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Further evidence for the domain specificity of Consideration of Future Consequences in adolescents and University students

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ABSTRACT

Within the study of temporal psychology, researchers have classified individuals as 'past', 'present', or 'future' depending on how they respond to items in a variety of scales. This labelling implicitly assumes that if an individual is 'future', they are equally 'future' in all domains of life. However, emerging research has suggested that orientation to the future might be domain-specific. Building on previous research with adolescents only, we used an adolescent (N = 243) sample, and a University (N = 173) sample to further examine the psychometric validity, internal consistency, and construct validity of the Domain Specific Consideration of Future Consequences (CFC) Scale. Results of Confirmatory Factor Analysis revealed acceptable validity and internal consistency for scale scores. Domain specificity was demonstrated via correlations between Domain Specific CFC scores and scores on other future-orientated constructs. Endorsing self-reported behavior in each domain was also associated with significantly higher scores on Domain Specific CFC factors, in models adjusted for future temporal focus score, subjective life expectancy, and both gender, and sample. With evidence emerging for the domain specificity of CFC scores, it may be time for this literature to examine domain specificity in all constructs.

1. Introduction

The psychological construct broadly known as *time perspective*, assesses the extent to which thoughts about, and feelings towards the past, present, and future, influence behavior. A large, and increasing literature, continues to demonstrate the significant association between future-related temporal constructs and a range of outcomes including: academic (e.g., Lens & Vansteenkiste, 2008); health (e.g., McKay, Cole, & Andretta, 2016; Daugherty & Brase, 2010); environmental (e.g., Milfont, Wilson, & Diniz, 2012); and financial (e.g., Joireman, Kees, & Sprott, 2010). Indeed, McKay, Perry, Cole, and Magee (2017), recently demonstrated that adolescents reported a domain-specific relationship with these constructs in the development of a CFC domain-specific scale. In their development of the Zimbardo Time Perspective Inventory (ZTPI), Zimbardo and Boyd (1999) contended that time perspective was "a relatively stable individual-difference process" (p. 1271), and that it was possible for individuals to develop a so-called *temporal bias* towards the past, the present or the future. In this way, individuals might be considered to be 'futures', 'presents', or 'pasts', depending on that bias.

However, others have argued that time perspective is an 'umbrella-term' (Shipp, Edwards, & Schurer-Lambert, 2009) for a range of varying and discrete temporal constructs including time attitudes, temporal depth, and Consideration of Future Consequences (CFC). Therefore, what might be true of time perspective more broadly, may not be true of these narrower constructs. For example, McKay, Perry, Cole, and Worrell (2018), recently reported results of a study using four temporal scales (including a total of 16 factors or dimensions), wherein only one inter-scale correlation reached a moderate threshold ($r \geq 0.5$; using the criteria set out by Ferguson, 2009). It is reasonable to expect that different temporal scales will relate differently to criterion variables, essentially based on the fact that some are comprised of exclusively cognitive items, some of exclusively affective items, and others again by a hybrid of cognitive, affective, and behavioral. Therefore, it seems quite intuitive that someone may feel that it is important to protect the environment, and act accordingly, but simultaneously lack the cognitive understanding for the need to save money for the future.

Across temporal scales, there is evidence that different temporal dimensions relate differently to criterion variables. For example, whereas some researchers (Cole, Andretta, & McKay, 2016; McKay et al., 2016) have reported that ZTPI scores (based on cognitive, affective and behavioral items) are significantly associated with self-reported alcohol-related problems and psychiatric symptomatology, we have also reported a limited relationship between psychiatric symptomatology and both CFC (cognitive and behavioral items) and time

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attitudes (affective only items) scores (McKay, Andretta, & Cole, 2017). Finally McKay, Andretta, et al. (2017) reported that whereas time attitudes scores were significantly and meaningfully related to scores on psychiatric symptomatology, they were not related to scores on problematic alcohol use. Clearly, on this evidence each temporal construct is deserving of unique investigation. Moreover, within the study of individual temporal constructs (e.g., time attitudes, time perspective, CFC), it is possible that a domain specific relationship exists with behaviors (see, for example, Dassen, Houben, & Jansen, 2015), and what is true of one behavior (e.g., recycling to offset future environmental decline), may not be seen in other behaviors (e.g., saving money for future requirements).

