The structure of virtue: An empirical investigation

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Abstract

This project is guided by the need for a common model of virtuous personality that can integrate theory and research on positive personality traits across the fields of positive psychology, personality, moral development and character education. A particular concern is that character education programs lack an empirically-based structural model of virtue - which could be provided by mainstream psychological research - even while initiatives to strengthen character in America's schools have been popular and well-funded in the past few decades. The current project was designed to do two things: 1) examine the structural validity of a rationally-derived model of virtue in two separate factor analytic studies, and 2) relate the resulting major virtue dimensions to dimensions of normal personality and to virtue-relevant criterion variables. Specifically, in Study 1, an exploratory scale factor analysis of a popular virtues assessment (the VIA-IS) was conducted to determine the fit of different models using multiple retention criteria. In Study 2, an exploratory item factor analysis was conducted using items from the International Personality Item Pool (IPIP) to represent the VIA-IS item content domain and factors were related to measures of normal personality, altruism, academic experiences and relevant demographic variables. Evidence for a three- and five-factor structure was found, with certain factors (e.g. Temperance) replicating across Studies 1 and 2. In addition, virtues predicted variance in altruism scores over and above that provided by a measure of normal personality.

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Chapter 1. Introduction and Review of the Literature

In the past century, the concept of virtue has garnered varying degrees of theoretical and research attention in the fields of education and psychology. In the past decade, however, the terms virtue and character have become common currency in both fields. In terms of educational practice, more than $100 million in funding has been appropriated to character education intervention programs since 2000, and in 2007 alone $24,248,070 was appropriated to the federal Department of Education for the Partnerships in Character Education discretionary grant funding program (U. S. Department of Education, 2007, 2008). In addition, an important minority (31%) of State Boards of Education have included in their organizational mission statements the task of developing students' character (Doolittle, Horner, Bradley, Sugai & Vincent, 2007). While it has often been the case that schools have focused on treating youth problems after they have occurred, the focus on character development is part of a larger emphasis in contemporary educational policy and practice on problem prevention and strengths promotion (Greenberg, O'Brien, Zins, Fredericks, Resnick & Elias, 2003; Rich, 2003).

While interest in and funding for character education efforts has increased in the past decade, an interest in character and virtue in positive psychology theory and research has occurred since the late 1990's. *Positive psychology* can be defined as the study of positive institutions, positive emotions or experiences, and positive traits, or character strengths and virtues (Seligman & Csikszentmihalyi, 2000). Comprehensive handbooks on character strengths and virtues have appeared in the last five years (e.g. Aspinwall & Staudinger, 2003; Peterson & Seligman, 2004), while professional organizations, conferences and training retreats devoted to positive psychology methods and theory

have sprung up in the United States and internationally (Gable & Haidt, 2005; Seligman, Steen, Park & Peterson, 2005). Indeed, while there were no graduate school programs devoted to the study of positive experiences ten years ago, today there are dozens (Seligman, Steen, Park & Peterson, 2005). The complementarity of character education and positive psychology's aims and vision have been noted (Peterson & Park, 2004; Steen, Kachorek & Peterson, 2003).

Among moral developmentalists (e.g. Colby & Damon, 1995; Walker & Pitts, 1998; Walker, Pitts, Hennig & Matsuba, 1995; see Bergman, 2002, for a review) there has been a growing concern that concepts about moral or virtuous personality was supplanted by research on moral decision-making in the 1960's. Citing empirical studies (e.g. Colby & Damon, 1995; Hart & Fegley, 1995; see Blasi, 1980 for a review) that show moral behavior is weakly related to moral reasoning, these researchers suggest other factors - such as moral affect, moral identity and moral traits - may be important determinants of moral behavior. The concepts of virtue and character have been increasingly invoked to explain highly moral behavior, for example altruism. Thus, in both education and psychology, traditional approaches to studying morality recently have given way to a focus on personal virtue and human flourishing.

But the encouragement, cultivation and study of virtue are not new trends in education or psychology. In the early 20th Century a similar interest in virtues was prevalent in the schools and in mainstream psychology, in particular among those interested in the psychometric study of personality (deRaad & Schouwenberg, 1996). It has been since the 1940's however that character and virtue were often derided by empirically-minded scientists and educators (McClellan, 1999). The pitfalls encountered

by previous virtue theorists and advocates, and those who criticized their ideas, provides a background for the aims of the present project. A brief history of theory and research on virtue, specifically in relationship to education in the early 20th Century, is the focus of the next section.

A. Virtue in history and education

The term virtue has a long history, dating at least back to the time of the ancient Greeks and perhaps earlier (Higgins-D'Allesandro & Power, 2005; Schimmel, 1998). All virtue theories involve answering the question "Who ought I to be?" *Virtue ethics*, a subfield in moral philosophy, has been guided by this concern. On the other hand, those interested in *duty ethics* attempt to answer the question "What ought I to do?" The first question focuses on which dispositions are present in a moral person - e.g. honesty, courageousness, kindness - and the second relates to deciding on which behaviors to enact in a given situation given certain moral rules and laws. In terms of psychological theory, the first question is a question of personality, while the second is a question of cognition. A major issue in personality theories involves the question of core personality dimensions: how many broad-band traits are needed to accurately account for human personality and behavior? We can ask the same question about virtues: how many virtues are needed to account for the full range of moral personality and behavior?

Answers to this question have varied across time and culture. At least since the time of the ancient Greeks people have asked themselves which qualities of mind and behavior are most important in moral excellence. Plato deemed courage, justice, wisdom and temperance as virtues essential to good character and the good life; these four virtues were adopted by Christian theologians like Thomas Aquinas, forming a foundation for

later Christian ethics (Jeffries, 1998; MacIntyre, 1984). Faith, hope and love are

traditional New Testament virtues that are grounded in the writings of Paul and were

important in Christian writing across almost two millenia (MacIntyre, 1984). Aristotle

developed his own comprehensive philosophy of virtue, often discussed in the character

education literature (Higgins-D'Allesandro & Power, 2005; Murphy, 2002). Some of the

virtues he discussed, like magnanimity, may seem less important today than they were in

his cultural context (MacIntyre,1984). While his specific list of virtues may not be

universally accepted, his ideas concerning the importance of virtue have been influential

among character educators.

Other virtue classifications can be found in different religions and philosophical

systems. Four Buddhist virtues prominent in historical writings are loving-kindness,

compassion, sympathetic joy, and equanimity (Goleman, 2003). Hindu virtues include

characteristics like being dutiful, an important quality in a class-based society

(Dahlsgaard, Peterson & Seligman, 2005). Modern American virtue theorists, like

Benjamin Franklin, have encouraged virtues like neatness, while the earliest Protestants

proposed a strong work ethic as a central virtue (Peterson & Seligman, 2004). (For a

review of the history of virtue theories see Dahlsgaard et al., 2005).

If virtue and character strengths represent socially-valued concepts that define

what is good in human beings, it is not surprising that a focus on virtue and good

character has always been an important feature of education (Cunningham, 2005;

McClellan, 1999; Ryan & Boehlin, 1999). In the American public education context, for

example, Washington and Massachusetts in the 1800's created statutes directing

educators to promote the development of virtues like justice, temperance and honesty as

part of the public school curriculum (Hunter, 2000). A core set of virtues was emphasized in the "Children's Morality Code" in the beginning of the 20th Century, which suggested the development of self-control, kindness, truthfulness, and teamwork, among other virtues (Leming, 1993; Lickona, 1993). Didactic instruction, stories and textbook aphorisms were generously used to remind students how virtuous people behave (McCLellan, 1999). Government support for systematic character education programs was integral to these often grass-roots efforts. Indeed, public funding for character education was at an all-time high in the late 1920's (Cunningham, 2005; Leming, 1993). Thus, a good education for American school children has often meant a good education in character.

Also in the late 1920's, however, a number of historical trends combined to diminish the popularity and plausibility of virtue-based education practices. Differences of opinion among educators about the proper role of the school in children's moral development were prevalent (Cunningham, 2005). Scientific progress in areas like industry suggested that education might be more effective if it was based more clearly on social scientific foundations. Educators influenced by John Dewey questioned the traditional values espoused in character education and mounted a movement to focus less on virtue and more on personal efficiency (McLellan, 1999). In addition, while virtue classifications were assumed to be useful guides to moral behavior by some educators, discrepancies between diverse lists of supposedly "core" virtues was seen as highly problematic to many progressive educators (McClellan, 1999). By the late 1920's, a set of influential studies designed to settle the debate between traditional character educators and more progressive educators was initiated.

Under the leadership of Edward Thorndike, research conducted by Hugh Hartshorne and Mark May (Hartshorne & May, 1928, 1929; Hartshorne, May & Shuttleworth, 1930) was designed to answer questions about the stability of behavior as evidenced across raters (self and teachers) and across situations. Thus, designing situations in which students could cheat, lie or steal, the Character Education Inquiry studies demonstrated that self- and teacher-rated "good character" was weakly to moderately related to moral behavior. The researchers' conclusions signaled to character educators, and the organizations that funded them, that it was no longer fruitful to educate students in virtuous traits due to a non-appreciable effect on behavior. These studies supported the view that, instead, situation-specific ethical decision-making represented a more scientific approach to education (McClellan, 1999). After these studies were published, character education became less popular as educators became wary of mixing morals with academics (Cunningham, 2005; Hunter, 2000).

In addition, an important monograph in personality psychology was published which had an added impact on the study of virtue. Proponents of an empirically-grounded science of personality, Allport and Odbert (1936) eliminated strongly evaluative terms from their massive compilation of trait terms, in an effort to create a comprehensive lexical approach to personality. The lexical approach assumes that meaningful differences between people have been encoded in common trait descriptors prevalent in everyday language (Allport & Odbert, 1936; Benet-Martinez & Waller, 2002; Tellegen, 1991). In a later publication, Allport (1937) suggested that socially-desirable trait descriptors reflect cultural or community values rather than biologically-based individual difference tendencies and therefore should have no part in the science of

personality. He wrote, "*Character is personality evaluated, and personality is character devaluated. Since character is an unnecessary concept for psychology, the term will not appear again in this volume...*" (p. 52, italics in original). Allport and Odbert (1936) suggested instead that virtue should be discarded from personality theory and research and studied instead by ethicists and educators.

This view ultimately affected future research in personality (Sandage & Hill, 2001; McCullough & Snyder, 2000).[1] However in the last 10 years, the terms "strengths" and "virtues" have re-appeared in personality (Cawley et al., 2000; Krueger et al., 2001) and general psychology (Seligman & Czikzentmihalyi, 2000) literatures and in applied fields such as organizational development (Rath, 2007). Yet the influential critiques described above had a long-lasting effect on the study of virtues in education and personality. How was moral behavior explained in the time period between the 1940's and 1990's?

B. Virtue in moral development and personality

After a period of loss of interest in theories and research on morality in education and psychology, the 1960's and 1970's ushered in a new era. Most of the change in these fields was due to the influence of Lawrence Kohlberg (Bergman, 2002; Narvaez & Lapsley, 2005; Walker & Pitts, 1998), who developed a cognitive developmental approach to understanding moral behavior. His stage model posited that moral development rested on progressively more sophisticated understandings of justice

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[1] Benet-Martinez and Waller (2002) have noted, however, that not all socially-valued trait terms were removed from their final list of personality trait terms. Indeed, most of the traits included in the positive psychology model of virtues and character strengths terms (e.g. *just*) were included in Allport and Odbert (1936); only *highly* evaluative terms were excluded (Benet-Martinez & Waller, 2002).

reasoning, specifically related to the rights and welfare of others. In contrasting his approach to the "bag of virtues" approach of the early 20th Century, Kohlberg stated that virtues education amounts to "indoctrination" while in contrast "the developmental approach appeals to rational autonomy in both its intent or theory and in its method..." (p. 32). Although highly critical of character or virtues education, Kohlberg was neverthless able to usher moral development research into the mainstream of academic psychology.

Critics have pointed out that Kohlberg's schema may convey a Western bias because it emphasizes individuality and abstract moral reasoning, disembodied from religion and community (Shweder, 1982; Shweder, Much, Mahapatra & Park, 1997). Gilligan (1982), a prominent critic of Kohlberg, suggested that moral judgment research was inherently gender-biased.[2] Indeed, Kohlberg's original longitudinal study of moral reasoning included an all-male, American sample, but was used to describe moral functioning across genders and across cultures (Flanagan, 1991). More importantly for the present project, however, is the frequent criticism that Kohlberg's theory restricts the scope of moral functioning to cognitive processes, which represent only one domain of moral functioning (Flanagan, 1991; Haidt, 2008; Walker & Pitts, 1998). And perhaps most importantly, decades of research has suggested that reasoning about moral dilemmas shows only a modest correlation with moral action (Blasi, 1980; Rest, 1993).

Despite both ideological critiques and inconsistencies in empirical support for the theory, Kohlberg and colleagues created school programs based on cognitive developmental moral theory. This is important because it was in this naturalistic setting

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[2] However most research has shown gender either only weakly predicts or does not predict moral reasoning ability, contrary to Gilligan's hypothesis (Rest, 1995).

that the problems of a purely rational, cognitive approach to moral behavior were highlighted. Termed "Just Community" programs, these school-based interventions attempted to create school communities using democratic participation as a forum for the development of moral reasoning (Higgins-D'Allesandro & Power, 2005; Kohlberg, 1985). Importantly, longitudinal results on the programs' effectiveness convinced Kohlberg that students' moral reasoning ability increased only slightly and that student understanding of moral rights and duties alone did *not* provide all or even most of the motivation for engaging in moral behavior (Kohlberg, 1985). Instead, moral behavior increased in part because of an emphasis on group loyalty, empathic awareness of others, and strong norms regarding honesty. Indeed, Kohlberg's former colleagues have found that moral responsibility and moral agency appeared to the primary motivators behind the students' moral behavior (Higgins-D'Allessandro & Power, 2005), a view also expressed by Blasi (2005). Indeed, while Kohlberg never developed a psychological model of character, his later writings indicated that he agreed that multiple factors make possible and sustain moral behavior (Bergman, 2001; Higgins-D'Allessandro & Power, 2005; Rest, 1983; Walker & Pitts, 1998).

While Kohlberg's cognitive developmental theory marked an important change in educators' and psychologists' willingness to address moral issues in education and research and represented a watershed moment in developmental psychology (Walker et al., 1995), other aspects of morality, important for this project, began to attract research attention in the 1970's and 1980's.

While the moral development literature has been dominated primarily by formulations and reformulations of moral reasoning, empathy constitutes one of the most

important developments in the moral psychology literature (Haidt, 2008). Empathy can be defined as the capacity to feel and understand others' internal states as the other feels them, and has both cognitive (perspective-taking) and emotional components (Davis, 1983; Eisenberg, 1986, 2001; Hoffman, 1982, 1993). Experimental studies have supported the idea that empathy induction affects willingness to help others (Batson et al. (1997b) and can improve inter-group relationships, thus playing a role in prejudice reduction (Stephan & Finlay, 2003). DeWaal (2008) and Eisenberg (1986, 2000) have suggested that empathy is the primary motivator for highly prosocial behaviors such as altruism.

Altruism is another major area of inquiry related to moral behavior, and appeared in research across disciplines (e.g. biology, psychology) in the late 20th Century (Piliavin & Charng, 1990). Altruistic behavior seen in humans (e.g. helping or rescuing unrelated kin; Batson et al., 1997; Oliner & Oliner, 1988) can also be found in other animals and is both spontaneous and adaptive (de Waal, 2008), and for these reasons has been an important area of inquiry in the evolutionary psychology literature. It has also figured prominently in the social psychology literature (e.g. Staub, 1992; 2001), and some moral developmentalists consider it to be the *most* moral of moral behaviors (e.g. Van Hesteren, 1992).

However, just as moral reasoning represents a too-narrow focus in the broad domain of morality, so too are the literatures on empathy and altruism limited in what they can say about human morality generally. In contrast to the study of singular, isolated aspects of morality, James Rest (1983) incorporated multiple processes and outcomes into his moral development theory. Rest's four-component model included

identifying how specific courses of action might affect others (e.g. a person in distress and a perpetrator; Component 1), deciding on a morally ideal course of action (Component 2), deciding whether to pursue the ideal action based on situational constraints and values (Component 3), and implementing the action, which Rest referred to as strong character (Component 4). While Rest was explicit in his dislike for virtue theories (Rest, 1983), like Kohlberg, he unwittingly provided a theory that described positive traits like caring and courage (Components 1 and 4), which are cited as necessary virtues by some character education proponents (see Table 1). Thus, the notion of good character as composed of multiple, distinct facets or processes - similar to the lists of virtues that make up good character popular in the early 20th Century - did not disappear completely from the moral development literature. Instead, these facets were discussed implicitly in Rest's (1983) alternative to Kohlberg's theory.

In addition to the somewhat circumspect area of moral development theory and research borne out of the 1960's, the broad and overarching approach of humanistic psychology existed in tandem with the discoveries of Lawrence Kohlberg. Representing the "Third Force" in psychology, humanistic psychologists attempted to break away from what was considered a myopic focus on the dark (or, at best, neutral) aspects of human functioning as found in the psychoanalytic and behaviorist approaches to psychology. Schultz and Schultz (1987) noted that, according to humanistic psychologists, "disregarding such attributes as joy, satisfaction, contentment, ecstasy, kindness and generosity...ignored distinctly human *strengths and virtues"* (p. 364, italics added). More than 20 years before the recent character education movement and more than 30 years before the positive psychology movement took shape, Abraham Maslow (1970)

developed a set of specific attributes characterizing psychologically healthy people, including, for example, the following characteristics: having empathy, being independent, being non-conformist, being hard-working in a specific field of interest, and being interested in humanity. And much earlier, the works of William James and John Dewey in the early part of the 20th Century had also discussed the kinds of psychological processes and outcomes that describe healthy development (Rathunde, 2001). In summary, a focus on the multidimensional content of good character was present in psychology in the past century, even though the terms *character* and *virtue* had fallen in and out of favor.

A movement that has focused specifically on articulating models of moral character, in the context of American educational practice, is discussed next.

C. Virtues in character education

Modern character education efforts began to gain momentum in American schools in the 1980's and early 1990's in part as a response to two trends, one educational and one societal. First, and perhaps most important, there was a perception of increasing and widespread moral decay in the 1970's and 1980's, stemming from seemingly prevalent problems such as drug use and violence among American youth. This signaled to many parents and educators that the country was in moral crisis (Lickona, 1993; McClellan, 1999; Murphy, 2002). As a reaction to these perceived problems, parents groups in particular advocated a return to teaching direct instruction in the virtues. In 1991, Benninga concluded that "[t]oday, more than ever before and perhaps as a result of the rising rate of juvenile crime, teenage pregnancy, drug use, and suicide, society expects help from the schools in instructing its youth in moral and civic ideals" (p. 5). William

Bennett (1991), former U. S. Secretary of Education and a prominent advocate of character education (Murphy, 2002), stated that "[t]here is no reason for excessive timidity, in suggesting a role for our schools in the formation of character. In fact, there is an increasingly broad consensus today as to the importance of this task" (p. 132). Finally, the Ohio State Department of Education (1990) echoed the renewed concern for cultivating specific virtues by stating: "The pluralism of our nation has greatly enriched our culture. An outgrowth of this pluralism is a diverse value system, reflecting the contributions of many ethnic, religious and racial groups. Yet *a consensus of common moral values transcends this cultural diversity*" (p. 6).

That there is a consensus about which positive traits to encourage across culturally diverse groups is an important idea in light of the present project. As discussed above, early critics of character education cited the lack of a universal, consensual set of core virtues as evidence of the irrelevance of virtue ideals and their inculcation in society (McClellan, 1999). However, the belief expressed by character educators is that finding a set of meaningful virtues that transcends culture is possible. This distinction is important because, until recent research on virtues has become more prevalent, these differences of opinion were often based in ideology, not data.

Secondly, in education, two approaches to moral development were increasingly seen as ineffective by teachers, parents and community members. Values clarification was an approach that focused on personal values creation and was thought by some to erode a traditional focus on core virtues all people share or value (Cunningham, 2005; Leming, 1993; Lickona, 1993). It sought self-consciously to focus on the *process* of valuing rather than on the *content* of values (Simon, Howe & Kirschenbaum, 1978).

Thus, ethical commonalities seemed problematic and even irrelevant (Lickona, 1993),

a situation not unlike that seen after the Hartshorne and May studies earlier in the

century. Values clarification has been cited by prominent character educators as the

antithesis of virtue-based education (e.g. DeLattre & Russell, 1993; Lickona, 1993).

In addition, Kohlberg's ideas, also found in public schools, proposed that justice

was seen as the only uncontroversial, universal value (Helwig et al., 1997).

Nevertheless, reducing the breadth of human virtue to one predominant characteristic also

has been widely cited as problematic for moral development research (e.g. Walker &

Pitts, 1998; Haidt, 2008) as well as school-based moral education interventions (e.g.

Higgins-D'Allesandro & Clark, 2005). Despite the differences in philosophy and

technique of values clarification and moral reasoning programs, both movements were

similarly designed to teach students *how* to think about moral dilemmas rather than teach

them *which* values or virtues should be cultivated (Cunningham, 2005; McLellan, 1999;

Ryan & Boehlin, 1999). Indeed, both cognitive approaches to moral development and

values clarification in classrooms diminished claims of universal values by making

values a personal issue (Lickona, 1993; McClellan, 1999). Some educators felt this led to

a vacuum in students' capacity to behave morally (if not in their moral knowledge) and

they advocated a return to traditional teachings on virtue (e.g. DeLattre & Russell, 1993).

What is "character education"? In a review of the state of character education,

Berkowitz and Bier (2004) describe that character education is a set of overlapping

intervention efforts that have been called variously "Positive Youth Development,"

"Social-emotional Learning" and so on. All aimed at increasing youth positive

characteristics and decreasing risk behaviors. The U. S. Department of Education (2005)

has defined character education as the teaching of "habits of thought and deed that help people live and work together as families, friends, neighbors, communities and nations" (np). Recently, Murphy (2002) has stated that "[t]he premise of character education is that there are virtues - objectively good human qualities - that should be taught to all" (p. 13), a belief echoed by prominent character education advocates Thomas Lickona (1993) and Kevin Ryan (Ryan & Boehlin, 1999). The Character Education Partnership (2007) states that it seeks to develop "young people of good character who become responsible and caring citizens" (p. ii). Thus, character education organizations and advocates have a vision of schools as settings in which the values of young people can be shaped in the interest of fostering good citizenship as well as personal growth and life satisfaction (Berkowitz & Bier, 2004; Lickona, 1993; Murphy, 2002).

