

Flexibility in Existential Beliefs and Worldviews

Introducing and Measuring Existential Quest

Matthieu Van Pachterbeke¹, Johannes Keller², and Vassilis Saroglou¹

¹Université Catholique de Louvain, Louvain-la-Neuve, Belgium, ²Ulm University, Ulm, Germany

Abstract. Being open to questioning and changing one's own existential beliefs and worldviews is an understudied epistemological tendency we call "existential quest." We found that existential quest is a specific construct that can be distinguished from related constructs such as searching for meaning in life, readiness to question proreligious beliefs (i.e., religious quest), need for closure, and dogmatism. In five studies, we tested the psychometric qualities of a newly developed 9-item scale and the relationship of existential quest with individual difference variables reflecting ideological and epistemological needs (such as authoritarianism or regulatory focus) and behavioral tendencies (myside bias in an argument generation task). Existential quest showed incremental validity over and above established constructs regarding the prediction of relevant cognitive biases and empathy. The findings indicate the relevance of existential quest as an epistemological construct that seems particularly interesting for research in the developing field of existential psychology.

Keywords: existential psychology, religious quest, worldviews, authoritarianism, dogmatism

Introduction

Universally – across individuals, religions, ideologies, countries, and historical periods – people hold a measure of attitudes, opinions, and beliefs regarding existential issues. These may concern the origin and finality of the world, the meaning of life and death, the existence of transcendence, and so on. Irrespective of the specific beliefs that individuals hold on these issues, everyone seems to have some idea about the nature of these questions. However, beyond the universality of holding opinions about these existential issues, there are substantial interindividual differences in the degree to which individuals hold them with certainty, intensity, and stability – or are open to reconsideration and modification. We call this openness to engage in reflective considerations concerning existential questions "existential quest" (EQ). We define it as the readiness to engage in the process of questioning one's opinion regarding such existential issues. This disposition applies to people with various existential beliefs and thus exists independently of the specific content of these beliefs.

Researchers in the field of psychology of religion are familiar with Batson, Schoenrade, and Ventis' (1993) quest religious orientation and the corresponding scale. Following a brief discussion of Batson's religious quest and related research, we argue in favor of introducing the construct of EQ. We then discuss the newly developed EQ scale and specify the hypotheses regarding its initial validation.

Batson's Quest Religious Orientation and Its Limitations

To differentiate mature from immature intrinsically religious individuals, Batson (Batson & Schoenrade, 1991a, 1991b; Batson et al., 1993) introduced the quest religious orientation defined as an open, flexible approach reflecting a tendency to challenge one's own religious beliefs. Religious questers are individuals who openly and honestly face the existential questions posed by the contradictions and tragedies of life. The quest religious orientation implies (1) the readiness to face existential questions without reducing their complexity, (2) the perception of self-criticism and of religious doubts as a positive quality, and (3) the openness to change one's own religious beliefs.

Important research has been conducted on the quest religious orientation, resulting in numerous insights. People endorsing religious quest tend to show high integrative complexity of thought (Batson & Raynor-Prince, 1983) and a strong need for cognition (Barrett, Patock-Peckham, Hutchinson, & Nagoshi, 2005; Burris, Jackson, Tarpley, & Smith, 1996). Moreover, religious quest negatively relates to constructs reflecting closed-mindedness: dogmatism, authoritarianism, religious orthodoxy, and fundamentalism (Altemeyer & Hunsberger, 1992; Duck & Hunsberger, 1999). In addition, religious quest reflects an autonomous attitude: High questers do not seem to care about how they appear to others (Watson,

Morris, Hood, Milliron, & Stutz, 1998), they do not have a preference for public consistency (i.e., to appear consistent to others; Barrett et al., 2005), and they tend to be explorative in their personal identity as reflected in strong endorsement of moratorium (Klassen & McDonald, 2002). Finally, religious questers tend to show low prejudice (Batson et al., 1993) and high postconventional moral reasoning (Cottone, Drucker, & Javier, 2007). They behave in a prosocial way, driven by intrinsic nonegoistic motivations – empathetic concerns – rather than extrinsic reasons such as self- or other-perception (Batson et al., 1993).

The quest religious orientation does not seem to reflect unconditional openness, excessive relativism, or naïve tolerance. It has been found to relate positively to relativism without being related to nihilism (McHoskey, Betris, Worzel et al., 1999), or openness to experience (Kosek, 1999). It also relates positively to the preference for consistency regarding one's own beliefs (Barrett et al., 2005). Moreover, religious questers, although tolerant and helpful to people who threaten their values (e.g., homosexuals, fundamentalists, or antigay), do not go so far as to help individuals when it comes to actions that are likely to promote intolerance (Batson, Eidelman, Higley, & Russell, 2001; Batson, Denton, & Vollmecke, 2008).

Introducing Existential Quest and the Corresponding Scale

When studying EQ, we must remember that the use of religious quest scales has two large limitations. Religious quest scales can be used only on religious people, neglecting nonreligious ones, and the latter are quite numerous in secularized countries. Moreover, existential beliefs and worldviews are broader than religious ones. As a consequence, by using only religious quest scales, we lose important psychological knowledge by neglecting how people reconsider their other existential beliefs. It is important to acknowledge the fact that there are various forms of existential beliefs and worldviews of which religious beliefs represent only one specific form.

Our aim in the present work was *not* to replace the existing religious quest scale with a new one (for such efforts, see Altemeyer & Hunsberger, 1992; Francis, 2007; Maltby & Day, 1998). The religious quest scale is well-designed to measure religious quest in religious individuals. Our aim was *to propose a new construct and scale* that extends the questing attitude to existential issues in general and can be applied to all people, whether religious or not. As mentioned above, holding existential beliefs is universal, whereas endorsement of religious beliefs is only *one* specific way to address existential issues. Introducing a measure assessing individual differences in flexibility and openness regarding existential beliefs in general represents a meaningful contribution to the study of epistemological and related sociocognitive processes. In this respect, it is

interesting to note that the quest orientation has already been applied to nonreligious beliefs reflecting a global ideology (communism; McFarland, 1998). However, up to now no instrument has been available designed specifically to assess the quest orientation in broad terms, i.e., without an exclusive focus on religious issues and without necessarily endorsing a religious perspective.

Being flexible as well as ready to question and possibly change one's own existential beliefs and worldviews is a neglected area of research. We acknowledge that EQ is most likely related to established constructs reflecting open-mindedness (see the next section for specific predictions), but we also argue that it is nonetheless unique in many respects. First, EQ should not be equated with low dogmatism; the latter represents flexibility regarding all kinds of opinions, whereas EQ refers specifically to existential beliefs and worldviews. Second, EQ should not be equated simply with search for meaning because this latter construct can be open- but also closed-minded in character. In contrast, a key characteristic of EQ is flexibility regarding existential worldviews. Third, EQ should not be equated with a low need for closure (i.e. high need for avoiding closure), since flexibility does not imply a general tendency to avoid conclusions regarding existential beliefs. These considerations speak to the fact that EQ cannot be considered as redundant with existing constructs.

We created a scale including nine items designed to measure EQ within the constraints implied by the definition of the construct: The items should not reflect proreligious convictions but should focus on abstract processes without reference to specific theological or ideological positions; and the thematic content reflected in the items should represent a broad range of relevant beliefs, going beyond – although not excluding – strictly religious or spiritual beliefs and thus including worldviews and existential issues in general. Moreover, we created items that do not merely paraphrase each other, including items that address the different components of the quest orientation in line with Batson's work:

1. relative uncertainty regarding fundamental issues,
2. valuing doubt about and questioning of these issues,
3. openness to change (reflecting the acknowledgment that one may change one's positions and attitudes across time).

The nine items are presented in the Appendix.

Validation Hypotheses

We derived several specific hypotheses regarding the relation of EQ to age, religiosity, and specific personality dispositions. These hypotheses reflect assumptions concerning the convergent, discriminant, and incremental validity of the EQ scale.

We posited that the *age* of respondents is negatively related to EQ because previous research revealed that open-

ness to experience typically decreases with age (Helson, Kwan, John, & Jones, 2002), whereas conservatism increases (Truett, 1993). Also, religious quest tends to decrease from young age to adulthood (Boyatzis & McConnell, 2006).

Religiousness should be largely unrelated to EQ. This is a key prediction, since one of the objectives of the present work was to move beyond religious quest, which often overlaps with high or low religiousness (depending on the sample), toward a measure of EQ that is largely independent of religiousness. However, we found it interesting to see whether religious and nonreligious people were equally ready to question their existential beliefs.