Recently, McKay, Perry, et al. (2017) developed the 18-item Domain Specific CFC Scale, which assesses CFC in four domains, Health and Well-being, Global Warming, School, and Finance. Results from two studies revealed support for the multidimensional nature of the scale, as well as support for its psychometric validity and internal consistency (McKay, Perry, et al., 2017). There are a number of important implications for domain specific CFC. Firstly, in theoretical terms, it calls into question both the accuracy and utility of a large literature which has implicitly assumed that to be considerate of the 'future' means to be considerate of the future across all domains (where claims are made that person X is a 'future'; or person X is 'future oriented'). Secondly, in terms of intervening to make individuals more considerate of the future, it would suggest that such interventions might need to be domain specific.

Building on the only previous study to use the Domain Specific CFC Scale (McKay, Perry, et al., 2017), the present study aimed to extend the use of the scale beyond adolescents, to include a University-based sample. To investigate construct and discriminant validity, the present study also included measures of future temporal focus; Future Positive and Future Negative time attitudes; subjective life expectancy, and single item questions assessing behaviors related to the four domains. Based on the previous study we hypothesised to find (a) support for a four-factor structure for the scale, (b) domain specific associations with scores on other future temporal scales, and (c) a significant relationship between self-reported behaviors and domain-related CFC.

2. Methods

2.1. Participants

Participants were both adolescents and University students. The adolescents were school children ($N = 243$; 60.9% Female; $M_{age} = 14.33$ [SD = 0.71]) recruited from five High schools in the Greater Belfast Area of Northern Ireland. Schools were asked to provide a random selection of pupils for both Year 10 and Year 11. The University students ($N = 173$; 87.3% Female; $M_{age} = 19.15$ [SD = 1.19]) were sampled as part of a student project at a University in the North West of England. A form of parental opt-out consent was approved for the school children, and both they and the University students gave informed consent at the time of data collection.

2.2. Measures

The Domain Specific CFC Scale (McKay, Perry, et al., 2017) consists of 18 items and assesses CFC in four domains. Six items assess CFC Health and Well-being (e.g., "*I think about what I eat as I do not want to develop an illness in later life*"); four items assess CFC Global Warming (e.g., "*I do what I can to help prevent global warming in the future*"); four items assess CFC Finance (e.g., "*I try to save money so that I will be able to afford things when I am older*"); and four items assess CFC School (e.g., "*I try my best at school so that I will get a good job when I am older*"). In the present study 'school' was replaced with school/University to accommodate the University participants. Both alpha ($0.72 \leq \alpha \leq 0.87$) and omega ($0.72 \leq \omega \leq 0.87$) estimates were in the acceptable range in the scale development study. Items are scored on a 5-point Likert scale with verbal and numerical anchors (1 = *Totally Disagree*, 5 = *Totally Agree*).

The five Future Negative and five Future Positive items from the Adolescent and Adult Time Inventory – Time Attitudes Scale (AATI-TA; Mello & Worrell, 2007) were used. AATI-TA items are scored on a 5-point Likert scale with verbal and numerical anchors (1 = *Totally Disagree*, 5 = *Totally Agree*). AATI-TA scores have been shown to be psychometrically valid and internally consistent in adults and adolescents (e.g., Mello et al., 2016; Worrell, McKay, & Andretta, 2018).

The four Future items from the Temporal Focus Scale (TFS; Shipp et al., 2009) were administered. The TFS is 12-item scale assessing cognitive engagement with the past, present and future. The scale consists of four Past, Current and Future items. Cronbach's alphas for TFS scores ranged from 0.74 to 0.89 (Shipp et al., 2009). Convergent validity evidence for the three TFS subscale scores was demonstrated through correlations with other pre-existing measures of time perspective, including the ZTPI (Shipp et al., 2009).

