of personality psychology (McCrae & Costa, 1999). Given this, any other selection of variables would have been somewhat arbitrary, and different researchers would always have compile different lists of variables to be included. However, future research should develop theory as to which other variables should be studied alongside gratitude, to see whether gratitude has a direct, confounded, or mediated relationship with PWB and other variables.

The current study suggests that gratitude is strongly related to aspects of PWB, and that this relationship is at least partially independent of the 30 facets of the Five Factor Model. The study of gratitude is still in its infancy, and future research should concentrate on the direction of the relationship between gratitude and PWB, the conditions under which both constructs develop, and how gratitude and PWB operate in diverse life contexts.

CHAPTER 6

6. THE ROLE OF GRATITUDE IN THE DEVELOPMENT OF SOCIAL SUPPORT, STRESS, AND DEPRESSION: TWO LONGITUDINAL STUDIES

6.1 Abstract

In two longitudinal studies, the authors examined the direction of the relationships between trait gratitude, perceived social support, stress, and depression during a life transition. Both studies used a full cross-lagged panel design, with participants completing all measures at the start and end of their first semester at college. Structural equation modeling was used to compare models of direct, reverse, and reciprocal models of directionality. Both studies supported a direct model whereby gratitude led to higher levels of perceived social support, and lower levels of stress and depression. In contrast, no variable led to gratitude, and most models of mediation were discounted. Study 2 additionally showed that gratitude leads to the other variables independently of the Big Five factors of personality. Overall gratitude seems to directly foster social support, and to protect people from stress and depression, which has implications for clinical interventions.

6.2 Introduction

Dispositional gratitude involves individual differences in how frequently and intensely people experience the emotion of gratitude, as well as individual differences in the range of events which elicit the emotion (McCullough et al., 2002). Dispositional gratitude is related to a more positive and appreciative outlook towards life (Wood, Maltby et al., 2008), and involves a positive bias in interpreting social situations (Wood, Maltby, Stewart et al., in press). Gratitude is perhaps the quintessential positive psychological trait, as it involves a life orientation towards the positive in the world. This positive orientation can be contrasted, for example, with the depressive orientations towards the negative in the self, world, and future (Beck, 1976).

Historically, gratitude has been accorded considerable importance in understanding human functioning (Emmons & Crumpler, 2000; Harpman, 2004). The study of individual differences in gratitude is, however, very recent (McCullough et al., 2002), perhaps due to a more general neglect of research into positive emotions (see Gable & Haidt, 2005; Linley et al., 2006).

In the last few years gratitude has been shown to be a robust predictor of well-being and social variables (McCullough et al., 2002; McCullough et al., 2004; Wood et al., 2007a). On the basis of this relationship, gratitude interventions have been developed, and shown to substantially decrease depression and increase social functioning (Emmons & McCullough, 2003; Lyubomirsky et al., 2005; Seligman et al., 2005). Such successes have led to calls for gratitude interventions to become more used in clinical settings (Bono et al., 2004; Seligman, 2005a). These calls are consistent with a more general movement to foster clients strengths in clinical practice (Duckworth et al., 2005; Joseph & Linley, 2006).

Despite the recent proliferation of research on gratitude, a basic question that

has yet to be addressed by the literature regards how gratitude, stress, depression, and social support influence each other over time. Longitudinal methods can also add valuable complementary evidence to the existing experimental studies showing that gratitude interventions lead to improved levels of emotional well-being. As well as knowing that therapeutically changing gratitude has a causal effect on well-being, it would be valuable to know whether gratitude naturally leads to improved well-being over time. Knowing whether gratitude leads to lower levels of stress and depression in naturalistic settings such as life transitions is a critical consideration in the implementation of gratitude interventions in clinical settings (Bono et al., 2004; Seligman, 2005b). For example, if gratitude naturally protected people from stress and depression, then this would suggest that increasing gratitude therapeutically may build up a psychological capital which is beneficial during the difficult periods of peoples lives. This would encourage the use of gratitude interventions in clinical, counseling, and coaching settings.

Although social support has a massive research base (see G. R. Pierce, Lakey, Sarason, & Sarason, 1997), the role of gratitude in social support has not yet been considered, and gratitude may be expected to be a particularly strong predictor of social support (Wood et al., 2007a). In studying social support longitudinal methods are particularly valuable (S. Cohen & Wills, 1985). The development of social support is a naturally occurring process, with levels of social support changing as people move through different social situations. Personality variables have good predictive value of individual differences in the levels of social support that people develop (G. R. Pierce et al., 1997). How social support naturally develops also has applied significance through informing the planning of social support interventions (Hogan, Linden, & Najarian, 2002).

New methods of analyzing longitudinal designs allow the testing of complex models of directionality including direct models (where gratitude leads to social support), reverse models (where social support leads to gratitude), and reciprocal models, where both gratitude and social support lead to each other over time, operating as a positive upward spiral (Zapf et al., 1996). Such methods provide particularly rich understanding of directionality between variables.

6.2.1. Models of Directionality

Several potential models of how gratitude, social support, stress, and depression could relate to each other over time are presented in Table 6.1 (see also Figure 6.1). Model 1 is a stability model, where no variable leads to any other over time, but the variables exhibit a degree of temporal stability (test-retest reliability), and are perhaps correlated at each time point. There are several reasons why there may be cross-sectional but not longitudinal relationships between the variables. First, over a given time span there may be no causality between any variables, either because an

Table 6.1
Six models of possible longitudinal relationships between gratitude, stress, depression, and social support

Model		Description
1. Stability		There is not a longitudinal relationship between gratitude, stress, depress, and social support (but each variable may be stable, and correlated at each time point)
2. Direct		Gratitude leads to stress, depression, and social support
3. Reverse		Stress, depression, and social support lead to gratitude
4. Reciprocal		A positive feedback loop between stress, depression, social support and gratitude
5. Mediation	i	Gratitude to social support to stress and depression
	ii	Gratitude to well-being to social support
	iii	Social support to stress and depression to gratitude
	iv	Social support to gratitude to stress and depression
	v	Stress and depression to social support to gratitude
	vi	Stress and depression to gratitude to social support
6. Third variable		A third variable (such as neuroticism or extraversion) accounts for the relationship between gratitude and stress, depression, and social support.

inappropriate time span is being studied, or because there is insufficient change in the variables. Second, there may have been causality between the variables in the past, but the relationships may have reached stability (for example a particularly influential life event may cause substantial gratitude, leading to permanently increased perceptions of social support). Third, there may be continuity between the variables, where, for example, gratitude actually represents satisfaction with social support. In each of these three cases, there could be a significant cross-sectional relationship between the variables, but over a given time period no variable would lead to any other when past levels of the variables were controlled (Maruyama, 1997).

In Model 2, gratitude leads to higher levels of social support, and lower levels of stress and depression. This is the model suggested by the previous experimental studies (McCullough et al., 2002; Seligman et al., 2005), which suggest that interventions that increase gratitude have a causal influence on well-being. There are various ways in which gratitude may lead to less stress and depression. First, gratitude could operate as a protective variable. Gratitude is associated with making positive attributions (Wood, Maltby et al., 2008; Wood, Maltby, Stewart et al., in press), and these attributions may protect people from becoming stressed and depressed, particularly during turbulent life events. Second, grateful people could change their environments in ways which make them less depressing and less stressful. Third, gratitude could modify or alter the progress of the other variables. For example, gratitude could modify the course of depression, making remission quicker; feeling grateful for the positive aspects of the world would quite likely make a depressive bout more bearable and of shorter duration.

Gratitude may also be particularly influential in developing perceptions of social support. Perceived social support appears to represent an interaction between the

amount of objectively helpful aid people receive and individual differences in interpreting social situations (Lakey & Drew, 1997). Perceived social support is correlated with the actual supportive behaviors that people receive at about $r = .30$. The remainder of the variance in perceived social support is accounted for by people's characteristic attributions regarding social situations, and an actual supportive behavior x characteristic attribution interaction (Lakey, McCabe, Fisicaro, & Drew, 1996). When gratitude is expressed to the benefactor, the benefactor is more likely to provide future aid (Bartlett & DeSteno, 2006; Carey et al., 1976; McCullough et al., 2001; Rind & Bordia, 1995; Tsang, 2006). As such dispositional gratitude may lead to the development of more supportive environments, represented in conscious awareness as perceived social support. Additionally, gratitude leads to characteristic attributions regarding social situations, with grateful people interpreting the help they receive as more valuable, more costly, and seeing their benefactors intentions as more altruistic (Wood, Maltby, Stewart et al., in press). As gratitude is involved in both encouraging actual supportive behaviors and in appraising situations positively, gratitude seems particularly likely to lead to perceived social support.

Model 3 specifies that high levels of social support and low levels of depression and stress lead to gratitude. This model is highly plausible, as the other variables could be exactly the aspects of life for which grateful people feel gratitude. People could be grateful for their high levels of well-being and supportive social environments. Phrased alternatively, people could feel that they have little to be grateful for if they have poor social support, and are very stressed and depressed. This could operate as part of a depressive bias (e.g. Beck, 1976; Evans et al., 2005), or through depressed people having objectively worse life events (Monroe, Harkness, Simons, & Thase, 2001), which could lead to low feelings of gratitude. Additionally,

there is evidence that depressed people seek information that confirms their negative world views (Giesler, Josephs, & Swann, 1996; Swann, Wenzlaff, Krull, & Pelham, 1992), which could perhaps lead to the impression that there is not much in the world for which to be grateful.

Model 4 suggests a reciprocal relationship between gratitude and the other variables. Fredrickson's (2001) broaden-and-build theory of positive emotions supports this model. The theory suggests that positive emotions cause cognitive and behavioral engagement in activities which build resources which will be adaptive in the future. The activities lead to further positive emotions, perpetuating an upward spiral. There is a growing body of evidence to support this theory with regard to positive emotions in general (e.g. Fredrickson & Joiner, 2002; Fredrickson, Tugade, Waugh, & Larkin, 2003; Sheldon & Houser-Marko, 2001), and Fredrickson (2004) has suggested that gratitude operates in a broaden-and-build fashion.

Model 5 is actually six different mediational models, proposing all permutations of causal chains between gratitude, stress, depression, and social support. Each of these models provides a reasonable explanation. For example, there is both evidence that in some circumstances low social support leads to stress and depression (Barnett & Gotlib, 1988; Monroe et al., 1986), and in others stress and depression leads to social support (Coyne, 1976; Joiner, Alfano, & Metalsky, 1993). Combined with not currently knowing whether gratitude should be conceptualized as a predictor or outcome variable, each of the mediational models remains plausible.

Model 6 specifies that the relationships between gratitude and stress and depression, and social support can be accounted for by third variables. Gratitude has been shown to be correlated with other broad personality variables (such as Extraversion or Neuroticism), which could account for any apparent relationship between

the variables.

Each of these six models of directionality (see Table 6.1) provide a plausible account of the relationships over time between gratitude and social support, stress, and depression. These models have not been tested. Establishing which of the models best accounts for the relationships will allow better interpretation of the previous correlational findings, and elucidate the role of gratitude and well-being. If gratitude is shown to be lead to perceived social support, then this will be suggest a potential role for gratitude in social support interventions (see Hogan et al., 2002). Additionally, whether gratitude naturally leads to decreases in stress and depression is of central importance in considering promoting the use of gratitude interventions.

6.3. Study 1

Study 1 directly tested Models 1 to 5 of the directionality between gratitude, depression, stress, and social support. In order to allow conclusions about directionality between the variables, the study used a full cross-lagged panel design, where each participant completed the same measures at two time points.

Various methods of testing models of directionality with longitudinal data have been developed (see the extensive discussions in Finkel, 1995; Zapf et al., 1996), including hierarchical regression based approaches, cross-lagged panel correlations (CLPC), and structural equation modeling (SEM) (see Maruyama, 1997; Schumacker & Lomax, 2004). Of these approaches, SEM is to be preferred, as CLPC is unable to deal satisfactorily with the stability of variables (Feldman, 1975), regression based approaches are very susceptible to factors that occur on the day of testing, and only SEM can test the reciprocal causality suggested by Model 4 (Zapf et al., 1996).

The current analysis takes a SEM approach to data analysis. The approach

taken in this paper seeks to improve on many SEM analysis, which have sometimes been controversial (for reviews see Fassinger, 1987; MacCallum & Austin, 2000; Tomarken & Waller, 2005). Much of this criticism has focused on how the variables in the SEM path diagram can be rearranged in another order, and yet still provide a good (often identical) model fit (S. Lee & Hershberger, 1990; MacCallum, Wegener, Uchino, & Fabrigar, 1993; Tomarken & Waller, 2003). In this paper we address these criticisms by (a) ruling out many models through the introduction of a temporal element, and (b) making tests between all the likely models that remain a fundamental focus of the analysis and paper. This approach of testing rival *a priori* models implements recent advice for improving the quality of published SEM research (Hoyle & Panter, 1995; MacCallum, Roznowski, & Necowitz, 1992; Tomarken & Waller, 2003).

6.3.1. Method

6.3.1.2. Participants and Procedure

The participants were 156 first year undergraduate students (76 male and 80 female), who completed all measures at two time points. All participants were aged between 18 and 19 years old, and predominantly reported their ethnicity as White (78.8%), or Indian (12.8%).

The first questionnaire was given to participants at the start of lectures during their first few weeks at the university (T1), and a second questionnaire at the end of the semester (T2), approximately three months later. All measures were given at both time points, and the order in which the measures were presented was counterbalanced.

As the participants had just started university, they would have had little time to develop perceptions of social support. The participants perceptions of support

could be expected to be in a state of change between the two time points, as the participants met new people during this life transition.

This population was chosen as it fulfilled Cohen and Wills's (1985) criteria for the optimum conditions for studying social support at more than one time point. Cohen and Wills (1985) suggested using (1) a sample that has a wide range of mental health differences (rather than a slanted clinical sample), (2) a life event where participants are undergoing changes in levels of mental health and social support, and (3) time points that are not too far apart to miss the developmental essence of the phenomena. Students starting university for the first time are particularly suited to these criteria as they (1) have a wide range of mental health, (2) have little or no social support networks, and (3) generally exhibit considerable changes in levels of mental health during the first term, with many people finding the experience rewarding and pleasing and others highly stressful and depressing (e.g. Brissette, Scheier, & Carver, 2002; Segrin & Flora, 2000). The three month interval was selected as this captures the key time when students social networks are changing, and as Cohen and Wills (1985) specifically recommend using periods of less than a year when studying social support in students. Using the students first semester at university appeared particularly relevant in this regard.

6.3.1.3. Measures

6.3.1.3.1. Gratitude. The Gratitude Questionnaire-6 (GQ-6: McCullough et al., 2002) was used to assess gratitude. Participants responded to six items (two reverse coded) on a 1 (strongly disagree) to 7 (strongly agree) scale. Items asked about how frequently and intensely participants experience gratitude (e.g. "I feel thankful for what I have received in life", and "long amounts of time can go by before I feel grateful to something or someone"). The scale has strong correlations with well-

being and social variables, good peer rated validity, and independence from other related constructs (McCullough et al., 2002).

     6.3.1.3.2. Social support. Perceived social support was measured using the belonging, tangible, and appraisal subscales of the college student version of the Interpersonal Support Evaluation List (S. Cohen & Hoberman, 1983). *Belonging* refers to shared social activities, *tangible* regards the provision of practical assistance, and *appraisal* involves advice, listening to problems, and emotional support. Participants respond to three sub-scales, each of which contain 12 statements (6 reverse coded) about the availability of people to provide belonging, tangible, or appraisal functions, and indicated whether they perceived the statement to be 'probably true' or 'probably false'. These scales thus measure perceptions of social support rather than the objective social situation (cf. Lakey et al., 1996). Slight changes were made to the directions, specifying that the items referred to social support provided in the campus or in the local town. As such, the majority of participants moving into a new social environment would experience an increase in social support over the course of the study. The scale has strong predictive validity for stress, depression, physical health, and health behavior change (S. Cohen, Mermelstein, Kamarck, & Hoberman, 1985), and is widely used in research (e.g. Brissette et al., 2002). The sub-scales have a 4-week test retest reliability of between $r = .80$ and $.87$, and the low intercorrelations between the sub-scales support their discriminate validity (S. Cohen et al., 1985).

     6.3.1.3.3. Depression. The Centre for Epidemiologic Studies Depression scale (CES-D: Radloff, 1977) was used to measure depression. Participants rate how frequently during the past month they have experienced depressed affect, positive affect (reverse coded), and somatic and retarded activity. Twenty items are rated on a four

point scale (0 = rarely or none of the time, 1 = some or a little of the time, 2 = occa-sionally or a moderate amount of time, 3 = most or all of the time). The CES-D was designed for measuring depressive symptoms in the general population, and is one of the most frequently used depression measures in psychological research (Shaver & Brennan, 1990). Validity has been demonstrated by several studies showing the ac-curacy of the CES-D in correctly identifying people known to be depressed (McDowell & Kristjansson, 1996).

 6.3.1.3.4. Stress. Perceived stress was measured using the Perceived Stress Scale (PSS: S. Cohen & Williamson, 1988). Ten items measure the extent to which during the last month participants have found their lives unpredictable, uncontrolla-ble, and overwhelming. The ten items (six recoded) are rated on a 0 (never) to 4 (very often) scale. The scale shows good convergent and predictive validity with life events, depression, use of health services, and health behaviours (S. Cohen, Kamarck, & Mermelstein, 1983; S. Cohen & Williamson, 1988), and has been used frequently in previous research.

6.3.1.4. Data Analysis

 The data was analyzed with covariance structural equation modelling. Initially, Models 1 to 4 (see Table 6.1) were tested, followed by testing for mediation (Model 5).

 6.3.1.4.1. Testing Models 1 to 4. Models 1 to 4 are presented in Figure 6.1. In each of the models all variables within each wave were allowed to correlate.

 In Model 1 (stability model), each T1 variable lead to its T2 counterpart, but no T1 variable led to any other T2 variable. Essentially, this model specifies that there is no longitudinal relationship between the variables, but each variable exhibits a degree of temporal stability (test-retest reliability). The remaining three models

Model 1: Stability

Model 2: Direct

Model 3: Reverse

Model 4: Reciprocal
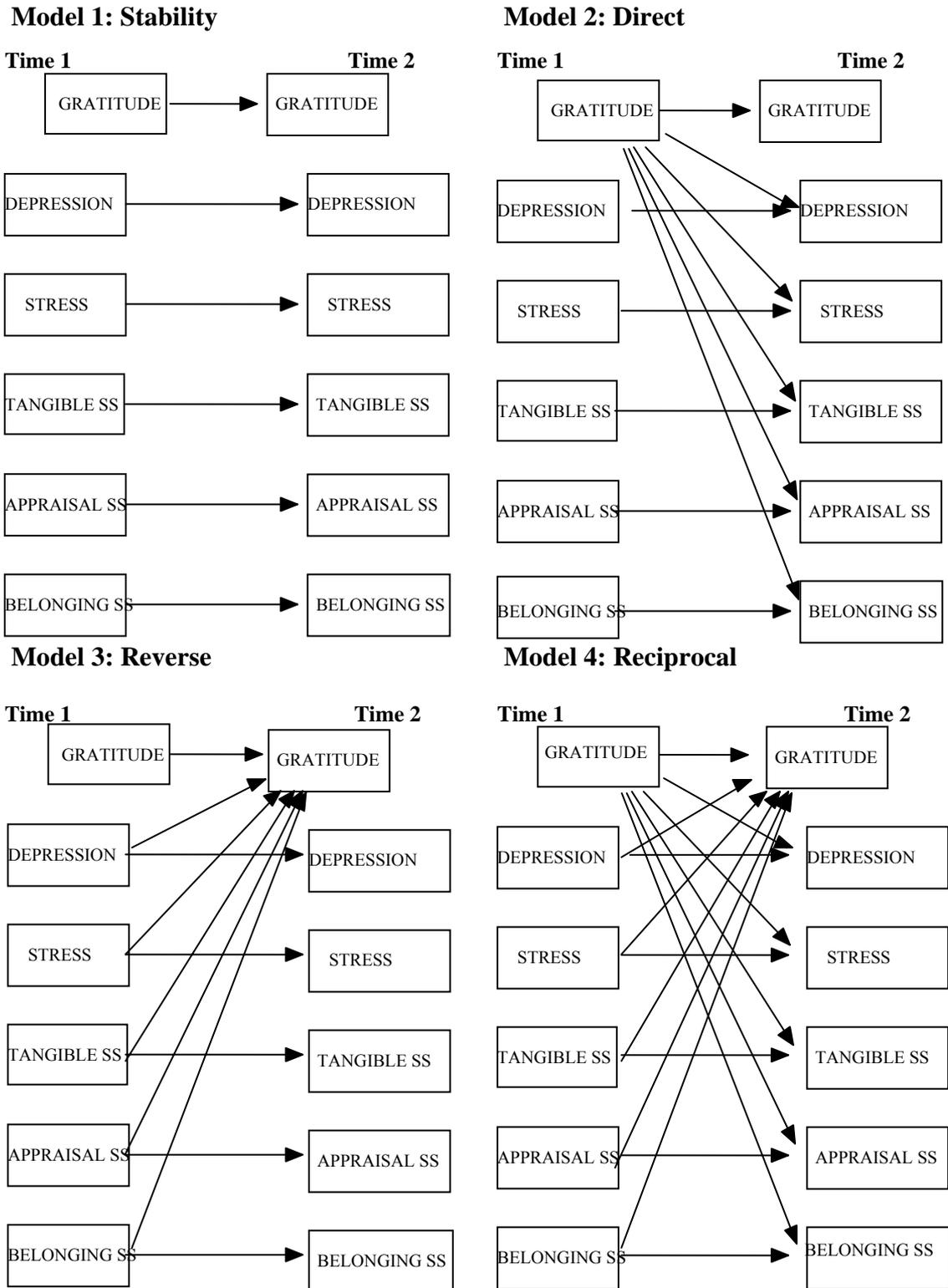
Figure 6.1. Models 1 to 4. SS = Perceived social support. For clarity, in this diagram the intercorrelations between the variables at each wave and the error variances of endogenous variables have been omitted.

were tested against Model 1, to see whether including additional paths improved model fit. Note that the remaining models (Models 2, 3, and 4) also incorporate the stability model, so prior levels of each of the variables are controlled.

In Model 2, paths were included from gratitude to each T2 variable, representing a model whereby gratitude leads to stress, depression and social support. In Model 3, paths were added from each of the T1 well-being and social support variables to T2 gratitude. This model specifies that well-being and social support leads to gratitude. Finally, in Model 4, paths were added from T1 gratitude to T2 well-being and social support, and from T1 well-being and social support to T2 gratitude. This model represents a positive feedback loop where gratitude is reciprocally related to well-being and social support.

For the purposes of model comparison, we examined differences in fit between the models using the changes in the chi squared test of fit and Akaike Information Criterion (AIC). As the models are nested, the difference in fit between any two models can be directly compared by examining the difference in the values of chi squared statistics. The difference in values is itself chi squared distributed, with number of degrees of freedom equal to the difference between the degrees of freedom of the competing models (Schumacker & Lomax, 2004). A significant difference in model fit indicates that the model with the smaller chi square value is to be preferred. This direct approach is preferable to comparing the fit indices of the various models (Hoyle & Panter, 1995) because models with lower numbers of parameters ordinarily exhibit greater fit.

Models were also compared using the AIC, a measure of model fit adjusted for parsimony. Burnham and Anderson (2002) demonstrate that the absolute size of the AIC is uninterruptible because of confounding with the constant and sample size.

However differences in the AIC between models provide a reliable indication of the best fitting model, with the model having the lowest AIC to be preferred. Burnham and Anderson suggest that AIC differences of 0-2 show little difference between the competing models, whereas differences of 4-7 show considerably more support for the model with the lowest AIC.

The fit of the final model was tested with the standardized root mean square residual (SRMR), and the comparative fit index (CFI). Hu and Bentler's (1999), Monte Carlo analysis suggested that of all the common fit criteria they tested, Type I and II errors were minimalized when using a combination of SRMR <.09, and CFI >.95. These criteria are to be preferred to relying on the Chi Squared test, which is over sensitive to sample size (see also Hu & Bentler, 1998).

6.3.1.4.2. Testing Model 5. The tests between Models 1 to 4 compared different models of the relationship of gratitude with stress, depression *and* social support. This leaves several questions unanswered, such as whether stress and depression lead to social support or vice versa, and whether these are part of the six possible mediational chains shown in Model 5.

Analysis was carried out to attempt to disprove the mediation suggested by Model 5, using Cole and Maxwell's (2003) longitudinal adaptation of Baron and Kenny's (1986) procedures. A key issue in establishing mediation involves showing that the causal chain is correctly arranged, so that the mediator is genuinely downstream of the predictor, and the outcome is genuinely downstream of the mediator (Frazier, Tix, & Barron, 2004; Tomarken & Waller, 2003). With non-experimental methods, this chain can only truly be demonstrated with three-wave longitudinal designs (Collins, Graham, & Flaherty, 1998). However, Cole and Maxwell (2003) demonstrate that mediation can be *ruled out* if (*a*) the T1 predictor does not lead to

Table 6.2
Descriptive statistics and intercorrelations between Study 1 variables

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
Time 1														
1. Gratitude	28.97	8.26	-											
2. Depression	33.29	15.16	-.10	-										
3. Stress	11.16	7.50	-.11	.76**	-									
4. Tangible SS	7.47	3.81	.06	-.33**	-.43**	-								
5. Belonging SS	6.54	3.79	.10	-.15	-.30**	.45**	-							
6. Appraisal SS	6.31	3.13	.02	-.20**	-.35**	.17*	.17*	-						
Time 2														
7. Gratitude	29.57	8.71	.59**	-.04	-.06	.09	.13	.01	-					
8. Depression	17.38	16.30	-.24**	.53**	.55**	-.27**	-.16*	-.16	-.15	-				
9. Stress	11.31	8.66	-.24**	.55**	.65**	-.34*	-.29**	-.18*	-.13	.80**	-			
10. Tangible SS	7.94	2.95	.07	-.31**	-.37**	.83**	.40**	.25*	.06	-.32**	-.40**	-		
11. Belonging SS	7.77	3.66	.17*	-.20*	-.33**	.39**	.84**	.09	.13	-.32**	-.46**	.38**	-	
12. Appraisal SS	7.65	3.12	.17*	-.17*	-.28**	.27**	.28**	.68**	.17*	-.29**	-.42**	.35**	.25**	-

Note: $n = 156$; *$p < .05$, **$p < .01$.

the T2 mediator, controlling for T1 levels of the predictor, and (*b*) the T1 mediator does not lead to the T2 outcome, controlling for T1 levels of the outcome. In such a case there can be no mediated causal chain. Note that if the stages were met, this does not actually demonstrate mediation as the results could occur if the predictor and mediator had separate effects on the outcome. However, this disconfirmation approach is preferable to trying to establish mediation with cross-sectional methods, due to concerns about whether the causal chain is correctly arranged (Cole & Maxwell, 2003; Tomarken & Waller, 2003).

6.3.1.4.3. Overview of data analysis. Models 1 to 4 were tested by setting up rival SEM models, and comparing model fit. Each of the mediational possibilities suggested in Model 5 were tested with Cole and Maxwell's (2003) longitudinal tests of mediation.

6.3.2. Results

6.3.2.1. Preliminary Analysis

Table 6.2 shows descriptive statistics, and intercorrelations between each of the scales. Each scale exhibited a three month test-retest validity between .53 and .84.

