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Aware of the future? Development and validation of the Futures Consciousness Scale

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Abstract

Futures Consciousness refers to the capacity that a person has for understanding, anticipating and preparing for the future. Although the concept is widely used in the field of futures research, no quantitative tool exists yet that assesses it. Drawing from a recent five-dimensional model that considers Time perspective, Agency beliefs, Openness to alternatives, Systems perception, and Concern for others as interrelated sub-dimensions of a general construct of Futures Consciousness, we developed a composite 20-item scale that measures Futures Consciousness as an interindividual difference. The psychometric properties of this new scale were examined through a dual approach of exploratory and confirmatory factorial analyses with a total of 1,301 participants in three languages (English, French, and Finnish). The scale's structure proved satisfactory and fitted the hypothesised five-dimensional model in all three languages. Measures of internal and external validity (convergent and concurrent) also indicated good psychometric properties. Notably, individuals' scores were positively related to the adoption of several social future-oriented behaviours such as pro-environmental and civic behaviour. As such, the developed scale proves a reliable tool that could be of use for scholars and practitioners in futures studies as well as psychology.

Keywords: anticipation; futures consciousness; future orientation; scale validation; time perspective.

Introduction

Futures Consciousness refers to the capacity that a person has for understanding, anticipating and preparing for the future. In today's increasingly complex and interconnected world, it has become ever more essential to understand how people apprehend the future. The present paper is the result of a collaborative effort between researchers in the fields of future studies and psychology, which aims at a better understanding of individual differences in the perception of the future.

Research in futures studies on individual attitudes and behaviour has relied on a variety of methodological approaches that are most often qualitative in nature and necessitate to be adapted to the specific need of each study (e.g., Chen, 2009; Dorham, 2005). In contrast, psychology research on "future orientation" has relied on quantitative measurement tools, such as Time Perspective (Zimbardo & Boyd, 1999) or Consideration of Future Consequences (Strathman, Gleicher, Boninger, & Edwards, 1994). However, futures *consciousness* is a broader construct than future *orientation*, since it emphasises individuals' roles as members of the society and their perception of a more global and societal future. As such, and with respect to a systemic approach, it encompasses notions of global or environmental consciousness (Morris, 2002; Rifkin, 2009), and awareness of the social, cultural and political environment (Freire, 2013).

Hence, there is a need for a quantitative tool that captures differences in individuals' perception of the future and enables an empirical study to the manifestations of futures consciousness, with respect to the theories and basic assumptions of futures research. The present paper builds on a recent conceptual model of Futures Consciousness (Ahvenharju, Minkkinen, & Lalot, 2018) and describes the psychometric development and validation of a reliable 20-item scale of Futures Consciousness in three languages – English, French, and Finnish.

The five dimensions of Futures Consciousness

The theoretical model of Futures Consciousness proposes five dimensions: Time perspective, Agency beliefs, Openness to alternatives, Systems perception, and Concern for others, which together form a higher-level construct of Futures Consciousness (hereafter, FC). These dimensions were identified and defined as a result of the literature review within the field of futures research (Ahvenharju et al., 2018). The concept has been developed further with the identification of relevant psychological constructs for each of the five dimensions (Ahvenharju, Lalot, Minkkinen, & Quiamzade, 2019). These constructs served as the starting point for developing the measure proposed in this paper. Below, we briefly summarise the five-dimensional theoretical framework before presenting the measure.

Time perspective

Time perspective (TP) emphasises the importance of long-term thinking and looking ahead. Understanding the concept of passing time and being aware of a potential tomorrow are the basic prerequisites for being conscious about the future (Ahvenharju et al., 2018), making time perspective a fundamental aspect of FC. Psychologists often assess individual differences in time perspective under the denomination of future orientation (Zimbardo & Boyd, 1999) in connection with episodic future thinking (Bromberg, Wiehler, & Peters, 2015) and delay discounting (Matta, Gonçalves, & Bizarro, 2012; Mischel, Ebbesen, & Raskoff Zeiss, 1972). Another widely used tool that relates to time perspective is Consideration for Future Consequences scale (Strathman et al., 1994), which has been found to positively predict several long-term-oriented behaviours, both at the individual (van Beek, Antonides, & Handgraaf, 2013) and the social level (Bruderer Enzler, 2015).

Agency beliefs

The Agency beliefs dimension (AB) stems from an understanding of the future as shaped by the choices and action of active agents (rather than a predetermined future). Within

the FC model, it represents the subjective sense of being in control of one's future and mindful of the consequences arising from one's actions, as a prerequisite for intentional social action (Ahvenharju et al., 2018). It hence corresponds to a high-level personal sense of agency that includes features of responsibility, forethought, self-reactiveness, and self-reflectiveness (Bandura, 2001). This generalised, long-term sense of agency can be apprehended through different lenses such as locus of control (Rotter, 1966), general self-efficacy (Bandura, 1982), and personal optimism (Scheier & Carver, 1985). All these measures have been found to predict engagement in efficient future-oriented action, leading – amongst others – to a better ability to delay gratification, perseverance, health and success in life (Conner & Norman, 2015; Furnham & Steele, 1993; Seligman & Csikszentmihalyi, 2000).

Openness to alternatives

Openness to alternatives (OA) stems from the assumption in futures studies that there is not one fixed future that can be known or discovered but, instead, several potential ways the future may evolve. Thus, FC requires openness of the mind to be able to anticipate and appreciate alternative developments. OA encompasses the capacity to critically evaluate commonly shared views, to imagine and discover unconventional solutions and alternative paths, as well as the aptitude for enduring uncertainty regarding the future (Ahvenharju et al., 2018). With regard to psychological concepts, OA is clearly related to the notion of openness to experiences (e.g., Costa & McCrae, 1992; Lee & Ashton, 2004) as well as critical thinking (Facione, Facione, & Sanchez, 1994; Sosu, 2013), and (negatively) to intolerance of uncertainty (Carleton, Norton, & Asmundson, 2007) and need for closure (Kruglanski & Fishman, 2009).

Systems perception

Systems perception (SP) relies on a holistic perspective of the world and describes individuals' understanding and appreciation of the complexity of the cultural, societal and environmental systems that they live in (Ahvenharju et al., 2018). The importance of systems perception within the model of FC comes from the assumption that people need to understand the complex interconnections between actions and impacts within larger systems in order to identify constructive and valuable ways towards a better global future. SP is not expected to come naturally to most people (Dawidowicz, 2011), who tend to overestimate their understanding of complex causal relations and patterns (Rozenblit & Keil, 2002). SP is related to neighbouring concepts of systems thinking (Lezak & Thibodeau, 2016) and holistic thinking (Nisbett, Peng, Choi, & Norenzayan, 2001). It is also related to perception of the self as more or less interdependent of other people (Markus & Kitayama, 1991) or external entities such as nature (i.e., the ecopsychological self; St. John & MacDonald, 2007).

