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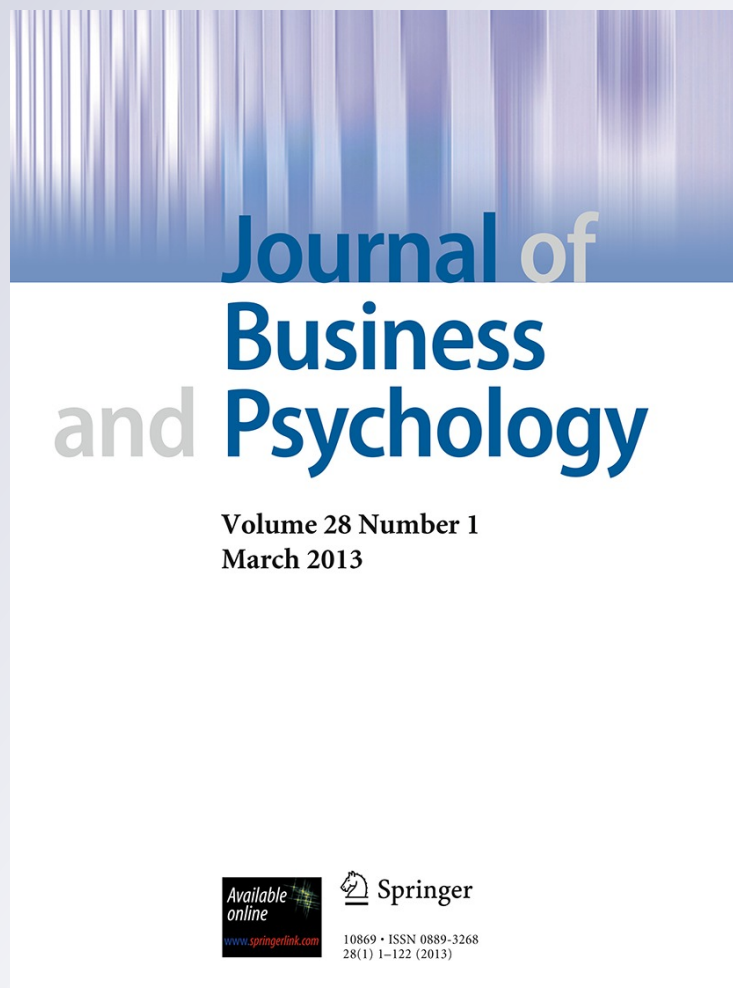
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Exploring the Effects of Value Diversity on Team Effectiveness

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Abstract

Purpose The goal of the present study was to explore the potential impact of within-team value diversity with respect to both team processes and task performance.

Design/Methodology/Approach We explored value diversity within a comprehensive framework such that all components of basic human values were examined. A sample of 306 participants randomly assigned to 60 teams, performed a complex hands-on task, demanding high interdependence among team members, and completed different measures of values and team processes.

Findings Results indicated that value diversity among team members had no significant impact on task performance. However, diversity with respect to several value dimensions had a significant unique effect on team process criteria. Results were consistent with respect to the nature of the impact of value diversity on team process outcomes. Specifically, the impact of team value diversity was such that less diversity was positively related to process outcomes (i.e., more similarity resulted in more team cohesion and efficacy and less conflict).

Implications The results indicated that disparity among teammates in many of these values may have important

implications on subsequent team-level phenomena. We suggest team leaders and facilitators of teambuilding efforts could consider adding to their agendas a session with team members to analyze and discuss the combined value profiles of their team.

Originality/Value This is the first study to highlight the unique impact of many unexamined, specific components of team diversity with respect to values on team effectiveness criteria.

Keywords Value diversity · Team diversity · Team processes · Team effectiveness · Team cohesion · Team conflict

Work force diversity has become an increasingly prominent concern in recent years. Many organizations have moved to incorporate diversity into their business structure and strategy, hoping for both societal approval and positive performance dividends (Horwitz 2005). The focus on workforce diversity taken together with the increased emphasis on team-based work groups (Applebaum and Batt 1994; Ilgen 1999) has resulted in a surge of interest in the relationship between team member diversity and overall team effectiveness (e.g., Bell 2007; Horwitz 2005; Klein et al. 2011; Mannix and Neale 2005; Mohammed and Angell 2004; Webber and Donahue 2001; Harrison et al. 1998; Jackson and Rudermann 1997; Milliken and Martins 1996). Although the majority of past research has focused on demographic, surface-level diversity (e.g., age, race, gender) (Harrison et al. 1998), the impact of diversity with respect to deeper, psychological variables (e.g., values, personality, attitudes, etc.) is likely of greater concern. As stated by Hollenbeck et al. (2004), “demographic diversity is actually less important to team performance than

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psychological diversity, especially over time” (p. 357). Thus, the goal of the present study is to explore the potential impact of within team diversity with respect to a specific set of psychological characteristics, namely values, on both team processes and task outcomes. It is important to highlight the lack of studies in this specific line of research, and more over, the inexistence of a study utilizing a comprehensive taxonomy of basic values to examine these relations. This study focuses on filling this gap.

Defining Diversity

Mannix and Neale (2005) note that diversity is a complex and multifaceted term. It encompasses a variety of differences among people (e.g., demographic variables, job-related characteristics, attitudes, values, personality traits, etc.), and the positive or negative effects of diversity may be contingent on the variables under investigation as well as the performance criteria. In a review of the team composition literature, Bell (2007) contends that discussing “diversity” without reference to a particular attribute or variable is meaningless; thus, the specific variable or family of variables on which team members differ must be identified before the relationship with team effectiveness can be examined. In order to provide some conceptual organization to this multifaceted phenomenon, recent theoretical discussions have classified dimensions of diversity into two general categories: attributes that are demographic and non-psychological versus attributes that are non-visible, underlying, and psychological in nature.

Attributes that are non-psychological and easily detectable fall under Harrison et al.’s (1998) *surface-level* categorization. Typical attributes associated with this categorization include age, gender, race, and physical disabilities (Mannix and Neale 2005). In contrast, non-apparent, psychological differences (e.g., cognitive ability, personality traits, values, beliefs, and attitudes) fall under the *deep-level* diversity category (Harrison et al. 1998). Information on deep-level attributes is acquired via observation of verbal and non-verbal behavioral patterns (Harrison et al. 1998). The deep-level label is analogous to similar descriptors such as “underlying” (Milliken and Martins 1996), “less observable” (Jackson et al. 1995), and “psychological” (Jackson and Rudermann 1997) used by other researchers. General values are prominent examples of Harrison’s deep-level diversity category.