EQ should be *negatively* correlated with key constructs that reflect specific dimensions of closed-mindedness: authoritarianism (Altemeyer, 1996), dogmatism (Altemeyer, 1996; Rokeach, 1960), need for closure (Webster & Kruglanski, 1994), and intolerance of ambiguity (Frenkel-Brunswik, 1949; Furnham & Ribchester, 1995). However, the associations should be moderate, given the distinctiveness of the EQ construct from other constructs reflecting the certainty–uncertainty and rigidity–flexibility continuum.

Individuals questioning their existential beliefs should be low in *authoritarianism*: They should share with low authoritarians the autonomous, nonsubmissive way of being and dealing with ideas, norms, and rules. However, authoritarianism also includes traditionalism–conventionalism, what is less relevant for EQ.

Individuals who are open to challenge their own beliefs would share with people low in *dogmatism* flexibility, relativization of beliefs, and openness to change them if new and contradictory evidence is provided. However, EQ is not just the opposite of dogmatism. First, existential beliefs are special beliefs: They are core beliefs with some stability across the lifespan and play a very central role in organizing people's life. Indeed, Hunsberger, Pratt, and Pancer (1994) found that religious fundamentalists have a "problem" with integrative complexity of thought concerning existential issues, but not with other kinds of issues. Moreover, the opposite of the high dogmatism pole is defined as "believing in little or nothing, even to the point of refusing to take slight stands" (Altemeyer, 1996, p. 202). This would not be the case for existential questers whose openness to change does not necessarily imply that they do not hold any beliefs at all. In other words, to be ready to question and change one's own worldviews, one necessarily needs to hold some worldview.

Similar considerations apply to *need for closure* and *intolerance of ambiguity*. Need for closure is defined as the motivational dimension that drives people to search for answers, order, certainty, and nonambiguity (Webster & Kruglanski, 1994). A negative but moderate correlation with EQ should be expected for several reasons. Need for closure refers to all sorts of aspects that may threaten order and certainty, whereas EQ focuses specifically on existential questions. However, the high pole of EQ does not just overlap with the low pole of need for closure, which re-

flects the need or motivation to *avoid certainty*. As mentioned earlier, questers still look for some internal consistency and can be considered to be motivated to avoid excessive relativism. In other words, the specificity of existential attitudes compared to other kinds of opinions, beliefs, and ideas is that, even when they are flexible and changeable, their primary function is to provide consistency, meaning, and order. Accordingly, a strong EQ orientation is *not* equivalent with a tendency to avoid certainty.

EQ should also reflect certain cognitive skills. First, we assume that individuals who are capable of envisaging the possibility that their present attitudes with regard to existential questions may evolve and change may also have the capacity to *take alternative perspectives* and to imagine and understand opinions and ideas that are contrary to their own positions. Second, we also explored the relation between EQ and *need for cognition* that refers to individuals' tendency to engage in and enjoy effortful cognitive endeavors (Cacioppo & Petty, 1982). If an association exists, this should be positive, since questioning and changing one's own existential attitudes can be reasonably expected to be most strongly found in people who have some curiosity and are interested in exploring alternative ways of creating meaning. However, the link should be modest at best, since EQ does not simply reflect cognitive curiosity.

Moreover, like the religious quest orientation, EQ should also comprise *empathic skills*. Individuals who are able to relativize their beliefs, to consider others' perspective – and who are ready to change their cognitive schemata if justified – may also have the capacity to empathize and feel what other persons feel, and to understand other individuals' feelings (Jolliffe & Farrington, 2006).

Finally, we explored whether the reflexive approach to worldviews and beliefs by existential questers reflects a specific *self-regulatory orientation*. Regulatory focus theory and research (Higgins, 1997) has distinguished between a *promotion focus*, which is a concern with acquiring nurturance through a focus on hopes, aspirations, and accomplishments, and a *prevention focus*, which is a concern with security through a focus on duties, obligations, and safety. A promotion focus is associated with generating more and simultaneously endorsing multiple hypotheses, whereas a prevention focus is associated with generating only a few hypotheses and firmly selecting one hypothesis from a given set (Liberman, Molden, Idson, & Higgins, 2001).

If existential questers are people who hedonistically look for complexity, challenge, and creativity in various worldviews, they should be high in *promotion* focus. Also, given the hypothesized negative links between EQ and constructs reflecting closed-mindedness, one should expect EQ to relate negatively to a prevention-focused self-regulatory orientation, known to reflect closed-mindedness and conservatism (Jost, Glaser, Kruglanski, & Sulloway, 2003). On the other hand, EQ implies the awareness (1) that beliefs and worldviews are not irrefutable and may be challenged, and (2) that the meaning of life is an elusive

concept, an awareness that may reflect some degree of uncertainty and a sense of instability, and in turn a need for safety and security. This suggests that EQ may be positively related to a *prevention-focused* mode of self-regulation.

Overview of the Studies

Study 1 explored the basic psychometric qualities of the scale in a sample of 323 students and tested the key validation hypothesis according to which EQ is largely independent from religiousness. Study 2 intended not only to replicate findings observed in Study 1, but also to examine in a more heterogeneous sample of 206 adults the influence of age on EQ as well as the associations of the EQ scale with right-wing authoritarianism, need for closure, and empathy. In Study 3, we tested the discriminant and incremental validity of the EQ scale based on a measure of generation of arguments reflecting a “myside bias” (Toplak & Stanovich, 2003). Study 4 replicated and extended findings of the first three studies in a different country and provided initial information on the self-regulatory focus of existential questers. Study 5 investigated the incremental validity of EQ with regard to religious quest and search for meaning in predicting external outcomes. In a concluding psychometric analysis, we provide additional information on the psychometric characteristics of the scale, on the basis of the whole set of data from the five studies.

Study 1

Method

Data were collected from 323 first-year psychology students at a French-speaking Belgian university (mean age = 18.5; $SD = 2.2$; 258 women and 58 men; 7 did not mention gender). The relevant scales were part of a general survey in which students participated in exchange for course credits.

To measure EQ, we generated a list of 13 items that were reduced (based on experts’ advice) to the nine items included in the scale we used in the studies reported below (see Appendix). The items included in the scale refer to the dimensions of being uncertain, valuing doubt, and being open to reconsider and change existential beliefs and worldviews. They were partly inspired by items included in existing quest scales within the Batson’s tradition. We included two items referring to religious/spiritual issues (reflecting one component of existential beliefs). Note that we designed these items in a way to avoid a proreligious interpretation. The items refer to “opinions on” or “attitudes toward” religion/spirituality. Thus, endorsement of the items does not reflect religious conviction as it is the case in religious quest scales. Participants responded to each item on a 7-point response scale with endpoints labeled 1 =

not at all true and 7 = *completely true*. We computed EQ scores by summing responses across the nine EQ scale items (with two-reverse coded items recoded).

To measure general *religiousness*, we administered three questions tapping (1) the importance of God, (2) the importance of religion in life, and (3) the frequency of personal prayer (7-point Likert scales) (see Saroglou & Muñoz-García, 2008). We computed a global index of religiousness by adding the scores across the three items ($\alpha = .91$). We also asked participants to evaluate importance of *spirituality* in their life on a 7-point Likert scale (see also Saroglou & Muñoz-García, 2008).

Results and Discussion

Scores of the EQ scale varied between 18 and 62, thus widely covering the possible range (9–63). The mean score was 42.4 ($SD = 8.6$), very close to the median (42). Both mean and median were higher than the midpoint of the scale (36). The distribution was symmetric (skewness = $-.06$) and well-balanced (kurtosis = $-.28$). Reliability was satisfactory ($\alpha = .74$), and no single item increased reliability if deleted. The mean scores of women (42.2; $SD = 8.7$) and men (42.6; $SD = 8.5$) did not differ, $t_{(301)} = -.29$, *ns*. Age was unrelated to EQ, but this is not informative given the restricted age range among participants.

