Brief report

Autonomy is equally important across East and West: Testing the cross-cultural universality of self-determination theory

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ABSTRACT

Introduction: Self-determination theory (SDT) posits the importance of three basic psychological needs (i.e., relatedness, autonomy, and competence) in promoting achievement. However, some cross-cultural researchers have cast doubt on the generalizability of the theory to non-Western cultures. The primary aim of the study was to test whether provision of support for relatedness, autonomy, and competence would be associated with achievement across both Western and Eastern cultures.
Method: We drew on a subsample of students from the Program for International Student Assessment (PISA) (n = 92,325 students from Australia, Canada, New Zealand, UK, and USA (Western societies); and Hong Kong SAR, Japan, Macau SAR, Shanghai, South Korea, and Taipei (Eastern societies); 46,006 were females and 46,319 were males, with a mean age of 15.77 (SD = 0.29) years). We used multi-group confirmatory factor analysis (MG-CFA) and multi-group structural equation modeling (MG-SEM) to analyze the data.
Results: Provision of the three basic needs correlated positively with achievement across cultures, providing broad support for the cross-cultural universality of SDT. MG-SEM indicated that relatedness and autonomy support were equally important for student achievement in both Western and Eastern cultures, whereas competence support was found to be more important to students in the West than in the East.
Conclusion: Findings support the cross-cultural relevance of SDT while at the same time highlighting important cultural variations such as greater importance of competence support in the West, suggesting the need to be cognizant of both cross-cultural universality and variability in motivational theorizing.

Researchers are increasingly recognizing the cultural and ethnic diversity of the student population and potential limitations of theories developed in Western contexts (King, McInerney, & Pitliya, 2018; Zusho & Clayton, 2011). Thus, it is important to test whether Western-developed motivation theories are relevant to students in the East. In this study, we focused on testing the cross-cultural generalizability of self-determination theory (SDT), one of the most prominent motivation theories in psychology and education.

We chose SDT because it puts basic universal (i.e., cross-cultural) psychological needs at the heart of its explanatory model. It posits that when social contexts support the satisfaction of basic psychological needs for relatedness (sense of belongingness and connection with others); autonomy (sense of volition and self-endorsement of behaviors); and competence (interacting effectively

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with one's environment and having opportunities for developing and expressing one's capabilities), optimal functioning is promoted (Deci & Ryan, 2002; Ryan & Deci, 2000).

While there are studies that support the generalizability of SDT (e.g., Jang, Reeve, & Deci, 2010), cross-cultural researchers have criticized SDT's claim to universality, especially as regards to autonomy. They argue that Eastern collectivistic cultures highly value conformity, social harmony, and family interdependence, as opposed to Western individualistic cultures that emphasize individuality, uniqueness, and interdependence (Chao & Tseng, 2002). Thus, students from Eastern cultures might not experience and benefit from autonomy support the same way students from Western cultures do (Iyengar & DeVoe, 2003). For example, Liu and Flick (2019) found that autonomy was not a salient predictor of academic performance among Chinese students. In addition, Markus and Kitayama (2003) claimed that Asian children "don't appear to suffer from any obvious negative consequences of the enormous pressure that is placed on them to achieve, in fact, they flourish" (p. 4).

We revisited the key issue of whether provision of relatedness, autonomy, and competence would be associated with higher levels of achievement in order to provide stronger evidence for the cross-cultural applicability of SDT. A limitation of previous studies that tried to evaluate the universality of SDT was failure to include all three basic needs(e.g., Jang et al., 2010). We addressed this by simultaneously including all three basic needs in our study. Another limitation of previous studies is testing SDT within only one or two cultures at most (e.g., Korean students for Jang, Reeve, Ryan, and Kim (2009); Chinese students for Zhou, Ma, and Deci (2009). We addressed this by using nationally representative data from 11 contexts representing a wide range of Western and Eastern societies.