Team diversity in surface-level characteristics has been the focus of ample research, which taken as a whole has yielded equivocal results (e.g., Webber and Donahue 2001). However, deep-level diversity may operate differently than surface-level diversity. In fact, research has demonstrated that surface-level diversity does not

necessarily relate to deep-level diversity (Harrison et al. 2002; Horwitz and Horwitz 2007). These findings highlight the need for the direct investigation of deep-level diversity. Yet, the research on deep-level diversity to date is underdeveloped. Specifically, Bell (2007) demonstrated that of studies examining deep-level team composition, those focusing on diversity are few, fragmented, and inconsistent. Bell (2007) also highlighted the dearth of studies on team member value composition despite the role of values as behavioral and attitudinal determinants. Tentative findings for only two specific value dimensions (i.e., collectivism and preference for teamwork) were reported, which were based on data from three and two studies, respectively. Bell (2007) commented that further research is necessary to assess the impact of other value dimensions on team performance. We propose that these other dimensions should include basic human values such as those related to independent thought and action, stability of self and relationships, and the welfare of others with whom one is in constant interaction. Basic values such as these have significant implications for interpersonal behavior.

Theoretical Underpinnings of Potential Diversity Effects

Research on deep-level team diversity in general and value diversity in particular, has only recently begun to emerge and is relatively limited (Harrison et al. 2002). However, the theoretical foundations of this research are longstanding. There are two primary classes of theories underpinning this area of study. On the surface, these theories appear to be in direct opposition, as one advocates a “pessimistic” view of diversity and the other an “optimistic” view (Mannix and Neale 2005). In general, the pessimistic view focuses on the affective and interactional problems caused by diversity; whereas, the optimistic view posits enhanced creativity, quality, and innovative task performance that results from increased access to a variety of perspectives and resources (Kravitz 2005). Respectively, these views are grounded in the similarity-attraction/social identity paradigms, and the information processing/cognitive resource paradigms.

The Pessimistic Perspective

In general, negative expectations regarding the impact of diversity in team composition stem from the similarity-attraction paradigm (Byrne 1971; Tziner 1985) and social identity theory (Tajfel 1978). Social attraction theory posits that similarity in values, beliefs, and attitudes increases interpersonal attraction, and when individuals like each other, their values, beliefs, and attitudes become more aligned. Together, attraction and similarity reciprocally

build on one another, facilitating a pull toward symmetry and an avoidance of the strain produced by dissimilarity (Rosenbaum 1986; Mannix and Neale 2005). Furthermore, people tend to categorize themselves relative to similar others and in an effort to maintain their social identities, they will demonstrate a bias toward those whom they believe share similar characteristics (Tajfel and Turner 1986; Turner and Haslam 2001). Byrne's (1971) early attraction-similarity research supports the perspective that individuals are drawn toward others who they think share similar attitudes to themselves and report that these individuals are smarter and more well-adjusted than others. These propositions also underlie Schneider's (1987) well-known attraction, selection, attrition (ASA) theory, which supports the notion that this similarity-attraction process naturally produces increasingly homogenous work environments (Giberson et al. 2005).

Overall, these theories posit that teams with members who have homogeneous values will more readily identify with each other. As a result, they will be more cohesive, facilitating both interaction and subsequent performance. Teams with heterogeneous values are predicted to be less cohesive and thus less productive because of the conflicts and stress that result from the differences in members' beliefs.

The Optimistic Perspective

Alternately, cognitive resource theory posits the "value in diversity" hypothesis, which advocates the benefits of the unique resources that members with diverse attributes bring to the team (Cox and Blake 1991; Easley 2001). The underlying assumption here is that diversity in members' attributes will result in more informed decisions by promoting creativity, innovation, and alternative problem solving. This information processing perspective suggests that differences create an opportunity for team members to share different perspectives and thus examine issues at a deeper level of analysis (Mannix and Neale 2005). Moreover, different perspectives are predicted to interact synergistically to create a "process gain" for the group to the extent that they are able to overcome potential social-integration problems that may result from their differing perspectives (Steiner 1972).

Overall, cognitive resource theory posits that diverse values among teammates will contribute to better team performance. Members will share information from a greater variety of perspectives, a practice that leads to higher quality analysis of tasks, which in turn fosters higher quality results. Although these two perspectives are often pitted against one another, they are not necessarily mutually exclusive. For example, a team with a diverse set of perspectives may produce high quality task results (e.g.,

more creative solutions), but in the process experience interpersonal conflict and low cohesion. Moreover, even supporters of the "value in diversity" hypothesis have noted that diversity may offer benefits for team outcomes even as it creates barriers for team interaction processes (Mannix and Neale 2005). In sum, while these theoretical perspectives posit different expectations with respect to value diversity, it is feasible for both perspectives to operate simultaneously contingent on the value and type of criterion in question. Even when this approach is theoretically feasible, a recent meta-analysis highlights the lack of studies combining both perspectives at the same time (Van Knippenberg and Schippers 2007).

As noted above, the primary goal of the present study is to explore team member value diversity with respect to an encompassing taxonomy of basic human values. Our objective is to dig into the impact of team value diversity on task performance, and on the following aspects of team effectiveness: relationship and task conflict, cohesion, and team efficacy. Below, we begin by presenting a brief review of previous findings pertaining to value diversity. Next, we discuss the concept of basic values and present Schwartz comprehensive model of values. We then briefly highlight the key team process variables that reflect team effectiveness and that are likely to be influenced by team member value diversity. Finally, we consider several research questions addressed in this study.

Previous Findings on Value Diversity

As noted by Harrison et al. (2002), and more recently by Bell (2007), relatively little research has examined the impact of diversity among team members in terms of basic values on effectiveness (c.f., Fisher et al. 1996; Jehn et al. 1997; Jehn and Mannix 2001; Klein et al. 2011). Among the few relevant existing studies, there is substantial variability with respect to both the conceptual and operational definitions of values as well as the outcomes examined. One approach has been to measure basic values at the individual-level using the classic *Rokeach Value Survey* (RVS; Rokeach 1979), and then either aggregate members responses to represent the team level (Rodriguez 1998) or compute their concordance (Fisher et al. 1996). Regarding this measure, Rokeach never suggested any a priori structure for the RVS, and further studies suggest that it does not cover the full domain of the values construct (e.g., Schwartz 1992). Nonetheless, Fisher and collaborators indicated that teams with more agreement in their ratings across the set of nine personal value scales, demonstrated better task performance than those with less concordance. Though the study presented promising results, it had a serious limitation: after collecting data from 22 teams of

undergraduate students, 12 teams were dropped due to inadequate levels of concordance between the members' values ratings. As a result, the analyses were based on only ten teams. The other study employing this approach (Rodriguez 1998), also used a very small sample - 11 teams.