6.3.2.2. Model Comparisons

Comparisons between the chi squared fit of each of the models are provided in Table 6.3. The first three comparisons compared the stability model with the direct, reverse, and reciprocal models. In the first comparison, a model whereby gratitude led to stress, depression, and social support (Model 2) provided a better fit than the stability model (Model 1). Model 2 is presented in Figure 6.2, where it can be seen that T1 gratitude significantly led to T2 stress, depression, belonging social support, and appraisal social support, but not tangible social support. In contrast, the reverse

Time 1   Time 2

```
┌─────────────┐  .59**                                    ┌─────────────┐
│  Gratitude  │──────────────────────────────────────────▶│  Gratitude  │
└─────────────┘                                            └─────────────┘
                            -.21**
┌─────────────┐  .52**                                    ┌─────────────┐
│   Stress    │──────────────────────────────────────────▶│   Stress    │
└─────────────┘              -.21**                        └─────────────┘
                                    .02
┌─────────────┐  .40**                                    ┌─────────────┐
│ Depression  │──────────────────────────────────────────▶│ Depression  │
└─────────────┘                     .10*                   └─────────────┘

┌─────────────┐  .82**                                    ┌─────────────┐
│ Tangible PSS│──────────────────────────────────────────▶│ Tangible PSS│
└─────────────┘              .16**                         └─────────────┘

┌─────────────┐  .82**                                    ┌─────────────┐
│  Belonging  │──────────────────────────────────────────▶│  Belonging  │
│     PSS     │                                            │     PSS     │
└─────────────┘                                            └─────────────┘

┌─────────────┐  .67**                                    ┌─────────────┐
│  Appraisal  │──────────────────────────────────────────▶│  Appraisal  │
│     PSS     │                                            │     PSS     │
└─────────────┘                                            └─────────────┘
```
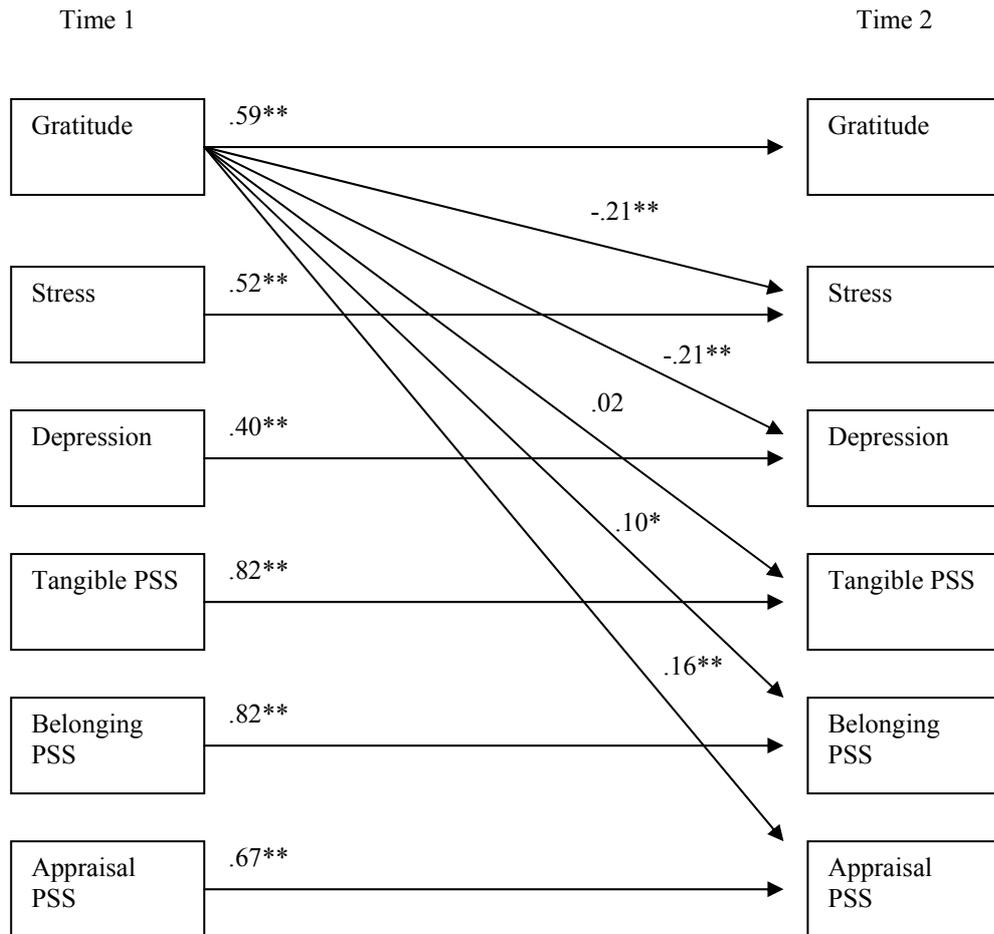
Figure 6.2. The results of the structural equation analysis for Model 1 in Study 2. For clarity, in this diagram the intercorrelations between the variables at each wave and the error variances of endogenous variables have been omitted. * $p < .05$, ** $p < .01$.

Table 6.3
Comparisons between Models 1 to 4 in Study 1.

	Model fit			Model comparisons				
Model	χ^2	Δd.f	AIC	Comparison	Δχ2	Δd.f.	*p*	ΔAIC
			160.2					
M1. Stability	66.2**	31						
			156.2	1. Stability vs. Direct	14.0	5	.02	4.0
M2. Direct	52.2**	26						
			169.0	2. Stability vs. Reverse	1.2	5	.95	8.8
M3. Reverse	65.0**	26						
			165.0	3. Stability vs. Reciprocal	15.2	10	.12	4.8
M4. Reciprocal	51.0**	21						
				4. Direct vs. Reciprocal	1.2	5	.95	8.8
				5. Reverse vs. Reciprocal	14.0	5	.01	4.0

Note: Direct (Gratitude to stress, depression, and social support), Reverse (stress, depression, and social support to Gratitude), and Reciprocal (positive feedback loop); see also Table 1. ** *p* < .01.

model, where stress, depression, and social support led to gratitude (Model 3) did not provide a better fit than the stability model. Additionally, none of the paths from T1 stress, depression, or social support significantly lead to T2 gratitude (largest β = .07, p > .37). The reciprocal model also did not significantly improve fit over the stability model.

In the fourth and fifth comparisons, the reciprocal model was compared with the direct and reverse models. The reciprocal model (Model 4) did provide a better fit than the reverse model (presumably because the reciprocal model included paths from gratitude to stress, depression, and social support). However, the reciprocal model did not indicate an improvement in fit over the direct model, suggesting that on the basis of parsimony, the direct model provides the best fit for the data.

Examination of the AIC provided results consistent with the chi squared comparisons. The AIC indicated that the reverse and reciprocal models were considerably inferior to the stability model, presumably because of low parsimony. The reciprocal model was considerably superior to the reverse model, presumably because the

reciprocal model included paths from gratitude to social support and well-being. The direct model was considerably superior to both the stability and reciprocal models. These results suggest that on the basis of parsimony, the direct model is to be preferred to any other model.

The results clearly indicated that a model whereby gratitude leads to social support and well-being (the direct model) is better supported by the data than (a) a model were well-being and social support lead to gratitude (the reverse model), or (b) a model were gratitude is reciprocally related to well-being and social support in a positive feedback loop (the reciprocal model). The direct model also provided a good fit to the data (SRMR = .06; CFI = .97).

6.3.2.3. Mediational Models

Table 6.1 shows six mediation models which could explain the relationships between gratitude, social support and well-being. The four models where gratitude acts as either an outcome or a mediator can be ruled out, as the results of the model comparisons show that neither social support, stress, or depression, lead to gratitude (so gratitude can not be downstream of any other variable). However, it remained possible that social support mediated the relationship between gratitude and well-being (Mediational Model 1), or well-being mediated the relationship between gratitude and social support (Mediational Model 2).

Mediation Models 1 and 2 were sequentially tested using the Cole and Maxwell (2003) procedure. There was no support for Model 1, as the mediators (T1 tangible, belonging, and appraisal social support) did not lead to the T2 outcome (T2 stress, and depression) (largest β = - .09, p = .25) with the T1 values of the outcome controlled, failing to meet Step b. There was also no support for Model 2, as the mediators (T1 stress and depression) again did not lead to the T2 outcome (T2 tangible,

belonging, and appraisal social support) (largest $\beta = .08$, $p = .30$), with T1 levels of the outcome controlled. The results ruled out the possibility of each of the mediational models, suggesting that there was a direct relationship between gratitude, and social support, stress, and depression, which is not mediated by any other variable.

6.3.3. Brief Discussion

In Study 1, over time gratitude was shown to lead to higher levels of appraisal and belonging social support, and lower stress and depression (controlling for past values of all of the variables). No variable led to gratitude over time. Comparison of five models of directionality using structural equation modeling showed that the direct model better represented the data than reverse, reciprocal, or mediational models (See Table 6.1).

This is the first study to show that (a) gratitude leads to the development of social support during a life transition, and (b) gratitude naturally leads to improved levels of stress and depression, which complements the existing experimental findings that therapeutically increasing gratitude causes decreases in depression. However, it was not clear from Study 1 whether the observed relationships between gratitude, social support, stress, and depression could be explained by other personality variables. This was examined in Study 2.

6.4. Study 2.

6.4.1. Introduction

Study 2 had two primary aims. First, the study aimed to replicate the results of Study 1. Several models were tested, and it is possible that the outcome capitalized on chance. Confidence in the robustness of the findings would be increased through replication with a second sample from the same population. Second, Study 2 aimed to test the Big Five personality traits as a potential third variable explanations of the

relationship between gratitude, social support, and well-being (Model 6 in Table 6.1).

Study 1 showed that gratitude lead to improving levels of social support, stress, and depression over time. It is however possible that these relationships are simply a reflection of the higher order personality traits to which gratitude is related. This would not change the interpretation of Study 1, as the direction of the relationship between gratitude and social support, stress, and depression would remain the same. However, gratitude may only lead to social support, stress, and depression due the effect of higher order personality traits, rather than playing a unique role in social support and well-being. This finding would question the value of studying gratitude in relation to these variables, when a large literature already exists regarding the relationship between high order personality traits and social support, stress, and depression (Barnett & Gotlib, 1988; Costa & McCrae, 1980; Roberts & Gotlib, 1997).

It is quite possible that higher order personality traits could explain the findings of Study 1. There is general agreement that the Big Five personality traits of extraversion, neuroticism, openness to experience, conscientiousness, and agreeableness represent most (but not necessarily all) of personality at the highest level of abstraction (Goldberg, 1993; McCrae & Costa, 1987, 1999). McCullough et al. (2002) showed that gratitude was correlated with each of the Big Five traits, which have themselves been linked to well-being (Barnett & Gotlib, 1988; Costa & McCrae, 1980). For example, Neuroticism has been shown to lead to both depression and perceived social support (Roberts & Gotlib, 1997). It is possible that gratitude only leads to social support and well-being due to its shared variance with one of more Big Five traits.

6.4.2. Method

6.4.2.1. Participants and Procedure

Eighty seven (75 female, 12 male) first year undergraduate students completed measures at two time points. Participants were aged between 18 and 30 years old (with 94.2% of participants aged below 21), and predominantly reported their ethnicity as White (81.6%), or Indian (9.2%).

Participants again completed measures at the start and end of the first semester, approximately three months apart, and followed the same procedure as Study 1. All participants completed all measures at both time points, with the exception of the Big Five, which was only assessed at T1.

6.4.2.2. Measures

6.4.2.2.1. Measures from Study 1. Participants completed the GQ6 (McCullough et al., 2002), Belonging, Appraisal, and Tangible social support scales of the ISSEL (S. Cohen et al., 1983), CES-D (Radloff, 1977), and Perceived Stress Scale (S. Cohen & Williamson, 1988), as in Study 2.

6.4.2.2.2. Depression. In addition to the CES-D the study also used the SDHS (Joseph, Linley, Harwood, Lewis, & McCollam, 2004), as a second measure of depression. Six items (three reverse coded) measure depressive states (e.g. "I felt my life was meaningless"), and the absence of positive states. Participants rate how frequently the feel the way described in the item on a four point scale (0 = never, 1 = rarely, 2 = sometimes, 3 = often). The SDHS has excellent convergent validity with other measures of depression (Joseph et al., 2004).

6.4.2.2.3. Big Five. The Big Five personality traits (extraversion, agreeableness, neuroticism, openness to experience, and conscientiousness) were measured with the 48-item Big Five Inventory (BFI: John & Srivastava, 1999). Each trait is measured with between 8 to 10 positively and negatively worded statements, with

Table 6.4
Descriptive statistics and intercorrelations between Study 2 variables

		M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
T1	1. Gratitude	35.13	4.40	-																
	2. Depression	12.22	9.49	-.48**	-															
	3. Stress	16.07	6.58	-.30**	.70**	-														
	4. Dep. Happ.	20.47	2.97	-.60**	.83**	.57**	-													
	5. Tangible PSS	10.06	1.76	.39**	-.45**	-.33**	-.49**	-												
	6. Belonging PSS	9.18	2.67	.58**	-.61**	-.44**	-.66**	.50**	-											
	7. Appraisal PSS	9.52	2.67	.29**	-.60**	-.45**	-.47**	.43**	.38**	-										
	8. Extraversion	22.63	4.98	.31**	-.44**	-.28**	-.44**	.37**	.25*	.25*	-									
	9. Agreeableness	33.94	4.17	.49**	-.28**	-.22*	-.30**	.26*	.27*	.14	.21	-								
	10. Cons.	29.83	4.89	.10	-.24*	-.24*	-.05	.10	.18	.16	.15	.11	-							
	11. Neuroticism	24.10	5.69	-.28**	.58**	.64**	.51**	-.30**	-.34**	-.25*	-.36**	-.35**	-.01	-						
	12. Openness	33.60	5.05	.12	-.08	-.01	-.07	-.08	.01	.04	.09	.19	.08	-.12	-					
T2	13. Gratitude	36.59	3.94	.73**	-.47**	-.28**	-.53**	.41**	.48**	.23*	.33**	.50**	.17	-.28**	.07	-				
	14. Depression	11.44	8.11	-.48**	.65**	.49**	.63**	-.44**	-.46**	-.34**	-.39**	-.31**	-.20	.41**	.03	-.54**	-			
	15. Stress	15.15	5.93	-.42**	.56**	.68**	.51**	-.39**	-.34**	-.32**	-.28**	-.32**	-.17	.60**	-.01	-.48**	.69**	-		
	16. Dep. Happ.	20.55	2.57	.51**	-.60**	-.43**	.65**	.39**	.47**	.36**	.32**	.35**	.10	-.44**	.03	.57**	-.75**	-.61**	-	
	17. Tangible PSS	10.14	1.36	.39**	-.45**	-.33**	-.54**	.61**	.40**	.48**	.22*	.20	.03	-.27**	-.04	.33**	-.45**	-.35**	.34**	-
	18.Belonging PSS	9.16	2.13	.45**	-.53**	-.34**	-.58**	.49**	.63**	.34**	.34**	.31**	.14	-.38**	-.10	.47**	-.61**	-.37**	.52**	.33**
	19. Appraisal PSS	10.52	2.32	.38**	-.54**	-.38**	-.48**	.42**	.39**	.58**	.30**	.11	.15	-.20	-.17	.32**	-.57**	-.24*	.49**	.45**

Note: *n* = 87; *p* < .05, ** *p* <.01; T1 – Time 1, T2 – Time 2, Dep. Happ. – Depression/Happiness, PSS – Perceived Social Support.

which participants rate themselves on a 1 ("strongly disagree") to 5 ("strongly agree") scale. Each of the sub-scales has a Cronbach's alpha and test-retest reliability ranging from .79 to .90, and has very high convergent validity with other measures of the Big Five. After correcting for unreliability, each of the sub-scales correlates with the corresponding scales of the NEO PI-R (see Costa & McCrae, 1995) and Trait Descriptive Adjectives (TDA; Goldberg, 1992) at between $r = .83$ and $r = .99$ (mean $r = .94$) (John & Srivastava, 1999). The BFI has become one of the most frequently used measures of the Big Five.

6.4.2.3. Data Analysis

The data analysis strategy followed Study 2, additionally covarying the effect of the Big Five. In each of the models paths were included from each of the T1 Big Five variables to every T2 variable. Any relationship observed between T1 and T2 variables would therefore exist independently of the effect of the Big Five personality traits.

<div align="center">*6.4.3. Results*</div>

6.4.3.1. Preliminary Analysis

Table 6.4 shows descriptive statistics and intercorrelations between each of the variables. Each scale had a three month test-retest validity between .58 and .73. In the current sample, at both time points gratitude correlated with social support, stress, and depression. At T1 gratitude was also correlated with extraversion and agreeableness, and negatively correlated with neuroticism.

6.4.3.2. Model Comparisons

Comparisons between the fit of each of the models are provided in Table 6.5. In each of these models the effect of the Big Five is covaried. As in Study 1, the models were first compared with nested comparisons of chi squared values, and ad-

Table 6.5
Comparisons between Models 1 to 4 (with the effect of the Big Five covaried) in Study 2

	Model fit			Model comparisons				
Model	χ^2	Δd.f	AIC	Comparison	$\Delta\chi^2$	Δd.f.	p	ΔAIC
M1. Stability	62.1**	42	358.1					
M2. Direct	44.6**	36	352.6	1. Stability vs. Direct	17.5	6	<.01	5.5
M3. Reverse	58.1**	36	366.1	2. Stability vs. Reverse	4.0	6	.40	8.0
M4. Reciprocal	40.6**	30	360.6	3. Stability vs. Reciprocal	21.5	12	.04	2.5
				4. Direct vs. Reciprocal	4.0	6	.40	8.0
				5. Reverse vs. Reciprocal	17.5	6	<.01	5.5

Note: Direct (Gratitude to stress, depression, and social support), Reverse (stress, depression, and social support to Gratitude), and Reciprocal (positive feedback loop); see also Table 1. ** $p < .01$.

ditionally examined with the AIC.

In the first comparison, the direct model provided a better fit than the stability model. T1 gratitude significantly led to lower levels of T2 stress, depression (measured with the CESD), and higher levels of tangible and appraisal social support (However, gratitude did not lead to belonging social support, $\beta = .08$, $p > .47$, and the relationship between T1 gratitude and the SHDS failed to meet conventional levels of significance, $\beta = -.18$, $p = .09$). These significant results are illustrated in Figure 6.3. In contrast, the reverse model did not provide a better fit than the stability model. None of the paths from T1 stress, depression, or social support significantly lead to T2 gratitude (largest $\beta = .18$, $p > .23$). The reciprocal model did improve fit over both the stability model and the reverse model, presumably as the reciprocal model included paths from gratitude to social support and well-being. However, the reciprocal model did not provide a better fit than the direct model, suggesting that on the basis of parsimony, the direct model provides the best fit for the data.

Examination of the AIC provided results that mirrored Study 1, and were con-
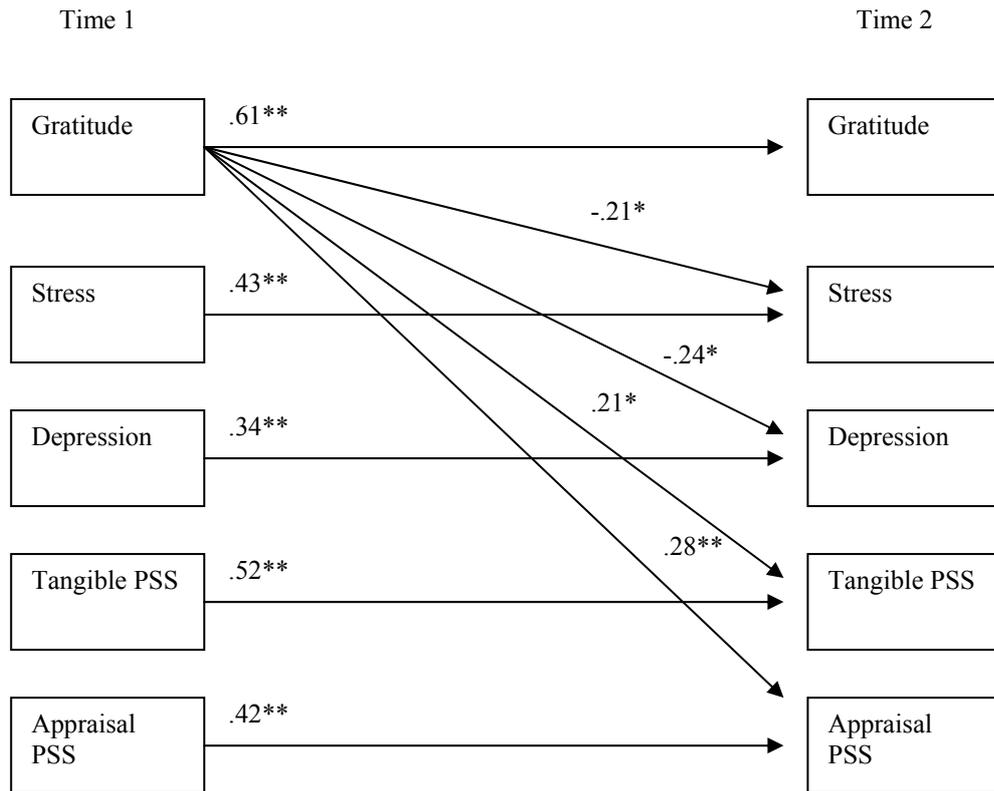
Figure 6.3. The results of the structural equation analysis for Model 1 in Study 3. For clarity, in this diagram the intercorrelations between the variables at each wave, the error variances of endogenous variables, and non-significant pathways have been omitted. * $p < .05$, ** $p < .01$.

sistent with the chi squared comparisons. The AIC indicated that the reverse and reciprocal models were considerably inferior to the stability model, presumably because of low parsimony. The reciprocal model was a considerably superior to the reverse model, presumably because the reciprocal model included paths from gratitude to social support and well-being. The direct model was considerably superior to both the stability and reciprocal models. These results suggest that on the basis of parsimony, the direct model is to be preferred to any other model.

Both the nested chi squared comparison and the AIC indicated that the direct model best represented the data. The overall fit of the direct model was also very good (CFI = .99, SRMR = .03).

6.4.3.3. Mediational Models

The six mediational models in Table 6.1 were again tested with Cole and Maxwell's (2003) longitudinal adaptation of Baron and Kenny's (1986) procedure. As in Study 1, the four models where gratitude acts as either an outcome or a mediator can be ruled out, as the results of the model comparisons show that neither stress, depression, or social support lead to gratitude. The remaining models, where social support mediated the relationship between gratitude and stress and depression (Mediational Model 5i), or stress and depression mediated the relationship between gratitude and social support (Mediational 5ii), remained possible.

Mediation Models 5i and 5ii were sequentially tested using the Cole and Maxwell (2003) procedure. Model 5i could also be ruled out, as the potential mediators (T1 tangible or appraisal social support), did not lead to the T2 outcome (T2 stress or depression) with the T1 values of the outcome controlled (largest β = - .13, p > .13).

In Model 5ii, stress could be ruled out as a mediator between gratitude and social support, as T1 stress did not lead to T2 tangible or appraisal social support

(largest $\beta = -.03$, $p > .82$). However, mediation by depression could not be ruled out, as depression significantly led to both appraisal social support ($\beta = -.31$, $p = .02$) and tangible social support ($\beta = -.29$, $p > .03$). To see whether these effects were attributable to the Big Five, we also ran the analysis without the Big Five represented in the model. The results were nearly identical with or without the Big Five covaried.

6.4.4. Discussion

Study 2 largely replicated the results of Study 1, additionally showing that gratitude lead to stress, depression, tangible and appraisal social support above the effect of the Big Five. As in the earlier study gratitude lead to other variables, but no other variable lead to gratitude. Direct comparison of the direct, reverse, and reciprocal models showed that the direct model best fit the data. Additionally, five out of six of the mediational models were ruled out, although depression mediating the relationship between gratitude and social support remains a possibility.

The finding that gratitude leads to well-being and social support above the effect of Big Five is important, as it suggests a unique role for gratitude in well-being and social life, as suggested by McCullough et al. (2002). The study of gratitude seems able to provide information about peoples lives above what can be explained by superordinate personality traits.

6.5. General Discussion

Two studies investigated the role of gratitude in social support, stress, and depression. Both studies provided direct tests between six equally plausible models of the direction of the relationships between gratitude and other variables. A consistent picture emerged: over time gratitude leads to social support, stress, and depression, and there is no evidence for reverse or reciprocal relationships. To our knowledge,

these are the first longitudinal studies of gratitude to suggest how gratitude operates during a life transition, and to consider how gratitude is related to social support.

6.5.1. Implications

We see the study as having four key implications, including aiding the interpretation of cross-sectional findings, supporting gratitude interventions, suggesting the unique importance of gratitude, and more generally in demonstrating the utility of SEM in analyzing longitudinal designs.

First, showing the direction of the relationship between gratitude, stress, depression and social support allows better interpretation of previous cross-sectional findings regarding the role of gratitude in well-being and social life (McCullough et al., 2002). Some (e.g. Lyubomirsky et al., 2005) have speculated that the grateful personality leads to emotional benefits, and this research provides empirical verification of this view.

Second, the results also support calls for the use of gratitude interventions in clinical practice (Bono et al., 2004; Seligman, 2005b). Previously, experimental evidence had shown the short term efficacy of increasing gratitude to reduce depression and increase happiness (Duckworth et al., 2005; Emmons & McCullough, 2003). Showing that gratitude naturally leads to improved social support and well-being during a life transition suggests that the interventions may have longer term effect, and that increasing gratitude is a legitimate goal of therapy. Potentially, giving people the skills to increase their gratitude may be as beneficial as such cognitive behavioral life skills as challenging negative beliefs (Beck, 1976; Hawton, Salkovskis, Kirk, & Clark, 1989). Indeed, such approaches may be complimentary; there are increasing calls for therapies to consider focusing on the positive alongside the negative (Duckworth et al., 2005; Joseph & Linley, 2006).

Third, Study 2 suggests a unique role of gratitude in well-being. McCullough et al. (2002) showed that the cross-sectional relationship between gratitude and well-being was independent of the Big Five. The current results provide the complementary finding that over time gratitude leads to lower stress and depression and higher levels of social support above the effect of the Big Five. These findings help support McCullough et al's position that gratitude is uniquely important to well-being and social life.

Fourth, the results demonstrate the use of SEM to analyze longitudinal designs. Cross-lagged panel designs have a long history in personality and social psychology (Finkel, 1995), and SEM analyses are becoming increasingly common (MacCallum & Austin, 2000), but only rarely are these analysis used together. As discussed in the Method sections, SEM provides a particularly versatile analytic method for cross-lagged panels, overcoming limitations with other methods, and allowing the testing of reciprocal models of directionality. Zapf et al. (1996) argues convincingly for the utility of this approach, although it is only seen very rarely (e.g. de Jonge, Dormann, Janssen, Dollard, Landeweerd, & Nijhuis, 2001). The essential approach of comparing different models of directionality can be beneficially applied to a large number of questions in personality and social psychology, and hopefully this paper will provide an illustration of the utility of this approach.

6.5.2. Limitations

There are a number of limitations to the present study. First, the sample sizes were relatively small. However, militating against this was the consistent replication across the studies, and the statistical significance of almost all key paths.

Second, the study used only one population undergoing a particular life transition over a relatively brief time period. The generalizeability of the findings would

be improved through replication in other diverse populations. However, college students adapting to university are arguably an important population in their own right (cf. Brissette et al., 2002), and this population and time frame has been described as ideal for capturing the developmental essence of social support (S. Cohen & Wills, 1985).

Third, longitudinal studies cannot strictly be used to infer causality, as there will always be possible third variables which could account for the results (although some authors have argued that the present cross-lagged design can strongly infer causality, e.g. Zapf et al., 1996). Ruling out the Big Five as third variables was valuable as these variables have been shown to be correlated with both gratitude (McCullough et al., 2002), and social support and well-being (Barnett & Gotlib, 1988; Costa & McCrae, 1980; Roberts & Gotlib, 1997). Additionally, as these traits represent personality at the highest level of abstraction, if only a limited number of traits could be included in the study these seemed a logical place to start. Having ruled out the effect of the Big Five, future research may wish to alternatively consider removing the effect of lower order variables (e.g., empathy or spirituality), or the individual domains of the Big Five (e.g., operationalized through the NEO, Costa & McCrae, 1995). However, the purpose of the present studies was not concerned with establishing causality, but aimed to test the direction between gratitude and other variables, and the direction of these relationships are unlikely to be affected by possible third variables. Given that longitudinal designs can conclusively show directionality but not causality, we consider the results to be complementary with the previous experimental studies (Emmons & McCullough, 2003; Seligman et al., 2005). The present study adds to the knowledge provided by the experimental studies by investigating reverse and reciprocal causality, investigating the role of grati-

tude in social support, and through showing how gratitude naturally operates during a life transition. Only combined with the previous studies does a picture begin to appear where gratitude plays a causal role in social life and well-being.

CHAPTER 7

7. COPING STYLE AS A PSYCHOLOGICAL RESOURCE OF GRATEFUL PEOPLE

7.1. Abstract

We examined whether gratitude was correlated with distinct coping styles, and whether coping styles mediated the relationship between gratitude and well-being. Participants ($n = 236$) completed measures of coping styles, dispositional gratitude, and measures of well-being. Gratitude correlated positively with seeking both emotional and instrumental social support, positive reinterpretation and growth, active coping, and planning. Gratitude correlated negatively with behavioral disengagement, self-blame, substance use, and denial. Coping styles mediated up to 51% of the relationship between gratitude and stress, but did not substantially mediate the relationship between gratitude and either happiness, depression, or satisfaction with life. We suggest that different mechanisms relate gratitude to separate aspects of well-being. Further research is indicated into the role of gratitude in social support processes, and in growth following adversity.

7.2. Introduction

Psychological research into gratitude as an individual difference variable seems poised to become a major influence on the field of personality psychology (McCullough et al., 2002; Wood et al., 2007b). Research has suggested that gratitude has one of the highest correlations with well-being of almost any personality characteristic (Park et al., 2004), and it seems to play an important part in people's lives, with 67% reporting expressing gratitude "all of the time", and a further 60% reporting that that expressing gratitude made them feel "very happy" (Gallup, 1999). Traditionally, there has been a substantial disparity between the small amount of consideration given to gratitude within psychology and the substantial consideration provided in philosophical and religious literatures (Emmons & Crumpler, 2000; Harpman, 2004; McCullough et al., 2001). However, partially influenced by the positive psychology movement (Linley et al., 2006; Seligman & Csikszentmihalyi, 2000), research into dispositional gratitude is now receiving considerable attention. Given the novelty of gratitude research, most existing work has focused only on the emotional benefits of dispositional gratitude (Emmons & McCullough, 2003; McCullough et al., 2002), and has not yet focused on the potential cognitive resources of grateful people, or on the mechanisms whereby gratitude is related to well-being. In this paper we investigate whether dispositional gratitude is associated with adaptive coping strategies, and whether this relationship could explain why grateful people seem to have higher levels of well-being.