The correlation between the EQ and religiousness was positive but weak, $r = .14$, $p < .05$. The link between EQ and spirituality was also positive, $r = .29$, $p < .01$, and clearly stronger ($z = -2.0$, $p = .02$). An exploratory test of curvilinearity of the relation between religiousness and EQ scores turned out to be significant, $F(2, 309) = 12.54$, $p < .001$; both the linear term ($B = 5.55$, $p < .001$, $t = 4.81$, $p < .001$) and the quadratic term ($B = -.08$, $t = 4.33$, $p < .001$)

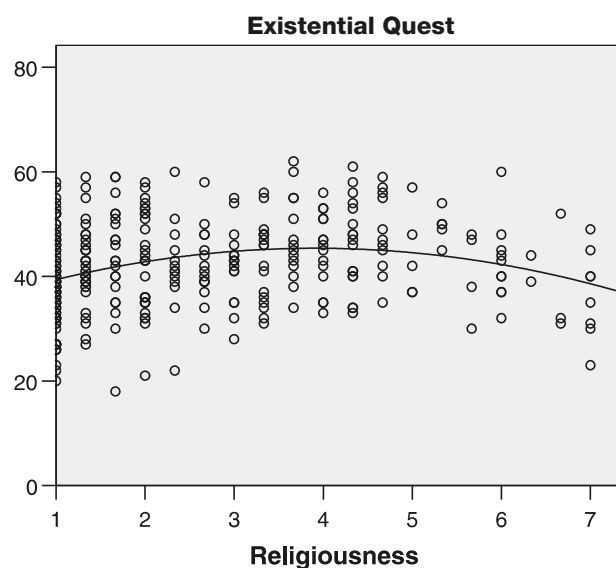


Figure 1. Curve estimation of religiousness as predicting existential quest in first-year psychology students (Study 1).

were significant. Figure 1 illustrates the inverted-U pattern, with both strongly religious and strongly nonreligious participants scoring relatively low on the EQ scale, whereas participants who were moderately a-religious or religious scored higher on the EQ scale.

In conclusion, EQ scores were normally distributed and gender had no impact on these scores. EQ and religiosity showed a curvilinear relation: Low EQ characterizes the two opposite extremes on the religiosity continuum, that is, strongly nonreligious and strongly religious individuals, but not moderately religious or agnostic individuals. This was an indication of (1) a negative relation between existential quest and closed-mindedness and (2) the possibility to distinguish EQ from religiousness.

Study 2

Study 2 investigated whether the findings obtained in Study 1 hold in a more heterogeneous sample. Moreover, we tested specific hypotheses regarding the links between EQ and other personality constructs as discussed in the introduction: right-wing authoritarianism, need for closure, and empathy.

Method

Participants

Adults of various ages were contacted by an undergraduate student who asked her acquaintances and neighbors to participate. In total, 206 French-speaking Belgian adults (87 men and 119 women) took part in this study (without receiving compensation). Mean age was 45.5 years ($SD = 16.8$, range = 18–87). Participants received a booklet containing a set of different questionnaires.

Measures

Existential Quest

The nine items as used in the first study were included.

Religiousness

Two items measured the importance of God and religion in participants' lives (as in Study 1). Two additional items measured the degree to which participants consider religious beliefs and faith a necessity. Finally, one item assessed the degree to which participants consider religion helpful in the quest for truth. The scores on these five items (all assessed using 7-point Likert scales) were added to get a global *religiousness* score ($\alpha = .89$). Finally, participants rated the importance of spirituality in their life in the same way as in Study 1.

Right-Wing Authoritarianism

Funke's (2005; our translation) version of Altemeyer's (1996) Right-Wing Authoritarianism scale was translated into French and adapted to the Belgian context. This scale borrows many items from the initial RWA and comprises items that cover the three RWA facets: conventionalism, authoritarian submission, and authoritarian aggression. Three items were split in two (more than one idea was included in the original version), and two items were replaced. A global score was computed by adding the response scores for all 15 items ($\alpha = .75$).

Need for Closure

This scale (Webster & Kruglanski, 1994; French translation by Caroff, Berjot, Fievet, & Drozda, 2003) measures the desire for definite knowledge about or a conclusive answer to relevant issues and an aversion to confusion and ambiguity. In order to reduce the length and time of the administration, we used the subscales Preference for order (10 items) and Preference for predictability (8 items), which reflect the inclination to maintain closure for as long as possible ("freezing" tendency), and computed an aggregate score of answers (6-point Likert format) on these 18 items ($\alpha = .87$).

Empathy

This measure of dispositional empathy (Interpersonal Reactivity Index; Davis, 1983; French translation by P.C. Moron of the University of Laval; see Saroglou, Pichon, Trompette, Verschuere, & Dernelle, 2005) consists of four subscales (28 items): empathetic concern, perspective taking, personal distress, and fantasy. In order to keep the questionnaire within a reasonable length, we dropped the fantasy subscale. Participants indicated their agreement with each of the 21 items on a 5-point Likert scale. A global score of empathy was computed by summing the scores on the 21 items ($\alpha = .71$).

Results and Discussion

The scores on the EQ scale varied between 11 and 63. The mean score was 38.57 ($SD = 9.91$), close to the median (39) and the midpoint of the scale (36), and significantly lower than in Study 1, which could be attributed to the higher mean age of respondents in the present sample. The distribution showed a slight negative asymmetry (skewness = $-.24$) and was well-balanced (kurtosis = $.00$). Reliability was again satisfactory and identical to Study 1 ($\alpha = .74$). Women had a higher score ($M = 40.23$, $SD = 9.99$) than men ($M = 36.17$, $SD = 9.36$), $t(186) = 2.81$, $p < .01$, and, as hypothesized, EQ decreased with age, though the correlation was weak ($r = -.15$, $p < .05$).

As depicted in Table 1, EQ scores were unrelated to religiousness and weakly positively related to spirituality.

Table 1. Correlates of existential quest and intercorrelations between measures in an adult sample (Study 2)

| | Existential quest | Religiousness | Spirituality | Need for closure | RWA | Empathy |
|------------------|-------------------|---------------|--------------|------------------|--------|---------|
| Age | -.17* | .40*** | .21** | .43*** | .39*** | .07 |
| Gender (F) | .19** | -.08 | -.05 | -.08 | -.04 | .29*** |
| Religiousness | -.05 | | .57*** | .30*** | .41*** | .22** |
| Spirituality | .14* | | | .02 | .04 | .22** |
| Need for closure | -.21** | | | | .56*** | .12 |
| RWA | -.23** | | | | | .10 |
| Empathy | .21** | | | | | |

Notes. * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

The test of curvilinearity of the relation between religiousness and EQ was not significant, $F(2, 203) = 0.48$, ns ; $B_{linear} = -0.45$, $t = -0.70$, ns ; $B_{quadratic} = -.003$, $t = -0.70$, ns . As hypothesized, the associations of EQ with personality constructs were negative for right-wing authoritarianism and need for closure, and positive for dispositional empathy (see also Table 1). Controlling for gender and age did not change these results.

All correlations supported our expectations and provided validation of the EQ scale. Moreover, the independence of EQ from religiousness clearly supported the distinct nature of EQ with respect to the religious quest orientation. The positive association between EQ and spirituality was similar to Study 1. It suggested that interest in spirituality (known to reflect high Openness to Experience; Saroglou, 2010) is a sign of flexibility and questioning of existential beliefs.

Table 1 also details the intercorrelations among the external correlates. Interestingly, an exploratory multiple regression analysis with the three personality correlates (right-wing authoritarianism, need for closure, and empathy) as predictors of EQ scores revealed that each one had unique explanatory power in predicting EQ: right-wing authoritarianism ($B = -.17$, $t = -2.21$, $p < .05$), need for closure ($B = -.14$, $t = -1.79$, $p = .07$), and dispositional empathy ($B = .24$, $t = 3.60$, $p < .001$) (adj. $R^2 = .11$). This suggests that EQ reflects a unique combination of different epistemological and sociocognitive elements, and does not represent a construct that is equivalent to an already established epistemological or sociocognitive concept.

Study 3

The objective of Study 3 was threefold. First, given the fact that the validation of EQ in Studies 1 and 2 was based exclusively on self-report measures, the aim of Study 3 was to provide additional evidence based on the performance on a task assessing a specific response tendency (reflecting a “myside bias”). We hypothesized that existential questers have the cognitive capacity and willingness to generate thoughts that do not represent – or are contrary to – their personal opinion or perspective on an issue. Second, we

intended to test the discriminant and incremental validity of the EQ scale by documenting the explanatory power of EQ scale scores over and above the explanatory power of other related constructs, such as need for cognition, need for closure, or dogmatism. One key component of *need for cognition* is curiosity, but this does not necessarily mean propensity to identify with an opponent’s views. People low in *need for closure* enjoy uncertainty. One might expect those individuals to be interested in other persons’ opinions. However, this is different from understanding and developing (with some conviction) alternative perspectives, even opposite to one’s own opinions, something we suppose is a specific element of EQ. Low *dogmatism* means flexibility in opinions but in its extreme form implies no attachment to any opinion. This is different from having an opinion but being capable of imagining alternatives ones. Finally, the epistemological constructs (dogmatism and need for cognition) incorporated in this study further added to the validation of the EQ scale.

Method

Participants were 49 French-speaking Belgian first- and second-year psychology students (11 men and 38 women) who participated in this study in exchange for course credit. Their mean age was 20.2 years ($SD = 2.1$).