Concern for others

Concern for others (CO) is the last and most normatively connoted dimension of FC. With respect to the normative approach that defines the field of future studies (Bell, 1997; Malaska, 2001), the FC model suggests that a person who is future-conscious should not only think of their own future but also of the future of others, of society, and of future generations (Ahvenharju et al., 2018). CO is obviously related to core concepts of empathy (Decety & Jackson, 2004) and perspective-taking (Leith & Baumeister, 1998). It is also connected to self-transcendence values (i.e., universalism and benevolence; Schwartz, 1994; Schwartz et al., 2012), moral self, and identification with all of humanity (McFarland, Webb, & Brown, 2012) or global citizenship (Reysen & Katzarska-Miller, 2013).

Measuring Futures Consciousness

We believe each of these five dimensions translate in inter-individual differences that can be measured. We hence created a composite scale of Futures Consciousness. To develop

the scale, we selected items from validated scales in the literature that relate to each of the five hypothesised factors of FC. We relied on Ahvenharju and colleagues' literature review (2019) to identify the existing scales most relevant to that purpose. This resulted in selecting two to four scales by hypothesised factor (see below). After this first step of items selection, we adopted a dual approach of exploratory and confirmatory factorial analyses to investigate the scale properties, then tested the scale's reliability, and convergent and concurrent validity. The scale was initially developed in the English language, then translated into French and Finnish. Psychometric properties of the three versions were finally compared. All data and material are available upon request from the first author.

Study 1 – First phase of items selection

Method

Participants. We first conducted a pilot study to select potential items that would compose the FC scale. Five hundred thirty-nine American participants were recruited during the autumn of 2016 through Amazon's Mechanical Turk. They were 210 males and 329 females of 18-76 years of age ($M = 37.7$, $SD = 12.5$). Most of the sample had achieved a 4-year degree or more (50%), smaller numbers having a 2-year degree or some college (39%), or a high school degree or less (11%).

Materials and procedure. Participants completed an online questionnaire including scales from the literature (in a randomised order) corresponding to the hypothesised FC dimensions. Fifteen scales (see list in Table 1) were selected based on a literature review (Ahvenharju et al., 2019). In a few cases, there was no available scale that assessed the key concept (notably, holistic thinking and moral centrality) and we had to include the closest available tool instead (virtuous leadership, that is, drawing from a leadership role to ensure justice and honesty, was included in replacement of moral centrality). This represented a total 160 items, with 26 to 40 items per theoretical dimension. Except stated otherwise,

participants answered all questions on a 5-point Likert scale (1 = “not at all like me”, or “disagree strongly”; 5 = “very much like me”, or “strongly agree”).

Results

We selected items through a two-stage process. First, we conducted principal components analyses on each scale separately, in order to identify the most relevant items (higher loadings) for each scale. We discarded the less relevant items, representing roughly a third of the total pool of items. We then conducted confirmatory factorial analyses.

We ran a separated analysis for each theoretical dimension. Each analysis included the different scales related to that dimension and assessed the loadings of their items, as well as the contribution of the scales themselves to the superordinate factor. A handful of scales were only weakly related to the superordinate factor and we discarded them. In the retained scales, we also discarded items which loadings were low, or items that were highly redundant (content-wise) with another item. Finally, we ensured that for each theoretical dimension the retained items formed a model with satisfactory fit as tested in the CFA. As such, this first phase of items selection was based on both statistical criteria and a subjective analysis of their content. At the end of the process, we retained 30 items, with six to eight items per theoretical dimension.

Study 2 – Final items selection and test of the scale structure

Method

Participants. Another six hundred American participants were recruited through MTurk to complete the online survey. Six participants failed to answer correctly to two attention checks and were excluded from further analyses. The final sample included 249 males, 342 females and three undisclosed, of 18 to 79 years of age ($M = 36.5$, $SD = 12.5$). Most of the sample had achieved a 4-year degree or more (51%), smaller numbers having a 2-year degree or some college (38%), or a high school degree or less (11%). Participants

completed the 30-item FC scale as well as other measures assessing convergent and concurrent validity, in a randomised order. A subsample of participants agreed to be contacted for a follow-up study (via their MTurk identifier). Fifty-nine participants (23 male and 36 female, $M_{\text{age}} = 35.6$, $SD = 10.6$) hence completed the FC scale again one month later in order to assess test-retest reliability.

Material

Scales used to assess convergent validity. In order to assess convergent validity, we tested the relations between FC score and different constructs of personality and motivation that were hypothesised to be related to Futures Consciousness. Specifically, participants completed the Big Five Inventory (John & Srivastava, 1999) and Mindful Attention Awareness Scale (Brown & Ryan, 2003). Their need for cognition (Cacioppo, Petty, & Kao, 1984), need for closure (Roets & Van Hiel, 2011), and chronic regulatory focus (Lockwood, Jordan, & Kunda, 2002) were also assessed. Descriptive statistics are reported in Electronic Supplementary Material (ESM 1).

Scales used to assess concurrent validity. Finally, in order to assess concurrent validity, we considered a variety of behaviours that can be considered future-oriented. Altruistic behaviour (Rushton, Chrisjohn, & Fekken, 1981), pro-environmental behaviour (Kaiser & Wilson, 2004) and active and engaged citizenship (Zaff, Boyd, Li, Lerner, & Lerner, 2010) were assessed (see ESM 1 for descriptive statistics). We expected FC score to be positively related to these behaviours.

Results

Exploratory factorial analysis. The sample ($N = 594$) was randomly split in two to allow for independent factorial analyses; the first exploratory, and the second confirmatory (see Noar, 2003; van Prooijen & van der Kloot, 2001). There were no missing data, and univariate normality assumptions were respected (Skewness $< |1.22|$, Kurtosis $< |1.62|$). On

the first half ($n = 297$), Kaiser-Meyer-Olkin's measure of sampling adequacy (KMO) and Bartlett's test of sphericity indicated that items were suited for factorial analyses (KMO = .81, Bartlett's $\chi^2(435) = 4183, p < .001$). Following recent recommendations (e.g., Ruscio & Roche, 2012), we relied on a multiple criteria approach to determine the number of factors to extract. Analyses were conducted on R. There was a strong consensus, with Horn's parallel analysis (package *paran*), BIC (package *psych* and *GPArotation*), and Ruscio's comparative data (package *RGenData*) suggesting seven factors. Only Velicer's MAP suggested eight. We hence conducted an exploratory factorial analysis (maximum likelihood method, extraction fixed on 7 factors) with an oblique (Oblimin) rotation, since factors were assumed to represent distinct but correlated facets of FC. The 7-factor solution (eigenvalues between 6.90 and 1.41) explained 53% of variance. Most items were grouped by hypothesised dimension and loaded on a single factor (all loadings are reported in Appendix 1). Others proved problematic. Two items from the system thinking scale loaded on the CO instead of the SP factor. One item from the critical thinking disposition scale and one from the openness to experience scale had cross-loadings on the CO factor of similar magnitude to their loadings on the OA factor, and one item from the future orientation scale cross-loaded with the OA factor. We decided to discard these problematic items. Furthermore, the two items from the virtuous leadership questionnaire loaded on a factor on their own instead of grouping with the other CO items. Given that these items were initially introduced as a proxy for moral centrality, but brought along aspects of leadership and risk orientation that were not part of the original construct, we considered their content was not completely in line with the original CO construct, and hence discarded them. Finally, the two scales used to measure TP (consideration of future consequences and future orientation) loaded on separate factors instead of a common one. We checked interfactor correlations and noticed that the CFC items were completely unrelated to the SP factor ($r = -.07$) whereas the future orientation items

were correlated to all other factors. It should also be noted that CFC has been criticised for low readability and hence potentially low reliability when used on population other than very highly educated (e.g., Crockett, Weinman, Hankins, & Marteau, 2009; McKay, Ballantyne, Goudie, Sumnall, & Cole, 2012). We hence decided to retain the future orientation and discard the CFC items. As a result, we obtained a 20-item scale with five factors corresponding to the five theoretical dimensions of Future Consciousness (all items are reported in ESM 3).

