A new perspective on the link between multiculturalism and creativity: The relationship between core value diversity and divergent thinking

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ABSTRACT

Recent theorizing suggested that the experience of cultural accountability might be an important mechanism explaining the often found heightened creativity among individuals with a multicultural background. In the present paper, participants completed a survey including two new scales – the value diversity scale and the value conflict scale – and took additional measurements of multicultural experiences, and personality. Results revealed an interaction effect between perceived value diversity and cultural conflict, such that value diversity predicted higher divergent thinking scores, only among participants who reported higher value conflict.

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1. Introduction

We are living in an increasingly globalized and multicultural world (Putnam, 2007). Studies indicate that increased cultural contacts are associated with inter- and intragroup tensions (Fu & Chiu, 2007; Phinney, Horenczyk, Liebkind, & Vedder, 2001). For example, compared to homogeneous groups, heterogeneous groups have reduced cohesiveness (Harrison, Price, & Bell, 1998; Terborg, Castore, & DeNinno, 1976), and experience more conflicts and misunderstandings (Jehn, Chadwick, & Thatcher, 1997). Some governments, as a response to these societal tensions, advocate increasingly stricter assimilation policies aimed at reducing cultural differences (Phinney et al., 2001).

In stark contrast with these societal developments, positive effects of multicultural exposure at the individual level have been reported in the literature as well. Studies for example showed that multicultural experiences enhance cognitive flexibility and heighten creative thinking (Antonio et al., 2004; Cheng, Sanchez-Burks, & Lee, 2008; Leung, Maddux, Galinsky, & Chiu, 2008; Maddux & Galinsky, 2009; Maddux, Leung, Chiu, & Galinsky, 2009; Storme et al., 2016). It seems that learning from and coping with opposing cultural value systems may lie at the heart of increased creativity (Maddux, Adam, & Galinsky, 2010). Indeed, considering that one's specific lifestyles choices, including the upholding of traditions and customs, are often reflections of culturally shaped core values (Roccas & Sagiv, 2010), multicultural experiences are in part experiences with value diversity. Specifically, it has been proposed in the literature that social accountability pressures challenge and

destabilize routinized and culturally constrained responses and value systems, and via this route increase creativity (Leung et al., 2008). Based on this literature, in the present paper we focus specifically on a specific aspect of multiculturalism that relates to the experience of core value differences, and we investigate whether interpersonal differences and disagreements in core values may be a source of cognitive growth and specifically creative thinking abilities. A second contribution of this paper is that, with our focus on individuals' experiences with core value differences, we move beyond a dichotomous approach on multiculturalism, and at the same time propose a conceptual focus for existing scale approaches to multiculturalism that often measure a variety of multicultural experiences (see for example the Multicultural Experiences Scale developed by Leung & Chiu, 2010).

1.1. Creative thinking and cultural incompatibility

Creativity is defined as the ability to usefully connect distant and seemingly unrelated and incompatible concepts, ideas, and knowledge structures into new and useful ideas (Amabile, 1996; Mednick, 1962; Sternberg & Lubart, 1996). Contemporary views consider human creativity to be the result of the same fundamental cognitive processes that underlie general human cognition (Ward, Smith, & Finke, 1999). One of the core processes involving creative cognition is the *generative process* (Ward et al., 1999), or divergent thinking (DT) as described by Guilford (1950); the ability to generate many ideas and solutions to the same problem. Creativity cannot be equated with DT (Runco, 1991), but is generally accepted as a good estimate of the potential for creative achievement (Kim, 2008; Runco, 1991; Wallach, 1970).

According to some researchers repeated exposure to foreign cultures benefits DT because it makes the incompatibilities and conflicts

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between cultural practices and values less intimidating and available to draw inspiration from (Leung & Chiu, 2010). According to Goćłowska and Crisp (2014), experiences of cultural conflict are even a necessary precondition for cognitive growth. In elaborating on, and deeply processing the norms and values of two cultural groups that are in conflict, culture-specific assumptions are questioned, and routinized and culturally constrained responses are destabilized (Leung et al., 2008).

Destabilizing routinized knowledge structures is one of the main processes of creative thinking, and is theorized to be associated with enhanced conflict resolution skills (Leung et al., 2008). Studies, for example, reported enhanced performance on the Stroop color word test, among more creative individuals (Benedek, Franz, Heene, & Neubauer, 2012; Grobörz & Necka, 2003; Zabelina & Robinson, 2010), and bilinguals seem to have an enhanced ability to resolve conflict and/or ambiguity as well (e.g. Bialystok & Craik, 2010; Costa, Hernández, & Sebastián-Gallés, 2008; Kessler & Quinn, 1981).

