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Consideration of future consequences (CFC): Validation and proposition of an ultra-short scale

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Abstract
Consideration of future consequences (CFC) assesses the extent to which individuals evaluate future outcomes of their current behaviour. This personality trait has been traditionally used as a unidimensional construct, but recent research has highlighted the theoretical and empirical relevance in differentiating between consideration of immediate and future consequences. The present research shows psychometric evidence for the CFC scale in Brazil, and proposes an ultra-short version of the measure. Results from exploratory and confirmatory factor analysis, convergent validity, and short-term test-retest reliability in Study 1 supported the two-factor structure of the CFC scale. In Study 2, we used item response theory to evaluate the discrimination and difficulty levels of the CFC scale and to test an ultra-short form with samples from Brazil and New Zealand. Correlations with personality, values, and attitudes and intentions to exercise and to eat healthy show that the ultra-short form (6 items) works similarly to the full form of the CFC scale (14 items).

Keywords Consideration of future consequences · Item response theory · Confirmatory factor analysis · Human values · Personality

Introduction

Human behaviour may be influenced by several aspects, different situations, and a wide range of distinct perceptions about life; and some of these behaviours even being influenced by a genetic percentage along with cultural components (Knafo and Spinath 2011). In addition, it sounds psychologically appropriate to understand how the future consequences of our behaviours influence the way that we think about the present and therefore stimulate some specific kinds of actions. In this direction, the Consideration of Future Consequences (CFC) is a construct developed and refined by Strathman et al. (1994), defined as the way that each person deals with the extent of distant and immediate consequences of potential behaviours, and how people would act when they consider a possible future scenario. Its application can be seen in different situations. For instance, it could be possible to see the influence of CFC when adopting pro-environmental behaviors, such as recycling or avoiding plastic bags. It could also present an influence in our eating habits, with people that adopt a healthier habit being more concerned about the future. Or even within academic context, such as students worried about what classes might have a significant effect on their professional life, at short and long term.

Consideration of Future Consequences (CFC)

When developing the construct, Strathman et al. (1994) considered that people could be located in a continuum of different types of concerns. On one extreme (low scores on CFC)

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are the people who are more concerned about immediate benefits and less interested in outcomes that may not come for some time, and that may be more uncertain and less concrete than instant behavioural rewards. They do not tend to focus much on theoretically bigger outcomes if it means having to make immediate sacrifices to achieve them. On the other extreme (high scores on CFC) are the people who are mainly led by the distant and more abstract outcomes of current behaviours, believing that certain actions are worthwhile, even if they are not so pleasant to be performed at the present time, because they will bring future benefits. These are the people who are willing to make some sacrifices in the present in order to obtain desirable future outcomes.

Several studies have demonstrated that the importance people give to the future consequences of their current behaviours has an important implication for their choices in life (Arnocky et al. 2014; Joireman et al. 2012; Strathman et al. 1994). Due to the fact that a wide range of modern health problems are directly connected to the choices people make in the present, many of these studies have focused on people's concerns about their exercising and eating habits (Joireman et al. 2012). However, more than these specific habits, research has reported that other important aspects to the maintenance of a healthy life are considered by people who present high scores on CFC, such as worrying about the use of sunscreen and the sun exposure periods (Heckman et al. 2009; Orbell and Kyriakaki 2008), being less likely to smoke or develop alcoholic habits (Daugherty and Brase 2010; Kovač and Rise 2007), and getting tested for HIV and having safe sex (Dorr et al. 1999). Furthermore, high levels of concern about the future also serve as a predictor to other psychological constructs and different kinds of actions, such as caring about environmental issues (Arnocky et al. 2014; Milfont et al. 2014), and being more ethical in the organizational environment (Ferreira et al. 2013).

Is CFC a Continuum or a Two-Factor Concept?

Although considering CFC as a continuum is theoretically sound (Arnocky et al. 2014; Strathman et al. 1994), recent research has indicated that a two-factor solution differentiating these two focuses might explain the data more appropriately (Joireman et al. 2012). A first indication for the existence of two separate variables is the fact that although the two-factors are associated, correlations between them are usually lower than −.50 (Dassen et al. 2015; Enzler 2015; Joireman et al. 2012; Milfont et al. 2017; Van Beek et al. 2013). Also, correlational studies have shown that the immediate and future focus are often not oppositely and significantly related to the same external outcomes. For instance, Joireman et al. (2012) showed that only the future factor of the CFC scale is significantly related with a promotion regulatory focus, and that both the future and immediate factors of the CFC scale are positively (not oppositely) and significantly related with a preventive regulatory focus (Milfont et al. 2017 replicated these paths). Therefore, ignoring the specificities of each dimension might hide important information to understand the influence of time perspective on external outcomes (Joireman et al. 2012).

The differentiation between an immediate and future focus can find theoretical support on life history theory (Stolarski et al. 2018) which posits that people's traits are shaped by social constraints. It is argued that experiencing stability or harshness in one's life might shape their personality in different ways. According to Stolarski et al. (2018), when the person is in an unpredictable environment, it is likely that s/he will strive for fast life-history strategies that could be characterized by an immediate focus (opportunistic lifestyle, impulsivity, etc.) while people who are in a predictable environment might show a different pattern of response (slow life-history strategy), with a focus on long-term goals (long-term planning, conscientiousness, etc.). Using this theory, Stolarski et al. (2018) associate Zimbardo's present-hedonistic factor with a fast life history strategy (e.g., focus on the immediate) and Zimbardo's future factor is argued to represent a pattern of behaviour characterized by long-term goals and rewards.

Another parallel can be drawn with the socioemotional selectivity theory (Carstensen et al. 1999), which hypothesizes time perspective as key to understand people's pursuit of goals. For Carstensen et al. (1999), if people perceive time as plentiful and expansive (more characteristic of young people), they are likely to behave in a way of preparation to enjoy long-term benefits, but if they perceive time as limited (more characteristic of elders) a more pragmatic or immediate focus is likely to happen. However, it does not mean that people will have only one focus; on the contrary, Carstensen et al. (1999) hypothesize that in certain stages of life it is likely that people will have a balanced motivation for the pursuit of goals with aspects related to preparation for the future but also enjoyment of the present. Although this is a theory from life-span development psychology, the association with time perspective makes it relevant for the present discussion.

A clear example of two different types of people who present distinct beliefs and motivations to think about the future consequences of their behaviour is highlighted by Joireman et al. (2012). These authors suggest that if individual A is motivated by thinking about the future benefits of his/her choices, this person will be more likely to make short-term sacrifices, such as exercising and stop eating fast foods and sweets, to have a healthier old age. This would be similar to the slow life history strategy and a perception of time as expansive (Carstensen et al. 1999; Stolarski et al. 2018). On the other hand, if individual B is motivated by immediate pleasures, s/he will be less likely to think about a distant and abstract future, prioritizing more concrete and straightforward rewards that can bring joy here and now, even if it means

being less healthy over the years to come. This would be similar to the fast life-history strategy and a perception of time as limited (Carstensen et al. 1999; Stolarski et al. 2018).