Confirmatory factorial analysis. We then conducted a confirmatory factorial analysis (R; package *lavaan*) on the second half of the sample ($n = 294$). Based on the results of the exploratory analysis, we tested for a hierarchical 5-factor model where the global construct of FC would be composed of TP, AB, OA, SP, and CO (see Figure 1). Fit indices included root mean square error of approximation (RMSEA; Steiger & Lind, 1980) and standardised root mean residual (SRMR; Bentler, 1995). Indeed, Hu and Bentler (1999) advise the use of a “2-index presentation strategy” in order to minimise both Type I and Type II errors. RMSEA has, moreover, been declared one of the most informative fit indices (Diamantopoulos & Siguaw, 2000). We also report comparative fit index (CFI; Bentler, 1990) and chi-square. Typically, $CFI \geq .90$, $RMSEA \leq .08$ and $SRMR \leq .09$ indicate an acceptable fit (MacCallum, Browne, & Sugawara, 1996).

The model tested yielded acceptable fit indices ($\chi^2 = 357$, $df = 165$, $\chi^2/df = 2.16$; $CFI = .905$; $RMSEA = .063$, 90% CI [.054, .071]; $SRMR = .071$) and likelihood ratio tests favoured it over alternative models (i.e., five independent factors, single factor, and the independence model; see Appendix 2). As expected, covariances between the five dimensions were all significant and positive (z -values between 1.99 and 4.93, p -values between .047 and $< .001$). Descriptive data and inter-items correlations are reported in Appendix 3. The five dimensions presented acceptable to good reliability as assessed by Cronbach's α (see Appendix 4).

Importantly, the global FC scale presented good reliability (McDonald's $\omega = .89$), suggesting that futures consciousness can be apprehended and measured as a global concept, even if composed of several dimensions. To compute the global score, we first aggregated the dimensions scores separately (since the dimensions were not composed of the exact same number of items) before averaging them into one FC score.

Test-retest reliability. Test-retest reliability was assessed on the answers of 59 participants who completed the scale again one month later. The global FC score showed acceptable reliability, $r(57) = .76, p < .001$ (see Appendix 4). Moreover, scores were not different between the two measurement times, $t(57) = 0.87, p = .39$ ($M_1 = 3.96, SD = .43; M_2 = 3.89, SD = .44$).

Interindividual differences. We tested whether gender, age, and level of education would predict FC score. Results of a multiple linear regression indicated a small effect of age on FC total score (which was mostly driven by differences in the AB dimension), $\beta = .09, b = .04, 95\% \text{ CI } [.003, .08], t(584) = 2.12, p = .035$, so that older participants were more future-conscious. Gender was also a significant predictor, $\beta = .15, b = .07 [.03, .11], t(584) = 3.64, p < .001$, so that women were more future-conscious than men. Finally, level of education also predicted FC score (mostly through the TP and AB dimensions), $\beta = .12, b = .08 [.03, .14], t(584) = 2.99, p = .003$, so that higher-educated participants reported higher levels of FC. Effects are detailed in ESM 2.

Convergent and discriminant validity. We considered correlations between FC score and subscores and personality, cognition and motivation variables (see Table 2). Regarding the personality traits, FC was positively correlated to extraversion, agreeableness, conscientiousness and openness to experiences, and negatively to neuroticism. It was also positively related to dispositional mindfulness. Regarding cognition, FC was positively related to need for cognition but not to need for closure. Regarding motivation, it was

positively related to chronic promotion focus and (weakly) negatively to chronic prevention focus.

Concurrent validity. Simple regression analyses showed that FC significantly predicted all outcomes, respectively altruism: $\beta = .33$, $b = .48$ [.37, .59], $t(592) = 8.45$, $p < .001$; civic behaviour: $\beta = .56$, $b = .66$ [.58, .74], $t(592) = 16.4$, $p < .001$; and pro-environmental behaviour: $\beta = .29$, $b = .42$ [.31, .53], $t(592) = 7.31$, $p < .001$. Correlations with each FC dimension are reported in Table 3.

Studies 3a & 3b – Finnish and French FC scale validation

In light of these findings and evidence of internal, convergent, and concurrent validity, we considered the 20-item FC scale reliable. We hence translated the items to create a French FC scale and a Finnish FC scale (these languages were chosen because they represent the native languages of the authors). Items were translated into French by a bilingual native French-speaking researcher, then back-translated by a bilingual native English-speaking researcher. Discrepancies between the original and the back-translated versions were discussed until a consensus was reached. The same procedure was used for the Finnish translation (all translated items are presented in ESM 3). We then tested the structure and psychometric properties of these two translated versions.

Method

Participants and material

French-speaking sample. Students of a Swiss francophone university were contacted by email and proposed to participate in an online study about “personality and perception of the future.” A total of 278 students (95 men, 159 women, 24 undisclosed; $M_{\text{age}} = 25.0$, $SD = 6.77$) completed the study. They completed the French 20-item FC scale as well as the pro-environmental behaviour scale as a measure of concurrent validity (descriptive data are displayed in Appendix 5).

Finnish-speaking sample. Students of a Finnish university participated in an online study as partial validation of four different courses. Because of time constraints, three of the classes only completed the 20-item FC scale ($n = 325$; 100 men, 221 women, and four undisclosed, $M_{\text{age}} = 37.0$, $SD = 12.9$). The fourth class ($n = 104$; 27 men, 75 women, and two undisclosed; $M_{\text{age}} = 36.0$, $SD = 11.5$) completed both the FC scale and scales of altruism and civic behaviour as measures of concurrent validity (see Appendix 5). The total sample ($N = 429$) was used to assess the scale structure.

Results

Scale structure. A confirmatory factorial analysis was conducted on the French data to ensure that the 5-factor structure held. Consistent with initial findings, the fit indices validated the scale structure, $\chi^2 = 349$, $df = 165$, $\chi^2/df = 2.12$, $CFI = .853$, $RMSEA = .063$, 90% CI [.054, .073], $SRMR = .074$. The same 5-factor model run on the Finnish data also proved satisfactory, $\chi^2 = 518$, $df = 165$, $\chi^2/df = 3.14$, $CFI = .828$, $RMSEA = .071$, 90% CI [.064, .077], $SRMR = .072$. It should be noted that, in both samples, CFI is lower than the recommended threshold. However, authors (Kenny, 2015; Rigdon, 1996) have highlighted that CFI is not reliable and of no use to interpret the fit when RMSEA for the independence model is smaller than .158, which was the case here (null model's $RMSEA = .154$ and $.153$, respectively). Thus, the model can be considered satisfactory despite a low CFI.