Recently, Klein et al. (2011) demonstrated that team leader style moderates the relationship between team values diversity and team conflict. They propose that leaders who are task-focused, create a strong team setting, with clear rules and roles, constraining the influence of team members' values. Even when the results are relevant, they analyzed value diversity from a simple framework of two values: Protestant work ethic (individual tendency to work hard even in the absence of material rewards) and traditionalism (commitment and acceptance of the customs and ideas of traditional cultures or religions). This framework does not cover relevant aspects of the values domain such as: power, achievement, altruism, etc.

Another approach used previously has been to measure organizational values preferences at the individual-level, and then compare the profiles of team members to assess value congruence (Jehn 1994). Using this approximation, Jehn and Mannix (2001) found that team member similarity with respect to work-related values (i.e., similarity across a set of 54 items related to innovativeness, stability, detail orientation, outcome orientation, aggressiveness, supportiveness, reward orientation, team orientation, and decisiveness) was positively related to task performance. However, Jehn and collaborators (1997) examined team member value congruence (defined in terms of a median split of team consistency scores derived from ratings of the same work-related values discussed previously) and found that value congruence was related to perceived performance via a negative correlation with relationship conflict; however, value congruence did not relate to subjective expert ratings of task performance. Both studies employed an adapted version of the *Organizational Culture Profile* (OCP; O'Reilly et al. 1991). The OCP was developed to obtain profiles of the cultures of organizations, and to assess individual preferences for organizational cultures (O'Reilly et al. 1991, p. 496), but not to measure individual values.

Finally, there are various studies using cultural-level values measured at the individual-level (e.g., Eby and Dobbins 1997; Vodosek 2007). These studies rest on the assumption that research on cultural diversity can be conducted using individual-level representations of cultural-level constructs (e.g., Maznevski et al. 2002), since some aspects of culture are internalized by individuals. For instance, Kirkman and Shapiro (2001) reported on the impact of collectivism, power distance, doing orientation, and determinism on the performance of self-managed work

teams, utilizing an instrument that operationalized two different models of cultural values (i.e., Hofstede 1991; Kluckhohn 1951). According to Smith and Schwartz (1997), this approach is inappropriate. These cross-cultural scholars argue that the relations between values at the cultural level reflect the dynamic conflicts of the societies that exist as a result of the way their institutions pursue their goals, adding that these relations are not necessarily the same at the individual-level.

Schwartz Model of Values

Values have generally been referred to as needs, beliefs, or norms. Values can be best understood as cognitive representations of universal needs (Rokeach 1979; Schwartz 1992). These needs are expressed through over-arching goals that direct behavior across situations, and are ordered by importance as guiding principles in life (Schwartz et al. 2001). Schwartz (1992) posits that the essence of a value is the motivational goal it expresses. From this premise, Schwartz derived ten value types that form a circumplex structure (see Fig. 1) such that value types that share a similar general motivational goal are arranged closer together. Alternately, types representing divergent goals are arranged more distantly around the circumference of the model. For instance, power (PO) and achievement (AC) are two compatible value types sharing the general

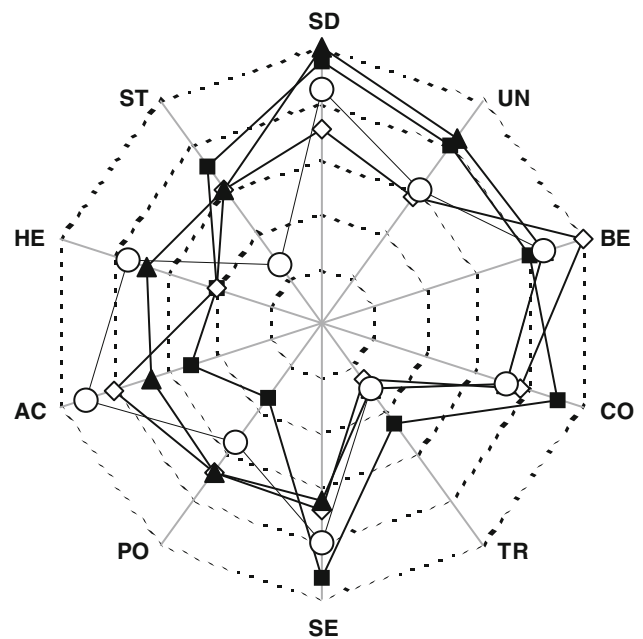


Fig. 1 Example value profiles of the members of a team. *SD* self-direction, *UN* universalism, *BE* benevolence, *CO* conformity, *TR* tradition, *SE* security, *PO* power, *AC* achievement, *HE* hedonism, *ST* stimulation

motivational goal of enhancing personal status, even at the expenses of others. Conversely, power (PO) and universalism (UN) are two conflicting values; the motivational goal of power is enhancing personal interests, whereas the motivational goal of universalism is promoting the welfare of others. The pattern of compatibilities and incompatibilities between value types is based on the premise that actions taken in the pursuit of each type have both psychological and behavioral consequences, which may be compatible or in conflict with the goals derived from other values. The Appendix provides a brief description of the ten value types (for a full description of these values see Schwartz 1992). It is important to highlight that a recent meta-analysis has validated this circumplex structure in more than seventy countries (Steinmetz et al. 2012)

Team member diversity in values is represented by the disparity in the importance assigned by each team member to each value type. The more the variability in the importance assigned by the members of the team to each value type, the greater the level of diversity across team members. Figure 1 shows this idea schematically. Each radius represents one of ten value types, and each irregular decagon, the profile of a team member. The lower the importance a team member assigns to a specific value, the closer the point associated with that individual's profile will be to the center on the respective value radius. The degree of spread among the points on a given value radius represents the degree of team diversity on that value. For instance, in the case of the radius of benevolence (BE), the variance among the four value profiles is low compared to the variance on the radius for achievement (AC). Given the contradictory nature across the motivational goals underlying opposing values, it is inappropriate to compute an overall "values" score. Moreover, the configuration approach (Moynihan and Peterson 2001) argues that whether homogeneity or heterogeneity regarding deep-level attributes is preferable depends on the specific value or trait in question. Consistent with these propositions, diversity should be examined separately with respect to each of the ten values. Given the predominant role of values with respect to attitudes and subsequent behavior, team member value diversity is likely to be a key factor for both process and outcome measures of team effectiveness.

