

### Abstract

The psycho-lexical approach was used to identify virtues in a Spanish population. A total of 209 descriptors was identified as virtues and administered to 485 participants who were instructed to indicate the extent to which each virtue term applied to them. Principal Components Analysis revealed seven factors: Self-confidence, Reflection, Serenity, Rectitude, Perseverance & effort, Compassion, and Sociability. The results showed that there was no simple one-to-one correspondence between these factors and those obtained in previous studies. However, the results are congruent with those obtained in other studies as far as the relation between virtues and personality traits is concerned.

**Keywords:** Virtues, Psycho-lexical approach, Personality, Big Five

Psycho-lexically based Virtue Factors in Spain and their Relation with Personality  
Traits

Traditionally, it was the field of philosophy that took an interest in the nature and meaning of moral character traits or virtues, as can be seen in the works of Aristotle, Plato, Thomas Aquinas and Rousseau. At first, the field of psychology shared this interest, but it soon faded when the study of character was replaced by the study of personality (Allport, 1937). Evaluative concepts such as virtues were excluded from Allport's definition of personality because character was a term that was more relevant to ethics than to psychology. This conception of personality has led to virtues (and morality) being ignored in modern personality theories.

Dahlsgaard, Peterson, and Seligman (2005) pointed out that psychology has generally focused more on understanding and preventing mental disorders, thus giving rise to a variety of manuals on diagnoses and classifications of mental disorders, instead of focusing on more positive aspects such as human strengths, mental health, or well-being. In recent years, however, interest in these concepts and the study and classification of virtues has grown, because of their importance in different fields of psychology (e.g., Peterson & Seligman, 2004; Sandage & Hill, 2001). We share this latter interest, and aim to follow the psycho-lexical approach to determine the structure of virtues in Spanish. We also want to determine how these virtues are related to personality traits. We start by identifying the Spanish language terms that refer to virtues. It should be emphasized that this study is not inscribed within positive psychology (*cf.* Seligman & Csikszentmihalyi, 2000) nor does it aim to change the priorities of the discipline of psychology. What it does aim to do is to contribute to an understanding of the long ignored moral character traits.

**The concept of virtues**

Numerous definitions of virtues have been put forward in the past, many of them specifically referring to virtues as human qualities related to ‘excellence’ and morals. Tjeltveit (2003), for example, defined virtues as human qualities that are worthy of praise and are relatively stable, and he connected them to the excellence of personal qualities. Zagzebski (1996) suggested that a virtue was “an excellence of the person and so it is connected directly with the idea of good, ... a deep trait of a person” (p. 89). Fowers (2005) referred to virtues as excellence in the pursuit of worthwhile aims in ordinary life and argued that virtues are simply human excellences. Doherty (1995) and Kellenberger (1995) specifically related virtues to morally desirable traits, and internal dispositions to pursue good. Likewise, Van Oudenhoven, De Raad, Carmona, Helbig and Van der Linden (2012) defined virtues as morally good personal characteristics that everyone can either possess or learn. In sum, virtues are desirable personality characteristics that are worth pursuing behaviourally.

To some extent, the concept of virtue is related to the concept of value, although they do not refer to precisely the same thing. According to Richardson (2012) virtues are personal characteristics that shape the actions of individuals in their daily lives. In this respect, there seems to be no difference between virtues, values, and traits: all refer to relatively stable characteristics of individuals (De Raad & Van Oudenhoven, 2011; Schwartz, 1992), and they contribute to the way people behave. But there are differences too. Traits are generally defined as “dispositional”, which implies that if people are in a particular situation, they will be inclined to respond in a particular way. For example, if a person is characterized by the trait *dutiful*, this means that that person is expected to comply with reasonable requests. Virtues are seen as a subset of traits whose main feature is that they are positively valued (e.g., Cawley, Martin, & Johnson, 2000; Dahlsgaard, Peterson, & Seligman, 2005). Traits dispose people to certain

behaviours in a more or less natural, unreflective way. And the same is true for virtues, which are a subset of traits. Values refer to what people regard as important – importance being defined by moral considerations – and they form guiding principles for the decisions people take and the choices they make. Values give direction to behaviour as a kind of psychological or moral compass. They are not supposed to dispose people to behave in a certain way as traits do, but they may give direction to the way they behave.. People can have particular values but not act in consequence. What is more, they can value traits they do not have or not value traits they do have.

Virtues can also be seen as a subset of values, because they are regarded as being morally important. It is difficult to imagine a virtue that cannot also be considered to be a value (cf., Van Oudenhoven, et al., 2012). Certain concepts with a positive connotation – for example *compassion* and *honesty* – can be used to refer to both virtues (dispositional traits) and values (guiding principles). Concepts that are generally seen as having a negative connotation, such as *conceited* or *distrustful*, are dispositional traits but not values, because they are regarded as undesirable (cf. Hampson, Goldberg, & John, 1987) and not morally important guiding principles in the life of a person. Moreover, the negative connotation of these concepts implies that they cannot be regarded as virtues either, because they do not involve excellence, nor are they desirable.

### **Principle studies on identifying and classifying virtues**

As background to the present study we use two perspectives. One is a tabulation of previous studies on virtues (or human strengths) and the distinctions they made, which should help understand our findings. And the other is a conceptual distinction that is considered important in both the domain of individual differences and in the domain of cultural differences, namely the view that people and societies seem to vary in terms of an emphasis on the importance of individuality and self-actualization on the one hand,

and on the importance of being part of a larger social entity on the other. We start with this second perspective, because of its presumably generic and fundamental nature and its power to explain differentiations both within the behavioral domain of interest and across cultural borders.

The distinction we refer to has been proposed by Bakan (1966), and consists of the two meta-concepts Agency and Communion. Agency refers to being an individual, who strives to realize self. Communion refers to being part of a larger social group. In personality research, this distinction was adopted by Wiggins (1991) as a meta-conceptualization to capture the major dimensions of individual differences in the domain of interpersonal traits (cf. Hogan, 1983). Several empirical studies have demonstrated the validity of this distinction (e.g. Digman, 1997; DeYoung, 2006; Saucier, Thalmayer, Payne et al., 2014). Interestingly, it can also be linked to the individualism-collectivism dimension (Hofstede, 1980), the difference being that this latter distinction is regarded as a single dimension to distinguish cultural values and societies, while in personality, agency and communion are two relatively independent dimensions describing individual differences.

Notwithstanding the differences, the obvious connection between agency-communion and individualism-collectivism opens up a broad field of research with a huge number of studies (cf. Triandis & Suh, 2002), thus providing a context of understanding, especially when running into cross-cultural differences. The individualism-collectivism distinction, which has been called the “deep structure” of cultural differences (Greenfield, 2000), has been used to explain differences in values, attitudes and behaviors between cultures and national groups (Oyserman, Coon, & Kemmelmeier, 2002). Collectivism implies that individuals may subordinate their personal goals to the goals of a collective (the family, for example, or co-workers). In

individualistic societies the core unit is the individual, the ties between people are loose, and everyone has to look after himself or herself and his or her immediate family (Hofstede, 1991). Some of the attributes related to individualism are personal uniqueness, independence, achievement orientation, and competition (Green, Deschamps & Páez, 2005; Oyserman, Coon & Kemmelmeier, 2002). Societies tend to show greater individualism with growing complexity and heterogeneity, as in the United States, Australia, Great Britain, Canada and the Netherlands, while there is more collectivism in Venezuela, Colombia, Pakistan, Peru and Taiwan (Hofstede, 1980; Triandis, 1994). Moreover, Ramírez-Esparza, Chung, Sierra-Otero and Pennebaker (2012) found that two different cultures living in the same country can differ with regard to their individualism and collectivism.