Interindividual differences. Similar to the English sample, we found a small effect of gender, significant in French: $\beta = .17$, $b = .08$ [.02, .13], $t(251) = 2.75$, $p = .006$; marginal in Finnish: $\beta = .08$, $b = .07$, 95% CI [-.01, .15], $t(419) = 1.72$, $p = .086$; indicating a somewhat stronger FC amongst women. The effect of age was significant in the Finnish, $\beta = .28$, $b = .12$, 95% CI [.08, .16], $t(419) = 5.87$, $p < .001$, but not the French sample, $\beta = .10$, $b = .006$ [-.002, .01], $t(251) = 1.54$, $p = .12$.

Concurrent validity. Consistent with initial findings in English, the Finnish FC scale was found to positively predict altruistic behaviour, $\beta = .35$, $b = .56$ [.26, .85], $t(102) = 3.77$, $p < .001$, and engaged citizenship, $\beta = .43$, $b = .47$ [.28, .67], $t(102) = 4.74$, $p < .001$. The French FC scale positively predicted self-reported pro-environmental behaviour, $\beta = .37$, $b = .76$ [.53, .99], $t(257) = 6.47$, $p < .001$. Correlations are reported in Table 3.

Measurement invariance across groups. We finally conducted multiple-group confirmatory factor analysis to assess measurement (in)variance across the three national groups. We sequentially tested for configural, metric, and scalar invariance (see e.g., Hirschfeld & von Brachel, 2014; Vandenberg & Lance, 2000). Changes in likelihood ratio tests are often reported to assess differences between the unconstrained model and models with measurement invariances constraints. However, χ^2 has been criticised for depending too much on the sample size and authors (Cheung & Rensvold, 2002) have proposed to also consider differences in three other incremental indices: CFI, Steiger's gamma hat (GH), and McDonald's non-centrality index (NCI). Differences in nested models should be $< .01$, $.01$, and $.02$, respectively (see also Milfont & Fischer, 2010). All statistics are reported in Appendix 6. Analyses supported full configural invariance (model 1), but not full metric invariance (model 2). We investigated loadings difference in the samples and modification indices, and tested for partial metric invariance while allowing the eight most differing loadings (see general discussion below) to vary across groups (model 3; see Byrne, Shavelson, & Muthén, 1989; Milfont & Fischer, 2010). Partial metric invariance was then supported. We hence moved to scalar invariance (model 4), which was not supported. This was probably not surprising since the samples differed on many characteristics and demographics and we did not expect to observe equivalent scores. Since the difference tests indicated important scalar variance, we stopped the investigating sequence there.

Study 4 – Assessing a social desirability bias

Method

Before concluding, we ensured against a social desirability bias. Indeed, several aspects of FC can be seen as socially positively connoted and answers could be biased by social desirability. We recruited an additional 42 American (13 male and 29 female; $M_{\text{age}} = 33.5$, $SD = 7.72$), 37 French (13 male, 24 female; $M_{\text{age}} = 25.0$, $SD = 6.68$) and 21 Finnish respondents (2 male, 18 female, 1 undisclosed; $M_{\text{age}} = 17.9$, $SD = 2.09$) who filled the short form of the Marlowe-Crowne social desirability scale (Reynolds, 1982) alongside the 20-item FC scale in their respective language.

Results

The correlation between FC score and social desirability was clearly non-significant across the language groups, $r(99) = .005$, $p = .96$ (nor was it in any of the group taken separately). We hence ensured that the measure was free from a social desirability bias.

General Discussion

Future Consciousness is a new concept that is of interest for researchers in several fields such as psychology, sociology, and futures studies. In the present paper, drawing from a recent five-dimensional model of Futures Consciousness (Ahvenharju et al., 2019; Ahvenharju et al., 2018), we developed and validated a 20-item scale able to reliably measure FC as an interindividual difference. The scale's structure proved satisfactory, fitted the hypothesised model, and yielded good indices of internal and external validity. Moreover, high correlations between the dimensions supported the idea of a higher-order construct of FC.

We found significant but small differences in FC score related to age, gender, and level of education. Globally, older individuals, women, and people with higher education tend to report higher FC. It should be noted, however, that these effects explained only little

variance. Hence, it seems that individuals differ in their level of FC above and over their demographic characteristics.

The scale was duplicated in three languages (English, French, and Finnish) and satisfactory psychometric properties were obtained for each language version. Multi-group analyses suggested a partial metric invariance across groups. Specifically, loadings somewhat differed on the AB items, one CO item (assessing the value of universalism), and one OP item (“I often re-evaluate my experiences so that I can learn from them”). When these items were allowed to vary, metric invariance was ensured. It hence seems that people’s appreciation of their sense of agency varies across countries. This could make sense if we consider that modern-day USA is culturally more oriented towards self-independence and agency than European countries such as Finland and Switzerland. The interpretation of ‘universalism’ also seems (ironically) to be culture-dependent. Nonetheless, despite these few differences, most of the items seemed to be interpreted the same way across the three samples, and configural invariance was also ensured.

The added value of the Future Consciousness scale

As mentioned earlier, this work is the result of a cross-disciplinary collaboration between researchers in the fields of psychology and future studies. We believe the resulting scale is of interest for scholars and practitioners of both disciplines. Regarding futures studies first, we provide a quantitative tool that is not thematic-dependent and can be readily used in a variety of research settings – such as impact assessments or comparative studies – or even as an educational tool. With respect to psychology, the scale brings the unique advantage of going beyond the often studied concept of future orientation. Indeed, FC encompasses future orientation in its sub-dimension of Time perspective but also includes other dimensions describing the individual’s capacity to take action, and to consider future issues through a broader lens that incorporates the social environment, i.e., others in general. This broader

scope allows for a more comprehensive assessment of future perception. It is worth noting that the predictive power of the entire scale regarding future-oriented social behaviours (e.g., civic and environmental behaviour) was much larger than that of the Time perspective dimension taken alone. This result supports our idea that future orientation alone is not sufficient to properly account for future-oriented behaviour. Hence, we believe the scale has important added value for psychology research and has the potential to help fostering our understanding and investigation of personal differences in human perception of and engagement with the future.

The profile of the high-FC person

The analysis of correlations between FC scores and different personality, motivation, and cognition measures help establishing the profile of high-FC individuals. In terms of personality, FC scores were positively correlated with extraversion, agreeableness, conscientiousness, and openness, and negatively with neuroticism. Some relations can seem evident, notably with openness to experiences, which is conceptually very close from the dimension of Openness to alternatives. It must be noted, however, that openness to experiences correlated positively with all five sub-dimensions and not only OA. Hence, we believe the result brings actual information above and beyond a mere confusion of constructs. Similarly, we believe the positive correlations with need for cognition not only reflect a commonality with OA but a broader relation with the multiple dimensions of the global concept of futures consciousness.

We also found positive correlations with dispositional mindfulness, which is interesting in two respects. First, because mindfulness implies enjoying the *present* moment (e.g., Baer, 2003), one could have expected no relation or a negative relation with Time perspective. In contrast, it seems that dispositional mindfulness is related to greater engaging in future thinking. Second, mindfulness also encompasses, above future orientation, notions of

nonjudgment and curiosity as well as compassion and altruism. It is hence sensible that it correlates positively with Openness to alternatives on the one hand, and Concern for others on the other hand. Its strong positive correlation with AB also suggests that increased acceptance and nonjudgment imply greater sense of control over one's life.