Subjective life expectancy was assessed using two questions concerning participants' subjective probability of expecting to live to both age 35 (SLE35), and age 75 (SLE75). Participants were asked, "*On a scale of 0 to 100, where 0 equals no chance, and 100 equals definitely, how likely do you think that it is that you will live to be 35/75 years old*?" Integer options of "5s" (0, 5, 10, 15, 20, etc.) were available between 0 and 100. This approach to assessing subjective life expectancy has been used elsewhere e.g., (Adams & Nettle, 2009; McKay, 2014).

Finally, participants were asked to indicate yes/no to the following four questions directly assessing behaviors: Do you always complete your homework/coursework on time? Do you have a Savings Account? Do you recycle your old things (clothes, paper, etc.)? Do you belong to a Sports Club (Soccer, Gaelic Games, Rugby, Hockey etc.)?

2.3. Statistical analyses

Preliminary analyses examined missing data, outliers, and internal consistency of each scale. We next examined the factor structure of each scale within the sample using confirmatory factor analyses. Model fit was examined with reference to incremental fit indices of the comparative fit index (CFI) and Tucker-Lewis index (TLI) and absolute fit indices of standardized root-mean-square residual (SRMR) and root-mean square error of approximation (RMSEA). Hu and Bentler's (1999) recommendations for CFI and TLI > 0.95, SRMR < 0.08, and RMSEA < 0.06 were used as a broad guideline for assessing model fit. Noting the recommendations of Perry, Nicholls, Clough, and Crust (2015) however, we did not stringently adhere to cut-off values for such indices. Standardized parameter estimates were interpreted using Comrey and Lee's (1992) recommendation of 0.32 (poor), 0.45 (fair), 0.55 (good), 0.63 (very good), and 0.71 (excellent).

For the main analyses, we examined differences between the two samples using and independent-samples *t*-tests. Pearson's bivariate correlations were used to examined relationships between temporal measures, and a further *t*-test was used to examine differences in domain-specific CFC for participants responding positively or negatively to questions on completing homework, having a savings account, recycling behavior, and membership of a sports club. For each of these analyses, we interpreted effect size with reference to Ferguson's (2009) recommendations for minimum practical effect ($d \geq 0.41$, $r \geq 0.20$).

To further examine the discriminant validity of each Domain Specific CFC factor, we performed four binary logistic regressions. In each case the response to the four behavioral questions was entered as the dependent variable. To determine the effect of the Domain Specific CFC factor over and above other variables, a hierarchical model was assessed, firstly determining the predictive effects of gender, sample (adolescent/university), future temporal focus, and subjective life expectancy, and then entering Domain Specific CFC in block two.

Table 1
Descriptive statistics for major variables.

	M	SD	Min.	Max.	Skew	Kurtosis	α	ω (95% CI)	MIC
Health									
Adolescent (N = 243)	3.20	0.82	1.20	5.00	−0.16	−0.40	0.81	0.81 (0.76, 0.85)	0.42
University (N = 173)	3.12	0.87	1.20	4.80	−0.05	−0.71	0.87	0.87 (0.83, 0.90)	0.52
Finance*									
Adolescent	3.35	0.78	1.00	5.00	−0.21	−0.16	0.64	0.65 (0.57, 0.72)	0.31
University	3.52	0.88	1.00	5.00	−0.47	−0.64	0.77	0.78 (0.72, 0.83)	0.47
Global Warming***,[1]									
Adolescent	3.50	0.70	1.20	5.00	−0.46	0.11	0.65	0.67 (0.59, 0.74)	0.31
University	3.94	0.49	2.00	5.00	−0.55	0.85	0.73	0.78 (0.72, 0.82)	0.46
Academic*									
Adolescent	3.39	0.84	1.25	5.00	−0.23	−0.33	0.88	0.88 (0.84, 0.92)	0.65
University	3.23	0.81	1.00	5.00	−0.25	−0.52	0.84	0.86 (0.81, 0.90)	0.57
Future Positive									
Adolescent	3.84	0.87	1.00	5.00	−0.66	0.35	0.90	0.91 (0.88, 0.93)	0.65
University	3.81	0.73	1.60	5.00	−0.43	0.14	0.92	0.92 (0.89, 0.94)	0.69
Future Negative									
Adolescent	2.47	0.84	1.00	5.00	0.39	0.08	0.80	0.80 (0.74, 0.85)	0.44
University	2.41	0.71	1.00	4.20	0.13	−0.42	0.79	0.75 (0.64, 0.81)	0.41
Future Focus									
Adolescent	3.72	0.87	1.00	5.00	−0.49	0.45	0.85	0.85 (0.80, 0.88)	0.58
University	3.79	0.70	2.00	5.00	−0.38	0.16	0.77	0.80 (0.72, 0.84)	0.48