Method

Data and measures

We used the data from the Organisation for Economic Co-operation and Development – Program for International Student Assessment (OECD PISA, 2009), which includes 92,325 students from 11 societies: Australia, Canada, New Zealand, UK, and USA (Western Anglo cultures); and Hong Kong, Japan, Macau, Shanghai, South Korea, and Taipei (Eastern Confucian Asian cultures) (Gupta, Hanges, & Dorfman, 2002). There were 59,513 students from Western and 32,812 from Eastern cultures; 46,006 were females and 46,319 were males, with a mean age of 15.77 (SD = 0.29) years.

We categorized items from PISA questionnaire into classroom contexts that support needs for relatedness, autonomy, and competence. All items were measured on a 4-point scale, with higher ratings indicating greater endorsement (see Table 1 for the items and reliability of the measure). Achievement was operationalized as reading achievement scores, which were scaled to have a mean of 500 (SD = 100) (OECD, 2012).

Table 1
Descriptive statistics for basic psychological need support.

			Western Culture		Eastern Culture	
			Mean	SD	Mean	SD
Relatedness	ST34Q01	I get along well with most of my teachers	3.08	.67	2.95	.63
	ST34Q02	Most of my teachers are interested in my well-being	2.90	.68	2.62	.73
	ST34Q03	Most of my teachers really listen to what I have to say	2.80	.72	2.64	.72
	ST34Q04	If I need extra help, I will receive it from my teachers	3.07	.65	2.92	.66
	ST34Q05	Most of my teachers treat me fairly	3.03	.66	2.85	.70
		Overall	*2.98*	*.67*	*2.80*	*.69*
		Cronbach's Alpha	.87		.83	
Autonomy	ST37Q03	The teacher gives students enough time to think about their answers	2.83	.82	2.58	.83
	ST37Q05	The teacher encourages students to express their opinion about a text	2.76	.88	2.36	.85
	ST37Q06	The teacher helps students relate the stories they read to their lives	2.25	.93	2.26	.86
	ST37Q07	The teacher shows students how the information in texts builds on what they already know.	2.54	.87	2.30	.85
		Overall	*2.60*	*.87*	*2.38*	*.85*
		Cronbach's Alpha	.78		.77	
Competence	ST38Q01	The teacher explains beforehand what is expected of the students	2.92	.88	2.16	.83
	ST38Q02	The teacher checks that students are concentrating while working on the < reading assignment	2.88	.83	2.50	.86
	ST38Q03	The teacher discusses students' work, after they have finished the < reading assignment >	2.80	.85	2.32	.92
	ST38Q04	The teacher tells students in advance how their work is going to be judged	2.93	.88	2.51	.93
	ST38Q05	The teacher asks whether every student has understood how to complete the < reading assignment >	2.95	.88	2.44	.89
	ST38Q09	The teacher tells students how well they did on the < reading assignment > immediately after	2.47	.92	2.15	.87
		Overall	*2.83*	*.87*	*2.35*	*.88*
		Cronbach's Alpha	.82		.76	

Table 2
Model fit statistics for basic psychological need satisfaction across cultures.

	x^2	df	x^2/df	p value	RMSEA (95% C.I.)	SRMR	CFI	TLI	ΔCFI
Model 1: Single-group CFA	23,556.324	192	122.69	< .001	0.052 (.051, .052)	.043	.952	.948	–
Model 2: Configural Invariance	31,719.118	204	155.49	< .001	0.058 (.057, .058)	.050	.937	.926	–
Model 3: Metric Invariance	33,132.641	216	153.39	< .001	0.057 (.057, .058)	.054	.934	.927	.003*
Model 4: Scalar Invariance	55,591.117	231	240.65	< .001	0.072 (.072, .073)	.082	.889	.885	.035