Evidence that gratitude is related to well-being is growing. Correlational studies have found consistently that dispositional gratitude is strongly linked to well-being. McCullough et al. (2002) found that gratitude was positively related to life satisfaction, vitality, and happiness, and negatively related to depression, and envy,

all in the absolute range of $r = .30$ to $.51$. Further, these relationships exist independently of the effects of both the Big Five personality traits and social desirability (as measured by the BIDR; Paulhus, 1998), and persist when gratitude is measured via peer rating. Park, Peterson and Seligman (2004) found that of all the 24 VIA character strengths (Peterson & Seligman, 2004), gratitude was more strongly related to life satisfaction ($r = .43$) than all of the other strengths except hope/optimism and zest (with the latter arguably a direct measure of happiness). Notably, this suggests that gratitude can explain more variance in life satisfaction than such traits as love, forgiveness, social intelligence, and humour. Additionally, McCullough, Tsang, and Emmons (2004) found that daily experiences of gratitude were related to a host of well-being benefits. Evidence regarding the relationship between gratitude and well-being is also provided by three experimental, longitudinal studies, which showed that if participants are manipulated into focusing on the good in their lives for a number of weeks, there are substantial improvements in happiness, depression, and even physical health (Emmons & McCullough, 2003; Lyubomirsky et al., 2005; Seligman et al., 2005). Such findings suggest that the relationship between gratitude and well-being may be causal.

Although research looking at the emotional benefits of the grateful personality is growing, existing studies have not really focused on whether more grateful people have better psychological resources. One psychological resource that people can possess is an adaptive coping style (Ptacek & Gross, 1997). A vast psychological literature exists regarding coping (Somerfield & McCrae, 2000), and various multidimensional conceptions of broad coping strategies have been developed (Schwarzer & Schwarzer, 1996), such as the COPE (Carver et al., 1989). Although there the coping literature is substantial, to our knowledge the role of gratitude has not yet

been considered. It is possible that grateful people exhibit a distinct pattern of coping strategies, in particular the habitual seeking out of emotional and instrumental social support. More generally, Fredrickson, Tugade, Waugh, and Larkin (2003) showed that following the September 11th terrorist attacks, a composite measure of positive emotions (including gratitude) buffered the depressive reactions of resilient people, and suggested further work examining the link between positive emotions and coping.

A theoretical rationale for why dispositional gratitude may be related to coping strategies is presented by Fredrickson (2004), who suggests that as gratitude is a positive emotion, and that frequent experiences of gratitude will build enduring cognitive resources. According to the broaden-and-build theory (Fredrickson, 1998, 2001), positive emotions are adaptive evolutionary mechanisms which broaden thought-action repertoires, improving creativity and cognitive ability (Fredrickson & Branigan, 2005; Johnson & Fredrickson, 2005). Positive emotions are adaptive as they encourage the person to make use of the 'good times' - occasions when the person is not in any threat or danger. Rather than idly passing the time, positive emotions encourage people to engage in cognitive and behavioural activities that will build resources that will become useful during future threatening and stressful occasions (Fredrickson, 1998, 2001). Given that gratitude seems to have a positive affective valence (Gallup, 1999), Fredrickson (2004) has suggested that the broaden-and-build theory could offer a wider view on dispositional gratitude, and that through broaden-and-build processes grateful people will have developed superior social and cognitive resources such as positive coping responses.

The social and cognitive benefits derived through broaden-and-build processes arising from experiencing a given positive emotion are thought to be partially

dependant on the inherent nature of the emotion. For example, joy leads to reflection and schematic integration, interest leads to exploratory behaviour (Fredrickson, 2000). As a state, gratitude seems to have a 'moral' or pro-social nature (Bartlett & DeSteno, 2006; McCullough et al., 2001; Tsang, 2006), involving recognition of benefits received (Tesser et al., 1968). As a disposition, gratitude has been shown to relate to such traits as extraversion, agreeableness, forgiveness, and empathy (McCullough et al., 2002). Peer reports of a person's level of gratitude have also been shown to be linked to peer perceptions of other pro-social tendencies (McCullough et al., 2002). We expect gratitude to be linked with coping strategies utilising social support. If grateful people are more aware of the benefits they receive, then they may more consciously realise that people are willing to help them, making them more likely to seek out social support in times of need.

At a more general level, we expected grateful people to use coping strategies broadly characterised by approach rather than disengagement strategies. Grateful people appear to view the world as a generally more pleasant place, taking the time to focus on the positive aspects of life (Adler & Fagley, 2005; Watkins et al., 2003). This perception of the world as a hospitable place may likely lead to an increased willingness to deal actively with problems. For example, when people view the world as threatening (for example, in the case of anxiety disorders) they are likely to exhibit inhibition tendencies (Beck, 1976). In contrast, we expect grateful people to view the world as a pleasant place, and expect this to be reflected in coping strategies involving less inhibition and more active cognitive and behavioural actions.

Given that certain coping strategies are related to well-being, possessing adaptive coping strategies could explain the emotional benefits of having a grateful disposition. Gratitude is related to such traits as optimism (McCullough et al., 2002),

and it is known that adaptive coping is one mechanism through which optimism is related to well-being (Brissette et al., 2002). In this paper we investigate whether coping mediates the relationship between gratitude and well-being. While existing studies have made the (possibly causal) link most clearly, what is not clear is the process or intervening variables in this relationship. If mediation could be shown, then there would be a clear suggestion of why gratitude is related to well-being. If mediation cannot be shown, then the results will suggest that gratitude is related to well-being through different mechanisms than related traits such as optimism. The latter possibility will support conceptions of gratitude as a unique emotion, with a unique role in people lives (McCullough et al., 2002; McCullough et al., 2001).

Establishing that gratitude is linked with coping will also begin to integrate the predominantly social literature of gratitude with the more clinical literature on coping and distress. At a broad level, psychology would benefit from a greater integration of its sub-disciplines (Sternberg & Grigorenko, 2001). At a more specific level, we have argued elsewhere (Joseph & Linley, 2006; Linley et al., 2006) that a key benefit of the positive psychology movement is that it provides impetus for an integration of research into the positive and negative aspects of life. Gratitude seems to be critically placed to aid in such a process of integration, as on the one hand it is a positively valanced emotion involved in social life (Bartlett & DeSteno, 2006; Tsang, 2006), and on the other has recently been shown to have the potential to form the basis of a powerful new therapy to alleviate psychological suffering (Bono et al., 2004; Emmons & McCullough, 2003; Lyubomirsky et al., 2005; Seligman et al., 2005). Positive approaches such as gratitude interventions have much to offer clinical therapies (Duckworth et al., 2005), and aid in promoting a more positive and realistic theoretical reconceptualisation of distress (Maddux, 2002; Maddux et al.,

2005; Maddux et al., 2004). Establishing a relationship between gratitude and coping would suggest new directions for research into gratitude interventions. Currently the research has focused on showing emotional benefits of the interventions. Showing that gratitude is related to coping will raise the question of whether gratitude interventions additionally increase adaptive coping, and indicate research into use with client groups for whom adaptive coping is particularly important.

In this paper, we aimed to establish whether gratitude is related to distinct coping strategies, and whether the relationship between gratitude and well-being is mediated by coping strategies. We report the findings from two samples. The samples differ in whether the full or brief measures of coping were used, and in the aspects of well-being studied. The advantage of this approach is that it allows a broader range of the aspects of well-being to be studied, as well as allowing replication of each sample's findings. To avoid needlessly reproducing tables, and thus impairing clarity, we present the results of these two samples simultaneously throughout this paper.

7.3. Method

7.3.1. Participants

Two hundred and thirty six people were surveyed across two samples. In the first sample, 149 people (115 female, 33 male, one undisclosed) voluntarily participated during a second year psychology lecture. All were aged between 18 and 22 years, and were predominantly white (92%). In the second sample, 87 people (75 female, 12 male) voluntarily participated during a first year psychology lecture. Ages ranged from 18 to 30 years, with 94% under 22 years. The sample was predominantly of a white ethnic background (81%), with the next highest represented ethnicity being Indian (9%).

7.3.2. Measures

7.3.2.1. In both samples, *Gratitude* was assessed using the Gratitude Questionnaire 6 (GQ6; McCullough et al., 2002). This measures trait gratitude through self-reports of items that measure emotional *intensity* (e.g. "I feel thankful for what I have received in life"), *frequency* (e.g. "Long amounts of time can go by before I feel grateful to something or someone"), and *density*, or the number of events or people that can elicit the emotion (e.g. "I am grateful to a wide variety of people"). Six items (two reverse coded) are rated on a seven point scale, ranging from 1 (strongly disagree) to 7 (strongly agree), which are summed to give a single score between 6 and 42.

7.3.2.2. The trait version of the full *COPE* (Carver et al., 1989) was used to measure coping in Sample 2. This asks respondents about the coping strategies they generally use during periods of stress. Sixty items assess 15 conceptually different forms of coping, including styles generally involving adaptively approaching the adversity (active coping, seeking instrumental support, seeking emotional support, suppression of competing activities, planning, and positive reinterpretation and growth) generally maladaptivly withdrawing from the problem (denial, behavioural disengagement, alcohol and drug use, and mental disengagement), and other common strategies which do not clearly fall into either category (restraint, acceptance, turning to religion, humour, and focus on venting emotions). Each of the sub-scales has good internal validity, and extensive psychometric development (Carver et al., 1989).

7.3.2.3. The *Brief COPE* (Carver, 1997) was used to measure coping in Sample 1. It was developed as a shorter and alternative form of the COPE, from the author's experience of participant dissatisfaction with the length of the original scale. On the basis of past research, the sub-scales of restraint coping and suppression of

competing activities were omitted; the former because of lack of empirical evidence of its value, and the latter because of substantial redundancy with active coping. Self-blame is also assessed in this version, as more recent empirical work has shown it to be a maladaptive coping strategy. Apart from these possible improvements, the Brief COPE shows a remarkably similar factor structure to the COPE, and measures the same dimensions (Carver, 1997). The Brief COPE contains 28 items, and has acceptable internal reliability.

7.3.2.4. Perceived stress was measured using the 10-item Perceived Stress Scale (S. Cohen & Williamson, 1988) (see also S. Cohen et al., 1983). The PSS measures the extent to which participants find their lives unpredictable, uncontrollable, and overwhelming. Scores can range from 0 to 56, with higher scores representing more stress.

7.3.2.5. Depression was measured using the Centre for Epidemiologic Studies Depression scale (CES-D`; Radloff, 1977). The CES-D was designed for measuring depressive symptoms in the general population, and contains 20 items relating to depressed affect, positive affect (reverse coded), and somatic and retarded activity. Participants rate how frequently the have felt a certain way during the past week on a four point scale (0 = rarely or none of the time, 1 = some or a little of the time, 2 = occasionally or a moderate amount of time, 3 = most or all of the time). Possible scores range from 0 to 60.

7.3.2.6. Happiness was measured using the Short Depression - Happiness Scale (SDHS: Joseph et al., 2004). The SDHS was designed to extend existing measures of depression beyond the zero point to measure not only the absence of depression but also the presence of happiness. The SDHS consists of six items, three items measuring happiness (e.g., I felt happy) and three reverse coded items measure de-

pressive states (e.g., I felt my life was meaningless). Participants rate how frequently the feel the way described in the item on a four point scale (0 = never, 1 = rarely, 2 = sometimes, 3 = often). When the items are totalled, people can score from 0 (depressive state) through 9 (neither unhappy or happy) to 18 (very happy).

7.3.2.7. The *Satisfaction with Life Scale* (SWLS; Pavot & Diener, 1993) was used as a measure of the cognitive evaluation dimension of happiness. Whereas the SDHS focuses on frequency of positive affect, the SWLS focuses on the cognitive component of positive affect, with such items as "In most ways my life is close to ideal". The SWLS has a degree of temporal stability ($r = .54$ over 4 years), whilst still being highly responsive to the effect of psychological therapies (Pavot & Diener, 1993).

7.3.3. Procedure

In Sample 1 participants completed the GQ-6, Brief Cope, SWLS, and Perceived Stress Scale (PSS). In Sample 2 participants completed the GQ-6, the full COPE, CES-D, and SDHS. For both studies, questionnaires were distributed at the start of a lecture and were completed during the first few minutes of class time. Efforts were made to maintain silence during this period. Participants were told that participation was completely voluntary, and although the research was important, they were free not to participate without penalty.

7.4. Results

7.4.1. Testing the Relationship Between Gratitude and Coping Strategies

In order to see how much variance was shared between coping style and gratitude we conducted multiple regressions of gratitude onto all of the scales contained in each of the coping styles questionnaires. Coping styles accounted for a substantial proportion of the variance in gratitude in both Sample 1 (Multiple $R = .59$, *F*

Table 7.1

Descriptive statistics of the coping scales, and correlations between coping styles and dispositional gratitude

	Descriptive Statistics				Correlations	
	Sample 1		Sample 2		Gratitude	
					Sample 1	Sample 2
	Mean	*SD*	Mean	*SD*		
Use of instrumental social support	5.58	1.67	11.02	2.54	.35**	.33**
Use of emotional social support	5.76	1.59	11.45	3.3	.30**	.20*
Active coping	5.84	1.38	10.37	2.42	.17*	.40**
Behavioral disengagement	3.00	1.26	5.56	1.77	-.36**	-.34**
Positive reinterpretation and growth	5.14	1.51	11.2	2.65	.33**	.40**
Self-blame [a]	4.95	1.56			-.23**	
Denial	2.68	1.1	5.27	1.64	-.15[†]	-.23*
Planning	5.47	1.44	10.55	2.79	.14[†]	.25*
Substance use	3.26	1.62	5.67	2.54	-.23**	.07
Religious coping	2.86	1.51	5.92	3.6	.03	.06
Humor	4.78	3.28	8.82	3.36	-.02	.21[†]
Acceptance	5.41	1.25	10.3	2.16	.06	.14
Mental disengagement	5.44	1.38	9.38	2.16	-.06	-.01
Focus on and vent emotions	4.48	1.45	9.39	3.06	-.15[†]	<.01
Restraint [a]			8.63	2.05		-.01
Suppression of competing activities [a]			9.18	1.97		.03

Note: Sample 1 used the Brief COPE and Sample 2 used the full COPE. [†]$p<.10$, *$p<.05$, **$p<.01$. [a] This sub-scale is not represented in the Brief COPE.

(14, 134) = 5.10, $p < .001$) and Sample 2 (Multiple $R = .59$, F (15, 62) = 2.20, p

$< .05$). As the coping styles are theoretically and empirically highly correlated, we

did not examine the unique contribution of each coping style, because issues of mul-

ticollinearity would have prevented meaningful interpretation (Gordon, 1968).

When gratitude was correlated with each coping strategy, a substantially

similar picture emerged between the two studies (see Table 7.1). Gratitude was posi-

tively correlated with instrumental social support, emotional social support, positive

reinterpretation and growth, active coping, and planning, and negatively correlated

with behavioural disengagement, self-blame, substance use, and denial. However,

the correlations between denial and gratitude, and planning and gratitude only ap-

proached significance in Sample 1, and gratitude was only correlated with substance

use in Sample 1.

7.4.2. Testing the Relationship Between Gratitude and Well-being

We attempted to replicate earlier work showing that gratitude was related to

well-being. As can be seen from Table 7.2 gratitude is significantly related to stress,

Table 7.2
Correlations between gratitude and well-being (zero-order and controlling for the effects of coping strategies)

	Sample 1			Sample 2		
	Zero-order	Controlled	%Reduction	Zero-order	Controlled	%Reduction
Stress	-.41***	-.24***	41%	-.53***	-.40***	25%
Happiness				.57***	.52***	9%
Depression				-.57***	-.42***	26%
Satisfaction with life	.59***	.47***	20%			

Note: ***$p<=.001$, '%Reduction' is the percentage reduction of the zero-order correlation caused by controlling for coping strategies

happiness, depression, and satisfaction with life (range $r = .41$ to $.59$). As with previous research, gratitude was shown to be strongly related to each of the well-being indicators used in the study.

7.4.3. Testing the Relationship Between Coping Strategies and Well-being

In order to see whether coping styles could predict well-being in the current sample we conducted a series of separate multiple regressions with the coping strategies as predictor variables, and the well-being measures as criterion variables. In each case, the Multiple Rs ranged from .53 to .71 (all $p < .001$), indicating that coping styles were significantly associated with well-being in the current samples. Again we did not examine the unique contributions of the coping styles on well-being due to issues of multicollinearity.

7.4.4. Testing Whether Coping Mediates the Relationship Between Gratitude and Well-being

We separately tested whether coping styles mediated the relationship between (a) gratitude and stress, (b) gratitude and happiness, (c) gratitude and depression, and (d) gratitude and satisfaction with life. Baron and Kenny (1986) provide four steps which are necessary to show mediation. First, the predictor (gratitude) must be related to the outcome (the well-being measure). Second, the predictor (gratitude) must be related to the mediators (coping styles). Third, the mediators (coping styles) must be related to the outcome (well-being) after controlling for the predictor. Finally, in the fourth step, full mediation is shown if the relationship between the predictor (gratitude) and the outcome (the well-being measure) is no longer be statistically significant after controlling for the mediator. Partial mediation is shown if both the relationship between the predictor (gratitude) and the outcome (the well-being measure) is reduced in magnitude, and the mediated pathway is statistically significant (as as-

sessed by Sobel's 1982 test, see Baron & Kenny, 1986; Kenny, Kashy, & Bolger, 1998).

Table 7.2 shows that when all of the coping styles were controlled, the relationship between gratitude and each of the well-being indicators remained statistically significant, ruling out full mediation (Step 4). There was however some reduction in the size of the correlation between gratitude and well-being after controlling for coping styles (ranging from 9% to 41%), suggesting that partial mediation may have occurred.

To begin testing for the significance of partial mediation, and to see which of the coping strategies were responsible for any mediation, for each of the well-being measures we separately tested whether each of the coping strategies individually acted as partial mediators, using the four steps outlined above.

None of the coping measures were found to significantly mediate the relationship between gratitude and either happiness or depression. However, Self-blame provided a small partial mediation of the relationship between gratitude and satisfaction with life (11% mediation, z = 2.45, p < .05).

Regarding stress, in Sample 2, the gratitude and stress relationship was partially mediated by positive reinterpretation and growth only (18% mediation, z = 2.08, p < .05). However, in Sample 1, the relationship between gratitude and stress was partially mediated by behavioural disengagement (26% mediation, $z = 3.03$, $p < .01$), positive reinterpretation and growth (26% mediation, $z = 3.06$, $p < .01$), and self-blame (22% mediation, $z = 2.61$, $p < .01$).

Given that three coping strategies individually mediated the relationship between gratitude and stress in Sample 1, we examined whether they could provide joint mediation. The results of this analysis are shown in Figure 7.1. Each of the me-
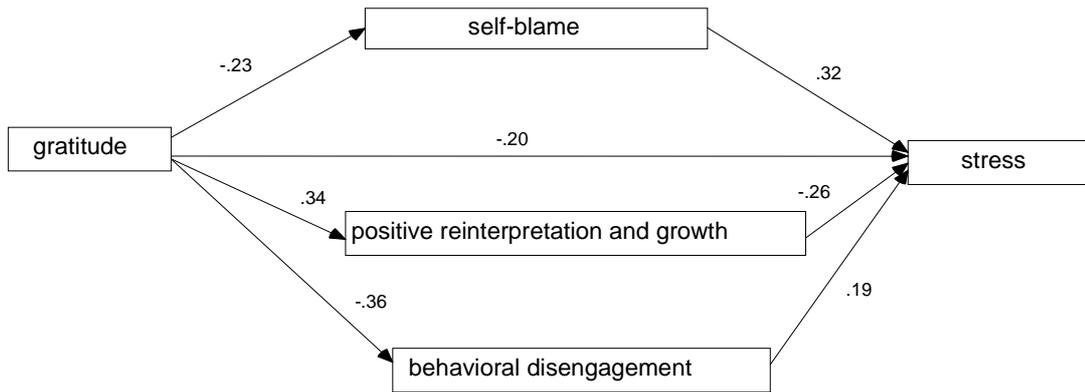
Figure 7.1. Path diagram of coping partially mediating the relationship between gratitude and stress in Sample 1.

diated paths remained significant (smallest $z = 2.21$, all $p < .05$). Together behavioural disengagement, positive reinterpretation and growth, and self-blame mediated 51% of the relationship between gratitude and stress in Sample 1.

7.5. Discussion

The results showed correlations between gratitude and several coping strategies, as well as several indicators of well-being. Coping strategies appeared to mediated up to 51% of the relationship between gratitude and stress, and 11% of the relationship between gratitude and satisfaction with life. However, there was no evidence for any mediation of the relationship between gratitude and either happiness or depression, or full mediation between gratitude and any of the well-being measures. To our knowledge, this is the first study to show that the grateful personality is linked to coping styles, one of the first studies to show that grateful people have a differential profile of psychological resources in areas other than well-being, and the first to show any partial mechanism whereby gratitude is related to well-being.

7.5.1. Gratitude and coping

Regarding the correlations between gratitude and coping, the results showed three main trends. First, there was considerable similarity across the two samples. Second, grateful people were more likely to seek out emotional and instrumental so-

cial support as a means of coping. Third, grateful people generally used more positive coping strategies, which seem broadly characterized by approaching the problems (using positive reinterpretation and growth, active coping, and planning) rather than avoiding the problems (behavioral disengagement, self-blame, substance use, and denial).

The association between gratitude and the seeking out of emotional and instrumental social support is in line with conceptions of gratitude as a socially oriented personality trait. Whilst there is considerable evidence regarding the pro-social basis of the grateful emotion (McCullough et al., 2001; Tesser et al., 1968; Tsang, 2006), the current study provides some of the earliest support for the pro-social basis of the grateful disposition (as suggested by McCullough et al., 2002).

Gratitude was related to generally more positive coping, being associated with strategies that involve approach rather than withdrawal tendencies. We had previously hypothesized this relationship as positive coping strategies seemed likely to be a benefit which would arise from the frequent experience of gratitude (cf. Fredrickson, 1998, 2001, 2004), and as grateful people have been shown to view the world as a more pleasant and hospitable place (Adler & Fagley, 2005; Watkins et al., 2003). Notably, we found that gratitude was not positively correlated to a single negative coping strategy, or negatively correlated with any positive strategy.

7.5.2. Partial Mediation

In line with previous research, gratitude was related to higher levels of happiness and satisfaction with life, and lower levels of stress and depression. The results suggested that coping could be a partial mediator of the relationship between gratitude and stress, and to a lesser extent the relationship between gratitude and satisfaction with life. In the first sample, 51% of the relationship between gratitude and

stress was mediated by behavioural disengagement, positive reinterpretation and growth, and self-blame. It seems that grateful people utilise more positive coping strategies, which lower the levels of stress that they experience.

There was, however, no evidence of partial mediation for either happiness or depression, and a very small mediation for satisfaction with life (11%) by self-blame. Whilst coping may play an important role in explaining why grateful people experience less stress, it seems that coping is not the primary mechanism whereby gratitude is related to well-being. This is interesting, given that coping styles are known to substantially mediate the relationship between well-being and other positive traits such as optimism (Brissette et al., 2002), and it seemed likely that a similar process may occur with gratitude. It does not seem likely that the results occurred because of issues with data integrity, given that we replicated earlier findings regarding the relationship between gratitude and well-being; there was a high level of consistency between our two samples; and the association between gratitude and coping style was in line with our predictions. Rather, this finding tends to support evidence that the grateful disposition is distinct from other related personality traits (such as optimism) (cf. McCullough et al., 2002), and suggests that gratitude is related to well-being through different mechanisms than related constructs. It also seems that there may be different mechanisms relating gratitude to different aspects of well-being.

7.5.3. Limitations

As we used two samples from a college student population, it is of course possible that gratitude is differently related to coping strategies in other populations, particularly those facing higher levels of stress and adversity, and those with distinct clinical and health needs. Coping styles may more strongly mediate the relationship

between gratitude and well-being in these populations. We recommend a programme of research into this possibility, and hope that the current study will be helpful in stimulating and designing this research. However, most previous research into gratitude and well-being has been with non-clinical populations, typically college students. Consistent with the positive psychology movement (see Linley et al., 2006), we are equally as interested in understanding well-being in the general population as we are with understanding populations undergoing distress.

The correlational and cross-sectional nature of the study prevents conclusions being drawn regarding causality between gratitude and coping. It seems likely that gratitude will lead to more positive coping strategies for the reasons discussed in the introduction, but this could be more clearly established by future experimental or longitudinal research.

The self-report nature of the study raises the possibility that social desirability may have inflated both reports of gratitude and positive coping. Against this possibility are McCullough's (2002) findings that the self-report of gratitude is substantially related to peer report, not highly correlated with social desirability, and controlling for social desirability does not substantially change the relationship between the self-reports of gratitude and either well-being, social, or personality variables. However the possibility of a social desirability bias would be better addressed through future experimental work.

7.5.4. Future Directions

Multiple new research questions emerge from this research, in addition to the role of gratitude and coping in clinical populations, and whether positive coping is facilitated by gratitude interventions. For example, the finding that gratitude is related to social support coping suggests that gratitude may be involved in other as-

pects of social support. Perceptions of the availability of social support are distinct to social support coping, with the former representing beliefs that one is cared about and valued enough by other people for them to provided help should it be needed (T. Pierce, Baldwin, & Lydon, 1997). Enacted social support represents what help people objectively receive in situations, and is distinct from self-perceptions of social support (Lakey & Drew, 1997). Each of these aspects of social support have extensive research literatures which have yet to be integrated with research into the grateful personality, and both lines of inquiry naturally arise from the current study. Further, the association between gratitude and positive reinterpretation and growth suggests that gratitude may be involved in psychological growth following trauma (see Linley & Joseph, 2004), although to our knowledge this remains to be investigated.

The mediation between gratitude and stress was partial, and there was little or low mediation between gratitude and either happiness, depression, or satisfaction with life. As such future research should examine what other mechanisms mediate the relationship between gratitude and well-being. The current study suggests several potential mechanisms. As noted above, research is indicated into the relationship between gratitude and social support. Social support mediates the relationship between well-being other positive traits such as optimism (Brissette et al., 2002), and this may also be the case for gratitude. Grateful people were also shown to engage in less self-blame, which perhaps implicates a relationship between gratitude and self-esteem, another potential mediator. The present finding that gratitude partially mediates the relationship between gratitude and stress suggests that the relationship between gratitude and well-being is not necessarily direct, and underlines the importance of looking for other mediating mechanisms.

7.5.5. Conclusion

In this study, we found that grateful people were more likely to seek out emotional and instrumental social support, and use coping strategies that were broadly characterized by approaching the problem, rather than avoiding the problem. Additionally, the results suggest coping strategies may be an important mechanism explaining why gratitude is negatively related to stress, although coping strategies do not appear to be the primary mechanism by which gratitude is related to other well-being variables. Gratitude research remains embryonic, and the findings reported here suggest that gratitude has distinct contributions to make to our understanding of the personality and individual difference variables that may influence health and well-being. As such, there are many exciting future directions for research into the grateful disposition.

CHAPTER 8

8. GRATITUDE INFLUENCES SLEEP THROUGH THE MECHANISM OF PRE-SLEEP COGNITIONS

8.1. Abstract

The authors investigated whether individual differences in gratitude were related to quality of sleep, and whether this was due to more positive pre-sleep cognitions. Participant were from a large community sample of 401 people (186 males, 215 females), and 40% were clinically impaired sleepers (PSQI > 5). Measures included gratitude, the PSQI measure of sleep, pre-sleep cognitions, the Big Five, and social desirability. Gratitude predicted greater subjective sleep quality and sleep duration, and less sleep latency and daytime dysfunction. The relationship between gratitude and each of the sleep variables was mediated by more positive pre-sleep cognitions, and less negative pre-sleep cognitions. All of the results were independent of the effect of the Big Five and social desirability. The results show that trait gratitude is related to sleep, and suggest that pre-sleep cognitions are the mechanism underlying this relationship. More generally, the study provides a basis for future work into the role of positive traits in sleep quantity and quality.

8.2 Introduction

Personality is an important predictor of sleep quality and quantity (Espie, 2002). Most previous research has focused on which personality traits are related to impaired sleeping. Neuroticism has emerged as a robust predictor of sleep quality, with people who are dispositionally stressed, depressed, anxious, and angry being shown to suffer from poor sleep (Brummett et al., 2006; Carmichael & Reis, 2005; Fortunato & Harsh, 2006; Gray & Watson, 2002; Pilcher et al., 1997; Pilcher & Huffcutt, 1996). This research has been influential both in developing models of the etiology of insomnia, and in developing psychological treatments of sleep disorders (Espie, 2002). However, the positive psychology movement has emphasized the importance of studying positive aspects of life in addition to the more traditional psychological focus on psychopathology (Duckworth et al., 2005; Linley et al., 2006; Seligman & Csikszentmihalyi, 2000). Positive well-being involves more than the absence of mental illness (Ryff et al., 2006), and positive traits have been shown to explain additional outcomes in health and well-being variables after controlling for neuroticism (McCullough et al., 2002; Scheier, Carver, & Bridges, 1994; Wood, Joseph et al., 2008). Recently, positive psychological well-being has been linked to improved quality of sleep (Steptoe, O'Donnell, Marmot, & Wardle, 2008). It is not clear, however, whether positive psychological traits can explain sleep quality above the effect of other more traditionally studied personality traits, including the negative traits represented within the construct of neuroticism. Additionally, there is no indication of the mechanisms which explain why positive psychological traits are related to sleep. This study examines these questions with regard to the specific positive psychological trait of gratitude.