All of this may mean that different cultures may stress different kinds of virtues (for example, competition and achievement in individualist countries, or cooperation in collectivist countries), which could ultimately involve a different structure of virtues. For this reason, it is important to study the structure of virtues in different cultures and countries.

With respect to the tabulation of existing virtue systems, we have attempted to put the pertinent virtue distinctions in Table 1, partly on the basis of conceptual similarities and partly on the basis of empirical relations found in the study by De Raad and Van Oudenhoven (2011). While the virtue systems developed by Walker and Pitts (1998), Cawley et al. (2000), and De Raad and Van Oudenhoven (2011) are based on empirical findings, and should be understood to reflect Canadian, North American, and Dutch virtues, respectively, the systems by Erikson (1950, 1981) and Dahlsgaard et al. (2005) are based on theoretical frameworks, and are not meant to be culture specific. The problem with the different virtue systems in Table 1 is that they differ not only in terms

of number of virtue factors or clusters, but also in terms of labeling, even in cases where they obviously refer to the same thing.

Erikson (1950, 1981) made one of the earliest classifications of virtues in psychology. He identified eight virtues linked to psychosocial stages of development: *hope, will, purpose, competence, fidelity, love, care, and wisdom* (Table 1, first column). *Will* and *purpose*, and possibly also *competence*, can easily be identified (see also the examples in Table 1) as representing phenomena of a primarily agentic nature. In addition, *love* and *care* seem to be typical of expressions of a communal orientation.

Dahlsgaard et al. (2005) examined valued human strengths from a variety of philosophical and religious traditions: Confucianism, Taoism, Buddhism, Hinduism, Athenian philosophy, Judaism, Christianity, and Islam. They distinguished six “core” virtues recurring in these traditions, namely *Courage, Justice, Humanity, Temperance, Wisdom, and Transcendence* (see Table 1). In particular *Courage* and *Humanity* may be seen as expressions of Agency and Communion, respectively.

The descriptions and classifications of virtues can vary from one culture to another, because they are imbued with cultural context (Sandage & Hill, 2001). In fact, the few psycho-lexically oriented studies that have been made in different cultures have shown at least some differences in virtues. Walker and Pitts (1998), for example, asked a Canadian sample to make a list of attributes about three person concepts, one of which was a highly moral person. They collected a list of 1,249 descriptive attributes, which was ultimately reduced to the 50 most prototypical attributes. Subsequently, a new group of subjects was asked to classify these 50 attributes according to their similarities. Hierarchical cluster analysis revealed a typology of six groups of attributes, including two groups with an agentic theme, attributes, namely *Confident* and *Integrity*, a group with a communal meaning, namely *Caring-trustworthy*, and *Principled-Idealistic*,

*Dependable-Loyal*, and *Fair* (see Table 1). The last one seems to be related to Dahlsgaard et al.'s *Justice*.

Cawley, Martin, and Johnson (2000) were possibly the first to explicitly study virtues using the psycho-lexical approach as described by Brokken (1978) and Angleitner, Ostendorf, and John (1990), among others. Cawley et al. (2000) used heuristic criteria to determine whether adjectives found in the dictionary were relevant for describing virtues. In particular, they used two heuristic criterion sentences: "What ought I to be?" and "What ought I to do?". With this method they obtained a list of 140 descriptors of virtues, which they turned into their 140 Virtues Scale items. The items were administered to a sample of American university students who responded by marking on a Likert scale the extent to which each of the listed virtues were descriptive of them (how they really are, and not how they ideally should be). Factor analysis (Maximum Likelihood), with Varimax rotation, showed that a four-factor solution was the best interpretable one. This solution was made up of the factors *Empathy*, *Order*, *Resourcefulness*, and *Serenity*, two of which (again) represent agentic (*Resourcefulness*) and communal (*Empathy*) orientations (see Table 1).

The starting point of the psycho-lexical study carried out by De Raad and Van Oudenhoven (2011) in Dutch was the exhaustive list of 1,203 personality traits developed by Brokken (1978). From this list, 11 judges reliably selected 153 virtue descriptors, about which a total of 400 participants (200 pairs) provided ratings; one member of a pair rated him or herself, and the other rated his or her partner. A Principal Component Analysis yielded six factors, two of which were typical of the communion orientation (namely, *Sociability and Altruism*, then *Prudence and Respectfulness*) while another two were typical of the agentic orientation (namely *Achievement and Vigour*) (see Table 1). The results also revealed that the subjects tended to perceive themselves



as less friendly and helpful (sociability), less well-mannered and polite (respectfulness), and less self-assured, courageous and optimistic (vigour) than other people perceived them to be. The self-rating and partner-rating factor structures were very similar (as assessed through congruence coefficients), although the congruence coefficient obtained on the factor Prudence was lower than for the other factors. The authors concluded that the Prudence factor was the weakest dimension.

Table 1 shows that the five systems of virtues are not fully equivalent, although there do seem to be some similarities. For example, the virtue factors *Wisdom* from the systems of Erikson (1950, 1981) and Dalsgaard et al. (2005) are similar to the Dutch factor *Prudence* (De Raad & Oudenhoven, 2011), but they do not have a clear equivalence in the other virtue systems. The Dutch factor *Achievement* seems to have an equivalent in all the virtue systems. Erikson's factors *Love* and *Care* (1950, 1981) also seem to have an equivalent in the other systems. However, the Dutch factor *Respectfulness*, for example, does not have a clear equivalence in the Dalsgaard et al. (2005) system. The Dutch virtue system is the one that generally seems to best represent the other virtue systems. In fact, all the factors from the other systems are more or less represented in the Dutch system.

PLEASE INSERT TABLE 1 ABOUT HERE

### **Virtues and Personality**

Several studies have attempted to describe the relation between virtues and personality factors, in particular those captured in the Big Five. Macdonald, Bore and Munro (2008), for example, studied core virtues and they found that the Big Five personality dimension Conscientiousness was related to the character strength Self-control, which is included in the virtue *Temperance*. Big Five Agreeableness was related to some character strengths contained in the virtues *Transcendence* and

*Humanity*, more specifically to Kindness and Spirituality. Openness to experience was related to character strengths contained in the virtues of *Wisdom* and *Transcendence*, such as Love of learning, Appreciation of beauty or Humour. Extraversion was related to the virtue *Humanity*, especially to its character strengths Social intelligence and Love. Results similar to those of Macdonald et al. (2008) were previously reported in Haslam, Bain, and Neal (2004).

Cawley et al. (2000) also assessed the relationship between their system of virtues and Big Five personality factors. They found that Conscientiousness was related to the virtues of *Order* and *Resourcefulness*, Agreeableness to *Empathy* and *Serenity*, Neuroticism to *Resourcefulness* and *Serenity*, and Extraversion to *Empathy*.

Finally, De Raad and Van Oudenhoven (2011) related the Big Five factors to their virtue factors, and they found that Extraversion was correlated with *Vigour*; Agreeableness with *Sociability*; Conscientiousness with *Achievement* and with *Respectfulness*; and Intellect with *Vigour* and *Prudence*. Emotional stability did not correlate with any of the virtue factors.

To sum up, the Big Five personality dimension Conscientiousness is related to virtues of dutifulness (virtues such as *Achievement*, *Respectfulness* or *Order*). Agreeableness is related to sympathy and goodness (virtues such as *Empathy*, *Humanity* and *Sociability*). Extraversion is also related to *Empathy* and *Humanity* in the first two studies mentioned, but also to *Vigour* in the De Raad and Van Oudenhoven study (2011), which implies being decisive, brave and vigorous. Openness to Experience and Intellect are related to virtues of judgment and perspective (virtues such as *Wisdom*, *Transcendence* or *Prudence*).