Parents, educators and community leaders have held largely positive attitudes about the renewed focus on character (Lickona, 1993; Murphy, 2002). For example, virtue curricula were increasingly adopted by schools throughout the 1980's and 1990's and national polls during the same period showed that people were supportive of teaching character in the schools (Dahlsgaard, 2005; Lickona, 1993). National organizations such as the Association for Supervision, Curriculum and Development, convened national meetings with a main objective of creating and advocating a list of core personal characteristics for use in schools (Murphy, 2002). In 1992, a group of educators and other professionals met with the express purpose of outlining principles of the new character education movement, out of which came the well-known Aspen Declaration on Character Education, which listed a set of six core virtues the group believed all schools should advocate (see Table 1). In addition, the National Week of Character, drafted into

federal law in 1994, was created to make visible the "call to character" by these

organizations (Murphy, 2002). As of 2005, the State of California Education Code

provided the mandate for character education when it stated that teachers should teach

students the "principles of morality, truth, justice" in addition to promoting "harmonious

relationships" and to avoid "idleness, profanity and falsehood" (Center for Youth

Citizenship/California Partnership for Character Education, 2005, p. 16).

Unfortunately, even though advocacy and funding for character education

initiatives has increased in the past three decades (U. S. Department of Education, 2005),

systematic efforts at research on virtues development specifically has been lacking

(Leming, 1993). Peterson and Seligman (2004) have criticized the proliferation of

programs that fail to measure intervention effects: "In the United States alone, millions of

young people participate in school programs...intended to cultivate good character. The

almost total absence of program evaluation vis-a-vis this stated goal is remarkable...[and]

leaves the issue of deliberately cultivated strengths largely unexplored" (p. 27).

While systematic evaluation of character education has been addressed in part by

evidence-based education mandated by the No Child Left Behind Act (NCLB; Benninga,

Berkowitz, Kuehn & Smith, 2006), a lack of knowledge about the content and structure

of virtues is striking. For example, the U. S. Department of Education's Institute of

Education Sciences "What Works Clearinghouse" reviews rigorous character education

intervention research, including the goals and primary outcome measures of selected

studies.   All character education programs state that they influence student values and/or

virtues (character strengths, character traits). However, of the recent character education

interventions that met Department of Education inclusion criteria for well-designed

empirical studies producing moderate to large effects, two out of six did not measure

any character strengths (Positive Action, Too Good for Drugs). Two others measured

between two and four character strengths (Caring School Community, Too Good for

Violence). But only two of the six (Connect With Kids, Lessons in Character) explicitly

measured the strengths or virtues on which each intervention was based. In addition, no

two studies measured exactly the same virtues. Clearly, the changes in character that

character education interventions are designed to produce should focus on the character

strengths assumed to underlie positive behavioral changes. In addition, a uniform,

research-based model of character strengths would allow for useful comparisons across

interventions and with different populations.

Peterson and Seligman (2004) and Steen et al. (2003) have argued that one of the

benefits of the positive psychology movement has been to focus not just on virtues and

strengths, but on rigorous assessment of positive psychology constructs. In addition, they

and others (e.g. Sandage & Hill, 2001) have suggested that providing a comprehensive

classification (discussed more in the next section) of "universally-agreed-on" strengths

and virtues will create a common language regarding positive personality (much like the

DSM has provided a common language of mental disorder) and provide a basis for

benchmarking progress in character development.

Much like previous criticisms in the 1920's, the "character bandwagon" has been

characterized as reactionary, simplistic and based on conservative political and religious

beliefs (e.g. Helwig et al., 1997; Kohn, 1997), and some critics consider the lack of

consensus around core or universal virtues a fundamental flaw of both the character

education movement and of virtue theories in general. Sandage and Hill (2001)

suggested that the dominant's culture's "view of morality or taxonomy of virtues will

be privileged" (p. 253) and warned against that possibility. Rich (2003) noted that

researchers need to include "the diversity of the world's cultures and values" (p. 3) in a

virtue taxonomy to avoid overly-narrow definitions of those terms. It is because of the

potential for biased classifications that some have predicted that the current character

education movement eventually will be replaced by more "scientific" educational

practices (e.g. Cunningham, 2005; Helwig et al., 1997). This does not allow for the

possibility, however, that character and virtue can be studied scientifically and may

provide a valid and reliable framework with which to understand positive youth, and

adult, development.

Linking the character education movement to mainstream psychological research

Differences between the character education efforts of the early 20th Century and

those of the early 21st Century may make the newer efforts more resistant to extinction

than the older ones. First, while not a topic of the current project, it is essential to note

that the acquisition and development of virtue can be explained by a number of plausible

psychological mechanisms that have a research base in mainstream psychology. Some of

these research-based frameworks include the chronic accessibility in working memory of

moral concepts (Van Hesteren, 1992; Narvaez & Lapsley, 2005), the development of

"moral expertise" through behavioral skill-building (Narvaez & Lapsley, 2005), goal-

setting in the context of social influences processes (Colby & Damon, 1992, 1995) and

biologically-based adaptive sensitivity to moral issues ("moral intuitionism"; Haidt, 2007,

2008; Haidt & Bjorklund, 2008). That these mechanisms are able to be tied to good

character and virtue is significant because progressive educators in the 1920's and 1930's

often dismissed character education as based more on common sense and community norms than on clear scientific foundations (McClellan, 1999). Even recently, Kohn (1998) argued that character education was "religious dogma, not scientific fact." Importantly for the present project, attacks on character education programs based solely in ideological disagreements (e.g. Kohn, 1997; Lickona, 1998) will likely fade as more evidence from psychology can be linked to the more controversial aspects of character education. One of these controversial aspects is the lack of an empirically-based virtue structure.

Second, virtues-based character education is difficult to dismiss because non-cognitive variables have been found to have an effect on educational performance. For example, persistence has been shown to relate directly to educational achievement (deRaad & Schouwenberg, 1996) and self-control/delay of gratification has been related to both positive educational and social experiences (Mischel, Shoda & Peake, 1988). Indeed, among the most important qualities researchers have identified as predictive of positive academic outcomes are skills like goal-setting, social-behavioral skills, and conscientiousness (Greenberg et al., 2003). All of these variables could be construed as virtues.

Another factor that makes this movement relevant is the proposed link between virtue and personality theory and research (Jeffries, 1999; McCullough & Snyder, 2000; Peterson & Seligman, 2004). One of the important contributions of the positive psychology movement is the suggestion that virtues are trait-like and can be understood in the context of current personality theory and research (Peterson & Seligman, 2004). This link may be crucial for the long-term viability of a contested educational movement

like character education. Discussion of this link will be useful for understanding the

purpose and methods of the present project.

The importance of traits for a virtue-based psychology

Allport and Odbert (1936) in their highly influential monograph on personality

description explained that trait constructs are important insofar as they accurately

describe and predict situation-specific behaviors. Like traits, virtues can be conceived of

as individual difference variables (Peterson & Seligman, 2004) which both describe and

predict behaviors.[3] Indeed, in the past two decades, personality psychology has been

enjoying a renaissance of theoretical and research interest, in part because traits have

been show to reliably predict patterns of behavior both across time and situations, show

genetic heritability, and are grounded in biophysiological mechanisms (Barrick & Mount,

2005; Cale, 2006; Krueger et al., 2001; McAdams & Pals, 2006). It has been suggested

that virtues also be conceptualized as individual differences in sensitivity to social values

and prescriptions (Allport, 1937) which are grounded in biology (Haidt & Bjorklund,

2008; Peterson & Seligman, 2004). In addition, virtues (McCollough & Snyder, 2000;

Peterson & Seligman, 2004), like traits (McAdams & Pals, 2006), are theorized to

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[3] Although trait research has suffered from criticisms from social psychology in the past
40-50 years (McAdams & Pals, 2006; Peterson & Seligman, 2004), current
conceptualizations are more nuanced (Barrick & Mount, 2005). Yet, It is essential to
take into account the criticisms of trait theory and research and place trait
conceptualizations in the context of the social situation. Positive psychology research has
been criticized due to a focus on traits to the neglect of positive situations and institutions
(Gables & Haidt, 2005). It has been proposed that embeddedness in community and
culture is one of the six dimensions in a viable post-modern science of virtue as
suggested by Sandage and Hill (2001). Thus, promising future directions for positive
psychology and virtues research must involve moving beyond traits to understanding
positive contexts.

integrate motivation, cognition, and affect into parsimonious explanatory constructs.

Finally, virtue terms are encoded in the natural language and lend themselves to studies

of naturalistic conceptions of personality content and structure (Walker & Pitts, 1998), in

the same way that normal personality is studied via natural language descriptors

(Tellegen, 1991).

While major dimensions of normal personality appear to contain moral elements

(e.g. the dimension of Agreeableness in the Five Factor Model; Ashton, Lee & Goldberg,

2004; Benet-Martinez & Waller, 2002; de Raad & Schouwenburg, 1996), recent research

suggests that virtues and strengths should not be considered synonymous with recognized

normal personality dimensions (e.g. the Big Five). For example, Steger et al., (2007),

Park and Peterson (2006) and Cawley et al. (2000) have found only moderate correlations

between virtues and personality as measured by different instruments including the

Multidimensional Personality Questionnaire and Costa and McRae's Big Five measure,

the NEO-PI-R. In addition, Big Five dimensions include neutral facets (e.g. compliance)

as well as moral facets (e.g. empathy), while strengths and virtues constructs are

explicitly moral in nature.

An essential criterion by which to judge the usefulness of constructs is the ability

of a construct to predict a relevant criterion variable. Virtues have been shown to predict

important moral and non-moral behaviors. For example, empathy has been shown to

relate inversely to aggressive behavior and positively with altruism (e.g. Eisenberg, 2000;

Staub, 2001) while hope, zest and reciprocating love are all strongly positively correlated

with life satisfaction (Peterson, Ruch, Beermann, Park & Seligman, 2007). The strength

of perseverance has been shown to be one of the strongest non-cognitive predictors of

academic achievement (see De Raad & Schouwenburg, 1996 for a review) while Big

Five Conscientiousness significantly predicts achievement in the workplace (Barrick &

Mount, 2005). Preliminary analyses of interventions using the explicit development of

positive traits like gratitude have shown buffering effects against stress and maladaptive

coping (Seligman et al., 2005).

In summary, there exist numerous plausible mechanisms for the development of

virtues, and virtuous traits are predictive of important behaviors. The critique that

character education as a whole is and is destined to be a methodologically "un-scientific"

enterprise is unwarranted, as is the call to move away from character education and

embrace cognitive models of moral development (e.g. Helwig et a., 1997). Indeed, many

researchers (Berkowitz & Bier, 2004; Greenberg et al., 2003; Peterson & Seligman,

2004) in related fields such as moral development, positive youth development and

positive psychology have suggested that more (not less) research is needed to understand

the relationship between virtues and real-life outcomes. First, however, a consensus on

the type and meaning of the core qualities of virtuous personality is needed.

D. Virtues in positive psychology

With the important exception of humanistic psychology, research and theory on

optimal human functioning has been scant in comparison to research on psychopathology

and dysfunction (Seligman & Csikszentmihalyi, 2000). For example, theory and research

on the alleviation of negative states like depression and anxiety has been much more

common than the promotion of positive states like joy and awe (Gables & Haidt, 2005).

A major accomplishment of the positive psychology movement has been to refocus

attention on what is right with people versus what is wrong with them. This concern

developed at the same time that educators and developmental psychologists began to focus more on the theory and assessment of positive traits and behaviors in youth (Rich, 2003). Perhaps the most interesting development in both fields as it relates to the present project is the focus on virtues as legitimate psychological constructs.

In order to study virtue more systematically, Peterson and Seligman (2004) developed what they called the "manual of the sanities," a handbook designed after the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychological Association, 1994). *Character strengths and virtues: A handbook and classification* (Peterson & Seligman, 2004) purports to be an in-depth and comprehensive treatment of both the content and the structure of good character. The *Handbook* represents a major accomplishment in bringing together diverse literatures in moral development, social psychology and counseling and clinical psychology in one volume with the express purpose of delineating the broad domain of virtuous personality.

In particular, the creation of a hierarchically ordered model of virtues and strengths, which they called the Virtues in Action (VIA) model (see Table 2), formed a common language for discussing individual strengths and broad-band virtues. Peterson and Seligman (2004) borrowed concepts from trait psychology to create this hierarchical model. The authors, with the help of Dahlsgaard (2005), created a model that included six virtues, considered to be relatively abstract, broadband traits. Then they introduced a number of lower-order traits or character strengths considered to be the result of a specific virtue. Thus, each virtue was comprised of loosely related positive traits, or strengths (Peterson & Seligman, 2004).

How did Peterson and Seligman (2004) develop the VIA model? First, the virtues were chosen based on a literature review of important religious and philosophical texts from diverse world cultures (e.g. Greece, India); the time period selected spanned the first millennium B. C. E. to the present (Dahlsgaard, Peterson & Seligman, 2005). The virtues uncovered by Dahlgaard et al. were assumed to represent " a non-arbitrary basis for focusing on certain classes of virtues rather than on others" (p. 211). The six major virtues are justice, wisdom, humanity, temperance, courage and transcendence. The authors suggested that each of the virtues might have "emerged and been sustained because each allows a crucial survival problem to be solved" (p. 212), an evolutionary argument that has been advanced for the major dimensions of normal personality (Buss, 1991).

Devising lists of character strengths came from reviewing diverse literatures and through the more subjective process of "brainstorming" (Peterson & Park, p. 436). For example, Peterson and Seligman (2004) note that they investigated the everyday nature of virtues by collecting strength terms from everyday sources, even including such sources as bumper stickers and Pokemon cards. The lists of possible strengths were reviewed and redundant strengths were collapsed into single ones, with the aim of including only those that were more universal (e.g. kindness) than culture-bound (e.g. autonomy; Peterson & Seligman, 2004). Candidate strengths had to meet the following inclusion criteria: 1) the strength is manifest in thoughts, feelings and behaviors; 2) the strength is fulfilling to oneself and others; 3) the strength is valued in and of itself regardless of possible beneficial outcomes; 4) the strength is, when manifest, elevating and inspiring to others; 5) the strength is promoted in societal rituals and institutions; 6) exists in exemplars of

the strength; and 7) the strength is unidimensional. Finally, because "virtues are

typically numerous...[and a] hierarchy of virtues is therefore introduced by most

philosophers" (p. 87), each strength was then placed "under" a virtue because,

theoretically, it shared features with other strengths. Thus, Peterson and Seligman (2004)

and their colleagues developed a comprehensive, multidimensional model of virtue - in

both content and structure - in an effort to advance the science of positive psychology.

Once the classification was outlined, Peterson and Seligman wrote 10 questionnaire items

to measure each strength (Peterson & Seligman, 2004), resulting in a 240-item survey

called the VIA Inventory of Strengths. (Recent publications have referred to it simply as

the VIA).

For all of its merit, the VIA classification, as the authors pointed out, "was based

on a priori philosophical notions, not the expectation that it would capture the empirical

structure of positive traits" (p. 901). In addition, they "urge the reader not to be too

concerned about the details of how we classified the 24 strengths under the six virtues,"

stating they will "gladly move" strengths from their original positions as data on the

empirical structure is accumulated. They note "we expect [the classification] to change

in the years to come" including "reformulating [strengths'] organization under core

virtues" (p. 31) as well as deleting scales which measure redundant constructs. To date,

however, the original structure as advocated by the authors has not changed, despite

factor analytic evidence that the six-virtue structure has not been replicated in adult or

youth samples. (These studies are discussed more in the next section.)

One reason for the lack of empirical support for the structure of the VIA

classification is the way in which it was developed, namely in a rational-deductive

fashion described by Tellegen (1985; Tellegen & Waller, 2008). Contrasted to the

rational-deductive approach, an exploratory approach to personality assessment involves

allowing a large pool of items describing diverse personality traits to " 'choose' the

particular set of converging descriptors that characterize an emerging construct"

(Tellegen, 1985, p. 686). Identifying emerging constructs is especially important in a

new area of research - like the study of virtues - that consists of "as yet unsettled

constructs" (Tellegen, 1985, p. 686). As noted above, one of the major criticisms of

virtue theories has been the seemingly arbitrary nature of so-called "universal" or "core"

virtues. (In Table 3, the lists of core virtues from competing character education

programs shows some overlap, but no two lists are the same.) Building a virtue model

"from the ground up" using empirical means could resolve some of the disputes about the

cultural or other biases present in previous models and lay the foundation for virtues as

basic individual differences. In addition, this kind of research would answer the call by

moral developmentalists and moral philosophers to develop more "naturalistic" virtue

theories (e.g. Walker & Pitts, 1998), based on data rather than theoretical abstraction.

E. Recent empirical research on virtue

Next I describe recent research on virtues in the moral development and positive

psychology literatures. In general, these literatures do not overlap.

Walker and Pitts (1998) investigated everyday or lay conceptions of moral,

spiritual and religious protoypes in an effort to define and differentiate morality from

these related concepts.[4] Using free-listing, prototype rating and similarity sorting

tasks, Walker and Pitts found 42 unique descriptors were attributed to the moral person-

concept which could be grouped into six virtue clusters (see Table 1). These were

created based on hierarchical cluster analysis and multidimensional scaling. A major

difference between the VIA model and Walker and Pitts' six-cluster model involved the

lack, in the latter model, of a clear wisdom factor. While the first cluster, Principled-

Idealistic, contained terms such as "has clear values," "has strong beliefs," and "has a

highly developed conscience," no clusters related to creativity, curiosity or love of

learning (which define VIA Wisdom) emerged. In addition, a number of terms not

appearing in the VIA classification emerged as important moral attributes, such as

respectfulness and responsibility, trait terms which are prominent in the character

education literature. Thus while six clusters were found in this study, they only partially

overlapped with VIA virtues in content and meaning. In a related study, Walker, Pitts,

Hennig and Matsuba (1995) found that compassion was almost twice as likely to be

attributed to moral exemplars than the next most frequently rated attribute, consistency,

suggesting that not all virtues are equally important, at least in Western culture.

Walker and Hennig (2004) conducted a similar study, wherein free-listing,

prototype and personality ratings, and similarity sorting were used to investigate the

attributes of three moral person-concepts: just, brave and caring types. Specific features

of each person-type are not discussed here. Instead the attributes that all three types

shared shed light on the characteristics of a generally moral or virtuous person. A set of

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[4] While the present project is not concerned with moral protoypes, per se, findings from prototype studies can shed some light on which traits or qualities lay people consider "moral."

30 specific descriptors (e.g. respectful, generous) were conceptually organized into three clusters, namely positive communion, agency and dependability.[5] The authors suggest that the traits common to all three types represent "the core traits of moral excellence" (p. 632) and further suggest that these three dimensions may "suggest a foundation for moral functioning" that warrant "inclusion in the foundational core of moral/character education programs" (p. 631).

Haslam et al. (2004) likewise investigated the cognitive organization and structure of virtuous personality using the adjectival forms of the VIA strengths, eight adjectives representing the positive poles of the Five Factor Model and 10 single adjectives representing the 10 dimensions of the Schwartz (1992) values model. Data were aggregated across multiple methods and three dimensions were found with multi-dimensional scaling while six core virtue clusters were found using cluster analysis. Of the six virtue clusters, four of the clusters related to, but did not duplicate, the VIA virtue groupings (see Table 3). Importantly, no strengths grouping duplicated any VIA virtue dimension exactly and five of the six clusters apparently conflated strengths from more than one virtue category, highlighting the fact that the VIA virtues may contain strengths that are substantially more heterogeneous than assumed by Peterson and Seligman (2004).

Although it is important to understand lay conceptions of virtuous personality as investigated by Walker and Pitts (1998), Walker and Hennig (2004) and Haslam et al. (2004), this research does not tell us how individuals actually differ in virtuous

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[5] Bakan (1966) described the two tendencies in human personality as agency and communion, an interpretation that will be considered more below.

personality. Cawley et al. (2000), on the other hand, conducted a recent study of self-reported virtuous personality which provided a number of precedents for the current study. Cawley et al. assembled a list of virtue descriptors culled from thesaurus and dictionaries in the tradition of Allport and Odbert's (1936) lexical study of personality adjectives. Rather than eliminating evaluative terms, Cawley et al. included any adjective which could be placed meaningfully into one of the following phrases: "I ought to be..." or "I ought to show...". Thus, the term prudence was recorded as a virtue because one could meaningfully express each idea as "I ought to be prudent" or "I ought to show prudence." One hundred forty unique virtue adjectives were then transformed into "sentence clusters," wherein three statements described actual behaviors, thoughts and feelings associated with each virtue. Factor analysis revealed that four factors created an interpretable structure (see Table 3). Subsequent data were collected on virtue factor scale scores and these results were correlated with both the facet and domain scores of the NEO-PI-R and with scores on the Defining Issues Test (DIT), an objective measure of moral judgment (Rest, 1993). Each of the four virtue dimensions was moderately and meaningfully related to at least one Big Five personality factor and often to multiple facets and all virtues showed a lack of relationship with moral judgment as measured by the DIT. This study provides preliminary evidence that virtues are related to but distinct from broad-band, normal personality traits and that moral judgment is unrelated to self-reported virtue, a finding which has been supported by studies of moral judgment among moral exemplars (Colby & Damon, 1992, 1995; Hart & Fegley, 1995). Cawley et al.'s is the only study to investigate the item-based structure of positive traits. Their resulting virtues do not provide support for a VIA-like model. Importantly, while

the VIA model includes a prominent Wisdom or Intellect virtue dimension, no virtue related to intellect was found in this study, even though items related to wisdom, intelligence and creativity were included in the item pool.

The findings of Cawley et al. (2000) are not the only results that call into question a six-factor model of virtuous personality. Studies that have included the 24 VIA strengths have also found no evidence in support of a six-virtue model. Dahlsgaard (2005) found an interpretable four-factor virtue structure using a revised version of the VIA-IS for youth in a middle-school sample (see Note under Table 3). Park and Peterson (2006) recently found that four factors best fit their data from children and adolescents. Park and Peterson labeled their retained factors similarly to dimension labels from the VIA classification, but the content of the virtue dimensions did not match any a priori strengths grouping from the classification (Table 2). Recall that Haslam et al.'s (2004) study used similarity sorting of the VIA strengths to develop virtue "clusters" and while six clusters were found, none contained the a priori strengths groupings developed by Peterson and Seligman (2004). In addition, summaries of factor analytic results of the VIA-IS in adult samples have indicated not a six-, but a five-factor virtue structure (Peterson & Seligman, 2004; Peterson & Park, 2004).