The acculturation complexity model (ACM, Tadmor, Tetlock, & Peng, 2009) suggests how this effect may come about by drawing on cognitive-consistency theories (e.g. Roccas & Brewer, 2002; Tetlock, 1986). According to the model, the more the individual feels accountable towards individuals of different and incompatible cultural backgrounds – i.e. the more there is the need, or requirement to justify one's actions and core values towards others – the more one experiences cognitive dissonance and needs to resort to effortful, integratively complex solutions. Integrative complexity is the capacity to hold and integrate competing perspectives on the same issue, and is related to creativity (Suedfeld & Bluck, 1993; Tadmor et al., 2009; Tuckman, 1966).

From the above, we derive that individuals with extensive cultural diversity experiences, who regularly find themselves in situations in which they are challenged by others to negotiate their values and lifestyle – i.e. who experience social pressure to account for their way of life – should benefit more from their diversity experiences, than individuals who are challenged less. This is because social accountability pressures and the ensuing core value conflicts may act as a cognitive challenge to one's culturally shaped knowledge and belief systems and increase creative supporting cognitive skills like DT. This is an interesting thesis that has yet to be investigated, as empirical studies that directly test the relation between core value conflict and creative potential are still lacking. The aim of the present study is to fill this gap in the literature.

1.2. Value diversity and value conflict

To define and operationalize core value conflict we rely on the notion of cultural conflict, and its relation with culturally shaped core values. Cultural conflict is a situation in which disagreements exist between culturally, ethnically, or racially identifiable groups due to different conduct norms for the same situation (Appleton, 1983; Tomer-Fishman, 2010). For example, the Hispanic Stress Inventory (Cervantes, Padilla, & de Salgado, 1991) probes for the existence of interpersonal conflicts due to different belief systems and personal goals within the family among immigrants. Central to cultural conflicts are thus disagreements about culturally shaped core values.

Values are generally shared, abstract notions of what is viewed as good, right, and desirable in a society. Several studies revealed that there are universally recognized values; they are beliefs pertaining to modes of conduct that guide the selection and evaluation of behavior, people, and events (Williams, 1970). Values are ordered by importance relative to other values to form a value hierarchy (Kluckhohn, 1951; Rohan, 2000; Rokeach et al., 1973; Schwartz, 1992, 1994).

Studies show that value disagreements can be intense and can sometimes lead to conflicting interpersonal interactions (Laursen & Collins, 1994). This is because values are central to people's worldviews, and basic notions of justice (Aquino & Reed, 2002); threats to one's worldview can elicit strong existential fears (Greenberg et al., 1990). Moreover, it is impossible to pursue all values simultaneously

(Schwartz, 1992). Actions taken in the pursuit of certain values have psychological and social consequences that may conflict with the pursuit of other values (Schwartz, 1992). For example, pursuing personal freedom is universally recognized as mutually exclusive with pursuing conformity and social harmony (Schwartz, 1992).

Nevertheless, the extent to which value diversity – i.e. differences in adherence to core values – in social groups leads to social accountability pressures and value conflicts, in theory, could depend on a variety of factors, like attitudes of peers, colleagues and family, and more general socio-cultural factors like government policies, the general political climate and public opinion on minorities (Phinney et al., 2001). Cultures and social contexts may thus differ with regards to how much diversity in value expressions they tolerate (Citrin & Sides, 2008; Huntington, 2004). In so called 'loose' (vs. 'tight') cultures (Gelfand, Nishii, & Raver, 2006), and 'weak' (vs. 'strong') situations (Kwaadsteniet, van Dijk, Wit, & de Cremer, 2006) there are few binding norms and expectations. In such cultures (or situations), individuals can freely express their personal values in their lifestyle without encountering much intolerance. This means that it is important not to equate value diversity, with *active interpersonal* value conflict. Thus, two individuals confronted with the same level of diversity regarding value adherences in their direct social environments, may nevertheless experience differing levels of interpersonal value conflicts.

As mentioned before, in focusing on value diversity and value conflict, we emphasize that multiculturalism is not reserved exclusively to ethnic and/or cultural minorities. Nowadays, negotiating (culturally shaped) values is an everyday practice on the many internet media (Rheingold, 2008), and many individuals, (demographically) multicultural and monocultural individuals alike, have multicultural experiences when it comes to experiences with core value diversity. Because sometimes stronger value differences can exist between groups that belong to the same ethnicity and/or nationality, than between nations, we take on this broader definition of what constitutes multiculturalism, and go beyond national borders and ethnicities. Nevertheless, it stands to reason that there will be a weak, but positive, correlation between experiences of value diversity and value conflict and having a multinational background. Thus, we expect that individuals with an immigrant background, for example, are more likely to experience higher levels of value diversity and value conflict, than individuals with a non-immigrant background.