The study comprised two sessions. During the first session, participants completed the EQ scale ($\alpha = .72$), the Need for Closure scale (as in Study 2; $\alpha = .72$), the Need for Cognition scale (Cacioppo & Petty, 1982; see Buxant, Saroglou, & Scheuer, 2009, for the French translation), and items from the Dogmatism scale (Altemeyer, 2002; our translation). The Need for Cognition scale is an 18-item scale measuring individuals’ tendency to engage in and enjoy effortful cognitive endeavors. A 6-point Likert scale was adopted ($\alpha = .85$). Altemeyer (2002) defined dogmatism as “relatively unchangeable, unjustified certainty” (p. 713). Five items from his Dogmatism scale were administered ($\alpha = .68$).

In a second session, 2 to 5 days later, participants worked on an arguments-generation task developed by Toplak and Stanovich (2003). Participants were first presented with three different issues in the form of opinion statements and

Table 2. Correlations of existential quest with cognitive measures, and intercorrelations between measures (Study 3)

| | Existential quest | NCognition | NClosure | Dogmatism | Myside bias: arguments |
|-------------------------|--------------------|-------------------|----------|------------------|------------------------|
| Need for cognition | .12 | | | | |
| Need for closure | -.20 [#] | -.28 [*] | | | |
| Dogmatism | -.26 [*] | -.08 | .04 | | |
| Myside bias: arguments | -.27 [*] | -.10 | .12 | .22 [#] | |
| Myside bias: conviction | -.37 ^{**} | .03 | .05 | .27 [*] | .89 ^{***} |

Notes. * $p < .05$, ** $p < .01$, *** $p < .001$, [#] $p < .10$ (one-tailed).

asked to indicate their agreement with the respective opinion on 8-point Likert scales. These three issues were: (1) "Child adoption by homosexual couples should be permitted"; (2) "The meaning of life is something entirely personal"; and (3) "In a house, rooms must be painted with light colors." The order of presentation was counterbalanced. Afterwards, each of these opinions was presented on a separate page and participants were asked to generate as many arguments as they could either *in favor of* or *in opposition to* the stated opinion. The page was left blank, so no indication was given as to how many pro and contra arguments should be provided; also, participants were not asked to specify which arguments were pro and which were contra. For a participant who agreed with opinion (2), the provided argument "Each person is unique, so everyone gives a personal meaning to his life" was counted as a myside argument, whereas the statement "Most people share the same goals and objectives in their life" was counted as an other-side argument. After having generated arguments for all three topics, participants were presented with all arguments – pro and contra – they had provided and were asked to rate (10-point Likert scale) the degree to which each of these arguments seemed convincing to them. Afterwards, they were thanked and debriefed.

Participants provided a total of 718 arguments. These were classified by two independent judges, following Toplak and Stanovich (2003), into "myside arguments," i.e., arguments endorsing/supporting the participant's position, and "otherside arguments," i.e., arguments opposing the participant's position. There was an 89% agreement between the two judges.

Afterwards, we first computed an index of *myside bias in arguments* by subtracting the number of "otherside arguments" from the number of "myside arguments." We summed up the three myside bias scores – one for each issue. Higher scores in *myside bias in arguments* reflect participants' tendency to generate more arguments in favor of their own opinion relative to the number of arguments in favor of the opposite opinion. Second, we similarly computed an index of *myside bias in conviction* by subtracting the conviction scores regarding otherside arguments from the conviction scores regarding myside arguments. Again, higher scores in myside bias in conviction reflect the fact that respondents reported higher conviction scores regarding the arguments that favored their opinion relative to the arguments in favor of the opposite opinion.

Results and Discussion

Concerning the self-report measures, EQ was negatively correlated with dogmatism and need for closure. It was unrelated to need for cognition (see Table 2).

Turning to the behavioral task, overall participants provided more arguments that conformed with their own positions than arguments that were contrary to their opinions, M of myside bias in arguments = 3.50 ($SD = 4.12$), significantly different from 0, $t(39) = 5.88$, $p < .001$; and they were more convinced by the former than the latter, $M = 34.77$ ($SD = 32.61$), $t(39) = 6.74$, $p < .001$. This replicated Toplak and Stanovich's findings (2003).

As hypothesized, EQ scores reflected individual differences in myside bias (see Table 2). Participants with high scores on EQ tended to be less prone to falling prey to the myside bias in both the number of arguments they generated and the degree of conviction with which they endorsed them. Need for closure and need for cognition turned out to be unrelated to myside bias scores. Dogmatism was positively associated with the myside bias: Highly dogmatic people tended to generate more myside arguments than otherside ones and showed more conviction with the former than the latter ones.

Most importantly, the link of the myside bias seemed to be stronger with EQ than with dogmatism. Partial correlations between myside bias in arguments and EQ, while controlling for dogmatism, only slightly decreased the association ($r' = -.23$, $p = .06$). On the contrary, partial correlation of myside bias with dogmatism controlling for EQ substantially reduced the zero-order correlation ($r' = .16$, ns). Similar findings were observed with myside bias in convictions (respective partial correlations: $-.33$, $p = .02$, and $.21$, $p = .10$). To further understand where the effect of EQ (and possible difference with dogmatism) comes from, we computed distinct correlations of the EQ and dogmatism with (1) the number of myside arguments and (2) the number of otherside arguments participants generated. Dogmatism seemed to predict the propensity to generate many *myside arguments* ($r = .18$, $p = .10$), while it was unrelated to the number of otherside arguments ($-.09$), whereas EQ seemed to reflect the propensity to generate *otherside arguments* ($r = .23$, $p < .05$), while being unrelated to the number of myside arguments ($-.11$).

In sum, Study 3 provided further validation of the EQ, including discriminant and incremental validity. As expect-

ed, people who are ready to challenge their existential beliefs tend to be low in dogmatism and need for closure, and they tend to be creative in imagining arguments contrary to their own opinions and to endorse them with some conviction. This tendency seemed to characterize high existential questers but not people high in need for cognition or need for avoiding closure. Dogmatic people seem to have the opposite tendency: They generate arguments in favor of their own opinions. Finally, the lack of clear association between EQ and need for cognition is understandable in light of our arguments advanced in the Introduction: Need for cognition may reflect high curiosity in general, but not necessarily the propensity to think about an issue while endorsing a perspective that acknowledges the opposite point of view.

Study 4

Study 4 provides crosscultural validation of the EQ scale by replicating and extending previous findings in another European country (Germany). We investigated psychometric properties of the EQ scale in two student samples in Germany, as well as correlations between the EQ and relevant constructs. In part, the study served as a replication of findings obtained in Studies 2 and 3: We examined associations of the EQ with dogmatism, empathy, need for cognition, and authoritarianism. Moreover, Study 4 investigated the link of EQ with additional constructs discussed in the Introduction. We hypothesized that individuals with a propensity to question their own worldviews should be tolerant of ambiguity, and high in altruism. Finally, we investigated whether high existential questers tend to be promotion- or prevention-focused.

Method

Participants

Data were collected in two samples ($N_1 = 120$, 64 men, mean age = 23.1; $N_2 = 100$, 50 men, mean age = 22.6) of students at a German university who participated in studies with various parts, including one involving a booklet containing personality questionnaires. Students received 2 EUR as compensation for participation.

Measures

Participants were administered the EQ scale. The nine items were translated into German on the basis of the French and English versions and then backtranslated into both English and French. Participants also completed several self-report scales: six items of the Need for Cognition Scale (Cacioppo & Petty, 1982; see Keller, Bohner, & Erb, 2000) ($\alpha = .73$), the 20 items of Altemeyer's (2002) Dog-

matism Scale ($\alpha = .88$; see Rangel & Keller, 2011), 6 items of Altemeyer's (1996) Right-Wing Authoritarianism Scale ($\alpha = .77$; see Funke, 2005), 10 items measuring altruism ($\alpha = .81$; Kuhl & Kazen, 1997), and 9 items of Mehrabian and Epstein's (1972) Empathy scale ($\alpha = .89$; our translation). For all these measures, a 7-point response scale was used. In addition, participants were administered the following measures:

Intolerance of Ambiguity (Martin & Parker, 1995; Our Translation)

This 8-item scale measures the tendency to respond in absolute terms. One item was removed from the final average score to improve reliability ($\alpha = .71$).

Regulatory Focus

To assess chronic regulatory focus, we used a German version (Keller, 2008) of the Regulatory Focus Questionnaire introduced by Lockwood, Jordan, and Kunda (2002), which includes 9 items intended to measure promotion and prevention, respectively. A prevention focus sample item reads "I often worry that I will fail to accomplish my academic goals," and a promotion focus sample item reads "I often think about the person I would ideally like to be in the future." Responses were given on 7-point rating scales with higher values indicating greater agreement with the statement. Both scales were reliable ($\alpha = .79$, $.87$, for the prevention scale, and $.80$, $.86$, for the promotion scale, respectively for samples 1 and 2).