### **Aims of the present study**

Assuming that descriptions of virtues can indeed change from one culture to another (cf. Sandage & Hill, 2001), the psycho-lexical approach may be ideal for their study. The approach assumes that people wish to talk about what is important to them and that the words they use for this purpose are found in the lexicon. This starting-point, usually referred to as the lexical hypothesis (Cattell, 1943; Goldberg, 1981), has proven to be very fertile in trait-taxonomic work. This “hypothesis” has also independently been expressed by people from other disciplines, such as the philosopher of language Austin (1970), the poet and novelist Thernerson (1974), and the psycholinguist Miller (1991). Miller (1991) gave the following formulation: *our common stock of words, our lexicon, embodies the distinctions men have found worth drawing. Observations of individual differences that people have found of interest, utility, or importance get encoded by words and expressions into the substance of language.*

The psycho-lexical approach takes advantage of this lingual sediment, and exploits the lexicon of a particular language for the type of concepts one is interested in. From language to language and from lexicon to lexicon, not only can nearly all virtues of a language be identified, but also vocabularies of virtues are found to differ. These cultural aspects are difficult to detect with other procedures. For this reason, the psycho-lexical approach is used here to establish a full list of virtues, which is then used to determine the structure of virtues in the Spanish population. Moreover, the Spanish virtue structure is compared to the structures obtained by De Raad and Van Oudenhoven (2011) and Cawley et al. (2000). A further aim is to determine the relation between these virtues and the Big Five Personality Factors.

### **Method**

This research comprised two studies. In the first, words were selected from the Spanish lexicon to describe virtues in Spanish, and the list obtained was then reduced to

manageable proportions. The second study focused on the structure of virtues and their stability, and on the relationship with previously published virtue structures. Also, the relations between virtue factors and the Big Five personality factors were assessed.

### **Study 1: Selection of virtue descriptors in Spanish**

Although in most psycho-lexical studies a dictionary is used to select the sought-after descriptors of interest, in the current study they were selected from the NIM database, which, as from 25/02/2013, consists of a list of 135,725 Spanish words that can be found at the following webpage: <http://psico.fcep.urv.es/utilitats/nim/index.php><sup>1</sup>. The NIM database was developed by researchers from the Psychology Department of the Rovira i Virgili University, and is based on the Spanish lexicon in the bigger Lexico Informatizado del Español database (LEXESP; Sebastián, Martí, Carreiras, & Cuetos, 2000). The NIM database makes it possible to limit the number of letters and the frequency of use of words. In our study we only considered words between 3 and 12 letters long, because words with more than 12 letters are often learned words that most people do not understand or do not use when they speak, and words with fewer than 3 letters are prepositions, conjunctions, interjections, etc. Neither did we include words with a low frequency of use. This led to a list of 31,428 words. Thus, the NIM database provided a representative repository of the most common Spanish vocabulary.

The virtue descriptors were selected in five stages. In the first stage, a conservative process was followed: all the terms that clearly did not represent human behaviour or thoughts (for example, physical objects) were removed by one of the researchers of the current study. After these words had been removed, the list of 31,428 was reduced to 9,762 words.

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<sup>1</sup> In fact, we used a former version of this database that did not include words with a low frequency of use. Therefore, it provided a representative repository of the most common Spanish vocabulary. The current version has the option to remove the words with a low frequency of use, so the list of words that we used can also be obtained with this new database.

Because virtues refer to morally desirable traits, in the second stage the words that clearly did not describe valued and desirable concepts were also removed by the same researcher as in the previous stage. These were words with a negative connotation, such as *blackmailer*, *anger* and *greed*, which are considered socially wrong or immoral. The criteria used were not too restrictive so that important words were not removed. After this further reduction, the new list consisted of 2,356 words.

The list obtained in the second stage included some descriptors that did not refer to virtue related human qualities, such as soul or family. For this reason, in the third stage, three judges (the same researcher as before, one professor, and one PhD student) were instructed to select the descriptors describing human qualities that could be considered to be valued and desirable traits. The judges answered on a binary scale (Yes/No). The inter-rater reliability was 0.75. Words were removed when all three judges agreed that they were not virtue related human qualities, thus yielding a new list of 395 descriptors.

In the fourth stage, nine judges (4 professors, 2 lecturers and 3 PhD students) were asked to decide on the extent to which the words described virtues. They were given the definition that virtues are moral traits that indicate “what one should be, do, or show”. A Likert scale was used (1 = completely disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, and 5=completely agree). The inter-rater reliability was 0.81. The words with an overall score below 27 on a scale from 9 to 45 were removed, because low overall scores meant that judges, in general, did not regard these words to be virtue descriptors. The resulting list had 226 words.

Finally, in the fifth stage two judges (1 professor and 1 lecturer) checked the words in the list and removed all synonyms and words from the same root-family that were close synonyms. When the two judges agreed that two words were synonyms, one of them was removed from the list. The final list had 209 virtue descriptors.

### **Study 2: Structure of virtues**

Traditionally, different procedures have been used to structure the domain of virtues. While earlier studies were performed on similarity ratings (Haslam et al., 2004; MacDonald et al., 2008; Walker & Pitts, 1998), Cawley et al. (2000) performed factor analysis (maximum likelihood) on self-ratings on Likert scales, and De Raad and Van Oudenhoven (2011) performed Principal Component Analyses on self- and other-ratings. Most of the studies based on similarity ratings use multidimensional scaling techniques (MDS) to structure the data. The difference between MDS and factor analysis is that MDS is designed to describe relations among items on the basis of proximity measures, and factor analysis is oriented towards identifying any underlying communality between variables by examining the structure of the correlations between variables (cf. Davison, 1985; MacCallum, 1974). Both methods provide similar results with individual ratings if only components after the first one are considered.

Here we followed the procedure reported by De Raad and Van Oudenhoven (2011), so Principal Component Analyses were performed on self-ratings. The results of Principal Component Analysis are similar to those of factor analysis when the number of items to be analyzed is large (Mulaik, 1972). Psycho-lexical studies of personality traits have often used standardized (ipsatized) ratings before factoring the data. This procedure removes the first component. According to De Raad and Van Oudenhoven (2011), this component can partly be understood to reflect social desirability. There is, however, no need to consider this a mere artifact: some people are more socially desirable than others (cf. Hofstee, 2001; Hofstee & Hendriks, 1998). For this reason, in the current study ipsatization was not applied.

#### ***Participants***

A total of 489 Spanish university undergraduates (391 women, 93 men, and 5 participants who did not report their gender) aged between 18 and 50 years ( $M = 22.8$ ;  $SD = 5.6$ ) took part in the study. The participants were volunteers who were asked to fill out the inventories in their classroom. The sample size clearly exceeded the size required to guarantee the stability of components (cf. Guadagnoli & Velicer, 1988). The sample comprised students from different disciplines: 49.3% from Psychology, 5.3% from Labour Relations; 31.7% from Teaching, and 13.7% from Social Work.

### ***Instruments and procedure***

The list of 209 virtue descriptors was administered to the participants, who were instructed to rate the extent to which each virtue term applied to themselves on a five-point scale. More specifically, we gave them the following instruction: “Below is a set of words and terms that describe different ways of thinking and acting. You have to decide to what extent each of these words and terms can be applied to yourself: i.e. how far they define your way of thinking and acting”. The instruction in Spanish was: “A continuación se presentan un conjunto de palabras y expresiones que describen diferentes formas de pensar y de actuar. Ha de decidir en qué medida cada una de estas palabras y expresiones se pueden aplicar a su persona, o sea, si definen su forma de pensar y de actuar”.