Note: MIC = mean inter-item correlation.
* Significant at $p < .05$.
*** Significant at $p < .001$.
[1] Effect size reached Ferguson's (2009) minimum threshold for practical significance.

3. Results

Descriptive statistics are presented in Table 1. There were no outliers or missing data, and no problems were observed regarding univariate skewness (< 2) or kurtosis (< 2; see Table 1). To estimate internal consistency, we calculated both alpha and also omega point estimates for the scales, as recommended by Dunn, Baguley, and Brunsden (2013), using the MBESS package (Kelley & Lai, 2012) in R (R Development Core Team, 2012) with 1000 bootstrap samples. All variables demonstrated acceptable internal consistency (see Table 1) with the exception of Global Warming and Finance domains in the adolescent sample. However, these were in the close range, and the mean inter-item correlation for both was ≥ 0.30.

Confirmatory factor analyses supported the factor structure of the Domain Specific CFC Scale with acceptable model fit: $\chi^2(129) = 333.31$, $p < .001$, CFI = 0.91, TLI = 0.90, SRMR = 0.06, RMSEA = 0.06, 90% CI = 0.05, 0.07. This could have been modified to present a better fit by covarying two of the health and wellbeing items that yielded a modification index of 101.76 (thus, $\chi^2(128) = 222.07$, $p < .001$, CFI = 0.96, TLI = 0.95, SRMR = 0.05, RMSEA = 0.04, 90% CI = 0.03, 0.05) but, following the guidance of Perry et al. (2015), this can result in sample-specific models and is not advised in samples smaller than the initial validation studies. Fit indices for a unidimensional scale were poor: $\chi^2(153) = 1589.96$, $p < .001$, CFI = 0.50, TLI = 0.44, SRMR = 0.15, RMSEA = 0.16, 90% CI = 0.15, 0.17. The standardized parameter estimates (Table 2) for the four-factor model indicated largely good to excellent loadings.

The first evidence of domain specificity is derived from the between-group comparisons in Table 1. Specifically, adolescents and University students indicated some significant differences in CFC by domain, in particular with reference to Global Warming and Finance. Secondly, some bivariate correlations are low (Table 3). For example, in the University sample, Health & Well-being and Finance scores are unrelated (r = 0.14), and in the adolescent sample, Finance and Global Warming scores (r = 0.15), and Global Warming and School/University scores (r = 0.15) are unrelated. Correlations between domain specific CFC variables and other future-focused variables provided equivocal support for domain specificity, as Global Warming elicited much stronger relationships than other domains for all future focuses. There was also some observable difference in correlations between domain specific CFC and subjective life expectancy. Specifically, Health & Well-being, and Global Warming were more strongly related to SLE35 and

Table 2
CFA factor loadings for Domain Specific CFC Scale.