In other VIA research, Van Eeden et al. (2008) conducted a confirmatory factor analysis (CFA) with youth to test the validity of the VIA-IS six-factor model.[6] A six-virtue structure provided a poor fit for the data. After extracting four factors, the authors

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[6] It is important to note that some researchers discourage the use of CFA for complex, multidimensional personality models because the large number of primary and secondary loadings needing specification would almost inevitably lead to model rejection (e.g. Church & Burke, 1994).

concluded that they would not recommend interpreting any of the VIA-IS strengths groupings and suggested that the VIA-IS assessment should be used as a unidimensional scale. Indeed, a somewhat better fit in CFA was obtained when one general factor and 24 strengths scales were specified. However, overall fit was poor for both models.

In addition, methodological and statistical issues regarding factor analysis were ignored in the studies of Cawley et al. (2000), Park and Peterson (2006), and Dahlsgaard (2005). For example, methodologists (Floyd & Widaman, 1995; Reise et al., 2000; Russell, 2002) have almost uniformly criticized the Kaiser (K > 1) criterion, or eigenvalues-greater-than-one rule, which can either under- or over-estimate the correct number of factors needed to fit the data (Fabrigar et al., 1999). All of the above-mentioned studies used K > 1 to determine the number of factors to retain. Interestingly, if factor retention had been based solely on the K > 1 criterion in Van Eeden et al. (2008), five factors would have been retained, a finding similar to others mentioned above, even though CFA indicated a one-factor solution. It has been suggested that using multiple criteria, including parallel analysis, to determine the number of factors to retain is essential (e.g. Floyd & Widaman, 1995; Henson & Roberts, 2006; Reise at al., 2000; Russell, 2002), but these techniques have not been employed to date in any VIA-IS studies. (Decision points and best practices in using factor and components analysis will be discussed more in a later section.)

In summary, the results of both self-reported virtue and lay conceptualizations of virtuous personality do not find support for the current VIA classification as originally developed. Recent publications (e.g. Linley et al., 2007; Peterson & Park, 2006),

however, still implicitly support the six-virtue conceptual model. In addition, the

number-of-factors issue has not been settled by existing VIA-IS studies.

F. Construct hierarchies and "super-trait" models

Character strengths can be organized into virtue "domains," or broad, related areas

of human functioning. Finding an adequate, parsimonious, and statistically justifiable set

of virtue domains is the main aim of the current project. Basic domains of human

personality often involve between five and eight factors (Mershon & Gorsuch, 1988), or

as few as three factors (Eysenck, 1991; Tellegen & Waller, 2008). Often, these basic

domains predict important life criteria and are assumed to represent an adequate

understanding of differences in human personality.

In addition, multiple domains can be hierarchically related into two domains in a

super-ordinate structure, and that this structure is important for understanding behavior.

According to Krueger et al. (2001), a structural model of personality,

> "is a formal account of patterns of correlations among basic personality traits in
>
> terms of a smaller number of 'super-traits,' or higher-order personality factors.
>
> These higher-order factors provide a 'road-map' of the major axes of human
>
> variation, and a structural model...therefore provides the theoretical basis needed
>
> to understand patterns of relations among various behavioral propensities" (p.
>
> 397).

Paunonen (1998) and Tellegen (1985) described personality organization as

moving from specific responses to habitual ones, and from habits to primary traits, and

from traits to "big" personality factors and then to higher-order factors that meaningfully

organize all lower-level constructs. According to DeYoung et al. (2007), "[c]onsiderable

progress has been made" (p. 2007) in this line of research in mainstream psychology. Reise et al. (2000) have suggested that knowing where any construct falls within the construct hierarchy is an essential task for those undertaking structural analyses (e.g. factor analysis).

In the areas of normal and abnormal personality research, models involving super-traits or super-factors have emerged in recent years. For example, Digman (1997) showed that the Big Five personality factors could be organized under two broad traits which he called (somewhat non-intuitively) Alpha and Beta, and which DeYoung (2006; DeYoung et al., 2002) has labeled Stability and Plasticity. Plasticity merges the broad factors of Extraversion and Openness and can be described as "the ability and tendency to explore and engage flexibly with novelty, in both behavior and cognition" (DeYoung, 2006, p. 1138). Stability, on the other hand, is comprised of Conscientiousness, Agreeableness and (low) Neuroticism (or Emotional Stability) and represents "the ability and tendency to maintain stability and avoid disruption in emotional, social and motivational domains" (p. 1138). Markon, Krueger and Watson (2005) found support for these two factors at the top of a personality hierarchy in both a meta-analysis and a joint factor analysis of multidimensional personality inventories.

Abnormal personality or psychopathology also has been conceptualized as involving two separate sets of tendencies, internalizing (involving anxiety and depression tendencies) and externalizing (involving antisocial tendencies; Krueger, 1999). Krueger suggested that a structural hierarchy is useful because it "helps to organize observations and suggest directions for future research" (p. 925). The importance of developing structural hierarchies also lies in the ability of higher-order factors to predict broad sets of

behaviors (Barrick & Mount, 2005; Paunonen, 1998; Tellegen, 1985). If a higher-order dimension better predicts a behavior of interest, it should be used rather than a lower-level trait. But evaluating which level best serves prediction, however, is not possible until a hierarchy has been delineated. Understanding how virtues are organized under a "super structure" would shed light on the nature of virtue and integrate the burgeoning area of virtues research with current theory and research in personality psychology.

G. Definition of character strengths and virtues

The terms *character*, *character strengths* and *virtue* describe the characteristics of a morally good person, and "morally good" is almost always defined by the characteristics that are promoted and valued by an individual's social group (Baumeister & Exline, 1999; Haidt & Bjorklund, 2008; Peterson & Seligman, 2004; Schimmel, 1998). The term character has often been used as a highly evaluative descriptor signifying a *general* level of moral goodness. This term is problematic because it suggests that people either possess character or they do not. In both philosophical (Flanagan, 1991) and scientific (Allport & Odbert, 1936) thinking, this idea likely is not useful.

Peterson and Seligman's (2004) definitions are used here. Specifically, an individual character strength represents only one facet of a virtue and facets can be described as an "element or component of a larger construct" (Smith, Fischer & Fister, 2003, p. 467) or as unidimensional item sets which measure an aspect of a broad-band psychological construct (Reise et al., 2000). In terms of the construct hierarchy, strengths are at the level between specific behaviors and broad traits. In terms of measurement, it is assumed that character strengths can be measured more easily than virtues because

strengths are observable in specific thoughts, feelings and behaviors. Virtues, like

broad personality domains, are understood to be like broad, underlying tendencies which

may be genetic in nature (see Krueger et al., 2001, for a discussion of heritability of

positive traits) and are manifest in many different behaviors, across diverse situations and

across time (Allport, 1937; Tellegen & Waller, 2008). Virtues are higher up on the

construct hierarchy. Character strengths and virtues are understood to be at the same level

of abstraction in the construct hierarchy, respectively, as facets and domains in the Big

Five personality model (Costa & McRae, 1995).

Chapter 2: Statement of the Problem

Virtue is not a new construct, whether in social discourse, psychological research

or educational practice. Currently, virtues and strengths have once again become

legitimate constructs for psychological research, in part because of the popularity of the

positive psychology movement (Gables & Haidt, 2005). A model of basic virtue

dimensions has been created that Peterson and Seligman (2004) have called a "non-

arbitrary basis for focusing on certain virtues rather than others" (p. 51). This

development should be welcome in a number of fields of study, such as moral

development, character education and personality psychology. Indeed, specific fields

like industrial-organizational psychology (Peterson & Park, 2006), cross-cultural

psychology (Park et al., 2006; Shimai et al., 2006), and clinical and counseling

psychology (Peterson et al., 2008; Seligman & Peterson, 2003; Seligman et al., 2005)

might benefit from such a classification (see also McCullough & Snyder, 2000, and

Sandage & Hill, 2001).

Yet, problems with the current VIA model from positive psychology (Peterson & Seligman, 2004) and its associated research are apparent. Studies 1 and 2 were designed to address two different but related problems with the model and with the research.

First, Study 1 was an attempt to uncover a virtues structure using the original VIA-IS questionnaire evaluated against multiple factor retention criteria. A major problem with previous VIA-IS research - both with adults and youth - is the lack of adequate retention methods that would provide a replicable factor solution.

Second, Study 2 addresses a more fundamental problem that arises from the use of strengths scales, rather than individual items, in factor analytic studies. Specifically, factoring scale-level data means presupposing that the researcher knows which strengths are important in defining virtue, and that, having written items to tap these constructs, he/she has included the most important scales in the factor analysis. However, this assumption may not be warranted. Instead, a more appropriate method for discovering constructs in a new research area is to use an empirical, bottom-up approach that involves using item-level data (Tellegen, 1985; Tellegen & Waller, 2008). Recall that one of the most consistent criticisms of virtue theories across time has been that no two virtue lists are alike and that rather than representing core, universal positive traits, they are the result of cultural or political bias. By using a bottom-up approach based in individual differences, a priori notions about which strengths are most important are unnecessary.

In summary, Study 1 was designed to find the most appropriate number of factors underlying VIA strengths given multiple statistical criteria. Study 2 was designed to move beyond these conceptual, scale-level strengths (see Table 2) to uncover new virtue

constructs using a more clearly empirical approach. Specific hypotheses - based on the literature reviewed above - are described for each study separately. (Study 2 hypotheses were based in part on findings from Study 1.)

Chapter 3. Study 1

Based on research in personality, moral development, and virtues, discussed above, the following hypotheses were developed:

1. Five components will represent an *upper* limit of the number of components to retain in the present dataset based on previous research findings suggesting five factors (Peterson et al., 2008), and also based on the fact that the retention method used, K > 1, tends to overestimate the factors to retain. Retained components will include some dimensions that resemble the four typically found in the positive psychology literature: Intellectual/Cognitive Strengths, Social/Interpersonal Strengths, Temperance/Restraint Strengths and Transcendence/Theological Strengths.

2. A meaningful hierarchical structure will emerge, organized at the top by two dimensions representing a Plasticity factor and a Stability factor.

Method

Participants

Data[7] were collected from a sample of middle-aged adults participating in Minnesota Twin Registry research at the University of Minnesota. Participants were twins born between 1950 and 1955. Steger et al. (2007) selected twin pairs from each year's birth cohort starting from 1955 until 400 twin pairs had been identified. (Twin

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[7] The extant data used for Study 1 were collected and used in a separate report by Steger, Hicks, Kashdan, Krueger and Bouchard (2007). However all of the analyses reported herein are new.

status is not the focus of the current study and will not be reported here.) Participants

completed the Virtues in Action Inventory of Strengths (VIA-IS) in 2004. Three hundred

thirty-two individuals made up the final sample. Fifty-two percent were female.

Materials

Participants completed a paper-and-pencil version of the VIA-IS measure

(Peterson & Seligman, 2004). The VIA-IS includes 240 items, made up of 24 10-item

scales. While many VIA studies (e.g. Linley et al., 2007) have measured strengths

explicitly rather than the virtues of which they are a part, each strength theoretically

relates to a virtue (see Table 2). For example the character strength of kindness is

theorized to be a virtue of Humanity and is measured by the item "I am never too busy to

help a friend." The virtue of Wisdom is measured by the item "I am never bored";

Courage by "I have taken frequent stands in the face of opposition"; Temperance by "I

am a highly disciplined person"; Justice by "I am strongly committed to principles of

justice and equality"; and Transcendence by "I have often been left speechless by the

beauty depicted in a movie" (Peterson & Seligman, 2004). Items were rated on a Likert-

type scale from 1 (*very much like me*) to 5 (*not at all like me*). The mean scale reliability

for this measure was .81, with values ranging from .68 - .90, similar to the internal

consistency reliabilities found in other VIA studies (e.g. Linley et al., 2007; Park &

Peterson, 2006; Peterson & Seligman, 2004). Consistent with other researchers' results,

the lowest alphas were found for temperance strengths (e.g. self-regulation; Shimai et al.,

2006; Park & Peterson, 2006), and the highest alpha was found for the spirituality scale

(Linley et al., 2006; Park & Peterson, 2006).

Procedure

After twin pairs were identified, the VIA-IS questionnaire was mailed to all potential participants. A $7 incentive was used to encourage participation. Address changes resulted in approximately 5% (17 of 332) of the mailed questionnaires being returned. The overall response rate was 42%.

Data Analytic Strategy

Previous studies investigating the structure of VIA data have been reported as research summaries with limited specific information, for example regarding choice of data analytic methods or factor loadings (e.g. Park & Peterson, 2005; Peterson & Seligman, 2004). Only one detailed, empirical and peer-reviewed report, based on data with adolescents, has been published (e.g. Park & Peterson, 2006). Both factor analysis and principal components analysis have been reported, along with various rotational techniques, resulting in a number of different structural models (see Table 3). The rational for the specific methods and techniques used in Study 1 are described next.

EFA versus CFA. First, a decision about which modeling strategy should be used - exploratory or confirmatory factor analysis - is needed because each is based on different analytic goals and both are reported in personality studies (Fabrigar et al., 1999; Floyd & Widaman, 1994). Exploratory factor analysis (EFA), a classic method for determining structure, was not designed for hypothesis testing whereas confirmatory factor analysis (CFA) is used when researchers have explicit hypotheses regarding factor structure and wish to test a model against a theory or test multiple models to determine the best-fitting model (Comrey, 1988; Floyd & Widaman, 1995; Reise et al., 2000). Some researchers suggest using caution in applying CFA, noting that causal modeling may be misused unless a researcher has an a priori knowledge of both primary and

secondary factor loadings for each factor model to be tested (Church & Burke, 1994;

Comrey, 1988). Because multidimensional models of personality are complex, CFA may

result in poor model fit due in part to many small specification errors (Floyd & Widaman,

1995). In order to specify factor loadings in CFA, it is necessary to have a detailed

theory or results from previous factor analytic studies. In terms of VIA results with adult

samples, only general results, but no factor loadings, have been published in the literature

(e.g. Peterson & Seligman, 2004; Peterson & Park, 2004). Thus, using CFA in the

present case would likely lead to poor model fit and a rejection of any model tested

(Floyd & Widaman, 1995). Thus, in the present study, EFA will be used.

   Method of factor extraction. A debate in the literature on factor analysis has

focused on the use of principal components analysis (PCA) versus common factor

analysis (FA). Principal components analysis extracts components from a correlation

matrix with 1.00's on the matrix diagonal while factor analysis extracts factors from a

reduced correlation matrix, using communality estimates (often iterated squared multiple

correlations) on the diagonal (Floyd & Widaman, 1995). In FA, data are assumed to

result from scores on a latent construct minus measurement error, wheras component

loadings in PCA are comprised of all the variance in the measured variables (Steger,

2006, p. 264). Accordingly, PCA loadings tend to be higher than those based on FA.

Although Floyd and Widaman (1995) make the argument that FA "should be strongly

preferred over component analysis" (p. 291) in many research contexts, there are a

number of reasons to choose PCA over FA. One pragmatic reason to prefer PCA

involves the ubiquity of the procedure in the personality literature. The majority of

recent factor analytic articles in the *Personality and Social Psychology Bulletin* (Russell,

2002) and measurement-related journals such as *Educational and Psychology Measurement* (Henson & Roberts, 2006) have used PCA, and influential personality models (and tests of those models) have often employed PCA (e.g. Almagor, Tellegen & Waller, 1995; Church & Burke, 1994; McRae, Zonderman, Costa, Bond & Paunonen, 1996). And because of the issue of factor indeterminacy, some methodologists suggest that principal components provide a mathematically simple and elegant form of extraction (Zwick & Velicer, 1986). Most importantly, many of the techniques used and rules advocated for factor or component retention are based on the use of PCA, not FA. For example, the K > 1 statistic (Russell, 2002), well-known guidelines related to factor or component saturation and identification (Zwick & Velicer, 1986), and parallel analysis (Steger, 2006) are based on PCA. Because the number of factors or components to extract is often a more substantive issue than extraction method (Zwick & Velicer, 1986), PCA results will be reported herein.

Number-of-factors issue. The next decision to make involves deciding on criteria for retaining factors, which, along with the quality of items submitted for analysis (Reise et al., 2000; Clark & Watson, 1995), is "likely to be the most important decision a researcher will make" (Zwick & Velicer, 1986, p. 432), The "number-of-factors" issue has produced a considerable literature (Henson & Roberts, 2006), in part because there is no single, objective criterion for determining the structural model that best fits the data in EFA (Steger, 2006). The most widely used criterion - the Kaiser, eigenvalues-greater-than-one rule, or K > 1 - suggests that factors or components with an eignevalue at or above the 1.0 eigenvalue cut-off should be retained. This rule is often criticized by methodologists (e.g. Floyd & Widaman, 1995; Russell, 2002; Zwick & Velicer, 1986),

and, importantly, is the rule most often used in studies of VIA factor/component

structure (e.g. Park & Peterson, 2006; Peterson et al., 2008), for reasons explained in the

footnote.[8] This is problematic because it has often been the *only* method for determining

the number of components to retain, a practice that has also been criticized (Henson &

Roberts, 2006).

Other methods appear to fare better in factor/component retention simulation

studies (e.g. Zwick & Velicer, 1986). For example, the scree test plots the eigenvalues of

all factors and each successive factor will show a small or large "drop" in value as more

factors are extracted. Thus, an objective factor structure which includes four "real"

factors and multiple later factors composed of error variance would show a scree plot

with four high eigenvalues and then a significant drop between the fourth and fifth

factors, indicating the first four are the only factors to retain in a final model. In recent

reviews of factor analytic articles in personality journals, Russell (2002) found that 30%

of the articles reviewed used the scree test while Fabrigar et al. (1999) found a slightly

lower number (15%) using this method.

Two criteria that have sometimes been used to detect when factors have been

over-extracted are factor/component saturation and identification (Floyd & Widaman,

1995; Zwick & Velicer, 1986). Factors or components are saturated when loadings are

moderate (.60) or high (.80). Many low loadings result in a less replicable solution

(Floyd & Widaman, 1995; Zwick & Velicer, 1986). Factor or component identification

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[8] First, two factors with eigenvalues of .99 and 1.01 will be differentially retained
(Fabrigar et al., 1995), thus the rule imposes arbitrary constraints on which factors or
components to retain versus reject. Secondly, this criterion can result in either too many
factors or too few factors (Fabrigar et al., 1999) because it is affected by the number of
variables involved in an analysis (Reise et al., 2000; Russell, 2002).

describes factors or components with three or more salient loadings (usually scales, but variables can also mean items; Gorsuch, 1998; Floyd & Widaman, 1995; Zwick & Velicer, 1986). In particular in the case of items, more than three per dimension is the minimum needed to achieve an interpretable factor or component and more variables are necessary (e.g. 12) for a robust solution that is both interpretable and replicable (Fava & Velicer, 1992). Under-identified and under-saturated dimensions can negatively impact a final model when interacting with smaller ($N < 150$) sample sizes (Velicer & Fava, 1998). Conversely, simulation studies have shown that when at least three or four multi-item scales or at least 20 items per component have loadings above .60, the factor or component solution is both saturated and identified, and sample size issues are rarely problematic (Velicer & Fava, 1998). Including more variables per factor or component when designing a study counteracts the negative effects of small sample size (Fava & Velicer, 1992).

Finally, one method that has shown the ability to recover a factor or component structure particularly well in EFA studies is a technique called parallel analysis (Fabrigar et al., 1999; Floyd & Widaman, 1995; Reise et al., 2000). Parallel analysis involves the use of randomly-generated data, based on the number of subjects and the number of variables in a real dataset, which is subjected to factor or components analysis (Hayton et al., 2004; Steger, 2006). A correlation matrix or a covariance matrix (for PCA and FA, respectively) forms the basis for extracting dimensions. (In the present case, I will discuss PA in the context of PCA, the extraction technique on which PA was based; Hayton et al., 2004; Steger, 2006). In PCA, eigenvalues based on the correlation matrix are plotted against the eigenvalues resulting from observed data. In comparing the

results, any eigenvalues based on actual data which fall below the eigenvalues from the

randomly-generated data are assumed to represent error dimensions, and are eliminated

from a final model. Simulation studies have demonstrated that parallel analysis performs

better than other retention techniques in determining a correct solution for major

dimensions when population parameters are known in advance (Zwick & Velicer, 1986).

In the present study, factor saturation and identification will be used along with

the scree test and parallel analysis to determine the appropriate number of components to

retain in a final model. The K > 1 statistic will also be discussed because it is the most

frequently-used statistic in analyzing VIA structure.

Factor rotation. Because an infinite number of orientations of factor axes is

possible in any factor space (Fabrigar et al., 1999), another critical decision involves

deciding on the kind of rotation to use to fit the data to an interpretable structure.

Thurstone (1947; cited in Fabrigar et al., 1999) suggested that the simplest factor solution

was one wherein variables have high loadings on only one factor and low loadings on all

others. Thurstone further stated that data rotated to simple structure could provide a more

meaningful, robust, replicable factor solution. Indeed, almost all published factor

analyses involve some form of factor or component rotation (Henson & Roberts, 2006;

Russell, 2002). The majority of analyses published in psychology journals have used

orthogonal rotations, although a number of methodologists suggest that oblique

(correlated factors) rotations are preferable (Fabrigar et al., 1999; Floyd & Widaman,

1995; Henson & Roberts, 2006; Reise et al., 2000). On the other hand many prominent

factor models in personality (e.g. Ashton, Lee & Goldberg, 2004; Digman, 1997; McRae

& Costa, 1987) have been based on Varimax (orthogonal). Comparing a structural model

obtained in this study to previous research across sub-disciplines (e.g. personality and positive psychology), an important step in construct validation, would be facilitated by using an orthogonal rotation. In addition, orthogonal rotations produce more simple, and often more interpretable, solutions, and because different rotations produce models that are "*mathematically* equivalent" (Bernstein, Garbin & Teng, 1988, p. 159, emphasis in original) a simple structure solution is often preferred (Goldberg, 2006).