Measuring CFC

Strathman et al. (1994), developed de original CFC scale, initially composed by 24 items, to measure the level of importance that each person would give to the distant outcomes of present behaviours. To assess the reliability and factor loadings of these 24 items Strathman et al. used three samples of college students (Sample 1, 2, and 3), and according to their first results, a subset of 12 items was identified. Subsequently, they conducted five other studies, each one of them with a different sample (Sample 4, 5, 6, 7, and 8), to verify the adequacy of these 12 items. Results reported Cronbach's Alphas of over .80 for all the samples, and factor loadings ranging from .30 to .72 in Sample 1, where the one-factor solution accounted for 94.6% of the variance.

In order to provide stronger evidence for the factorial structure of the measure, Strathman et al. (1994) performed a confirmatory factor analysis with Samples 2, 3, and 4. Using alternative indices of the goodness of fit suggested by Wheaton et al. (1977), the authors considered the ratio of the chi-square to its degrees of freedom, where a ratio of 5:1 or less points out to an adequate fit. For the CFC scale, the authors found ratios of 2.18:5, 2.89:1, and 4.11:1. In addition, the values of the root-mean-square residual (RMSR) were .057, .059, and .069 for Samples 2, 3, and 4, respectively (Strathman et al. 1994).

Furthermore, aiming at finding more evidence regarding the adequacy of the scale, Strathman et al. (1994) also provided its convergent validity, relating the measure with three different constructs. Firstly, the authors used Sample 1 to demonstrate that an orientation towards the future is associated with the Willingness to Delay Gratification (Ray and Najman 1986), finding significant results ($r = .47$, $p < .001$). In addition, the correlation between CFC and the Internal-External Locus of Control Scale (Rotter 1966) was also verified, demonstrating an equally significant and positive result ($r = .25$, $p < .01$). Finally, the participants responded to the Stanford Time Perspective Inventory (Zimbardo and Boyd 1999), and the correlations were, once again, positive and significant ($r = .43$, $p < .001$). This unidimensional structure of the CFC scale was then used for years in predicting many other constructs, such as aggressive driving (Moore and Dahlen 2008), sensitivity to health communication (Orbell et al. 2004), sexual behaviour (Appleby et al. 2005), and organizational citizenship behaviour (Joireman et al. 2006).

However, recent studies have shown that a two-factor solution of the CFC scale could be a more accurate structure for this measure, being composed by an Immediate and a Future subscale. This structure was initially organized with 5 (Immediate) and 7 (Future) items but reorganized into two sets of seven items because the five-items sub-scale (Future) frequently showed poor reliability scores (Joireman et al. 2008). Supporting this two-factor structure, validations of the CFC scale (for either the 12 or the 14 items) in Canada (Arnocky et al. 2014); France (Camus et al. 2014), Ireland (Hevey et al. 2010), Italy (Nigro et al. 2016), Netherlands (Rappange et al. 2009), and Portugal (Echeverría et al. 2015), have shown satisfactory psychometric properties for the distinction between the CFC-Future and CFC-Immediate scales.

Besides the extensive support of factor reduction approaches, the CFC-Future and CFC-Immediate have also shown different participation in correlational studies. For instance, Joireman et al. (2012) found that the long-term thinking (CFC-Future) is related to attitudes and intentions to exercise, and also to attitudes and intentions to eat healthily, while the short-term thinking (CFC-Immediate) did not present significant results in this relation. Contrastingly, in another research lead by Joireman et al. (2008), multiple regression analysis pointed out that short-term thinking was related to lower levels of self-control, while long-term thinking did not present significant results. These findings provide empirical support for the distinction between the two CFC Sub-scales that will be verified in the present study (see also,"Arnocky et al. 2014; Macaskill et al. 2019).

The Present Research

It is widely known that psychological studies can present different results within and between countries (Hanel and Vione 2016). Therefore, in order to provide more reliable results, replications are necessary. However, these replications commonly occur in WEIRD countries (Western, Educated, Industrialized, Rich, and Democratic; Henrich et al. 2010). Regarding the CFC scale, previous validations showed acceptable psychometric parameters in different countries (e.g., Italy, Portugal), but its structure has been scarcely assessed in a non-Western culture, such as Brazil. Providing a reliable measure for considerations of future consequences in Brazil would help to broaden the possibilities in research. For instance, if invariance is achieved, future research can use the measure to assess the influence of country-level characteristics such as individualism and collectivism on individual-level immediate and future choices. In Hofstede's Insights (https://www.hofstede-insights.com/), Brazil is seen as a collectivist culture, with individuals focusing on protecting its members and to belong to cohesive groups. Differently, countries where the CFC scale was previously validated, such as Italy, France and Netherlands, are individualistic.

Since researchers are often extremely short on survey space, we also examined whether a shorter version of the CFC scale would show similar psychometric properties when compared to the original version. To trim the measure, besides traditional approaches for validation like confirmatory factor analysis,

convergent validity, and test-retest, we used Item Response Theory (IRT). The IRT helps to understand the associations between item responses and the construct the items represent (Cappelleri et al. 2014). Differently from the statistical approaches commonly used by the Classical Test Theory (CTT; e.g., confirmatory factor analysis, exploratory factor analysis), that have a focus on the structure and its external and internal validity, an IRT approach offers more specific information about the items (Pasquali and Primi 2003). This information is obtained through mathematical formula, expressing the relations between observed and hypothetical variables, called latent traits (Pasquali and Primi 2003). Therefore, using this approach helps us to get detailed information about how well items of the CFC scale are precise across different ranges of the construct measured. The IRT provides information about how discriminant (degree to which an item can differentiate people with similar magnitude of agreement of the same latent trait) and how difficult (level of latent trait necessary to endorse the item) the items are for people with different levels of agreement about a given construct (Sibley and Houkamau 2013; Webster and Jonason 2013). We thus used IRT to identify the more informative items, and whether these items can form a shorter version of the scale. Therefore, the present research aims to (1) validate the CFC scale in Brazil; and (2) propose an ultra-short version of the measure.

We highlight that the use of short measures to assess psychological constructs has been increasing over the years (e.g., Appel et al. 2012; Coelho et al. 2018; Rammstedt and Beierlein 2014). For instance, Coelho et al. (2018) reduced the Need for Cognition Scale from 18 to six items, reducing its completing time in almost one third (average 70 s). Using short measures help to avoid lack of attention, boredom and drop-outs. All these can affect the quality of the data, resulting in lower reliability and validity levels (Rammstedt and Beierlein 2014). Therefore, we are confident that the use of a short measure of CFC might present several benefits for research.

Study 1

Method

Participants and Procedure

A convenience sample composed by 434 Brazilian university students (Age $M = 22.9$, $SD = 7.05$; 69.9% female) was used. From the total, the majority of participants was heterosexual (91%), single (76.1%) and Catholic (48%). Data was collected using paper and pen and participants were directly contacted at the university and asked to fill out the questionnaire.

Measures

Consideration of Future Consequences Scale (CFC, Joireman et al. 2012). For the present study, we use a CFC scale composed by 14-items. This instrument assesses two different aspects of future consequences: CFC-Future (e.g., "My behavior is generally influenced by future consequences") and CFC-Immediate (e.g., "I only act to satisfy immediate concerns, figuring the future will take care of itself"). Both factors are composed of 7 items evaluated through a Likert type scale (ranging from 1 = "*not at all like you"* to 7 = "*very much like you"*). When proposing the 14-items version of the CFC measure, Joireman found satisfactory internal reliability for both factors ($\alpha > .80$) and a robust goodness-of-fit index in confirmatory factor analysis (CFI = .965, RMSEA = .043).