Gratitude is perhaps the quintessential positive psychology trait, involving a

life orientation towards the positive in the world (Wood et al., 2007b). In addition to feeling more grateful affect (McCullough et al., 2004), grateful people focus on the positive in their environment and have greater appreciation of their possessions and social relationships (Wood, Maltby et al., 2008). As a trait, gratitude is related to positive coping (Wood et al., 2007a), social functioning (Wood, Maltby, Stewart et al., in press), and has an unique and causal effect on positive well-being and social relationships (Emmons & McCullough, 2003; Wood, Joseph et al., 2008; Wood, Maltby, Gillett et al., in press). The aim is to investigate whether individual differences in gratitude are related to sleep, after controlling for neuroticism and other personality traits, and to test for the mediational mechanisms underling this relationship.

Only one previous study has indicated that trait gratitude may be related to sleep, and no previous study has suggested mechanisms which may underlie this relationship. Patients with neuromuscular disorders listed three things for which they were grateful each night for 21 nights. Subsequently, their physical and mental well-being was compared with a control group which simply completed outcome measures (Emmons & McCullough, 2003). The gratitude group self-reported increased hours of sleep and an improved sense of refreshment upon waking. Gratitude was selected as the focus of this study due to this indication that trait gratitude may be related to sleep, and due to the centrality of gratitude as a positive trait (Emmons & McCullough, 2004). The current study will extend this work by testing which aspects of sleep are related to gratitude, whether this relationship is independent of the effects of other personality traits, and by investigating the mediational mechanisms that may explain the relationship between gratitude and sleep quality.

It is suggested that pre-sleep cognitions may underlie the relationship between gratitude and sleep quality. Pre-sleep cognitions are the thoughts that people have

just before sleep. A large literature has linked pre-sleep cognitions with sleep quality (Fichten, Libman, Creti, Amsel, Tagalakis, & Brender, 1998; A. G. Harvey, 2000; K. J. Harvey & Espie, 2004; Libman, Creti, Amsel, Brender, & Fichten, 1997; Nicassio, Mendlowitz, Fussell, & Petras, 1985; Wicklow & Espie, 2000), and experimental evidence has suggested that increased negative pre-sleep cognitions cause impaired sleep (Ansfield, Wegner, & Bowser, 1996; Gross & Borkovec, 1982; Haynes, Adams, & Franzen, 1981; Levey, Aldaz, Watts, & Coyle, 1991). Negative pre-sleep cognitions have attracted particular empirical attention, as precursors of impaired sleep. More recently, positive pre-sleep cognitions are beginning to be studied (Fichten et al., 1998), and there is indication that positive cognitions are related to good sleep quality (Nelson & Harvey, 2003a, 2003b). As there is evidence that gratitude causes a variety of positive cognitions, including life evaluations (Emmons & McCullough, 2003), perceptions of social support (Wood, Maltby, Gillett et al., in press) and social situations (Wood, Maltby, Stewart et al., in press), it may be that gratitude is one determinant of pre-sleep cognitions.

Specifically, we suggest that grateful people will have less negative pre-sleep cognitions (which impair sleep) and more positive pre-sleep cognitions (which promote sleep). This is the first empirical study to link trait gratitude to sleep, or to suggest mechanisms explaining why this relationship may occur. With gratitude interventions increasingly being promoted in clinical settings (Bono et al., 2004; Seligman, Rashid, & Parks, 2006; Seligman et al., 2005), establishing the mechanisms linking gratitude and sleep will indicate the potential of gratitude interventions for treatment of insomnia. This is also the first study to investigate the potential for positive traits to increase our understanding of sleep above the effects of neuroticism. More generally, this is the first study to investigate pre-sleep cognitions as a mecha-

nism linking any personality trait to sleep.

<div align="center">8.3. Method</div>

8.3.1. Participants and Procedure

Participants were 401 (186 male, 215 female; age range = 18-68, *M* = 24.89, *SD* = 9.02) people recruited from the local community by one of two research assistants. Participants were either recruited from administrative workers in the head office of a large multinational company in London (n = 200) or approached at a large chain of coffee shops in the South West of England, a community center in East Midlands, or a local Arts Center in the East Midlands (n = 201). Participation was voluntary and without payment, and 75% of those approached agreed to participate. Prior to completing the questionnaire the participants read a sheet providing details of the study and ethical information, and signed a declaration of informed consent. All measures were completed in English with pencil-and-paper. Prior to data collection the study was approved according to the institutional review procedures of the University of Warwick, and the research followed the ethical guidelines of the American Psychological Association.

8.3.2. Measures

8.3.2.1. Gratitude was measured with the GQ-6 (McCullough et al., 2002). Six items assess the frequency and intensity with which grateful affect is experienced, and the range of events which elicit gratitude (e.g., "I have so much in life to feel thankful for" [Item 1], "I am grateful to a wide variety of people" [Item 4], and "When I look at the world, I don't see much to be grateful for" [Item 3, reverse coded]). Items are rated on a 1 (strongly disagree) to 7 (strongly agree) scale. The GQ6 has a robust one-factor structure and convergent validity with peer-reports (McCullough et al., 2002), and high test-retest reliability (Wood, Maltby, Gillett et

al., in press).

8.3.2.2. Pre-sleep cognitions were measured with the self-statement test (Fichten et al., 1998). Participants rate how frequently they experience 60 different thoughts, in general, when trying to initially fall asleep or get back to sleep. Items are rated on a 0 (never or hardly ever) to 4 (very often) scale. Items were developed on the basis of a qualitative study of the thoughts people experience whilst trying to fall asleep, and include both positive (e.g., "enjoyable things I did during the last few days") and negative pre-sleep cognitions (e.g., "bad things happening in the world"). The self-statement test discriminates between insomniac and normal populations (known group validity) and positive and negative thoughts load on different factors (Fichten et al., 1998).

8.3.2.3. Sleep was measured with the Pittsburgh Sleep Quality Index (PSQI) (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). Referring to the past month, 19 question ask about sleep quantity (e.g., "when have you usually gone to bed at nights?"; "when have you usually gotten up in the morning?"; "how many actual hours of sleep did you get at night?") and sleep quality (e.g., "how would you rate your sleep quality overall?"). Responses are made in a variety of formats; all responses are recoded on a 0 – 3 scale based on the ranges specified by the scale development paper. (the recoding also has the effect of removing the effect of extreme outliers). A total sleep score is formed, in addition to seven subscales representing *subjective sleep quality*, *sleep latency* (how long it takes to get asleep), *sleep duration*, *sleep efficiency* (hours spent asleep divided by number of hours in bed), *sleep disturbances*, *use of sleep medicine*, and *daytime dysfunction* (e.g., difficulty staying awake during the day). The PSQI can be used as a continuous measure of the continuum of impaired sleep, or a total score > 5 can be used to diagnose sleep problems

with a sensitivity and specificity of >85% (Buysse et al., 1989). The scale is one of the most widely used measures of sleep in clinical research and practice.

8.3.2.4. The Big Five were measured with the Mini-IPIP scales (Donnellan, Oswald, Baird, & Lucas, 2006). The personality factors of neuroticism, extraversion, agreeableness, conscientiousness, and openness are assessed with twenty items (four per factor, including a mixture of positively and negatively worded items). These five traits have been shown to represent all of personality at the broadest level of abstraction (Goldberg, 1993; McCrae & Costa, 1987). The Mini-IPIP shows very good test-retest reliability, convergent, discriminant, and criterion-related validity which is comparable to the NEO and other measures of the Big Five (Donnellan et al., 2006).

8.3.2.5. Social desirability was measured with the Social Desirability Scale-17 (Stöber, 2001). Sixteen items (seven reverse coded) provide statements with which most people would like to agree but are probably unable to do so truthfully (e.g., ''I always accept other's opinions, even when they don't agree with my own''). Participants respond "true" or "false" to each item, and higher scores represent socially desirable responding. The measure was developed due to concerns that the items in older measures were no longer socially desirable. The measure shows sensitivity to socially desirable situations (e.g., job applications), good convergent validity, and all items have recently been rated as socially desirable (Stöber, 2001).

8.4. Results

The total PSQI score was approximately normally distributed. The mean total PSQI score was 5.44 ($SD = 2.57$), slightly higher than representative population surveys ($M = 4.55$, $SD = 3.71$, t [1390] = 4.45, $d = .28$) (Zeitlhofer et al., 2000). At the standard cut-off point of five, 161 people (40%) could be classified as poor sleepers (compared to 32.1% in population surveys).

In the total sample, higher scores on the GQ-6 were positively associated with superior sleep quality, with gratitude negatively correlating with six measures of impaired sleep quality: Total sleep quality ($r = -.29$, $p<.001$), subjective sleep quality ($r = -.25$, $p<.001$), sleep latency ($r = -.20$, $p<.001$), sleep duration ($r = -.14$, $p<.01$), habitual sleep efficiency ($r = -.11$, $p<.05$), and daytime dysfunction ($r = -.27$, $p<.001$). Gratitude was also positively correlated with positive pre-sleep cognitions ($r = .21$, $p<.001$), and negatively correlated with negative pre-sleep cognitions ($r = -.11$, $p<.001$). A series of multiple regressions were conducted to test whether the relationship between gratitude and sleep was mediated by positive and negative pre-sleep cognitions, using Baron and Kenny's (1986) three mediational steps and the Sobel test (MacKinnon & Dwyer, 1993). As gratitude was positively correlated with extraversion, agreeableness, and conscientiousness, and negatively correlated with neuroticism (r ranged from $|.23|$ to $|.35|$, all $p<.001$), the Big Five traits and social desirability were also included as predictor variables in each of the regressions in order to control for the effects of these traits at each stage of the analysis.

Baron and Kenny's first step requires the predictor to be related to the outcome. With the effects of the Big Five and social desirability controlled, gratitude still significantly predicted total sleep quality ($\beta = -.24$, $p < .001$), subjective sleep quality ($\beta = -.25$, $p < .001$), sleep latency ($\beta = -.17$, $p = .002$), sleep duration ($\beta = -.15$, $p = .006$), and daytime dysfunction ($\beta = -.16$, $p = .003$). Gratitude was not uniquely related to sleep efficiency ($\beta = -.08$ $p = .144$), failing Baron and Kenny's first step; therefore this variable was not included in any further analysis.

The second step was conducted separately for each of the five sleep variables with which gratitude showed a unique relationship (these are presented as path diagrams in Figure 8.1, where each of the path values shown are independent of the ef-

fects of social desirability and the Big Five). This step requires the mediators (pre-sleep cognitions) to be significantly related to the outcome (the sleep measure) after controlling for the predictor (gratitude). As shown in Figure 8.1, this step was met in each case.

In the third step, mediation is demonstrated if controlling for the mediator significantly reduces the relationship between the predictor (gratitude) and the outcome (sleep) relative to the zero-order correlation. Sobel's z tests whether the decrease in Beta is statistically significant, and is mathematically equivalent to testing the significance of the mediated pathway (MacKinnon & Dwyer, 1993). Figure 1 shows Sobel's z for each mediated pathway, and demonstrates that either positive or negative pre-sleep cognitions significantly mediated the relationship between gratitude and each of the five measures of sleep (fulfilling the third step). Positive pre-sleep cognitions mediated the relationship between gratitude and subjective sleep quality, sleep duration, sleep latency, and sleep efficiency. Negative pre-sleep cognitions mediated the relationship between gratitude and subjective sleep quality, sleep latency, sleep efficiency, and daytime dysfunction.

8.5. Discussion

Gratitude was uniquely related to total sleep quality, subjective sleep quality, sleep latency, sleep duration and daytime dysfunction, after controlling for the effects of the Big Five and social desirability. The results of the current study also provide evidence that pre-sleep cognitions mediate the relationship between trait gratitude and sleep quality. When falling asleep, grateful people are less likely to think negative and worrying thoughts, and more likely to think positive thoughts. It appears that negative pre-sleep cognitions impair sleep, and gratitude reduces the likelihood of such thoughts, protecting sleep quality. Equally, it appears that positive

Gratitude and total sleep quality

z = 2.97**

β= .21***

Positive pre-sleep cognitions

β= -.18***

Gratitude

β= -.15**

Total sleep quality

β= -.11*

Negative pre-sleep cognitions

β= .53***

z = 2.46***

Gratitude and sleep duration

z = 2.16*

β= .21***

Positive pre-sleep cognitions

β= -.14*

Gratitude

β= -.11, ns

Sleep duration

β= -.11*

Negative pre-sleep cognitions

β= .15**

z = 1.65, ns

Gratitude and sleep latency

z = 2.56*

β= .21***

Positive pre-sleep cognitions

β= -.16***

Gratitude

β= -.08, ns

Sleep latency

β= -.11*

Negative pre-sleep cognitions

β= .47***

z = 2.20*

Gratitude and subjective sleep quality

z = 2.89**

β= .21***

Positive pre-sleep cognitions

β= -.19***

Gratitude

β= -.17**

Subjective sleep quality

β= -.11*

Negative pre-sleep cognitions

β= .39***

z = 2.17*

Gratitude and daytime dysfunction

z = .79, ns

β= .21***

Positive pre-sleep cognitions

β= -.05, ns

Gratitude

β= -.13*

Daytime dysfunction

β= -.11*

Negative pre-sleep cognitions

β= .25****

z = 2.00*

Figure 8.1. Tests of mediation between gratitude and five sleep measures, with standardized betas and Sobel's *z*. All values are after covarying the effects of social desirability and the Big Five. *** *p* < .001, ** *p* < .01, * *p* < .05.

pre-sleep cognitions have a positive effect on sleep, and that gratitude facilitates these thoughts, leading to superior sleep quality.

Showing gratitude leads to good sleep suggests a wider role of positive traits in understanding sleep. Most of the existing research has focused on the role of impaired mental health variables such as neuroticism (Espie, 2002), consistent with a general focus in psychology on the negative aspects of life (Duckworth et al., 2005; Linley et al., 2006; Seligman & Csikszentmihalyi, 2000). The current results suggest that gratitude can explain variance in sleep above the variance which can be explained by neuroticism. More research is needed into whether other positive traits can explain sleep and sleep disorder, in order to develop more complete models of sleep functioning. Research is also needed into whether increasing positive traits improves sleep. Emmons et al. (2003) shows that encouraging gratitude can increase sleep quality. Further work is needed to explore the efficacy of this approach in insomnia patients to test whether including a focus on gratitude can improve existing sleep therapies and whether pre-sleep cognitions are the mechanism through with the therapy operates.

The study had some limitations, including the reliance on self-report measures. This was partially mitigated by the use of the PSQI measure of sleep (which correctly diagnoses insomnia with sensitivity and specificity of >85%) and through showing that the results were not confounded with socially desirable responding. Self-reports of sleep are also important in themselves, given that most people self-refer to sleep clinics. There is also evidence that mood and objective daily performance is more strongly related to the self-report of sleep quality than sleep-quality measured through neuropsychological assessment (Orff, Drummond, Nowakowski, & Perlis, 2007). However, further research is needed into whether gratitude and

other positive traits are related to objective sleep assessment measured by EEG or actigraphy. The current study also used a community sample, rather than a sample of people clinically diagnosed with insomnia. The community sample had the advantage of a wide range of both personality and sleep quality, whereas a slanted clinical sample would probably have exhibited range restrictions, producing biased statistical analysis. However, future research is needed into whether the findings extend to clinical samples, perhaps using the experimental methodology discussed above. Finally, as the study was cross-sectional it is not possible to demonstrate causality, and the mediational analysis relies on the variables being arranged in the correct order, which is normally inferred on the basis of previous research (Baron & Kenny, 1986). However, given that gratitude has been previously shown to cause better sleep (McCullough et al., 2002), pre-sleep cognitions have been shown to causally influence sleep (Ansfield et al., 1996; Gross & Borkovec, 1982; Haynes et al., 1981; Levey et al., 1991), and gratitude causally influences cognitions (Emmons & McCullough, 2003; Wood, Maltby, Gillett et al., in press; Wood, Maltby, Stewart et al., in press), it seems likely the causal chain was correctly arranged in the mediational analysis.

The results present the first indication that individual differences in gratitude are related to sleep quality, and suggest that this is due to the mechanism of pre-sleep cognitions. More research is needed into the role of gratitude and other positive traits in relation to quality of sleep in both healthy and clinical populations. Such a positive psychology approach to sleep could potentially provide better understanding of the etiology of sleep disorders, explanation of positive sleep quality, and lead to new therapies to treat sleep disorder and promote optimal sleeping amongst the general population.

CHAPTER 9

9. CONCLUSION

This thesis provides a new social-cognitive model of gratitude, and shows how and why gratitude is important to well-being. Specifically, (a) benefit appraisals were shown to be the mechanism linking trait and state levels of gratitude, (b) gratitude was reconceptualized as a life orientation towards appreciating the positive in life, (c) gratitude was shown to be uniquely important to both psychological and subjective well-being, (d) gratitude was shown to lead to well-being over time, (e) positive coping strategies were shown to explain why grateful people experience less stress in life, and (f) gratitude was shown to be an important unique predictor of sleep through the mechanism of pre-sleep cognitions. This chapter summarizes these findings, highlights future research directions, and considers how this research relates to the positive psychology movement.

9.1. Summary

First, whilst considerable previous work into state gratitude had shown that gratitude has pro-social functions (McCullough et al., 2001), it was not known why trait and state levels of gratitude were linked, nor had it been conclusively shown what causes the experience of gratitude. *Chapter 2* presented a new social-cognitive model which integrated trait and state levels of gratitude, along with the effect of the social situation. This model focused on the role of benefit appraisals, which was tested with three studies. After receiving aid, gratitude is caused by appraisals of (a) how costly the help was to provide, (b) the value of the help, and (c) whether the help was provided altruistically (or through their benefactor having an ulterior motive). This benefit appraisal also explains why trait and state levels of gratitude are linked. People who are higher in trait gratitude habitually make more positive benefit

appraisals (seeing the help they receive as more costly, more valuable, and more altruistically intended), and these benefit appraisals cause grateful people to generally experience more gratitude in a given situation.

Second, there are currently three measures of individual differences in gratitude, comprising 12 sub-scales (Adler & Fagley, 2005; McCullough et al., 2002; Watkins et al., 2003). With some overlap between the sub-scales, they comprise 10 theoretically diverse conceptions of gratitude: (1) frequency and intensiveness of grateful affect, (2) appreciation of people, (3) appreciation of possessions, (4) focusing on the positive in the present moment, (5) rituals to enhance or express gratitude, (6) feeling of awe, (7) positive social comparisons against other people, (8) existential gratitude arising from the appreciation that life is short, (9) behavior which expresses gratitude, and (10) lack of resentment for the negative aspects of life. *Chapter 3* presented two studies showing that these 10 conceptions are actually indicators of a single higher order gratitude construct. People who score highly one of the 10 aspects of gratitude generally score high on all of the others. This finding has implications both for the study of gratitude and for the conceptualization of the construct. Pragmatically, showing that the 12 sub-scales measure the same higher order construct suggests that literature reviews can integrate the results from studies using any of the measures of gratitude. Theoretically, showing that each of the 10 theoretically diverse conceptions of gratitude actually assess the same higher order construct has implications for the conceptualization of the construct. Chapter 3 offers a new wider definition of trait gratitude, incorporating aspects of each of the previous conceptualizations of gratitude. Gratitude appears to involve both an affective component and a deliberate, continual focus on the positive in the world. As such, gratitude could be characterized as a life orientation towards noticing and appreciating the positive in

the world. Conceptualizing gratitude as such a life orientation intuitively explains why gratitude is so strongly linked to well-being, as demonstrated in later chapters of the thesis.

Third, it was not known if the relationship between gratitude and well-being was unique or simply due to the effects of other personality variables. The 30 facets of the Five Factor Model (Costa & McCrae, 1995) are amongst the most studied personality in the last 50 years (McCrae & Costa, 1999), and cover the breath of personality as conceptualized by the Five Factor Model (Goldberg, 1993). *Chapter 4* showed that gratitude was strongly related to satisfaction with life above and beyond the effects of the 30 facets of the Big Five. This provided the strongest test yet conducted of whether gratitude can contribute unique understanding to the study of well-being.

It was also not known whether gratitude was related to psychological well-being (PWB) in addition to subjective well-being (SWB). SWB and PWB arise from different theoretical conceptions of well-being. SWB represents a pleasant life involving infrequent negative affect, frequent positive affect, and feelings of satisfaction with life. In contrast, PWB represents a meaningful life full of constructive activity, positive relationships, and personal growth. Previous research into gratitude had focused almost exclusively on SWB, whereas traditional considerations of gratitude have focused on the relationship between gratitude and the meaningful life inherent in PWB. *Chapter 5* showed that gratitude had small correlations with autonomy ($r = .17$) and medium to large correlations with environmental mastery, personal growth, positive relationships, purpose in life, self-acceptance, and life satisfaction (*r*s ranged from .28 to .61). Critically, many of these relationship appear to be unique. After controlling for the 30 facets of the Big Five, gratitude still predicted

personal growth, positive relationships with others, purpose in life, and self-acceptance. Together, Chapters 4 and 5 suggest that gratitude may be able to make a unique contribution to both SWB and PWB.

Fourth, it was not known whether gratitude leads to well-being over time, or whether another model of causality more appropriately represented the relationship between the variables. In *Chapter 6*, two longitudinal studies examined how student's levels of well-being changed when they first started university. Several models of causality were compared with structural equation modeling. These models included gratitude leading to well-being, well-being leading to gratitude, and both variables leading to each other in a positive spiral. Both studies clearly indicated that the best model involved gratitude leading to well-being over time, and in the second study this was found to be independent of the effects of the Big Five domains. Chapter 6 provides the first longitudinal evidence of causality between gratitude and well-being, and indicated that gratitude may be a cognitive resource which leads to improved well-being over time during difficult life periods. This complements the existing evidence that gratitude interventions causally increase well-being (e.g., Emmons et al., 2003).

Fifth, it was not known whether the relationship between gratitude and well-being was direct or whether gratitude was related to well-being through a cognitive mechanism. *Chapter 7* presented the first evidence that gratitude was related to positive coping strategies, with grateful people having strategies broadly characterized by directly approaching and dealing with problems (rather than avoiding or denying the problem exists) and being more willing to use their social contacts for advice and help. Positive coping strategies mediated the relationship between gratitude and stress, but not between gratitude and any other aspect of well-being. This suggests

that the relationship between gratitude and well-being is mostly direct, but that positive coping is the reason why grateful people become less stressed in aversive situations.

Sixth, whist there was indication that gratitude interventions lead to better quality of sleep, it was not known whether trait gratitude was related to sleep, nor was there any indication of the mechanisms which may explain why this occurs. *Chapter 8* presents a new model of gratitude and sleep. Grateful people were shown to have different cognitions prior to sleep, thinking more positive and less negative thoughts. Positive pre-sleep cognitions had a facilitating role in sleep, and negative thoughts disrupted sleep. Together, positive and negative pre-sleep cognitions explained why gratitude was linked to sleep. All of the results were independent of the Big Five domains. The study suggests that gratitude may be important to sleep. Taken together, these seven empirical chapters indicate that gratitude is a strong, unique, and causal predictor of well-being.

9.2. Future Directions for Gratitude Research

9.2.1. Conceptualizing Gratitude and Appreciation

Chapter 3 conceptualized gratitude and appreciation as an unitary personality trait. Questions emerge regarding how this new conceptualization fits in with well-being. For example, it is not clear whether this conception is an aspect of SWB or PWB. Whilst Chapters 4 and 5 show that gratitude has substantial incremental validity when conceptualized as an emotion (with the GQ-6), it is not clear whether the latent gratitude and appreciation construct has a similar ability to uniquely predict other variables. The discriminant validity of the higher order gratitude factor is also not clear, nor is it clear how this factor fits in with the Five Factor Model. For example, is the gratitude/appreciation factor a Big Five facet, has the factor just recreated

one of the Big Five, or is the factor one of the aspects of personality which is not represented in Big Five space (see Paunonen & Jackson, 2000).

It is also unclear how the higher order gratitude factor is related to post-traumatic growth. Following traumatic experiences, people commonly experience positive benefits in addition to their often intense suffering (Linley & Joseph, 2004). People commonly report benefits such as "I value my relationships much more now", "I don't take life for granted anymore", "I live every day to the full now", and "I look upon each day as a bonus" (Joseph et al., 2005, p. 73). These experiences show remarkable similarity to the higher order gratitude factor, and appear covered by the sub-scales of the Appreciation Scale (Adler & Fagley, 2005) and the GRAT (Watkins et al., 2003). This raises the question of whether post-traumatic growth is best conceptualized as involving increases in gratitude. Empirical work is needed into (1) whether measures of post-traumatic growth are part of the same higher order factor as gratitude and appreciation, (2) which personality traits and social-conditions promote increases in gratitude following trauma, and (3) how gratitude is related to changes in well-being for traumatized people.

9.2.2. Incremental Validity of Gratitude

Following on from Chapters 4 and 5, the question arises whether gratitude has incremental validity from other personality traits. Demonstrating that gratitude has incremental validity above the Big Five facets suggests that gratitude can contribute to the literature on well-being beyond commonly studied personality traits. However, it is increasingly appreciated that many traits are not covered by the Big Five (Paunonen & Jackson, 2000) and traits of honesty and humility seem to form a sixth higher order factor of personality (Ashton et al., 2004; K. Lee & Ashton, 2005; K. Lee, Ogunfowora, & Ashton, 2005). It is not yet known whether gratitude is related

to the sixth factor of personality and whether gratitude has incremental validity above these traits. It is also not clear whether gratitude has incremental validity above other traits commonly studied by positive psychology, such as optimism (Scheier et al., 1994), "optimistic" attribution style (Alloy, Abramson, Peterson, & Seligman, 1984; Seligman, 2006), or hope (Snyder, Harris, Anderson, Holleran, & et al., 1991). Park et al. (2004) showed that 24 psychological strengths were correlated with satisfaction with life; gratitude was a strong correlate, but it is not clear how much of this relationship was due to the shared variance between gratitude and the other 24 strengths.

9.2.3. Gratitude and Well-being Over Time

In Chapter 6, gratitude was shown to lead to well-being over time. In particular, gratitude was shown to lead to lower levels of depression, but questions now emerge regarding which part of the time course of depression is influenced by gratitude. First, gratitude could act as a protective factor in preventing the development of depression. Second, gratitude could lesson depression at the peak of the time course. Third, gratitude could speed recovery from depression (see Barnett & Gotlib, 1988). Quite possibly, gratitude impacts on each stage of the course of depression, but testing whether this is the case has applied significance. For example, if gratitude acted as a protective factor, then gratitude research is relevant to the community psychology focus on preventative medicine. Alternatively, if gratitude promoted recovery from depression, then gratitude would seem relevant to the clinical psychology focus on alleviating distress. If both possibilities were the case, then this would promote gratitude research and practice in both community and clinical psychology. One of the opportunities of the positive psychology movement is to challenge the medical model of psychopathology, where well-being variables such as depression

are seen as a disorder which is either absent or present (Joseph & Linley, 2006), and to encourage people to reflect on their core conceptions of humanity (cf., Wood & Joseph, 2007). Positive psychology promotes a continuum approach to well-being, inherently suggesting that a focus on improving positive well-being is as important as curing distress (Maddux, 2002; Maddux et al., 2005; Maddux et al., 2004). Demonstrating that gratitude impacts on all parts of the depression continuum will aid this process, and help integrate the efforts of community, positive, and clinical psychologists in promoting a more integrated discipline of psychology (cf., Sternberg & Grigorenko, 2001).

9.2.4. Gratitude and Coping

In Chapter 7 coping was shown to mediate the relationship between gratitude and stress in a sample of undergraduate students. Additional questions now emerge regarding causality and how the findings apply to applied settings. The study used mediational analysis, which presumes the causal chain was correctly arranged (MacKinnon, Krull, & Lockwood, 2000; Spencer, Zanna, & Fong, 2005). Whilst theory suggested that gratitude lead to coping, which subsequently leads to lower levels of stress, this should be tested with all measurements taken at three time points. A three-wave study can test all possible permutations of the causal chain to more conclusively demonstrate causal mediation (Cole & Maxwell, 2003). Finer grained detail of the relationship between gratitude and coping would be provided by a multilevel design using a daily process methodology (as used in Chapter 2). With this methodology it would possible to ask whether grateful people generally cope more positively on a daily basis, and whether grateful people have lower levels of stress specifically on days where they cope more positively (cf., Affleck, Zautra, Tennen, & Armeli, 1999). Taken together, the combined use of multi-wave and daily

process studies would increase confidence in the conclusion that gratitude decreases stress through the mechanism of coping. Ideally, these studies would involve populations for whom coping is particularly relevant, such as people who are coping with medical disorders. Finally, it should be tested whether these relationship are unique or due to the influence of another personality trait such as the facets of the Big Five.

9.2.5. Gratitude and Sleep

Chapter 8 showed that gratitude was related to sleep because more grateful people had more positive pre-sleep cognitions, thinking less negative and more positive thoughts before falling asleep. Sleep is an important predictor of many aspects of life, including immune function (Motivala & Irwin, 2007), cognitive and motor performance (Pilcher & Huffcutt, 1996), and academic performance (Gray & Watson, 2002). Establishing a link between trait gratitude and sleep suggests new directions for gratitude research, questioning whether gratitude is related to a wide variety of variables due to sleep quality. More research is needed into whether gratitude is related to outcomes influenced by sleep, and into whether sleep is the mediating mechanism in these relationships. Given that sleep is related to a variety of aspects of SWB (Brummett et al., 2006; Carmichael & Reis, 2005; Fortunato & Harsh, 2006; Gray & Watson, 2002; Pilcher et al., 1997; Pilcher & Huffcutt, 1996), good sleep quality may be an aspect of why gratitude is related to well-being. Longitudinal or experimental methodologies will be needed to show establish the potential causal order between these variables (e.g., does gratitude lead to well-being because of sleep, or does gratitude lead to sleep because of well-being? The methodology of Chapter 6 offers one way to test these conflicting models).