Note: The following covariances were freed: between ST34Q02 and ST34Q05 for relatedness; ST37Q06 and ST37107 for autonomy; and ST38Q04 and ST38Q05 for competence; we used the following fit indices and cutoff values: root mean square error of approximation (RMSEA): < 0.08 and < 0.05 acceptable and good fit (Browne & Cudeck, 1992), standard root mean square residual (SRMR): < 0.09 reasonable fit (Hu & Bentler, 1999), comparative fit index (CFI) and Tucker-Lewis index (TLI): > 0.90 and > 0.95, acceptable and good fit (Byrne, 2010); CFI decrease of 0.01 or less indicates evidence of invariance (Cheung & Rensvold, 2002); *invariant across cultures.

Data analysis

Missing values (proportions ranging from 1.5 to 2.1) were analyzed and imputed using multiple imputation method (Rubin, 1987; Schafer, 1997). Confirmatory factor analysis (CFA) was used to assess the measurement validity of the three-factor model of basic needs support comprised of relatedness, autonomy, and competence. Multi-group CFA (MG-CFA) was performed to test the invariance of measurement model across cultures.

Results

Descriptive statistics for basic needs support are shown in Table 1. A CFA model was tested to examine the construct validity of the three-factor model of basic needs. Results indicated a good fit to the data (see model 1 in Table 2). Results of MG-CFA to examine the invariance of the model across cultures indicated configural (model 2: no parameter constraint) and metric (model 3: equal factor loadings) but not scalar (model 4: equal factor loadings and intercepts) invariance (see Table 2). Model 3 was therefore used as baseline for examining the relationship of basic needs support with achievement.

Table 3 shows the correlation of the study variables. Positive correlations between support for basic needs and achievement were found in the overall sample and when grouped according to culture. Results of MG-SEM (see Fig. 1) showed that the model of basic needs support predicting achievement across cultures has good fit to the data. Wald tests conducted to compare the difference of effects of basic needs support on achievement indicated non-significant difference in relatedness. However, results for autonomy and competence support seem more ambiguous. We found suppression effects for competence support as indicated by sign reversal. In particular, competence support was positively related to achievement in the bivariate correlations but became negatively related to achievement in the SEM model.

Johnston, Jones, and Manley (2018) argue that suppression effects may be due to high correlations among independent variables and suggest exploring models that separately test for effects of independent variables. Thus, we ran supplementary analyses with autonomy and competence entered independently. We first analyzed a model with only autonomy support predicting achievement. Results indicated that autonomy support positively predicted achievement in both cultures. More importantly, Wald's test indicated that the regression coefficient was invariant across cultures (see Fig. 2). Next, we analyzed a model with only competence support. Results indicated a positive effect of competence support on achievement for both cultures. However, Wald's test indicated that the role of competence support was stronger for Western than Eastern cultures (see Fig. 3).

Discussion

The study provided broad support for the cross-cultural universality of SDT. The finding on metric invariance suggests that students across cultures have similar understanding of contexts that support relatedness, autonomy, and competence. Moreover, the

Table 3
Bivariate correlations of the study variables.

A. Overall Sample	Achievement	Relatedness	Autonomy	Competence
Achievement	1			
Relatedness	.187**	1		
Autonomy	.086**	.330**	1	
Competence	.057**	.360**	.597**	1
B. Grouped According to Culture				
Achievement	1	.218**	.109**	.114**
Relatedness	.165**	1	.307**	.338**
Autonomy	.075**	.326**	1	.599**
Competence	.028**	.314**	.561**	1