Results and Discussion

The means, standard deviations, and reliabilities of the EQ scale for the two samples are presented in Table 3. These psychometric properties were similar across the two sam-

Table 3. Psychometrics of EQ scale and coefficients of correlations with personality measures in Germany (Study 4)

| | Sample 1 | Sample 2 |
|-----------------------------|----------|----------|
| <i>M</i> | 39.35 | 39.77 |
| <i>SD</i> | 8.42 | 9.55 |
| α | 0.75 | 0.79 |
| Need for cognition | -.08 | n.a. |
| Dogmatism | n.a. | -.46*** |
| Intolerance of ambiguity | n.a. | -.20* |
| Right-wing authoritarianism | -.33** | -.13 |
| Empathy | n.a. | .35*** |
| Altruism | n.a. | .40*** |
| Promotion focus | -.17 | .18 |
| Prevention focus | .22** | .45*** |

Notes. * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed). n.a. = not assessed in the respective study.

ples and similar to the ones obtained in Studies 1 (Belgian students) and 2 (Belgian adults). Note that the two German samples included students of higher average age than in Study 1, which may explain why the mean score was closer to the one of Study 2 than to Study 1. Scores varied between 19 and 58 (sample 1) and between 20 and 61 (sample 2). Skewness (.08) and kurtosis (−.54) were satisfactory (total $N = 220$). No gender difference emerged, and age was unrelated to EQ (in samples 1 and 2, $r_s = .03, -.06, ns$; again, the restricted age range renders these correlations largely uninformative).

Coefficients for the correlations involving EQ and the personality constructs are detailed in Table 3. Replicating Studies 2 and 3, Study 4 confirmed (with German participants) that high EQ reflects high empathy, low dogmatism, and low right-wing authoritarianism (correlations involving RWA turned out significant only in one of the two samples). Again, EQ was unrelated to need for cognition. Extending Studies 2 and 3, Study 4 further consolidated the open-minded cognitive style of individuals with a high EQ score (i.e., low intolerance of ambiguity) as well as the empathic and perspective-taking tendencies implied in the capacity to relativize one's own worldviews. Further, existential quest was positively linked to altruism.

Moreover, existential questers tended to report a prevention regulatory focus. They were not necessarily high or low in promotion focus. These findings may be considered as in line with Batson's theory and research on the religious quest orientation, which suggests that a quest orientation reflects awareness of the contradictions and tragedies of life and is therefore related to feelings of insecurity, uncertainty, and anxiety (Batson et al., 1993; Hills, Francis, Argyle, & Jackson, 2004; Lavri & Flere, 2010).

Finally, in line with Study 2, sociocognitive, affective, and emotional regulation components contributed each in an additive way to predicting EQ. In multiple regressions analyses with the significant correlates as predictors, it turned out that EQ was uniquely predicted, in Sample 1, by authoritarianism and prevention focus ($B_s = -.39, .35, t_s = -4.16, 4.13, p < .001, \text{adj. } R^2 = .22$), and, in Sample 2, by altruism ($B = .25, t = 3.08, p < .01$), dogmatism, and prevention focus ($B_s = -.36, .33, t_s = -4.44, 3.99, p < .001$) ($\text{adj. } R^2 = .40$).

In sum, Study 4 provided crosscultural validation of the EQ scale, replicated and extended findings from previous studies, and added information regarding our understanding of EQ, especially regarding relevant emotional and self-regulatory factors.

Study 5

Study 5 was designed to provide evidence regarding the incremental validity of the EQ scale by replicating and extending previous findings to include measures of religious quest and meaning in life in the analysis. Most importantly,

we tested the incremental validity of the EQ construct by way of analyses exploring the explanatory power of EQ over and above religious quest.

Method

Eighty-three students at a German university (41 men, mean age = 24.6) participated in the study. Students received 1 EUR as compensation for participation. Parallel to Study 4, participants responded to the German version of the EQ scale ($\alpha = .64$) and completed eight items of Altemeyer's (1996) Right-Wing Authoritarianism Scale ($\alpha = .73$), six items of the Need for Closure scale (Webster & Kruglanski, 1994; $\alpha = .84$; see Keller, 2005), and nine items of Mehrabian and Epstein's (1972) Empathy scale ($\beta = .81$). For all these measures, a 7-point response scale was used. In addition, participants were administered measures of religious quest, intrinsic religiosity, and search for meaning in life. For *religious quest*, we selected the six religious quest items with highest factor loadings as reported by Batson and Schoenrade (1991a). A sample item of the religious quest scale reads "For me, doubting is an important part of what it means to be religious" ($\alpha = .86$). We also included four items of the *intrinsic religiosity* scale (Allport & Ross, 1967; our translation). One item reads "I try hard to carry my religion over into all my other dealings in life" ($\alpha = .90$). We measured the *search for meaning in life* using the 10-item scale developed by Steger, Frazier, Oishi, and Kaler, 2006 (our translation). A sample item reads "I am always looking to find my life's purpose" ($\alpha = .87$).

Results and Discussion

The psychometric properties of the EQ scale were similar to the ones obtained in the previous studies ($M = 40.87, SD = 7.62$). Range (24 to 58), skewness (.18), and kurtosis (−.54) were satisfactory. No gender difference emerged, and age was negatively related to EQ ($r = -.24, p < .04$; again, the restricted age range renders this correlation questionable).

In order to assess the factorial structure underlying responses to EQ and religious quest items, we ran a factor analysis using principal axis factoring and varimax rotation. This analysis resulted in five eigenvalues greater than one that accounted for 53.8% of the variance. The scree plot indicated a substantial decline between the third and fourth eigenvalue, which is why we ran an additional analysis restricting the number of factors to three. Only two of the EQ items showed meaningful loadings on the factor representing religious quest (factor 1), and these are the two items that refer to spirituality and religion which renders the observed loadings meaningful. None of the religious quest items showed substantial loadings on the two remaining factors that represent the flexibility aspect (factor 2)

Table 4. Correlations of existential quest (EQ) and religious quest (RQ) with personality measures (Study 5)

| | Existential quest | Religious quest | EQ, controlling for RQ ^a | RQ, controlling for EQ ^a |
|-----------------------------|-------------------|-----------------|-------------------------------------|-------------------------------------|
| Religious quest | .53*** | – | – | – |
| Need for closure | –.12 | –.04 | –.11 | .03 |
| Empathy | .46*** | .27* | .26* | .08 |
| Right-wing authoritarianism | –.42*** | –.25* | –.30** | –.05 |
| Intrinsic religiosity | .05 | .41*** | –.17 | .46*** |
| Search for meaning in life | .57*** | .35** | .56*** | .09 |

Notes. * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed). ^aPartial correlations.

Table 5. Results of regression analyses testing the predictive power of EQ, religious quest and search for meaning in life (Study 5)

| Predictors | F | R^2 | B | $SE B$ | β |
|--------------------|--------|-------|------|--------|---------|
| Model 1 | | | | | |
| Criterion: Empathy | 4.45** | .15 | | | |
| Existential quest | | | .39 | .159 | .366* |
| Religious quest | | | .07 | .074 | .108 |
| ML-Search | | | –.07 | .103 | –.100 |
| Model 2 | | | | | |
| Criterion: RWA | 5.83** | .18 | | | |
| Existential quest | | | –.45 | .181 | –.370* |
| Religious quest | | | –.03 | .085 | –.039 |
| ML-Search | | | –.04 | .117 | –.050 |

Notes. * $p \leq .05$, ** $p < .01$.

and the valuing doubt aspect (factor 3) of EQ. This speaks for the fact that the two instruments (the EQ scale and the Religious Quest scale) actually assess distinct constructs.

Correlations involving EQ and religious quest with the personality constructs are detailed in Table 4. Replicating Studies 2, 3, and 4, Study 5 confirmed that high EQ reflects high empathy and low right-wing authoritarianism. Extending the previous studies, we observed that the correlations involving EQ remained largely robust when we controlled for religious quest supporting the incremental validity of the scale. In contrast, correlations involving religious quest largely disappeared when we controlled for EQ. The correlation involving intrinsic religiosity builds the only exception, given its religious character – which also supports the validity of the EQ as being a construct independent from religiousness (neither a linear nor a curvilinear relation was found between EQ and intrinsic religiosity).

In additional regression analyses we tested the unique explanatory power of EQ regarding empathy and RWA in comparison to the two critical constructs that seem conceptually closely related to EQ (religious quest and SML). The results of these analyses are reported in Table 5. In both regression models it turned out that EQ was the only meaningful predictor which again supports the incremental validity of the scale.