Psychological interventions to treat insomnia are moderately successful, with 64% of people achieving clinically significant gains on cognitive behavioral pro-

grams, compared to an 8% improvement through placebo effects (Morin, Bootzin, Buysse, Edinger, Espie, & Lichstein, 2006). These interventions commonly involve a behavioral component (such as maintaining the same bedtime routine) and a psychological component (such as reducing anxiety and promoting relaxation); multi-component interventions seem to hold particular promise (Lacks & Morin, 1992). Emmons et al. (2003) showed that a gratitude intervention increased self-reported sleep, and Chapter 8 suggested that this may be because gratitude changes pre-sleep cognitions. More investigation is needed into whether gratitude interventions are an efficacious and cost effective treatment for improving insomnia, perhaps as part of a multi-component approach to treating insomnia. If pre-sleep cognitions are causally implicated in insomnia (Ansfield et al., 1996; Gross & Borkovec, 1982; Haynes et al., 1981; Levey et al., 1991), and gratitude causes positive pre-sleep cognitions, then gratitude interventions may be a highly targeted approach to improving sleep quality. Specifically, a program of research is suggested where gratitude is experimentally manipulated in clinical populations, both to test this causal chain is correctly arranged, and to develop a potentially powerful new treatment of sleep disorder.

9.2.6. Other Directions

Two other directions of research not specifically linked to gratitude are particularly suggested by the research in this thesis. First, the model linking gratitude and sleep has considerable applicability beyond gratitude. Currently, there are two divergent streams of sleep research. One stream suggests that personality is linked to sleep (Brummett et al., 2006; Carmichael & Reis, 2005; Fortunato & Harsh, 2006; Gray & Watson, 2002; Pilcher et al., 1997; Pilcher & Huffcutt, 1996), and another suggests that pre-sleep cognitions cause sleep (Ansfield et al., 1996; Gross & Borkovec, 1982; Haynes et al., 1981; Levey et al., 1991). These lines of research have yet

to be integrated although Chapter 8 suggests that, at least for gratitude, pre-sleep cognitions are the mechanism linking personality and sleep. Much more research is needed to test whether this finding holds for other personality traits (such as neuroticism), in order to integrate research on personality and pre-sleep cognitions to form a more complete model of insomnia and sleep quality. It is also interesting that positive pre-sleep cognitions improve sleep whereas negative pre-sleep cognitions impair sleep. This is consistent with recent findings in positive psychology showing that positive emotions counteract the effect of negative emotions (the "broaden-and-build" hypothesis, Fredrickson, 1998, 2001; Fredrickson et al., 2000). Including a focus on both positive and negative pre-sleep cognitions makes the proposed sleep research consistent with the aims of the positive psychology movement, in that positive aspects of sleep are considered along with the negative (cf., Linley et al., 2006).

Second, the thesis highlights the rapid advances which can arise from studying traits which have received substantial philosophical attention but limited psychological research. On this basis, running parallel with the research which forms the basis of this thesis, I have been conducting research into authenticity, and have developed the first ever psychometrically valid scale of dispositional authenticity (Wood, Linley et al., in press) (reproduced in the Appendix). Like gratitude, authenticity has received considerable philosophical attention. Authenticity is fundamental to the person centered counseling perspective (Rogers, 1951, 1959, 1961, 1963, 1964, 1980), with the importance of authenticity also stressed by psychodynamic (e.g., Horney, 1951; Winnicott, 1965), existential (e.g., May, 1981; Yalom, 1980), developmental (e.g., Harter, Marold, Whitesell, & Cobbs, 1996), social psychological (e.g., Kernis & Goldman, 2005; Lopez & Rice, 2006), positive psychological (e.g., Sheldon, 2004), and clinical perspectives (e.g., Ehlers, Maercker, & Boos, 2000; Joseph &

Linley, 2005). However, as with many aspects of counseling psychology perspectives, whilst the theories provide rich theoretical basis, the fundamental aspects of the theories have not received empirical attention. The publication of the Authenticity Scale (see Appendix) may be as seminal to authenticity research as the publication of the GQ-6 was to research into gratitude. Authenticity and gratitude share common roots in that they were both largely neglected theoretically important traits, which benefited from the positive psychological focus on promoting empirical research into positive traits (although research into both was progressing prior to the positive psychology movement, Emmons, 2007).

9.3. Conclusion

Gratitude has always been considered important in philosophical and theological conceptions of well-being and the functioning of society (Emmons & Crumpler, 2000). The study of individual differences in gratitude has only recently began, with early successes including better understanding the nature of grateful affect (McCullough et al., 2001), developing scales of individual differences in gratitude (Adler & Fagley, 2005; McCullough et al., 2002; Watkins et al., 2003), showing gratitude is related to well-being (e.g., Kashdan et al., 2006; McCullough & Tsang, 2004), and developing gratitude interventions that causally increase well-being (e.g., Emmons & McCullough, 2003; Seligman et al., 2005). This thesis advances knowledge into gratitude by (1) providing a new social cognitive model integrating trait and state levels of gratitude, (2) integrating measures of gratitude and appreciation to redefine gratitude as a life orientation towards the positive, (3) showing that gratitude is uniquely related to SWB and PWB above the effects of other personality traits, (4) demonstrating that gratitude naturally leads to improved well-being during a life transition, (5) establishing that gratitude is related to positive coping strategies

which explain why grateful people feel less stress in life, and (6) providing a new

model linking trait gratitude to good sleep quality. These findings suggest that grati-

tude is a key variable which is integral to the understanding to well-being.

10. REFERENCES

Adler, M. G., & Fagley, N. S. (2005). Appreciation: Individual differences in finding value and meaning as a unique predictor of subjective well-being. *Journal of Personality, 73*, 79-114.

Affleck, G., Zautra, A., Tennen, H., & Armeli, S. (1999). Multilevel daily process designs for consulting and clinical psychology: A preface for the perplexed. *Journal of Consulting and Clinical Psychology, 67*, 746-754.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.

Alloy, L. B., Abramson, L. Y., Peterson, C., & Seligman, M. E. P. (1984). Attributional style and the generality of learned helplessness. *Journal of Personality and Social Psychology, 46*, 681-687.

Ansfield, M. E., Wegner, D. M., & Bowser, R. (1996). Ironic effects of sleep urgency. *Behaviour Research and Therapy, 34*, 523-531.

Arbuckle, J. L. (2006). *Amos 7.0 user guide*. Spring House, PA: Amos Development Corporation.

Ashton, M. C., Lee, K., Perugini, M., Szarota, P., de Vries, R. E., Di Blas, L., et al. (2004). A six-factor structure of personality-descriptive adjectives: Solutions from psycholexical studies in seven languages. *Journal of Personality and Social Psychology, 86*, 356-366.

Backstrom, M. (2007). Higher-order factors in a five-factor personality inventory and its relation to social desirability. *European Journal of Psychological Assessment, 23*, 63-70.

Bandura, A. (1999). Social cognitive theory of personality. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research (2nd ed.)* (pp.

154-196). New York: Guilford Press.

Bargh, J. A., Lombardi, W. J., & Higgins, E. (1988). Automaticity of chronically accessible constructs in person x situation effects on person perception: It's just a matter of time. *Journal of Personality and Social Psychology, 55*, 599-605.

Barnett, P. A., & Gotlib, I. H. (1988). Psychosocial functioning and depression - distinguishing among antecedents, concomitants, and consequences. *Psychological Bulletin, 104*, 97-126.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Bartlett, M. Y., & DeSteno, D. (2006). Gratitude and prosocial behavior: Helping when it costs you. *Psychological Science, 17*, 319-325.

Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. Oxford, England: International Universities Press.

Beiser, M. (1974). Components and correlates of mental well-being. *Journal of Health and Social Behavior, 15*, 320-327.

Bodner, E., & Mikulincer, M. (1998). Learned helplessness and the occurrence of depressive-like and paranoid-like responses: The role of attentional focus. *Journal of Personality and Social Psychology, 74*, 1010-1023.

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54*, 579-616.

Bono, G., Emmons, R. A., & McCullough, M. E. (2004). Gratitude in practice and the practice of gratitude. In P. A. Linley & S. Joseph (Eds.), *Positive psychology in practice* (pp. 464-481). Hoboken, NJ, US: John Wiley & Sons, Inc.

Brissette, I., Scheier, M. F., & Carver, C. S. (2002). The role of optimism in social network development, coping, and psychological adjustment during a life transition. *Journal of Personality and Social Psychology, 82*, 102-111.

Brummett, B. H., Babyak, M. A., Siegler, I. C., Vitaliano, P. P., Ballard, E. L., Gwyther, L. P., et al. (2006). Associations among perceptions of social support, negative affect, and quality of sleep in caregivers and noncaregivers. *Health Psychology, 25*, 220-225.

Burnham, K. P., & Anderson, D. R. (2002). *Model selection and multimodel inference: A practical information-theoretic approach* (2 ed.). New York: Springer-Verlag.

Buysse, D. J., Reynolds, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh sleep quality index - a new instrument for psychiatric practice and research. *Psychiatry Research, 28*, 193-213.

Byrne, B. M. (2004). Testing for multigroup invariance using AMOS graphics: A road less traveled. *Structural Equation Modeling, 11*, 272-300.

Carey, J. R., Clicque, S. H., Leighton, B. A., & Milton, F. (1976). Test of positive reinforcement of customers. *Journal of Marketing, 40*, 98-100.

Carmichael, C. L., & Reis, H. T. (2005). Attachment, sleep quality, and depressed affect. *Health Psychology, 24*, 526-531.

Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the brief cope. *International Journal of Behavioral Medicine, 4*, 92-100.

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies - a theoretically based approach. *Journal of Personality and Social Psychology, 56*, 267-283.

Cervone, D. (2004). The architecture of personality. *Psychological Review, 111*,

183-204.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2 ed.). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155-159.

Cohen, S., & Hoberman, H. (1983). Positive events and social supports as buffers of life change stress. *Journal of Applied Social Psychology, 13*, 99-125.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385-396.

Cohen, S., Mermelstein, R., Kamarck, T., & Hoberman, H. (1985). Measuring the functional components of social support. In I. G. Sarason & B. R. Sarason (Eds.), *Social support: Theory, research and application* (pp. 74-94). The Hague, Holland: Martinus Nijhoff.

Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the united states. In S. Spacapam & S. Oskamp (Eds.), *The social psychology of health* (pp. 31-67). Newbury Park, CA: Sage.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310-357.

Cole, D. A., & Maxwell, S. E. (2003). Testing mediational models with longitudinal data: Questions and tips in the use of structural equation modeling. *Journal of Abnormal Psychology, 112*, 558-577.

Collins, L. M., Graham, J. W., & Flaherty, B. P. (1998). An alternative framework for defining mediation. *Multivariate Behavioral Research, 33*, 295-312.

Compton, W. C., Smith, M. L., Cornish, K. A., & Qualls, D. L. (1996). Factor structure of mental health measures. *Journal of Personality and Social Psychology, 71*, 406-413.

Costa, P. T., & McCrae, R. R. (1980). Influence of extraversion and neuroticism on subjective well-being - happy and unhappy people. *Journal of Personality and Social Psychology, 38*, 668-678.

Costa, P. T., & McCrae, R. R. (1992). *Revised NEO personality inventory (NEO-PI-R) and the NEO five-factor inventory (NEO-FFI): Professional manual.* Odessa, FL: Psychological Assessment Resources, Inc.

Costa, P. T., & McCrae, R. R. (1995). Domains and facets: Hierarchical personality assessment using the revised NEO personality inventory. *Journal of Personality Assessment, 64*, 21-50.

Cowen, E. L., & Kilmer, R. P. (2002). "Positive psychology": Some plusses and some open issues. *Journal of Community Psychology, 30*, 449-460.

Coyne, J. C. (1976). Toward an interactional description of depression. *Psychiatry-Interpersonal and Biological Processes, 39*, 28-40.

De Haes, J. C. J. M., De Rulter, J. H., Tempelaar, R., & Pennink, B. J. W. (1992). The distinction between affect and cognition in the quality of life of cancer patients - sensitivity and stability. *Quality of Life Research, 1*, 315-322.

De Haes, J. C. J. M., Pennink, B. J. W., & Welvaart, K. (1986). The distinction between affect and cognition. *Social Indicators Research, 19*, 367-378.

de Jonge, J., Dormann, C., Janssen, P. P. M., Dollard, M. F., Landeweerd, J. A., & Nijhuis, F. J. N. (2001). Testing reciprocal relationships between job characteristics and psychological well-being: A cross-lagged structural equation model. *Journal of Occupational and Organizational Psychology, 74*, 29-46.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95*, 542-575.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71-75.

Donnellan, M. B., Oswald, F. L., Baird, B. M., & Lucas, R. E. (2006). The mini-IPIP scales: Tiny-yet-effective measures of the big five factors of personality. *Psychological Assessment, 18*, 192-203.

Duckworth, A. L., Steen, T. A., & Seligman, M. E. P. (2005). Positive psychology in clinical practice. *Annual Review of Clinical Psychology, 1*, 629-651.

Ehlers, A., Maercker, A., & Boos, A. (2000). Posttraumatic stress disorder following political imprisonment: The role of mental defeat, alienation, and perceived permanent change. *Journal of Abnormal Psychology, 109*, 45-55.

Eich, E., Kihlstrom, J. F., Bower, G. H., Niedenthal, P. M., & Forgas, J. P. (2000). *Cognition and emotion*. New York: Oxford University Press.

Ekehammar, B., & Akrami, N. (2007). Personality and prejudice: From big five personality factors to facets. *Journal of Personality, 75*, 899-925.

Emmons, R. A. (2007). *Thanks! Recent developments in the science of gratitude.* Paper presented at the 9th International Summit on Positive Psychology, Gallup International, Washington DC, October.

Emmons, R. A., & Crumpler, C. A. (2000). Gratitude as a human strength: Appraising the evidence. *Journal of Social and Clinical Psychology, 19*, 56-69.

Emmons, R. A., & Diener, E. (1985). Personality-correlates of subjective well-being. *Personality and Social Psychology Bulletin, 11*, 89-97.

Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology, 84*, 377-389.

Emmons, R. A., & McCullough, M. E. (2004). *The psychology of gratitude*. New York: Oxford University Press.

Espie, C. A. (2002). Insomnia: Conceptual issues in the development, persistence,

and treatment of sleep disorder in adults. *Annual Review of Psychology, 53*, 215-243.

Evans, J., Heron, J., Lewis, G., Araya, R., Wolke, D., & ALSPAC Study Team. (2005). Negative self-schemas and the onset of depression in women: Longitudinal study. *British Journal of Psychiatry, 186*, 302-307.

Fassinger, R. E. (1987). Use of structural equation modeling in counseling psychology research. *Journal of Counseling Psychology, 34*, 425-436.

Feldman, J. (1975). Considerations in use of casual correlational techniques in applied-psychology. *Journal of Applied Psychology, 60*, 663-670.

Fichten, C. S., Libman, E., Creti, L., Amsel, R., Tagalakis, V., & Brender, W. (1998). Thoughts during awake times in older good and poor sleepers - the self-statement test: 60+. *Cognitive Therapy and Research, 22*, 1-20.

Finkel, S. E. (1995). *Causal analysis with panel data*. Thousand Oaks, CA: Sage Publications.

Fleeson, W. (2001). Toward a structure- and process-integrated view of personality: Traits as density distributions of states. *Journal of Personality and Social Psychology, 80*, 1011-1027.

Fleeson, W. (2004). Moving personality beyond the person-situation debate: The challenge and the opportunity of within-person variability. *Current Directions in Psychological Science, 13*, 83-87.

Fortunato, V. J., & Harsh, J. (2006). Stress and sleep quality: The moderating role of negative affectivity. *Personality and Individual Differences, 41*, 825-836.

Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology, 51*, 115-134.

Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology, 2*, 247-270.

Fredrickson, B. L. (2000). Cultivating positive emotions to optimize health and well-being. *Prevention and Treatment, 3*, Article 0001a.

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology - the broaden-and-build theory of positive emotions. *American Psychologist, 56*, 218-226.

Fredrickson, B. L. (2004). Gratitude, like other positive emotions, broadens and builds. In R. A. Emmons & M. E. McCullough (Eds.), *The psychology of gratitude* (pp. 145-166). New York: Oxford University Press.

Fredrickson, B. L., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition & Emotion, 19*, 313-332.

Fredrickson, B. L., & Joiner, T. (2002). Positive emotions trigger upward spirals toward emotional well-being. *Psychological Science, 13*, 172-175.

Fredrickson, B. L., Mancuso, R. A., Branigan, C., & Tugade, M. M. (2000). The undoing effect of positive emotions. *Motivation and Emotion, 24*, 237-258.

Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crises? A prospective study of resilience and emotions following the terrorist attacks on the united states on September 11th, 2001. *Journal of Personality and Social Psychology, 84*, 365-376.

Froh, J. J., Miller, D. N., & Snyder, S. F. (2007). Gratitude in children and adolescents: Development, assessment, and school-based intervention. *School Psychology Forum: Research in Practice, 1*, 1-14.

Froh, J. J., Sefick, W. J., & Emmons, R. A. (2008). Counting blessings in early adolescents: An experimental study of gratitude and subjective well-being. *Jour-

nal of School Psychology, 46, 213-233.

Froh, J. J., Sefick, W. J., & Emmons, R. A. (in press). Counting blessings in early adolescents: An experimental study of gratitude and subjective well-being. *Journal of School Psychology*.

Gable, S. L., & Haidt, J. (2005). What (and why) is positive psychology? *Review of General Psychology, 9*, 103-110.

Gable, S. L., Reis, H. T., Impett, E. A., & Asher, E. R. (2004). What do you do when things go right? The intrapersonal and interpersonal benefits of sharing positive events. *Journal of Personality and Social Psychology, 87*, 228-245.

Gallup. (1999). Survey results on "Gratitude", adults and teenagers. *Emerging Trends, 20, 4-5,9.*

Giesler, R. B., Josephs, R. A., & Swann, W. B. (1996). Self-verification in clinical depression: The desire for negative evaluation. *Journal of Abnormal Psychology, 105*, 358-368.

Gilbert, D. T., Lieberman, M. D., Morewedge, C. K., & Wilson, T. D. (2004). The peculiar longevity of things not so bad. *Psychological Science, 15*, 14-19.

Gilbert, D. T., Pinel, E. C., Wilson, T. D., Blumberg, S. J., & Wheatley, T. P. (1998). Immune neglect: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology, 75*, 617-638.

Goldberg, L. R. (1992). The development of markers for the big-five factor structure. *Psychological Assessment, 4*, 26-42.

Goldberg, L. R. (1993). The structure of phenotypic personality-traits. *American Psychologist, 48*, 26-34.

Gordon, R. A. (1968). Issues in multiple regression. *American Journal of Sociology 73*, 592-616.

Gray, E. K., & Watson, D. (2002). General and specific traits of personality and their relation to sleep and academic performance. *Journal of Personality, 70*, 177-206.

Gross, R. T., & Borkovec, T. D. (1982). Effects of a cognitive intrusion manipulation on the sleep-onset latency of good sleepers. *Behavior Therapy, 13*, 112-116.

Harpman, E. J. (2004). *Gratitude in the history of ideas*. In R. A. Emmons & M. E. McCullough (Eds.), *The psychology of gratitude* (pp. 19-36). New York: Oxford University Press.

Harter, S., Marold, D. B., Whitesell, N. R., & Cobbs, G. (1996). A model of the effects of perceived parent and peer support on adolescent false self behavior. *Child Development, 67*, 360-374.

Harvey, A. G. (2000). Pre-sleep cognitive activity: A comparison of sleep-onset insomniacs and good sleepers. *British Journal of Clinical Psychology, 39*, 275-286.

Harvey, K. J., & Espie, C. A. (2004). Development and preliminary validation of the Glasgow content of thoughts inventory (GCTI): A new measure for the assessment of pre-sleep cognitive activity. *British Journal of Clinical Psychology, 43*, 409-420.

Hawton, K., Salkovskis, P. M., Kirk, J., & Clark, D. M. (1989). *Cognitive behaviour therapy for psychiatric problems: A practical guide*. New York: Oxford University Press.

Haynes, S. N., Adams, A., & Franzen, M. (1981). The effects of pre-sleep stress on sleep-onset insomnia. *Journal of Abnormal Psychology, 90*, 601-606.

Higgins, E., & Brendl, C. (1995). Accessibility and applicability: Some "Activation

rules" Influencing judgment. *Journal of Experimental Social Psychology, 31*, 218-243.

Hogan, B. E., Linden, W., & Najarian, B. (2002). Social support interventions - do they work? *Clinical Psychology Review, 22*, 381-440.

Horney, K. (1951). *Neurosis and human growth*. London: Rutledge.

Howell, R. T., & Howell, C. J. (in press). Subjective well-being and poverty: A meta-analysis to test need theory in developing countries. *Psychological Bulletin*.

Hoyle, R. H., & Panter, A. T. (1995). Writing about structural equation modeling. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications.* (pp. 158-176). Thousand Oaks, CA: Sage Publications.

Hu, L. T., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods, 3*, 424-453.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.

Hunsley, J., & Meyer, G. J. (2003). The incremental validity of psychological testing and assessment: Conceptual, methodological, and statistical issues. *Psychological Assessment, 15*, 446-455.

John, O. P., & Srivastava, S. (1999). The big five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research (2nd ed.)* (pp. 102-138). New York, NY: Guilford Press.

Johnson, K. J., & Fredrickson, B. L. (2005). "We all look the same to me" - positive

emotions eliminate the own-race bias in face recognition. *Psychological Science, 16*, 875-881.

Joiner, T. E., Alfano, M. S., & Metalsky, G. I. (1993). Caught in the crossfire - depression, self-consistency, self-enhancement, and the response of others. *Journal of Social and Clinical Psychology, 12*, 113-134.

Joseph, S. (2004). Client-centred therapy, post-traumatic stress disorder and post-traumatic growth: Theoretical perspectives and practical implications. *Psychology and Psychotherapy-Theory Research and Practice, 77*, 101-119.

Joseph, S., & Linley, P. A. (2005). Positive adjustment to threatening events: An organismic valuing theory of growth through adversity. *Review of General Psychology, 9*, 262-280.

Joseph, S., & Linley, P. A. (2006). *Positive therapy: A meta-theory for positive psychological practice*. New York: Routledge.

Joseph, S., Linley, P. A., Andrews, L., Harris, G., Howle, B., Woodward, C., et al. (2005). Assessing positive and negative changes in the aftermath of adversity: Psychometric evaluation of the changes in outlook questionnaire. *Psychological Assessment, 17*, 70-80.

Joseph, S., Linley, P. A., Harwood, J., Lewis, C. A., & McCollam, P. (2004). Rapid assessment of well-being: The short depression-happiness scale. *Psychology and Psychotherapy: Theory, Research, and Practice, 77*, 1-14. .

Kashdan, T. B., Uswatte, G., & Julian, T. (2006). Gratitude and hedonic and eudaimonic well-being in Vietnam war veterans. *Behaviour Research and Therapy, 44*, 177-199.

Kenny, D. A., Kashy, D. A., & Bolger, N. (1998). Data analysis in social psychology. In D. T. Gilbert, S. T. Fiske & G. Lindzey (Eds.), *The handbook of so-*

cial psychology (pp. 233-265). New York: McGraw-Hill.

Kernis, M. H., & Goldman, B. M. (2005). From thought and experience to behavior and interpersonal relationships: A multicomponent conceptualization of authenticity. In A. Tesser, J. V. Wood & D. Stapel (Eds.), *On building, defending, and regulating the self: A psychological perspective* (pp. 31-52). New York, NY: Psychology Press.

Keyes, C. L. M., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: The empirical encounter of two traditions. *Journal of Personality and Social Psychology, 82*, 1007-1022.

King, L. A., Eells, J. E., & Burton, C. A. (2004). The good life, broadly and narrowly considered. In P. A. Linley & S. Joseph (Eds.), *Positive psychology in practice* (pp. 35-52). Hoboken, NJ: John Wiley & Sons.

Krull, J. L., & MacKinnon, D. P. (2001). Multilevel modeling of individual and group level mediated effects. *Multivariate Behavioral Research, 36*, 249-277.

Lacks, P., & Morin, C. M. (1992). Recent advances in the assessment and treatment of insomnia. *Journal of Consulting and Clinical Psychology, 60*, 586-594.

Lakey, B., & Drew, J. B. (1997). A social-cognitive perspective on social support. In G. R. Pierce, B. Lakey, I. G. Sarason & B. R. Sarason (Eds.), *Sourcebook of social support and personality* (pp. 107-140). New York: Plemum Press.

Lakey, B., McCabe, K. M., Fisicaro, S. A., & Drew, J. B. (1996). Environmental and personal determinants of support perceptions: Three generalizability studies. *Journal of Personality and Social Psychology, 70*, 1270-1280.

Lane, J., & Anderson, N. H. (1976). Integration of intention and outcome in moral judgment. *Memory & Cognition, 4*, 1-5.

Lee, K., & Ashton, M. C. (2005). Psychopathy, machiavellianism, and narcissism in

the five-factor model and the HEXACO model of personality structure. *Personality and Individual Differences, 38*, 1571-1582.

Lee, K., Ogunfowora, B., & Ashton, M. C. (2005). Personality traits beyond the big five: Are they within the HEXACO space? *Journal of Personality, 73*, 1437-1463.

Lee, S., & Hershberger, S. (1990). A simple rule for generating equivalent models in covariance structure modeling. *Multivariate Behavioral Research, 25*, 313-334.

Levey, A. B., Aldaz, J. A., Watts, F. N., & Coyle, K. (1991). Articulatory suppression and the treatment of insomnia. *Behaviour Research and Therapy, 29*, 85-89.

Levin, J. (2000). A prolegomenon to an epidemiology of love: Theory, measurement, and health outcomes. *Journal of Social and Clinical Psychology, 19*, 117-136.

Libman, E., Creti, L., Amsel, R., Brender, W., & Fichten, C. S. (1997). What do older good and poor sleepers do during periods of nocturnal wakefulness? The sleep behaviors scale: 60+. *Psychology and Aging, 12*, 170-182.

Linley, P. A. (2006). Counseling psychology's positive psychological agenda: A model for integration and inspiration. *Counseling Psychologist, 34*, 313-322.

Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress, 17*, 11-21.

Linley, P. A., Joseph, S., Harrington, S., & Wood, A. M. (2006). Positive psychology: Past, present, and (possible) future. *The Journal of Positive Psychology, 1*, 3-16.

Linley, P. A., Maltby, J., Wood, A. M., Joseph, S., Harrington, S., Peterson, C., et al.

(2007). Character strengths in the United Kingdom: The VIA inventory of strengths. *Personality and Individual Differences, 43*, 341-351.

Lopez, F. G., & Rice, K. G. (2006). Preliminary development and validation of a measure of relationship authenticity. *Journal of Counseling Psychology, 53*, 362-371.

Luke, D. A. (2004). *Multilevel modeling*. Thousand Oaks, CA: Sage Publications.

Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology, 9*, 111-131.

MacCallum, R. C., & Austin, J. T. (2000). Applications of structural equation modeling in psychological research. *Annual Review of Psychology, 51*, 201-226.

MacCallum, R. C., Roznowski, M., & Necowitz, L. B. (1992). Model modifications in covariance structure-analysis - the problem of capitalization on chance. *Psychological Bulletin, 111*, 490-504.

MacCallum, R. C., Wegener, D. T., Uchino, B. N., & Fabrigar, L. R. (1993). The problem of equivalent models in applications of covariance structure-analysis. *Psychological Bulletin, 114*, 185-199.

Macdonald, C., Bore, M., & Munro, D. (in press). Values in action scale and the big 5: An empirical indcation of structure. *Journal of Research in Personality*.

MacKinnon, D. P., & Dwyer, J. H. (1993). Estimating mediated effects in prevention studies. *Evaluation Review, 17*, 148-158.

MacKinnon, D. P., Krull, D. S., & Lockwood, C. M. (2000). Equivalence of the mediation, confounding and suppression effect. *Prevention Science, 1*, 173-181.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening

variable effects. *Psychological Methods, 7*, 83-104.

Maddux, J. E. (2002). Stopping the 'madness': Positive psychology and the deconstruction of the illness ideology and the dsm. In C. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 13-25). New York: Oxford University Press.

Maddux, J. E., Gosselin, J. T., & Winstead, B. A. (2005). Conceptions of psychopathology: A social constructionist perspective. In J. E. Maddux & B. A. Winstead (Eds.), *Psychopathology: Foundations for a contemporary understanding* (pp. 3-18). New York: Lawrence Erlbaum Associates.

Maddux, J. E., Snyder, C. R., & Lopez, S. J. (2004). Toward a positive clinical psychology: Deconstructing the illness ideology and constructing an ideology of human strengths and potential. In P. A. Linley & S. Joseph (Eds.), *Positive psychology in practice.* Hoboken, NJ. Wiley.

Markus, H. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology, 35*, 63-78.

Markus, H., Smith, J., & Moreland, R. L. (1985). Role of the self-concept in the perception of others. *Journal of Personality and Social Psychology, 49*, 1494-1512.