1.3. Present study

We test the general thesis that regularly and actively interacting with individuals who are intolerant towards diversity in value adherences and demand conformity, could especially trigger the deep engagement in cultural differences described by Goćłowska and Crisp (2014) that is essential for cognitive growth and creativity. We specifically expect that individuals who are confronted with value differences in their direct social environment, and who regularly find themselves in situations in which they are actively challenged by close others to negotiate and defend their values and lifestyle, should benefit more from their diversity experiences in terms of creativity, than individuals who are challenged less. This is because value disagreements revolve around right and wrong and can trigger strong personal involvement (Kouzakova, Ellemers, Harinck, & Scheepers, 2012), rendering common conflict resolution strategies like negotiating mutual interests often futile (Barki & Hartwick, 2001; Pruitt & Carnevale, 1993). Value conflicts may instead, require higher order complex reasoning to find mutual ground and resolve the conflict.

To test our idea, we designed two new scales that tap into subjective experiences of value diversity and interpersonal value conflicts in individuals' direct social environment. As a main hypothesis we expect an interaction effect between value diversity and interpersonal value conflict on divergent thinking. Specifically, we expect that the experience of value diversity will be more strongly and positively related to divergent

thinking skills among individuals who experience relatively high levels of interpersonal value conflict, than among individuals who experience relatively low levels of interpersonal value conflict. In addition, we control for several personality variables, and take into account (demographic) indicators of multiculturalism.

2. Method

2.1. Participants and design

Participants were recruited from the general population via an online survey. 350 (158 women; $M_{age} = 35.56$ years, $SD_{age} = 14.90$, ranging between 18 and 68 years old) participated. We specifically recruited individuals with diverse multicultural experiences, to ensure enough variability between individuals on their scores of value diversity and value conflict. The drop-out rates was 13% (Galesic, 2006).

2.2. Materials

2.2.1. Value conflict

The questionnaire was aimed at tapping into subjective experiences of conflicts in which others (are perceived) to lack understanding for one's personal core values and lifestyles, and exercise social pressure to adopt, denounce or change certain values and associated lifestyles.

To capture the full social scope of value conflict, we probed for value conflicts emerging between the (I) individual and family members (II), between the individual and close others outside of the family, and (III) between family members of the individual and close others outside of the family. In total 18 items were devised, of which half were formulated to probe for value conflict in the present, and the other half to probe for value conflict in the past (see Table 3). The internal consistency was found to be satisfactory (Cronbach's $\alpha = .94$).

2.2.2. Value diversity

The value diversity scale was designed to assess participants' subjective perceptions of the level of social (dis)agreement on the importance of 10 universally recognized value domains as defined by Schwartz (1992): achievement, power, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity and security. For example, self-direction includes values such as believing in the importance of individual creativity, curiosity and freedom. We made a selection of 10 values from the original Schwartz value inventory to cover the 10 domains. We were interested in how much diversity individuals experience between individuals in their direct social environment. An example of an item is: "Including myself, there is a lot of diversity in the extent that people in my environment value achievement" (see Table 1). All items of the value diversity and conflict scales were scored on a slider scale of 0 'Do not agree' to 100 'Absolutely agree'. The internal consistency was found to be satisfactory (Cronbach's $\alpha = .70$).

2.2.3. Divergent thinking

Divergent thinking was assessed with 3 Alternative Uses Tasks (Guilford, 1967) introduced to participants as a creativity task. Participants had to list as many ideas as they could about how to use a brick, newspaper and paperclip creatively, in two minutes per task. Each task was scored in terms of fluency and uniqueness.

Fluency scores were created by counting the number of ideas for each individual. Longitudinal studies show that fluency scores are a predictor of creative achievement (Cramond, Matthews-Morgan, Bandalos, & Zuo, 2005; Plucker, 1999). The internal consistency was satisfactory for fluency (Cronbach's $\alpha = .78$).

In addition, we scored for uniqueness of the ideas as a proxy for originality. We followed the procedure described by Lau, Cheung and colleagues for the Wallach and Kogan Creativity Tests (Cheung, Lau, Chan, & Wu, 2004; Lau & Cheung, 2010; Cheung & Lau, 2010; Runco and Albert, 1985). First, each idea's frequency was computed by

Table 1

Items of the value diversity questionnaire and factor loadings.