Also, the Spanish version (Rodríguez-Fornells, Lorenzo-Seva & Andrés-Pueyo, 2001) of the Five-Factor Personality Inventory (FFPI; Hendriks, Hofstee, & De Raad, 1999) was administered in order to make it possible to assess relations between virtues and traits. This latter inventory consisted of 100 items, twenty for each of the Big Five scales, which were named Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellectual Autonomy.

The questionnaires were administered in class, in groups of 20-50 individuals. They took about 30 minutes to fill out the list of virtue descriptors and the personality inventory. The anonymity and confidentiality of individual results was also guaranteed

Statistical analyses were carried out using SPSS V.20 and FACTOR 8.1 (Lorenzo-Seva & Ferrando, 2006).

## Results

### Virtue factors

Principal Component Analyses (PCA) were performed on the virtue ratings. Three criteria were used to determine the number of factors to be extracted: the Eigenvalue pattern (scree test), Velicer's MAP test (Velicer, 1976), and interpretability of the factors. The eigenvalue pattern suggested four to seven factors, as indicated by the first ten eigenvalues: 47.4, 10.4, 7.4, 6.9, 5.0, 4.4, 3.7, 3.1, 2.9, and 2.7. Velicer's MAP test also indicated that the data had seven underlying factors. As in previous psycho-lexical studies, the first unrotated factor explained a large amount of variance (22.7%).

To further inspect the structure of the ratings, we constructed the hierarchy of factors from the various solutions with between one and seven factors. Following the procedure described by De Raad and Van Oudenhoven (2011), several PCAs were performed followed by varimax orthogonal rotations, and correlations were calculated between factors from adjacent solutions. Figure 1 provides information on the stability of the factors across the different levels of extraction. Some of the factors in solutions that had eight or more factors, which we also considered, were un-interpretable, so only the solutions with seven factors or fewer were accepted as relevant. In the solution with seven factors, the factors explained 40.7% of the overall variance.

Figure 1 shows the factors obtained in each solution and the correlations between the factors in different solutions. The order of the factors in the solutions is shown in the



figure, above the factor names. For example, the first factor obtained in the seven-factor solution, called Self-confidence, is encoded as 1/7. The first unrotated factor (1/1) is labeled First Unrotated Factor. As can be seen, some factors at one level split into other factors at the next level. For example, the factor *Consistency* (1/4) splits up into the factors *Reflection & serenity* (5/5), with which it shares 26% of the variance, and the factor *Liability* (3/5), with which it shares 74% of the variance. However, the factor *Compassion* (4/4) has correlations below .40 with the next higher level factors. In general, the factors at a lower hierarchical level should be seen as more specific than factors at a higher level. Moreover, the figure shows that there is a general division between more striving and individualistic (agency) virtues and more social (communion) virtues (at the third level of the figure, *Self-confidence* and *Consistency* versus *Empathy*).

PLEASE INSERT FIGURE 1 ABOUT HERE

All the factors of the seven-factor solution were interpretable; therefore, it was decided to retain the seven-factor solution. In Table 2 the factors are described by selecting virtues that loaded higher than 0.30 and conveyed the different facets contained in each factor. The factors are explained in more detail below.

***Self-confidence.*** This factor refers to vigor, courage, and resourcefulness and it includes descriptors such as strength, drive, optimistic, skill, and bravery.

***Rectitude.*** This factor refers to seriousness and suitable behavior and includes descriptors related to integrity (e.g., honour, dignity, faithfulness), politeness (e.g., manners, courtesy), and dependability (e.g., discipline, rectitude, order).

***Compassion.*** This factor refers to goodness and altruism, and includes descriptors related to benevolence (humanitarian, do good), compassion (mercy, clemency), and generosity (open-handedness, solidarity).

***Sociability.*** The descriptors of this factor refer to social relationships and feelings. The factor includes virtues such as love, happiness, tenderness, being communicative, and comradeship.

***Reflection.*** This factor refers to being lucid and critical, and includes descriptors about coherence, curiosity, independence, good sense, and honesty.

***Perseverance & effort.*** This factor refers to industriousness and includes descriptors such as responsibility, perseverance, hard-working, be a fighter, sacrifice, and taking care.

***Serenity.*** The descriptors of this factor refer to serenity and tranquility. It includes descriptors such as calm, be equilibrated, and patience.

PLEASE INSERT TABLE 2 ABOUT HERE

### **Sex differences in virtues**

Table 3 shows descriptive statistics for the seven virtue factors across sex. As can be seen, women had higher scores on the *Sociability* factor ( $t_{(359)}=3.68$   $p<0.01$ ; effect size:  $d=0.50$ ) and on the *Perseverance* factor ( $t_{(359)}=3.77$   $p<0.01$ ; effect size:  $d=0.51$ ). Men had higher scores on the *Serenity* factor ( $t_{(359)}=2.33$   $p<0.05$ ; effect size:  $d=0.32$ ).

PLEASE INSERT TABLE 3 ABOUT HERE

### **Comparison between Spanish virtue factors and other studies on virtues**

The seven virtue factors were compared to those obtained in two previous psycho-lexical studies: the Dutch structure of virtues (De Raad & Van Oudenhoven, 2011) and the American structure of virtues (Cawley et al., 2000). This was done through finding equivalences of the Dutch and American virtue descriptors in the Spanish data set. To find those equivalences, firstly the virtue descriptors used in the Dutch and American studies were translated into Spanish. The relevant Dutch virtues had already been made available in English in the study by De Raad and Van Oudenhoven. A native English

speaker, with expert knowledge of English and Spanish, translated the English descriptors reported by De Raad and Van Oudenhoven (2011) and Cawley et al. (2000) into Spanish. Secondly, within the translated lists we tried to find sets of terms to represent the six Dutch and the four American virtue factors in the Spanish set of virtues. We found sufficient equivalents in the Spanish list of virtues to reliably represent the two other systems of virtues (see Table 4), so these descriptors were used as markers to calculate the scores for each of the factors reported by De Raad and Van Oudenhoven (2011) and Cawley et al. (2000), within the Spanish data set.

Table 4 shows the number of markers and the reliabilities for each factor in each system of virtues. We found 66 markers to represent the Dutch virtue factors in our list, and Cronbach's alpha coefficients for these factors ranged between 0.87 and 0.70. For the Cawley et al. system of virtues (2000), we found 47 markers and Cronbach's alpha coefficients ranged between 0.86 and 0.74.

PLEASE INSERT TABLE 4 ABOUT HERE

Table 5 gives the Pearson correlations between the seven Spanish virtue factors and the factors from the other two systems of virtues. The size of the correlations, many of which were moderate to high, suggests that there is no simple one-to-one correspondence between the Spanish virtue factors and the factors from the other systems of virtues. Yet none of the correlations was counterintuitive. The Spanish *Self-Confidence* and *Sociability* relate well to single corresponding factors in the other systems, and *Serenity* has a close but lower correspondence too. The Spanish factor *Serenity* is moderately correlated to the factor *Serenity* from the Cawley et al. (2000) system of virtues and, as the name suggests, they are both related to calmness and peacefulness.