Finally, chronic promotion focus positively correlated with each of the five dimensions. Promotion focus is related to nurturance and growth needs and the accomplishment of ideals; it implies a focus on the absence/presence of positive outcomes and particularly involves eagerness strategies (Higgins, 1997). Interestingly, research found chronic promotion focus to be related to future time perspective and most specifically to the perception of future opportunities (Zacher & de Lange, 2011). Our results indirectly support these findings and suggest that a promotion orientation fosters an active engagement in future-oriented action through all five sub-dimensions (see also Cornwell & Higgins, 2015, for links between promotion focus and openness values; and Friedman & Förster, 2001, for links between promotion focus and creative thinking). Conversely, a negative albeit smaller correlation was found with respect to chronic prevention focus. Prevention is related to safety needs and the accomplishment of obligations; it implies a focus on negative outcomes and involves vigilance strategies. However, the detail of the correlations reveals that prevention is strongly (negatively) related to Agency beliefs but not so to the other dimensions. Hence, it seems that chronic orientation towards prevention can lower Futures Consciousness mostly through a lower sense of being personally able to shape the future. As prevention and promotion are constructed as independent dimensions (Higgins, 1997), it is not so surprising that their effects are not mirroring each other.

Conclusions and future directions

The three language versions of the FC scale had similar properties and yielded comparable results in terms of concurrent validity. This strengthens the reliability of the five-

dimension construct of FC, which is proven valid in three different national contexts. However, the different samples correspond to developed countries within the Western world and relatively similar cultures. We suspect that some dimensions of the FC model, notably Systems thinking (e.g., Nisbett et al., 2001) and Concern for others (e.g., Heine, Lehman, Markus, & Kitayama, 1999) could be subject to cultural variations. Future studies will need to investigate the universality of the FC structure (both theoretically and in terms of its measurement) in different cultural settings such as collectivist cultures, and maybe adapt some critical aspects. Moreover, a few items proved just satisfactory but could probably be improved. We selected items from the literature based on PCA and statistical decisions, but the process could be further improved, for example by additionally relying on expert ratings. Accordingly, future work might want to revise and refine some of the scale's items.

Finally, even if FC is primarily construed as an interindividual difference linked to core variations in cognition, motivation, and values, this does not imply that FC cannot be taught, or improved. Past research has notably shown that engaging in episodic future thinking can be learned (Altgassen et al., 2015), agency beliefs can be boosted (Margolis & McCabe, 2006), and critical thinking can be taught (King & Kitchener, 1994). As a result, FC as a multidimensional construal could be enhanced through time. Our newly developed FC scale could be used as an informative tool to measure evolution of a person's score across time, and could also allow to quantify the degree of change following an intervention, such as futures workshops. Futures workshops are co-creative methods used for various purposes (e.g., strategic planning, scenario development or educational goals). Different types of futures workshops have been developed after their original introduction by Jungk and Mullert (1987), such as the Futures Literacy KnowLabs (Miller, 2015) and could be expected to have an impact on one's futures consciousness – an impact that the present scale could measure.

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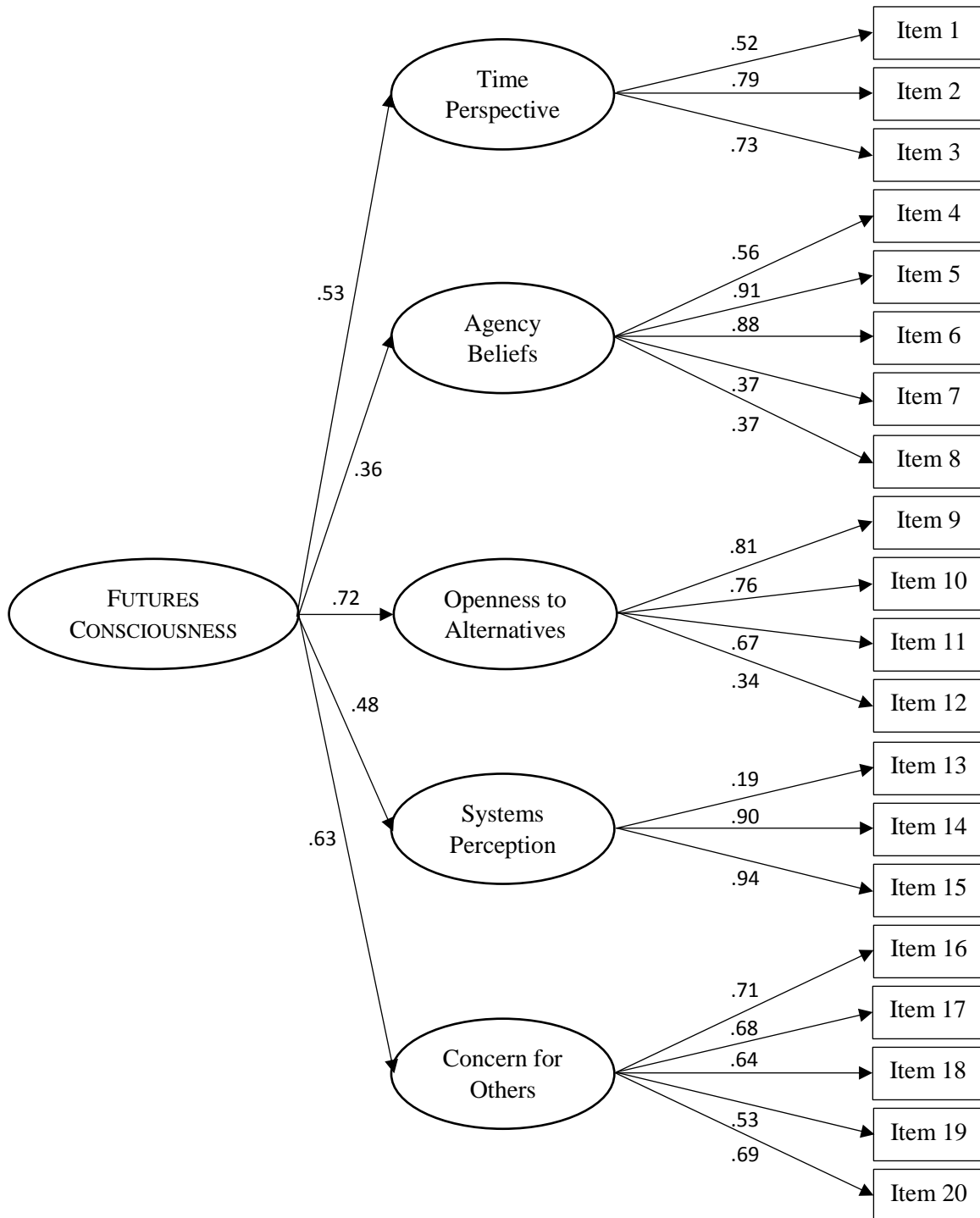


Figure 1. Results of the 20-item five-factor model tested in confirmatory factorial analysis in Study 2 ($n = 297$). Loadings are standardised (completely standardised solution) and are all significant at $p = .002$ or smaller. Items wordings are reported in ESM 3 following the same numbering.