Item	Including myself.....	Factor loading
1	There is a lot of diversity in the extent that people in my environment value achievement.	0.55
2	Among the people that I know, people do not always value true friendship and love to the same extent.	0.51
3	Among the people that I know, people do not always value politeness to the same extent.	0.41
4	There are many differences among the people in my environment in the extent that they value having pleasure in their life.	0.60
5	Among the people in my environment there are few differences in the extent that they strive for obtaining social recognition.	0.18
6	Among the people in my environment there are quite some differences in the extent that they strive for security.	0.34
7	There are quite some differences in my environment regarding the belief that creativity and curiosity are important.	0.33
8	People in my environment do not value modesty equally.	0.41
9	There is diversity in my environment in the extent that people value having exciting life experiences.	0.56
10	People in my environment differ in how much they strive for being broad-minded and creating a world of justice and equality.	0.40

dividing the number of participants who gave the idea by the total number of participants. Second, the uniqueness score of a participant is the number of ideas he/she had that were given by less than 1% of the participants. The internal consistency was satisfactory for uniqueness (Cronbach's $\alpha = .78$). The correlation between fluency and uniqueness scores was .60, which is consistent with previous empirical studies comparing different scoring strategies of divergent thinking tasks (Mouchiroud & Lubart, 2001).

2.2.4. Control variables

We assessed participants' and their parents' country of birth and country of residence. Participants, who for themselves and/or for their parents', did not list the same country of residence and birth, were categorized as multinational. We also asked participants to indicate on a 5-point scale (1 'Never' to 5 'Every day') how often they interact with ethnic minorities in their country of residence.

2.2.4.1. Ten Item Personality Inventory. The TIPI (TIPI, Gosling, Rentfrow, & Swann, 2003) is a shortened self-report measure that assesses the 'Big Five' personality dimensions of Openness to experience, Extraversion, Emotional stability, Conscientiousness and Agreeableness. Internal consistency indicators are not relevant for the TIPI because it was designed to maximize content validity with very few items – 2 items per dimension – which has the effect to systematically provide low Cronbach's α (Gosling et al., 2003; Storme, Tavani, & Myszkowski, in press). Despite the fact that the internal consistency is not satisfactory, Gosling et al. (2003) report good test–retest reliability and reasonable convergent validity with the Big Five Inventory (John & Srivastava, 1999). It is advised to use the TIPI in cases like ours: Personality is a relevant control variable but not the main focus of our study (Storme, Tavani, & Myszkowski, in press).

2.2.4.2. Need for Closure Scale – reduced. The original NFCS (Webster & Kruglanski, 1994) exists of 42 items. We used a 20-item shortened version of the NFCS, validated by Houghton and Grewal (2000). The scale showed satisfactory internal consistency in our sample (Cronbach's

Table 2

Models of value conflict questionnaire.

Model	χ^2/df	CFI	RMSEA	SRMR	AIC
Model A	901.59/135 = 6.68	0.69	0.13	0.11	55,923
Model B	340.56/132 = 2.58	0.92	0.07	0.06	54,858
Model C	196.17/108 = 1.82	0.96	0.05	0.04	54,635

Table 3

Items of the value conflict questionnaire and factor loadings.

Item	Factor	Label	Present	Past
1	I	I feel that my family does not understand the underlying reasons of my values.	0.63	0.83
2	I	I feel pressure from my family to change my values and way of life so that they are the same as theirs.	0.73	0.82
3	I	I experience conflict with my family due to value differences or differences in ways of life.	0.84	0.78
4	II	I feel that people outside of my family (friends, study mates, colleagues etc.) do not understand the underlying reasons of my values.	0.68	0.84
5	II	I feel pressure from people outside of my family (friends, study mates, colleagues etc.) to change my values and way of life so that they are the same as theirs.	0.75	0.85
6	II	I experience conflict with people outside of my family due to value differences or differences in ways of life.	0.82	0.79
7	III	I feel that people outside of my family (friends, study mates, colleagues etc.) do not understand the underlying reasons of my family's values.	0.70	0.83
8	III	I feel that people outside of my family (friends, study mates, colleagues etc.) put pressure on my family to change their values and way of life so that they are the same as theirs.	0.84	0.88
9	III	I experience that people outside of my family have conflict with my family due to value differences or differences in ways of life.	0.90	0.87

$\alpha = .77$). Individuals with a high need for closure desire definite order and structure in their lives. Kruglanski and Webster (1991) found that a temporarily heightened need for closure causes negative reactions to deviant opinions in a group, and increases attraction towards more similar groups (Kruglanski, Shah, Pierro, & Mannetti, 2002). Need for closure could thus be negatively related to value diversity and/or conflict. Previous studies demonstrated also negative correlations between need for closure and creative thinking potential (Chirumbolo, Livi, Mannetti, Pierro, & Kruglanski, 2004; Rietzschel, De Dreu, & Nijstad, 2007).