Zimbardo Time Perspective Inventory (ZTPI; Brazilian version adapted by Leite and Pasquali 2008). The ZTPI is composed by 56 items that represent five distinct factors: Past-Negative (10 items), Present-Hedonistic (15 items), Future (13 items), Past-Positive (9 items) and Present-Fatalistic (9 items). In this measure, participants have to answer how characteristic the items are to them, using a Likert-type scale, ranging from 1 (*very uncharacteristic*) to 5 (*very characteristic*). For the original ($\alpha > .74$) and the Brazilian validation ($\alpha > .68$), the internal consistencies were satisfactory for all the factors of the measure. Future and Present-Fatalistic factors were used to assess the convergent validity of the CFC scale.

Data Analysis

Previously to analyzing factor reduction, we randomly split the sample into two halves (n_1 and $n_2 = 217$). This division was adopted to test the exploratory and confirmatory approaches with different samples.

Exploratory Factor Analysis (EFA) The first half was used to assess the EFA. For that, the Minimum Rank Factor Analysis (MRFA) method was used to extract the factors. Hull method (HM) was chosen as a criterion for factor retention. Lorenzo-Seva et al. (2011) describe a stepwise overview of the procedure for selecting the optimal number of factors. The Hull method examines a screen test where model fit (Axis-Y) and degrees of freedom (Axis-X) of a range of factor solutions are plotted to find the factor solution that are on or close to an elbow in the highest boundary of the convex hull (i.e., the curve consisting of line segments touching the cloud on the top of it; Lorenzo-Seva et al. 2011). Therefore, the selected factor solution marks the point which an increase in fit levels off. Model fit was examined using the Common part Accounted For (CAF) index. This index varies from 0 to 1. The closer to

zero the value, the higher the amount of common variance in the residual matrix after the factor has been extracted. Values close to 1 mean that the residual matrix after the factor solution has been extracted is free of common variance (Lorenzo-Seva et al. 2011). Analyses were conducted using the *Factor* software (http://psico.fcep.urv.es/utilitats/factor/).

Confirmatory Factor Analysis (CFA) Using the second half of the sample, we performed the CFA. The Robust Maximum Likelihood estimator (Robust-ML) was used in Mplus (version 7.31), and the following indices were used to assess the model fit (Brown and Moore 2013; Kenny et al. 2014; Tabachnick and Fidell 2013): (1) Satorra-Bentler chi-square ($S\chi^2$) significance test, which must be non-significant; (2) Comparative Fit Index (CFI) and (3) Tucker-Lewis Index (TLI), which must be higher than .90 or close to .95; (4) Standardized Root Mean Square Residual (SRMR), which must be .08 or less; and (5) Root Mean Square Error Approximation (RMSEA), which must be .06 or less, but with values lower than .10 for small samples and small degrees of freedom also acceptable.

Convergent Validity Convergent validity was assessed through Pearson's correlations between the CFC scale and Zimbardo's measure. We expect positive and significant relationships between the future dimension of both measures and also between the present dimensions of both scales. On the other hand, we expect that the future dimension will be weakly or non-correlated with the present dimension in both scales. Convergent validity was assessed considering the entire sample.

Test-Retest From the total sample, 36 participants also answered the survey on a second application (1 month later) to assess the temporal reliability of the CFC scale. The temporal validity of the scale was assessed through (1) Spearman's correlations, (2) paired sample *t*-test, and (3) intraclass correlations. The *two-way mixed* method and the *absolute agreement* type were used for the intraclass correlations.

Results

Exploratory and Confirmatory Factor Analysis

Results supported the two-factor structure proposed by Joireman et al. (2012). However, two items did not fit in the hypothesized structure. Through an MRFA extraction method with Promin rotation and Hull method as the criterion of factor retention, we found a clear two-factor solution composed of six items each. The Hull method compared four factor solutions to select the best fit to the data. The selected factor solution was the last which showed a considerable increase in model fit in comparison with its antecedent. The fit (CAF) of each factor solution – zero, one, two, and three factors - were, respectively, .253 (df = 91), .241 (df = 77), .427 (df = 64), and .449 (df = 52). According to the Hull method, a two-factor solution provides the best balance between model complexity and goodness-of-fit. As it can be seen in Table 1, most of the items loaded satisfactory, except items 2 and 5.

In order to confirm the two-factor structure, we ran the confirmatory factor analysis with the second half of the sample, considering all 14 items of the measure. Results showed lambdas lower than .30 for items 2 and 5. These findings suggest that both items do not fit in the latent structure hypothesized for the Brazilian sample (Table 1). The model fit of the CFC scale was assessed with the 14 items version, and also for the structure excluding the two items with unsatisfactory loadings. The full version presented unsatisfactory fit indexes [$S\chi2$ (76) = 172,41, $p < .001$, CFI = .83, TLI = .80, SRMR = .09, RMSEA = .08 (CI 90% = .061–.092)] and the 12 items version presented better indicators [$S\chi2$ (53) = 86.01, $p = .003$, CFI = .93, TLI = .91, SRMR = .05, RMSEA = .05 (CI 90% = .032, .074)]. We also tested an alternative unidimensional model, but the results did not support this structure [$S\chi2$ (54) = 243.60, $p < .001$, CFI = .60, TLI = .51, SRMR = .13, RMSEA = .13 (CI 90% = .111, .144)].

Convergent Validity

The 12 items that present adequate psychometric properties were used to assess the convergent validity of the scale. As expected, the CFC-Future scale was positively correlated with the Future dimension of the ZTPI ($r = .40$, $p < .001$) and the CFC-Immediate scale was positively correlated with the Present-Fatalistic dimension of Zimbardo's scale ($r = .55$, $p < .001$). Also, the CFC-Future was negatively correlated to the Present-Fatalistic dimension of the ZTPI ($r = -.22$, $p < .001$), and the CFC-Immediate was not significantly associated to the Future dimension of the ZTPI ($r = -.01$, $p > .05$). In addition to presenting different correlations with other constructs, CFC-Future and CFC-Immediate were weakly and negatively correlated ($r = -.15$, $p = .002$). According to Cohen's guidelines, the correlation between the future dimensions from the CFC scale and the ZTPI scale presented medium effect size, and the effect sizes for the relationship between the present dimensions from both scales were large. When we correlated the present dimension in one scale with the future dimension in the other one, the effect size was small or non-existent.