As mentioned above, Figure 1 shows a division between more individualistic (agency) virtues and more social (communion) virtues. The Dutch factor *Vigour* is particularly related to *Self-confidence*, a factor that emphasizes the agency string. The Dutch factor *Sociability* is especially related to *Compassion*, a factor that emphasizes the communion string. These results support the division between agency and communion virtues.

The remaining factors maintain a more complex relation with those in other systems. For example, the Spanish factor *Rectitude* has high correlations with the Dutch factor *Respectfulness* and Cawley et al.'s (2000) factor *Order* because these factors refer to seriousness and reliability, but *Rectitude* is also related to other factors such as *Achievement* and *Prudence*. In fact, *Rectitude* includes some descriptors related to prudence. Moreover, being serious and reliable may help to achieve goals that involve dedication and effort, which would explain the relationship with *Achievement*. The Spanish factor *Compassion* has the highest correlations with the Dutch factor *Altruism* and a smaller correlation with the Dutch *Sociability* and Cawley et al.'s (2000) factors *Empathy* and *Serenity*. These factors contain descriptors referring to goodness, generosity and helping others. The Spanish factor *Perseverance & effort* is moderately correlated to the Dutch factor *Achievement* and the Cawley et al.'s (2000) factor *Resourceful*. All of these factors include descriptors related to persistency, and the factors *Perseverance & effort* and *Achievement* also include descriptors referring to industriousness. The Spanish factor *Reflection* does not have moderate or high correlations with any factor from the other systems of virtues.

Table 5 also gives multiple correlations between the various systems of virtues. The multiple correlations between the Spanish virtue factors and the other sets of factors are high (between 0.87 and 0.95) and they indicate that the Spanish system substantially

predicts all the factors in the other systems. The moderate multiple correlations of 0.40 and 0.37 between the Spanish *Reflection* and the Dutch and the Cawley et al. systems, respectively, reveal that *Reflection* (being lucid and critical, independent and honest) is less well covered in the other two systems. The multiple correlations obtained with the Dutch system of virtues are higher than the multiple correlations obtained with the Cawley et al. (2000) system, which suggests that the Dutch system covers a larger part of the Spanish system of virtues.

PLEASE INSERT TABLE 5 ABOUT HERE

### **Virtues and personality**

Table 6 gives the correlations between the Big Five personality traits assessed by the FFPI and the three systems of virtues. It also gives the multiple correlations based on regressions of the Big Five scales on each system of virtues, and the multiple regressions of the three systems of virtues on the Big Five scales.

Big Five Extraversion is significantly correlated to virtue factors referring to friendliness and resolution, in particular *Sociability*, *Vigour* and *Resourceful*. Agreeableness is related to virtue factors referring to goodness and generosity, such as *Compassion*, *Empathy* or *Altruism*. Conscientiousness is related to those virtue factors that include markers of persistence, hard-working and seriousness, such as *Rectitude*, *Achievement*, *Respectfulness* and *Order*. Emotional stability only has moderate correlations with the Dutch factor *Vigour* and the Cawley et al. (2000) factor *Resourceful*. Finally, Intellectual Autonomy is related to virtue factors referring to intellect and resolution, in particular *Reflection*, *Vigour* and *Resourceful*.

Most of the multiple correlations in Table 6 are moderate, which suggests that virtues moderately predict personality traits. The *Sociability* factor has the highest multiple correlation, and the factors *Reflection* and *Serenity* the lowest in the Spanish

set of virtues. In fact, the factor *Serenity* has low correlations with all the personality trait factors. The personality trait factor with the lowest multiple correlation is Emotional Stability, which is congruent with the study performed by De Raad and Van Oudenhoven (2011).

PLEASE INSERT TABLE 6 ABOUT HERE

### **Discussion**

Despite the fact that modern theories of personality pushed the study of virtues aside, several authors have pointed out the need to study and classify virtues because of their relevance to various areas of psychology (e.g., Peterson & Seligman, 2004; Sandage & Hill, 2001). The psycho-lexical studies that have been performed in this field have provided interesting and relevant information about the delineation of virtues in different cultures (De Raad & Van Oudenhoven, 2011; Cawley et al., 2000).

Furthermore, the studies performed with the psycho-lexical approach have also shown that culture can affect the conception of virtues (cf. Van Oudenhoven et al., 2012). The differences between one culture and another may be explained by the fact that virtues are morally desirable traits (Doherty, 1995; Kellenberger, 1995), and that it is culture which to some extent defines what is considered good or desirable. Therefore, the study of virtues may also provide insight into these cultural differences.

The main objective of the current study was to determine the structure of virtues in a Spanish population following the psycho-lexical approach, and to establish the similarities and differences with the results obtained in other cultures. The Spanish factors were compared to those obtained in the previous psycho-lexical studies performed by De Raad and Van Oudenhoven (2011) and Cawley et al. (2000).

The results revealed seven virtue factors that were called *Self-confidence*, *Rectitude*, *Compassion*, *Sociability*, *Reflection*, *Perseverance & effort* and *Serenity*. The results

indicated that they are somewhat similar to the factors obtained in other cultures, although there is no direct and simple equivalence. The Spanish system of virtues is more similar to the Dutch system (De Raad & Van Oudenhoven, 2011) than to the American system (Cawley et al., 2000). More specifically, all the Spanish virtue factors except *Reflection* and *Serenity* have high correlations with other factors in the Dutch study. For example, *Self-confidence* is related to the Dutch factor *Vigour* (representing agency orientation) and *Sociability* is related to the Dutch factor of the same name (representing communion). However, the Spanish virtue factors *Rectitude*, *Compassion* and *Perseverance* have moderate to high correlations with several Dutch virtue factors. The Spanish virtue factor *Reflection* is not related to any Dutch virtue factor, but it is related to Cawley et al.'s factor *Resourceful*. Moreover, the Spanish virtue factors *Self-confidence*, *Rectitude* and *Compassion* have high correlations with the American factors *Resourceful*, *Order* and *Empathy*, respectively, although there are other moderately significant correlations.

The results reported by De Raad and Van Oudenhoven (2011) with the psycho-lexical approach revealed a discrepancy between their virtue factors and the six core virtues identified by Dahlsgaard et al. (2005). The virtue factors obtained in the current study have been compared only with virtue factors from previous psycho-lexical studies, not with the six core virtues. Nevertheless, a conceptual comparison between these systems of virtues tells that there is no one-to-one correspondence between them; there seem to be only some similarities (cf. Table 1). The Spanish *Self-confidence* seems to be related to *Courage*, because it includes descriptors such as courage, bravery or vigor (agency related). Likewise, there seems to be some similarity between the Spanish *Rectitude* and the Dahlsgaard et al. *Temperance*, because *Rectitude* refers to prudence and self-control. The Spanish *Sociability* seems to have some similarities with

*Humanity*, because it includes descriptors of love and kindness, among others (communion related). *Reflection* and *Wisdom* also seem to be similar to some extent, because *Reflection* refers to being lucid and critical. However, *Compassion* seems to be related to several core virtues, and it is difficult to find clear similarities between *Perseverance*, *Serenity*, and the core virtues. Therefore, it seems that the six core virtues of Dahlsgaard et al. (2005) are only partially directly represented in the virtue factors identified in the current study.