2.2.4.3. Amsterdam Executive Function Inventory (AEFI, van der Elst et al., 2012). The AEFI is a 13-item self-report questionnaire assessing three executive aspects of daily-life behavior – Attention, Self-Control, and Planning and Initiative. Executive functions are thought to be positively related to creative thinking (Benedek et al., 2012; Nusbaum & Silvia, 2011; Scibinetti, Tocci, & Pesce, 2011). Validity and reliability has been described in detail by van der Elst et al. (2012). All control items were scored on a slider scale of 0 'Do not agree' to 100 'Absolutely agree'. The scale-score reliability was found to be satisfactory in our sample (Cronbach's $\alpha = .72$).

2.3. Procedure

Participants completed the survey via an online testing platform (Limesurvey, LimeSurvey Development Team, 2012). They were informed that participation was voluntary. Participants started with the Alternative Uses Task, then completed the value diversity scale, followed by the value conflict scale, followed by three personality scales. Finally, the demographics questionnaire, which also included measures of education and socio-economic status, was administered. These additional variables, as well as age and gender, were not related with any of the other variables and are not considered in our main analyses.

2.4. Data analysis

Measurement and structural models were tested with Structural Equation Modeling (Schreiber, Nora, Stage, Barlow, & King, 2006). Testing measurement models – a procedure similar to Confirmatory Factor Analysis – was conducted for the value diversity and value conflict questionnaires and the DT tasks, using the lavaan package in R (R Core Team, 2012; Rosseel, 2012). Next, in Mplus (Muthén & Muthén, 2012), we tested the structural model with latent factor interaction between value diversity and value conflict. SEM is a more precise test compared to just using simple sum scores of the scales, because it corrects for unreliability of the measurements (Byrne, 2013).

Throughout the analyses standardized model coefficients are reported. We followed the recommendations of Hu and Bentler (1999) and used four statistical indices to evaluate the absolute model fit: The χ^2/df ratio ($\chi^2/df < 3$), the Comparative Fit Index (CFI > .90), the Standardized Root Mean Square Residual (S-RMR < .08) and the Root Mean Square Error of Approximation (RMSEA < .08). When comparing several models, we used the Akaike Information Criterion (AIC, Burnham & Anderson, 2002); we considered a difference between the AIC of two competing models superior to 2, as evidence for the superiority of the model with the lowest AIC. Finally, robust standard errors derived from Maximum Likelihood Estimations were used, as Mardia's tests of multivariate skewness 55,113.53 ($b_{1,59} = 1450.36$) and kurtosis 50.08 ($b_{2,59} = 4161.74$), were both significant, p 's < .001.

3. Results

3.1. Testing measurement models

3.1.1. Value diversity

According to Schwartz (1992), there are two orthogonal sets of motivational value domains suggesting a hierarchical model with two

Table 4

Descriptive statistics and correlation matrix for control variables.

	M (SD)	2.	3.	4.	5.	6.	7.	8.	9.
1. Fluency	20.17 (08.19)	0.62***	−0.11*	0.02	0.11*	0.00	−0.04	−0.04	0.14**
2. Uniqueness	01.66 (02.13)		−0.02	−0.03	0.06	0.06	−0.06	0.02	0.09†
3. Need for closure	47.90 (09.66)			0.13*	−0.14**	−0.07	0.38***	0.01	−0.31***
4. Executive functions	61.28 (12.34)				0.07	0.15**	0.44***	0.30***	0.12*
5. Extroversion	60.99 (21.66)					0.16**	−0.09†	−0.07	0.28***
6. Agreeableness	63.45 (16.49)						0.16**	0.30***	0.17**
7. Conscientiousness	68.19 (19.74)							0.21***	−0.07
8. Emotional stability	57.64 (21.85)								0.06
9. Openness	69.95 (16.81)								

Note. M = mean; SD = standard deviation.

*** $p < .001$.

** $p < .01$.

* $p < .05$.

† $p < .10$.

Table 5
Estimates of the structural model for fluency and uniqueness.

	Fluency	Uniqueness
	β (SE)	β (SE)
Value diversity	0.13 (0.09)	0.36 (0.17)*
Value conflict	0.06 (0.07)	0.18 (0.10)*
Value diversity $\times$ value conflict	0.22 (0.09)*	0.38 (0.17)*
χ^2/df	1.50	1.45
CFI	.91	.92
RMSEA	.04	.04
SRMR	.07	.07

Note. SE = standard error.

* $p < .05$.