Note: **p < .01. Values in the upper diagonal matrix refer to Western culture; values in the lower diagonal matrix refer to Eastern culture.
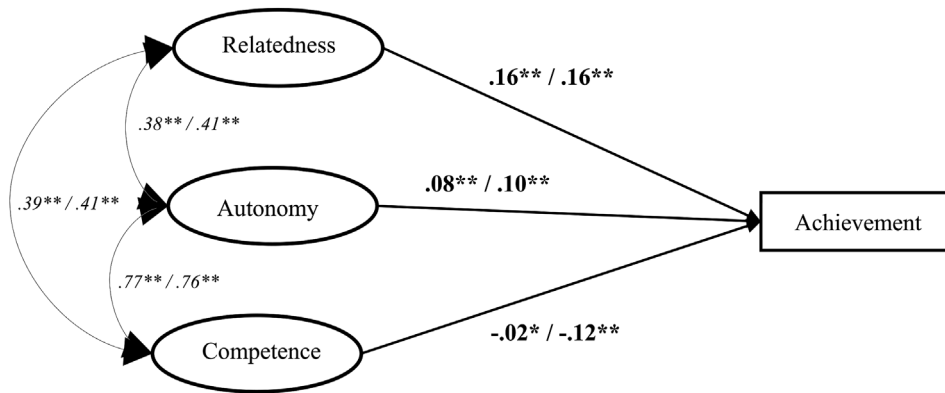
Fig. 1. Model of Basic Psychological Need Satisfaction as Predictor of Achievement. Notes: 1. Model fit statistics: $x^2 = 32,694.579$, $df = 267$, $x^2/df = 122.45$, $p < .001$, RMSEA (95% C.I.) = 0.052 (0.051, 0.052), SRMR = 0.046, CFI = 0.937, TLI = 0.928 2. All coefficients are standardized; *$p < .05$, **$p < .01$. 3. For each path, values on the left refer to coefficients for Western culture; values on the right refer to coefficients for Eastern culture. 4. For the sake of clarity, effects of covariates (i.e., sex and SES (which is based on students' scores in PISA 2009's measure of economic, social and cultural status (ESCS) (OECD, 2012) are not shown in the diagram. 5. Effect size for SEM: > 0.05, 0.15, and 0.24 and above for small, moderate, and large positive effects; > -0.10, −0.20, and −0.29 and lower for small, moderate, and large negative effects; = < 0.05 (or = < -0.10), trivial and should be ignored (Hattie, 2009) 6. Effects of sex (1 = female, 2 = male) on satisfaction of needs for relatedness were $\beta = -0.02$** and -0.11**; autonomy were $\beta = 0.02$** and -0.09**; and competence were $\beta = 0.05$** and -0.19**; and on reading achievement were $\beta = -0.17$** and -0.19** for Western and Eastern cultures, respectively. 7. Effects of SES on satisfaction of needs for relatedness were $\beta = 0.13$** and 0.05**; autonomy were $\beta = 0.14$** and 0.08**; and competence were $\beta = 0.09$** and 0.05**; and on reading achievement were $\beta = 0.31$** and 0.25** for Western and Eastern cultures, respectively. 8. Wald test of path coefficient (i.e., basic psychological need satisfaction to reading achievement) difference between Western and Eastern cultures: for satisfaction of needs for relatedness, $\Delta b = 0.00$, $df = 1$, $p < .999$; autonomy, $\Delta b = 16.82$, $df = 1$, $p < .001$; and competence $\Delta b = .92.87$, $df = 1$, $p < .001$.
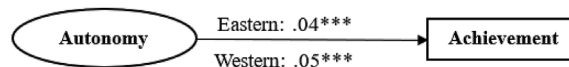

Fig. 2. Model of Autonomy as Predictor of Achievement. Notes: 1. All coefficients are standardized; ***$p < .001$. 2. The following covariances were freed: between ST37Q03 and ST37Q05. 3. Model fit statistics: $x^2 = 9536.802$, $df = 27$, $x^2/df = 353.21$, $p < .001$, CFI = 0.918, TLI = 0.878, RMSEA (95% C.I.) = 0.088 (0.087, 0.090), SRMR = 0.045. 4. Wald test: $\Delta\beta = 2.31$, $df = 1$, $p = .129$.
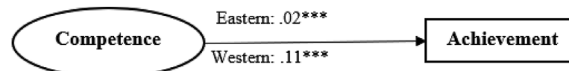