As far as the study of Walker and Pitts (1998) is concerned, the Multidimensional scaling performed on similarity indices among the 50 highly moral person attributes suggested that there were two underlying dimensions: self-other orientation and external-internal orientation. The “self” pole of the first dimension refers to personal agency and includes such attributes as *self-assured*, *self-confident* and *self-disciplined*, while the “other” pole refers to care of or attention to others and includes such attributes as *caring*, *thoughtful* and *sincere*. As far as the external-internal orientation is concerned, the “external” pole refers to maintaining external moral standards and includes such attributes as *tries to obey the Ten Commandments* and *law-abiding*, while the “internal” pole includes such attributes as *confident*, *dependable* and *conscientious*. In the current study, the hierarchy of factors shown in Figure 1 suggests an underlying self-other dimension: In the third level of the hierarchy, the factor *Self-confidence* (3/3) refers to the “self” pole and the factor *Empathy* (2/3) refers to the “other” pole (empathy, compassion). The third factor *Consistency* (1/3) seems to refer to the internal-external dimension: it includes subfactors related to dependability and conscientiousness such as *Perseverance and effort* (internal pole) and it also includes the subfactor *Rectitude* that refers to respectfulness and suitable behaviour according to social standards (external pole). In fact, *Rectitude* includes descriptors such as politeness, manners, courtesy or



suitable behaviour. However, in comparison with the other poles, the external pole is not so clearly depicted in the hierarchy of factors.

Regarding sex differences, women have higher scores on the *Sociability* and *Perseverance and effort* factors, while men have higher scores on the *Serenity* factor. Previous studies have also shown sex differences on virtues (Walker & Pitt, 1998), but these studies did not follow the psycho-lexical approach, so comparison with the current results is difficult, because the factors are very different. However, a study that focused on the Big Five personality traits across 36 cultures shows that in most cultures women tend to be more warm and open to feelings, which seems to be related to their greater scores in the current factor *Sociability* (Costa, Terracciano & McCrae, 2001; McCrae, 2002). Moreover, several studies show that women tend to have greater neuroticism, showing more anxiety and less subjective well-being than men (e.g., Feingold, 1994; Schmitt, Realo, Voracek & Allik, 2008; Friedman, Kern & Reynolds, 2010; Vigil-Colet, Morales-Vives & Lorenzo-Seva, 2013), which seems to be related to their lower scores in *Serenity*. The study by Costa, Terracciano & McCrae (2001) in 26 cultures showed that in most cultures women were more dutiful than men, which may be related to the higher scores of women on the *Perseverance and effort* factor. However, further studies focusing on virtues should be made to replicate the results found in the current study.

In conclusion, the general structure of virtues found in Spain is not equivalent to any of the structures found in other cultures. The factors *Self-confidence*, *Rectitude*, *Compassion*, *Sociability*, *Perseverance* and *Serenity* are similar to some factors found in previous studies, but they are not identical. For example, the Spanish and Dutch *Sociability* factors include facets of love, friendship and happiness, but only the Dutch factor includes descriptors of support (which in the Spanish system is included in the factor *Compassion*). Another example is the Spanish and the American *Serenity* factors:

they are similar, but the American factor includes descriptors of mercifulness and forgiveness, which in the Spanish system are included in the factor *Compassion*. The Spanish factor *Reflection* is not well represented in any of the previous psycho-lexical studies, but it has some similarities with Dahlsgaard et al.'s (2005) *Wisdom* factor.

Therefore, although none of the virtues found are specific to Spain, with no equivalence in other cultures, the general configuration and structure of the Spanish virtues are not fully equivalent to those found in previous studies. This result illustrates how difficult it is to generalize a system of virtues from one culture to another, and has implications for how virtues should be assessed in a particular culture. These cultural differences imply that it is not advisable to translate questionnaires for assessing moral traits from one culture to another. The current study may be helpful to other researchers when developing questionnaires to assess virtues in Spain, taking the factors found in this study as a starting point.

### ***Virtues and personality***

It has been suggested that virtues form a subset of traits whose main feature is that they are positively valued (Cawley et al., 2000; Dahlsgaard et al., 2005). In fact, as Cawley et al. (2000) stated, personality trait models include trait terms such as honest or agreeable that could or should be regarded as virtues as well. Taking into account the relationship between the concepts of personality and virtues, a further aim of the current study was to determine the relation between the seven virtues obtained and the Big Five Personality Factors.

As expected, the virtue factor *Sociability* is related to Extraversion, and the virtue factor *Compassion* is related to Agreeableness. The virtue factor *Reflection* refers to being lucid and critical, and for this reason it is related to Autonomy, as expected, because Autonomy is an intellectual trait that refers to the tendency to have personal

opinions, to be critical and analytical. The virtue factors *Rectitude* and *Perseverance & effort* are correlated with Conscientiousness, as expected, because these virtue factors refer to seriousness and suitable behavior (*Rectitude*) and industriousness (*Perseverance & effort*), concepts that are related to responsibility. In general, the results are congruent with those obtained by De Raad and Van Oudenhoven (2011) and Cawley et al. (2000), and they suggest that Agreeableness and Conscientiousness reflect characteristics of virtue, as De Raad and Van Oudenhoven (2011) stated. Cawley et al. (2000) also found high correlations with virtue factors for Agreeableness and Conscientiousness. McCrae and John (1992) underlined the evaluative nature of these personality traits, because they describe “good” versus evil” and “strong-willed” versus “weak-willed”. Moreover, Extraversion and Autonomy also seem to represent virtue, as De Raad and Van Oudenhoven (2011) pointed out.

According to McCrae and John (1992), the term Conscientiousness combines two aspects: an inhibitive view and a proactive view. The inhibitive view is a dimension that involves the control of impulses. The proactive view is a dimension that organizes and directs behaviour. Cawley et al. (2000) stated that their virtue factor *Order* might represent the inhibitive dimension of Conscientiousness, while their virtue factor *Resourcefulness* might represent the proactive dimension. In the current study, the virtue factors *Rectitude* and *Perseverance & effort* might also represent, to some extent, the inhibitive and the proactive dimensions, respectively. In fact, *Rectitude* has a high correlation with the Cawley et al. factor *Order*, and it includes descriptors related to self-control such as prudence, moderation or careful. *Perseverance & effort* has a moderate correlation with the Cawley et al. factor *Resourceful* and it includes descriptors related to self-directed action such as commitment or perseverance.

### ***Final comments***

Taking into account the lack of heterogeneity of the sample (university students from a variety of courses, with more women than men), further research is required to determine whether the virtue structure is replicated in more heterogeneous samples, with a greater proportion of men and with subjects from different socioeconomic and cultural levels. Moreover, it should be taken into account that the same self-ratings were used to compare different systems of virtues. This procedure might enhance the correlations, although the size of the correlations obtained shows that the different systems of virtues are not fully equivalent; in other words, they do not include exactly the same descriptors.

In conclusion, the present study has identified the structure of virtues in the Spanish population and compared it with other structures in psycho-lexical studies. The results show that the Spanish system of virtues has some similarities with other systems, especially the Dutch one (De Raad & Van Oudenhoven, 2011). Therefore, it seems that, to some extent, the Spanish system of virtues accommodates the previous systems of virtues obtained with the psycho-lexical procedure. However, further studies are needed to replicate the virtue structure obtained in this study. It should be taken into account that the current study has been carried out with Spanish speakers from Spain, and the results cannot simply be generalized to Spanish speakers from other countries, because there are many linguistic and cultural differences between them. In fact, some of the words in these cultures have different meanings or connotations; some may even have a positive connotation in one country and a negative connotation in another. Moreover, some words are very common in some countries but unknown or very rare in others. Therefore, further studies should be made in each of those cultures, to acquire greater insight into the structure of virtues in Spanish-speaking countries and the differences

between them. The findings concerning the relation between virtues and personality traits of the current study are generally similar to the ones obtained in previous studies.