† $p < .10$.

subfactors: self-enhancement versus self-transcendence (including the items evaluating the following value domains: achievement, power, security, universalism, benevolence) and openness to change versus conservation (including the items evaluating the following value domains: stimulation, self-direction, hedonism, tradition, conformity). We compared this model to a simple one-factor structure with all items loading on a single latent variable without allowing for any residual covariance. In both models, one factor loading was set to 1 and the other loading(s) and the factor variance(s) were estimated.

Both the one-factor model ($\chi^2/df = 62.35/35 = 1.78$, CFI = .89, RMSEA = .05, SRMR = .05) and the hierarchical model ($\chi^2/df = 58.48/33 = 1.36$, CFI = .90, RMSEA = .05, SRMR = .05) showed acceptable absolute fit, but the one-factor model proved to have superior fit (AIC = 31,754) compared to the hierarchical model (AIC = 31,756). See Table 1 for all factor loadings of items. In subsequent analyses we used the one factor model of value diversity.

3.1.2. Value conflict

We tested three competing measurement models. Model (A) assumed that all items load on one single factor – i.e. value conflict.

Model (B) assumed a hierarchical structure in which items load on their respective subfactor (I: conflict between participant and family; II: between participant and society; III: between the participant's family and society), and on a general factor of value conflict. Finally, in model (C), because past and present items had similar content, we added the residual covariances between present items and their past counterparts. In all models, one factor loading was set to 1 and the other loadings and the factor variance(s) were estimated. The fit indices of the three models are reported in Table 2.

The analyses yielded substantial evidence for model 3 (AIC = 54,635) over model 1 (AIC = 55,923) and 2 (AIC = 54,858), see Table 2 for absolute fit indices. Factor loadings of the three subfactors on the general factor of value conflict were respectively: .64, .90 and .83 ($p < .001$).

3.1.3. Correlates of value diversity and value conflict

Structural Equation Modeling was conducted with the latent variables of value diversity and value conflict as dependent variables, and participants' multinational background (dummy coded), the frequency of interactions with people from different cultures, big five personality traits, need for closure, and executive functions as predictor variables. Simple sum scores were entered for the control variables for simplicity reasons. We allowed latent variables' residuals to be correlated. The model showed satisfactory fit ($\chi^2/df = 1.42$, CFI = .93, RMSEA = .04, SRMR = .06).

These analyses revealed that, as expected, value conflict was independent from value diversity ($\beta = -.07$, $SE = 0.09$, $p = .42$). However, both value diversity ($\beta = .16$, $SE = 0.06$, $p = .01$) and value conflict ($\beta = .14$, $SE = 0.06$, $p = .02$) were positively related to having a multinational (i.e. immigrant) background.

Regarding relationships with personality variables, agreeableness negatively predicted value conflict ($\beta = -.16$, $SE = 0.05$, $p < .01$), and need for closure value negatively predicted value diversity ($\beta = -.20$, $SE = 0.08$, $p < .01$). This suggests that part of the value diversity and

Fig. 1. Simplified path model.

value conflict in the social environment of participants, is related to stable dispositions of participants themselves. It stands to reason that those who have relatively low need for firm answers, are less threatened by social contexts that are culturally diverse. And it also makes sense that those who score higher on the agreeableness trait, experience less value conflict, as agreeableness is associated with avoiding conflicts in general and maintaining social harmony.

Finally, executive functions negatively predicted value conflict ($\beta = -.19, SE = 0.07, p = .01$). One possible explanation for this finding is that the AEFI partly taps into some form of self-regulation. It is possible that those weaker in self-regulation may also have fewer resources to avoid social conflicts in general. Consistent with this idea, a significant positive correlation was present between executive function scores and emotional stability scores ($r = .30, p < .001$). Table 4 shows descriptive statistics and correlations between all relevant control variables and the dependent variables.

3.1.4. Divergent thinking

With only three indicators for a latent variable, the measurement model of DT was a 'just identified' model with no degrees of freedom. This means that model fit could not be evaluated by fit indices because the model is saturated. Therefore, instead of constraining factor loadings, we set the variance of the latent variable to 1. As expected, the factor loadings of the three DT tasks on the latent variable were high and significant (p 's $< .001$) for fluency (Task1: $\beta = .72, SE = 0.05$; Task 2: $\beta = .82, SE = 0.05$; Task 3: $\beta = .67, SE = 0.06$) and uniqueness (Task 1: $\beta = .53, SE = 0.10$; Task 2: $\beta = .58, SE = 0.09$; Task 3: $\beta = .43, SE = 0.13$).

3.2. Testing the structural model

We hypothesized that value diversity would be positively related to DT, more strongly among individuals reporting higher value conflict. We conducted SEM with latent factor interactions, including the control variables, value diversity, value conflict and their interaction as predictors and DT as the dependent variable (see Fig. 1). Variances of latent variables were set to 1, all factor loadings were freely estimated. Summary of estimates of the structural models for fluency and uniqueness are reported in Table 5. Because no control variable was a significant predictor of divergent thinking, we did not report their estimates in the table.