Team Effectiveness

The evaluation of teams encompasses a variety of components. Many theories have addressed the multifaceted nature of team effectiveness (e.g., Shea and Guzzo 1987; Gladstein 1984; Hackman 1987). According to Hackman (1987), group effectiveness can be defined in terms of three criteria. First, the final outputs produced by the team must

meet or exceed the standards set by key constituents within the organization. Second, the internal social processes operating as the team interacts should enhance, or at least maintain, the group's ability to work together in the future. Finally, the experience of working in the team environment should act to satisfy rather than aggravate the personal needs of team members. In order to address these criteria, team effectiveness evaluation should include both a measure of the teams' final task performance as well as criteria with which to assess intragroup process. The current paper explores task performance and prominent team process criteria. The three major intragroup process constructs examined are: intra-group conflict, team cohesion, and team-efficacy.

Intra-group conflict has emerged as an integral team process variable. Previous research has differentiated two components of intra-group conflict: relationship conflict and task conflict. Jehn (1994) describes relationship conflict as interpersonal incompatibilities between team members such as annoyance and animosity. Task conflict occurs when members convey divergent ideas and opinions about specific aspects related to task accomplishment (Jehn 1994). Research to date indicates that relationship conflict is largely detrimental to team performance (e.g., Evan 1965; Baron 1991; van Woerkom and van Engen 2009; Vodosek 2007). The impact of task conflict is less clear. While it has been argued that task conflict facilitates enhanced performance via thorough task analysis (e.g., Amason and Schweiger 1994), empirical evidence is equivocal. Some research has found positive relationships between task conflict and novel idea generation and strategic planning (Baron 1991; Amason 1996), but others have shown task conflict may hinder goal accomplishment and implementation (Amason 1996; Vodosek 2007). In a direct investigation of task conflict, Jehn (1994) found only a small amount of task conflict was beneficial, after which team performance began to deteriorate, and a meta-analysis demonstrated a negative relationship between task conflict and team satisfaction and performance (De Dreu and Weingart 2003). Nonetheless, both types of conflict have proven to be significant correlates of a variety of team effectiveness criteria.

Team cohesion is another important process variable (Chiochio and Essiembre 2009; Swezey and Salas 1992). While a multitude of definitions and measures have been offered (Mullen and Copper 1994), basically, cohesion is viewed as "a general indicator of synergistic group interaction—or process" (Barrick et al. 1998, p. 382). Meta-analyses have revealed significant team cohesion-performance effects (Beal et al. 2003; Mullen and Copper 1994). Furthermore, cohesion has been linked to greater coordination during team-tasks (Morgan and Lassiter 1992) as well as improved satisfaction, productivity, and group interactions (Bettenhausen 1991).

Finally, team efficacy is another important team process construct. Team efficacy refers to team members' perceptions of task-specific team competence (Gibson 1999). This construct is thought to create a sense of confidence within the team that enables the group to persevere when faced with hardship (Gully et al. 2002). Several researchers have related team efficacy to aspects of team effectiveness (e.g., Campion et al. 1993; Gibson 1999; Gibson et al. 2000), and a meta-analysis demonstrated that the relationship between team efficacy and performance was greater than that between cohesion and performance (Gully et al. 2002).

Present Study

Our review of both the extant research as well as the theoretical underpinnings highlights several limitations in the literature to date. Specifically, the few studies examining diversity with respect to team member values has largely focused on congruence across a set of context specific values as opposed to a comprehensive set of more broadly defined values such as that posited by Schwartz. To date, no study has examined team member diversity with respect to the full domain of values on both process and performance criteria. Moreover, the literature offers little guidance as to whether value diversity will lead to positive or negative effects with respect to team processes and outcomes, or to what extent these effects will be contingent on the specific value dimensions examined. Finally, while the literature examining the impact of surface-level diversity has capitalized on the fact that these characteristics are readily observable and therefore likely to have immediate effects on team outcomes. It has been argued, however, that diversity with respect to deep-level characteristics such as values may take longer to manifest itself with respect to team outcomes (e.g., Harrison et al. 1998). Therefore, it is not at all clear as to whether there will be effects of value diversity in short-term novel teams.

Thus, our goal in the present study is to explore the relationship between values diversity and team effectiveness. We provide a preliminary investigation of the impact of basic values, on both process and task performance aspects of team effectiveness. Toward this end, we seek to address two research questions. Specifically:

- (1) To what extent does diversity across team members with respect to basic values impact team process and outcome variables in a short-term team task with novel teams?
- (2) Will the impact of team member value diversity be consistent with the optimistic or pessimistic views of team diversity?

Method

Participants

Three hundred and six undergraduate college students at a large U.S. southeastern university participated in the present study. Participants were randomly assigned to mixed gender teams of 4–6 ($M = 4.6$; mode = 5) resulting in 60 teams. Participants were 43 % (134) male, and 78 % (237) white. The mean age of participants was 22 years, and the ages ranged from 19 to 38 years ($SD = 2.32$).

Task

The task was a complex team-based exercise called the Chinese Bridge (Arciniega and Castañón 2002). The task is a relatively difficult one requiring both the design and building of a complex structure. Specifically, the task requires each team to design and build a replica of a real bridge, using 33 plastic pipes of three different sizes and 20 rubber bands (with instructions that all of the materials must be used in the bridge). The task is designed such that, given the material available, there is one optimal solution. In addition, the task is designed so that even if a team were given specific plans for the bridge, multiple people working together are required to actually build the structure (e.g., one must hold pieces while another connects them, etc.). Thus, successful completion requires team members to work interdependently. This type of simulation could be categorized as a high interdependence task, since team members collectively work together to complete the task while sharing information and resources (Horwitz and Horwitz 2007). Based on a recent review of the literature (Joshi and Roh 2008), these contextual factors combining task interdependence and complexity, promote a scenario where deep-level team diversity variables really emerge.