Maruyama, G. (1997). *Basics of structural equation modeling*. Thousand Oaks, CA: Sage Publications.

Maslow, A. H. (1970). *Motivation and personality* (2nd ed.). Harper & Row.

May, R. (1981). *Freedom and destiny*. New York: Basic Books.

Mayer, J. D., Salovey, P., Gombergkaufman, S., & Blainey, K. (1991). A broader conception of mood experience. *Journal of Personality and Social Psychology, 60*, 100-111.

McCrae, R. R., & Costa, P. T. (1987). Validation of the 5-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology, 52*, 81-90.

McCrae, R. R., & Costa, P. T. (1999). A five-factor theory of personality. In L. A. Pervin & O. P. E. John (Eds.), *Handbook of personality: Theory and research (2nd ed.)* (pp. 139-154). New York: Guilford Press.

McCullough, M. E., Emmons, R. A., & Tsang, J. A. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology, 82*, 112-127.

McCullough, M. E., Kilpatrick, S. D., Emmons, R. A., & Larson, D. B. (2001). Is gratitude a moral affect? *Psychological Bulletin, 127*, 249-266.

McCullough, M. E., & Tsang, J.-A. (2004). Parent of the virtues? The prosocial contours of gratitude. In R. A. Emmons & M. E. McCullough (Eds.), *The psychology of gratitude*. New York: Oxford University Press.

McCullough, M. E., Tsang, J.-A., & Emmons, R. A. (2004). Gratitude in intermediate affective terrain: Links of grateful moods to individual differences and daily emotional experience. *Journal of Personality and Social Psychology, 86*, 295-309.

McDowell, I., & Kristjansson, E. (1996). Depression. In I. McDowell & C. Newell (Eds.), *Measuring health: A guide to rating scales and questionnaires* (2 ed., pp. 238-286).

McGregor, I., & Little, B. R. (1998). Personal projects, happiness, and meaning: On doing well and being yourself. *Journal of Personality and Social Psychology, 74*, 494-512.

Monroe, S. M., Connell, M. M., Bromet, E. J., & Steiner, S. C. (1986). Social sup-

port, life events, and depressive symptoms - a 1-year prospective-study. *Journal of Consulting and Clinical Psychology, 54*, 424-431.

Monroe, S. M., Harkness, K., Simons, A. D., & Thase, M. E. (2001). Life stress and the symptoms of major depression. *Journal of Nervous and Mental Disease, 189*, 168-175.

Morin, C. M., Bootzin, R. R., Buysse, D. J., Edinger, J. D., Espie, C. A., & Lichstein, K. L. (2006). Psychological and behavioral treatment of insomnia: Update of the recent evidence (1998-2004). *Sleep, 29*, 1398-1414.

Moss, M. K., & Page, R. A. (1972). Reinforcement and helping behavior. *Journal of Applied Social Psychology, 2*, 360-371.

Motivala, S. J., & Irwin, M. R. (2007). Sleep and immunity - cytokine pathways linking sleep and health outcomes. *Current Directions in Psychological Science, 16*, 21-25.

Myers, D. G. (2000). The funds, friends, and faith of happy people. *American Psychologist, 55*, 56-67.

Naito, T., Wangwan, J., & Tani, M. (2005). Gratitude in university students in Japan and thailand. *Journal of Cross-Cultural Psychology, 36*, 247-263.

Nelson, J., & Harvey, A. G. (2003a). An exploration of pre-sleep cognitive activity in insomnia: Imagery and verbal thought. *British Journal of Clinical Psychology, 42*, 271-288.

Nelson, J., & Harvey, A. G. (2003b). Pre-sleep imagery under the microscope: A comparison of patients with insomnia and good sleepers. *Behaviour Research and Therapy, 41*, 273-284.

Nezlek, J. B. (2001). Multilevel random coefficient analyses of event- and interval-contingent data in social and personality psychology research. *Personality*

and Social Psychology Bulletin, 27, 771-785.

Nicassio, P. M., Mendlowitz, D. R., Fussell, J. J., & Petras, L. (1985). The phenome-
nology of the pre-sleep state - the development of the pre-sleep arousal scale.
Behaviour Research and Therapy, 23, 263-271.

O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of
components using parallel analysis and Velicer's MAP test. *Behavior Re-
search Methods, Instrumentation, and Computers, 32*, 396-402.

Okamoto, S., & Robinson, W. P. (1997). Determinants of gratitude expressions in
England. *Journal of Language and Social Psychology, 16*, 411-433.

Olff, M., Langeland, W., Draijer, N., & Gersons, B. P. R. (2007). Gender differences
in posttraumatic stress disorder. *Psychological Bulletin, 133*, 183-204.

Orff, H. J., Drummond, S. P. A., Nowakowski, S., & Perlis, M. L. (2007). Discrep-
ancy between subjective symptomatology and objective neuropsychological
performance in insomnia. *Sleep, 30*, 1205-1211.

Park, N., Peterson, C., & Seligman, M. E. P. (2004). Strengths of character and well-
being. *Journal of Social and Clinical Psychology, 23*, 603-619.

Paulhus, D. L. (1998). Interpersonal and intrapsychic adaptiveness of trait self-
enhancement: A mixed blessing? *Journal of Personality and Social Psychol-
ogy, 74*, 1197-1208.

Paunonen, S. V. (1998). Hierarchical organization of personality and prediction of
behavior. *Journal of Personality and Social Psychology, 74*, 538-556.

Paunonen, S. V., & Ashton, M. C. (2001). Big five factors and facets and the predic-
tion of behavior. *Journal of Personality and Social Psychology, 81*, 524-539.

Paunonen, S. V., Haddock, G., Forsterling, F., & Keinonen, M. (2003). Broad versus
narrow personality measures and the prediction of behaviour across cultures.

European Journal of Personality, 17, 413-433.

Paunonen, S. V., & Jackson, D. N. (2000). What is beyond the big five? Plenty! *Journal of Personality, 68*, 821-835.

Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. *Psychological Assessment, 5*, 164-172.

Peterson, C., & Seligman, M. E. (2003). Character strengths before and after september 11. *Psychological Science, 14*, 381-384.

Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. New York: Oxford University Press.

Pierce, G. R., Lakey, B., Sarason, I. G., & Sarason, B. R. (Eds.). (1997). *Sourcebook of social support and personality*: New York: Plemum Press.

Pierce, T., Baldwin, M. W., & Lydon, J. E. (1997). A relational scheme to social support. In G. R. Pierce, B. Lakey, I. G. Sarason & B. R. Sarason (Eds.), *Sourcebook of social support and personality* (pp. 19-49). New York: Plemum Press.

Pilcher, J. J., Ginter, D. R., & Sadowsky, B. (1997). Sleep quality versus sleep quantity: Relationships between sleep and measures of health, well-being and sleepiness in college students. *Journal of Psychosomatic Research, 42*, 583-596.

Pilcher, J. J., & Huffcutt, A. I. (1996). Effects of sleep deprivation on performance: A meta-analysis. *Sleep, 19*, 318-326.

Ptacek, J. T., & Gross, S. (1997). Coping as an individual difference variable. In G. R. Pierce, B. Lakey, I. G. Sarason & B. R. Sarason (Eds.), *Sourcebook of social support and personality* (pp. 69-92). New York: Plenum Press.

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research

in the general population. *Applied Psychological Measurement, 1*, 385-401.

Raudenbush, S., Bryk, A., Cheong, Y. F., & Congdon, R. (2004). HLM 6: Hierarchical linear and nonlinear modeling [computer software]. Lincolnwood, IL: Scientific Software International.

Reynolds, S. K., & Clark, L. A. (2001). Predicting dimensions of personality disorder from domains and facets of the five-factor model. *Journal of Personality, 69*, 199-222.

Rind, B., & Bordia, P. (1995). Effect of servers thank-you and personalization on restaurant tipping. *Journal of Applied Social Psychology, 25*, 745-751.

Roberts, J. E., & Gotlib, I. H. (1997). Social support and personality in depression: Implications from quantitative genetics. In G. R. Pierce, B. Lakey, I. G. Sarason & B. R. Sarason (Eds.), *Sourcebook of social support and personality* (pp. 187-214). New York: Plemum Press.

Rogers, C. R. (1951). *Client-centered therapy : Its current practice, implications and theory*. London: Constable and Co.

Rogers, C. R. (1959). A theory of therapy, personality and interpersonal relationships as developed in the client-centered framework. In *Psychology: A study of a science* (Vol. 3, Formulations of the person and the social context, pp. 181-256). New York: McGraw-Hill Book Company.

Rogers, C. R. (1961). *On becoming a person: A therapist's view of psychotherapy*. London: Constable.

Rogers, C. R. (1963). The actualizing tendency in relation to "Motives" And to consciousness. In M. R. Jones (Ed.), *Nebraska symposium on motivation* (Vol. 11, pp. 1-24). Lincoln: University of Nebraska Press.

Rogers, C. R. (1964). Toward a modern approach to values: The valuing process in

the mature person. *Journal of Abnormal and Social Psychology, 68*, 160-167.

Rogers, C. R. (1980). *A way of being.* Boston: Houghton Mifflin.

Rosenberg, E. L. (1998). Levels of analysis and the organization of affect. *Review of General Psychology, 2, 247-270.*

Russell, J. A., & Carroll, J. M. (1999). On the bipolarity of positive and negative affect. *Psychological Bulletin, 125*, 3-30.

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*, 141-166.

Ryff, C. D. (1989). Happiness is everything, or is it - explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*, 1069-1081.

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology, 69*, 719-727.

Ryff, C. D., Love, G. D., Urry, H. L., Muller, D., Rosenkranz, M. A., Friedman, E. M., et al. (2006). Psychological well-being and ill-being: Do they have distinct or mirrored biological correlates? *Psychotherapy and Psychosomatics, 75*, 85-95.

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A re-evaluation of the life orientation test. *Journal of Personality and Social Psychology, 67*, 1063-1078.

Schimmack, U., Oishi, S., Furr, R. M., & Funder, D. C. (2004). Personality and life satisfaction: A facet-level analysis. *Personality and Social Psychology Bulletin, 30*, 1062-1075.

Schmutte, P. S., & Ryff, C. D. (1997). Personality and well-being: Reexamining methods and meanings. *Journal of Personality and Social Psychology, 73*, 549-559.

Schumacker, R. E., & Lomax, R. G. (2004). *A beginner's guide to structural equation modeling* (2 ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Schwarzer, R., & Schwarzer, C. (1996). A critical survey of coping instruments. In M. Zeidner & N. S. Endler (Eds.), *Handbook of coping - theory, research, applications* (pp. 107-132). New York: Wiley.

Segrin, C., & Flora, J. (2000). Poor social skills are a vulnerability factor in the development of psychosocial problems. *Human Communication Research, 26*, 489-514.

Seligman, M. E. P. (1999). President's address. *American Psychologist, 54*, 559-562.

Seligman, M. E. P. (2002). Positive psychology, positive prevention, and positive therapy. In C. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 3-9) New York: Oxford University Press.

Seligman, M. E. P. (2005a). *Positive interventions.* Paper presented at the fourth international positive psychology summit.

Seligman, M. E. P. (2005b). *Positive interventions.* Paper presented at the 4th international positive psychology summit, Washington, DC.

Seligman, M. E. P. (2006). *Learned optimism.* New York: Knopf.

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*, 5-14.

Seligman, M. E. P., Rashid, T., & Parks, A. C. (2006). Positive psychotherapy. *American Psychologist, 61*, 774-788.

Seligman, M. E. P., Steen, T. A., Park, N., & Peterson, C. (2005). Positive psychol-

ogy progress: Empirical validation of interventions. *American Psychologist, 60*, 410-421.

Shaver, P. R., & Brennan, K. (1990). Measures of depression and loneliness. In J. P. Robinson, P. R. Shaver & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes* (Vol. 1: Measures of social psychological attitudes, pp. 195-290). London: Academic Press.

Sheldon, K. M. (2004). Integrity (honesty/authenticity). In C. Peterson & M. E. P. Seligman (Eds.), *Character strengths and virtues* (pp. 249-272) C. Peterson & M. Seligman. New York: Oxford University Press.

Sheldon, K. M., & Houser-Marko, L. (2001). Self-concordance, goal attainment, and the pursuit of happiness: Can there be an upward spiral? *Journal of Personality and Social Psychology, 80*, 152-165.

Sheldon, K. M., & King, L. A. (2001). Why positive psychology is necessary. *American Psychologist, 56*, 216-217.

Snyder, C., Harris, C., Anderson, J. R., Holleran, S. A., & et al. (1991). The will and the ways: Development and validation of an individual-differences measure of hope. *Journal of Personality and Social Psychology, 60*, 570-585.

Sobel, M. E. (1982). Asymptotic intervals for indirect effects in structural equations models. In S. Leinhart (Ed.), *Sociological methodology 1982* (pp. 290-312). San Francisco: Jossey-Bass.

Somerfield, M. R., & McCrae, R. R. (2000). Stress and coping research - methodological challenges, theoretical advances, and clinical applications. *American Psychologist, 55*, 620-625.

Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining

psychological processes. *Journal of Personality and Social Psychology, 89*, 845-851.

Steptoe, A., O'Donnell, K., Marmot, M., & Wardle, J. (2008). Positive affect, psychological well-being, and good sleep. *Journal of Psychosomatic Research, 64*, 409-415.

Sternberg, R. J., & Grigorenko, E. L. (2001). Unified psychology. *American Psychologist, 56*, 1069-1079.

Stöber, J. (2001). The social desirability scale-17 (SDS-17): Convergent validity, discriminant validity, and relationship with age. *European Journal of Psychological Assessment, 17*, 222-232.

Stock, W. A., Okun, M. A., & Benin, M. (1986). Structure of subjective well-being among the elderly. *Psychology and Aging, 1*, 91-102.

Swann, W. B., Wenzlaff, R. M., Krull, D. S., & Pelham, B. W. (1992). Allure of negative feedback - self-verification strivings among depressed persons. *Journal of Abnormal Psychology, 101*, 293-306.

Tesser, A., Gatewood, R., & Driver, M. (1968). Some determinants of gratitude. *Journal of Personality and Social Psychology 9*, 233-236.

Tomarken, A. J., & Waller, N. G. (2003). Potential problems with "Well fitting" Models. *Journal of Abnormal Psychology, 112*, 578-598.

Tomarken, A. J., & Waller, N. G. (2005). Structural equation modeling: Strengths, limitations, and misconceptions. *Annual Review of Clinical Psychology, 1*, 31-65. .

Tsang, J.-A. (2006). Gratitude and prosocial behaviour: An experimental test of gratitude. *Cognition & Emotion, 20*, 138-148.

Velicer, W. F., Eaton, C. A., & Fava, J. L. (2000). Construct explication through fac-

tor or component analysis: A review and evaluation of alternative procedures for determining the number of factors or components. In R. D. Goffin & E. Helmes (Eds.), *Problems and solutions in human assessment: Honoring Douglas n. Jackson at seventy.* Norwell, MA: Kluwer Academic.

Waterman, A. S. (1993). Two conceptions of happiness - contrasts of personal expressiveness (eudaimonia) and hedonic enjoyment. *Journal of Personality and Social Psychology, 64*, 678-691.

Watkins, P. C. (2004). Gratitude and subjective well-being. In R. A. Emmons & M. E. McCullough (Eds.), *The psychology of gratitude* (pp. 167-194). New York: Oxford University Press.

Watkins, P. C., Scheer, J., Ovnicek, M., & Kolts, R. (2006). The debt of gratitude: Dissociating gratitude and indebtedness. *Cognition and Emotion, 20*, 217-241.

Watkins, P. C., Woodward, K., Stone, T., & Kolts, R. L. (2003). Gratitude and happiness: Development of a measure of gratitude, and relationships with subjective well-being. *Social Behavior and Personality, 31*, 431-451.

Watson, D., Clark, L. A., & Harkness, A. R. (1994). Structures of personality and their relevance to psychopathology. *Journal of Abnormal Psychology, 103*, 18-31.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect - the PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-1070.

Weiner, B., Russell, D., & Lerman, D. (1978). Affective consequences of causal ascription. In J. H. Harvey, W. J. Ickes & R. F. Kidd (Eds.), *New directions for attribution research* (Vol. 2, pp. 59-90). Hillsdale, N.J.: Erlbaum. .

APPENDIX

11. THE AUTHENTIC PERSONALITY: A THEORETICAL AND EMPIRICAL CONCEPTUALIZATION, AND THE DEVELOPMENT OF THE AUTHENTICITY SCALE

11.1. Abstract

This paper describes the development of a measure of dispositional authenticity, and tests whether authenticity is related to well-being, as predicted by several counseling psychology perspectives. Scales were designed to measure a tripartite conception of authenticity, comprising self-alienation, authentic living, and accepting external influence, which was supported with exploratory factor analysis. Multigroup confirmatory factor analysis showed that the factor loadings were invariant across sample, ethnicity, and gender. The scale showed substantial discriminant validity from the Big Five personality traits, non-significant correlations with social desirability, and two and four week test-retest correlations ranging from $r = .78$ to $.91$. Each sub-scale was strongly related to self-esteem, and aspects of both subjective and psychological well-being. This paper provides the first direct test of several theoretical models which view authenticity as integral to well-being.

"To thine own self be true, And it must follow, as the night the day, Thou cans't not be false to any man" - *Hamlet, Act I, Scene iii, 78-80.*

11.2. Introduction

To 'know yourself' and to act accordingly has been seen as a moral imperative throughout history (Harter, 2002). Within humanistic and existential psychology, individual differences in authenticity have been considered critically important to understanding well-being and freedom from psychopathology (May, 1981; Rogers, 1959, 1964, 1980; Yalom, 1980), with the importance of authenticity also stressed by psychodynamic writers (Horney, 1951; Winnicott, 1965). However the study of authenticity has largely been neglected in empirical psychology, and there are no direct and psychometrically valid measures of trait authenticity yet developed (Sheldon, 2004). Lopez and Rice (2006) lament the "virtual absence of available measures of the construct" (p. 362); Peterson and Seligman (2004) note that "most [people] agree that integrity, authenticity, and honesty are basic human strengths, but the psychological database is spotty" (p. 205); and Harter (2002) concludes "there is no single, coherent body of literature on authentic self-behavior, no bedrock of knowledge" (p. 382). The recent positive psychology movement (see Linley, Joseph, Harrington, & Wood, 2006) has encouraged a resurgence of interest in authenticity. This is partly through highlighting understudied areas of research (Gable & Haidt, 2005), and partly through promoting an increased dialogue between humanistic and empirical psychologists, involving the rigorous scientific testing of ideas with humanistic and counseling psychology lineage (Joseph & Linley, 2006; Linley, 2006; Patterson & Joseph, 2007). For the study of authenticity to progress, there seems to be a need to identify and quantify authenticity as an individual difference variable. There is also a need for a direct test of the theoretically driven hypothesis that the

authentic personality is related to well-being.

In the empirical study of authenticity there has been definitional confusion re-garding the construct (Harter, 2002). As a result, previous research has either asked people to rate themselves on a 'false-self' to 'true-self' continuum (e.g., Harter, Marold, Whitesell, & Cobbs, 1996), or used less direct measures such as the extent to which peoples behavior varies across social roles (e.g., Sheldon, Ryan, Rawsthorne, & Ilardi, 1997). As noted by Harter (2002), this has led to a diffuse body of literature, which at times is difficult to interpret. In developing a scale of dispositional authenticity there is a need for a clear definition of the construct, both for item development and to interpret the existing literature. Fortunately, such a defi-nition emerges from person centered psychology, where substantial debate and con-ceptualization has led to a clear explanation of the construct, with consensus on the content and boundaries of authenticity (see Wyatt, 2001). The person centered model is presented in Figure 11.1 (based substantially on Rogers, 1959, 1961).
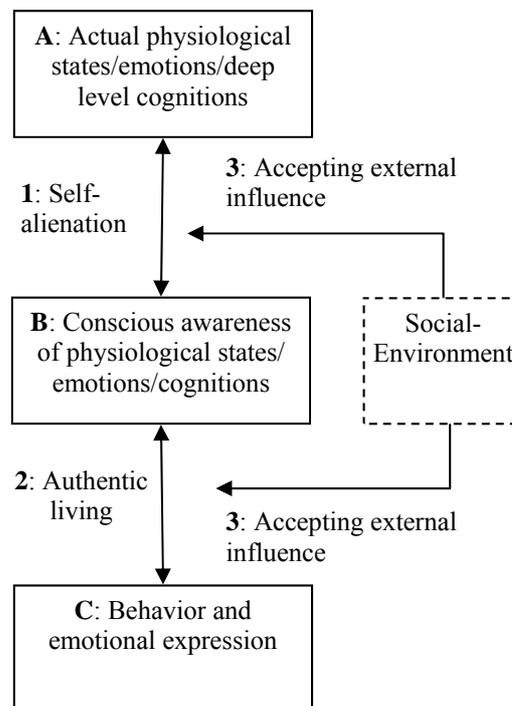

Figure 11.1: The person centered conception of authen-ticity.

In the person centered conception authenticity is a tripartite construct, defined by Barrett-Lennard (1998) as involving "consistency between the three levels of (a) a person's primary experience, (b) their symbolized awareness, and (c) their outward behavior and communication" (lines 1, 2, and 3, in Figure 11.1). This account begins by contrasting actual experience (the 'true-self' including actual physiological states, emotions, and schematic beliefs; Box A), with the aspects of experience which are represented in cognitive awareness (Box B). The first aspect of authenticity involves the inevitable mismatch between the conscious awareness and actual experience. Perfect congruence between these aspects of experience is never possible, and the extent to which the person experiences *self-alienation* between conscious awareness and actual experience (the 'true self') composes the first aspect of authenticity (Line 1, in Figure 11.1) and leads to psychopathology. The subjective experience of not knowing oneself, or feeling out of touch with the true self are indicative of this aspect of authenticity.

The second aspect of authenticity involves the congruence between experience as consciously perceived (Box B) and behavior (Box C) (Rogers, 1959, 1961). *Authentic living* involves behaving and expressing emotions in such a way that is consistent with the conscious awareness of physiological states, emotions, beliefs, and cognitions (Line 2). In other words, authentic living involves being true to oneself in most situations, and living in accordance with values and beliefs.

The third aspect of authenticity involves the extent to which one accepts the influence of other people, and the belief that one has to conform to the expectations of others. Humans are fundamentally social beings and both self-alienation and authentic living are affected by the social environment (Schmid, 2005). Introjecting the views of others and *accepting external influence* affects both feelings of self-

alienation and the experience of authentic living (Line 3). Taken together, self-alienation, authentic living, and accepting external influence compose the tripartite person centered view of authenticity.

Whilst the forgoing discussion has focused on the person centered conception, the concept of authenticity is considered essential to understanding the human condition in psychodynamic (e.g., Horney, 1951; Winnicott, 1965), existential (e.g., May, 1981; Yalom, 1980), developmental (e.g., Harter et al., 1996), social psychological (e.g., Kernis & Goldman, 2005; Lopez & Rice, 2006), positive psychological (e.g., Sheldon, 2004), and clinical perspectives (e.g., Ehlers, Maercker, & Boos, 2000; Joseph & Linley, 2005). We have focused on the person centered definition of authenticity simply as it appears to provide the widest and most comprehensive explanation of the construct. Authenticity appears to represent an area of agreement between various counseling, clinical, and empirical perspectives, with each conception of authenticity mapping on one or more of the lines in Figure 11.1. The integrative nature of our definition is evident in treatments of the relationship between authenticity and well-being.

11.2.1 Authenticity and Well-Being

In many mainstream counseling psychology perspectives authenticity is seen as the most fundamental aspect of well-being (Horney, 1951; May, 1981; Rogers, 1961; Winnicott, 1965; Yalom, 1980). These see authenticity not simply as an aspect or precursor to well-being, but rather the very essence of well-being and healthy functioning. As such, departures from authenticity are seen as involving increasing psychopathology. However, many of these approaches have not been subjected to empirical verification, and the empirical evidence that does exist regarding the relationship between authenticity and well-being is mostly indirect, and focuses primar-

ily one or other of the three facets of authenticity.

From a psychodynamic perspective, both Winnicott (1965) and Horney (1951) focused on how internalizing external influence, particularly during childhood, leads to self-alienation. Self-alienation was in turn seen to be the cause of psychopathology. From the existential perspective, Yalom (1980) and May (1981) focused particularly on self-alienation, again viewing this as the core of authenticity, and the cause of mental distress. Both of these existential perspectives and more recent humanistic accounts (Joseph, 2004; Joseph & Linley, 2005) have conceptualized post-traumatic stress disorder (PTSD) in terms of a shattered, inauthentic self, and linked the distress element of PTSD with bringing self-alienation to awareness. Joseph and Linley (2005) presented a purely theoretical account, however a qualitative studies (with a priori coding) by Ehlers et al. (2000) found that both self-alienation and completely accepting external influence were related to more intense PTSD symptoms. Using a similar methodology, Dunmore, Clark, and Ehlers (2001) found that accepting external influence led to the worsening of symptoms over time. The role of self-alienation is also examined empirically by Harter et al. (1996), who found that greater self-alienation was related to lower levels of hope in children.

In the only study to examine dispositional authenticity, Goldman and Kernis (2002) asked 60 questions designed to measure authenticity, and found strong correlations between authenticity and both self-esteem and a composite subjective well-being (although this should be considered preliminary, given internal consistencies of their authenticity scale were as low as $\alpha = .32$, and the study used only 79 college students).

Neff and Harter (2002) examined people who subordinated their needs in close relationships to avoid confrontation, accepting external influence. Providing they

subjectively felt inauthentic, they reported lower levels of self-esteem and more de-
pression. Lopez and Rice (2006) rigorously developed a measure of authentic living
and accepting external influence with respect to romantic relationships, and found
correlations with self-esteem, depression, anxiety, satisfaction with life. Lopez and
Rice also found correlations between authenticity and relationship satisfaction, even
after controlling for gender, self-esteem, commitment level, avoidance, and anxiety.
However, Lopez and Rice were very clear that they were measuring the process of
authenticity in relationships, rather than authenticity as a disposition, and it is not
clear whether the results will generalize to individual differences on a personality
level. This study also did not examine the self-alienation dimension, probably appro-
priately given the focus was on the relationship rather than the individual.

Social psychological research has demonstrated the extent to which people feel
that their personality varies between roles is related to their levels of well-being,
with less role variation being correlated with higher well-being (e.g. Roberts &
Donahue, 1994). Sheldon et al. (1997) specifically related this to authentic living by
showing that people how reported more variability between roles rather themselves
as less "authentic". Greater feelings of authenticity were negatively correlated with
anxiety, stress, and depression, and positively correlated with self-esteem, and this
partially mediated the relationship between role variability and well-being. In a re-
lated study Bettencourt and Sheldon (2001) showed that subjective authenticity in
different roles was related to both subjective well-being and group connectedness,
and this correlation persisted when these variables were measured via the peer report
of a group member.

There is an increasing body of empirical evidence which supports counseling
psychology perspectives on authenticity. We suggest a tripartite definition of authen-

ticity, grounded in a well-accepted definition in person centered psychology, which

sees authenticity as comprising self-alienation, accepting external influence, and au-

thentic living. This definition provides a framework in which to interpret the existing

empirical work, answering Harter's (2002) call for such an integration. We devel-

oped a measure to assess this tripartite conception, to directly test whether disposi-

tional authenticity was related to well-being, and to provide a new tool for counsel-

ing psychology research.

11.3. Study 1

11.3.1. Introduction

The aim of Study 1 was the initial development of the Authenticity Scale

through standard psychometric procedures (Clark & Watson, 1995), to measure the

tripartite conception of authenticity describe in the introduction. An initial item pool

was generated and analyzed with exploratory factor analysis (EFA), in order to

check that the expected three factor structure emerged. We aimed to develop a short

scale, as the scale is likely to be used in counseling psychology settings. In these set-

tings time is expected to be at a particular premium, and we wanted to reduce partici-

pant burden as much as possible. Preliminary evidence is also presented regarding

the relationship between authenticity and subjective well-being.

11.3.2. Method

11.3.2.1. Development of the Item Pool

Items were developed to measure the *a priori* three factor definition of au-

thenticity described in the introduction and illustrated in Figure 11.1. Specifically,

items were designed to measure self-alienation, authentic living, and accepting exter-

nal influence. As noted above, this definition is derived from the person centered

literature (see Wyatt, 2001), and encompasses the focus of existential and psycho-

dynamic approaches, as well as empirical work from a variety of perspectives. The exact items were developed by the second author (AL; an expert in existential psychology and positive psychology) and the fifth author (SJ; an expert in positive psychology and psychotherapist specializing in person-centered practice). AL took the lead in reviewing the literature, initially conducting electronic searches on the PsychInfo database using the term "authenticity", and subsequently working through the reference sections of the papers which emerged. This revealed several empirical studies which studied authenticity (e.g., Bettencourt & Sheldon, 2001; Goldman & Kernis, 2002; Harter et al., 1996; McGregor & Little, 1998; Neff & Harter, 2002; Sheldon et al., 1997), and several theoretical literatures from humanistic psychology (Rogers, 1959, 1964, 1980), psychodynamic theory (Winnicott, 1965), existential psychology (May, 1994; Yalom, 1980) and positive psychology (Harter, 2002; Peterson & Seligman, 2004; Sheldon, 2004). AL and SJ met weekly during the development phrase, and developed the items together; there were no disagreements regarding which items to include. Through a consensual process it was agreed that 7 items parsimoniously and accurately represented self-alienation (e.g., "I feel out of touch with the real me"), 11 items represented authentic living (e.g., "I always stand by what I believe in"), and 7 items represented external influence (e.g., "Other people influence me greatly"). AL and SJ agreed that these 25 items accurately covered the construct of authenticity, and measured each of the three factors (see Table 11.1 for a full list of items). Each item was expressed as a statement (e.g. "I am true to myself in most situations"), with which participants expressed their agreement on a 1 ("Does not describe me at all) to 7 ("Describes me very well") likert type scale; intermediate scale points were not anchored.