Hierarchical structure. One method for investigating hierarchical relationships advocated by Goldberg (2006) involves correlating component scores across various levels of extraction, mapping where components "split" to form separate, interpretable dimensions, and determining when trivial components or factors can be discarded. When only small amounts of variance are added by extracting new components, or when "no new interesting factors appear" (p. 353), the extraction process can be terminated (Goldberg, 2006). Hierarchical diagrams are useful in determining which components retain their structure through successive levels of extraction, which splinter into new variables, and how the structure "stabilizes" after successive extractions.

<div align="center">Results</div>

In this study, between two and six components were extracted using PCA and rotated using an orthogonal Varimax rotation. Scree plot analysis, parallel analysis, component saturation and component identification showed that retaining between three and four components provided the best fit for the data.

K > 1 statistic. This statistic represents the retention criterion that is most likely to over-estimate the number of components to retain (Fabrigar et al., 1999; Reise et al., 2000; Velicer & Fava, 1992; Zwick & Velicer, 1986). K > 1 showed that five

components should be retained, which represents an upper limit for component retention, a finding that supports Hypothesis 1. Eigenvalues for the first six components are provided in Table 4. This finding is consistent with the findings of Peterson et al. (2008) who specifically used PCA with Varimax rotation on VIA data from an adult sample and retained five components. Peterson and Park (2004) and Peterson and Seligman (2004) also reported a five dimensional structure, and these eigenvalues are very similar to those of Park and Peterson (2006) and Van Eeden et al. (2008).

It should be noted that looking only at the eigenvalues might indicate that one major dimension underlies the data. However, as noted by multiple authors, dimensional solutions for personality data should not be determined by mathematical or statistical criteria only, but also by the goals of the research (Barrick & Mount, 2005; Bernstein et al., 1988; Gorsuch, 2003; Rushton & Irwing, 2008). In this study, while retaining one large component may be statistically justifiable due to the large drop in eigenvalues after Component 1, a solution which contains only one virtue dimension would have very limited utility. Similarly, while CFA of large Big Five datasets has shown that a single, general factor of personality (GFP) "occupies the apex of the hierarchical structure of personality," it is also true that "[t]he existence of a higher-order GFP does not invalidate the clinical, vocational, or theoretical importance of lower-order factors" (Rushton & Irwing, 2008, p. 683). The practical utility of a multi-dimensional virtue model versus a one-dimensional model led to the extraction, rotation and interpretation of more than one component. These results are described next.

Component saturation and identification. In a three-component solution, 10, nine and five strengths load on each component, respectively. In a four-component solution,

the fourth component loads only three strengths, which Velicer and Fava (1998) have called a "dangerous goal" for retaining a component. Using Velicer and Fava's (1998) criteria, between three and four - but preferably three - components should be retained. Indeed in a set of simulation studies, Velicer and Fava (1998) showed that poor factor pattern replicability results when only three (versus four or five) variables load on a component. When components load 0, 1 or 2 variables, the model should be reduced. In the present study, retaining three components provides an acceptable variable to component ratio (Velicer & Fava, 1998), and may represent an interpretable, replicable solution.

In terms of component saturation, values varied considerably across strengths. For example, in the three-component solution, the highest loadings for individual strengths ranged from low (.35 for religiousness) to high (.82 for creativity) in magnitude (Velicer & Fava, 1998). Also, cross-loading was evident. For example, religiousness loaded onto Components 2 and 3 almost equally (.35 and .34, respectively). In the three-component solution, more than three strengths had loadings of .60 or above on each component. When four components are extracted, the fourth component shows three variables with loadings at or above .60 and represents both a saturated and identified component. The caveats above, however, suggest that pattern robustness will be more likely with a three- versus four-dimensional solution.

Scree plot analysis and parallel analysis. Figure 1 shows the scree plot and indicates a very slight "elbow" after the fourth component is extracted. When five components were extracted, the variance accounted for by each component (18%, 16%, 13%, 12% and 7%, respectively) shows that a fifth component adds a relatively small

amount of variance compared to that provided by the first four components (Gorsuch, 1983). Four components account for 64% of the variance in the data.

The results of the parallel analysis can be seen in Figure 1. This figure shows that three components represent non-random variance in the data, and the three components together account for 58% of the variance in the data. Fava and Velicer's (1998) criteria regarding component identification and saturation also indicate that extracting more than three components is unwarranted.

Hierarchical structure

The Goldberg (2006) technique reveals how the data "split" into different dimensions as components are extracted (Figure 2). In this figure, labels for the components are tentative, as they were for the original VIA classification (Peterson & Seligman, 2003, 2004) and are based on the content of the scales appearing on each component.[9] This diagram shows that three components - Intellectual Strengths, Social Strengths and Temperance - replicate quite consistently across multiple levels of extraction. Extracting more than three components, on the other hand, produces components representing trivial aspects of virtue (Goldberg, 2006), a finding that can be better understood by investigating the size and kind of kind of the factor loadings on each component. The only saturated and identified components that also replicate across *all* six levels of extraction are those found at Level III. Thus, this technique suggests the stability of a three-component model.

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[9] It is important to recall Gorsuch's (1974) warning that "[f]actor interpretations can only be considered hypotheses for another study" (p. 188) and that while the labels given to the components in Study 1 reflect similar labels in past VIA research, their interpretation needs to be confirmed by further research.

Hypothesis 2 regarding Stability- and Plasticity- like aspects of a two-dimensional model was confirmed. The content of the two major dimensions clearly differed. The scales representing curiosity, creativity, social intelligence, awe and zest all had significant loadings on Intellectual Strengths and low loadings on Social Strengths. The opposite pattern was found for honesty, kindness, fairness, prudence and forgiveness, which loaded strongly on Social Strengths and low on Intellectual Strengths. The first component, thus, represents a set of self-focused strengths and the second a set of strengths that would be important in maintaining harmony in a community setting.

Discussion

The purpose of the scale PCA was to use multiple criteria to determine the best-fitting model for an EFA of VIA-IS data in an adult sample. Of the three decision rules (component identification and saturation, scree plot analysis and parallel analysis), the combined component identification and saturation results as well as the parallel analysis indicated that three components may represent a robust component pattern, at least when the scales of the VIA-IS are used as variables. Retaining four components also could be justified by analyzing the scree plot, and by using the minimum requirements for saturation and identification. When six components were extracted in this study, the fifth and sixth components loaded only one strength scale each (religiousness and mercy, respectively), which results in non-interpretability of those components (Velicer & Fava, 1998). Empirical studies (Dahlsgaard, 2005; Park & Peterson, 2006; Peterson et al., 2008) and the summaries of empirical works in progress (e.g. Peterson & Park, 2004; Park & Peterson, 2005) also have indicated six components or factors provide an

improper fit for VIA-IS data. Thus, no evidence exists for the retention of six virtue dimensions, whether in the present study or in other reports of VIA-IS structure.

Parallel analysis and component saturation and identification showed that a three-component model might be particularly robust. In addition, the three-component model is both interpretable and can be linked, at least theoretically, to major personality factors. For Component 1, the highest-loading strengths are creativity, perspective (good judgment/critical thinking), and social intelligence, suggesting a dimension related to openness. For Component 2, kindness, teamwork and gratitude loaded most highly and suggest a component related to social attentiveness and agreeableness. Component 3 loaded most highly the strengths of prudence, self-regulation and perseverance, suggesting this dimension involves restraint and thoughtfulness. Although all factor/component labels must be tentative and suggestive (Matthews & Stanton, 1994), I provisionally labeled these Intellectual Strengths, Social Strengths and Temperance Strengths. Note that no components emerged which suggested different content or meaning than those already found in previous studies. For example, in both the three- and four- component solutions, love of learning, creativity and curiosity load one component; teamwork, love and kindness load another; and self-regulation, prudence and perseverance load another. Evidence for one or more of these sets of strengths have been found across multiple structural analyses of the VIA-IS, both with adults (e.g. Peterson & Seligman, 2004; Peterson et al., 2008) and with youth (e.g. Dahlsgaard, 2005; Park & Peterson, 2006). Thus interpreting and labeling Intellectual, Social and Temperance dimensions seems warranted, although replication of these results in a new sample and

demonstrating reasonable relationships with behavioral criteria are needed (Comrey et al., 1988; Kline, 1993).

Interpreting a fourth Transcendence component, however, requires caution. First, its retention is not suggested from parallel analysis, which is a robust and recommended test of component retention (Reise et al., 2000; Zwick & Velicer, 1986). Its inclusion does meet the "bare minimum" requirement for interpretability according to Velicer and Fava (1998), but it likely represents a weak component for other reasons. For example, in Dahlsgaard's four-component model, the Transcendence dimension included the strengths zest, hope, leadership, citizenship, teamwork and religiousness; in Peterson and Park (2004) the Theological Strengths factor included the strengths zest, hope, love, religiousness and gratitude. In Peterson et al. (2008), a five-component solution yielded a Transcendence dimension which included gratitude, hope, zest and religiousness. Thus, it appears that religiousness, hope and zest often are found on a common factor/component in other VIA studies but not in the present study. Thus the findings presented here are not in accord with previous results and may be due to sample-specific characteristics.

It is clear, however, that the moderately strong (.59) loading of religiousness on a fourth component indicates that it may "belong" to a fourth dimension, in particular because it does not have a salient loading on any component when only three components are extracted. Goldberg (2006) has recommended that factors or components be extracted until no variable has its highest loading on that factor or component. In this case, a component containing a moderately high loading for religiousness should be retained. In addition, while extracting three components may provide a replicable solution according to the criteria of Velicer and Fava (1998), extracting too few

components is as problematic, if not more problematic, than extracting too many (Comrey, 1988; Gorsuch, 1997, 2003; Reise et al., 2000). Under-extraction produces components or factors that conflate structurally distinct dimensions and obscure real differences between underlying dimensions (Comrey, 1988). In addition, the scree plot analysis showed a small "elbow" in the plot between Components IV and V, which may suggest that retaining a fourth component is justified. And a significant drop in variance accounted for does not happen until after four components are extracted.

Religiousness has sometimes been subsumed under normal dimensions of personality (e.g. MPQ Traditionalism; Tellegen & Waller, 2008) or has been considered a sixth dimension of personality, after the Big Five traits are extracted (see Saucier & Skrzypinska, 2006, for a review). A problem with both approaches is that religiousness and spirituality (which are confounded in the VIA scale; see below) have been found to be highly independent dimensions when analyzed with measures of normal personality, attitudes, values and beliefs (Saucier & Skrzypinska, 2006). In summary, it is unclear whether VIA religiousness should form the core of a separate virtue dimension, in particular because: 1) it may be substantively related to other strengths such as self-regulation and 2) its items reflect both religiousness and spirituality in content, potentially obscuring the relationship between it and other VIA strengths. With this in mind, results from the three-component and four-component models will be discussed in relationship to relevant personality and virtues research.

While three or four components may represent the most interpretable and replicable solution, I nevertheless named other components - for example, I labeled Component 4 Agency. Although other labels may have fit, Agency seemed appropriate

because the highest loading was for the strength of perseverance; the other three highest-loading strengths were self-regulation, bravery and zest. Together, these indicated an agentic dimension that was different from Temperance which loaded honesty, fairness, forgiveness, prudence and modesty, clearly a dimension that contains strengths that are more reserved than is indicated by a component loading bravery, perseverance and zest. In the six-component solution, I labeled Component 6 Mercy even though it loaded only one strength, forgiveness. Typically, a component including only one variable would not be interpreted and this label simply reflects the content of the single variable it includes.

In terms of a four-component solution for these data, some precedence is evident in the literature. Cawley et al.'s (2000) virtue model, discussed in the Introduction, included four virtue components extracted from an item analysis of virtue "sentence clusters." The content of those factors appear to have modest conceptual relationships to the four dimensions just described. The first of Cawley et al.'s factors loaded strengths such as understanding and compassion and may be similar to the present Social Strengths (e.g. love and kindness). Cawley et al.'s second factor, Order, loaded such strengths as self-control and carefulness, which may be like the Temperance Strengths component (e.g. self-regulation and prudence). Finally, Cawley et al.'s third factor, Resourcefulness, loaded strengths like intelligence and independence and thus may be similar to the present Intellectual Strengths component. However, while the items wise, creative and knowledgeable were included in the item pool, these did not load highly on this factor;

thus Cawley's factor may represent agency or purposefulness more than intellect.[10]

Cawley et al.'s fourth factor, Serenity, contained the strengths of forgiveness and meekness. In the present model, a fourth component loads the strengths forgiveness and modesty. However, in the Cawley et al. study, while the strengths faith, devoutness and religious were included in the item pool, none of these loaded the fourth factor. The Transcendence component reported here, however, has the strongest loading for religiousness. Thus, interpreting Cawley et al.'s fourth factor and the fourth component reported here as similar is probably not warranted. In summary, while it is not possible to compare the two models directly, the results of Cawley et al. (2000) lends some support for a four-virtue solution in the present data.

Walker and Hennig (2004) showed that basic virtue dimensions may include positive communion, agency and honesty/dependability because these themes were shared across different moral prototypes. The authors suggested these may provide a "core" foundation for morality. Their results are interesting in light of the present results, as the agency, positive communion and honesty/dependability themes appear to relate to the content of the Intellectual Strengths, Social Strengths and Temperance components, respectively. Although that hypothesis cannot be tested here, it is nevertheless notable that their three core moral dimensions across protoypes show similarity to the major dimensions of virtue using an individual differences approach.

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[10] In a two-dimensional solution of Big Five data, Digman (1997) showed that Intellect/Openness and Extroversion combine into a single dimension. If virtue is structured like personality, Cawley's four dimensions might create a conflated dimension that loads items related to both agency and intellect.

A personality model advanced by Cloninger (Cloninger, Srvakic & Przybeck, 1993), which includes a three-factor model of character, also deserves mention in relationship to the present results. Richter, Brandstrom and Przybeck (1999) found an empirically-derived three-factor structure for the character sub-portion of the Temperament and Character Inventory (TCI), which measures such traits as impulse control, responsibility and resourcefulness (Factor 1, Self-Directedness), social acceptance and helpfulness (Factor 2, Cooperativeness) and self-forgetfulness and spiritual acceptance (Factor 3, Self-Transcendence). The main difference between the TCI model and the three-dimensional model found here is the lack of an Intellect factor for the TCI; instead, Self-Directedness seems to measure traits similar to the component here labeled Temperance. In a four-component solution for these data, the three dimensions of the TCI may overlap somewhat in meaning with three of the four VIA dimensions: Temperance could be related to Self-Directedness; Cooperativeness may be related to Social Strengths; and Self-Transcendence suggests a relationship to Transcendence. However, without data to support this claim, the possible overlap in the two models is speculative.

In relationship to normal personality structure, one particularly influential model that has identified three basic personality dimensions is Tellegen's Multidimensional Personality Questionnaire (MPQ) model (Tellegen, 1985; Tellegen & Waller, 2008). This model consists of Negative Emotionality (NEM), Positive Emotionality (PEM) and Constraint (CON). PEM consist of traits such as optimism, leadership, ambition and sociability, while the three NEM scales are comprised of characteristics such as worry-proneness, feelings of being betrayed and exploited and vengefulness. The three CON

scales entail being cautious and sensible, harm-avoidant, and religious and moralistic. While the high end of NEM is not represented in a model of virtue, its low end - being resilient and emotionally stable - also is not readily apparent in the conceptual VIA model or in VIA-IS item content. PEM and CON on the other hand do have VIA correlates. An analysis linking the 24 VIA-IS scales to the 11 MPQ scales show sensible inter-scale correlations (e.g. MPQ social potency is correlated at .41 with VIA social intelligence and MPQ well-being correlates at .46 with VIA zest and .44 with both hope and curiosity) as reported in Steger et al. (2007). As can be seen in Table 6, four VIA-IS virtues are not identical to, but are sensibly related to, normal personality.

Other VIA results suggest that normal personality is sensibly related to virtue, at least as measured in youth. Park and Peterson (2006), using the VIA-Youth as a measure of virtue and a brief Big Five measure, found that the VIA strengths were sensibly correlated with each of the Big Five factors. For example, Big Five Conscientiousness correlated most positively with perseverance and prudence; Extraversion with humor and leadership; Openness with creativity and love of learning; and Neuroticism correlated most negatively with hope and zest. In addition, Park and Peterson (2006) investigated the incremental predictive validity of the strengths scales on the criterion variable of life satisfaction over and above that provided by the Big Five dimensions. They found that four of the strengths (hope, love, gratitude and zest) were still strongly associated with life satisfaction after variation from the Big Five index was removed. Their analysis, however, focused only on the predictive validity of the strengths, not the virtue dimensions. Importantly, no previous studies have looked specifically at the incremental predictive validity of broadband virtue dimensions over normal personality dimensions

on specific behaviors. I focus on the incremental validity of broadband virtues in Study 2.

Personality hierarchy

In terms of the personality hierarchy, these results showed that a Stability and a Plasticity dimension could be extracted and would "split" meaningfully into other constructs down through the construct hierarchy (Figure 2). I labeled the first two dimensions extracted Intellectual Strengths and Interpersonal Strengths. The Intellectual Strengths dimension retains its structure through multiple levels of extraction, while the dimension Interpersonal Strengths splits at each successive level into new components. This kind of hierarchy is called an "unbalanced" one because some dimensions appear to be comprised of many smaller, interpretable components while at least one dimension (Intellectual Strengths) has a stable structure through levels of extraction (Markon et al., 2005). In other words, different dimensions split (or do not split) at different places along the hierarchy. Intellectual Strengths retains its structure through multiple extractions, while Social Strengths splits into two dimensions after the third extraction and Temperance further splits into two dimensions after the fifth extraction. This unbalanced hierarchy is found to underlie normal and abnormal personality structure (Markon et al., 2005). MOst importantly, this finding suggests that not every dimension is at the "same level of abstraction" (Markon et al., 2005, p. 152) and this has implications for the replicability of some factors. Based on this analysis, it is expected that future studies will show the presence of an Intellectual Strengths dimension at all levels of the extraction hierarchy - i.e. whether two or five factors are extracted, Intellectual Strengths will appear. No analysis of the higher-order structure of VIA data

has been conducted. Thus the results reported are novel. A replication in Study 2

would lend evidence that the hierarchy shown in Figure 2 is shows "structural validity"

(Steger, 2006).

Chapter 4. Study 2

Study 1 showed that when structurally analyzing the VIA-IS strengths scales a

limited number of dimensions accounted for the covariation among scales. The idea,

presented by Peterson and Seligman (2004), that as many as six dimensions are needed to

describe human virtue was not supported by these data. That represented a novel result in

the VIA-related literature.

However, a structural analysis of the scales in the VIA-IS is limited in itself for

three reasons. First, the VIA-IS does not include some strengths that have figured

prominently in literatures on virtue and morality - for example, empathy. Second, some

strengths are measured by items that do not reflect central aspects of constructs they are

designed to measure - for example, self-regulation (described more below). Third, a

structural analysis of VIA-IS scales obviates the discovery of new constructs that may

emerge if, instead, items were the variables of analysis (Tellegen, 1985; Tellegen &

Waller, 2008). Study 2 was designed to address these short-comings through the use of

better items to measure certain constructs, the inclusion of new constructs and a structural

analysis based on items rather than scales.

Revising existing VIA constructs

Items measuring three VIA-IS constructs were in need of revision: self-regulation,

religiousness and leadership. These are each discussed in turn next.

While self-regulation appears to be a central concept in virtuous personality, VIA-IS self-regulation items lack comprehensiveness. Of 10 items, four relate to diet or exercise, which are considered important but peripheral issues in the study of self-control (Peterson & Seligman, 2004; Tagney et al., 2004). Items which measure self-regulation should more clearly represent the broad and social nature of the construct, as discussed by other researchers. Baumeister and Exline (1999) argued that "many socially problematic behaviors involve self-control failures, whereas the majority of positive virtues are based on high and effective self-control" (p. 1171) and refer to self-regulation as a master virtue. Thus, the construct's core meaning lies in putting group needs ahead of personal needs, breaking bad habits and interrupting impulsive behavior (Baumeister & Exline, 1999; Tagney et al., 2004), aspects of the strength that are only somewhat reflected in the VIA-IS items.

The VIA-IS religiousness (formerly spirituality scale; Peterson & Seligman, 2004) scale is problematic due to its conflation of three potentially separable constructs: spirituality, religiosity and meaning in life. What is the evidence that these constructs are distinct? First, spirituality and religiosity are increasingly seen as differentiated by both laypeople and psychologists of religion (Hill & Pargament, 2003). People may identify as being "spiritual, but not religious", or conversely, "religious, but not spiritual," a finding in adult samples (Albertsen, O'Connor and Berry, 2006), and adolescent samples (Good & Willoughby, 2006). In addition, Dillon, Wink and Fay (2003) found that the correlation between a religious and a spiritual orientation was between .26 and .30. Multiple recent reports (Good & Willoughby, 2006; Saucier & Skrzypinska, 2006; Wink, Ciciolla, Dillon & Tracy, 2007) have found that spirituality and religiousness involve

distinct personality profiles, causing Saucier and Skrzypinska (2006) to state "scientists who treat religious/spiritual tendencies as a unitary phenomenon do so in error" (p. 1286). However, items on the VIA-IS religiousness scale measure spirituality ("I am a spiritual person") and religiosity ("I practice my religion") on the same scale, in addition to meaning in life (Steger, Frazier, Oishi & Kaler, 2006). Meaning can be divorced from a belief in God, while both religiousness and spirituality have as their central concern God or a higher power (Hill & Pargament, 2003). It is essential that these three variables be represented by items that tap unique aspects of each domain.

Leadership as described in Peterson and Seligman (2004) involves "the motivation and capacity to seek out, attain and successfully carry out leader roles in social systems" and involves traits such as "authority, dominance, charisma, ascendancy and social assertiveness" (p. 414), items measuring leadership on the VIA-IS include items like "As a group leader I try to make people feel good" and "To be a good leader I treat people fairly."[11] Other items are similar. As mentioned above, it is perhaps not surprising that leadership and kindness tend to fall on the same dimension as kindness and/or love in most structural analyses (e.g. Peterson & Park, 2004; Peterson & Seligman, 2004; Peterson et al., 2008). However, leadership in the personality literature has been associated with being forceful and persuasive rather than warm and nurturing (Church & Burke, 1994; Tellegen & Waller, 2008), thus a more comprehensive assessment of the agentic, dominant facets of leadership is needed.

Inclusion of additional strengths constructs

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[11] VIA-IS items taken directly from the questionnaire and which are not published elsewhere (e.g. in the *Handbook*; Peterson & Seligman, 2004) have been reworded due to copyright issues.