Scale/item	FL	R^2
Health and Well-being		
1	0.43	0.18
2	0.74	0.55
3	0.65	0.42
4	0.82	0.68
5	0.79	0.63
6	0.63	0.39
Finance		
1	0.43	0.18
2	0.84	0.70
3	0.46	0.21
4	0.72	0.52
Global Warming		
1	0.73	0.53
2	0.45	0.20
3	0.78	0.61
4	0.59	0.35
School/University		
1	0.74	0.55
2	0.77	0.59
3	0.87	0.76
4	0.79	0.62

Note: FL = standardized factor loadings.

Table 3
Bivariate Pearson's correlations (two tailed) between temporal measures.

	1	2	3	4	5	6	7	8	9
1 Health	–	0.27**	0.43**	**0.64****	0.24**	−0.15*	0.26**	0.15*	0.24**
2 Finance	0.14	–	0.15*	**0.54****	0.18**	−0.17**	0.25**	−0.03	0.01
3 Global Warming	**0.67****	0.36**	–	0.15*	0.35**	−0.30**	0.37**	0.23**	0.26**
4 Academic	**0.79****	0.44**	**0.66****	–	0.15*	−0.15*	0.26**	0.00	0.11
5 Future Positive	0.23**	0.17*	0.39**	0.21**	–	**−0.64****	**0.62****	0.42**	0.38**
6 Future Negative	−0.21**	−0.18*	−0.39**	−0.25**	**−0.72****	–	−0.48**	−0.38**	−0.36**
7 Future Focus	0.26**	0.23**	0.38**	0.27**	**0.52****	−0.47**	–	0.26**	0.26**
8 Live to age 35	0.23**	0.08	0.25**	0.15	0.20**	−0.21**	0.03	–	**0.75****
9 Live to age 75	0.24**	0.07	0.24**	0.18*	0.31**	−0.31**	0.14	**0.60****	–

Note: Correlation coefficients reaching Ferguson's (2009) recommended moderate effect size are bolded. Coefficients below the diagonal are for the University sample. Coefficients above the diagonal are for the adolescent sample.

* $p < 0.05$.

** $p < 0.01$.

SLE75 than Finance and School/University were (Table 3).

The final evidence for domain specificity, and scale construct validity is seen in Table 4. Here, endorsement of the self-reported behaviors was associated with significantly and meaningfully (in terms of effect size) higher scores on the relevant Domain Specific CFC Scale factor. For example, those reporting membership of a sports club also reported a significantly higher CFC Health & Well-being score than those not endorsing membership, while those reporting having a savings account also reported significantly higher CFC Finance than those reporting not having a savings account.

Table 5 displays the results of four, two-step mediation models. Because of collinearity issues in the direct effects step, only scores on future temporal focus and SLE75, were retained, along with gender, and sample (adolescent versus university). Results for each of the models show a significant domain-specific effect for the four domains. For coursework/homework completion, results show that, at step one, future temporal focus was a significant predictor, but with the inclusion of CFC academic scores, this became non-significant. Further, higher CFC academic was significantly associated with a 2.78 times greater likelihood of coursework/homework completion. For recycling behavior, the inclusion of CFC Global Warming scores was associated with a 29.10 times greater likelihood of recycling, and rendered significant scores on SLE75 non-significant from step one. In terms of having a savings account, neither temporal measure was significant at step one. However, at step two, higher CFC Finance was associated with a 2.63 times greater likelihood of having a savings account. Finally, higher CFC Health and Well-being scores were significantly associated with a 2.38 times greater likelihood of membership of a sports club, and the previously significant relationship between SLE75 and club membership at step one, was rendered non-significant.