3.2.1. Fluency

The model showed satisfactory fit ($\chi^2/df = 1.50, CFI = .91, RMSEA = .04, SRMR = .07$). The analysis revealed the expected interaction effect of value diversity and value conflict on fluency ($\beta = 0.22, p = .01$). The main effects of value diversity ($\beta = 0.13, p = .15$) and value conflict ($\beta = 0.06, p = .44$) were not significant. None of the control variables were significantly related to fluency scores. Note that the interaction effect was significant and in the same direction without the control variables in the model as well.

Simple slope analyses (Bauer & Curran, 2005) were calculated for value diversity at 1 standard deviation below, and 1 standard deviation above the mean of value conflict. As expected, a significant effect of value diversity was found among individuals experiencing relatively high levels of value conflict ($\beta = 0.71, SE = 0.32, p = .03$), but not among individuals experiencing relatively low levels of value conflict ($\beta = 0.17, SE = 0.18, p = .32$). This is consistent with our reasoning that value diversity alone is not a sufficient predictor of fluency; its effect is conditional on the presence of a sufficient level of value conflict. See Fig. 2, left pane.

To be exhaustive, we also calculated the simple effects of value conflict at high (+1 SD) and low (−1SD) levels of value diversity. It appeared that value conflict significantly predicted fluency scores among individuals experiencing relatively high levels of value diversity ($\beta = 0.55, SE = 0.23, p = .02$), but not among individuals experiencing

relatively low levels of value diversity ($\beta = 0.33, SE = 0.23, p = .14$). This finding complements above results, as it suggests that value conflict alone, also is not a sufficient predictor of fluency; its effect as well is conditional on the presence of a sufficient level of value diversity.

3.2.2. Uniqueness

The model showed satisfactory fit ($\chi^2/df = 1.45, CFI = .92, RMSEA = .04, SRMR = .07$). This analysis revealed a main effect of value diversity on uniqueness ($\beta = 0.36, p = .03$), which was qualified by a significant interaction effect of value diversity and value conflict on uniqueness ($\beta = 0.38, p = .02$). The main effect of value conflict was marginally significant ($\beta = 0.18, p = .07$).

Simple slope analyses, showed that the interaction effect was in the expected direction, with a significant effect of value diversity among individuals experiencing relatively high levels of value conflict ($\beta = 1.49, SE = 0.65, p = .02$), but not among individuals experiencing relatively low levels of value conflict ($\beta = 0.04, SE = 0.21, p = .84$). Thus, similar to the results on fluency scores, also regarding uniqueness scores, the effect of value diversity seems conditional on the existence of a certain level of value conflict. See Fig. 2, right pane.

Finally, replicating the results on fluency, the effect of value conflict on uniqueness scores, seemed conditional on the level of value diversity; whereas value conflict significantly predicted uniqueness scores among individuals experiencing relatively high levels of value diversity ($\beta = 1.13, SE = 0.46, p = .01$), it did not do so among individuals experiencing relatively low levels of value diversity ($\beta = 0.39, SE = 0.32, p = .23$). Together, these results suggest that, not only, is the effect of value diversity on divergent thinking conditional on the level of value conflict, the reverse is also true.¹

4. Discussion

Previous theorizing hypothesized that the positive link between multicultural experiences and creative thinking is the result of a destabilization of established cultural knowledge networks due to experiences of social accountability (Gocłowska & Crisp, 2014; Maddux et al., 2009; Tadmor et al., 2009). Consistent with this theorizing, our study indicates that specifically among those who reported relatively high value conflict in their interactions with close others, value diversity positively predicted fluency and uniqueness of ideas in a divergent thinking task – both are skills associated with creativity. Those who reported relatively few experiences of value conflict did not seem to benefit from living in a value diverse environment. In other words, individuals who regularly find themselves in situations in which they are challenged by others to negotiate their (or their families') values and lifestyle to others, and who observe these situations among their family members, seemed to benefit more from the value diversity in their social environment, than individuals who are challenged less.

Importantly, this effect was found irrespective of controlling for the correlates of our main variables. This refutes the alternative explanation that the effect is simply due to some individuals being more open to complexity/ambiguity, or to new experiences in general, which are known predictors of creative thinking as well (Leung et al., 2008; Maddux et al., 2010). Indeed, consistent with the literature, DT scores were negatively correlated with need for closure, and positively with openness to new experiences. Thus, although value diversity and value conflict were correlated with stable dispositional differences between individuals in openness to new experiences, and need for closure, they had unique predictive value for DT, over and above the effects of these variables on DT. This suggests that the challenge that others pose on one's core personal values, predicts divergent thinking skills independent of these variables.