Constructs that deserved inclusion in a comprehensive virtues assessment were empathy, respect and responsibility. These are discussed next.

One of the most important variables not assessed on the VIA-IS that figures prominently in the moral development and developmental psychopathology literature is empathy. As mentioned in the Introduction, empathy is a multidimensional construct (Davis, 1983) that can be defined as both the cognitive ability to take another's perspective (Chandler, 1973; Hogan, 1973) and the ability to accurately discern and simultaneously experience others' emotional reactions (Bryant, 1982). (While other aspects of empathy are important [Davis, 1983], they are not included in the present study.) Empathy has been related to positive social behaviors and the lack of empathy is implicated in antisocial behavior (Chandler, 1973; Webster-Stratton & Reid, 2003). Thus, it is essential to include empathy in any assessment of character strengths and virtues. While the VIA-IS measures both kindness and fairness, strengths that may be related to empathy (Peterson & Seligman, 2004), neither of the constructs assesses empathy directly.

In addition, respect and responsibility are two of the most frequently cited character strengths in the character education literature (e.g. Lickona, 1991; Murphy, 2002). Indeed, the *Center for the 4th and 5th R's*, a nationally prominent character education organization, promotes respect and responsibility as the most basic part of a comprehensive character education program (*Center for the 4th and 5th R's*, n.d.). An important minority of schools applying for federally-funded character education grants name these two strengths as primary outcomes of their character education initiatives (Murphy, 2002). Schaeffer (2003) lists respect and responsibility first among a list of

core character strengths to be encouraged in school settings. Neither of these strengths

is represented in the VIA classification. Clearly, the omission of these two "core"

character strengths is difficult to justify when positive psychologists (e.g. Peterson &

Park, 2005; Peterson & Seligman, 2004; Steen et al., 2003) have stated that the strengths

in the VIA model may be relevant for guiding and assessing character education

programs.

In summary, items designed to measure the constructs just discussed were either

included in order to more comprehensively measure virtues, or items were revised in

order to more clearly reflect the meaning of each strength.

Establishing relationships between the virtues found in Study 2 with behaviors

and existing psychological constructs is essential to determining the usefulness and

interpretability of any virtues model. Investigating these relationships and establishing

the criterion and construct validity of virtue dimensions is needed to create a

"nomological network" (p. 290) within which the virtues constructs fit (Cronbach &

Meehl, 1955). Floyd and Widaman (1995) stated that the relationship between the

factors and external criteria is "the ultimate criterion for the usefulness of a factor

solution" (p. 296). Comrey (1988) noted that "there is never too much validity

information" and that essential to construct explication is the "network of evidence that

lends support to the idea that a scale is measuring the desired construct" (p. 761).

Criterion and construct validity were gathered in the following ways.

Construct validity evidence

  Normal personality. Two studies have been published on the relationship

between the VIA strengths and normal personality, as represented by the Five Factor

model (Park & Peterson, 2006) and Tellegen's MPQ model (Steger et al., 2007). However, both correlated only the VIA strengths - not the higher-order virtues - with major personality factors, thus neither addressed the construct validity of a specific structural model. In terms of new research, then, discovering the pattern of convergant and discriminant correlations between virtue dimensions and normal personality dimensions is a worthwhile goal.

Criterion validity evidence

  Academic experiences and altruism. Two behavioral variables were used in Study 2 in an attempt to provide external validity evidence for the virtue factors. Benninga et al. (2006) suggested that there are two classes of virtue that are important in describing good character and important specifically for character education: personal, individual virtues and interpersonal virtues. Thus, two non-test variables - positive academic experiences (PAE) and altruism - were included in Study 2. Why measure academic and prosocial variables?

  First, studying the relationship between academic achievement and virtue factors would provide information relevant to character educators (Steen, Kachorek & Peterson, 2003). In addition, Park and Peterson (2006) related academic achievement (measured as end-of-year GPA) to the 24 character strengths of the VIA-IS-Youth and found that the character strength of perseverance predicted achievement. Finally, many character education programs, which seek primarily to influence student acquisition of virtues, also use measures like GPA and student engagement as primary outcomes (Institute of Education Sciences/U. S. Department of Education, 2008).

Second, altruism is a variable that has been extensively studied in the moral development literature (Krueger et al., 2001). Haidt (2007) stated that altruism is "one of two aspects of interpersonal treatment" that is found in "[n]early every research program in moral psychology" (p. 1001). Thus, relating virtues to this established variable of interest is important. In addition, character educators focus on prosociality as an important outcome of character education programs (Benninga et al., 2006; Schaeffer, 2003).

Demographic variables. Gender (Park & Peterson, 2006; Peterson & Seligman, 2004) has been found to relate to character strengths dimensions, while political orientation appears to also have an affect on strengths reports (Peterson & Seligman, 2004) as well as preferences for "moral intuitions" (Haidt, 2007). Cultural affiliation has also been hypothesized to affect preference for attributions for moral events (Shweder et al., 1997) and for moral intuitions (Haidt, 2008). Thus, these variables were considered of interest.

Study 2 hypotheses, based on theory and research in personality, moral development, positive psychology and character education, are listed next.

Hypotheses

1. At the top of a construct hierarchy, two components will show similarity to the Stability and Plasticity dimensions described by DeYoung (2006) or Alpha and Beta described by Digman (1997).

2. Based on statistical criteria and interpretability, a three-, four- or five-component solution will produce the best fit for the data.

If components representing Social Strengths, Intellectual Strengths, Temperance, and Transcendence emerge in this analysis, as expected, the following hypotheses will be tested:

3. Social Strengths and Temperance will be the best predictors of altruism (Eisenberg, 2000; Staub, 2001). In a model in which the virtue components and the Big Five factors are included, variance from virtue will produce significantly better prediction of altruism.

4. A Temperance dimension will be the best predictor of PAE (deRaad & Schouwenburg, 1996; Park & Peterson, 2006). In a model in which the virtue components and the Big Five factors are included, variance from virtue will produce significantly better prediction of PAE.

In addition to the above hypotheses, the following exploratory hypotheses, secondary to the main aims of this study, will be tested.

5. Women will score higher on a Social Strengths component (Linley et al., 2007; Park & Peterson, 2006; Peterson & Seligman, 2004)

6. Differences in political orientation will result in differences on one or more virtue components (Haidt, 2008; Jost, 2006; Peterson & Seligman, 2004).

7. Based on a study of the higher-order dimensions of factor analyzed normal and abnormal personality scales, I hypothesize that when the character strengths included are subjected to a joint PCA with the Big Five factors, a reasonable pattern of inter-relationships between virtues and normal personality will emerge.

Method

Participants

Two-hundred ninety-one participants, all students at the University of Minnesota, a large, public research university, were initially recruited for this study. One inclusion criterion - that participants were between 18-60 years old - was used. Some participants' data were eventually excluded for the following reasons: one participant did not consent to participate; two participants did not have any usable data because after consenting to participate, they did not answer any survey questions; four participants answered less than 50 percent of the survey questions and their data were not used (Widaman, 2006); seven people were excluded from the analysis because they were under 18. Thus, 276 participants were retained in the final analysis. Of this group, ages ranged from 18 to 47; 87% were between the ages of 18-21 and the mean age was 19. The majority of the participants were female (65%). Sixty-four percent of the participants were Caucasian; 10% were Asian-American; 2.5% were African-American; 1.4% were Latino/a; 1% was Native American; .4% was Pacific Islander; and 19% reported being of a multi-ethnic background or reported "other". Twenty-five percent of respondents answered the question, "Do you identify yourself as Western or non-Western in terms of your cultural identity?" Approximately 18% of this group identified as strongly non-Western and 18% identified as strongly Western. In terms of political views, 11% stated they were strongly liberal, 28% liberal, 17% slightly liberal, 17% moderate, 9% slightly conservative, 12% conservative and 4% very conservative.

Materials

Revised virtues measure. Public domain measures of personality constructs, both entire scales and individual items, are difficult to find and use due to copyright issues; the VIA-IS items are not an exception. Goldberg et al. (2006) state that this has been a

hindrance to personality research. For this and other reasons, the *International Personality Item Pool* (IPIP) was created as a repository for items and scales that measure popular constructs and can be used without permission for psychological research (Goldberg et al., 2006). IPIP items, and other items available in the public domain, were used in the present study. The IPIP creators developed versions of many established personality scales and in this development attempted both to maximize scale reliability and to establish concurrent validity (e.g. by comparing IPIP items and scales to the original measures; Goldberg et al., 2006; see http://ipip.ori.org/). While, IPIP items and scales should not be considered equivalent to their counterparts on copyrighted inventories (Goldberg et al., 2006), this repository is nevertheless extremely useful when the measurement of possibly new constructs is the goal of research for which items and scales are needed.

I reduced the total number of items included on a revised assessment in the interest of reducing participant fatigue and unreliable responding. This may be a problem with the original 240-item VIA-IS for adults and the somewhat shorter version for youth (Park & Peterson, 2005; Peterson & Seligman, 2004), and would be even more problematic here due to an increase in the number of constructs measured in Study 2. (Appendix A shows the list of items used to measure each construct.) Items that did not meet certain criteria were eliminated in the following ways.

First, reliability analyses were conducted for each VIA scale based on results from Study 1. For each VIA-IS scale, the five items that increased, rather than decreased, the scale alpha value were retained. In a few cases, the fifth and sixth items on a scale had the same values, in which case the corrected item-total correlation was used to

choose the fifth item. Second, IPIP items were evaluated for content validity.

Goldberg (2006) suggested that assessment-creators the question, "Does this item seem to

measure what all the other items are measuring in terms of construct meaning?" For

example, regarding the self-regulation scale, I decided that two diet-specific items,

although meeting the requirements of the reliability analysis, would be deleted and items

covering a wider range of self-regulation behaviors (e.g. "I rarely over-indulge") would

be substituted because their meaning was more general and better represented overall

construct meaning. In addition, some items meeting the Study 1 reliability check did not

meet an IPIP-based reliability analysis. Those items were not included on the Study

virtues measure. Third, each item was evaluated for simplicity in language (Clark &

Watson, 1995; Comrey, 1988). I omitted three items at this stage. Finally, items that

showed robust loading patterns - i.e. loading one component above .40 and all others at

.25 or lower based on the item retention procedure used by Watson, Clark & Tellegen

(1988) - in a five-component PCA solution were considered to be good "marker items"

(DeYoung et al., 2007; Saucier, 1994; Watson et al., 1988) and were retained in the VIA-

IS pool. Finally, I chose a roughly equivalent IPIP item to represent each original item

retained using the steps just mentioned.

The final revised measure included 157 items, primarily from the IPIP-VIA, and

was designed to measure 32 distinct constructs. I created some items based on the

description of constructs found in Peterson and Seligman (2004) or from the personality,

moral development and/or character education literatures. Others - e.g. those measuring

empathy - were taken from an existing measure. A full list of items appears in Appendix

A. Most constructs were measured using at least five items, although using the criteria above, some scales included as few as three or as many as eight items.

Items that were in need of revision or additional construct explication, as discussed above, are described in more detail next.

Self-regulation. Of the five items chosen based on the reliability analysis, two were related exclusively to diet and exercise and were eliminated. Five additional items related to self-control were added.

Spirituality, religiosity and meaning. Two VIA-IPIP items were chosen based both on the reliability analysis and item robustness as described above. In addition, items related more clearly to religiousness versus spirituality were written and included. Meaning items were taken from the Meaning in Life Scale, a 10-item measure assessing two aspects of meaning, Search and Presence (Steger et al., 2007). Only items measuring Presence were used in this study, because items measuring Search have been related to measures of anxiety and depression (Steger et al., 2006) and thus do not measure a character strength as previously defined.

Leadership. Two IPIP-VIA items were selected. In addition, three IPIP items were added which connote the agentic qualities of leadership missing from the original scale. Author-created items were based on the description of leadership in Peterson and Seligman (2004).

Empathy. The Interpersonal Reactivity Index (Davis, 1983) is a 28-item self-report measure which taps four aspects of empathy as suggested by structural analysis and behavioral correlates. Only two aspects of empathy - Emotional Concern and Perspective-Taking - were used here because they represent the central meaning of the

construct (Davis, 1983). Two items from the EC scale and three items from the PT

scale were included.

Respect and responsibility. All items measuring respect were author-created. To

measure responsibility, three IPIP items were selected and two items were created by the

author.

Achievement and dependability. Finally, two IPIP items measuring achievement

were selected and three were based on the description of achievement in Hough (1992).

Five items measuring dependability also were based on the description of the construct in

Hough (1992). I chose to include these items to clarify the meaning of the lower-level

virtues of Agency and Temperance from Study 1, as mentioned in the Study 1

Discussion.

Normal personality: Saucier's Mini-Markers. Due to the need for a brief measure

of the Big Five personality factors, Saucier (1994) created a self-report measure

consisting of 40 adjectival terms that were chosen to reliably recover the Big Five

personality traits of Extraversion, Agreeableness, Neuroticism, Conscientiousness and

Openness to Experience. The Mini-Markers scale consists of eight trait terms each of

which tap one Big Five dimension, and have low loadings on all other factors, as assessed

across 12 data sets. The adjectives were culled from a much larger set of adjectives used

by Goldberg (1992) and only the adjectives that showed the clearest or "factor pure" (p.

509) convergent-discriminant correlations were included. For example, the items *bold,*

talkative, energetic, extraverted, shy, quiet, bashful and *withdrawn* tap both poles of the

broad domain of Extraversion (loadings of between .44 and .79) but have shown low (-

.15 to .24) loadings on the other Big Five traits in Saucier's 1994) report. This set of

40 adjectives was rated on a scale from 1 (*very inaccurate*) to 7 (*very accurate*).

 Altruism: Rushton et al.'s (1981) Self-Report Altruism Scale. The Self-Report

Altruism Scale (SRAS) is a 20-item frequency-based measure of typically-encountered

situations eliciting altruistic behaviors. Original responses included *never, once, more

than once, often* and *very often*. In the present study those responses were changed to

never, sometimes, often and *very often* because the response *more than once* could

subsume responses such as *often* and *very often*. Responses were rated on a scale from 1

(*never*) to 4 (*often*). Representative items include "I have offered my seat on a bus or

train to a stranger who was standing" and "I have donated goods or clothes to a charity."

Coefficient alpha for the scale in a pilot sample of 300 college students was .88 for the

20-item version of the scale, an alpha slightly higher than the mean alpha of .83 reported

across five samples reported in Rushton et al. Although the average item-total correlation

of .88 was high, only 10 items were retained to create a more parsimonious scale to

reduce overall participant response burden (Gosling, Rentfrew & Swann, 2003; Peterson

& Park, 2004; Saucier, 1994).

 Academic success: GPA and positive academic experiences. Academic

achievement was measured by a single variable: college grade point average (GPA).

Other items were designed to measure non-academic aspects of the school experience and

included the following items: *I have a positive attitude toward college*; *I am positively

engaged in my academic work*; *I feel connected to my college community*. These were

measured on a five-point Likert-type scale.

Demographic questions. Participants provided information on age, gender, and political affiliation (e.g. very liberal to very conservative).

Procedure

Participants were recruited from a large pool of students receiving extra credit for research participation in the Department of Psychology at the University of Minnesota. All potential participants were invited to take part in an online-administered study for one point of extra credit. An email was sent to potential participants with a link to a URL hosted by the University of Minnesota *Social Science Research Center*. The consent form and the research questionnaire, consisting of the revised virtues measure, Rushton et al.'s (1981) Self-Report Altruism Scale, GPA and academic experiences questions, and a set of demographic items, were available by going to the URL. In addition, a website hosted by the Department of Psychology listed the current project as available to all students taking extra credit-giving courses, and I emailed the questionnaire URL to participants who contacted me. Total time for completion of all measures was approximately 20-25 minutes. Institutional Review Board approval was obtained before data were collected.

Data analytic strategy

As in Study 1, an exploratory PCA was conducted and factors were rotated to simple structure using Varimax rotation. While multiple criteria again were used to determine the number of factors to retain - scree analysis, parallel analysis, component saturation and component identification[12] - mathematical and statistical rules for retaining components or factors can be unclear or problematic for item-based dimensional analysis

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[12] K > 1 was investigated but it was assumed that it would vastly over-estimate the number of components to retain (Gorsuch, 1997; Matthews & Stanton, 1994).

(Bernstein et al., 1988). Gorsuch (1983) and Bernstein et al. (1988) have cautioned

that research context and purpose, versus purely technical criteria, may be better

determinants of a well-fitting model. Thus, interpretability was also used to determine

the number of components to retain.

<div align="center">Results</div>

Virtues structure

  Hypothesis 1. Hypothesis 1 stated that a two-component solution would resemble

the two higher-order dimension of the Big Five found in previous studies, wherein

Agreeableness, Conscientiousness and (low) Neuroticism form one dimension and

Extraversion and Openness form the other. As in Study 1, a hierarchical structure

diagram based on Goldberg's (2006) technique clarified how each component at different

extraction levels correlates with others (see Figure 4).

  Two dimensions could not be clearly interpreted as representing an exploratory,

adventurous dimension (Plasticity) and a stable, community-oriented dimension

(Stability) as described by DeYoung (2006). Component 1 included items measuring

such constructs as learning, representing openness to new ideas, which might be expected

to load on a Plasticity-like dimension. However it also loaded responsibility and

dependability, which would seem to represent a Stability-like dimension. Component 2

was comprised of items measuring such constructs as fairness, forgiveness, gratitude and

religiousness. While Component 2 might be thought of as a community-oriented,

Stability-like dimension, Component 1 appeared to blend aspects of Stability and

Plasticity. Thus, Hypothesis 1 was not supported as stated.

Hypothesis 2. Hypothesis 2 stated that a three-, four- or five-component

solution would be reasonable and interpretable, and would be supported by results of

objective criteria. As expected, the K >1 criterion indicated that 44 components should

be retained. Retaining this number of components is unjustified by theory and would

create a situation where each "broad" factor consisted of approximately only three items

each. Thus, this solution was not considered further.

The scree plot showed that retaining only one component may be justified due to

the very large drop in eigenvalues between the first and second components (see Figure

3). This result is similar to that of Study 1 and to the results of Van Eeden et al. (2008)

and Park and Peterson (2006). However, as noted previously, mathematical and

statistical criteria cannot be used without knowledge of the construct hierarchy and

research goals in a given study. As discussed in the Study 1 Results section, the finding

of a general personality factor in Big Five datasets does not obviate the utility of a five-

factor solution for applied purposes (Rushton & Irwing, 2008). Thus other criteria were

considered.

PA based on a program created by Watkins (2006) revealed that 11 components

represented more than error variance in this dataset. The random versus actual data

eigenvalues are listed in Table 8. These 11 components, however, would appear to be at

a level of the construct hierarchy in between a set of domains like those of the Big Five

and a more specific facet level. As discussed earlier, big trait models tend to have

between three and eight dimensions (Almagor et al., 1995; Markon et al., 2005; Mershon

& Gorsuch, 1994). Thus, the 11 components here may resemble a level more like

domains than big factors. DeYoung et al. (2007) have called the level between big trait

domains and smaller facets a personality "substructure" (p. 895). Thus this solution

was not considered further as representing a broad set of virtue dimensions.

In terms of identification and saturation of components, I defined a saturated

component as one having multiple item loadings at or above .40, while the loadings for

those same items were at or below .25 on all other components (Watson et al., 1988). (A

"salient" loading for items is expected to be lower, e.g. .40, than for scales [see Bernstein

et al., 1988]. Salient loadings for scales in Study 1 was .60.) Component identification

was defined as a component that had at least three items with their primary loadings on

that component. Using PA plus these additional criteria yielded nine components that

were both saturated and identified (Zwick & Velicer, 1986). Again, however, nine

components may represent a personality substructure rather than a set of big factors that

underlie the virtues data. Thus, interpretability also was used to determine the best-fitting

model.

I assumed that three-, four- and five-component solutions would be reasonable

and interpretable. Each of these solutions was interpretable, but some models provided

an interpretation that could be better compared to previous research. Each is discussed

next.

In a three-component solution, items measuring honesty, prudence, self-regulation

and perseverance comprised Component 1. I labeled this dimension Temperance because

it resembled the Temperance dimension in the three-component solution in Study 1 and

other VIA-IS research (e.g. Park & Peterson, 2006). The second component, which I

labeled Social Strengths, was similar to the Social Strengths component from Study 1 and

included items measuring gratitude, forgiveness, and teamwork but was dissimilar in that

it also highly loaded religiosity items as well as the newly-added spirituality and meaning items. Component 3 contained items measuring curiosity, learning, (low) self-regulation and empathy and I labeled this dimension Learning.

In a four-component solution, the first two components were recognizable as Social Strengths and Temperance. However, a new component appeared which loaded items measuring bravery, leadership, social intelligence and creativity and I labeled this dimension Agency. The fourth component loaded items measuring learning and empathy but also was negatively related to religiosity, spirituality and meaning. I considered this problematic because the component showed a bipolar structure. This could obscure relationships with other variables if the two poles are in fact conceptually distinct. In fact, previous research supports this idea. Steger et al. (2007) showed that VIA-IS learning is negatively related to MPQ traditionalism while VIA-IS religiousness is significantly *positively* related to that same variable. Thus, I considered a biploar structure undesirable, and extracted five components to investigate another solution.

Five dimensions represented an interpretable solution in which each component had a distinct meaning. A number of the five components showed similarities with the final three retained components in Study 1. Comparing the content from Appendix B to the three- and four-component solutions from Study 1 shown in Tables 5 and 6, it is clear that Social Strengths in Study 1 is similar to Social Strengths from Study 2; Intellectual Strengths in Study 1 is similar to Agency in Study 2; and Temperance in Study 1 is similar to Temperance in Study 2. At the five-component level, Transcendence split into two distinct components which I labeled Learning and Transcendence. While Learning had no clear counter-part in Study 1, and Transcendence in the two studies were not

identical in content, this factor structure was chosen as the best one to represent a set of broad, interpretable virtue dimensions.

It should be noted that while retaining a five-component solution has some tentative support in previous VIA-IS research (Peterson & Seligman, 2004; Peterson et al., 2008), the solution above does not clearly replicate component or factor structures from previous VIA-IS research (e.g. Peterson et al., 2008).