Test-Retest

Temporal stability was assessed with a sample of 36 university students who answered the CFC items on two occasions with a gap of 30 days. The 12 items with adequate psychometric properties were used to test the temporal reliability. Results showed that the factors of the CFC scale from the first time were

Table 1 Factorial Structure of the CFC scale in Study 1

	Exploratory FactorAnalysis (14 items)			Confirmatory Factor Analysis (14 items)			Confirmatory Factor Analysis (12 items)		
	CFC-Future	CFC-Immediate	h^2	CFC-Future	CFC-Immediate	R^2	CFC-Future	CFC-Immediate	R^2
Item 1	.49	.06	.51	.54		.29	.51		.26
Item 2*	.29	.44	.43	.29		.09	–	–	–
Item 6	.66	.11	.63	.50		.25	.50		.25
Item 7	.62	.06	.54	.47		.22	.46		.21
Item 8	.55	.07	.54	.52		.27	.51		.26
Item 13	.54	−.31	.60	.51		.26	.53		.28
Item 14	.74	−.17	.86	.74		.55	.74		.56
Item 3	.05	.64	.58		.59	.35		.59	.34
Item 4	.12	.56	.60		.55	.31		.55	.31
Item 5*	.42	.35	.54		.23	.05	–	–	–
Item 9	−.01	.60	.61		.60	.34		.60	.37
Item 10	−.14	.59	.59		.74	.54		.74	.55
Item 11	−.11	.68	.70		.82	.68		.82	.68
Item 12	.15	.45	.39		.53	.28		.52	.27
Eigenvalue	2.33	2.72							
Cronbach's Alpha	.79	.77		.71	.78		.71	.80	
Explained Variance	28%	33%							

*Items that did not load satisfactorily. The seven first items compose the hypothesized Future dimension, and they are followed by the seven items that compose the hypothesized Immediate dimension. Standardized parameters are shown for Confirmatory Factor Analysis. CFC = Consideration of Future Consequences

strongly correlated (Spearman's rho) with the factors from the last application [CFC-Future time 1 and 2: $r = .61$, $p < .001$; CFC-Immediate time 1 and 2: $r = .69$, $p < .001$]. Also, we performed a paired sample *t*-test analysis to assess the difference of mean between the two waves. As expected, results were non-significant [CFC-Future time 1 and 2: $t = -.18$, $p = .856$; CFC-Immediate time 1 and 2: $t = -.10$, $p = .921$]. Finally, we assessed the intraclass correlation coefficient (ICC; two-way mixed) to provide further evidence of temporal reliability. Results showed high intraclass correlation for both factors of the CFC scale, suggesting that the measure is reliable across time [CFC-Future time 1 and 2: ICC = .76, $p < .001$; CFC-Immediate time 1 and 2: ICC = .82, $p < .001$].

Study 2

Method

Participants and Procedure

Participants were university students from Brazil ($N = 610$; age, $M = 23.9$, $SD = 7.97$; 61.3% female) and a sample from Milfont et al. (2017) composed by psychology students from Brazil ($N = 136$, $M_{age} = 21.5$, $SD_{age} = 6.3$, 70.6% female) and New Zealand ($N = 144$, $M_{age} = 19.1$, $SD_{age} = 1.3$, 70.8% female). In their original publication, Milfont et al. (2017) assessed a model in which promotion orientation mediated the association between CFC and exercise attitudes. Differently, we are concerned about the psychometric properties of the measure itself. Participants from the first Brazilian sample ($N = 610$) completed an online survey shared on Facebook pages and groups of Brazilian universities, where participants were invited to collaborate voluntarily. In the sample from Milfont et al. (2017), students from New Zealand completed an online survey in exchange for partial course credits, whereas the Brazilian students completed a paper survey voluntarily. The data collected by Milfont et al. (2017) was founded by a Marsden Fast-Start grant from The Royal Society of New Zealand (Te Putea Rangahau a Marsden).

Measures

The survey used to collected data for this study (Brazilian, $N = 610$) was composed of the same items from the first study (CFC scale and ZTPI), already described, and items of personality traits (Gosling et al. 2003) and human values (Gouveia et al. 2014) described below.

Basic Value Survey (BVS; Gouveia 2003): This instrument is composed by 18 values/items that form 6 human values dimensions. Respondents rated how important each of the

values was to them on a scale ranging from 1 (*Completely unimportant*) to 7 (*Of the utmost importance*).

Ten-Item Personality Inventory (TIPI; Gosling et al. 2003): This measure is composed by 10 items assessing each one of the Big Five personality traits. Participants rated the items on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Regarding the sample from Milfont et al. (2017), besides the CFC scale, participants also answered items from the Regulatory Focus Questionnaire (Lockwood et al. 2002) and items about exercising and eating healthy as described below.

Regulatory Focus Questionnaire (RFQ, Lockwood et al. 2002). This scale is composed by 18 items that forms two subscales: prevention (e.g., "In general, I am focussed on preventing negative events in my life") and promotion (e.g., "I frequently imagine how I will achieve my hopes and aspirations"). Items were rated on a scale from 1 (*not at all true of me*) to 7 (*very true of me*).

Regarding the items about exercising and eating healthy, three items assessed exercise attitudes (e.g., "regular exercise is essential to good health"), and three items assessed healthy eating attitudes (e.g., "eating healthy is essential to my well-being"). These were measured using a seven-point scale (1 = *strongly disagree*; 7 = *strongly agree*). These two attitudinal scales presented satisfactory internal consistence ($\alpha > .80$) and measurement invariance (Δ RMSEA$_{scalar} = .003$) across Brazilian and New Zealand samples (Milfont et al. 2017). To assess future exercise intentions, we used a single item ("Next week, how many times do you plan to exercise?"). Finally, to assess healthy eating intentions, we asked participants to think about their future meals (e.g., breakfasts, lunches, dinners), rating to what extent these would be healthy (1 = *not healthy*; 10 = *very healthy*).

Data Analysis

Item Discrimination To determine the quality of the CFC scale, we evaluated the item discrimination for each item that composes this measure, using Baker's (2001) guidelines to interpret the results. According to this author, we can evaluate the item discrimination through the following range of values: 0 = no discrimination, .01 to .34 = very low discrimination, .34 to .64 = low discrimination, .65 to 1.34 = moderate discrimination, 1.35 to 1.69 = high discrimination, and 1.70 to infinity = very high discrimination.

Item Difficulty Concerning the item difficulty, the theoretical range that goes from -∞ to +∞ indicates the likelihood of choosing an option from the item scale of response (Baker 2001). In other words, the item difficulty indicates which level of a latent trait is necessary for the participants to agree with each point of the response scale, and it can be checked by the values of the thresholds (e.g., $b_1 - b_4$). As an example, let's suppose that a given instrument is answered in a range of 5 points, and the latent trait necessary for the participants to agree "totally" with its first item (e.g., select the option 5 in a 5-points Likert-scale) is .05 (b_4) and 2.00 (b_4) for the second item. This would mean that the participant does not need to have a high latent trait in the respective construct to agree entirely with its first item, but they would need a considerable latent trait to select the highest option from the response scale for the second item. In this case, item 1 would be considered easier than item 2.

Test Information Curve This test was used to indicate how well, and in what range of the latent trait, the scale can discriminate individuals. Ideally, the test information curve should cover a wide range of the latent continuum (e.g., 2 to +2; Hambleton et al. 1991), which indicates more precision and discrimination of individuals with similar magnitudes of agreement.

Differential Item Function (DIF) This procedure evaluates the extent to which items are equivalent across groups (Camilli and Shepard 1994). DIF function runs the Wald and likelihood-ratio approaches for testing whether specific items operate differently across groups. To test that, some items are select as anchors, and the remaining items are freely estimated. Besides DIF, we also used CFA invariance. Model fit differences were assessed through Satorra-Bentler χ^2, ΔRMSEA (must be smaller than or equal to .015), and ΔCFI (must be lower than or equal to .01) (Chen 2007).