The simulation consists of four phases: (a) a multimedia presentation describing the task and presenting a picture of the real bridge; (b) a 20-min period for team members to familiarize themselves with the materials; (c) a 30-min period to sketch a proposed design of the bridge; and (d) the building phase lasting approximately 60 min.

Measures

Values

Values were assessed using the Portrait Values Questionnaire (PVQ; Schwartz et al. 2001). The 40-item PVQ measures the ten value types proposed by Schwartz (1992). These values as measured by the PVQ are defined in the Appendix. The scale includes short verbal portraits of hypothetical individuals (e.g., *Thinking up new ideas and*

being creative is important to him. He likes to do things in his own original way). Respondents are asked to rate the extent to which they agreed with each item on a scale from 1 (*not like me at all*) to 6 (*very much like me*). The PVQ has been used in several studies, in more than 60 countries, and has been shown to be a reliable and valid measure of personal values (Schwartz 1992; Schwartz et al. 2001). The average alpha across these ten dimensions was .68 (SD = .08). Here, it is important to note that previous studies utilizing the PVQ during the last decade have tended to report relatively low reliability estimates (particularly estimates of internal consistency) for many of the value dimensions (e.g., Aitken-Schermer et al. 2008; Fotopoulos et al. 2011; Liem et al. 2011; Schwartz et al. 2001). Schwartz justifies the low reliability of some of the value scales based on the fact that many of these, have conceptually broad definitions, assessing multiple components, rather than narrowly defined constructs (Schwartz et al. 2001, pp. 531–532). Consistent with this perspective, previous studies have found clear effects between the value types and a plethora of psychological variables under study despite relatively low reliability estimates. Nonetheless, the tradition scale demonstrated a particularly low alpha (.54) in the present study; thus, it was not included in further analyses.

Task and Relationship Conflict

Conflict was measured using Jehn's Intragroup Conflict Scale (ICS; 1994). The scale contains four items related to the task conflict dimension (e.g., *There are differences of opinion regarding the task in my work group*), and four items related to the relationship conflict dimension (e.g., *There are personality clashes present in my work group*). Participants are asked to rate the extent to which they agreed with each item on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Alphas for these scales were .85 (task conflict) and .87 (relationship conflict).

Cohesion

Cohesion was measured using two items from Podsakoff and MacKenzie's (1994) Substitutes for Leadership Scale and four items from Zaccaro (1991). Each of the 6 items consists of a short statement regarding the cohesion of the individual's team (e.g., *I generally get along well with my fellow group members*). Respondents are asked to rate the extent to which they agreed with each item on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Alpha for the scale was .75.

Team Efficacy

Team-efficacy was assessed with a 2-item scale constructed specifically for this study (e.g., *My team works as*

an effective unit and My team has an effective plan for completing the bridge task). Respondents rated the extent to which they agreed with each item using a 7-point scale from 1 (*strongly agree*) to 7 (*strongly disagree*). Alpha for this scale was .73.

Team Task Performance

Task performance was measured as the extent to which a team was able to complete the task and the quality of the finished product (i.e., the bridge replica). Following completion of the task, a photograph was taken of each team's bridge. Next, each photograph was evaluated by a group of 5 raters familiar with the task. Ratings were made on a 5-point scale from 1 (*non-standing structure*) to 5 (*arched bridge with 5 cross pieces and perfect joints*). After each member of the research group provided their initial rating, the entire group came to consensus on a single rating for the bridge (mean level of agreement in the initial ratings across raters was 88 %). The consensus rating was used as the measure of team performance.

Procedure

All participants completed the values measures during the week preceding their participation in the bridge task. On the day of the simulation, all participants first viewed the task overview presentation as a group and then were broken up into their teams and assigned to separate team rooms to complete the task. Teams completed each phase of the bridge task, and then each participant individually completed the team process measures.

Results

All analyses were conducted at the team-level. To assess diversity, the variance across team members for each of the ten value scales was computed (e.g., Barrick et al. 1998; Mohammed and Angell 2003; Neuman et al. 1999). Descriptive statistics and intercorrelations for the composition of team value types are shown in Table 1. Statistics are presented for the team-level for mean composition of values (control variables) and the average degree of within-team variance in each value (diversity variables). Alpha values for each value scale are also presented in Table 1. Team process was assessed as the aggregate (mean) score across team members on each of the process measures (task and relationship conflict, cohesion, and team efficacy). Descriptive statistics and intercorrelations for the team process criterion variables are presented in Table 2.

Here, it is important to note that the use of these aggregated variables as indicators of team level processes

Table 1 Descriptive statistics & intercorrelations for team level means & team level variances in value variables

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<i>Team mean</i>																				
1. Benevolence	4.67	.33	(.66)																	
2. Universalism	4.16	.43	.50	(.79)																
3. Self-direction	4.53	.37	.26	.19	(.64)															
4. Stimulation	4.20	.48	.37	.33	.61	(.69)														
5. Hedonism	4.59	.48	.51	.16	.56	.65	(.74)													
6. Achievement	4.61	.45	.28	.06	.55	.66	.65	(.80)												
7. Power	3.61	.51	.04	-.11	.45	.40	.47	.59	(.66)											
8. Security	4.35	.42	.39	.29	.43	.35	.47	.41	.21	(.61)										
9. Conformity	4.31	.41	.38	.30	.10	.20	.27	.30	.11	.48	(.65)									
<i>Team variance</i>																				
10. Benevolence	.50	.59	-.29	-.26	-.20	-.22	-.33	-.06	-.03	-.36	-.35									
11. Universalism	.65	.66	-.04	-.09	.00	-.03	-.04	.15	.10	-.20	-.28	.62								
12. Self-direction	.52	.57	-.26	-.16	-.31	-.24	-.38	-.06	-.05	-.31	-.15	.60	.61							
13. Stimulation	.87	.52	.10	-.07	-.04	-.14	.04	.03	-.12	.12	-.21	.26	.34	.40						
14. Hedonism	.69	.76	-.20	-.08	-.01	-.10	-.33	-.05	-.01	-.16	-.38	.72	.62	.59	.47					
15. Achievement	.85	.93	-.01	.07	-.30	-.38	-.42	-.41	-.24	-.21	-.31	.50	.37	.41	.25	.63				
16. Power	.96	.81	.00	.04	-.01	-.13	-.02	.00	.13	.15	.04	.25	.21	.24	.14	.30	.41			
17. Security	.53	.53	-.27	-.06	-.13	-.10	-.29	-.13	.04	-.51	-.29	.48	.37	.40	.07	.46	.38	.20		
18. Conformity	.71	.84	-.10	.05	-.15	-.18	-.28	-.18	-.29	-.33	-.45	.59	.47	.52	.51	.59	.53	.17	.48	