Relationships between multiple factor solutions and Big Five factors

To better understand the meaning of the virtues extracted at the two- and five-component levels, the virtue dimensions at both of these levels were correlated with the Big Five factors, as can be seen in Table 9. The first unrotated principal component, here called the General Virtue Component, correlated strongly and positively with all Big Five factors, especially with Agreeableness. At a two-component level, the dimensions just discussed were differentially related to all Big Five factors except Agreeableness. At the five-component level, each virtue dimension, except Transcendence, showed a sensible relationship with at least one Big Five factor. This result agrees with the findings of Saucier and Skrzypinska (2006) who found that religiousness and spirituality are not clearly related to the Big Five. One interesting finding involved the correlations between Component 2 and both Conscientiousness and Openness. Typically, Conscientiousness and Openness have been unrelated in higher-order factor analyses of the Big Five (e.g. Digman, 1997; Markon et al., 2005; although some higher-order personality trait studies have found a slightly different structure [see Ashton et al., 2004]).

Criterion variables

Hypothesis 3. This hypothesis stated that two virtue components - Social Strengths and Temperance - would best predict altruism. All components were included in a full, multiple-predictor regression model in an exploratory analysis (see Table 10). Results showed that scores on the Temperance component were unrelated to altruism scores. Contrary to the hypothesis, Agency was the best predictor of altruism, followed by Social Strengths.

Next, I entered the Big Five personality factors into a hierarchical linear regression analysis in the first step, and followed this by adding the five virtue dimensions. Variance in altruism scores from the Big Five provided a significant change from the null model and provided an adjusted R^2 of .08 (F (10, 266) = 5.93, p = .000). Adding virtues in the second step resulted in a significantly better fit with an adjusted R^2 of .19; the change in F(10, 266) was significant (8.25, p = .000) Thus, the five virtue factors provided a significant positive change in the ability to predict altruism as measured in this study.

Hypothesis 4. Hypothesis 4 stated that a Temperance dimension would be the best predictor of positive academic experiences (PAE). Table 11 shows the results of a multiple regression with PAE as the dependent variable. Temperance was the best predictor of PAE. In addition, Agency and Social Strengths, but not Learning or Transcendence, were also significant predictors.

I conducted a hierarchical linear regression analysis with the Big Five factors entered in the first step, and the Big Five factors and the virtue factors entered in the second step. This analysis showed a significant change in F from the null model, F(6, 270) = 14.18, p < .000 in Step 1. In Step 2, the change in F was also significant, F(6,

270) = 4.39, $p < .001$). The adjusted R^2 changed from .19 in Model 1 to .24 in Model 2. Adding variance from the five virtues had a significant but only slight impact on the model's ability to predict PAE. Thus, when the Big Five, including Conscientiousness, were included in the model, the virtues showed only a slight ability to predict PAE.

Exploratory hypotheses

Hypothesis 5. Hypothesis 5 stated that female gender would be associated with higher scores on a Social Strengths component. I performed independent groups t-tests to detect gender differences on each of the virtue components. Females scored statistically significantly higher on three components: Social Strengths ($p = .006$, 95% CI = .10 - .60), Temperance ($p = .007$, 95% CI = .12 - .62), and Learning ($p = .001$, 95% CI = .42 - .90). Males scored higher on the Agency dimension, which contained items measuring leadership and bravery, although this result was not statistically significant. Scores on Transcendence were not related to gender ($p = .55$). The finding that female gender predicts higher scores on Social Strengths accords with findings from previous VIA-IS studies (Linley et al., 2006; Park & Peterson, 2006; Peterson & Seligman, 2004).

Hypothesis 6. Hypothesis 6 stated that political orientation would be significantly related to one or more virtue dimensions. Multiple one-way ANOVAs revealed that political affiliation was not related to Social Strengths or Agency, but was significantly related to Learning, with those reporting a liberal orientation scoring higher ($F (6, 270) = 27.70$, p = .001, CI = -.24 - -.11), and to Temperance, with those reporting a more conservative orientation scoring higher ($F (6, 270) = 9.84$, $p = .002$, CI = .04 - .18). Previous research on personality and political orientation provide some support for these results (e.g. Jost, 2006). In addition, political conservatives scored higher on the

Transcendence dimension (F (6, 270) = 31.54, p = .001, CI = .12 - .25). Peterson and

Seligman (2004) have previously reported on the positive relationship between VIA-IS

religiousness and conservatism.

Hypothesis 7. Finally, Hypothesis 7 stated that strengths "mini-scales" or item

parcels would show reasonable patterns of relationships with the Big Five dimensions

when both were subjected to a joint PCA.

Thirty-two constructs were theoretically measured by the items of the revised

virtues measure. Thus, in order to obtain a number of small, construct-homogenous

components, 32 components were extracted using PCA and were Varimax-rotated.

Inspection of each component showed that 21 of 32 components had three or more salient

loadings (.40 or greater) on one component and non-salient loadings (.25 or less) on all

other components (see Appendix C for component labels and items loading each

component) and were content homogeneous. For example, Component 1 contained only

items measuring religiousness, Component 2 contained only items measuring meaning in

life, etc. Two components contained items from more than one construct: Orderly-

Dependability and Emotional Empathy.

The 21 retained mini-scales and the Big Five factors were subjected to a joint

PCA with Varimax rotation. Reasonable relationships between the mini-scales and the

Big Five factors emerged. For example, the highest loadings for fairness, gratitude and

teamwork were found on the same component as Big Five Agreeableness and also low

Neuroticism (Emotional Stability). Table 12 shows that both the Big Five dimensions

and the strengths mini-scales helped define each component for four out of five

components. Component 5, however, is composed only of strengths mini-scales. These

results are similar to those reported earlier (shown in Table 9) in that religiousness falls on a unique component not defined by a Big Five dimension.

Discussion

Virtues structure

The virtues retained in Study 2 showed important similarities to virtues retained in Study 1. Differences were also found. In terms of similarities, Social Strengths from the three- and four-component solutions from Study 1 were very similar in content to the Social Strengths component in Study 2. For example, all three components included the strengths (or items measuring the strengths) of kindness, teamwork, fairness and gratitude. It should be noted that fairness was measured by items such as "Give everyone a chance" and gratitude by the item "Express thanks to those who care about me." Thus, this virtue dimension appears to involve a caring, nurturing and helpful attitude toward others. One difference on this component across the two studies involved leadership. This strength as measured in Study 1 included items related to being a helpful and attentive leader. Thus leadership was found on the Social Strengths component in Study 1. When the construct was revised in Study 2 to include the assertive and agentic qualities of this construct, it instead was found on the Agency dimension. This difference across the two studies, however, could have been expected due to the change in the nature of the construct. Except for the change regarding leadership, Social Strengths can be considered a replicated dimension in a new sample.

The virtue of Temperance was also found in the three- and four-component solutions from Study 1 and the five-component solution from Study 2. In each case the component included the strengths (or items measuring the strengths of) perseverance,

prudence, honesty and self-regulation. Thus, like Social Strengths, Study 2

Temperance can be considered a replicated dimension.

The clearest difference between Studies 1 and 2 was the retention of a three-

component model in Study 1 versus a five-component model in Study 2.   The addition of

a component labeled Learning, clearly related to Big Five Openness, was found, as was a

dimension I labeled Agency, which contained different content than the one I labeled

Agency in Study 1.

In terms of differences across the two studies, Agency as I labeled it in Study 2

contained items measuring bravery, perspective, social intelligence and creativity.

However, the virtue I labeled Agency in Study 1 - which included the strengths of

perseverance, bravery, zest and self-regulation - had little in common with the Agency

dimension of Study 1. In Study 1, on the other hand, bravery, perspective, social

intelligence and creativity were found on the same component as learning and beauty,

and together were labeled Intellectual Strengths in Study 1. Because the learning and

beauty items (see Appendix A) that had previously helped define Study 1 Intellectual

Strengths were missing from this factor in Study 2, it lacked the clearly intellectual flavor

it had in Study 1. Naming this factor Intellectual Strengths in Study 2 would have mis-

characterized its meaning. In summary, Agency in Study 2 was not a replication of Study

1 Intellectual Strengths or Study 1 Agency, but represented aspects of both.

Agency as it was construed in Study 2 may represent a dimension not yet

uncovered in previous VIA research. Nevertheless, a construct similar to it has been

found in some prior research. Walker and Hennig (2004) have found that laypeople

ascribe certain moral traits to the "brave" person moral prototype, including traits like

"risk-taking," "faces danger," "stands up for beliefs," and "good leader." These qualities might also define someone high in Agency (see Appendix B). In addition, Cawley et al. (2000) labeled one of their four virtue dimensions Resourcefulness and it included such descriptors as "resourceful," "purposeful," "confidence" and "fortitude." Finally, Walker and Pitts (1998) found that the qualities associated with the moral person concept included an aspect labeled Confident.

In addition, contrary to hypothesis, Agency was more strongly related to altruism than any other virtue. Fagin-Jones and Midlarsky (2007), in an analysis of non-Jewish rescuers versus bystanders of Jewish persecution in Nazi Germany, found that rescuers were significantly more likely to score high on a measure of risk-taking. The authors note that "for compassion [toward others] to be realized...to some extent one must be predisposed to undertake risk" (p. 145). The content of the Agency dimension suggests that high scorers are willing to take risks ("Have taken frequent stands in the face of strong opposition"). More research should be conducted on behavioral correlates of the Agency dimension. In particular, this finding suggests that one needs to possess more than empathy or kindness in order to engage in highly prosocial behavior. In summary, Agency may represent an important individual differences variable in virtuous personality that influences the expression of moral behaviors like altruism, and deserves further study.

In Study 2, Learning involved such strengths as love of learning, empathy and (low) self-regulation. It was very clearly related to Big Five Openness at .56, and was characterized by imagination and emotional engagement. In addition, it was very similar in content to Tellegen's (1985; Tellegen & Waller, 2008) MPQ Absorption domain.

Scales that measure Absorption include such facets as "Responds to evocative stimuli," "Can imagine vividly," and "Thinks in images." The Learning dimension includes such items as "Experience deep emotions when I see beautiful things" and "Crave the experience of great art." Thus Learning is at least somewhat conceptually related to Absorption. VIA-IS Beauty and MPQ Absorption have been correlated at .39 in previous research (Steger et al., 2007).

Unlike other Big Five dimensions like Conscientiousness, Agreeableness and Emotional Stability, which are considered to have moral aspects and are socially desirable (Barrick & Mount, 2005; Digman, 1997), Openness - and presumably the Learning dimension reported here - may not be explicitly moral in nature. Indeed, Absorption, to which Learning is conceptually linked, has been found to relate to both prosocial *and* antisocial behavior (Krueger et al., 2001). In addition, Study 2 results showed that Learning had no relationship to either of the criterion variables chosen for this study. While I included Learning in my final virtues model, its relationships with the criterion and personality variables in Study 2 calls into question its status as a useful virtue dimension.

Finally, the dimension I labeled Transcendence in Study 2 differed in content from the one I labeled Transcendence in Study 1. Specifically, Transcendence in Study 1 (four-component solution) included religiousness, forgiveness and modesty. In Study 2, it included only religiousness, spirituality and meaning items. In Study 2, forgiveness had its highest loadings instead on Social Strengths, and modesty was not strongly related to any component. Although the two components had the same label, they were not

similar. Thus Transcendence as virtue dimension was not replicated from Study 1 to Study 2.

Prior research has found that religiousness is positively correlated with psychosocial adjustment (Good & Willoughby, 2006) and academic performance (Walker & Dixon, 2002). These results showed that Transcendence does positively relate to positive school behaviors and altruism and that it is not captured by the Big Five. Other strengths constructs that might be theoretically related to this virtue could include serenity and calmness, which were strengths that emerged in a four-factor model in Cawley et al., 2000). A broader Transcendence dimension, aggregating more strengths than those related to religiosity, may be useful with populations who are not religious but who have nevertheless found a coherent life meaning and purpose. It is of note that in this study, religiousness, spirituality and meaning formed a single dimension. Some previous research on spirituality and religiousness has found that the two constructs are differentially related to personality and social attitudes (Saucier & Skrzypinska, 2006). The strong relationship between religiousness and spirituality as well as life meaning in Study 2 deserves further study.

Virtues hierarchy

Personality hierarchies are appealing to researchers because they can organize diverse sets of research findings into usable frameworks that can guide and enhance theory development (Digman, 1997; Markon et al., 2005; Reise et al., 2000). As discussed above, classical personality theories such as Bakan's (1966) describe the two major personality or motivational factors underlying most human behavior as Agency versus Communion. Adler (cited in Digman, 1997) called these same basic human

motivations Superiority Striving and Social Interest. Digman (1997) called them Self-actualization (Beta) and Socialization (Alpha).

The distinctions made by these theorists between the two higher-order dimensions are not clearly reflected in the Study 2 two-component virtues solution. For example, Component 1 included strengths like achievement, perseverance and responsibility but also kindness and learning. On the other hand Component 2 included strengths like meaning, religiousness, spirituality and hope. Compared to the structure in Study 1, this structure shows Component 1 to be a blend of Agency and Communion strengths, while the meaning of Component 2 lies in the high loadings for religiousness and spirituality items.

It is likely that the structure relates to the distribution of the items. Items that defined Component 1 tended to have negatively skewed distributions, while those of Component 2 had more normal distributions. Analyzing items, which are almost always less reliable that scales (Bernstein et al., 1988; Gorsuch, 1997), may have contributed to this problem. Analyzing scales may be preferable to analyzing items when conducting research on a higher-order factor structure.

Relationship to Big Five

At the one-, two- and five-component levels of the construct hierarchy, virtues were sensibly related to the Big Five. Importantly, at the first level, with only one factor extracted, a general virtue dimension related strongly and positively to all Big Five factors, in particular to Agreeableness. This result is not surprising given the fact that the Big Five all have an evaluative dimension (Barrick & Mount, 2005; Benet-Martinez & Waller, 2002), perhaps in particular Agreeableness (Digman, 1997). At the two-

component virtues level, only Agreeableness correlates with both components. Conscientiousness is clearly differentially related to the two components. This result makes sense because Component 1 is comprised of items measuring achievement and responsibility while the content of Component 2 measures such constructs as religiousness and meaning.

Importantly, at the five-component level, construct validity evidence exists for the virtues. For example, Social Strengths, unsurprisingly, correlates strongly and positively with Extraversion, low Neuroticism and Agreeableness, suggesting that it captures stability and outgoing warmth toward others. Thus the label of Social Strengths appears appropriate. Likewise, Learning correlates strongly and positively with Openness as well as Agreeableness, which is reasonable given that this virtue involves engagement with new information, with others' emotions (via empathy) and with one's own emotions (via low self-regulation). The relationships between the personality dimensions and the other virtues are similarly reasonable. Cawley et al. (2000) found very similar correlations between their measure of virtues and the Big Five as measured by the NEO-PI-R, and Park and Peterson (2006) found similarly moderate to high correlations between the VIA-IS-Youth and a Big Five measure in a sample of adolescents. Future research might involve correlating the virtue dimensions reported here with other major personality dimensions, such as the MPQ Big Three (Positive Emotionality, Negative Emotionality and Constraint).

However, these results also suggest the possibility that the Big Five are adequate for explaining human virtue. In other words, assessing people on the Big Five factors, or perhaps on alternate personality models (e.g. the MPQ model; Tellegen & Waller, 2008)

could provide a proxy for virtue measurement. For example, Barrick and Mount (2005) stated that any employer would look for a job candidate that was high in Agreeableness, Conscientiousness and Emotional Stability. Assessing them on these factors would provide a measure of socially desirable traits, or virtues. Thus it may reduce the need to expend resources on creating a valid and reliable virtues assessment when existing measures could be used to assess virtues. Even those within positive psychology advocate against the proliferation of new constructs that duplicate extant ones (Bryant et al., 2007). With these cautions in mind, it was important to ask whether virtues - as measured in the present study - could predict anything unique in desirable behaviors.

Relationship to academic and social criteria

Results of hierarchical linear regression analyses showed that variance from virtue does account for specific variance over and above that explained by normal personality dimensions, at least in two key areas of functioning and as assessed by the measures included in this study. Specifically, participants were more likely to report engaging in altruistic behaviors if they also reported higher levels of Social Strengths, Agency and Transcendence. Importantly, this effect was significant even after normal personality variation was accounted for. Interestingly, neither Agreeableness nor Conscientiousness showed a significant relationship with altruism, which is important because these are considered the most clearly "moral" of the Big Five factors (Digman, 1997). Indeed some of the descriptors measuring Agreeableness are "cooperative," "kind" and "sympathetic," and at least conceptually, these should be related to prosocial behavior. Thus, using virtues to predict certain prosocial behaviors beyond what can be predicted

using a measure of normal personality is warranted. This is important in terms of character education programs, because one outcome of these interventions has been traditionally a decrease in negative social behaviors and increases in positive ones (Murphy, 2002).

In addition, Temperance predicted a composite variable, Positive Academic Experiences (PAE), that included self-reported engagement and positive attitude toward academic work, engagement with one's college community, and GPA. While Temperance accounted for about 10 % of the variation in PAE, the ability of Temperance to predict PAE was only slight when normal personality factors were included in a full model (although the effect was still significant). In terms of academic experiences, it may be that both virtues and personality are needed to predict flourishing in school settings. In terms of character education, these findings are relevant because academic performance is often used an outcome measure for virtue-based interventions (Murphy, 2002).

These results may help inform the debate surrounding character education, which has tended to divide interested parties along ideological lines. For example, Helwig et al. (1997) and Kohn (1997) suggested that character education is based on narrow, conservative political principles while more traditionally-minded character educators (e.g. Benninga, 1991; Ryan & Boehlin, 1999) have suggested that *not* teaching values and virtues in schools represents a kind of moral vacuum in American education. The debate about whether to teach virtues in schools, however, can be resolved to come extent by appealing to the data: if some self-reported virtues actually predict the behaviors educators hope to encourage in students, virtue development in the schools is useful.

Exploratory hypotheses

In Study 2, female participants reported having more of three of the five virtues (Social Strengths, Temperance and Learning) while males reported having more Agency-related strengths. Levels of Transcendence did not differ according to gender. While descriptive statistics in VIA-IS studies have supported the notion that females - both adult (e.g. Linley et al., 2007) and adolescent (e.g. Park & Peterson, 2006) - report having more social strengths, this has typically been the only reported gender difference in the VIA literature. In contrast, the finding in Study 2 that males tend to self-report more courage and bravery (on the Agency dimension) while women self-report both more intellectual curiosity (on the Learning dimension) and more self-control (on the Temperance dimension) suggests that more investigation should be conducted on gender differences across the virtues.

In addition, some differences on virtue dimensions based on political affiliation were significant. Specifically, political conservatism showed a strong positive relationship with Transcendence, a result that has found support in previous VIA-IS research (Peterson & Seligman, 2004). In addition, political liberals reported higher scores on Learning and conservatives reported higher scores on Temperance. Thus, conservatives, at least in this study, appear to be higher in self-control and goal perseverance while liberals appear to seek out new information and are emotional and empathic. These findings have support in the personality literature where research has shown liberals are higher on Big Five Openness and conservatives are higher on Conscientiousness (Jost, 2006). These findings also accord with Haidt's (2007, 2008)

research that shows liberals and conservatives consistently endorse different moral values (although the differences are not dramatic).

In terms of character education, moral development and positive psychology, many research topics related to politics and virtue are possible. For example, Aristotle suggested people should try to achieve the "Golden Mean" in their behavior - for example, they should not be lazy or be over-zealous in completing a task (Cawley, 1997). The idea of the Golden Mean could be extended to political views. For political liberals, developing the virtue of Temperance, including being persevering, responsible and prudent, would help them achieve the Golden Mean; for political conservatives, developing the virtue of Learning, or being open to and emotionally engaged in new ideas and experiences, might help them do the same. A research question that could be asked is, Do people on the extreme ends of the political spectrum report more or less life satisfaction? According to virtue theorists, achieving a balance among virtues would lead to flourishing, but extremes, even in virtues, will lead to an unpleasant life.

Construct validity evidence was also found for the strengths mini-scales. Each scale was meaningfully related to one Big Five dimension. For example, leadership, comprised of three items, was found on the same dimension as Extraversion, while empathy-kindness and teamwork were found on the same dimension as Agreeableness. A note about the five-component structure in Table 12 is needed. Five components were extracted because five personality dimensions were included in the analysis. However, only four of these dimensions included the five personality variables; Agreeableness and (low) Neuroticism fell on the same dimension. This may be because the Agreeableness scale includes items like "warm" and "cooperative" and Neuroticism includes the items

"relaxed" and "jealous" (reversed). People who are warm to others are likely also

relaxed and people who are cooperative are probably not jealous. Thus the item content

for these scales may have influenced their loading on the same component. As noted

above, religiousness and meaning formed their own dimension and did not strongly relate

to any Big Five factor. An interesting finding was the negative relationship between the

strength of humor and those of meaning and religiousness.

The strengths mini-scales could be used as virtue facet scales in new samples and

then subjected to factor analysis. Facet scales would strike a balance between efficiency

and reliability of measurement.

Chapter 5. General Discussion

It was noted in the Introduction that a common virtues model would provide a

language for communicating findings about positive traits and their correlates across

diverse sub-disciplines of education and psychology. In addition, an empirically-based

virtues model would improve upon the rationally-derived virtues models produced by

positive psychologists and character educators.

The goal of both Studies 1 and 2 was to use a number of empirical criteria to

evaluate the structure of virtue in an exploratory fashion. A scale-based PCA conducted

in Study 1 had the advantage of being comparable to previous studies based on the VIA

classification popular in positive psychology (See Table 3; Peterson & Seligman, 2004).

Alternatively, an item-based PCA conducted in Study 2 had the advantage of capturing

potentially untapped areas of virtue exploration through a more empirically-based,

"bottom-up" approach favored by personality researchers like Tellegen (Tellegen, 1985;

Tellegen & Waller, 2008) and could be compared to the item-based virtue results of

Cawley et al. (2000). In addition, I attempted to establish the criterion, construct and incremental validity of the item-based virtue dimensions.

First, the results of these two studies showed that some virtue dimensions are replicable. Both the Temperance and Social Strengths virtues appeared in both studies, and have appeared (although in slightly different forms) in other virtues research (e.g. Park & Peterson, 2006; Peterson & Seligman, 2004; Peterson et al., 2008). Temperance was strongly related to Big Five Conscientiousness and to the criterion variable Positive Academic Experiences, which included a measure of college GPA. Social Strengths was strongly related to Big Five Agreeableness and was a good predictor of altruism in Study 2.