Most of the analyses in Study 2 were performed with the "R" statistical program (R Development Core Team 2016) using the *mirt* package. This package can estimate multidimensional IRT parameters for exploratory/confirmatory models through maximum-likelihood methods (Chalmers 2012). We also used Mplus (version 7.31) to assess measurement invariance.

Results

Item Discrimination

We assessed the item discrimination for each subscale of the CFC separately in each sample. As shown in Tables 2 and 3, discrimination parameters (*a*) were higher than .65 for most of the items, representing moderate or high adequacy to evaluate people with similar levels of agreement regarding considerations about the future. However, items 2 and 5 showed unsatisfactory discrimination parameters (Item 2 = very low discrimination, Item 5 = low discrimination) for the two Brazilian

Table 2 Item response theory parameters for a Study 2 sample (Brazil, $N = 610$)

	a	b_1	b_2	b_3	b_4	b_5	b_6
CFC-Future							
Item 1	1.29	−4.34	−3.55	−2.63	−1.53	−.31	.89
Item 2	.08	−30.85	−18.09	−5.99	7.18	21.32	35.64
Item 6	.72	−4.71	−3.34	−2.22	−.84	.40	2.32
Item 7	1.04	−5.60	−3.99	−2.54	−1.62	−.38	1.24
Item 8	1.25	−4.05	−2.96	−2.04	−.79	.13	1.47
Item 13	2.29	−3.02	−2.56	−2.11	−1.46	−.71	.21
Item 14	2.38	−3.03	−2.26	−1.71	−.89	−.09	.90
CFC-Immediate							
Item 3	2.02	−.52	.46	1.16	1.65	2.30	3.26
Item 4	1.62	−.69	.41	1.18	1.77	2.51	3.64
Item 5	.44	−8.50	−5.19	−2.88	−.60	2.05	4.95
Item 9	1.26	−1.03	.39	1.15	1.80	2.69	3.96
Item 10	1.86	−.55	.57	1.31	1.84	2.60	3.18
Item 11	2.67	−.53	.48	1.12	1.0	2.20	2.98
Item 12	.85	−2.59	−.74	.43	2.01	3.35	4.80

*Items that did not discriminate satisfactorily

CFC = Consideration of Future Consequences

samples, and item 5 also presented low discrimination for the New Zealand sample. These two items also showed unsatisfactory psychometric properties in Study 1.

Item Difficulty and Information

Regarding the difficulty parameter (b), it can be seen that the levels of latent trait necessary to endorse the items of the CFC scale were slightly low for the future factor and somewhat high for the immediate factor. In other words, when rating items from the immediate dimension, participants struggled to select more top options of the scale of response because their level of agreement with these items was low. Meanwhile, participants tended to present higher levels of agreement with the items from the future dimension. This trend can be seen by the frequency of responses for the two dimensions. While only 2.7% of the two Brazilian samples selected the first option of the response scale to rate the items from the future dimension, around 21.7% of these participants selected the highest option to rate these same items. On the other hand, about 24.2% of the participants from these two samples chose the first option of the response scale to evaluate items from the immediate dimension, and 2.3% of these participants chose the highest option to evaluate the same items. The New Zealand sample followed similar patterns (for more details see the supplementary materials).

Nevertheless, even if the latent trait or level of agreement required to endorse the items were different for each of the two dimensions (future and immediate), we found a reasonable spread of item difficulty over the latent range. For instance, the future dimension presented overall mean[1] of −3.60 ($SD = .89$) for the b_1 threshold, and 1.70 ($SD = .90$) for the b_6 threshold, while the immediate dimension presented the overall mean of −1.95 ($SD = 1.99$) for the b_1 threshold, and 4.10 (SD = 1.71) for the b_6 threshold. In general, these results indicate that items for the future dimension are efficient to

Table 3 Item response theory parameters for other Study samples

	a	b1	b2	b3	b4	b5	b6
Brazil ($N = 136$)							
CFC-Future							
Item 1	1.32	−3.19	−2.58	−1.44	−.29	1.20	NA
Item 2	.21	−11.53	−5.10	−.65	4.24	7.97	16.47
Item 6	1.28	−2.65	−2.29	−1.54	−.75	.53	1.67
Item 7	1.49	−3.94	−2.93	−1.74	−1.00	−.01	1.36
Item 8	1.22	−3.43	−2.44	−1.97	−.54	.14	1.34
Item 13	2.03	−2.67	−2.00	−1.60	−.65	.50	NA
Item 14	2.81	−2.35	−1.94	−1.56	−.81	.12	.83
CFC-Immediate							
Item 3	1.48	−.65	.70	1.78	2.91	3.89	NA
Item 4	1.36	−.76	.38	1.47	2.56	3.39	4.24
Item 5	.06	−.78.23	−40.38	−22.96	−5.12	16.40	38.83
Item 9	1.15	−.83	.52	1.39	2.30	3.01	4.17
Item 10	2.08	−.56	.71	1.40	2.14	2.62	NA
Item 11	2.38	−.61	.26	.94	1.52	2.61	NA
Item 12	.38	−7.82	−.59	−.39	3.76	6.92	9.47
New Zealand ($N = 144$)							
CFC-Future							
Item 1	1.70	−3.24	−2.08	−1.37	−.39	.82	2.33
Item 2	1.66	−3.45	−2.01	−1.05	.21	1.19	2.14
Item 6	1.00	−4.79	−2.96	−1.30	−.04	1.35	3.57
Item 7	1.45	−3.42	−2.42	−1.60	−.59	.36	1.70
Item 8	1.17	−4.31	−2.77	−1.52	.50	1.59	3.29
Item 13	2.13	−3.60	−2.39	−1.45	−.69	.19	1.67
Item 14	2.30	−2.52	−1.85	−1.06	−.28	1.01	2.43
CFC-Immediate							
Item 3	1.60	−2.24	−1.09	−.16	.75	1.85	3.32
Item 4	1.19	−2.87	−1.48	−.43	.70	1.94	3.47
Item 5	.62	−8.31	−5.29	−2.68	−.26	1.92	5.35
Item 9	1.59	−2.26	−1.13	−.09	.90	1.93	3.11
Item 10	1.15	−2.93	−1.32	−.09	1.34	2.47	NA
Item 11	2.25	−1.99	−1.09	−.35	.54	1.31	2.61
Item 12	.79	−5.76	−3.75	−1.96	.58	2.06	5.26

*Items that did not discriminate satisfactorily

CFC = Consideration of Future Consequences; NA = no answer was registered for at least one of the options in the response scale

[1] Items 2 and 5 were not included in the mean value.

evaluate the latent trait from −4 to +2, and the immediate dimension are efficient to evaluate the latent trait from −2 to +4 (see details of item difficulty in Tables 2 and 3 and details of item information in the supplementary material).