Fig. 3. Model of Competence as Predictor of Achievement. Notes: 1. All coefficients are standardized; ***$p < .001$. 2. Model fit statistics: $x^2 = 15,294.52$, $df = 659$, $x^2/df = 259.23$, $p < .001$, CFI = 0.906, TLI = 0.888, RMSEA (95% C.I.) = 0.075 (0.074, 0.076), SRMR = 0.059. 3. Wald test: $\Delta\beta = 125.96$, $df = 1$, $p = .000$.

positive relationships of these three basic needs provision with achievement across Western and Eastern cultures support SDT's contention on the importance of need satisfaction on students' optimal functioning. The inclusion of multiple cultures and nationally-representative samples enhance the robustness of the findings.

An important finding was that autonomy was equally important for students in both Western and Eastern cultures. This goes against the criticism of cross-cultural researchers who argued that autonomy might not be relevant in the East. Our findings corroborate SDT's key arguments using a more rigorous evidence base through our inclusion of more cultural groups as Jang et al. (2009) included only Korean students, while Zhou et al. (2009) focused only on Chinese students.

In terms of competence support, we found a significant cross-cultural difference. Competence support was more strongly related to achievement in the West compared to the East.

Competence support is often defined as the provision of structure which happens when teachers provide information, cues, prompts and examples including appropriate guidance and feedback so students can feel competent to achieve (Grolnick, Deci, & Ryan, 1997; Reeve, 2006). Observational studies have shown that Eastern classrooms have higher levels of structure/competence support compared to Western classrooms (Hatano & Inagaki, 1998; Jingbo & Elicker, 2005). For example, a cross-national video study revealed that teachers in Eastern classrooms engaged in behaviors such as providing direct explanations and summaries after students attempted to solve challenging problems (Hiebert, Stigler, & Manaster, 1999). Hence, the lower impact of competence in Eastern classrooms might represent a ceiling effect. However, in Western classrooms characterized by lesser structure, perhaps teacher support for structure might be more important for achievement.

In terms of effect size, relatedness had the largest association with achievement. It should be noted that some effects, although statistically significant, are small (< 0.30). Nevertheless, the practical significance of these effects should be considered when

interpreting the results. Small effect sizes are common for motivation research, but this does not mean that motivational factors are unimportant because when repeated across time, small effect sizes can have big implications (Martell, Lane, & Emrich, 2005). Practically, basic needs support is malleable and presents an optimal target for intervention efforts. Other factors such as cognitive ability (Dunlosky, Rawson, Marsh, Nathan, & Willingham, 2013) and socioeconomic background (Sirin, 2005), on the other hand, while having larger effect sizes, are relatively fixed.

Some limitations need to be noted. Culture was dichotomized into Western and Easter which might be too simplistic. Future studies can measure relevant cultural dimensions purported to underlie cross-cultural differences. We used proxmy measures in the PISA dataset to operationalize needs provision rather than using questionnaires developed specifically by SDT researchers. Last, our data was cross-sectional which prevents us from making causal conclusions. Caution must also be taken in the use of big data due to inherent biases in how these are collected and interpreted; issue on data mining as opposed to hypothesis-driven theory; and proneness to spurious correlations (Bottles & Begoli, 2014).

Nonetheless, by employing a large sample and more societies/regions, it provided support for the cross-cultural relevance of Western-developed SDT to learning and achievement of students from the East, while at the same time, highlighting important cultural nuances in competence support. Our research findings highlight that autonomy—which has received the most criticism from cross-cultural researchers—was invariant and equally important for both Western and Eastern cultures. Surprisingly, it was competence support that demonstrated cultural variations, suggesting the need to be cognizant of both cross-cultural universality and variability in motivational theorizing.

Acknowledgement

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.adolescence.2019.12.009.

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