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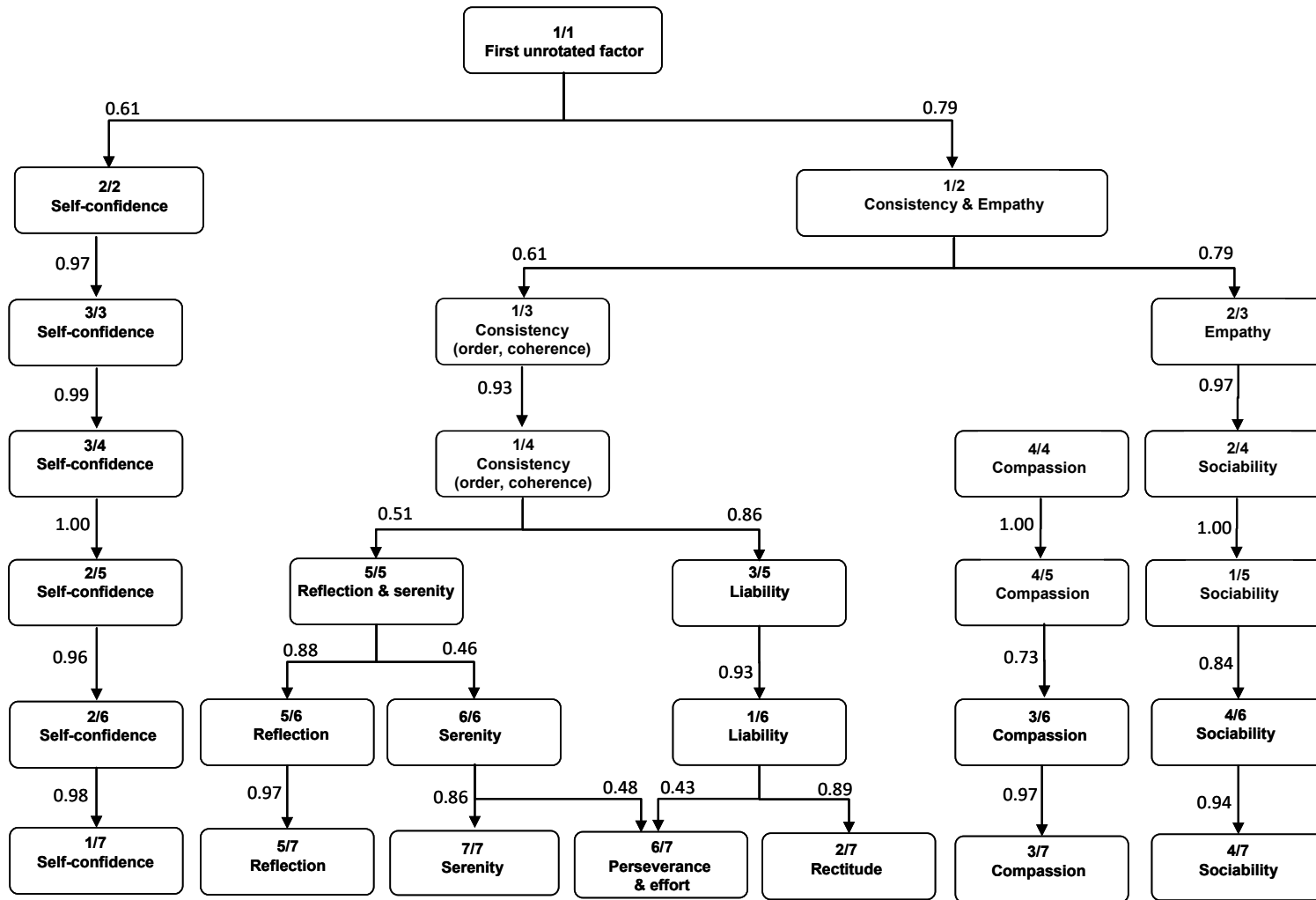


Figure 1. Solutions obtained with PCA followed by Varimax orthogonal rotation

Table 1. Five systems of virtues

<b>Erikson</b>	<b>Dahlsgaard et al.</b>	<b>Walker &amp; Pitts</b>	<b>Cawley et al.</b>	<b>De Raad &amp; Van Oudenhoven</b>
<b>Hope</b> Trust, gratitude	<b>Transcendence</b> Gratitude; hope; spirituality			<b>Sociability</b> Friendly; social; good-hearted; kind; humane, forgiving, sympathetic
			<b>Serenity</b> Serene; peaceful; merciful	
<b>Love</b> Intimacy	<b>Temperance</b> Forgiveness; humility; prudence.	<b>Caring-trustworthy</b> Honest; truthful; Good; Caring; kind; helpful	<b>Empathy</b> Sympathy; understanding; compassion	<b>Altruism</b> Sacrificial; compassionate; noble
<b>Care</b> Kindness, generativity	<b>Humanity</b> Love; kindness			
<b>Fidelity</b> Identity, loyalty		<b>Dependable-loyal</b> Responsible; honorable; faithful; loyal; respectful	<b>Order</b> Discipline; scrupulous; tidy	<b>Respectfulness</b> Orderly; tidy; obedient; civilized; decent
<b>Competence</b> Industry				
<b>Will</b> Autonomy, determination	<b>Courage</b> Bravery; perseverance, authenticity	<b>Confident</b> Strong; self-assured		<b>Vigour</b> Decisive; vigorous; brave; will-power
<b>Purpose</b> Initiative, courage		<b>Integrity</b> Consistent, integrity; hard- working; conscientious	<b>Resourcefulness</b> Perseverance; purposeful; fortitude	
<b>Wisdom</b> Integrity, perspective	<b>Wisdom</b> Creativity; curiosity; judgement; perspective			<b>Prudence</b> Integrity; discrete; philosophical; open-minded; sober-minded
	<b>Justice</b> Fairness, leadership, citizenship, teamwork	<b>Fair</b> Virtuous; fair; just		

Table 2. Descriptors with high loadings on the seven virtue factors (in Spanish between brackets)

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**Self-confidence:** drive (*empuje*), vigor (*vigor*), bravery (*valentía*), strength (*fortaleza*), wit (*ingenio*), skill (*destreza*), insight (*perspicacia*), talent (*talento*), originality (*originalidad*), creativity (*creatividad*), self-confidence (*seguridad en uno mismo*), optimistic (*optimismo*), entrepreneurialism (*ser emprendedor*), charisma (*carisma*), imagination (*imaginación*), charm (*encanto*).

**Rectitude:** seriousness (*seriedad*), decency (*decencia*), dependability (*formalidad*), manners (*tener buenos modales*), discipline (*ser disciplinado*), moderation (*moderación*), careful (*ser cuidadoso*), rectitude (*rectitud*), courtesy (*cortesía*), prudence (*prudencia*), nobility (*nobleza*), dignity (*dignidad*), faithfulness (*fidelidad*), order (*orden*), suitable behavior (*comportarse de forma apropiada*), normality (*normalidad*), politeness (*comportarse con corrección*).

**Compassion:** generosity (*generosidad*), open-handedness (*desprendimiento*), benevolence (*benevolencia*), charitable (*ser caritativo*), clemency (*clemencia*), mercy (*misericordia*), humanitarian (*ser humanitario*), help people (*ayudar a otras personas*), goodness (*bondad*), compassion (*compasión*), gratitude (*gratitud*), do good (*hacer el bien*), solidarity (*solidaridad*), hospitality (*hospitalidad*), humility (*humildad*), tolerance (*tolerancia*).