11.3.2.2. Sample and Procedure

Two hundred undergraduate students (79 male, 121 female) participated in Study 1. Ages ranged from 18 to 54, with 90% of participants aged below 26. Participants were predominantly of a white ethnicity (64%) with the next highest represented ethnicities being Indian (11.5%) and Chinese (9%). Most participants were single (86%), with a minority either married (6.5%), or in other forms of relationships (7.5%). Participants were presented with a study information sheet in the course of academic lectures and invited to take part in the study, being advised that they were free to withdraw at any time. Upon completion and return of the survey by paper-and-pencil, participants were debriefed on the nature of the research by the second author, and any questions were answered.

11.3.2.3. Measures

11.3.2.3.1. Authenticity item pool. All participants completed the full item pool of 25 items.

11.3.2.3.2. Anxiety. The tension sub-scale of the Profile of Mood States (McNair, Lorr, & Droppleman, 1971) was used to measure anxiety. Participants rate how they have been feeling over the last week on nine adjectives (e.g. Anxious, Tense, Shaky, On edge), on a 0 (not at all) to 4 (extremely frequently) scale. The sub-scale is one of the most commonly used measures of anxiety (McNair et al., 1971). In the current study, alpha = .92.

11.3.2.3.3. Stress. The Perceived Stress Scale was used to measure subjective stress (Cohen & Williamson, 1988). Participants rate 10 items regarding how often in the last month they have found their lives unpredictable (e.g. been upset because of something that happened unexpectedly), uncontrollable (e.g. been unable to control irritations in your life), and overwhelming (e.g. felt that you were on top of things). Items are rated on a 0 (never) to 4 (very often) scale. In the current study,

alpha = .83.

11.3.2.3.4. Happiness. Happiness was measured with the Subjective Happiness Scale (Lyubomirsky & Lepper, 1999). Five items assess the participants perception of their happiness (e.g. In general, I consider myself…) which are rated on a 1 (not a very happy person) to 7 (a very happy person) scale. The Subjective Happiness scale has high test-retest validity over periods varying from one month (*r* = .90) to one year (*r* = .55), and convergent validity with measures of depression and life satisfaction (Lyubomirsky & Lepper, 1999). In the current study, alpha = .82.

11.3.3. Results

11.3.3.1. Factor Analysis of the Initial Item Pool

A first step in scale construction involves identifying the underlying dimensions that exist in the item pool (Clark & Watson, 1995). Using Sample 1 (*n* = 200) we submitted the whole item pool of 25 items to principle axis exploratory factor analysis (EFA), with initial communalities generated using squared multiple correlations. Bartlett's test suggested that the data was suitable for an EFA (χ^2 [300] = 1696.95, *p* < .001), and the Kaiser-Meyer-Olkin (KMO) measure indicated that there was an adequate *N* for this specific analysis (KMO = .823). The first 10 factors had eigenvalues of 6.20, 2.36, 2.25, 1.38, 1.30, 1.14, .97, .93, .89, .81, and respectively accounted for 24.78%, 9.43%, 8.10%, 5.51%, 5.19%, 4.54%, 3.87%, 3.70%, 3.56%, 3.23% of the variance.

The decision on the number of factors to retain was based on parallel analysis and the minimum average partial method (MAP). In studies using simulated data, Velicier et al. (2000) and Zwick and Velicier (1986) demonstrated that parallel analysis and MAP produced more accurate decisions regarding the number of factors to retain than did examination of the scree plot or the Kaiser eigenvalue greater than

1 criterion.

Parallel analysis involves the generation of random data correlation matrices with the same number of variables and participants, and calculation of the average eigenvalues for each factor in the datasets. Any factor in the real dataset with eigenvalues exceeding the randomly generated values is considered substantive. Using SPSS syntax developed by O'Connor (2000), we calculated 1000 randomly generated datasets with 200 cases and 25 variables, for which the first five mean eigenvalues were 1.71, 1.59, 1.50, 1.43, and 1.36. These values were exceeded by the first three eigenvalues in our actual dataset, indicating an optimal three factor structure.

The MAP method involves separating common and unique variance, and only retaining factors comprising common variance (see O'Connor, 2000; Velicer et al., 2000). In the current dataset the average squared partial correlations (ASPC) associated with the first five components were .024, .022, .015, .016, .018, with the smallest ASPC being associated with the third component, again suggesting a three factor solution. Based on parallel analysis and the MAP we extracted three factors which were rotated with an oblique rotation. An oblique rotation is the most appropriate when the components are theoretically or empirically related (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

Table 11.1 shows the initial and extracted communalities, and all factor loadings. The initial communalities were considerably lower than one, supporting the use of EFA over PCA, as PCA assumes all variance is shared variance (Tinsley & Tinsley, 1987). There were little differences between the initial and extracted communalities, again suggesting that a sufficient number of factors had been extracted. Most of the items loaded strongly and uniquely on one factor. The factors were readily interpretable.

Table 11.1
Communalities and Factor Loadings From the Exploratory Factor Analysis (Study 1)

	Factor			Communalities	
	1	2	3	In	Ex
7*. I feel as if I don't know myself very well	**.79**	.17	-.01	.51	.54
18*. I feel out of touch with the "real me."	**.74**	.03	-.07	.47	.49
20*. I feel alienated from myself	**.70**	-.05	-.14	.54	.51
23*. I don't know how I really feel inside	**.69**	.04	.02	.51	.49
25. I feel "cut off" from who I really am	**.63**	.08	.02	.42	.37
3. I have to hide the way I feel inside	**.39**	-.06	-.01	.29	.16
12. I am in touch with "the real me"	**-.42**	**.37**	.04	.57	.44
16*. I always stand by what I believe in	.27	**.73**	-.06	.47	.45
17*. I am true to myself in most situations	-.08	**.76**	-.06	.65	.67
8*. I think it is better to be yourself, than to be popular	-.17	**.52**	-.06	.40	.35
19*. I live in accordance with my values and beliefs	.08	**.52**	-.09	.35	.28
15. I find it easier to get on with people when I'm being myself	.19	**.50**	.03	.22	.20
21. My daily behavior reflects "the real me"	-.18	**.44**	.00	.46	.30
4. I can be myself in my day-to-day activities	-.27	**.43**	-.02	.45	.36
22. I am in touch with all of my feelings	-.18	**.40**	.14	.38	.21
9. I feel free to express my emotions to others	-.07	**.38**	-.09	.32	.15
6. I feel that I am doing the things that are right for me	-.17	**.38**	-.04	.40	.24
2. I dislike people who pretend to be what they are not.	.18	.26	.04	.17	.06
5*. I usually do what other people tell me to do	-.10	-.04	**.73**	.48	.51
10*. Other people influence me greatly	-.02	.01	**.74**	.53	.54
13*. I am strongly influenced by the opinions of others	-.12	-.04	**.69**	.46	.44
24*. I always feel I need to do what others expect me to do	.16	-.07	**.64**	.47	.48
14. I feel pressured to behave in certain ways	.18	-.12	**.61**	.54	.44
11. I usually laugh because other people are laughing	.03	-.02	**.35**	.21	.13
1. I make my own choices in life.	-.01	.26	**.29**	.42	.25

Note: Sample 1 (*n* = 200), principle axis exploratory factor analysis with oblique rotation, loadings over .35 in bold type; *Item included in final 12-item scale, In = Initial, Ex = Extracted.

Factor 1 comprised negatively worded statements such as "I feel as if I don't know myself very well", and "I feel out of touch with the real me", and corresponded to the self-alienation factor of authenticity. The highest loading items of Factor 2 were "I always stand by what I believe in", and "I am true to myself in most situations", and corresponded to the authentic living factor of authenticity. Factor 3 was defined by such items as "I usually do what other people tell me to do", and "Other people influence me greatly", and represented accepting external influence. Thus the factor analysis supported the structure we expected to find, based on the person centered definition of authenticity (Rogers, 1961; Wyatt, 2001) , and suggested that the items we had developed mapped onto this conception as desired. The three factors were intercorrelated. Self-alienation correlated with authentic living at $r = -.44$ and with accepting external influence at $r = .40$. Authentic living was correlated with accepting external influence at $r = -.38$.

11.3.3.2. Development of the Authenticity Scale

The Authenticity Scale was developed from the results of the EFA. Three sub-scales were created to represent each of the factors. We hypothesized each of the three factors to be equally important and therefore purposefully selected an equal number of items for each of the subscales. As noted in the introduction, we aimed to develop a short scale for use in counseling psychology settings. We did not form sub-scales with less than four items, as Saucier and Goldberg (2002) demonstrate that scales normally have low internal consistency and poor psychometric properties with less than four items. The results from the EFA (see Table 11.1) showed that factor loadings drop off markedly after the fifth item for each sub-scale, so we considered forming sub-scales each comprising either four or five items. The four item sub-scales had internal consistency of .69 for authentic living, .78 for ac-

cepting external influence, and .78 for self-alienation. We examined the change in alpha that would occur if we included the fifth highest loading item in each factor. For each of the sub-scales, adding a fifth item increased alpha between .03 and .04. We did not feel that such marginal changes in alpha justified burdening the participant with an additional item, particularly given the aim of developing a short scale. As such we used the four highest loading items on each factor to measure self-alienation, authentic living, and accepting external influence. The final 12-items used in the Authenticity Scale are indicated in the Appendix, along with revised item numbers.

11.3.3.3. Authenticity and Subjective Well-being

Table 11.2 shows preliminary correlations between the Authenticity Scale and subjective well-being. Each of the sub-scales also was correlated with happiness. Authentic living and accepting external influence were correlated with Anxiety and Stress. The correlations of self-alienation with anxiety and stress were particularly notable ($r = .43$ and $.54$).

11.3.4. Discussion

In Study 1 the Authenticity Scale was developed, and initial evidence supported the existence of the expected factor structure of self-alienation, accepting external influence and authentic living. This suggests that the items are indeed assessing the a priori tripartite conception of authenticity. Based on these three fac-

Table 11.2
Preliminary Correlations Between the Authenticity Scale and Subjective Well-being (Study 1)

	M	SD	Anxiety	Stress	Happiness
Authentic living	22.05	3.72	-0.07	-0.11	.26**
Accepting external influence	13.34	4.95	.16*	.22**	-.16*
Self-alienation	10.84	4.91	.43**	.54**	-.55**

Note: $N = 200$, * $p < .05$, ** $p < .01$.

tors, a 12-item Authenticity Scale was created.

Each of the sub-scales was correlated with happiness. Additionally, anxiety and stress were positively correlated with authentic living, and negatively correlated with external influence. Given that authenticity was theoretically expected to be associated with subjective well-being (e.g., Horney, 1951; Rogers, 1964; Winnicott, 1965), this provides preliminary evidence for the validity of the scale.

11.4. Study 2

11.4.1. Introduction

Study 2 aimed to (a) confirm the factor structure with a new sample, (b) investigate whether a higher order factor structure might best represent the data, (c) test whether the factor structure is invariant across sample, gender, and ethnic group, (d) compare the a-priori three factor model with an alternate one-factor model, (e) investigate the temporal stability of the sub-scales with test-retest correlations, (f) present discriminant validity from social desirability and the Big Five, and (g) present convergent validity with self-esteem and a greater number of subjective and psychological well-being characteristics.

11.4.1.1. Multigroup CFA

The factor structure was tested with multigroup confirmatory factor analysis (CFA). CFA is commonly used in scale development to test a factor structure which has emerged through EFA (Clark & Watson, 1995). Multigroup CFA builds on a conventional CFA by additionally testing whether the factor structure is invariant across samples and demographic groups (Byrne, 2004). The multigroup approach both provides several replications of the CFA, and supports the generalizeability of the measure across the samples and demographic groups included in the analysis.

In addition to testing the factor structure suggested by Study 1, the multi-group CFA was also used to test whether authentic living, self-alienation, and accepting external influence exist under a higher order factor. If these three factors are indeed aspects of authenticity, then they would be expected to load highly on a higher order authenticity factor. Low loadings would suggest that the scales are actually measuring fundamentally different concepts.

11.4.1.2. Discriminant Validity

Study 2 presents discriminant validity from socially desirable responding and the Big Five personality traits. Discriminant validity from the Big Five would be provided if the Authenticity Scale could not be reduced to a linear combination of one or more Big Five traits. Correlations between the Big Five and authenticity may be expected as authenticity is conceptualized as a variable related to well-being and social life, domains with which the Big Five are correlated. The Authenticity Scale was especially expected to correlate with extraversion, neuroticism, and agreeableness as these traits respectively include positive affect, negative affect, and pro-social tendencies (Costa & McCrae, 1995).

However, the discriminant validity of the Authenticity Scale would be undermined if the majority of variance in the scale could be predicted by one or more Big Five traits. If this were the case, then authenticity research may still be useful, as it would explain how people with certain Big Five trait configurations see their world. However, it would seem that the Authenticity Scale has greater potential to make a contribution to the literature if it encompasses more than simply a linear combination of the Big Five. As there has been much recent interest in a sixth (humility) factor of personality which is not represented in the Big Five (Lee & Ashton, 2004), we also provide correlations between the Authenticity Scale and a scale measuring this fac-

tor.

11.4.1.3. Authenticity and Well-being

Convergent validity is provide with subjective well-being, psychological well-being, and self-esteem. Subjective well-being involves high positive affect, low negative affect (including low anxiety, stress), and high satisfaction with life. Psychological well-being involves fulfilling human potential "existential challenges of life" (Keyes, Shmotkin, & Ryff, 2002). Ruff (1989) operationalizes psychological well-being as comprising autonomy, environmental mastery, positive relations with others, personal growth, purpose in life, and self-acceptance. Subjective and psychological well-being are theoretically and empirically distinct concepts, with about 45% of people 'off-diagonal', that is, high on SWB and low on PWB or *vice versa* (Keyes et al., 2002). The literature on authenticity predicts that authenticity will be related to both aspects of well-being, with authentic people both experiencing both positive emotional experience and also engaging in the existential challenges of living. Self-esteem was also predicted to be related to authenticity, as self-esteem is a proxy for unconditional self-regard, which person centered conceptions (e.g., Rogers, 1959, 1961) strongly link with authenticity.

11.4.2. Method

11.4.2.1. Participants and Procedure

11.5.2.1.1. Sample 1 (Ethnically Diverse Sample). Sample 1 was comprised of 180 people (94 male, 86 female) from the local community. Ages ranged from 24 to 70 ($M = 38.6$, $SD = 9.0$), and ethnicity was equally balanced between Asian (60 people) Black (60 people) and White (60 people). Participants were married (45.6%), co-habiting (21.7%), single (17.8%), dating (8.9%), separated (3.3%), divorced (2.2%), or widowed (0.6%). Most participants were employed (95.6%),

with a diverse range of occupations represented, the most common of which were computer operation (20.6%), education (12.6%), and sales (6.7%).

Sampling was designed to obtain an ethnically diverse sample of working adults. The sample was originally contacted via five workplaces and four community groups in Northern England. Respondents were sought four at a time, looking to fill a quota of equal numbers of three broadly defined ethnicities. Once identified, participants were given a paper-and-pencil questionnaire packet, which they completed and returned to the researcher. The procedure was repeated until the target number of 180 people was reached. Prior to completing the questionnaire, each individual was told about the broad nature of the research, their right to withdraw, and were assured of confidentiality. They were also asked to provide personal contact details if they would be willing to complete a second questionnaire at a future time point. Informed consent was achieved by the signing of a document. Each person was re-contacted either two or four weeks after they first completed the questionnaire (whether they were contacted in two or four weeks was determined by random assignment). At the first time point participants completed the 12-item Authenticity scale, measures of subjective well-being (satisfaction with life, positive and negative affect), psychological well-being (autonomy, environmental mastery, positive relations with others, personal growth, purpose in life, and self-acceptance), socially desirably responding, and the sixth factor of personality. At the second time point, participants only completed the 12-item Authenticity Scale (to establish test-retest reliability). Participants were debriefed on all aspects of the study following completion of the second time point measure.

11.4.2.1.2. Sample 2 (College Student Sample A). Sample 2 comprised 158 undergraduate students (21 male, 137 female), who were recruited at two uni-

versity campuses. Ages ranged from 18 to 50, with 96.2% of participants being aged below 26. Most participants were of White (79.1%) or Indian (9.5%) ethnicity, and described their relationship status as single (88.5%), or married (3.8%). Participants were presented with a study information sheet in the course of academic lectures and invited to take part in the study, being advised that they were free to withdraw at any time. Participants completed a paper-and-pencil questionnaire packet including the 12-item Authenticity Scale, as well as measures of self-esteem and subjective well-being (stress, satisfaction with life, and positive and negative affect). Following completion, participants were debriefed on the nature of the research by the second or fifth author (depending on location), and any questions were answered.

11.4.2.1.3. Sample 3 (College Student Sample B). Sample 3 included 213 second year psychology students who participated in return for course credit. Participants included 43 males and 170 females, with a mean age of 19.45 years (SD = 2.45 years). Participants were primarily of a white (79.9%) or Indian (8.1%) ethnic background, and single / never married (94.7%). Participants were presented with a study information sheet as part of an academic course and invited to take part in the study, being advised that they were free to withdraw at any time. Participation in the study was part of a course in personality psychology, although several other alternate options were available to obtain course credit. Students who agreed to participate in the study were given a questionnaire packet. All participants completed the 12-item Authenticity Scale and a measure of self-esteem. Taking advantage of the large N, participants were then asked to either complete a measure of the Big Five ($n = 97$), or measures of psychological well-being (autonomy, environmental mastery, positive relationships with others, gratitude, and emotional intelligence) ($n = 115$).

11.4.2.1.4. Sample 4 (Community Sample). Sample 4 was recruited from

a participant panel run by the second author's university. The initial sample was comprised of 117 people (18 male, 99 female), aged between 14 and 76 years old (mean = 32.23, SD = 15.93). Participants were predominantly White (82.1%), or Chinese (6.8%), and single (45.3%) or married (35.9%), with a minority divorced (5.1%), or with other relationship status. Due to potential developmental differences in authenticity, we excluded 13 participants aged below 18, leaving a final sample of 94.

Information about the study was provided via the Internet for potentially interested parties. Having read the study information, participants then indicated their agreement with the study protocol and procedure by signifying their consent online. At a secure university website, participants completed the 12-item Authenticity Scale, and measures of self-esteem and subjective well-being (anxiety, satisfaction with life, and positive and negative affect). Upon completion of the study, participants were emailed a debrief to their nominated email address. Due to an error in the production of the electronic questionnaire, participants completed the Authenticity Scale on a 1 ("Does not describe me at all) to 5 ("Describes me very well") likert type scale, rather than the usual seven point scale. Due to this anomaly Sample 4 was not used in the psychometric analysis, and is used only as a cross-validation sample for the correlational analyses.

11.4.2.2. Measures

11.4.2.2.1. Socially desirable responding. The full 40-item Balanced Inventory of Desirable Responding (BIDR: Paulhus, 1984) was used to measure socially desirable responding. The widely used BIDR provides two orthogonal scales measuring deliberate misreporting of items to create a positive effect ("impression management") and characteristic positivity bias ("self deception"). In the current

study, alphas were .90 for both sub-scales.

11.4.2.2.2. Big Five. The Big Five personality traits of extraversion, neuroticism, agreeableness, openness, and conscientiousness were assessed with the Big Five Inventory (BFI John & Srivastava, 1999). Each trait is measured with between 8 and 10 items, and contains a mixture of positively and negatively coded items. The BFI is one of the mostly widely used measures of the Big Five, for each trait Cronbach's alpha and test-retest reliability have been shown to range from .79 to .90, and each sub-scale correlates with the corresponding scale of the NEO PI-R (Costa & McCrae, 1992) and the Trait Descriptive Adjectives (Goldberg, 1992) at between r = .83 and r = .99 (mean *r* = .94) (John & Srivastava, 1999). In the current study alphas ranged from .81 to .86.

11.4.2.2.3. Sixth Factor of Personality. Lee and Ashton's (2004) Honesty/Humility sub-scale of the HEXACO personality inventory was used to represent the proposed sixth primary factor of personality. Sixteen items assess self-perceptions of honesty (e.g. "If I knew that I could never get caught, I would be willing to steal a million dollars") and humility (e.g. "I am an ordinary person who is no better than others"). Lee and Ashton demonstrate that these items operationalized the proposed sixth factor of personality, and have incremental validity above the Big Five. In the current study, alpha was .86.

11.4.2.2.4. Self-Esteem. Rosenberg's (1965) 10-item Self-Esteem Scale assessed global self-esteem. Five items are orientated in a positive direction (e.g. "I feel that I am a person of worth, at least on an equal plane with others"), and five in a negative direction (e.g. "At times I think I am no good at all"). Participants rate statements on a 1 (strongly disagree) to 4 (strongly agree) scale. The Rosenberg Self-Esteem Scale is one of the most widely used measures of self-esteem. In the current

study, alphas ranged from .87 to .90.

11.4.2.2.5. Life Satisfaction. The Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). Participants rate their agreement with five statements regarding how satisfied they are with their life (e.g. I am satisfied with my life) on a 1 (strongly disagree) to 7 (strongly agree) scale. The Satisfaction with Life Scale is the most commonly used measure of the evaluative component of subjective well-being, and has a high degree of temporal stability (ranging from $r = .89$ over two weeks to .54 over four years) whilst still being sensitive to the effects of therapy (Pavot & Diener, 1993). In the current study, alphas ranged from .83 to .87.

11.4.2.2.6. Affect. The frequency of positive and negative affect was measured with the twenty-item Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). Ten items form a positive affect sub-scale, assessing participant's positive affect (e.g. interested, excited, and enthusiastic) and ten items form a second sub-scale, assessing negative affect (e.g. guilty, scared, and hostile). Consistent with research on the independence of positive and negative affect, the two sub-scales are minimally correlated. The PANAS is an extremely widely used measure of affect, as the independence of positive and negative affect is better operationalized than many other similar measures (Watson et al., 1988). In the current study, alphas ranged from .83 to .88.

11.4.2.2.7. Scales of Psychological Well-being. The short versions of the six subscales of Ryff's (1989) Scales of Psychological Well-being were used to measure aspects of psychological well-being. Each of the sub-scales contains fourteen items, including a balance of positively and negatively worded items, all of which are rated on a 1 (strongly disagree) to 6 (strongly agree) scale. *Autonomy* measures independence and self-determination (e.g. "I have confidence in my opin-

ions, even if they are contrary to the general consensus"), *environmental mastery* measures a person's sense of mastery and competence in managing the environment (e.g. "In general, I feel I am in charge of the situation in which I live"), *positive relations with others* measures the participant's impression of the quality of their close personal relationships (e.g. "I have not experienced many warm and trusting relationships with others" [reverse coded]), *personal growth* measures an orientation towards self-improvement and actualization (e.g. "For me, life has been a continuous process of learning, changing, and growth"), *purpose in life* measures beliefs regarding purpose and meaningfulness in life (e.g. "Some people wander aimlessly through life, but I am not one of them") and *self-acceptance* measures positive attitudes about the self (e.g. "I like most aspects of my personality"). Extensive studies have previously used these scales, and shown their independence from subjective well-being (e.g. Keyes et al., 2002; Ryff & Keyes, 1995). In the current study, alphas for the three items scales ranged from .54 to .79.

11.4.2.2.8. Gratitude. The Gratitude Questionnaire-6 (GQ6; McCullough, Emmons, & Tsang, 2002) was used to assess trait gratitude, which was included as an additional well-being variable. Six items measure grateful affect in terms of *intensity* (e.g. "I feel thankful for what I have received in life"), *frequency* (e.g. "Long amounts of time can go by before I feel grateful to something or someone"), and *density* reflecting the number of events or people that can elicit the emotion (e.g. "I am grateful to a wide variety of people"). Items (two reverse coded) are rated on a seven point scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The GQ6 has been shown to be correlate with well-being largely independently of the Big Five, social desirability, and coping styles (McCullough et al., 2002; Wood, Joseph, & Linley, 2007; Wood, Maltby, Stewart, & Joseph, 2008), and to have high

test-retest reliability (Wood, Maltby, Gillette, Linley, & Joseph, in press). In the current study, alpha was .86.

11.4.3. Results

11.4.3.1. Descriptive Statistics

Table 11.3 shows the descriptive statistics and sub-scale intercorrelations for all of the samples. Of note is the relatively low inter-correlations between the sub-scales, supporting their discriminant validity. Internal consistencies ranged from .70 to .86.

11.4.3.2. Multigroup Confirmatory Factor Analysis

Multigroup covariance structural equation modeling was performed with the AMOS software (see Byrne, 2004), using the maximum likelihood model of estimation. As the scales showed some negative skew, we applied the Satorra-Bentler (2001) correction for non-normality.

Multigroup CFA involves two steps. In Step 1 separate CFAs are performed for each of the groups. In Step 2 two models are compared for difference in fit. The fit of the first model (the 'unconstrained model') is simply the sum of the chi squared statistics from the separate CFAs in step one. In this model, the values of factor loadings have been free to vary between groups. The second model (the 'constrained model') is a single CFA which constrains the factor loadings to be equal across the groups. Invariance of the measure across groups is inferred if the fit of the constrained model is not significantly worse than the unconstrained model. As the models are nested, the difference in the fit between the chi squared values of the two models is itself chi squared distributed, with number of degrees of freedom equal to the difference between the degrees of freedom of the competing models (see Byrne, 2004).

Table 11.3
Descriptive Statistics and Scale Intercorrelations (Study 2)

		Central Tendency		Intercorrelations		
	α	Mean	SD	Authentic living	Accepting external influence	Self-alienation
Sample 1						
Authentic living	.82	19.52	5.20	-	-.40**	-.32**
Accepting external influence	.84	13.11	5.77		-	.42**
Self-alienation	.82	13.03	5.16			-
Sample 2						
Authentic living	.70	21.75	3.42	-	-.21**	-.16*
Accepting external influence	.77	13.91	4.71		-	.32**
Self-alienation	.84	9.95	4.79			-
Sample 3						
Authentic living	.79	22.41	3.07	-	-.27**	-.32**
Accepting external influence	.77	13.14	4.18		-	.20**
Self-alienation	.82	9.49	4.15			-

Note: Sample 1 $n = 180$, Sample 2 $n = 158$, Sample 3 $n = 210$, ** $p < .01$, * $p < .05$.

The first multigroup analysis was performed to test the fit and sample invariance of the three factor model suggested in Study 1. Three latent factors were specified, corresponding to self-alienation, authentic living, and accepting external influence. Each of these latent factors were defined by the items of the sub-scales. We also specified that the latent factors of self-alienation, authentic living, and accepting external influence existed under a higher order authenticity factor. No error variances were allowed to correlate.

The individual fit from the separate CFAs for Sample 1, 2, and 3 are presented in Table 11.4. Model fit was tested with the chi squared test of the difference between the implied and reproduced correlation matrices, the standardized root-mean-square residual (SRMR), the comparative fit index (CFI), and the root mean square error of approximation. As the chi squared test is highly sensitive to sample size, Hu and Bentler (1999) recommend basing model fit assessments on the CFI and SRMR. Based on their Monte Carlo analyses, they suggest that good model fit is individually indicated with approximate values of SRMR $\leq$ .08, CFI $\geq$ .95, and RMSEA $\leq$ .06; conventional values for accepting good models are substantially more lenient than these values. Based on these values, individually either of the samples provided a good fit for the three factor model. In the multigroup comparison, the constrained model (χ^2 [df = 171] = 312.93, CFI = .94, RMSEA = .04 [90% CI = .03 - .05]) provided an equally good fit as the unconstrained model (χ^2 [df = 153] = 285.69, CFI = .94, RMSEA = .04 [90% CI = .03 - .05]; $\Delta\chi^2$ = 27.25 Δdf = 18, p = .08), indicating that the factor loadings were equal between the groups, and the measure was sample invariant. This is important, as the samples differed in terms of sampling technique and comparison (two student groups, and one ethnically diverse occupational sample).

Table 11.4
Results from the multigroup CFA

Group	n	Model 1: Three factors				Model 2: One factor				Model Comparisons	
		$\chi2$ ($df = 51$)	SRMR	CFI	RMSEA (90% CI)	$\chi2$ ($df = 54$)	SRMR	CFI	RMSEA (90% CI)	Δdf	$\Delta\chi2$
					Between sample comparisons						
1. Sample 1	180	55.55	.04	.99	.02 (.00 - .05)	353.45***	.13	.63	.18 (.16 - .19)	3	297.90***
2. Sample 2	158	79.25**	.08	.94	.06 (.03 -.08)	260.76***	.16	.53	.16 (.14 - .18)	3	181.51***
3. Sample 3	213	90.06***	.08	.94	.06 (.04 - .08)	365.87***	.16	.50	.16 (.15 - .18)	3	275.81***
					Between gender group comparisons						
4. Male only	144	48.44	.05	.99	.00 (.00 - .05)	284.16***	.14	.62	.17 (.15 - .19)	3	235.72***
5. Female only	325	83.45**	.04	.98	.04 (.03 - .06)	714.70***	.15	.52	.19 (.18 - .20)	3	631.25***
					Between ethnic group comparisons						
6. White only	283	61.98	.04	.99	.03 (.00 - .05)	449.07***	.14	.51	.16 (.15 - .18)	3	387.09***
7. Asian only	109	74.30*	.06	.96	.07 (.03 - .10)	297.80***	.16	.54	.20 (.18 - .23)	3	223.50***
8. Black only	65	53.43	.07	.99	.03 (.00 - .09)	148.22***	.14	.60	.17 (.13 - .20)	3	94.79***

Note: *** $p < .001$, ** $p < .01$, *$p < .05$.