A dimension I labeled Transcendence appeared in both studies, but the content in each study was different. The only similar aspect involved the inclusion of religiosity (see Table 6 and Appendix B to compare the content of each Transcendence dimension). In Study 2 this dimension did not significantly correlate with any Big Five dimension, and showed low to moderate predictive ability on altruism and academic experiences. It is notable that although theory and research suggest that religiousness, spirituality and meaning are separable constructs (e.g. Saucier & Skrzypinska, 2006; Steger & Frazier, 2005; Wink et al., 2007), it was clear that items measuring each construct covaried together in Study 2 even though, theoretically, items measuring each could appear on any virtues dimension.

An Intellectual Strengths component appeared in Study 1, but not in the more empirically-grounded Study 2. Intellectual Strengths in the form found in Study 1, however, has been found in multiple VIA structural analyses (Park & Peterson, 2006;

Peterson et al., 2008). It may be that when items (rather than scales) are the analyzed

variable, a different structure emerges because item covariation reflects underlying virtue

covariation. Arguably, Study 2 produced a more accurate picture of actual individual

differences in human virtue (Tellegen & Waller, 2008).

An important result of the "splitting" of the Intellectual Strengths dimension from

Study 1 into the dimensions of Agency versus Learning in Study 2 was that differential

relationships to the criterion variables were found. In terms of altruism, Agency best

predicted that criterion while Learning showed no ability to predict it. In addition,

surprisingly, Learning showed no ability to predict Positive Academic Experiences, while

Agency predicted it moderately well. Differentiating between these constructs in future

studies is thus important.

The number-of-virtues issues and the construct hierarchy

A major dispute in the personality literature has centered on finding "the" model

of personality dimensions that best accounts for variations in behavior (Eysenck, 1991;

Mershon & Gorsuch, 1988). In the future it is possible that a "number-of-virtues" issue

similar to the "number-of-factors" issue in the personality literature (Floyd & Widaman,

1995; Reise et al., 2000; Russell, 2002) will become important. Are there an ideal

number of virtues the use of which would simplify theory, research and assessment on

this topic? A look at Table 1 shows that between four and seven virtues are considered

core, essential virtues in selected character education schemas. [The number of

personality factors assumed to account for normal personality variation also usually

resides somewhere between these figures (Mershon & Gorsuch, 1988).] Should a virtue

classification contain more than seven or fewer than four factors? Some character

educators (e.g. Benninga et al., 2006) that all virtues can be subsumed under two broad categories - individual strengths and interpersonal strengths. Would this simple schema have advantages over more differentiated, narrower-band models? Barrick and Mount (2005) have suggested that researchers keep in mind the theory and goals of their research when deciding on an ideal number of constructs to include in a predictive model (e.g. predicting work behaviors from narrow-band versus broad-band measures). For example, using two very broad domains - e.g. Intellectual Strengths and Social Strengths - to predict broad sets of behaviors would be useful if this would simplify comparisons of character education program effects across different interventions, populations or age groups. Predicting specific school-related behaviors, on the other hand, might require the use of facet scales, similar to those reported in Appendix C.

There is heuristic and assessment value to organizing virtues into two very broad domains, however. For example, comparisons across virtue-based school interventions, across social roles, and across political ideologies, could be done within a two-virtue system. Krueger (1999) has suggested that psychological disorders be organized into two broad clusters - internalizing and externalizing. This simple schema is useful for comparing etiologies and treatment types across broad domains of disorder. A similarly simple system might be employed for virtues, at least when the assessment of broad sets of behaviors is needed.

A related question involves what virtue might exist at the top of the virtue construct hierarchy. Is there a "master virtue" that organizes all lower-level strengths? Baumeister and Exline (1999) have suggested that self-regulation is the "master virtue" because "[s]tifling self-interest for the greater collective good requires self-control" and

self-control allows the maintenance of long-lasting relationships within a group, which is a primary human motivation (p. 1166). On the other hand, post-Kohlbergians such as Helwig et al. (1996) suggested that justice is a master virtue. Still others, such as Sternberg (2004), have stated that wisdom organizes other values, and hence may be like a master virtue. While it may be reasonable to suggest that there exists one underlying virtue dimension upon which all people could be evaluated, such a proposition has been rejected by some virtue theorists (McCullough & Snyder, 2000). Human behavior, and character, is complex, and people who behave in extraordinarily good ways can also behave horrifically.

I suggest that any virtues model if organized at the top by a "general virtues component" also include sub-factors that can account for this complexity. Indeed even advocates of a general factor underlying personality have acknowledged the usefulness of multidimensional personality models in predicting and evaluating personality in applied settings (e.g. Rushton & Irwing, 2008).

Virtue theories

In addition to complex structure, comprehensive models of virtue should be, in the future, guided by theory. Richard Lazarus (2003) asked the question, "Does the positive psychology movement have legs?" The same could be asked of the character education movement. A naive retreat into looking only at the "bright side of things" will ultimately impoverish the field of positive psychology and any field that attempts to over-correct for the sometimes ubiquitous focus in psychology on human frailty. A psychological model of vices and virtues would provide a more integrated, complex and accurate representation of human behavior.

In the interest of facilitating the development of such a model, Lazarus (2003) suggested that positive psychologists seek a "sounder and well thought through theoretical...rationale" regarding their major constructs (e.g. strengths and virtues; p. 107). Peterson and Seligman (2004) acknowledged that their classification "should not be confused with a *taxonomy*, which is based on a deep theory" (p. 6, italics in original). This lack of a theory of human nature also plagues the character education movement, which, as its critics point out, often opts for expert opinion and common sense as the basis for choosing a certain set of virtue constructs over others.

Related to personality theory, McAdams and Pals (2006) have stated that evolutionary theory should be taken into account. Sheldon (2004) suggested that, based on evolutionary theory, three needs - competence, autonomy and relatedness - are central to human survival. In relationship to this project, the three- and four-component solutions in Study 1 revealed an Intellectual Strengths and a Social Strengths component, and these could be related to Sheldon's (2004) competence and relatedness needs. Indeed, while Dahlsgaard et al. (2005) and Peterson and Seligman (2004) have intimated that the six virtues of the VIA classification may represent tendencies required for survival in the ancestral past, no empirical evidence suggests that there six core virtues even exist. Researchers interested in virtue should be wary of creating and analyzing multifarious lists of strengths and virtues, especially those that are based purely on rational methods, that do not link to deeper theories of human nature.

Limitations

A number of limitations of Studies 1 and 2 deserve mention. First, it is unlikely that all of the relevant strengths important for understanding moral functioning and moral

personality have been included in Study 1 or in Study 2. While Study 2 provided an

expanded set of strengths constructs from which to draw compared to the original VIA-IS

classification, other constructs, such as peacefulness, generosity, or self-confidence could

have been included.

In terms of limitations for Study 2, it is clear that items are inherently unreliable,

and item factor analysis is sometimes avoided when only small or moderate sample sizes

are available. At the same time, a sample size above 200 with loadings above .40 on

factors, as are found in this study, provide important improvements on sample sizes of

100 or loadings below .40 (Velicer and Fava, 1998). Of course, larger sample sizes

would be ideal for an item structural analysis and should be used in other studied to

overcome the issue of item unreliability.

A limitation also exists because of the concurrent nature of all self-report

measures in Study 2. It would have been interesting to use virtues and personality in a

more clearly predictive way, for example in predicting altruism and academic success at a

later time.

The choice to use Saucier's (1994) Mini-Markers as a measure the Big Five in

Study 2 was based on expediency: a shorter measure would reduce participant fatigue.

The Mini-Markers are not a comprehensive, nuanced measure of the Big Five, but are

rather based on highly reliable, narrow-band aspects of each trait. As stated by Saucier,

this brief measure sacrifices breadth for depth. Thus it is possible that some of the

correlations reported here between the virtues and the Big Five would not have been

found with another measure. More importantly, however, is the implication that a

different, more comprehensive measure of the Big Five may reduce any unique effects of virtues on criterion prediction.

An issue that affects the external validity of both studies are the sample characteristics of both studies. Study 1 used a middle-aged sample from the Minnesota Twin Study. Study 2 used a college student sample. While the Study 2 sample was more representative of the cultural and ethnic groups represented in the U. S. compared to the Study 1 sample, including people of a variety of ethnicities, cultures and ages in the same study would allow for important comparisons of virtue expression in different cultural and developmental contexts.

Finally, conducting a continuous, "iterative" cycle of virtues research would be ideal, wherein new constructs could be explored and poorly-performing constructs discarded. In this study, only one round of data collection was completed with the revised virtues measure. Tellegen and Waller (2008) report on the continuous research program that resulted in the MPQ model of personality, which performs well in exploratory factor analytic studies (e.g. Church & Burke, 1994). Such a "bottom-up" approach using ongoing construct refinement would improve upon the rational approaches used by character educators and positive psychologists, especially in a research area as unexplored as that of virtues.

Suggestions for future research

Future research should focus on further delineating the virtues that appear to arise across multiple virtue studies, in particular Temperance and Social Strengths. Virtues for which evidence exists in some studies but not others, like Intellectual Strengths and Agency, should be researched further. Cross-cultural studies of indigenous virtues and

strengths - similar to studies of indigenous personality constructs (see Ashton & Lee, 2005; Ashton et al., 2004b) - should be undertaken. Studies that incorporate cultural variables will be able to test the contention of character education proponents that values, and presumably virtues, transcend culture (Ohio State Department of Education, 1990).

It is also essential to understand the genetic versus environmental influences on virtue presence and development. Virtues have been advocated across time because, advocates presumed, they can be (willfully) developed. If some virtues have a strong genetic basis, however, their status as a virtue to be cultivated is called into question. At least one of the strengths included in the VIA model and in the work presented here, religiousness, involved genetic effects. Heritability affects the expression of this strength, in particular in older adults (Koenig et al., 2007). Heritable aspects of normal personality also underlie some variation in the VIA strengths (Steger et al., 2007). At the same time, altruism (which could be construed as a virtue as well as an outcome variable) appears to be more sensitive to environmental impacts - both in shared/family and non-shared/non-family - than aggression. This implies that families, schools and peers may be better able to impact the promotion of positive traits than prevent negative ones. The genetic versus environmental influences on virtues should be explored further.

At present it is unclear how the VIA-IS measure is related to other virtue measures. A prominent recent example of a virtue measure is found in Cawley et al.'s (2000) Virtues Scale, which has shown a four-factor structure. Cloninger's (1994) Temperament and Character Inventory includes three character dimensions that should be related to the virtues reported here. In building on the work of Markon et al. (2005),

conducting a joint factor analysis of multiple virtue measures may suggest new virtue factors and clarify the dimensions found in this study and other VIA research.

In addition, it is important that the differences and similarities between values and virtues - in meaning, content and structure - are investigated. Peterson and Seligman (2004) stated that "virtues embody values when the behavior they organize and direct becomes habitual" (p. 74). However, there is a general lack of clarity in the character education literature on the meaning of "value" versus "virtue"; in fact, the two terms are often used interchangeably. Longitudinal research on the process by which value commitments or preferences develop into virtues as stable individual differences is needed. The Schwartz values model (Schwartz, 1992) could be used as a predictor of future virtue development, with value commitment strength, behavior frequency and environmental and genetic influences tested as moderating influences. Steen et al. (2003) have stated that traditional character education programs often promote certain values without giving students time to reflect on these or practice them in everyday contexts. Clarifying specifically how school values promotion and virtue enactment relate is needed.

Furthermore, studies of incremental validity on a diverse range of behaviors will be important. It is clear from the results presented here that virtues and personality are not the same thing, and that virtue has some predictive advantage over personality, at least as both of these sets of constructs have been measured here. Using more comprehensive measures of personality - such as the Multidimensional Personality Questionnaire or the NEO-PI-R - would allow for more robust tests of the incremental

predictive validity of major virtue dimensions over broad personality dimensions from well-known personality models.

Finally, character education programs would benefit by incorporating empirical virtues research, especially as that relates to developing theories of behavior change. Many character education programs are based on the idea that when virtue programming is introduced in schools, negative behaviors will decrease and positive behaviors will increase (Benninga et al., 2006; Leming, 1993). However, the effects of virtue development will depend on which virtues are developed, how they are developed and which outcome measures are used. For example, the Character Counts! program promotes both the virtues of Responsibility and Caring. An outcome measure in a traditional character education program might include the number of times a student shares with other students. Based on the results of Study 2, however, promoting the virtue of Caring might facilitate sharing, but promoting Responsibility may produce no benefits on social behaviors. In fact, promoting Responsibility may conflict with sharing behaviors because sharing interferes with taking responsibility for one's own actions. Educators and researchers should focus as much on mechanisms as on outcomes. Positive psychologists have advocated for more complex modeling of virtues and strengths development (e.g. Aspinwall & Staudinger, 2003; Gable & Haidt, 2005; Peterson & Seligman, 2004).

As stated throughout this paper, one of the major criticisms of the virtue construct is its seeming basis in common sense (McClellan, 1999) or, worse, in religious and political dogma (Helwig et al., 1997; Kohn, 1998). The utility of the virtues construct for diverse research areas will depend, in part, upon three things: 1) the empirical

demonstration that virtues have a sensible structure, 2) evidence that they are linked

to other constructs in mainstream psychology, and 3) evidence that they are uniquely

predictive of morally-relevant behaviors. In addition, the development of a theory of

human nature that can provide a framework for organizing virtues should be an essential

long-term goal for virtue investigators.

While this project was preliminary and exploratory, it is clear that some of the

virtue dimensions found in this study are replicable (e.g. Social Strengths), and others

(e.g. Agency) represent fruitful areas for future research. In addition, the structures

uncovered in Studies 1 and 2 do not closely resemble the virtue dimensions specified in

the VIA model as originally formulated (Peterson & Seligman, 2004). Finally, most of

the virtues reported in Study 2 contribute some unique variance to behaviors relevant to

psychologists and character educators.

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Appendix A

Items from the Revised Virtues Measure (Study 2)

Love of Beauty
IPIP-VIA: Feel it's important to live in a world of beauty.
IPIP-VIA: Can become tearful thinking of the goodness of others.
IPIP-VIA: Experience deep emotions when I see beautiful things.
IPIP-VIA: Appreciate all forms of art.
IPIP-VIA: Am in awe of simple things in life that others might take for granted.
IPIP-VIA: Crave the experience of great art.
IPIP-VIA: Fail to notice beauty until others comment on it. (-)

Love
IPIP-VIA: Am willing to take risks to establish a relationship.
IPIP-VIA: Know that there are people in my life who care as much for me as for themselves.
IPIP-VIA: Can express love to someone else.
IPIP-VIA: Know someone whom I really care about as a person.
IPIP-VIA: Do not easily share my feelings with others. (-)
IPIP-VIA: Have difficulty accepting love from anyone. (-)

Teamwork
IPIP-VIA: Enjoy being part of a group.
IPIP-VIA: Support my teammates or fellow group members.
IPIP-VIA: Feel I must respect the decisions made by my group.
IPIP-VIA: Am not good at working with a group. (-)

Curiosity
IPIP-VIA: Am always busy with something interesting.
IPIP-VIA: Can find something of interest in any situation.
IPIP-VIA: Think that my life is extremely interesting.
IPIP-VIA: Love to hear about other countries and cultures.
IPIP-VIA: Am not all that curious about the world. (-)
IPIP-VIA: Have few interests. (-)

Fairness
IPIP-VIA: Believe that everyone's rights are equally important.
IPIP-VIA: Give everyone a chance.
IPIP-VIA: Believe that everyone should have a say.
IPIP-VIA: Treat others differently if I don't like them. (-)

Forgiveness
IPIP-VIA: Believe that it is best to forgive and forget.

IPIP-VIA: Hold grudges.
IPIP-VIA: Do not give anyone a second chance to hurt me. (-)

Gratitude
IPIP-VIA: Express my thanks to those who care about me.
IPIP-VIA: Stop to count my blessings.
IPIP-VIA: Am an extremely grateful person.
IPIP-VIA: Feel thankful for what I have received in life.
IPIP-VIA: Feel a profound sense of appreciation every day.
IPIP-VIA: Find few things in my life to be grateful for. (-)

Hope
IPIP-VIA: Look on the bright side.
IPIP-VIA: Can find the positive in what seems negative to others.
IPIP-VIA: Remain hopeful despite challenges.
IPIP-VIA: Will succeed with the goals I set for myself.
IPIP-VIA: Think about what is good in my life when I feel down.

Humor
IPIP-VIA: Try to tease my friends out of their gloomy moods.
IPIP-VIA: Use laughter to brighten the days of others.
IPIP-VIA: Try to add some humor to whatever I do.
IPIP-VIA: Have a great sense of humor.
IPIP-VIA: Am not known for my sense of humor. (-)
IPIP-VIA: Do not go out of my way to make others smile or laugh. (-)

Perseverance
IPIP-VIA: Don't quit a task before it is finished.
IPIP-VIA: Finish things despite obstacles in the way.
IPIP-VIA: Don't finish what I start. (-)
IPIP-VIA: Give up easily. (-)
IPIP-VIA: Do not tend to stick with what I decide to do. (-)

Honesty
IPIP-VIA: Keep my promises.
IPIP-VIA: Can be trusted to keep my promises.
IPIP-VIA: Am true to my own values.
IPIP-VIA: Make decisions only after I have all of the facts.

Judgment
IPIP-VIA: Am valued by others for my objectivity.
IPIP-VIA: Weigh the pro's and the con's.
IPIP-VIA: Try to have good reasons for my important decisions.

Kindness

IPIP-VIA: Go out of my way to cheer up people who appear down.
IPIP-VIA: Love to make other people happy.
IPIP-VIA: Get impatient when others talk to me about their problems. (-)
IPIP-VIA: Try not to do favors for others. (-)
IPIP-VIA: Am only kind to others if they have been kind to me. (-)

Leadership
IPIP-VIA: Am good at helping people work well together.
IPIP-VIA: Am told that I am a strong but fair leader.

Love of learning
IPIP-VIA: Am thrilled when I learn something new.
IPIP-VIA: Am a true life-long learner.
IPIP-VIA: Read all the time.
IPIP-VIA: Consult the library or the Internet immediately if I want to know something.
IPIP-VIA: Read a large variety of books.
IPIP-VIA: Don't like to learn new things. (-)
IPIP-VIA: Do not like to visit museums. (-)
IPIP-VIA: Don't read nonfiction books for fun. (-)

Modesty
IPIP-VIA: Am humble about the good things that have happened to me.
IPIP-VIA: Believe that others are drawn to me because I am humble.
IPIP-VIA: Don't act is if I'm a special person.
IPIP-VIA: Don't call attention to myself.
IPIP-VIA: Like to stand out in a crowd. (-)

Creativity
IPIP-VIA: Am able to come up with new and different ideas.
IPIP-VIA: Like to think of new ways to do things.
IPIP-VIA: Come up with new ways to do things.
IPIP-VIA: Am an original thinker.
IPIP-VIA: Have an imagination that stretches beyond that of my friends.
IPIP-VIA: Am not considered to have new and different ideas. (-)
IPIP-VIA: Have no special urge to do something original. (-)

Perspective
IPIP-VIA: Have been described as wise beyond my years.
IPIP-VIA: Have a mature view on life.
IPIP-VIA: Consider myself to be a wise person.
IPIP-VIA: Am considered to be a wise person.
IPIP-VIA: Lose sight of what is most important in life. (-)

Prudence

IPIP-VIA: Cannot imagine lying or cheating.
IPIP-VIA: Keep straight right from wrong.
IPIP-VIA: Make careful choices.

Self-regulation
IPIP-VIA: Am a highly disciplined person.
IPIP-VIA: Can always say "enough is enough."
IPIP-VIA: Do my tasks only just before they need to be done. (-)

Social Intelligence
IPIP-VIA: Am able to fit into any situation.
IPIP-VIA: Know what makes others tick.
IPIP-VIA: Am good at sensing what others are feeling.
IPIP-VIA: Know what to say to make people feel good.
IPIP-VIA: Don't know how to handle myself in a new social situation. (-)

Bravery
IPIP-VIA: Have taken frequent stands in the face of strong opposition.
IPIP-VIA: Don't hesitate to express an unpopular opinion.
IPIP-VIA: Can face my fears.
IPIP-VIA: Speak up in protest when I hear someone say mean things.
IPIP-VIA: Do not stand up for my beliefs. (-)
IPIP-VIA: Don't speak my mind freely when there might be negative results. (-)

Zest
IPIP-VIA: Look forward to each new day.
IPIP-VIA: Awaken with a sense of excitement about the day's possibilities.
IPIP-VIA: Don't have much energy.   (-)

Leadership
IPIP-Assertiveness:/IPIP-CPI Dominance: Try to lead others.
IPIP-Assertiveness:/IPIP-CPI Dominance: Automatically take charge.
IPIP-Assertiveness:/IPIP-CPI Dominance: Take control of things.

Religiousness
IPIP-VIA: Do not practice any religion. (-)
IPIP-VIA: Do not believe in a universal power or a God. (-)
Author-created: Practice my religion.
Author-created: Am devoted to my religion.
Author-created: Attend religious services.

Spirituality
Author-created: Have private moments when I am connected to all that exists.
Author-created: Seek a close relationship with the sacred in my daily life.
Author-created: Often feel intimately connected to a divine "life force."

Meaning
Meaning in Life Questionnaire (Steger, 2006): I understand my life's meaning.
Meaning in Life Questionnaire (Steger, 2006): My life has a clear sense of purpose.
Meaning in Life Questionnaire (Steger, 2006): I have a good sense of what makes my life meaningful.
Meaning in Life Questionnaire (Steger, 2006): I have discovered a satisfying life purpose.
Meaning in Life Questionnaire (Steger, 2006): I am searching for meaning in my life. (-)

Achievement
IPIP-MPQ Achievement: Do more than what's expected of me.
IPIP-MPQ Achievement: Excel in what I do.
Author-created (based on Hough, 1992): Set high standards for myself.
Author-created (based on Hough, 1992): Believe in a strong work ethic.
Author-created (based on Hough, 1992): Often suffer from self-doubt. (-)

Dependability
Author-created (based on Hough, 1992): People feel comfortable depending on me.
Author-created (based on Hough, 1992): People know what to expect of me.
Author-created (based on Hough, 1992): I plan things out.
Author-created (based on Hough, 1992): I like order.
Author-created (based on Hough, 1992): I consider myself to be rebellious. (-)

Self-regulation
IPIP-CPI Self-control: Am not easily affected by my emotions.
IPIP-CPI Self-control: Never spend more than I can afford.
IPIP-CPI Self-control: Experience very few emotional highs and lows.
IPIP-CPI Good Impression: Rarely overindulge.
IPIP-CPI Good Impression: Easily resist temptations.