¹ None of the control variables were significantly related to uniqueness scores. The interaction effect was significant and in the same direction without the control variables in the model as well.

Fig. 2. Interaction plots with unstandardized DT scores.

These findings can be explained if we consider that (partly internalized) pressures to conform to other values and lifestyles can destabilize established cultural knowledge networks, because they trigger a deep and dual processing of cultural information (Gocłowska & Crisp, 2014). Indeed, the mere observation of value diversity may result solely in a non-constructive, defensive response (Cinnirella, 1997; Torelli, Chiu, Tam, Au, & Keh, 2011), consistent with the finding that value diversity alone did not predict DT. In fact, our results also indicated that the relationship between value conflict and DT is also conditional on the level of value diversity; only when value diversity was above average the relationship reached significance.

Our findings are in line with early theorizing about how encountering new ideas, and interacting intensively with people who are different force cognitive disequilibrium, and cause changes in response patterns and conceptual structures (Piaget, Cook, & Norton, 1952). For example, institutionally structured efforts (like racial-cultural awareness workshops) to help students engage in diversity, and interventions to increase intercultural sensitivity and competence, are positively associated with social-psychological and cognitive development, and creativity (Denson & Chang, 2009; Dziedziewicz, Gajda, & Karwowski, 2014). Our findings are also in line with studies conducted by Tadmor, Galinsky, and Maddux (2012), who showed that asking individuals with an ethnic minority background to find common characteristics between their two identities, caused lower preferences for cognitive simplicity and structure (Neuberg & Newsom, 1993). It seems thus, that the pressure from the social environment to integrate both cultures can indeed foster openness to complexity, and presumably creativity as well. Discussing core values can be a sensitive issue (Minette, 2014), but cultural diversity experiences can come with a cognitive benefit if we (dare to) put each other's core values into question.

4.1. Strengths, limitations and future directions

The critical reader might wonder to what extent our results can be generalized to individuals with a 'true', i.e. demographically, multicultural background, because we controlled statistically for participants' potential immigrant background. Multiculturalism is a complex and multifaceted phenomenon and for this reason it is often operationalized in different ways in the existing literature. We acknowledge that with our relatively holistic approach – i.e. proposing that everybody has more or less experience with multiculturalism – we may have missed partly the unique effect of being for example a cultural or ethnic minority on creativity. Yet, the strength of our approach is that it attempts to reach the essence of what it means to be multicultural, or to have multicultural experiences: Being confronted with subjectively deviant ways of life, built on value configurations that can potentially shake our worldviews at its core.

But it is important to realize that conflict and psycho-emotional hardship in general (like parental loss, childhood trauma, social rejection) possibly benefit complex thinking and creativity as well (Akinola & Mendes, 2008; S. H. Kim, Vincent, & Goncalo, 2013; Suedfeld & Bluck, 1993). Thus, to consolidate further the link between value conflicts specifically and benefits to cognitive functioning, more research is needed to compare experimentally the impact of value conflicts, with the impact of general conflicts (i.e. conflict of interest) on cognitive functioning.

Another interesting venue for further research would be to investigate to what extent it is important that individuals integrate conflicting values into higher order meta-cognitive concepts (Cheng et al., 2008). Could it be that the awareness and active engagement in value challenging social interactions is enough to foster creative thinking? Our findings do not give conclusive answers to this question, and future research may investigate to what extent individuals experiencing high value conflict reach (cognitive) solutions to their conflicts.

Finally, future research may take into account other relevant demographic variables like education level and socio-economic status that might be associated with cultural diversity experiences. For example, at universities students come in contact more often with diverse cultures than in the general population.

5. Conclusion

In 1971, a study investigated the creative achievement of four different civilizations – China, India, Middle East and Europe – and tested to what extent wealth, geographical expansion, democracy, warfare, and political fragmentation are associated with the posthumous reputation of these civilizations' creative artists and thinkers across several centuries. It appeared that political fragmentation is a catalyst of creativity (Naroll et al., 1971, see also Simonton, 1975). According to Simonton (1975), political conditions relate directly to cultural diversity, and therefore to creativity. This is very interesting, as political fragmentation within our current world has probably never been bigger, with sometimes detrimental societal effects (Nye, 1997; Modood & Werbner, 1997). Our study offers hope that the experience of social and cultural diversity in core value adherences and the social pressures that we put on one another to reach consensus regarding these core values, might also come with a benefit. We hope that our findings stimulate future research for a more fundamental study of cultural and societal diversity and its impact on human functioning and creativity.

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