In sum, Study 5 revealed evidence supporting the discriminant validity of EQ with regard to intrinsic religiosity. In addition, incremental validity was provided with regard

to the constructs “religious quest” (Batson & Schoenrade, 1991a) and “search for meaning in life” (Steger et al., 2006). The higher predictivity of the EQ scale regarding external constructs (compared to religious quest) was empirically substantiated. We assume that both EQ and SML reflect openness to new ideas, but that SML emphasizes people’s desire and efforts *to establish* a meaning in life, whereas EQ reflects a different tendency, namely, the tendency to *question* and *being flexible* with respect to one’s perspective on the meaning of life. Note that important and meaningful divergences in the personality correlates of the two constructs can be observed in this field of research: SML, contrary to the EQ, is unrelated to prosociality (as assessed with a subscale of the agreeableness factor) and RWA, and relates to a behavioral approach orientation (reflecting eagerness, see Steger, Kashdan, Sullivan, & Lorenz, 2008), whereas EQ is unrelated to promotion focus (also reflecting eagerness). This suggests that EQ should not be equated with the tendency to *search for* meaning in life.

Psychometric Analysis

The aim of the concluding analyses reported below was to examine additional psychometric characteristics of the EQ scale using the whole set of data from the five studies (six

samples; total $N = 861$). We first examined, from a classic test theory perspective, the reliability of the scale in the combined data set, item-total correlations, and the factorial structure. Second, applying an item response theory perspective, we examined the item response function and the scale information function.

In the classic conceptions of reliability and unidimensionality, the characteristics of the individual respondent and those of the test cannot be separated. Item response theory (IRT; see Morizot, Ainsworth, & Reise, 2007) allows for descriptions of the relationship between individuals' responses to a particular item and the construct underlying those responses. The *item response function* indicates the probability that individuals at different levels of the construct would endorse the item. It informs on how well the item discriminates those with high and those with low levels of the underlying trait as well as on how "difficult" an item is. The *scale information curve* informs on the precision of the scale across all levels of the latent trait. It is the sum of information on how much each item is able to differentiate between individuals at different trait levels.

Issues of Reliability and Factorial Structure

The reliability of the EQ scale based on the combined data set was .74. Item-total correlation (for each item) was .38 (item 1), .48 (2), .35 (3), .45 (4), .54 (5), .46 (6), .23 (7), .43 (8), and .50 (9). Mean item-total correlation was .42. The mean interitem correlation was .31, and the median interitem correlation was .27. Item 7 slightly decreased the reliability (if deleted, reliability increased to .75). However, this item is an important indicator of uncertainty about the goal of one's life. We thus decided to keep this item included in the scale in order not to restrict the breadth of the construct.

In order to assess the factorial structure of the EQ scale, we ran a principal axis factor analysis with direct oblimin rotation on the data collapsed across the five studies. The results of this analysis support the unidimensional nature of the scale. We observed a dominant principal axis (Eigenvalue = 3.05) accounting for 34% of the variance and a steep decline in the scree plot from the first to the second axis (Eigenvalue = 1.23). All items of the EQ scale showed substantial loadings on the primary axis (varying between .42 and .67; item 7 showed a weaker loading with .25). The second factor added 13.6% to the proportion of variance explained. The rotated solution suggested a first main factor that seems to reflect flexibility (valuing doubt, possibility of change) in existential, core beliefs (items 2, 3, 4, and 9; but also item 1), and a secondary factor that seems to reflect flexibility (possibility of change) in worldviews (items 5, 6, and 8; but also item 7).

Note that several arguments support the unidimensional conceptualization and application of the scale. First, we could not identify a theoretical substance in the distinction of two subscales. For instance, item 1 and item 7 showed

primary loadings on different factors, although both refer to certainty–uncertainty about the goal of life and thus belong to the same factor on the conceptual level. Moreover, computing distinct reliabilities for each of the two sets of items provided lower α values, .67 and .64, respectively, compared with the overall reliability. Nevertheless, we computed indices for each of the two sets of items. The two indices were moderately intercorrelated ($r = .44$). More importantly, we recomputed all of the analyses of the five studies using these two indices. With the exception of religion/spirituality (related with only flexibility in existential beliefs), the two indices provided associations of the same nature (direction and, in most cases, significance) with all of the variables included in the studies: emotional (empathy, altruism, promotion, prevention), cognitive (need for closure, need for cognition, dogmatism, myside bias, intolerance of ambiguity), and social-ideological (authoritarianism).

It is also noteworthy that we defined existential quest as a combination of several aspects: as valuing doubt, being open to reconsider and to change beliefs and worldviews, including – but not being restricted to – attitudes (positive or negative) with respect to religion and spirituality. Although these specific aspects can be conceptually distinguished, they reflect one common underlying feature: flexibility in existential worldviews. Note that EQ seems to be similar to other broad social-cognitive constructs (e.g., need for closure: Webster & Kruglanski, 1994; authoritarianism: Altemeyer, 1996; religious quest: Batson et al., 1993) that are conceived to be (primarily) unidimensional, although they include specific subcomponents (see Francis, 2007; Funke, 2005; Neuberg, Judice, & West, 2007).

Analyses Based on Item Response Theory

Analyses were performed using Grade Map, a software based on the Rasch model (Wilson, Draney, & Kennedy, 2001). Model-data fit was assessed with mean squares of item residuals. All items showed acceptable fit to the Rasch model: Infit and outfit indices lie in the range 0.75 to 1.30, i.e., within reasonable boundaries as defined by Wilson (2005). Item locations ranged between -0.521 and 0.595 . The items' mean difficulty does not cover the full range of EQ, and the items are fairly concentrated around the mean difficulty level. Option thresholds range from -1.50 to 1.69 . As shown in Table 6, the two items concerning religion/spirituality (items 2 and 9) are the most difficult, followed by the two items mentioning life goal (1 and 7). The remaining items refer to "change" and "doubt," with those concerning "doubt" being the easiest ones. The scale information curve looks like a normal distribution with the peak around 0. It reveals that the scale is most useful in discriminating people with an average level of existential quest.

The IRT analysis suggests that the Existential Quest scale may not cover the full range of the existential quest construct. However, within the covered range, items are not

Table 6. Item discrimination parameter estimates (a) and threshold parameter estimates (bj) of the Existential Quest scale items (psychometric analysis)

| Item # | a | b2 | b3 | b4 | b5 | b6 | b7 |
|--------|-------|-------|-------|-------|-------|-------|------|
| 1 | 0.17 | -0.81 | -0.27 | -0.03 | 0.24 | 0.60 | 1.27 |
| 2 | 0.25 | -.073 | -0.19 | 0.05 | 0.32 | 0.68 | 1.34 |
| 3 | -0.52 | -1.50 | -0.96 | -0.71 | -0.45 | -0.09 | 0.57 |
| 4 | -0.17 | -1.16 | -0.61 | -0.37 | -0.10 | 0.26 | 0.92 |
| 5 | -0.26 | -1.24 | -0.69 | -0.45 | -0.18 | 0.18 | 0.84 |
| 6 | 0.05 | -0.93 | -0.39 | -0.14 | 0.12 | 0.48 | 1.14 |
| 7 | 0.15 | -0.83 | -0.28 | -0.04 | 0.23 | 0.59 | 1.25 |
| 8 | -0.27 | -1.25 | -0.70 | -0.46 | -0.19 | 0.17 | 0.83 |
| 9 | 0.59 | 0.14 | 0.56 | 0.25 | 0.54 | 0.87 | 1.20 |

redundant. Examination of option thresholds showed that a low level of quest refers to valuing doubt and being open to change. Intermediate levels are characterized by interrogations about the goal of one's life. The highest level refers to the openness to change one's attitudes toward belief systems such as religion and spirituality.

General Discussion

This paper introduces the construct of existential quest, i.e., individuals' ongoing questioning and challenging of existential beliefs and worldviews, irrespective of the specific content of these existential beliefs. A scale including nine items was created and administered to six samples of students and adults from two countries. Validation documents the scale's internal consistency, unidimensionality, and well-balanced distribution reflecting interindividual variability.

The EQ did not overlap with or reflect high or low religiousness, as is often the case with religious quest (see Study 5). In Studies 2 and 5, EQ was independent from religiousness. In Study 1, the curvilinear relation between EQ and religiosity suggested that holding strong attitudes in favor of or against religion reflects less flexibility than a moderate endorsement or nonendorsement of religious attitudes. However, EQ reflected a tendency toward spirituality (in both Study 1 and Study 2). This is in line with the specificity of spirituality as an autonomous search for meaning that is independent from religious institutions and traditional norms (Saucier & Skrzypińska, 2006).