Note. 'Team Mean' statistics represents the average variable score among team members across teams for each value. 'Team Variance' statistics represent the average amount of variance in each variable among team members across all teams. *N* = 60. Scale level alphas are listed in the parentheses

Table 2 Descriptive statistics & intercorrelations for team effectiveness and team level variances in value variables

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Team Effectiveness																
1. Task Performance	2.42	1.33	1.0													
2. Task Conflict	2.45	.72	.00	(.92)												
3. Relationship Conflict	1.80	.56	.15	.68**	(.96)											
4. Cohesion	5.55	.51	.06	-.53**	-.58**	(.94)										
5. Team Efficacy	5.60	.62	.00	-.59	-.63**	.62**	(.94)									
Team Variance																
6. benevolence	.50	.59	.06	.16	.35*	-.08	-.21*	1.0								
7. universalism	.65	.66	-.05	.17	.17	-.06	-.09	.62	1.0							
8. self-direction	.52	.57	.12	.31**	.49**	-.25*	-.36**	.60	.61	1.0						
9. stimulation	.87	.52	-.15	-.03	.10	-.02	-.10	.26	.34	.40	1.0					
10. hedonism	.69	.76	.07	.22*	.23*	.06	-.20	.72	.62	.59	.47	1.0				
11. achievement	.85	.93	.05	.35**	.27*	.02	-.28*	.50	.37	.41	.25	.63	1.0			
12. power	.96	.81	-.08	.23*	.21*	.01	-.20	.25	.21	.24	.14	.30	.41	1.0		
13. security	.53	.53	.12	.30**	.41**	-.23*	-.25*	.48	.37	.40	.07	.46	.38	.20	1.0	
14. conformity	.71	.84	.08	.10	.25*	-.04	-.16	.59	.47	.52	.51	.59	.53	.17	.48	1.0

Note. ‘Team variance’ statistics represent the average amount of variance in each variable among team members across all teams. Numbers inside parentheses represent the average agreement level ($r_{wg(j)}$) across teams. $N = 60$

** $p < .01$

requires sufficient agreement across team members to warrant aggregation (James 1982; James et al. 1984). Thus, before aggregating, we examined the level of agreement across team members. To assess interrater reliability, we calculated intraclass correlations coefficients (ICCs) where $ICC = (MS_{between} - MS_{within})/MS_{between}$ (Shrout and Fleiss 1979). The ICC estimates across all teammates were .62 for team efficacy, .77 for team cohesion, .78 for role conflict, and .85 for task conflict. Landis and Koch (1977) suggest that interrater reliabilities above .61 should be considered substantial level of agreement. Nonetheless, recent research indicates that ICC’s tend to underestimate levels of agreement (LeBretton et al. 2003). Thus, we also calculated $r_{wg(j)}$ for each of these variables for each team¹. Results (included in Table 2) indicate adequate agreement to justify aggregation, (i.e., overall mean $r_{wg(j)}$ was approximately .85).

Next, we examined the zero-order correlations between diversity in each of the value types and the five criterion variables. These correlations (presented in Table 3) indicate that team diversity with respect to seven of the values is significantly related to one of the outcome variables, and six of these are related to at least two of the four team process variables. Task performance was not related to diversity in any of the values. Previous research has indicated that the team’s mean (across team members) level of

deep-level attributes is often a significant predictor of team performance criteria (e.g., Barrick et al. 1998), and thus the mean level may confound the amount of variance in these attributes (Bedeian and Mossholder 2000). Consequently, it is important to control for teams’ mean level (i.e., ‘‘team-level’’) before interpreting the impact of variability. As stated by Steiner (1972, p. 667), ‘‘a completely satisfactory description of the composition of groups must deal with members’ average scores on attributes as well as with their dispersion around those averages.’’ Thus, we next examined the independent influence of diversity on the team effectiveness criteria (e.g., Mohammed and Angell 2004). Specifically, for each significant zero-order correlation between a component of effectiveness and a value diversity variable, we conducted a hierarchical regression such that the effectiveness variable was regressed first on the team-level (i.e., mean) and then on team diversity (i.e., variance). A significant beta weight and semi-partial correlation provided indication of the unique relationship between diversity variables and effectiveness. As noted previously, diversity with respect to the nine values investigated had no effect on team performance. For the team process variables, however, of the 18 significant zero-order correlations, 14 were still significant after controlling for team-level (see Table 3, coefficients in bold). Of note, team diversity on two of the values (security and self-direction) was significantly related to all of the team process outcomes, and diversity with respect to achievement was

¹ We calculated $r_{wg(j)}$ using the uniform expected null distribution.

Table 3 Independent effects of value diversity after controlling for value mean level on team effectiveness criteria

Deep-level diversity variables	Unstandardized		Standardized		Correlations		Relative importance ^b
	B	SE	β	t	Zero-order	Semi-partial	
<i>Dependent variable: task conflict mean</i>							
Self-direction	.387	.166	.308	2.33	.311	.294*	28.56
Hedonism	.156	.128	.165	1.22	.223	.160	–
Achievement	.282	.106	.365	2.67	.352	.333**	25.88
Power	.211	.114	.238	1.84	.234	.237*	9.82
Security	.530	.194	.393	2.73	.302	.340**	35.74
Multiple R ² ^a					.26	.19*	
<i>Dependent variable: relationship conflict mean</i>							
Benevolence	.309	.121	.326	2.55	.354	.320**	14.65
Self-direction	.451	.118	.464	3.8	.485	.451**	35.06
Hedonism	.084	.095	.116	.89	.228	.117	–
Achievement	.159	.084	.265	1.89	.273	.242*	11.97
Power	.146	.089	.213	1.64	.207	.213	–
Security	.444	.146	.426	3.05	.408	.374**	28.73
Conformity	.210	.096	.317	2.18	.245	.277*	9.58
Multiple R ² ^a					.38	.24**	
<i>Dependent variable: cohesion mean</i>							
Self-direction	–.241	.121	–.269	–1.99	–.246	–.255*	50.00
Security	–.288	.142	–.299	–2.02	–.232	–.259*	50.00
Multiple R ² ^a					.10	.10*	
<i>Dependent variable: team-efficacy mean</i>							
Benevolence	–.199	.141	–.190	–1.42	–.210	–.184	–
Self-direction	–.366	.139	–.341	–2.63	–.364	–.329**	42.94
Achievement	–.215	.092	–.324	–2.32	–.279	–.294*	31.36
Security	–.309	.171	–.268	–1.81	–.250	–.233*	25.71
Multiple R ² ^a					.19	.14*	