4. Discussion

The literature on CFC has developed on the belief that there is a single unitary measure of considering the future (e.g., Joireman & King, 2016) but the results of the present study, as well as the results previously reported (McKay, Perry, et al., 2017) suggest that the CFC construct may actually be domain specific. In this context, the results are instructive on a number of levels. Firstly, they offer further support for the viability of the Domain Specific CFC Scale to assess this construct in four domains. Although the fit indices were not as good as in the two previous samples used (McKay, Perry, et al., 2017), they were acceptable for the four factor solution, with results for a unidimensional solution, very poor. The present study extended psychometric examination to a non-adolescent sample, modifying the School factor to School/University. While the fit indices could have been improved by allowing two items to covary, the present indices were within the adequate range. Further work will have to be undertaken to assess the properties of the scale in a non-United Kingdom context. As well as acceptable fit indices, results also revealed that internal consistency estimates (both alpha and omega) were either acceptable, or in the close range, and in both cases where the values dropped slightly below 0.70, the upper level confidence level for omega was > 0.70.

Increasing numbers of studies continue to investigate, and often demonstrate, a significant relationship between time-related constructs and criterion variables. Most of these studies compare scores on a variety of temporal dimensions (e.g., future time attitudes, or past time perspective), and demonstrate how these individual-level differences predict outcomes. The underlying, and usually unstated assumption, is that the scores represent a stable personality trait, and further that someone who is 'future' in terms of time attitudes, time perspective, or CFC, will be 'future' in all life domains. The results of the present study,

Table 4
Relationship between behavioral measures and scores on the CFCS-18. Shown are Means (+SD).

		Health	Global Warming	Finance	Academic
Do you always complete your homework or coursework on time?	No (N = 107)				3.01 (0.96)
	Yes (N = 308)				3.44 (0.75)
Do you have a Savings Account?	No (N = 144)			3.17 (0.81)	
	Yes (N = 271)			3.55 (0.80)	
Do you recycle your old things?	No (N = 276)		2.97 (0.80)		
	Yes (N = 140)		3.57 (0.76)		
Do you belong to a Sports Club?	No (N = 145)	3.31 (0.67)			
	Yes (N = 270)	3.88 (0.56)			

Note: All differences significant at $p < .001$ and all effect sizes reached Ferguson's (2009) minimum threshold for practical significance ($d \geq 0.41$).

Table 5
Results of respective Binary Logistic Regression models for coursework/homework completion, recycling, having a savings account, and membership of a sports club.

	B (*SE* B)	95% CI B	OR	*p* value
Coursework/homework completion (direct effects)				
Gender	−0.78 (0.28)	−1.50, −0.06	0.46	.006
Sample	0.84 (0.25)	0.19, 1.49	2.33	.001
Future temporal focus	0.57 (0.17)	0.14, 1.00	1.77	.001
SLE 75	0.02 (0.01)	0.00, 0.03	1.02	.002
With CFC mediation				
CFC academic	1.02 (0.31)	0.23, 1.82	2.78	< .001
Gender	−0.80 (0.29)	−1.53, −0.07	0.45	.005
Sample	0.71 (0.27)	0.03, 1.40	2.04	.007
Future temporal focus	0.31 (0.19)	−0.19, 0.81	1.36	.113
SLE 75	0.02 (0.01)	0.00, 0.03	1.02	.005
Recycling (direct effects)				
Gender	0.19 (0.24)	−0.43, 0.81	1.21	.430
Sample	1.16 (0.24)	0.55, 1.76	3.18	< .001
Future temporal focus	0.15 (0.14)	−0.22, 0.51	1.16	.299
SLE 75	0.01 (0.01)	−0.00, 0.02	1.01	.035
With CFC mediation				
CFC Global Warming	3.37 (0.87)	1.12, 5.62	29.10	< .001
Gender	0.03 (0.36)	0.91, 0.96	1.03	.938
Sample	0.92 (0.33)	0.07, 1.76	2.50	.005
Future temporal focus	0.03 (0.22)	−0.54, 0.61	1.03	.884
SLE 75	0.00 (0.01)	−0.02, 0.02	1.00	.792
Having a savings account (direct effects)				
Gender	0.24 (0.24)	−0.38, 0.87	1.28	.316
Sample	0.63 (0.23)	0.04, 1.21	1.87	.006
Future temporal focus	0.25 (0.14)	−0.09, 0.60	1.29	.060
SLE75	0.01 (0.01)	−0.00, 0.02	1.01	.087
With CFC mediation				
CFC Finance	0.97 (0.27)	0.028, 1.66	2.63	< .001
Gender	0.26 (0.25)	−0.40, 0.91	1.29	.310
Sample	0.61 (0.23)	0.02, 1.20	1.84	.008
Future temporal focus	0.10 (0.14)	−0.27, 0.47	1.11	.476
SLE75	0.01 (0.01)	−0.00, 0.02	1.01	.065
Being a member of a sports club (direct effects)				
Gender	−0.74 (0.25)	−1.38, −0.10	0.48	.003
Sample	0.02 (0.23)	−0.56, 0.60	1.02	.916
Future temporal focus	0.16 (0.14)	−0.18, 0.51	1.18	.224
SLE75	0.01 (0.01)	0.00, 0.03	1.01	.012
With CFC mediation				
CFC Health and well-being	0.87 (0.22)	0.06, 0.44	2.38	< .001
Gender	−0.70 (0.25)	−0.32, −0.15	0.50	.005
Sample	0.04 (0.23)	−0.14, 0.16	1.04	.851
Future temporal focus	0.04 (0.14)	−0.14, 0.17	1.04	.769
SLE75	0.01 (0.01)	−0.05, 0.27	1.01	.067