Scale Information Curve

The scale information curve shows a better picture of the range of the latent trait which each dimension of the scale is more accurate. This curve summarizes the information functions on all the items along the latent trait continuum (Lo et al. 2015). As it can be seen in Fig. 1, the future dimension offered the maximum information at a θ score of approximately −2 for the Future dimension and + 2 for the immediate dimension. However, both dimensions presented relatively similar accuracy for at least 4 points on the latent trait continuum, which also suggests a reasonable spread of discrimination across the latent range.

Differential Item Functioning and Measurement Invariance

To assess measurement invariance, we used DIF and CFA invariance (see Table 4). For the DIF approach, items discrimination and difficulty are constrained to be equal across the comparison groups. Two items per dimension were selected as anchors to pull all items common metric. For that, we selected the items that presented the best discriminations across the three samples (Items 3, 11, 13, and 14). Results showed that the items that compose the CFC scale present reasonable invariance. Differences were found for items 2 and 5, or for the comparison between the Brazilian sample with 610

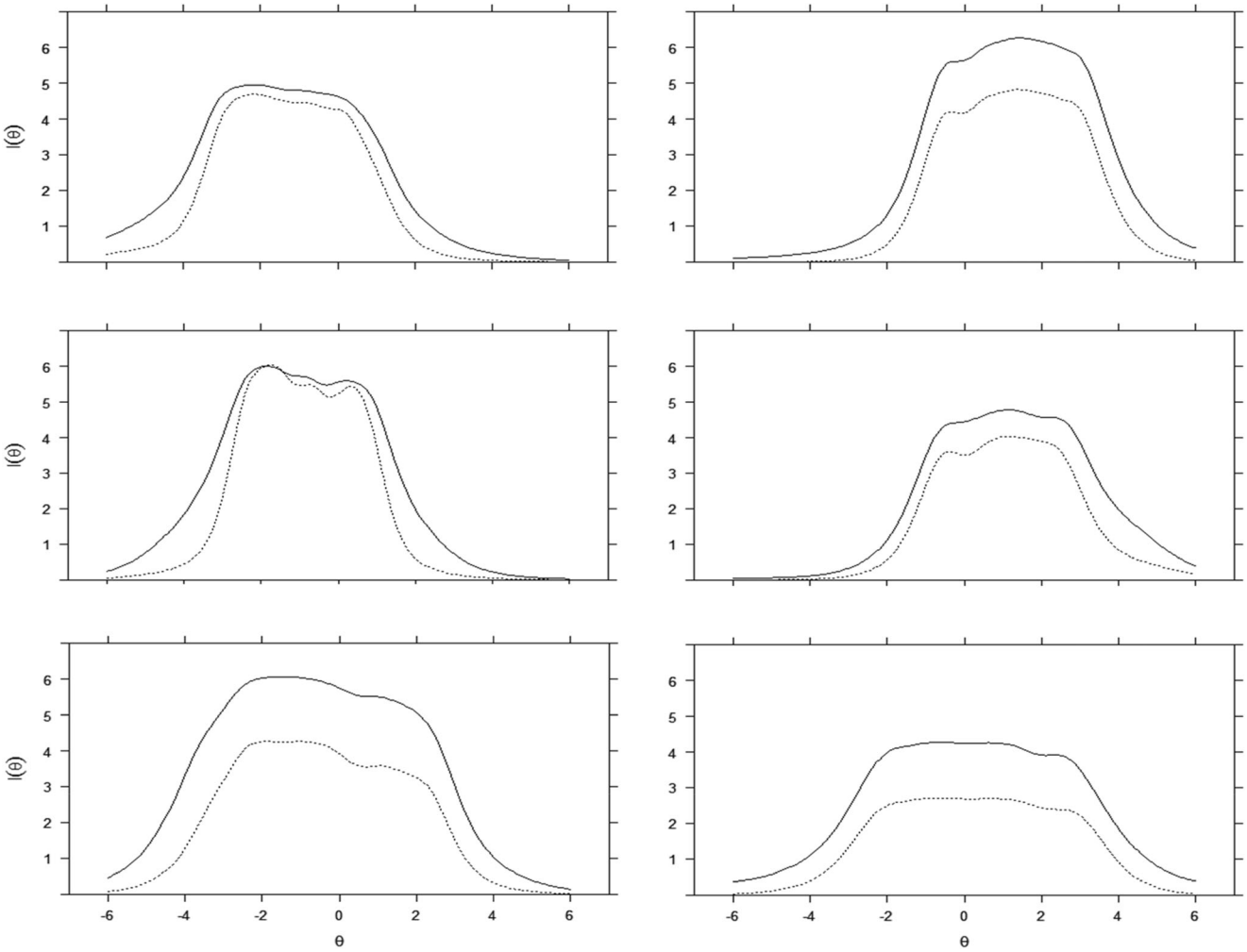

Fig. 1 Scale information curve for the Future (right) and Immediate dimensions of the CFC scale in Study 2 (left). *Note.* The two figures on the top are from the Brazilian data ($N = 610$), the two figures in the middle are from the second Brazilian data ($N = 136$) and the two figures in the bottom are from the New Zealand data ($N = 144$). Each figure shows one line for the scale with 7 items per dimension (continuous line), and one line for the scale with 3 items per dimension (dashed line)

Table 4 DIF Statistics and CFA measurement invariance of the 14-item CFC scale

	DIF 1 (BR1/BR2)		DIF2 (BR1/NZ)		DIF3 (BR2/NZ)		DIF4 (Female/Male)	
	a-DIF	χ^2	a-DIF	χ^2	a-DIF	χ^2	a-DIF	χ^2
CFC-Future								
Item 1	1.33	6.15	1.81	20.33*	1.29	11.41	1.41	7.50
Item 2	.23	9.59	1.74	78.84**	.21	79.33**	.24	16.84*
Item 6	1.28	17.38	1.02	25.88**	1.21	14.62	.82	5.91
Item 7	1.51	5.64	1.48	14.01	1.40	11.38	1.37	3.17
Item 8	1.24	7.44	1.21	12.64	1.17	14.22	1.17	10.22
Item 13	–	–	–	–	–	–	–	–
Item 14	–	–	–	–	–	–	–	–
CFC-Immediate								
Item 3	–	–	–	–	–	–	–	–
Item 4	1.36	4.85	1.25	5.92	1.39	3.78	1.65	3.46
Item 5	.05	6.70	.61	29.43**	.04	14.88	.40	19.36*
Item 9	1.15	4.88	1.68	22.20*	1.16	10.26	1.31	13.67
Item 10	2.10	7.74	1.17	19.52*	2.06	7.46	1.97	2.56
Item 11	–	–	–	–	–	–	–	–
Item 12	.35	13.99	.80	21.85*	.34	10.17	.74	10.42
CFA measurement invariance[a]								
Configural	$SB\chi^2$ (159) = 324.73**, CFI = .917, RMSEA = .059							
Metric	$SB\chi^2$ (179) = 345.96**, CFI = .917, RMSEA = .056, $\Delta SB\chi^2$ (20) = 20.62							
Scalar	$SB\chi^2$ (199) = 385.54**, CFI = .907, RMSEA = .056, $\Delta SB\chi^2$ (20) = 39.50**							
Partial Scalar[b]	$SB\chi^2$ (198) = 372.81**, CFI = .913, RMSEA = .055, $\Delta SB\chi^2$ (19) = 27.73							

For all the estimated χ^2 in the DIF statistics, the degree of freedom was 7. "—" indicates the anchor items that are free in DIF analysis

BR1 = sample of 610 Brazilians collected for the current study; BR2 = sample of 136 Brazilians from the study of Milfont et al. (2017); NZ = sample of 144 New Zealanders from the study of Milfont et al. (2017). DIF 1 = comparison between the BR1 and BR2; DIF 2 = comparison between the BR1 and NZ; DIF 3 = comparison between the two BR2 and NZ. DIF 4 = comparison between the Female (N = 500) and Male (N = 368) samples from all the three samples combined

* $p < .01$, ** $p < .001$, a = CFA measurement invariance did not include items 2 and 5, b = the intercept of Item 12 was freely estimated for the Brazilian sample with 610 participants to achieve partial scalar invariance

participants and the New Zealand sample with 144 participants, which might be influenced by the difference of sample size. Additionally, we assessed CFA invariance for the two-factor structure. Except for the intercept of item 12, that had to be freely estimated for the scalar measurement, results showed satisfactory configural, metric and scalar invariance.