Note. N = 60 teams. The results displayed are associated with a model in which the variance of the deep-level attribute was entered in the second step following the mean level of the deep-level attribute

* p < .05, ** p < .01. All zero-order correlations were significant at p < .05

^a Multiple R² values represent the squared correlation between the criterion measure and all of the diversity variables listed (zero-order) and the correlation between the criterion measure and all of the diversity variables listed after controlling for the corresponding team level variables (semi-partial)

^b Relative importance values are based on dominance analysis (Budescu 1993) and represent the average percentage of the variance accounted for across all possible subsets of predictors attributable to the specific value dimension

significantly related to all but cohesion. In addition, diversity on three other values (benevolence, hedonism, and power) was significantly related to two of the four process variables. In all cases, results indicate the impact of team diversity was such that higher levels of similarity (i.e., less diversity) across team members was positively related to process outcomes (i.e., more similarity resulted in more team cohesion and efficacy and less conflict).

The analyses presented above provide an indication of the extent to team member diversity on each of the value dimensions individually relates to the team process outcomes. Also of interest is the extent to which all of the significant value dimensions together account for variance in the

team effectiveness measures as well as the relative importance of each dimension. To assess the overall impact of the value dimensions, we conducted a hierarchical regression in which each of the four team process outcomes was first regressed on the value dimension team means and second on the value dimension team diversity (variability). The change in R² from step 1 to step 2 provides an indication of the total proportion of variance in the team process variable accounted for by team member diversity on the set of significant value dimensions. These values (reported in Table 3) ranged from 10 % for cohesion to 24 % for relationship conflict.

In order to assess the relative impact of each of the significant value dimensions we conducted a dominance

analysis (Azen and Budescu 2003; Budescu 1993). Dominance analysis is a procedure that is based on an examination of the R^2 values for all possible subsets of models derived from a set of predictors. It provides for an indication of the relative importance of each predictor as the ratio of the average (across all possible subsets of predictors) squared semi-partial correlation to the total R^2 . For the present study, we conducted dominance analyses to examine the relative impact of team member diversity on each of the significant value dimensions over and above team means on all of the value dimensions (i.e., we controlled for team mean on each of the value dimensions). In essence this provides an indication the unique variance accounted for by each value dimension relative to the others. Results of the dominance analyses are also presented in Table 3. Examination of these results indicates that the relative importance of team member diversity on the value dimensions differed for each of the team process variables. For example, diversity with respect to self-direction and security was equally important with respect to cohesion. However, security was the most influential predictor for task conflict; self-direction the most influential for both relationship conflict and team efficacy.

Discussion

Our goal in the present study was to explore the impact of team member diversity with respect to general values on both team process and task performance. In addition, we chose to study values within a comprehensive framework (Schwartz's ten value types) such that all components values were examined. Results indicate that task performance was neither positively nor negatively affected by a lack of congruence across team members with respect to any of the value types examined. This finding is in line with the meta-analysis of Bell (2007) suggesting that in lab settings, only negligible effects are observed in the relationships between value diversity and team performance. A very different picture emerged, however, with respect to team process criteria. Diversity on values had a significant unique effect on all of the team process variables (i.e., task and relationship conflict, cohesion, and efficacy). In addition, results are consistent across values and team processes. Specifically, the impact of team diversity was such that greater diversity was negatively related with process outcomes. That is, diversity resulted in lower team cohesion, lower team efficacy, and more conflict.

Not surprisingly, relationship conflict appears to be the team process variable most strongly related to value diversity, both in terms of the number of diversity variables and the overall magnitude of effect (i.e., seven of the values were significantly related to relationship conflict and

accounted for approximately one-third of the total variance). In contrast, team cohesion was least affected; it was related to diversity on only two values, accounting for approximately ten percent of the total variance.

Diversity with respect to two values (self-direction and security) emerged as important for all of the team process measures. Upon reflection this finding is not surprising that these two values emerged in tandem in that self-direction and security represent polar opposites in the Schwartz circumplex model of values (see Fig. 1) and thus should negatively covary. More importantly, they reflect the general motivational goals of novelty and mastery versus order and harmony, which has clear implications for team functioning. The impact of differences across team members with respect to these values is thus conceptually, as well as empirically, significant with respect to team interaction processes. Results of the dominance analyses indicate that self-direction had the highest relative impact of all of the values for three of the four processes outcomes. This suggests that much more attention should be focused on the role of this value dimension for team interactions.

Achievement and benevolence also emerged as important for all of the process variables except cohesion. Again it is important to note that these values are polar opposites in the circumplex model and thus should negatively covary. More importantly, they reflect the general motivational goals of personal versus collective advancement. Similarly, both power and hedonism values reflect a highly individualistic orientation (and are proximal to achievement in the circumplex model) and team member differences on these values were significantly related to both task and relationship conflict. So as might be expected the general value dimensions of mastery versus harmony and individual versus collective orientation appear to readily manifest in team member interactions.

Our results highlight several potential areas for future research. For example, our results do not speak of the potential interactive effects of diversity in two or more value types and team processes and performance. For instance, it may be very likely that the impact of diversity with respect to a specific value dimension may depend on the both the mean (e.g., team) level and variability of one or more other dimensions. From a causality approach, it could be examined if team processes, such as relationship conflict or team effectiveness, act as mediators between team diversity and performance.

It is also important to note that the effects of value diversity on team process outcomes emerged in a relatively short-term team task. Team members in the present study did not know each other before their participation in the study and worked together for approximately 75 min. This indicates that values can play a significant role in team processes very early in team development and is an

important finding. This finding is consistent with a recent study, that utilizing data from studies conducted in the last 25 years, indicates that even in newly created teams and conducting tasks of short duration, team processes such as conflict, cohesion or potency, tend to emerge at very early stages of the life of a team (Allen and O'Neill 2010). However, the role of time with respect to the impact of values should be addressed in future research. A number of questions emerge with respect to the role of time. For example, will diversity continue to have an impact as teams development and form a common history and/or identity. In addition, it is possible that diversity pertaining to different specific values may be more or less impactful at different stages of a team history. Finally, what contextual factors or interventions might moderate the impact of value diversity? These are all important avenues for future research.