Evidence supporting the construct validity of the new instrument was provided through associations with several relevant constructs. A strong EQ is related to

1. an autonomous, nonsubmissive way of dealing with norms (low right-wing authoritarianism in both the Belgian and German samples);
2. low rigidity, not keeping opinions and beliefs unchallenged from contrary evidence (low dogmatism in both the Belgian and German samples);

3. low need for fixed knowledge, certainty, order, and permanence in cognitions (low need for closure);
4. low intolerance of ambiguity reflecting a weak tendency to respond in absolute terms;
5. readiness to imagine and identify with other individuals' opinions, as reflected in the readiness to generate arguments that are contrary to one's own opinions (low "myside bias");
6. emotional capacity to understand and feel other persons' emotions (high empathy in both the Belgian and German participants);
7. prosocial tendencies as high altruistic behavior.

However, all these associations were – as hypothesized – moderate at best. That is, EQ is not equivalent with low dogmatism or need for closure. Obviously, the fact that some people are prone to question, challenge, and change their existential beliefs does not imply that they do not hold beliefs or that they do enjoy inconsistency and disorder. People low in dogmatism, according to Altemeyer (1996), "believe in little or nothing" or "can have a great many opinions but little certainty" (p. 202), and people with low need for closure are highly motivated to *avoid* closure (Kruglanski, 2004). Importantly, we argue that the specificity of EQ lies in the questioning and readiness to change specific core beliefs reflecting existential attitudes and worldviews, which is more specific and probably more demanding (in terms of resources and personal development) than being flexible and relativizing other kinds of opinions, ideas, and beliefs. Interestingly, it was EQ and not (low) dogmatism or (low) need for closure that predicted our behavioral measure based on the myside bias technique.

The findings regarding the relationship between EQ and need for cognition as well as regulatory focus support the idea that existential questers are not merely creative thinkers, amazed by the challenge to various ideas and opinions, but rather individuals looking for and holding some order in their worldviews while being flexible about them and ready to question them if necessary. The absence of a meaningful relation of EQ to need for cognition (in both the Belgian and German samples) and the promotion focus,

together with the positive association found with the prevention focus (in both German samples of Study 4), suggest the following: EQ does not reflect hedonistic, joyful efforts to play with existential meaning and pursue intellectual advancement and success, but rather the concern with being correct and ensuring a complex and flexible way of approaching existential issues that include the questions of meaning, truth, and morality.

The present work represents an initial investigation of the construct of EQ. Additional steps should be taken to further validate the instrument in future studies. For example, biographical information attesting changes in ideology, worldviews, and values among high existential questers, as well as data on the way individuals approach their beliefs could provide additional support for the scale's validity (in the ideal case across a variety of ideological contents). Moreover, we reported data from only two democratic Western European countries, predominantly Catholic or Protestant. Although promising and providing some cross-cultural validity, these data are still limited and there is need for investigating the generalizability of results in other countries with various ideological, existential traditions.

The elaboration of an optimal scale is not a one-shot work, but an ongoing process. Although there were several indicators in favor of the unidimensional aspect of the EQ scale (see Psychometric Analysis), in future research one can go further and develop a longer scale. Such an extended scale could, if possible, distinguish between different components that we theorized as together composing flexibility in existential beliefs and worldviews: Valuing doubt on them, being open to change them, and keeping open the question of life's goal and meaning. Nevertheless, as with other constructs that are theoretically conceived as being defined by several aspects (e.g., need for closure, religious quest, authoritarianism), the unidimensional use of the scale has its own theoretical, statistical, and communicational advantages. Moreover, our EQ scale was designed as a small set of items, of a mean difficulty. As shown by the IRT analysis (see also Psychometric Analysis), the scale comprises few extreme items and could thus be optimized through incorporation of items targeted at the very low and very high questers. For example, items reflecting a total lack of interest or motivation to engage in existential questioning (e.g., ideological radicalism) could be added. On the other hand, one could also add items targeted at people with the highest existential flexibility to address the tendency to value doubt at any cost or the refusal to see any type of goal in one's life.

EQ can certainly be a construct of interest to different fields of psychology: existential, developmental, religion, personality, epistemology, social, and clinical. Important and intriguing questions emerge, particularly those regarding the determinants and consequences of EQ. What makes people high or low in their tendency to question their existential attitudes? This may result from a variety of factors: education, socialization with respect to global ideologies, life experiences, personality dispositions, social environ-

ments, and the pattern of personal development. Are individuals high in EQ emotionally stable and mature individuals at the peak of their personal development? Research from the religious quest orientation tradition (e.g., Hills et al., 2004; Lavri & Flere, 2010), as well as the present findings regarding the prevention focus, suggests a possible relationship between quest and emotional instability and anxiety. Future research should investigate this link. Another interesting issue to be explored in future research is whether low EQ is prevalent only among high right-wing authoritarians (as shown in the present work) or whether it may also be typical of people strongly endorsing left-wing ideologies. Given that existential needs and issues seem to have an important influence on most if not all aspects of human life (Greenberg, Koole, & Pyszczynski, 2004), EQ seems to represent a distinctive and interesting construct that deserves further study in a next generation of research.

Acknowledgments

We thank Corine de Wilde, Susanne Hirth and Melanie Hurst for their help with data collection, and Vincent Yzerbyt for statistical advice.

References

- Allport, G. W., & Ross, J. M. (1967). Personal religious orientation and prejudice. *Journal of Personality and Social Psychology*, 5, 432–443.
- Altemeyer, B. (1996). *The authoritarian specter*. Cambridge, MA: Harvard University Press.
- Altemeyer, B. (2002). Dogmatic behavior among students: Testing a new measure of dogmatism. *Journal of Social Psychology*, 142, 713–721.
- Altemeyer, B., & Hunsberger, B. (1992). Authoritarianism, religious fundamentalism, quest, and prejudice. *International Journal for the Psychology of Religion*, 2, 113–133.
- Barrett, C. D., Patock-Peckham, J. A., Hutchinson, G. T., & Nagoshi, C. T. (2005). Cognitive motivation and religious orientation. *Personality and Individual Differences*, 38, 461–474.
- Batson, C. D., Denton, D. M., & Vollmecke, J. T. (2008). Quest religion, anti-fundamentalism, and limited versus universal compassion. *Journal for the Scientific Study of Religion*, 47, 135–145.
- Batson, C. D., Eidelman, S. H., Higley, S. L., & Russell, S. A. (2001). "And who is my neighbor?" II: Quest religion as a source of universal compassion. *Journal for the Scientific Study of Religion*, 40, 39–50.
- Batson, C. D., & Raynor-Prince, L. (1983). Religious orientation and complexity of thought about existential concerns. *Journal for the Scientific Study of Religion*, 22, 38–50.
- Batson, C. D., & Schoenrade, P. A. (1991a). Measuring religion as quest: 1) Validity concerns. *Journal for the Scientific Study of Religion*, 30, 416–429.
- Batson, C. D., & Schoenrade, P. A. (1991b). Measuring religion