Responsibility
IPIP-JPI Responsibility: Cheat to get ahead. (-)
IPIP-JPI Responsibility: Disregard rules. (-)
IPIP-JPI Self-discipline: Avoid responsibilities. (-)
Author-created: Show up for meetings on time.
Author-created: Am more responsible than most of my friends.

Respect
Author-created: Give respect to people who are older than me.
Author-created: Believe more respect should be shown to our elders.
Author-created: Have been told that I am a respectful person.
Author-created: Am more polite than most people.
Author-created: Treat people the way they want to be treated.

Cognitive/Emotional Empathy
IRI: Don't feel very sorry for other people when they are having problems. (-)
IRI: Would describe myself as a pretty soft-hearted person.
IRI: Sometimes try to understand my friends better by imagining how things look from their perspective.
IRI: Don't waste much time listening to other people's arguments if I am sure I am right about something. (-)
IRI: Sometimes find it difficult to see things from the "other guy's" point of view. (-)

_____

Note: CPI = California Psychological Inventory; JPI = Jackson Personality Inventory; IRI = Interpersonal Reactivity Index.

Appendix B

Item content for five virtue dimensions (Study 2)

Socioemotional Strengths
Can express love to someone else.
Do not easily share my feelings with others. (-)
Enjoy being part of a group.
Support my teammates or fellow group members.
Give everyone a chance.
Believe that everyone should have a say.
Believe that it is best to forgive and forget.
Hold grudges. (-)
Do not give anyone a second chance to hurt me. (-)
Express my thanks to those who care about me.
Am an extremely grateful person.
Feel thankful for what I have received in life.
Feel a profound sense of appreciation every day.
Look on the bright side.
Can find the positive in what seems negative to others.
Do not go out of my way to make others smile or laugh. (-)

Temperance
Don't quit a task before it is finished.
Finish things despite obstacles in the way.
Don't finish what I start. (-)
Do not tend to stick with what I decide to do. (-)
Do not tend to stick with what I decide to do. (-)
Keep my promises.
Can be trusted to keep my promises.
Am true to my own values.
Make decisions only after I have all of the facts.
Cannot imagine lying or cheating.
Make careful choices.
Am a highly disciplined person.
Do my tasks only just before they need to be done. (-)
Do more than what's expected of me.
Cheat to get ahead. (-)
Disregard rules. (-)
Avoid responsibilities. (-)
Show up for meetings on time.
Am more responsible than most of my friends.
I plan things out.
I like order.

Believe in a strong work ethic.

Agency
 Am able to come up with new and different ideas.
 Like to think of new ways to do things.
 Come up with new ways to do things.
 Am an original thinker.
 Consider myself to be a wise person.
 Am considered to be a wise person.
 Am able to fit into any situation.
 Know what makes others tick.
 Have taken frequent stands in the face of strong opposition.
 Don't hesitate to express an unpopular opinion.
 Can face my fears.
 Speak up in protest when I hear someone say mean things.
 Don't speak my mind freely when there might be negative results. (-)
 Automatically take charge.
 Take control of things.

Learning[a]
 Experience deep emotions when I see beautiful things.
 Appreciate all forms of art.
 Crave the experience of great art.
 Am thrilled when I learn something new.
 Read all the time.
 Read a large variety of books.
 Don't like to learn new things. (-)
 Do not like to visit museums. (-)
 Don't read nonfiction books for fun. (-)

Transcendence[b]
 Do not practice any religion. (-)
 Do not believe in a universal power or a God. (-)
 Practice my religion.
 Am devoted to my religion.
 Attend religious services.
 Seek a close relationship with the sacred in my daily life.
 Often feel intimately connected to a divine "life force."

Note: All items listed for each component have their highest loading (.40 or above) on that component and low loadings (.25 or lower) on all other components.
[a] = Items related to lack of emotion regulation (e.g. a strong negative loading for "Experience very few emotional highs and lows") also have their highest loadings on this component.

[b] = Items related to meaning in life (e.g. "I understand my life's meaning") also have their highest loadings on this component.

Appendix C

Item content for 21 strengths mini-scales

Religiosity
Am who I am because of my faith.
Practice my religion.
Am devoted to my religion.

Meaning in Life
My life has a clear sense of purpose.
I have a good sense of what makes my life meaningful.
I have discovered a satisfying life purpose.

Leadership
Try to lead others.
Automatically take charge.
Take control of things.

Creativity
Like to think of new ways to do things.
Come up with new ways to do things.
Am an original thinker.

Hope
Look on the bright side.
Can find the positive in what seems negative to others.
Remain hopeful despite challenges.

Orderly-Dependability
Am a highly disciplined person.
I plan things out.
I like order.

Fairness
Believe that everyone's rights are equally important.
Believe that everyone should have a say.
Give everyone a chance.

Perseverance
Don't quit a task before it is finished.
Finish things despite obstacles in the way.
Don't finish what I start. (-)

Learning
Read all the time.
Read a large variety of books.
Don't read nonfiction books for fun. (-)

Humor
Have a great sense of humor.
Am not known for my sense of humor. (-)
Do not go out of my way to make others smile or laugh. (-)

Perspective
Have been described as wise beyond my years.
Consider myself to be a wise person.
Am considered to be a wise person.

Respectfulness
Believe more respect should be shown to our elders.
Have been told that I am a respectful person.
Am more polite than most people.

Judgment
Make decisions only after I have all of the facts.
Weigh the pro's and the con's.
Try to have good reasons for my important decisions.

Emotional Empathy
Get impatient when others talk to me about their problems. (-)
Experience very few emotional highs and lows. (-)
Don't feel very sorry for other people when they are having problems. (-)

Bravery
Have taken frequent stands in the face of strong opposition.
Don't hesitate to express an unpopular opinion.
Do not stand up for my beliefs. (-)

Awe
Feel it's important to live in a world of beauty.
Experience deep emotions when I see beautiful things.
Am in awe of simple things in life that others might take for granted.

Love
Know that there are people in my life who care as much for me as for themselves.
Can express love to someone else.
Know someone whom I really care about as a person.

Modesty
Don't act is if I'm a special person.
Don't call attention to myself.
Like to stand out in a crowd. (-)

Self-regulation
Never spend more than I can afford.
Rarely overindulge.
Easily resist temptations.

Gratitude
Am an extremely grateful person.
Feel thankful for what I have received in life.
Find few things in my life to be grateful for. (-)

Teamwork
Enjoy being part of a group.
Support my teammates or fellow group members.
Feel I must respect the decisions made by my group.

Table 1

Core virtues/values from selected national character education/positive youth development organizations

_____

Organization	Number of Virtue Dimensions	Core Virtues/Values
Character Counts!	6	Trustworthiness, Respect, Caring, Responsibility, Fairness, Citizenship
Heartwood Curriculum	7	Courage, Loyalty, Justice, Respect, Hope, Honesty, Love
Center for the Advancement of Ethics and Character	4	Wisdom, Justice, Self-Mastery, Courage
Search Institute	6	Caring, Equality/Social Justice, Integrity, Honesty, Responsibility, Restraint
Character Education	-	(Suggested)

Partnership   Caring, Honesty,

                                                    Fairness, Respect,

                                                    Responsibility

_____

Note: All organizations except the Character Education Partnership (CEP) determined lists of core virtues

by literature searches and/or professional consensus. The CEP has suggested that individual schools tailor

virtue lists as appropriate for school needs.

Table 2

Hypothesized structure of the Virtues in Action classification of virtues and character strengths (Peterson & Seligman, 2004)

_____

Virtue   Strength

_____

Wisdom (cognitive strengths of acquiring and using knowledge)

     Creativity (thinking of novel means and concepts)

     Curiosity (interest in things, exploring)

     Perspective (understanding world, wise counsel)

     Judgment (weighing all evidence fairly)

     Love of Learning (systematically add knowledge)

Courage (emotional strengths, exercise will to accomplish goals)

     Perseverance (completing tasks one starts)

     Bravery (not shrinking from threat or difficulty)

     Honesty (presenting oneself in a genuine way)

     Zest (feeling alive and excited)

Humanity (interpersonal strengths, cultivating relationships)

     Social Intelligence (understanding social world)

     Kindness (helping and taking care of others)

     Love (valuing close relationships)

Justice (civic strengths underlying healthy community life)

     Leadership (organizing group activity)

     Fairness (treating everyone fairly and justly)

Teamwork (being a good team member)

Temperance (strengths protecting against excesses)

Forgiveness (forgiving others)

Self-regulation (regulating feelings and actions)

Prudence (choosing actions with care)

Modesty (not overvaluing self)

Transcendence (strengths providing meaning, links with universe)

Religiousness (beliefs about purpose and meaning)

Beauty (awareness of excellence or beauty)

Hope (expecting/working toward good future)

Gratitude (thankfulness for good things)

Humor (seeing light side of life, liking to laugh)

Note: Descriptions are adapted from Peterson and Seligman (2004) and Steger et al. (2007)

Table 3

Virtue models using various methods from selected publications

Authors and date	Scale	Analysis	Dimensions	Dimension labels
Cawley et al. (2000)	Virtues Scale	Factor Analysis	4	Empathy, Order, Resourcefulness, Serenity
Dahlsgaard (2005)[a]	VIA-Y	Components Analysis	4	Temperance, Intellect, Transcendence, Gregariousness
Park & Peterson (2005)[a, b]	VIA-Youth	Components Analysis	4	Conscientiousness, Openness, Agreeableness, Theological Strengths
Park & Peterson (2006)[a]	VIA-Youth	Factor Analysis	4	Temperance Strengths, Other-Directed Strengths, Intellectual Strengths, Theological Strengths
Peterson & Park (2004)[a, d]	VIA-IS	Factor Analysis	5	Conative Strengths, Emotional Strengths, Cognitive Strengths,

				Interpersonal
Strengths,				
				Transcendence Strengths
Peterson & Seligman (2004) [a, b]	VIA-IS	Factor Analysis	5	Restraint Strengths, Interpersonal Strengths, Intellectual Strengths, Emotional Strengths, Theological Strengths
Peterson et al. (2008)	VIA-IS	Components Analysis	5	Interpersonal, Fortitude, Cognitive, Temperance, Transcendence
Van Eeden et al. (2008) [a, c]	VIA-Youth	Components Analysis	1	Unidimensional virtue component

[a] These studies involved youth samples.

[b] These reports are summaries of data analyses. No means, loadings or other statistical information were presented.

[c] Results based on oblique (not orthogonal) rotations.

[d] Rotational strategy is unknown.

Table 4

Real versus random data eigenvalues from a scale-level PCA

Component	Real eigenvalue	Random eigenvalue
1	10.26	1.52
2	2.16	1.44
3	1.70	1.38
4	1.24	1.32
5	1.02	1.27
6	0.86	1.22

Table 5

Strengths scale loadings from PCA with Varimax rotation for two and three components.

	Virtue Components					
VIA Strengths	1	2		1	2	3
Creativity	**.82**	-.06		**.82**	.06	.00
Curiosity	**.72**	.28		**.68**	.29	.23
Perspective	**.72**	.33		**.71**	.19	.38
Judgment	**.57**	.40		**.58**	.09	.54
Learning	**.66**	.13		**.63**	.23	.07
Perseverance	.34	**.56**		.34	.12	**.69**
Bravery	**.68**	.14		**.69**	.05	.25
Honesty	.27	**.67**		.23	.32	**.66**
Zest	**.65**	.43		**.59**	.38	.34
Social Intelligence	**.76**	.24		**.71**	.36	.11
Kindness	.39	**.63**		.24	**.76**	.21
Love	.47	**.51**		.33	**.72**	.10
Leadership	.52	**.53**		.41	**.60**	.24
Fairness	.27	**.72**		.16	**.64**	.43
Teamwork	.25	**.67**		.10	**.76**	.24
Forgiveness	.14	**.67**		.04	**.53**	.44
Self-regulation	.27	**.49**		.29	.00	**.71**
Prudence	.09	**.72**		.06	.26	**.74**
Modesty	-.06	**.65**		-.11	.31	**.57**

Religiousness	.22	**.46**	.16	**.35**	.34
Beauty	**.65**	.20	**.57**	.44	-.02
Hope	**.67**	.39	**.62**	.36	.30
Gratitude	.47	**.55**	.33	**.70**	.17
Humor	**.59**	.28	.49	**.53**	.00

_____

n = 332

Note. The highest-loading component for each strength is bolded.

Table 6

Strengths scale loadings from PCA with Varimax rotation for four and five components.

	Virtue Components								
VIA Strengths	1	2	3	4	1	2	3	4	5
Creativity	.16	**.79**	.14	-.12	.20	**.79**	.22	-.07	-.09
Curiosity	.22	**.72**	.20	.29	.22	**.70**	.23	.18	.27
Perspective	.30	**.59**	.50	.02	.30	**.58**	.47	.24	-.07
Judgment	.11	.51	**.57**	.19	.09	**.59**	.39	.47	-.10
Learning	.08	**.75**	.00	.34	.10	**.78**	.00	.15	.20
Perseverance	.22	.17	**.76**	.10	.19	.06	**.75**	.32	.10
Bravery	.21	**.56**	.42	-.13	.22	.43	**.58**	-.07	.05
Honesty	.32	.11	**.63**	.29	.28	.14	.42	**.58**	.00
Zest	.45	**.49**	.40	.13	.44	.35	**.53**	.08	.28
Social Int.	**.57**	.53	.31	-.17	**.59**	.45	.42	-.03	-.07
Kindness	**.75**	.15	.17	.29	**.73**	.15	.09	.33	.17
Love	**.71**	.26	.07	.25	**.70**	.19	.13	.13	.30
Leadership	**.72**	.24	.32	.06	**.71**	.26	.22	.30	-.10
Fairness	**.56**	.10	.31	.45	.52	.20	.06	**.61**	.08
Teamwork	**.71**	.03	.15	.36	**.68**	.04	.03	.39	.19
Forgiveness	.31	.10	.22	**.63**	.27	.12	.05	**.55**	.39
Self-regulation	.03	.18	**.73**	.18	.00	.07	**.73**	.31	.20
Prudence	.20	-.01	**.64**	.40	.15	.04	.37	**.70**	.03
Modesty	.10	-.07	.35	**.60**	.05	.03	.04	**.71**	.17

Religiousness	.10	.28	.13	**.60**		.08	.14	.22	.20	**.75**
Beauty	.33	**.65**	-.07	.29		.35	**.66**	-.04	.10	.27
Hope	.43	**.52**	.37	.10		.43	.38	**.51**	.06	.27
Gratitude	**.58**	.35	.06	.44		.57	.23	.16	.15	.57
Humor	**.70**	.33	.13	-.11		**.71**	.26	.23	-.04	-.02

_____

n = 332

Note. The highest-loading strength for each component is bolded, except gratitude in the five component

solution, which loads equally on Components 1 (Social Strengths) and 5 (which only loads religiousness

and is not labeled).

Table 7

Strengths scale loadings from PCA with Varimax rotation for six components.

	Virtue Components					
VIA Strengths	1	2	3	4	5	6
Creativity	.19	**.79**	-.01	.15	-.03	-.19
Curiosity	.23	**.71**	.12	.30	.12	.32
Perspective	.30	**.60**	.31	.38	-.01	-.17
Judgment	.10	**.59**	.53	.29	-.02	-.11
Learning	.11	**.78**	.10	.03	.19	.25
Perseverance	.18	.08	.36	**.75**	.05	.02
Bravery	.22	.44	.06	**.45**	.24	-.45
Honesty	.29	.14	**.64**	.31	.10	-.13
Zest	.44	.37	.04	**.62**	.10	.26
Social Intelligence	**.58**	.47	.01	.38	-.05	-.17
Kindness	**.75**	.14	.33	.03	.24	-.05
Love	**.71**	.19	.10	.15	.27	.10
Leadership	**.71**	.27	.33	.16	-.05	-.10
Fairness	.54	.19	**.58**	.04	.06	.16
Teamwork	**.70**	.04	.33	.06	.13	.21
Forgiveness	.29	.13	.42	.18	.17	**.59**
Self-regulation	.00	.09	.37	**.70**	.19	-.03
Prudence	.16	.04	**.73**	.30	.08	.00
Modesty	.07	.03	**.67**	.04	.14	.26

Religiousness	.10	.13	.20	.19	**.83**	.03
Beauty	.36	**.65**	.09	-.09	.34	-.00
Hope	.43	.40	.04	**.57**	.15	.14
Gratitude	**.58**	.22	.11	.17	.57	.11
Humor	**.70**	.28	-.05	.26	-.09	.02

Note. The highest-loading component for each strength is bolded,

Table 8

Real versus random data eigenvalues from an item-level PCA

Component	Real eignevalue	Random eigenvalue
1	21.06	3.02
2	6.62	2.91
3	5.75	2.82
4	5.33	2.75
5	4.29	2.70
6	3.69	2.64
7	3.57	2.58
8	3.31	2.53
9	2.82	2.49
10	2.62	2.44
11	2.50	2.40
12	2.36	2.36
13	2.26	2.32

Table 9

Correlations of Study 2 virtue components with Big Five Mini-Markers

	Big Five Mini-Markers				
Virtues	E	C	N	A	O
GVC	**.41**	**.44**	**.37**	**.63**	**.50**
Intellect/Agency	.16	**.52**	.18	**.44**	**.53**
Social Strengths	**.45**	.04	**.37**	**.45**	.13
Social Strengths	**.39**	.00	**.37**	**.55**	.13
Temperance	-.05	**.68**	.16	**.31**	.12
Agency	**.48**	.10	.18	.08	**.38**
Learning	-.14	.01	-.11	**.28**	**.56**
Transcendence	.15	.18	.08	.10	-.02

Note: GVC = General virtue component; E = Extroversion; C = Conscientiousness; N = Emotional Stability (Neuroticism, reversed); A = Agreeableness; O = Openness. Significance of all correlations was determined using Bonferroni-adjusted p levels. All bolded correlations are significant at $p < .001$.

Table 10

Results of multiple regression predicting scores on altruism from five virtue components

_____

Virtue component	R	R^2	t	Sig.	95% CI
Socioemotional Strengths (1) [a]	.19	.03	3.45	.00	.04 - .15
Temperance (2)	.00	.00	.05	.95	-.05 - .05
Agency (3) [a]	.32	.10	5.93	.00	.11 - .22
Learning (4)	.02	.00	.47	.63	-.04 - .06
Transcendence (5) [a]	.03	.03	3.38	.00	.04 - .15

[a] = These relationships remained significant after variance from the Big Five factors were partialled out in a hierarchical regression analysis. Of the Big Five (not shown here), only low Emotional Stability (high Neuroticism) was significantly related to altruism scores ($t = -2.83$, $p < .01$).

Table 11

Results of multiple regression predicting scores on Positive Academic Experiences from five virtue

components

_____

Virtue component	R	R^2	t		Sig.	95% CI
Socioemotional Strengths (1) [a]	.25	.06	4.82		.00	.38 - .91
Temperance (2) [a]	.32	.10	6.40		.00	.59 - .1.12
Agency (3) [a]	.23	.05	4.2		.00	.30 - .83
Learning (4)	.00	.00	-.24		.90	-.29 - .23
Transcendence (5)	.13	.01	.01		.01	.07 - .60

[a] = These relationships remained significant after variance from the Big Five factors were partialled out in a hierarchical regression. Of the Big Five (not shown here), only Agreeableness was significantly related to PAE ($t = 2.39$, $p = .01$).

Table 12

Joint PCA of strengths mini-components and Big Five factors in a five-component extraction with Varimax rotation

	Component				
Strength/Personality Factor	1	2	3	4	5
Agreeableness	**.69**	.16	.23	-.04	.09
Hope	**.67**	-.06	.21	.12	.23
Fairness	**.64**	.00	.14	-.06	-.11
Gratitude	**.62**	.12	.19	.10	-.02
Teamwork	**.52**	.17	-.25	.22	.00
Neuroticism (reversed)	**.52**	.10	.03	-.02	.29
Emotional Empathy	**.45**	.29	.19	-.17	-.17
Love	**.43**	.11	.03	.22	.07
Respect	.34	.34	.17	.05	.19
Conscientiousness	.06	**.83**	.05	.01	.05
Orderly-Dependability	-.07	**.82**	.10	.05	.17
Perseverance	.21	**.60**	-.01	.08	.00
Self-Regulation	.13	**.49**	.02	-.22	.06
Judgment	.20	**.48**	.29	-.03	-.22
Openness	.21	.04	**.78**	-.09	-.13
Bravery	-.05	.12	**.63**	.31	.13
Creativity	.15	.10	**.62**	.15	.16
Perspective	.05	.28	**.58**	.14	.08
Beauty	.24	-.06	**.53**	.00	.07

Learning	.10	.02	**.49**	-.23	-.29
Extroversion	.34	.04	.07	**.77**	.02
Modesty	.05	.20	-.01	**-.74**	.01
Leadership	.09	.43	.31	**.53**	.08
Religiosity	.15	.10	.05	-.01	**.71**
Meaning	.25	.12	.21	.20	**.56**
Humor	.31	.04	.17	.28	**-.43**

Note: Big Five factors are italicized. Loadings above .40 are bolded.

Figure 1. The scree plot and parallel analysis of scale-level data indicate a slight elbow after the fourth component is extracted. The parallel analysis shows that only three components represent non-error components.

Figure 2. The hierarchical diagram shows correlations between components across multiple levels of extraction. Intellectual Strengths, Social Strengths and Temperance show replication across multiple levels of extraction. Correlations of each component with the level above are shown in parentheses. Adjacent correlations are not shown.

Figure 3. The scree plot of item-level data shows a large drop in values after the first component and a small amount of variance accounted for by five components. The parallel analysis shows that 11 components are non-error components.

Figure 4. The hierarchical diagram shows correlations between item-based components across multiple levels of extraction. Correlations of each component with the level above are shown in parentheses. Adjacent correlations are not shown. See discussion in Study 2 Discussion regarding the validity of this solution.

General Virtue Component

Individual Strengths (.78)

Social Strengths (.61)

Temperance (.77)

Learning (.66)

Social Strengths (.99)

Temperance (.88)

Agency (.36)

Social Strengths (.61)

Transcendence (.77)

Temperance (1.00)

Agency (.95)

Social Strengths (.91)

Learning (-.49)

Transcendence (.83)