Finally, it is important to consider that while value diversity impacted team process outcomes, there was no effect on task performance. While this might be a function of the task, here again the role of time should be considered. Specifically, it is possible that the negative effects of value diversity on team processes might result in task performance decrements over the long term functioning of the team. Thus, while these effects did not emerge in our study, they might with teams that interact over longer time frames. Again this is an important avenue for future research.

Implications for Managing Team Diversity

The results of the present study point to several implications for managing team diversity in practice. First and foremost, it is important to recognize that not all aspects of diversity are directly visible. Deep-level diversity with respect to psychological variables such as values play as, if not more, important a role in determining team effectiveness than do surface-level characteristics. Moreover, our results suggest that diversity with respect to basic values may impact team process outcomes very quickly. Specifically, despite the fact that values are not directly observable, we found significant effects of value diversity in novel teams that interacted for a relatively short period of time. Thus, these effects are very likely to compound over time. Finally, when value diversity does impact team process variables, these effects are uniformly consistent with the pessimistic view of diversity—value diversity leads to more conflict, less team efficacy, and lower team cohesion.

The results of the present study suggest that it may be important to actively manage team development even in cases where team member diversity is not readily apparent. From a practical perspective, we suggest facilitators of teambuilding efforts could consider adding to their agendas a session with team members to analyze and discuss the combined value profiles of their team. Utilizing a graphical

representation like the one presented in Fig. 1 could facilitate this type of exercise. This kind of exercise could help team members to assess their potential for conflict, cohesion, and team efficacy based on their value diversity.

Another important practical consideration for managing diversity is that the impact of team member value diversity may manifest very quickly in the team development process. This finding suggests that those seeking to manage the impact of deep-level diversity need to take action sooner rather than later as teams form and develop.

Limitations

As with any laboratory-based study, the results of the present study must be considered in light of some limitations. First, the teams used in the present study were composed of undergraduate students, which may not be directly representative of non-student, organizational teams. The characteristics, skill sets, lifestyles, and priorities of undergraduate students may be different than those of most organizational team members. For example, compared to the variability indices reported by Neuman et al. (1999) from an organizational sample, this student population is less diverse with respect to values than the typical working organizational population. Also, the importance of this laboratory exercise to these students' lives was likely substantially less than the importance that organizational team members attach to the team-tasks in which they are involved. Nonetheless, these limitations likely serve to attenuate the impact of team diversity rather than enhance it. That is, our results may actually underestimate the effects in more variable and more personally relevant organizational contexts. In addition, we used an ad-hoc team task lasting under 2 h. As noted by Hackman and Morris (1975), the problem with such an environment is that each team, "does not have a chance to develop its own history or its unique normative structure" (p. 59). In addition, participants completed only one problem solving/production task. This task was highly interdependent and had one unique, ideal outcome. The findings of the present study may be quite different among teams of longer life spans, pursuing different or multiple tasks, and operating in a much less controlled environment.

Furthermore, this study did not include any contextual variables that may moderate the influence of deep-level diversity attributes on team outcomes. Gladstein (1984) noted that contextual variables such as reward structure or resource availability influence components of team effectiveness. Other factors such as socialization processes, organizational climate, and culture are important elements of a typical organizational context that were not accounted for here. Additional research is certainly warranted along these lines.

Despite these limitations, this is one of the first studies to highlight the unique impact of many unexamined, specific components of team diversity with respect to values on team effectiveness criteria. These results indicate that there is worth in proposing that disparity among teammates in many of these values may have important implications on subsequent team-level phenomena.

Overall, the present findings add to the emerging research suggesting that diversity among team members with respect to deep-level characteristics is related to effectiveness criteria, especially with respect to individual values. The popular view that increased diversity will lead to a direct improvement in the quality of team performance may need to be carefully considered. Diverse team members may perceive and interpret the environment and interactions they engage in differently. Managers need to be prepared to take steps to mitigate these negative consequences. Finally, researchers and practitioners alike must realize that the effects of diversity will be moderated by a number of variables including the type of diversity attribute, the type of task, and the context within which the team operates.

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Appendix

See Table 4.

Table 4 Brief definitions of the 10 value constructs and examples of the PVQ items

Value definitions
POWER: Social status and prestige, control or dominance over people and resources (e.g., <i>He likes to be in charge and tell others what to do. He wants people to do what he says</i>)
ACHIEVEMENT: Personal success through demonstrating competence according to social standards (e.g., <i>Being very successful is important to him. He likes to stand out and to impress other people</i>)
HEDONISM: Pleasure and sensuous gratification for oneself (e.g., <i>He really wants to enjoy life. Having a good time is very important to him</i>)
STIMULATION: Excitement, novelty, and challenge in life (e.g., <i>He looks for adventures and likes to take risks. He wants to have an exciting life</i>)
SELF-DIRECTION: Independent thought and action-choosing, creating, exploring (e.g., <i>He thinks it's important to be interested in things. He is curious and tries to understand everything</i>)
UNIVERSALISM: Understanding, appreciation, tolerance and protection for the welfare of all people and for nature (e.g., <i>He thinks it is important that every person in the world should be treated equally. He wants justice for everybody, even for people he doesn't know</i>)

Table 4 continued

Value definitions
BENEVOLENCE: Preservation and enhancement of the welfare of people with whom one is in frequent personal contact (e.g., <i>He always wants to help the people who are close to him. It's very important to him to care for the people he knows and likes</i>)
TRADITION: Respect, commitment and acceptance of the customs and ideas that traditional culture or religion provide the self (e.g., <i>He thinks it is important to do things the way he learned from his family. He wants to follow their customs and traditions</i>)
CONFORMITY: Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms (e.g., <i>He believes that people should do what they're told. He thinks people should follow rules at all times, even when no one is watching</i>)
SECURITY: Safety, harmony and stability of society, of relationships, and of self (e.g., <i>The safety of his country is very important to him. He wants his country to be safe from its enemies</i>)

Note. The content of this table was adapted from the definitions provided in Schwartz et al. (2001)

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