Note: CI = confidence interval; OR = odds ratio; CFC = Domain Specific Consideration of Future Consequences; SLE 75 = subjective life expectancy probability of living to age 75; Female = 0, Male = 1; University sample = 0, adolescent sample = 1.

and those of previous studies (e.g., Dassen et al., 2015; McKay, Perry, et al., 2017), suggest that this may not be the case and, in fact, being 'future' is not a trait variable. In practical terms this suggests that an environmental activist may have no pension provision for retirement, and someone who is motivated by academic success to attain a better future, may give scant regard to their health and well-being. Said this way, it makes complete sense that CFC might be domain-specific, and yet whole literatures in temporal psychology have developed, assuming that time perspective (and its associated constructs) are individual-difference, trait-like constructs.

The present study included scores on other future-oriented temporal constructs in order to investigate both domain specificity and construct validity of Domain Specific CFC scores. Based on a recent study using four temporal scales (McKay et al., 2018) we were not expecting large-sized correlations between factors in different scales herein, instead we were looking for minimally interpretable correlations to support the validity of Domain Specific CFC scores. Taking the results of Pearson's correlations in their totality, they both corroborate the future-oriented element of Domain Specific CFC scores, and the domain specificity of scores, the former in terms of the manifold correlations across scales that were > 0.20 (Ferguson, 2009), and the latter in terms of the differential relations between the domain specific CFC factors and scores on other scales.

The present study further extended previously-reported findings by examining the discriminant validity of Domain Specific CFC Scale scores. Here, using a two-step approach (where, for reasons of collinearity problems we retained only temporal focus and SLE75 scores and not scores on the AATI-TA nor the SLE35), and adjusting for gender and sample (University versus adolescent) we found that Domain Specific CFC scores were significantly related to endorsement of the given behavior. So, while SLE75 or future temporal focus may have been significantly related to domain-specific outcomes at step one (direct effects) the inclusion of the domain-specific CFC scores at step two rendered those findings either non-significant, or reduced in magnitude. In all four cases, higher scores on the domain-specific CFC factor in question suggested a significantly greater likelihood of the self-reported behavior. These findings add to the positive psychometric findings for the Domain Specific CFC Scale, and demonstrate that scores on the scale have real discriminant validity.

To conclude, this study further demonstrates that the existing CFC and wider temporal psychology literature may be flawed in that it assumes the measures are not domain specific. The implications for interventions utilising temporal psychology (e.g., Schuitema, Peetsma, & Van der Veen, 2014) are more profound as they may fail to succeed and/or have unintended consequences. Clearly, further work with the Domain Specific CFC scale is needed.

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