Table 1

Validated scales from the literature used in the first step of items selection to create the composite Futures Consciousness Scale; ordered by hypothesised dimension.

Time Perspective	Agency Beliefs	Openness to Alternatives	Systems Perception	Concern for Others
Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999)	New General Self-Efficacy scale (Chen et al., 2001)	Openness to experiences from HEXACO (de Vries, 2013)	Nature Inclusiveness measure (St. John & MacDonald, 2007)	Identification with All Humanity scale (McFarland & Brown, 2008)
Consideration of Future Consequence scale (Strathman et al., 1994)	Life-Orientations test revised (Scheier et al., 1994)	Intolerance of Uncertainty scale (Carleton et al., 2007)	System Thinking scale (Davis & Stroink, 2016)	Short Schwartz's Values survey (Lindeman & Verkasalo, 2005)
Future Orientation scale (Beal, 2011)	Social Generativity scale (Morselli & Passini, 2015) Locus of Control (Sapp & Harrod, 1993)	Critical Thinking Disposition scale (Sosu, 2013)		Virtuous Leadership Questionnaire (Wang & Hackett, 2016)

Table 2

Correlations between FC score and sub-scores and personality, cognition and motivation measures for the English-speaking sample (Study 2; N = 594).

	Big 5					Mind-fulness	Need for closure	Need for cognition	Regulatory focus	
	Extra-version	Agreeable-ness	Conscien-tiousness	Neuro-ticism	Openness				Promotion	Prevention
TP	.14***	.26***	.36***	-.11**	.23***	.13**	.13**	.15***	.45***	-.09*
AB	.38***	.31***	.48***	-.55***	.19***	.41***	-.16***	.28***	.40***	-.51***
OA	.28***	.25***	.23***	-.21***	.57***	.15***	-.21***	.50***	.43***	-.02
SP	.14**	.11*	.06	-.04	.30***	-.003	.02	.15***	.22***	.04
CO	.09*	.44***	.18***	-.02	.31***	.09*	.06	.16***	.37***	.09*
FC	.33***	.41***	.41***	-.30***	.50***	.25***	-.06	.39***	.58***	-.11**

Note. TP = Time Perspective, AB = Agency Beliefs, OA = Openness to Alternatives, SP = Systems Perception, CO = Concern for Others.

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

Table 3

Concurrent validity: correlations between FC score and sub-scores and behavioural outcomes, for the English (Study 2), French, and Finnish-speaking samples (Studies 3a & 3b).

	English-speaking (<i>n</i> = 594)			Finnish-speaking (<i>n</i> = 104)		French-speaking (<i>n</i> = 278)
	Altruistic behaviour	Engaged citizenship	Environmental behaviour	Altruistic behaviour	Engaged citizenship	Environmental behaviour
TP	.18***	.31***	.09*	.20*	.22*	.14*
AB	.11**	.26***	.09*	.22*	.37***	-.03
OA	.30***	.44***	.27***	.20*	.35***	.28***
SP	.20***	.27***	.25***	.25*	.12	.33***
CO	.26***	.53***	.20***	.26**	.32**	.32***
FC	.33***	.56***	.29***	.35***	.43***	.37***

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

Appendices

Appendix 1

Results of the exploratory factorial analysis (maximum likelihood method, extraction fixed to 7 factors, Oblimin rotation) conducted in Study 2 (n = 297). Items wordings are reported in Appendix 8 following the same numbering. Items not retained are marked with a hash sign and their loadings are in brackets.

N°	Item	Communalities	Factor							
			1	2	3	4	5	6	7	
#	TP1	.63		(.241)	(.350)					(.465)
1	TP2	.58			.162					.510
2	TP3	.68						.219		.702
3	TP4	.58								.658
#	TP5	.77		(-.791)						
#	TP6	.72		(-.723)						
#	TP7	.82		(-.929)						
4	AB1	.71		-.152	.222	.580				.176
5	AB2	.80				-.901				
6	AB3	.77				-.878				
7	AB4	.60				.531				
8	AB5	.49		-.191		-.462				
9	OA1	.70			.787					
10	OA2	.68			.773					
11	OA3	.59			.464		-.151	.254	.168	
#	OA4	.59			(.388)			(.356)	(.237)	
#	OA5	.66			(-.237)			(-.218)	(.187)	
12	OA6	.56	-.157		-.287					.191
13	SP1	.59	.260					.209		
#	SP2	.69	(.199)					(.187)	(.439)	(.205)
#	SP3	.56							(.490)	(.150)
14	SP4	.90	1.004							
15	SP5	.89	.859							
#	CO1	.77						(-.800)		
#	CO2	.79						(-.817)		
16	CO3	.55			.151				.510	
17	CO4	.60							.530	
18	CO5	.66						-.196	.524	
19	CO6	.48	.175						.531	
20	CO7	.58							.593	

Note. Loadings < |.15| are not reported.

TP = Time Perspective, AB = Agency Beliefs, OA = Openness to Alternatives, SP = Systems Perception, CO = Concern for Others.

Appendix 2

Fit indices of the different models tested in the confirmatory analyses in the English-speaking sample (Study 2; n = 297).

Models	χ^2	df	Fit indices			Likelihood ratio tests
			CFI	RMSEA	SRMR	$\Delta\chi^2$
A	2213	190	-	.189	-	-
B	1390	170	.397	.155	.120	$\Delta\chi^2(20) = 823^{***}$
C	491	170	.841	.080	.148	$\Delta\chi^2(0) = 899$
D	357	165	.905	.063	.071	$\Delta\chi^2(5) = 134^{***}$

Note. Model A = independence; model B = single factor; model C = five independent factors; model D = five correlated factors forming a higher Future Consciousness construct. Likelihood ratio tests: each $\Delta\chi^2(\Delta df)$ compares the model of the given line with that of the preceding line.

*** $p < .001$. CFI = Comparative Fit Index, RMSEA = Root Mean Square Error of Approximation. SRMR = Standardised Root Mean Residual.

Appendix 3

Descriptive statistics and correlations of the 20 items forming the FC scale in the English-speaking sample (N = 594).