As the measure showed sample invariance, it is acceptable to combine the samples and create new groups based on demographic groups (Byrne, 2004). We combined the samples and split according to gender (144 male, 325 female). As shown in Table 11.4, both genders exhibited a good fit for the three factor model. The multigroup CFA showed that again the constrained model (χ^2 [df = 111] = 146.85, CFI = .98, RMSEA = .03 [90% CI = .01 - .04]) provided an equally good fit as the unconstrained model (χ^2 [df = 102] = 135.39, CFI = .98, RMSEA = .03 [90% CI = .01 - .04]; $\Delta\chi^2$ = 11.46, Δdf = 9, p = .25), suggesting the gender invariance of the measure.

Finally, we recombined the samples, and split the sample between three ethnic groups. Participants were classed as either White (n = 283), Asian (n = 109), or Black (n = 65). Finer grained comparisons between ethnic groups (e.g. Indian or Chinese) were not possible due to an insufficient n for CFA. Table 11.4 shows a model fit for each of the ethnic groups. The multigroup CFA showed the constrained model (χ^2 [df = 189] = 273.31, CFI = .96, RMSEA = .03 [90% CI = .02 - .04]) provided an equally good fit as the unconstrained model (χ^2 [df = 180] = 261.82, CFI = .96, RMSEA = .03 [90% CI = .02 - .04]; $\Delta\chi^2$ = 11.49 Δdf = 9, p = .09), suggesting that the measure is invariant across ethnic groups.

11.4.3.3. Factor Loadings. The multigroup CFAs suggested that the model is invariant across sample, gender and ethnic groups (the factor loadings are equal for each of these groups). Given the factor loadings are equal across each group, Figure 11.2 presents the factor loadings based on a combination of all three samples. Visual inspection of the factor loadings from the separate CFAs from each group confirmed the statistical finding that the loadings were near identical. Inspection of Figure 11.2 shows reasonable factor loadings (between .60 and .78). The la-
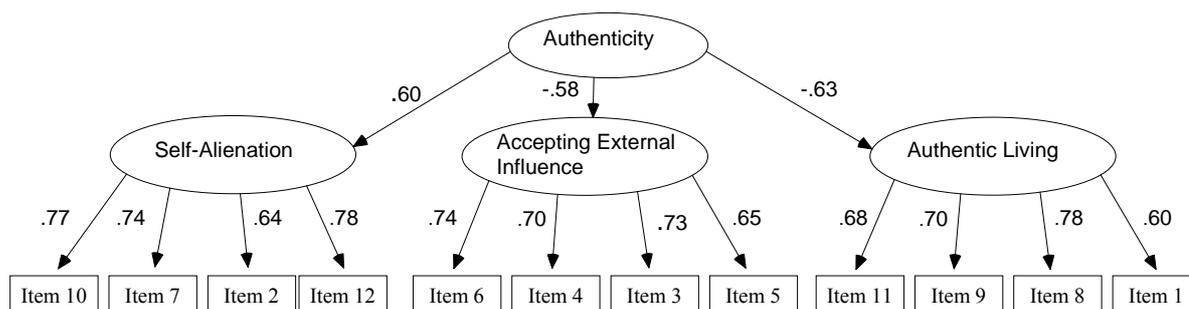
Figure 11.2: Diagram of the confirmatory factor analysis, with item and latent variable loadings. Error variances omitted for clarity.

tent factors also load highly on a higher order authenticity factor (between .58

and .63).

11.4.3.4. Comparing One and Three Factor Models. The results of the multi-

group CFAs suggested that the three factor model provides a good fit for the data.

However, the three latent factors loaded highly on a higher order authenticity factor.

Although this is consistent with each factor being representative of authenticity it

raises the question of whether a one factor model would provide an equally good fit

for the data. To test this, for each of the samples, genders, and ethnicities we com-

pared the three factor model with a second one-factor model where all items loaded

on a single factor. As can be seen Table 11.4, for each group the one factor model

provided a poor fit of the data. As also reported in Table 11.4, for every group, direct

nested comparisons of chi squared values showed that the three factor model pro-

vided a significantly better fit than the one factor model. On this basis the one factor

model was rejected.

11.4.3.5. Reliability and validity

11.4.3.5.1. Test-retest reliability. Table 11.5 provides two and four week

test retest reliability. For each of the sub-scales, responses at Time 1 were correlated

with responses at Time 2 at between $r = .78$ and $r = .91$. In each case, the four week

test-retest correlation differed from the corresponding four week correlation by only

r = .01. Additionally, at both time intervals each of the sub-scales showed group level stability, with small and non-significant mean level differences between the two time points.

Table 11.5
Two and Four Week Test-Retest

	Time 1		Time 2		Mean Change		Stability
	M	SD	M	SD	t	p	r
				2 Weeks			
Authentic living	19.02	5.26	19.27	5.01	-.69	.49	.79
Accepting external influence	13.67	5.50	13.91	5.12	-1.08	.28	.84
Self-alienation	12.46	5.15	12.41	4.78	.13	.90	.78
				4 Weeks			
Authentic living	20.02	5.12	19.63	5.25	1.09	.28	.78
Accepting external influence	12.66	6.02	12.84	5.47	-.51	.61	.81
Self-alienation	13.61	5.12	13.47	5.14	.38	.71	.79

11.4.3.5.2. Discriminant validity from Social Desirability. Both the impression-management (IM) and self-deception (SED) scales of social desirability showed very low and non-significant correlations with the authenticity scale. Neither scale was significantly correlated with accepting external influence (IM *r* = -.09; SED *r* = -.08), self-alienation (IM *r* = -.08; SED *r* = -.08), or authentic living (IM *r* = .05; SED *r* = .06), with the smallest *p* = .19. The results suggest that responding to the Authenticity Scale is not influenced by socially desirable responding.

11.4.3.5.3. Discriminant Validity from the Big Five. Table 11.6 presents zero-order correlations between the Authenticity Scale and the Big Five, along with three multiple regressions, where the Big Five are sequentially regressed authentic living, accepting external influence, and self-alienation. There were different patterns of zero-order correlations for each of the subscales, but a consistent overall picture emerges where all the significant correlations are in the same direction. As a

Table 11.6
Summary of Zero-Order correlations and Four Multiple Regressions of the Big Five on the Authenticity Scale

	F (5, 89)	Adj R^2	Extraversion			Agreeableness			Conscientiousness			Neuroticism			Openness		
			r	B (SE)	β	r	B (SE)	β	r	B (SE)	β	r	B (SE)	β	r	B (SE)	β
3. Authentic living	3.46	.12**	.11	.00 (.02)	-.01	.27**	.04 (.02)	.19	.17	.01 (.02)	.06	-.23*	-.04 (.02)	-.23*	.21*	.03 (.01)	.23*
4. Accepting external influence	3.27	.11*	-.33**	-.07 (.02)	-.30**	-.07	.04 (.02)	.18	-.16	-.03 (.02)	-.18	.19	.01 (.02)	.06	.10	.01 (.01)	.09
5. Self-alienation	3.92	.13**	-.29**	-.04 (.02)	-.21*	-.24*	-.02 (.02)	-.11	-.28**	.03 (.02)	.19	.25*	.02 (.02)	.13	-.04	-.01 (.01)	-.06

Note: Participants from Sample 3 (*n* = 94). * *p* < .05 ** *p* < .01, Adj = Adjusted.

construct, authenticity appears to be positively correlated with extraversion, agree-ableness, conscientiousness, and openness, and negatively correlated with neuroti-cism. However, the results of the multiple regression suggest that authenticity cannot be reduced to a linear combination of Big Five traits, with the Big Five only ac-counting for a small but significant 11% - 13% of the variance in authentic living, accepting external influence, and self-alienation. We also correlated the Authenticity Scale with the recently conceptualized sixth factor of personality. None of the sub-scales of the sub-scales were significantly correlated with the HEXACO measure of this factor (largest absolute $r = .11$, $p = .14$), ruling out strong correlations with the sixth factor of personality as an explanation for the discriminant validity of the Au-thenticity Scale from the Big Five.

11.4.3.6. Correlations with Self-Esteem and Subjective Well-being

To test whether authenticity is related to self-esteem and subjective well-being, the Authenticity Scale was correlated with measures of self-esteem, anxiety, stress, happiness, satisfaction with life, and positive and negative affect. These re-sults are presented in Table 11.7.

11.4.3.6.1. Self-esteem. As predicted, all sub-scales of the Authenticity Scale were correlated with self-esteem in four samples. Self-alienation had large correla-tions with self-esteem (range $r = -.45$ to .59). Authentic living and accepting external influence were also correlated with self-esteem in each of the samples. The size of the correlations of self-esteem with authentic living and accepting external influence were generally of a medium magnitude (range absolute $r = .20$ to .36). The hypothe-sis that authenticity would be linked to self-esteem was supported in four samples across all of the sub-scales.

11.4.3.6.2. Subjective well-being. As can be seen from Table 11.7, each of

Table 11.7
Authenticity and subjective well-being

		Self esteem	Anxiety	Stress	SWLS	Positive affect	Negative affect
Sample 1	Authentic living				.22**	.23**	-.07
	Accepting external influence				-.35**	-.23**	.20**
	Self-alienation				-.34**	-.21**	.21**
Sample 2	Authentic living	.24**		-.20**	.22**	.17*	-0.1
	Accepting external influence	-.23**		.26**	-.13	-.15	.18*
	Self-alienation	-.57**		.47**	-.50**	-.35**	.49**
Sample 3	Authentic living	.23**					
	Accepting external influence	-.27**					
	Self-alienation	-.45**					
Sample 4	Authentic living	.36**	-.18		.21*	.20*	-.27*
	Accepting external influence	-.20*	.20*		-.06	.06	.21*
	Self-alienation	-.59**	.39**		-.34**	-.31**	.48**

Note: Sample 1 *n* = 180, Sample 2 *n* = 158, Sample 3 *n* = 213; Sample 4 *n* = 97; * p < .05, **p < .01, SWLS = Satisfaction with Life Scale.

the authenticity sub-scales were correlated with the subjective well-being variables. Self-alienation was particularly strongly correlated with each of the subjective well-being variables (absolute rs ranged from .21 to .50). Accepting external influence showed the same pattern of correlations, but the correlations between satisfaction with life and positive affect were not stable across all samples. Authentic living was correlated with each of the well-being variables except anxiety, although the correlation with negative affect seems less stable. With a few exceptions, there was a remarkable level of consistency and replication across samples, and strong support for the conception of authenticity as a variable related to subjective well-being.

11.4.3.6.3. Psychological well-being. Table 11.8 shows the correlations between the Authenticity Scale and psychological well-being. Each of the sub-scales were significantly correlated with almost all of the seven aspects of psychological well-being (accepting external influence was not correlated with gratitude, and authentic living was not correlated with purpose in life). Additionally, results were replicated in a second sample for the three variables which were represented in both samples. The results support the hypothesis that authenticity is related to PWB.

11.5. Discussion and General Discussion

Two studies reported the development and testing of the Authenticity Scale. Study 1 developed the Authenticity Scale based on a tripartite conception of authenticity. Study 2 confirmed the factor structure, presented reliability and validity information, and the presented first stringent test of whether trait authenticity is related to subjective and psychological well-being.

The factor structure of the scale appears very robust. Exploratory factor analysis in Study 1 showed that the factor structure measured the intended three factor conception, which was supported through Multigroup CFA in Study 2. Of par-

Table 11.8
Authenticity and Psychological Well-being

		Autonomy	Environmental Mastery	PRWO	Personal Growth	Purpose in Life	Self acceptance	Gratitude
Sample 1	Authentic living	.18*	.17*	.18*	.25**	.08	.28**	
	Accepting external influence	-.25**	-.21**	-.27**	-.30**	-.22**	-.41**	
	Self-alienation	-.17*	-.21**	-.23**	-.28**	-.15*	-.39**	
Sample 3	Authentic living	.45**	.40**	.34**				.37**
	Accepting external influence	-.59**	-.27**	-.24*				-.15
	Self-alienation	-.33**	-.52**	-.44**				-.35**

234

ticular note was the factor invariance across each sample both between genders and broad ethnic grouping. This provides early indication that the Authenticity Scale behaves consistently across diverse demographic groups.

The Authenticity Scale appears to have good psychometric properties. The two-week and four-week test-retest reliabilities ranged from $r = .78$ and $.91$, suggesting that responses on the scale are stable across short intervals, as would be expected for a trait measure. Correlations with social desirability were all small and non-significant. It appears that responding to the scale is neither confounded with responses designed to manage impressions or represent an overly positive impression of the self. The Authenticity Scale also seems to have distinct variance from the Big Five traits. The scale was meaningfully related to the Big Five, with more authentic people being more extraverted, agreeable, conscientious, open, and less neuroticism. This pattern of correlations is consistent with the conceptualization of authenticity as an aspect of positive emotional and social functioning. However, a linear combination of the Big Five only explained a maximum of 13% of the variance in the sub-scales of the Authenticity Scale, suggesting that the scale is more than just a reflection of a configuration of Big Five traits.

The Authenticity Scale also showed was correlated with self-esteem, subjective well-being, and psychological well-being. As well as providing convergent validity for the scale this provides the first test using a validated scale of whether trait authenticity is related to well-being. This is important as authenticity is considered central to well-being in several counseling psychology conceptions (Horney, 1951; May, 1981; Rogers, 1959; Winnicott, 1965; Yalom, 1980). Indeed, some of the correlations of authenticity and well-being were particularly high. For example, the correlation between self-alienation and satisfaction with life ranged be-

tween $r = -.34$ and $.50$. In Park, Peterson and Seligman's (2004) assessment of the relationship between 24 character strengths and satisfaction with life, values of .34 would be higher than all but six strengths, and values of .50 are higher than all 24 strengths except for hope. It appears that authenticity is one of the strongest predictors of well-being. This is particularly notable as there is no item overlap between the measure of authenticity and the well-being variables. The strong relationship between the Authenticity Scale and well-being is a good example of how classical perspectives in counseling psychology can inform the direction of current empirical work in personality psychology (cf. Linley, 2006).

It is also notable that authenticity was correlated with both SWB and PWB. SWB and PWB are separate concepts, with different theoretical positions, causes, correlates, and consequences (Keyes et al., 2002; Ryan & Deci, 2001; Ryff & Keyes, 1995). However, as predicted, authenticity is related to both conceptions of well-being. The Authenticity Scale was also strongly and robustly related to self-esteem. This is in keeping with Rogers' (1959) linking of authenticity and unconditional positive regard, and Kernis' (2003) association of authenticity and secure self-esteem.

11.5.1. Directions for future research

The field of authenticity research has been hampered by the lack of a valid personality measure. The development of the Authenticity Scale allows for further tests of the theoretical positions, as well as the several questions which emerge from the present paper.

First, longitudinal research could also address the order of causality between authenticity and well-being, and the developmental antecedents of authenticity. For example, authenticity could lead to well-being as Rogers' (1959) suggests,

well-being could lead to people having the courage to be authentic, or the two could operate in a spiral in a broaden-and-build fashion (Fredrickson & Joiner, 2002).

Second, from a developmental perspective it would be interesting to examine both mean level authenticity across different age groups, and what kind of environments lead to dispositional authenticity. Rogers (1959) suggested that people were naturally authentic at an early age, but this decreased later in life due to the imposition of conditions of worth. Similarly, Harter (1996) and Neff and Harter (2002) found that people were more authentic when their self was being accepted by other people. It would be pertinent to see whether this equated to different levels of dispositional authenticity.

Third, authenticity could also illuminate differences between groups. In addition to the disadvantages suffered by all stigmatized groups, certain group members may have a potential identity which is not visually clear (such as Jewish people, lesbian, gay, bisexual, and transsexual people, and people with unseen disabilities such as epilepsy). For such people they have the additional strain of not knowing whether people would treat them differently if their true group membership was known (Crocker, Major, & Steele, 1998). Issues of authenticity may be particularly important for such groups.

Fourth, several conceptions have seen increased authenticity as sometimes arising in people who have undergone trauma (Joseph, 2004; Joseph & Linley, 2005; May, 1981). This may be one of the benefits that people often report after the trauma, in addition to their intense suffering. The Authenticity Scale could be used to test whether this was the case, as well as more complex models, such as authenticity only arising as a form of trauma related growth when unconditionally accepting relationships are present (Joseph, 2004; Joseph & Linley, 2005).

Fifth, each of the counseling and existential psychology perspectives on authenticity (Horney, 1951; May, 1981; Rogers, 1959; Winnicott, 1965; Yalom, 1980) saw the authentic disposition as being increased through psychotherapy. This could be tested with the Authenticity Scale, such as by comparing longitudinal change scores between those undergoing therapy and a control group. This would be in keeping with an increasing focus on the efficacy of counseling and a drive to evaluate therapy by other criteria than those based on the medical model of psychopathology (Joseph & Worsley, 2005).

Sixth, future research could also widen understanding of how authenticity fits in with other personality traits. In particular it is not clear how authenticity is related to its non-felicitous opposites. For example, Peterson and Seligman (2004) pointed out that antonyms of authenticity include deceitfulness, insincerity, pretentiousness, and falseness. It would be informative to see whether these were part of the same higher order factor as authenticity. Kernis (2003) posits that authenticity should be more related to secure self-esteem than to insecure self-esteem, and this could now be tested directly. Whilst such traits as 'insincerity' and 'secure self-esteem' are difficult to measure, considerable advances have been made into measuring these traits through implicit measures (Greenwald & Farnham, 2000).

There are multiple new areas of research for authenticity in both counseling psychology and personality psychology research. It is hoped that the development of the Authenticity Scale will aid these research endeavors and support therapeutic applications.

11.6. References

Barrett-Lennard, G. T. (1998). *Carl Rogers' helping system: Journey and substance*. London: Sage.

Bettencourt, B. A., & Sheldon, K. (2001). Social roles as mechanisms for psychological need satisfaction within social groups. *Journal of Personality and Social Psychology, 81*, 1131-1143.

Byrne, B. M. (2004). Testing for multigroup invariance using AMOS graphics: A road less traveled. *Structural Equation Modeling, 11*, 272-300.

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*, 309-319.

Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the united states. In S. Spacapam & S. Oskamp (Eds.), *The social psychology of health*. Newbury Park, CA: Sage.

Cooper, C. (2002). *Individual differences* (2 ed.). London: Arnold.

Costa, P. T., & McCrae, R. R. (1992). *Revised NEO personality inventory (NEO-PI-R) and the NEO five-factor inventory (NEO-FFI): Professional manual*. Odessa, FL: Psychological Assessment Resources, Inc.

Costa, P. T., & McCrae, R. R. (1995). Domains and facets: Hierarchical personality assessment using the revised NEO personality inventory. *Journal of Personality Assessment, 64*, 21-50.

Crocker, J., Major, B., & Steele, C. (1998). Social stigma. In D. T. Gilbert, S. T. Fiske & G. Lindzey (Eds.), *The handbook of social psychology* (Vol. 2, pp. 505-553). New York: Oxford University Press.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71-75.

Dunmore, E., Clark, D. M., & Ehlers, A. (2001). A prospective investigation of the role of cognitive factors in persistent posttraumatic stress disorder (ptsd) after physical or sexual assault. *Behaviour Research and Therapy, 39*, 1063-1084.

Ehlers, A., Maercker, A., & Boos, A. (2000). Posttraumatic stress disorder following political imprisonment: The role of mental defeat, alienation, and perceived permanent change. *Journal of Abnormal Psychology, 109*, 45-55.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*, 272-299.

Fredrickson, B. L., & Joiner, T. (2002). Positive emotions trigger upward spirals toward emotional well-being. *Psychological Science, 13*, 172-175.

Gable, S. L., & Haidt, J. (2005). What (and why) is positive psychology? *Review of General Psychology, 9*, 103-110.

Goldberg, L. R. (1992). The development of markers for the big-five factor structure. *Psychological Assessment, 4*, 26-42.

Goldman, B. M., & Kernis, M. H. (2002). The role of authenticiy in healthy psychological functioning and subjective well-being. *Annuals of the American Psychotherapy Association, 5*, 18-20.

Greenwald, A. G., & Farnham, S. D. (2000). Using the implicit association test to measure self-esteem and self-concept. *Journal of Personality and Social Psychology, 79*, 1022-1038.

Harter, S. (2002). Authenticity. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 382-394). Oxford: Oxford University Press.

Harter, S., Marold, D. B., Whitesell, N. R., & Cobbs, G. (1996). A model of the effects of perceived parent and peer support on adolescent false self behavior.

Child Development, 67, 360-374.

Horney, K. (1951). *Neurosis and human growth*. London: Rutledge.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.

John, O. P., & Srivastava, S. (1999). The big five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research (2nd ed.)* (pp. 102-138). New York, NY: Guilford Press.

Joseph, S. (2004). Client-centred therapy, post-traumatic stress disorder and post-traumatic growth: Theoretical perspectives and practical implications. *Psychology and Psychotherapy-Theory Research and Practice, 77*, 101-119.

Joseph, S., & Linley, P. A. (2005). Positive adjustment to threatening events: An organismic valuing theory of growth through adversity. *Review of General Psychology, 9*, 262-280.

Joseph, S., & Linley, P. A. (2006). *Positive therapy: A meta-theory for positive psychological practice*. New York: Routledge.

Joseph, S., & Worsley, R. (Eds.). (2005). *Person-centred psychopathology: A positive psychology of mental health*: Ross-on-Wye, England: PCCS Books.

Kernis, M. H. (2003). Toward a conceptualization of optimal self-esteem. *Psychological Inquiry, 14*, 1-26.

Kernis, M. H., & Goldman, B. M. (2005). From thought and experience to behavior and interpersonal relationships: A multicomponent conceptualization of authenticity. In A. Tesser, J. V. Wood & D. Stapel (Eds.), *On building, defending, and regulating the self: A psychological perspective* (pp. 31-52). New

York, NY: Psychology Press.

Keyes, C. L. M., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: The empirical encounter of two traditions. *Journal of Personality and Social Psychology, 82*, 1007-1022.

Lee, K., & Ashton, M. C. (2004). Psychometric properties of the HEXACO personality inventory. *Multivariate Behavioral Research, 39*, 329-358.

Linley, P. A. (2006). Counseling psychology's positive psychological agenda: A model for integration and inspiration. *Counseling Psychologist, 34*, 313-322.

Linley, P. A., Joseph, S., Harrington, S., & Wood, A. M. (2006). Positive psychology: Past, present, and (possible) future. *The Journal of Positive Psychology, 1*, 3-16.

Lopez, F. G., & Rice, K. G. (2006). Preliminary development and validation of a measure of relationship authenticity. *Journal of Counseling Psychology, 53*, 362-371.

Lyubomirsky, S., & Lepper, H. S. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research, 46*, 137-155.

May, R. (1981). *Freedom and destiny*. New York: Basic Books.

May, R. (1994). Contributions of existential psychotherapy. In R. May, E. Angel & H. F. Ellenberger (Eds.), *Existence* (pp. 37-91). Northvale, NJ: Jason Aronson. (Original work published 1958).

McCullough, M. E., Emmons, R. A., & Tsang, J. A. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology, 82*, 112-127.

McGregor, I., & Little, B. R. (1998). Personal projects, happiness, and meaning: On

doing well and being yourself. *Journal of Personality and Social Psychology, 74*, 494-512.

McNair, D. M., Lorr, M., & Droppleman, L. F. (1971). *Manual for the profile of mood states*. San Diego, CA: Educational and Industrial Testing Services.

Neff, K. D., & Harter, S. (2002). The authenticity of conflict resolutions among adult couples: Does women's other-oriented behavior reflect their true selves? *Sex Roles, 47*, 403-417.

O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instrumentation, and Computers, 32*, 396-402.

Park, N., Peterson, C., & Seligman, M. E. P. (2004). Strengths of character and well-being. *Journal of Social and Clinical Psychology, 23*, 603-619.

Patterson, T. G., & Joseph, S. (2007). Person-centered personality theory: Support from self-determination theory and positive psychology. *Journal of Humanistic Psychology, 47*, 117-139.

Paulhus, D. L. (1984). Two-component models of socially desirable responding. *Journal of Personality and Social Psychology, 46*, 598-609.

Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. *Psychological Assessment, 5*, 164-172.

Peterson, C., & Seligman, M. E. P. (2004). Introduction: Strengths of courage. In C. Peterson & M. E. P. Seligman (Eds.), *Character strengths and virtues: A handbook and classification* (pp. 197-212.) Oxford: Oxford University Press.

Roberts, B. W., & Donahue, E. M. (1994). One personality, multiple selves - integrating personality and social roles. *Journal of Personality, 62*, 199-218.

Rogers, C. R. (1959). A theory of therapy, personality and interpersonal relation-

ships as developed in the client-centered framework. In *Psychology: A study of a science* (Vol. 3, Formulations of the person and the social context, pp. 181-256). New York: McGraw-Hill Book Company.

Rogers, C. R. (1961). *On becoming a person: A therapist's view of psychotherapy*. London: Constable.

Rogers, C. R. (1964). Toward a modern approach to values: The valuing process in the mature person. *Journal of Abnormal and Social Psychology, 68*, 160-167.

Rogers, C. R. (1980). *A way of being.* Boston: Houghton Mifflin.

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*, 141-166.

Ryff, C. D. (1989). Happiness is everything, or is it - explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*, 1069-1081.

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology, 69*, 719-727.

Satorra, A., & Bentler, P. M. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika, 66*, 507-514.

Schmid, P. F. (2005). Authenticity and alienation: Towards an understanding of the person beyond the categories of order and disorder. In S. Joseph & R. Worsley (Eds.), *Person-centred psychopathology* (pp. 75-90). Ross-on-Wye: PCCS Books.

Sheldon, K. M. (2004). Integrity (honesty/authenticity). In C. Peterson & M. E. P.

Seligman (Eds.), *Character strengths and virtues* (pp. 249-272) C. Peterson & M. Seligman. New York: Oxford University Press.

Sheldon, K. M., Ryan, R. M., Rawsthorne, L. J., & Ilardi, B. (1997). Trait self and true self: Cross-role variation in the big-five personality traits and its relations with psychological authenticity and subjective well-being. *Journal of Personality and Social Psychology, 73*, 1380-1393.

Tinsley, H. E. A., & Tinsley, D. J. (1987). Uses of factor-analysis in counseling psychology research. *Journal of Counseling Psychology, 34*, 414-424.

Velicer, W. F., Eaton, C. A., & Fava, J. L. (2000). Construct explication through factor or component analysis: A review and evaluation of alternative procedures for determining the number of factors or components. In R. D. Goffin & E. Helmes (Eds.), *Problems and solutions in human assessment: Honoring Douglas n. Jackson at seventy.* Norwell, MA: Kluwer Academic.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect - the PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-1070.

Winnicott, D. W. (1965). *The maturational processes and the facilitating environment.* New York: International Universities Press, Inc.

Wood, A. M., Joseph, S., & Linley, P. A. (2007). Coping style as a psychological resource of grateful people. *Journal of Social and Clinical Psychology, 26,* 1108 - 1125.

Wood, A. M., Maltby, J., Gillette, R., Linley, P. A., & Joseph, S. (in press). The role of gratitude in the development of social support, stress, and depression: Two longitudinal studies. *Journal of Research in Personality*, doi: 10.1016/ j.jrp.2007.1011.1003.

Wood, A. M., Maltby, J., Stewart, N., & Joseph, S. (2008). Conceptualizing grati-
tude and appreciation as a unitary personality trait. *Personality and Individ-
ual Differences, 44*, 619-630.

Wyatt, G. (2001). *Rogers' therapeutic conditions: Evolution, theory and practice.*
(Vol. 1. Congruence). Ross-on-Wye: PCCS Books.

Yalom, I. D. (1980). *Existential psychotherapy.* New York: Basic Books.

Zwick, W. R., & Velicer, W. F. (1986). Comparison of five rules for determining the
number of components to retain. *Psychological Bulletin, 99*, 432-442.

11.7 Appendix

11.7.1. Items of the Final Authenticity Scale

1. I think it is better to be yourself, than to be popular.

2. I don't know how I really feel inside.

3. I am strongly influenced by the opinions of others.

4. I usually do what other people tell me to do.

5. I always feel I need to do what others expect me to do.

6. Other people influence me greatly.

7. I feel as if I don't know myself very well.

8. I always stand by what I believe in.

9. I am true to myself in most situations.

10. I feel out of touch with the "real me."

11. I live in accordance with my values and beliefs.

12. I feel alienated from myself.

11.7.2 .Scoring Instructions

All items are presented on a 1 (does not describe me at all) to 7 (describes me very well). Total items 1, 8, 9,11 for authentic living, items 3, 4, 5 ,6 for accepting external influence, and items 2, 7, 10, 12 for self-alienation.