**Sociability:** nice (*ser agradable*), friendliness (*simpatía*), affectionate (*ser cariñoso*), happiness (*alegría*), love (*amor*), warm (*ser acogedor*), tenderness (*ternura*), communicative (*ser comunicativo*), comradeship (*compañerismo*), sensitivity (*sensibilidad*), kindness (*amabilidad*), unaffected (*sencillez*), sincerity (*sinceridad*), to listen (*escuchar*), confidence (*confianza*).

**Reflection:** coherence (*coherencia*), consistency (*ser congruente*), frankness (*franqueza*), honesty (*honestidad*), truthful (*honestidad*), self-criticism (*ser autocrítico*), good sense (*sensatez*), fair (*ser justo*), sensibleness (*ser juicioso*), lucidity (*lucidez*), be reasonable (*ser razonable*), autonomy (*autonomía*), be critical (*ser crítico*), independence (*independencia*), curiosity (*curiosidad*).

**Perseverance & effort:** persistency (*persistencia*), effort (*esfuerzo*), perseverance (*perseverancia*), hard-working (*ser trabajador*), commitment (*compromiso*), be a

fighter (*ser luchador*), take great care (*esmero*), sacrifice (*sacrificio*), be responsible (*ser responsable*), maturity (*madurez*), strength of mind (*firmeza*), tenacity (*tesón*).

**Serenity:** calm (*calma*), tranquility (*tranquilidad*), peaceful (*ser pacífico*), patience (*paciencia*), serenity (*serenidad*), caution (*cautela*), be equilibrated (*ser equilibrado*), self-control (*autocontrol*), acceptance (approval or tolerance of somebody or something; *aceptación, aprobación o tolerancia de alguien o algo*).

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Table 3. Gender differences for virtue factors

Virtue factors							
	Self-confidence	Rectitude	Compassion	Sociability	Reflection	Perseverance	Serenity
<i>males</i>	0.18	-0.02	0.08	-0.40	0.10	-0.41	0.26
<i>females</i>	-0.06	0.00	-0.02	0.09	-0.02	0.09	-0.05
t	1.75	-0.14	0.71	-3.68	0.90	-3.77	2.33
Sign	.08	.89	.48	<b>.00</b>	.37	<b>.00</b>	<b>.02</b>

Table 4. Reliabilities for the previous systems of virtues

	Number of markers	Reliabilities
DeR&VO: Sociability	15	0.87
DeR&VO: Achievement	10	0.80
DeR&VO: Respectfulness	11	0.83
DeR&VO: Vigour	13	0.84
DeR&VO: Altruism	8	0.77
DeR&VO: Prudence	9	0.70
Cawley et al.: Empathy	13	0.84
Cawley et al.: Order	16	0.86
Cawley et al.: Resourceful	11	0.80
Cawley et al.: Serenity	7	0.74

*Note.* DeR&VO: Dutch virtue factors (De Raad & Van Oudenhoven, 2011); Cawley et al.: Cawley et al.' (2000) virtue factors.

Table 5. Correlations between four systems of virtue factors and domains

	Seven virtue factors							
	Self-confidence	Rectitude	Compassion	Sociability	Reflection	Perseverance	Serenity	Multiple <i>R</i>
DeR&VO: Sociability	.19	<b>.31</b>	<b>.61</b>	<b>.57</b>	.17	.15	.17	<b>.95</b>
DeR&VO: Achievement	.23	<b>.53</b>	.10	.29	.25	<b>.52</b>	.15	<b>.88</b>
DeR&VO: Respectfulness	.27	<b>.72</b>	.25	.27	.16	.18	.22	<b>.92</b>
DeR&VO: Vigour	<b>.66</b>	.13	.23	.27	.26	<b>.44</b>	.05	<b>.92</b>
DeR&VO: Altruism	.25	<b>.33</b>	<b>.78</b>	.16	-.01	.19	.10	<b>.93</b>
DeR&VO: Prudence	.29	<b>.54</b>	<b>.40</b>	.19	.23	.15	<b>.36</b>	<b>.88</b>
Multiple <i>R</i>	<b>.72</b>	<b>.83</b>	<b>.88</b>	<b>.72</b>	<b>.40</b>	<b>.66</b>	<b>.43</b>	
Cawley et al.: Empathy	.19	<b>.33</b>	<b>.70</b>	<b>.40</b>	.19	.10	.17	<b>.94</b>
Cawley et al.: Order	.29	<b>.69</b>	.22	.09	.17	<b>.31</b>	.29	<b>.91</b>
Cawley et al.: Resourceful	<b>.63</b>	.12	.10	.25	<b>.36</b>	<b>.48</b>	.13	<b>.93</b>
Cawley et al.: Serenity	.11	<b>.30</b>	<b>.50</b>	.18	.15	.05	<b>.59</b>	<b>.87</b>
Multiple <i>R</i>	<b>.64</b>	<b>.76</b>	<b>.77</b>	<b>.47</b>	<b>.37</b>	<b>.53</b>	<b>.65</b>	

*Note:* Correlations higher than 0.13 were significant at 0.01 level, but only correlations higher than 0.29 are in boldface in order to make the table easier to interpret.

Table 6. Correlations between dimensions of virtues and personality traits

	EX	AG	CO	ES	AU	<i>Multiple R</i>
Self-confidence	.23	<b>-.35</b>	-.17	.21	.21	<b>.49</b>
Rectitude	.00	.14	<b>.44</b>	.07	-.16	<b>.49</b>
Compassion	-.03	<b>.38</b>	.02	-.08	-.15	<b>.43</b>
Sociability	<b>.53</b>	<b>.33</b>	.19	.19	.20	<b>.61</b>
Reflection	.11	.11	.04	.14	<b>.40</b>	<b>.43</b>
Perseverance	.16	-.01	<b>.50</b>	.12	.19	<b>.57</b>
Serenity	-.19	.14	.18	.12	-.14	<b>.40</b>
<i>Multiple R</i>	<b>.64</b>	<b>.66</b>	<b>.73</b>	<b>.38</b>	<b>.59</b>	
DeR&VO: Sociability	<b>.35</b>	<b>.39</b>	.29	.16	.06	<b>.53</b>
DeR&VO: Achievement	.25	.20	<b>.59</b>	.23	.20	<b>.60</b>
DeR&VO: Respectfulness	.19	.26	<b>.47</b>	.20	.04	<b>.50</b>
DeR&VO: Vigour	<b>.40</b>	-.01	.19	<b>.37</b>	<b>.37</b>	<b>.48</b>
DeR&VO: Altruism	.12	<b>.29</b>	.23	.06	-.05	<b>.35</b>
DeR&VO: Prudence	.14	.28	<b>.35</b>	.17	.07	<b>.40</b>
<i>Multiple R</i>	<b>.52</b>	<b>.51</b>	<b>.65</b>	<b>.39</b>	<b>.47</b>	
Cawley et al.: Empathy	.24	<b>.39</b>	.24	.12	.03	<b>.46</b>
Cawley et al.: Order	.08	.19	<b>.52</b>	.19	.03	<b>.53</b>
Cawley et al.: Resourceful	<b>.36</b>	-.03	.26	<b>.36</b>	<b>.38</b>	<b>.49</b>
Cawley et al.: Serenity	.03	<b>.33</b>	.18	.19	-.07	<b>.42</b>
<i>Multiple R</i>	<b>.43</b>	<b>.49</b>	<b>.58</b>	<b>.38</b>	<b>.47</b>	

*Note:* Correlations higher than 0.13 were significant at 0.01 level, but only correlations higher than 0.29 are in boldface, in order to make the table easier to interpret.

EX: Extraversion; AG: Agreeableness; CO: Conscientiousness; ES: Emotional Stability; AU: Autonomy