Developing An Ultra-Short Scale

We examined whether a shorter version of the CFC scale would present similar or better efficiency and precision than the original measure. A scale composed by the best six items (3 for each dimension) is proposed. Items 2 and 6 of the future dimension, and items 5 and 12 of the immediate dimension were dropped because they showed overall poor levels of discrimination and precision across the three samples. Items 7 and 8 from the future dimension, and items 4 and 9 from the immediate dimension were dropped because they showed low information ($\theta < 1$) when evaluated individually (see supplementary materials). All the dropped items also presented significant DIF results for one or more group comparisons, which suggest their limitation to evaluate different groups in an equivalent way.

Because of the aforementioned limitations, the most precise and informative items for assessing the future dimension of the CFC scale are the items 1, 13, and 14, and the best items to measure the immediate dimension of the same scale are the items 3, 10, and 11. The future ($\alpha > .72$) and immediate ($\alpha > .68$) dimensions of the CFC short–scale also presented satisfactory internal consistency in all the three samples. Figure 1 shows the curve information for the two dimensions of the CFC scale both for the original 14 items version and for the proposed six items ultra-short version, in all the three samples considered in the present study. Overall, the 6-item

scale presented promisor results. For all of the three samples, the difference of information between the 14-item version and the 6-item version was only one or two theta points, which suggests a relatively high efficiency of the ultra-short (6-item) scale to measure the consideration of future consequences.

Correlational Performance of the Original and Short-Form Scales

Aiming at presenting additional evidence of the quality of the ultra-short measure, we decided to examine the performance of the 14 and 6-items scales when correlated with other constructs. We correlated the two versions of each dimension of the CFC scale in the three samples we used in the current research. In this case, we aimed to check whether a shorter version of the CFC scale would present comparable results with its full version. To check whether the strength of the correlations was different among the two versions, we used Steiger's z and the corresponding p value (Lenhard and Lenhard 2014; Steiger 1980).

CFC, Values, and Personality The Brazilian sample with 610 participants answered the CFC scale, the basic values survey, and the ten-item personality inventory. As the value scale used has six dimensions (Gouveia et al. 2014) and the personality scale has five dimensions (Gosling et al. 2003), 11 comparisons were performed between the two immediate dimensions and other 11 comparisons were carried out for the two future dimensions. Among these 22 comparisons, only on two occasions, one version of the CFC scale showed relations statistically different from the other version. One of them was a stronger relationship of the future dimension of the full form and promotion values ($z = 3.16$, $p = .001$), and the other was a stronger relationship of the immediate dimension of the ultra-short form and normative values ($z = 2.23$, $p = .013$). Overall, the full and ultra-short forms of the CFC scale work similarly to predict values and personality (the correlations matrix is available in the supplementary materials).

CFC, Regulatory Focus and Attitudes and Intentions to Exercise and to Eat Healthily The two samples (Brazil and New Zealand) from Milfont et al. (2017) answered the CFC scale, the regulatory focus scale and questions about attitudes, and intentions toward exercising and eating healthy. A matrix of correlations can be seen in the original paper (Milfont et al. 2017). In the current study, we used their samples to examine whether the different versions of the CFC scale would present differences in correlation strength. Results for the Brazilian sample showed that the future dimension of the full form of the CFC scale predicted the promotion ($z = 3.26$, $p = .001$) and prevention dimensions ($z = 2.46$, $p = .007$) of the regulatory focus scale stronger than its ultra-short form. However, the future dimension of the ultra-short form of the CFC scale predicted exercise attitudes ($z = 1.86$, $p = .031$), eating habit attitudes ($z = 3.11$, $p = .001$) and eating habit intentions ($z = 3.07$, $p = .001$) stronger than the full form. For the immediate dimension, the full form of the CFC scale showed stronger correlations with the promotion ($z = 3.07$, $p = .001$) and prevention dimensions ($z = 2.51$, $p = .006$) of the regulatory focus scale. Regarding the future dimension of the CFC scale for the New Zealand sample, differences were found only for exercise intentions ($z = 2.01$, $p = .022$) and eating habit intentions ($z = 2.00$, $p = .023$), in which the full form of the CFC scale showed slightly stronger relations. Regarding the immediate dimension, the ultra-short form presented slight stronger relations with the promotion dimension of the regulatory focus scale ($z = 1.72$, $p = .043$), and the full form showed slight stronger relations with the eating habit attitudes ($z = 1.72$, $p = .043$).

General Discussion

The present research aimed to adapt the Considerations of Future Consequences (CFC) scale to the Brazilian context. We provided evidence of a two-factor structure through two studies using Exploratory/Confirmatory Factor Analysis and Item Response Theory. In addition, helping to diminish problems such as fatigue, boredom, and lack of attention, and taking advantage of the detailed information about the quality of each item as provided by the IRT approach, we proposed an ultra-short version of the CFC. The ultra-short version was examined with data collected for the second study and with published data from Brazil and New Zealand confirming its appropriateness in three samples from two countries.

Factorial Structure, Convergent Validity and Temporal Stability

Through Exploratory and Confirmatory Factor Analysis, our findings showed the same two-factors structure proposed by Joireman et al. (2008, 2012) and by previous validations developed in Portugal, Italy, Netherlands, France, and Ireland (Echeverría et al. 2015; Hevey et al. 2010; Nigro et al. 2016; Rappange et al. 2009). These two factors were correlated with similar dimensions from other measures with similar meaning (Zimbardo and Boyd 1999) and were stable across an interval of one month.

Nevertheless, two items (Items 2 and 5) did not present satisfactory loadings in any of the factor reductions (EFA and CFA) procedures. Item 5 was also poorly loaded in validation for Portugal (Echeverría et al. 2015), and similar writing of item 2 did not load in the expected factor in validation to the Dutch context (Rappange et al. 2009). Excluding these, CFA results showed a good fit without the need for modification indexes, which represent better results than those reported

Joireman et al. (2012). Item 2 has the specificity of emphasizing a length of time in years, which might add a layer of complexity and result in an increase of residuals. The specification of time in years is also present on items 4 and 7, but although these items did not show poor psychometric properties, they were not among the best items of the scale. Regarding item 5, there is an addition of two ideas in the same item (make decisions and take actions) that might have caused confusion for some participants.