Item	M	SD	Pearson's correlation coefficient																		
			2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<i>Time Perspective</i>																					
1	4.31	0.79	.45***	.37***	.27***	-.18***	-.20***	.20***	-.12**	.25***	.20***	.23***	-.18***	.09*	.06	.08*	.25***	.17***	.07	.07	.16***
2	4.35	0.77		.62***	.23***	-.13**	-.15***	.15***	-.04	.22***	.28***	.32***	-.13**	.02	.12**	.13**	.27***	.17***	.17***	.14**	.24***
3	4.13	0.89			.16***	-.10*	-.12**	.15***	-.03	.22***	.17***	.26***	-.08*	.05	.17***	.15***	.22***	.16***	.18***	.11*	.23***
<i>Agency Beliefs</i>																					
4	4.03	0.92				-.48***	-.48***	.51***	-.23***	.35***	.33***	.26***	-.12**	.02	.16***	.14**	.13**	.13**	.10*	.01	.09*
5	2.48	1.20					.81***	-.42***	.41***	-.12**	-.11**	-.10*	.13**	.04	-.09*	-.08*	-.18***	-.12**	-.03	-.04	-.14**
6	2.48	1.23						-.34***	.39***	-.09*	-.10*	-.11**	.13**	.04	-.11**	-.10*	-.17***	-.13**	-.06	-.06	-.12**
7	3.81	0.80							-.19***	.21***	.19***	.19***	-.10*	-.03	.11**	.09*	.20***	.07	.09*	.02	.12**
8	2.51	1.11								-.03	-.04	-.01	.08	.11*	.02	.02	-.06	.02	.03	-.04	-.08
<i>Openness to Alternatives</i>																					
9	3.72	0.88									.66***	.51***	-.23***	.09*	.20***	.20***	.20***	.14***	.18***	.12**	.13**
10	3.97	0.89										.47***	-.25***	.09*	.17***	.18***	.23***	.156***	.20***	.09*	.17***
11	4.08	0.86											-.24***	.15***	.28***	.29***	.33***	.24***	.24***	.20***	.25***
12	2.41	1.20												-.09*	-.18***	-.17***	-.19***	-.16***	-.14***	-.22***	-.16***
<i>Systems Perception</i>																					
13	3.93	1.04													.24***	.26***	.09*	.16***	.11**	.23***	.07
14	3.61	1.20														.87***	.23***	.27***	.20***	.32***	.13**
15	3.77	1.18															.25***	.29***	.20***	.37***	.16***
<i>Concern for Others</i>																					
16	4.25	0.73																.38***	.41***	.27***	.50***
17	4.20	0.92																	.55***	.34***	.37***
18	3.88	0.98																		.31***	.40***
19	3.97	0.94																			.40***
20	4.34	0.72																			.40***

Note. Items are not recoded (measured on 5-point scales). * $p < .05$, ** $p < .01$, *** $p < .001$

Appendix 4

Descriptive statistics and standardised covariances of the five dimensions forming the FC scale in the English-speaking sample (N = 594).

	<i>M</i>	<i>SD</i>	McDonald's ω	AB	OA	SP	CO	Test-retest reliability ^a
TP	4.26	0.66	.75	.20**	.43***	.14*	.35***	.56***
AB	3.67	0.78	.78		.25**	.14*	.26**	.79***
OA	3.84	0.70	.74			.37***	.39***	.62***
SP	3.77	0.92	.78				.36***	.72***
CO	4.13	0.62	.77					.69***
	<i>M</i>	<i>SD</i>	McDonald's ω					
FC	3.93	0.46	.89					.76***

Note. TP = Time Perspective, AB = Agency Beliefs, OA = Openness to Alternatives, SP = Systems Perception, CO = Concern for Others. All scores were assessed on 5-point scales.

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

^a Test-retest reliability was assessed on a subsample of $n = 59$ participants who filled the scale again one month later.

Appendix 5

Descriptive statistics and standardised covariances of the five dimensions forming the FC scale in the Finnish- (N = 429) and French-speaking (N = 278) samples.

	Finnish-speaking		French-speaking		Standardised covariances				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	TP	AB	OA	SP	CO
TP	4.09	.61	4.11	.68	-	.25*	.28*	.14	.23*
AB	3.75	.59	3.66	.67	.17*	-	.09	.17*	.18*
OA	4.08	.62	3.77	.69	.58***	.46***	-	.26**	.33**
SP	3.85	.94	3.64	.95	.28***	.12 ^{ns}	.35***	-	.57***
CO	3.93	.60	4.04	.73	.43***	.36***	.50***	.44***	-
FC	3.94	.44	3.84	.43					

Note. Correlations in the Finnish sample are reported under the diagonal. Correlations in the French-speaking sample are reported above the diagonal.

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

Appendix 6

Test of measurement invariance across groups.

Model	χ^2	df	χ^2/df	CFI	GH	NCI	RMSEA [90% CI]	SRMR	Comparison	$\Delta\chi^2$	Δ CFI	Δ GH	Δ NCI	Decision
(1) Configural model	1223	495	2.47	.863	.823	.696	.066 [.062, .071]	.069	-	-	-	-	-	Accept
(2) Metric invariance	1379	533	2.59	.841	.798	.656	.069 [.064, .073]	.084	Model 2 vs. 1	156(38) ^{***}	.022	.025	.040	Reject
(3) Partial metric invariance ^a	1289	519	2.48	.855	.811	.681	.067 [.062, .071]	.076	Model 3 vs. 1	66(24) ^{***}	.008	.012	.015	Accept
(4) Scalar invariance	1828	549	3.32	.760	.726	.529	.083 [.079, .088]	.088	Model 4 vs. 3	539(30) ^{***}	.095	.085	.152	Reject

Note. CFI = comparative fit index, GH = gamma hat, NCI = non-centrality index, RMSEA = root mean square error of approximation, SRMR = standardised root mean residual. Each difference test (D) compares the model on its line with the previous one.

^a The following loadings were allowed to vary across groups: items CO6, OP3, AB1, AB2, AB3, AB4, AB5, and latent factor AB.

Electronic Supplementary Material

ESM 1

Descriptive statistics of the personality, cognition, motivation and behaviour scales used for convergent and predictive validity in the English-speaking sample (Study 2; N = 594).

	<i>M</i>	<i>SD</i>	α	2	3	4	5	6	7	8	9	10	11	12	13
1 Extraversion	2.99	0.86	.88	.17**	.29**	-.47**	.29**	-.23**	.23**	.26**	-.24**	.24**	.38**	.11**	.28**
2 Agreeableness	3.81	0.63	.80	-	.45**	-.43**	.25**	-.10*	.16**	.31**	-.18**	.39**	.43**	.10*	.24**
3 Conscientiousness	3.84	0.70	.86		-	-.52**	.17**	-.04	.23**	.34**	-.35**	.50**	.31**	.12**	.20**
4 Neuroticism	2.79	0.92	.89			-	-.19**	.34**	-.25**	-.26**	.56**	-.51**	-.30**	-.09*	-.21**
5 Openness to experience	3.69	0.67	.84				-	-.29**	.61**	.35**	-.09*	.20**	.36**	.25***	.28**
6 Need for closure	3.40	0.71	.90					-	-.39**	.017	.40**	-.31**	-.09*	-.12**	-.11**
7 Need for cognition	3.37	0.70	.90						-	.30**	-.22**	.23**	.31**	.31***	.26**
8 Promotion focus	3.86	0.72	.86							-	-.02	.15**	.42**	.12**	.23**
9 Prevention focus	3.22	0.78	.80								-	-.44**	-.04	-.10*	-.08*
10 Mindfulness	3.39	0.80	.91									-	.15**	.05	.03
11 Engaged citizenship	3.33	0.55	.90										-	.32***	.56**
12 Environmental behaviour	-0.61	0.68	.71											-	.36***
13 Altruism	2.87	0.67	.91												-

Note. α = Cronbach's alpha. Columns 2 to 13 indicate Pearson's correlation coefficient *r*, * $p < .05$, ** $p < .001$.

All scales were measured on 5-point scale. However and following Kaiser and Wilson's (2004) recommendations, the GEB score for Environmental behaviour was computed using a Rasch-type analysis, which results in scores included, roughly, between -2 and + 2.