- as quest: 2) Reliability concerns. *Journal for the Scientific Study of Religion*, 30, 430–447.
- Batson, C. D., Schoenrade, P. A., & Ventis, W. L. (1993). *Religion and the individual: A social-psychological perspective*. New York: Oxford University Press.
- Boyatzis, C. J., & McConnell, K. M. (2006). Quest orientation in young women: Age trends during emerging adulthood and relations to body image and disordered eating. *International Journal for the Psychology of Religion*, 16, 197–207.
- Burris, C., Jackson, L., Tarpley, W., & Smith, G. (1996). Religion as quest: The self-directed pursuit of meaning. *Personality and Social Psychology Bulletin*, 22, 1068–1076.
- Buxant, C., Saroglou, V., & Scheuer, J. (2009). Contemporary conversions: Compensatory needs or self-growth motives? *Research in the Social Scientific Study of Religion*, 20, 47–68.
- Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology*, 42, 116–131.
- Caroff, X., Berjot, S., Fievet, C. M., & Drozda, E. (2003). Validation de la version française de l'échelle de "besoin de clôture" de Webster et Kruglanski (1994) [Validation of the French translation of Webster and Kruglanski's Need for Closure Scale (1994)]. In A. Vom Hofe, H. Charvin, J.-L. Bernaud, & D. Guedon (Eds.), *Psychologie différentielle: Recherches et réflexions* (pp. 73–76). Rennes, France: Presses Universitaires de Rennes.
- Cottone, J., Drucker, P., & Javier, R. A. (2007). Predictors of moral reasoning: Components of executive functioning and aspects of religiosity. *Journal for the Scientific Study of Religion*, 46, 37–53.
- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, 44, 113–126.
- Duck, R. J., & Hunsberger, B. (1999). Religious orientation and prejudice: The role of religious proscription, right-wing authoritarianism, and social desirability. *International Journal for the Psychology of Religion*, 9, 157–179.
- Francis, L. J. (2007). Introducing the new indices of religious orientation (NIRO): Conceptualisation and measurement. *Mental Health, Religion and Culture*, 10, 585–602.
- Frenkel-Brunswik, E. (1949). Intolerance of ambiguity as an emotional perceptual personality variable. *Journal of Personality*, 18, 108–143.
- Funke, F. (2005). The dimensionality of right-wing authoritarianism: Lessons from the dilemma between theory and measurement. *Political Psychology*, 26, 195–218.
- Furnham, A., & Ribchester, T. (1995). Tolerance of ambiguity: A review of the concept, its measurement and applications. *Current Psychology: Developmental, Learning, Personality, Social*, 14, 179–200.
- Greenberg, J., Koole, S. L., & Pyszczynski, T. (Eds.). (2004). *Handbook of experimental existential psychology*. New York: Guilford.
- Helson, R., Kwan, V. S. Y., John, O. P., & Jones, C. (2002). The growing evidence for personality change in adulthood: Findings from research with personality inventories. *Journal of Research in Personality*, 36, 287–306.
- Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist*, 52, 1280–1300.
- Hills, P., Francis, L. J., Argyle, M., & Jackson, C. J. (2004). Primary personality trait correlates of religious practice and orientation. *Personality and Individual Differences*, 36, 61–73.
- Hunsberger, B., Pratt, M., & Pancer, S. M. (1994). Religious fundamentalism and integrative complexity of thought: A relationship for existential content only? *Journal for the Scientific Study of Religion*, 33, 335–346.
- Jolliffe, D., & Farrington, D. P. (2006). Development and validation of the basic empathy scale. *Journal of Adolescence*, 29, 589–611.
- Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin*, 129, 339–375.
- Keller, J. (2005). In genes we trust: The biological component of psychological essentialism and its relationship to mechanisms of motivated social cognition. *Journal of Personality and Social Psychology*, 88, 686–702.
- Keller, J. (2008). On the development of regulatory focus: The role of parenting styles. *European Journal of Social Psychology*, 38, 354–364.
- Keller, J., Bohner, G., & Erb, H.-P. (2000). Intuitive und heuristische Urteilsbildung – verschiedene Prozesse? Präsentation einer deutschen Fassung des "Rational-Experiential Inventory" sowie neuer Selbstberichtskaalen zur Heuristiknutzung [Intuitive and heuristic judgment? Different processes? Presentation of a German version of the Rational-Experiential Inventory and of new self-report scales of heuristic use]. *Zeitschrift für Sozialpsychologie*, 31, 87–101.
- Klaassen, D. W., & McDonald, M. J. (2002). Quest and identity development: Re-examining pathways for existential search. *International Journal for the Psychology of Religion*, 12, 189–200.
- Kosek, R. B. (1999). Adaptation of the big five as a hermeneutic instrument for religious constructs. *Personality and Individual Differences*, 27, 229–237.
- Kruglanski, A. W. (2004). *The psychology of closed mindedness*. New York: Psychology Press.
- Kuhl, J., & Kazén, M. (1997). *Personality-Style-and-Disorder-Inventory: Manual*. Göttingen: Hogrefe.
- Lavri, M. L., & Flere, S. (2010). Trait anxiety and measures of religiosity in four cultural settings. *Mental Health, Religion, and Culture*, 13, 667–682.
- Liberman, N., Molden, D. C., Idson, L. C., & Higgins, E. T. (2001). Promotion and prevention focus on alternative hypotheses: Implications for attributional functions. *Journal of Personality and Social Psychology*, 80, 5–18.
- Lockwood, P., Jordan, C. H., & Kunda, Z. (2002). Motivation by positive and negative role models: Regulatory focus determines who will best inspire us. *Journal of Personality and Social Psychology*, 83, 854–864.
- Maltby, J., & Day, L. (1998). Amending a measure of the quest religious orientation: Applicability of the scale's use among religious and nonreligious persons. *Personality and Individual Differences*, 25, 517–522.
- Martin, C. L., & Parker, S. (1995). Folk theories about sex and race differences. *Personality and Social Psychology Bulletin*, 21, 45–57.
- McFarland, S. (1998). Communism as religion. *International Journal for the Psychology of Religion*, 8, 33–48.
- McHoskey, J., Betris, T., Worzel, W., Szyarto, C., Kelly, K., Eggert, T., . . . Anderson, H. (1999). Relativism, nihilism, and quest. *Journal of Social Behavior and Personality*, 14, 445–462.
- Mehrabian, A., & Epstein, N. (1972). A measure of emotional empathy. *Journal of Personality*, 40, 525–543.
- Morizot, J., Ainsworth, A. T., & Reise, S. P. (2007). Toward mod-

- ern psychometrics: Application of item response theory models in personality research. In R. W. Robins, R. C. Fraley, & R. F. Krueger (Eds.), *Handbook of research methods in personality psychology* (pp. 407–423). New York: Guilford.
- Neuberg, S. L., Judice, T. N., & West, S. G. (1997). What the Need for Closure Scale measures and what it does not: Toward differentiating among related epistemic motives. *Journal of Personality and Social Psychology, 73*, 1396–1412.
- Rangel, U., & Keller, J. (2011). Essentialism goes social: Belief in social determinism as a component of psychological essentialism. *Journal of Personality and Social Psychology, 100*, 1056–1078.
- Rokeach, M. (1960). *The open and closed mind*. New York: Basic Books.
- Saroglou, V. (2010). Religiousness as a cultural adaptation of basic traits: A Five Factor Model perspective. *Personality and Social Psychology Review, 14*, 108–125.
- Saroglou, V., & Muñoz-García, A. (2008). Individual differences in religion and spirituality: An issue of personality traits and/or values. *Journal for the Scientific Study of Religion, 47*, 83–101.
- Saroglou, V., Pichon, I., Trompette, L., Verschuere, M., & Deruelle, R. (2005). Prosocial behavior and religion: New evidence based on projective measures and peer ratings. *Journal for the Scientific Study of Religion, 44*, 323–348.
- Saucier, G., & Skrzypińska, K. (2006). Spiritual but not religious? Evidence for two independent dispositions. *Journal of Personality, 74*, 1257–1292.
- Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology, 53*, 80–93.
- Steger, M. F., Kashdan, T. B., Sullivan, B. A., & Lorentz, D. (2008). Understanding the search for meaning in life: Personality, cognitive style, and the dynamic between seeking and experiencing meaning. *Journal of Personality, 76*, 199–228.
- Toplak, M. E., & Stanovich, K. E. (2003). Associations between my-side bias on an informal reasoning task and amount of postsecondary education. *Applied Cognitive Psychology, 17*, 851–860.
- Truett, K. R. (1993). Age differences in conservatism. *Personality and Individual Differences, 14*, 405–411.
- Watson, P. J., Morris, R. J., Hood, R. W., Jr., Milliron, J. T., & Stutz, N. L. (1998). Religious orientation, identity, and the quest for meaning in ethics within an ideological surround. *International Journal for the Psychology of Religion, 8*, 149–164.
- Webster, D. M., & Kruglanski, A. W. (1994). Individual differences in need for cognitive closure. *Journal of Personality and Social Psychology, 67*, 1049–1062.
- Wilson, M. (2005). *Constructing measures: An item response modeling approach*. Mahwah, NJ: Erlbaum.
- Wilson, M., Draney, K., & Kennedy, C. (2001). *GradeMap* [Computer software]. Berkeley, CA: BEAR Center, University of California, Berkeley.

Accepted for publication: February 28, 2011

Matthieu Van Pachterbeke

Université catholique de Louvain
 Department of Psychology
 Place du Cardinal Mercier 10
 1348 Louvain-la-Neuve
 Belgium
 Tel. +32 10 478640
 Fax +32 10 474834
 E-mail matthieu.vanpachterbeke@uclouvain.be

Appendix

Existential Quest Scale

1. Today, I still wonder about the meaning and goal of my life.
2. My attitude toward religion/spirituality is likely to change according to my life experiences.
3. Being able to doubt about one's convictions and to reappraise them is a good quality.
4. In my opinion, doubt is important in existential questions.
5. My way of seeing the world is certainly going to change again.
6. My opinion varies on a lot of subjects.
7. I know perfectly well what the goal of my life is. (R)
8. Years go by but my way of seeing the world doesn't change. (R)
9. I often reappraise my opinion on religious/spiritual beliefs.

Note. R = reverse-coded item.