Item Response Theory: Developing an Ultra-Short Measure of CFC

Aiming at exploring the properties of each item of the measure more deeply, we then conducted the second study with three different samples and using the Item Response Theory approach. With that, we also had a better picture of the two items that did not present satisfactory results in the previous procedure. Once again, items 2 and 5 did not show good results: they did not discriminate participants well in any of the three samples, and they presented high levels of item difficulty in the three samples, except for item 2 in the New Zealand sample. These results might indicate that items 2 and 5 are too complex to be understood, or they measure something different from the other items on the scale. As these items showed poor quality in two separate studies, with different methods and samples, researchers aiming at using the 14-items CFC should consider rewording both items or use them carefully.

Besides items 2 and 5, items 6 and 12 also showed poor levels of discrimination and item difficulty across the three samples used in Study 2. Then, we decided to construct a shorter version of the CFC scale, aiming at evaluating its performance when compared to the full version. For that, we select the best items of the scale to measure each dimension (future and immediate). To decide the number of items for the short scale, we considered results for discrimination, difficulty, information curve, and differential item functioning. Similar criteria have been adopted in previous research (Coelho et al. 2018; Edelen and Reeve 2007; Lo et al. 2017; Yu et al. 2011). Thus, items 4, 7, 8, and 9 were also dropped because they showed poor results for information curve and differential item functioning. Finally, three items per dimension (CFC-Future = item 1, item 13, and item 14; CFC-Immediate = item 3, item 10, and item 11) composed the proposed ultra-short form of the CFC scale. To assure that the ultra-short measure worked in a similar way as its long form, despite of the lower number of items, we evaluated their performance when correlating them with other constructs. Overall, the ultra-short form of the CFC scale showed similar results to the full form, indicating that using the scale with fewer items does not compromise the results. Out of 22 comparisons of correlations, for the Brazilian sample with 610 participants, only two relations differed significantly.

Implications

The present study contributes with the CFC literature by bringing light about the appropriateness of a two-factor structure. This is because this scale was initially proposed to measure a continuum (Strathman et al. 1994), but later a two-factor solution was proposed as more appropriate (Joireman et al. 2012). Our Study 1 shows that a clear two factor structure is found when performing an EFA and confirmed using a CFA. Also, correlations between both factors and predicting external outcomes show that the immediate focus is different from the future focus. For instance, our correlations between the immediate and future factors showed only moderate and not strong correlations as it would be expected for items that represent the same latent factor. Also, theories from life-span developmental psychology (Carstensen et al. 1999) and the Life-History Theory (Stolarski et al. 2018) suggest that an immediate and future focus might represent different goals or might be a result of different constraints in life, supporting the argument that the immediate and future focuses are different components. In this case, future research will benefit from the multiple method and multiple sample findings we provided using new analytic approaches (e.g., IRT) to support the use of the two-factor solution instead a single variable representing a continuum.

We highlight that there is a study that follows a different path, suggesting a one-factor solution after examining the two-factor structure. Petrocelli (2003) concluded that the one-factor solution is more appropriate because the two-factor structure was unstable. This author proposed a shorter one-factor solution using only items written to represent the immediate focus and excluding almost all the items that were designed to represent the future focus (only 1 item that represented the future focus was kept in the short scale). This decision seemed arbitrary because the exclusion of items that could represent a possible second factor does not mean that the overall concept is represented by a single factor. For instance, using all items in the same analysis, this author did not find an improvement on model fit when using the one-factor solution instead of the two-factors.

Limitations and Future Studies

Non-probabilistic convenience samples were used in our studies, restricting the generalizability of our findings. Also, considerations for future consequences might be a construct that might result in social desirability from participants. That is, they might "mask" their actual psychological functioning,

providing a response that they judge to be more socially acceptable and expected. Thus, future studies might consider the use of a social desirability measure. Also, it is important to assess the psychometric properties of the ultra-short CFC in different contexts, to attest its applicability.

Conclusion

The present research provides the first validation of the Consequences of Future Considerations in Brazil. We found strong psychometric evidence for its use in such context. Moreover, we also provided an alternative ultra-short version of the CFC, composed of six items. This alternative measure was assessed in samples from Brazil and New Zealand. Short measures help researchers to get better data quality, avoiding problems such as participants' lack of attention and boredom, besides reducing the time and cost of the studies. In sum, our findings indicate that the ultra-short form of the CFC scale shows promising results in comparison to the full form, and can be an efficient alternative, benefiting future research.

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Compliance with Ethical Standards

Conflict of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Appendix

Considerations for Future Consequences Scale – Portuguese (*English*).

01. Eu considero como as coisas podem ser no futuro e tento influenciá-las com o meu comportamento diário. (*I consider how things might be in the future, and try to influence those things with my day to day behavior.*)

02. Envolvo-me frequentemente em comportamentos específicos, a fim de alcançar resultados que podem não durar por muitos anos. (*Often I engage in a particular behavior in order to achieve outcomes that may not result for many years*.)

03. Eu ajo apenas para satisfazer preocupações imediatas, imaginando que o futuro cuidará de si próprio. (*I only act to satisfy immediate concerns, figuring the future will take care of itself.*)

04. Meu comportamento só é influenciado pelos resultados imediatos das minhas ações (por exemplo, uma questão de dias ou semanas). (*My behavior is only influenced by the immediate (*i.e.*, a matter of days or weeks) outcomes of my actions*.)

05. Minha conveniência é um fator importante nas decisões que eu tomo ou nas ações que pratico. (*My convenience is a big factor in the decisions I make or the actions I take*.)

06. Estou disposto a sacrificar a minha felicidade ou bem-estar imediatos, a fim de alcançar resultados futuros. (*I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes*.)

07. Eu considero importante levar a sério os avisos sobre consequências negativas, mesmo que estas consequências não venham a ocorrer por muitos anos. (*I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years*.)

08. Eu considero mais importante realizar um comportamento com consequências relevantes a longo prazo do que um comportamento com consequências imediatas de menor importância. (*I think it is more important to perform a behavior with important distant consequences than a behavior with less important immediate consequences*.)

09. Geralmente eu ignoro avisos sobre possíveis problemas futuros porque eu acho que os problemas serão resolvidos antes que eles atinjam um nível crítico. (*I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level*.)

10. Eu acho que sacrificar-se agora geralmente é desnecessário, pois as consequências futuras podem ser lidadas em um momento posterior. (*I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.*)

11. Eu ajo apenas para satisfazer preocupações imediatas, imaginando que vou cuidar de futuros problemas que possam ocorrer em uma data posterior. (*I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date.*)

12. Como o meu trabalho diário tem consequências específicas, ele é mais importante para mim do que comportamentos que tenham resultados distantes. (*Since my day to day work has specific outcomes, it is more important to me than behavior that has distant outcomes*.)

13. Quando eu tomo uma decisão, penso sobre como ela pode me afetar no futuro. (*When I make a decision, I think about how it might affect me in the future*.)

14. Meu comportamento geralmente é influenciado por consequências futuras. (*My behavior is generally influenced by future consequences*.)

***In **BOLD** are the items that compose the ultra-short scale.

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