ESM 2

Effect of gender, age, and level of education on FC score and subscores in the English-speaking sample (Study 2). Standard deviations are reported in brackets (N = 594).

	Gender			Age				Level of education			
	Men	Women	<i>t</i> -test	-1 <i>SD</i>	Mean	+1 <i>SD</i>	<i>t</i> -test	Low	Average	High	<i>t</i> -test
TP	4.18 (.62)	4.32 (.68)	2.80**	4.24	4.26	4.28	.71 ^{ns}	4.01 (.79)	4.26 (.69)	4.32 (.59)	3.35**
AB	3.62 (.78)	3.71 (.79)	1.26 ^{ns}	3.54	3.68	3.82	4.42***	3.53 (.75)	3.57 (.80)	3.78 (.77)	3.55***
OA	3.87 (.68)	3.82 (.71)	-.83 ^{ns}	3.84	3.84	3.84	.17 ^{ns}	3.72 (.84)	3.86 (.73)	3.86 (.64)	1.13 ^{ns}
SP	3.66 (.90)	3.85 (.93)	2.67**	3.74	3.77	3.80	.84 ^{ns}	3.55 (.90)	3.83 (.90)	3.77 (.93)	1.10 ^{ns}
CO	3.95 (.67)	4.25 (.54)	6.07***	4.12	4.13	4.13	-.89 ^{ns}	4.11 (.64)	4.15 (.63)	4.11 (.60)	.20 ^{ns}
FC	3.86 (.46)	3.99 (.46)	3.64***	3.90	3.94	3.98	2.12*	3.78 (.50)	3.93 (.50)	3.93 (.47)	2.99**

Note. For age, means were estimated for values of 24 (-1 *SD*), 36.5 (*M*) and 49 years of age (+1 *SD*). For level of education, “low” represents high school graduation or less, “average” a 2-year degree or some college, and “high” a 4-year college degree or more.

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

ESM 3

The 20 items composing the Futures Consciousness scale, organised by dimension, in English, French, and Finnish. (R) indicates items that need to be recoded.

ENGLISH	FRENCH	FINNISH
TIME PERSPECTIVE		
1. I think about the consequences before I do something.	Je réfléchis aux conséquences avant de faire quoique ce soit.	Mietin tekojeni seurauksia ennen kuin toimin.
2. I think about how things might be in the future.	Je pense à comment les choses pourraient être dans le futur.	Mietin sitä, miten asiat voisivat olla tulevaisuudessa.
3. I think often about what tomorrow will bring.	Je pense souvent à ce que le futur me réserve.	Mietin usein, mitä huomina tuoda tullessaan.
AGENCY BELIEFS		
4. I believe I can succeed at most any endeavor to which I set my mind.	Je crois que je peux mener à bien n'importe quel projet sur lequel je me focalise.	Uskon, että voin menestyä lähes kaikissa pyrkimyksissäni.
5. I hardly ever expect things to go my way. (R)	Je ne m'attends presque jamais à ce que les choses aillent bien pour moi. (R)	En juuri koskaan odota asioiden menevän omien toiveideni mukaisesti. (R)
6. I rarely count on good things happening to me. (R)	Je compte rarement sur le fait que de bonnes choses puissent m'arriver. (R)	Lasken harvoin sen varaan, että minulle tapahtuu hyviä asioita. (R)
7. I am usually able to protect my personal interests.	En général, je suis capable de protéger mes intérêts personnels.	Pystyn yleensä puolustamaan omia etujani.
8. I feel like what happens in my life is mostly determined by powerful people. (R)	J'ai le sentiment que ce qui arrive dans ma vie dépend principalement des décisions que des gens puissants prennent en amont. (R)	Minusta tuntuu että se, mitä omassa elämässäni tapahtuu, riippuu enimmäkseen valtaapitävien ihmisten päätöksistä. (R)
OPENNESS TO ALTERNATIVES		
9. I often use new ideas to shape (modify) the way I do things.	J'utilise souvent des idées nouvelles pour modifier ma façon de faire les choses.	Hyödynnän usein uusia ideoita, jotta voin muokata toimintatapani.
10. I am often on the lookout for new ideas.	Je suis souvent à la recherche d'idées nouvelles.	Etsin usein uusia ideoita.
11. I often re-evaluate my experiences so that I can learn from them.	Je repense souvent aux expériences de mon passé de façon à en tirer quelque chose pour le futur.	Arvioin usein kokemuksiani jälkikäteen, jotta voin oppia niistä.

12. I find it boring to discuss philosophy. (R)	Discuter de philosophie a tendance à m'ennuyer. (R)	Filosofiasta keskusteleminen on mielestäni tylsää. (R)
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SYSTEMS PERCEPTION

13. I think that all the Earth's systems, from the climate to the economy, are interconnected.	Je pense que sur Terre tous les systèmes, du climat à l'économie, sont interconnectés.	Mielestäni kaikki maapallon järjestelmät ilmastosta talouteen ovat yhteydessä toisiinsa.
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14. I have had the experience of feeling "at one" with nature.	J'ai déjà eu la sensation de ne « faire qu'un » avec la nature.	Minulla on kokemus luontoyhteydestä, eli olen tuntenut olevani yhtä luonnon kanssa.
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15. At least one time in my life, I have felt united with nature.	Au moins une fois dans ma vie, je me suis senti-e connecté-e à la nature.	Olen ainakin kerran elämässäni tuntenut olevani osa luontoa.
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CONCERN FOR OTHERS

16. I show concern and care for peers.	Je me préoccupe et je prends soin de mes proches.	Osoitan huomiota ja huolenpitoa vertaisilleni.
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17. I believe in being loyal to all mankind.	Je crois en l'idée d'être loyal envers l'humanité toute entière.	Uskon lojaaliuteen koko ihmiskuntaa kohtaan.
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18. When they are in need, I want to help people all over the world.	Lorsqu'ils sont dans le besoin, je voudrais aider les humains dans le monde entier.	Haluan auttaa ihmisiä kaikkialla maailmassa, kun he ovat avun tarpeessa.
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19. Universalism (that is, broad-mindedness, beauty of nature and arts, social justice, a world at peace, equality, wisdom, unity with nature, and environmental protection) is an important life-guiding principle for me.	L'universalisme – c'est-à-dire l'ouverture d'esprit, la justice sociale, un monde en paix, l'égalité, la sagesse, l'unité avec la nature et la protection de l'environnement – est un principe directeur important dans ma vie.	Universalismilla tarkoitetaan avarakatseisuutta, luonnon ja taiteiden kauneutta, sosiaalista oikeudenmukaisuutta, maailmanrauhaa, tasa-arvoa, viisautta, luontoyhteyttä ja luonnonsuojelua. Se on tärkeä elämäni ohjaava periaate.
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20. Benevolence (that is, helpfulness, honesty, forgiveness, loyalty, and responsibility) is an important life-guiding principle for me.	La bienveillance – c'est-à-dire la serviabilité, l'honnêteté, le pardon, la loyauté et la responsabilité – est un principe directeur important dans ma vie.	Hyväntahtoisuudella tarkoitetaan avuliaisuutta, rehellisyyttä, anteeksiantoa, uskollisuutta ja vastuullisuutta. Se on tärkeä elämäni ohjaava periaate.
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