Transforming Human Resource Management Systems to Cope with Diversity

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Abstract The purpose of this study is to examine how workgroup diversity can be managed through specific strategic human resource management systems. Our review shows that 'affirmative action' and traditional 'diversity management' approaches have failed to simultaneously achieve business and social justice outcomes of diversity. As previous literature has shown, the benefits of diversity cannot be achieved with isolated interventions. To the contrary, a complete organizational culture change is required, in order to promote appreciation of individual differences. The paper contributes to this discussion by exploring the implications of this change for human resource management, and explaining how the systems of practices should be changed when they are directed to diverse groups. The model designed to test this notion includes: (1) demographic and human capital diversity as independent variables, (2) group performance (measured as innovation outcomes) as the dependent variable and, (3) the orientation of the strategic human resource management system as a potential moderator of this relationship. The main conclusion of the empirical analysis developed is that different patterns of human resource management practices can be used, depending on the type of diversity that the organization faces, and the specific effects that it wishes to manage. Concretely, three alternative management systems are identified in this paper, with different moderating effects. This result has interesting implications for human resource management professionals, explained in the last section. The limitations of this study are also discussed, as well as some issues that future research in this field should address.

Abbreviations
SHRM Strategic human resource management
SEM Structural equations modeling

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Introduction

Recent empirical studies have confirmed that diversity is a multifaceted reality, with important competitive and ethical implications (McMahon 2010). As Gilbert et al. (1999) argued increased diversity implies a 'new organizational paradigm', which requires systematic and planned change efforts. In the last two decades, organizations have reacted differently to increasing workforce diversity. The first attempts to respond to this phenomenon followed an 'affirmative action' approach. Affirmative action has been defined as a "program designed to equalize hiring and admission opportunities for historically disadvantaged groups by taking into consideration those very characteristics which have been used to deny equal treatment" (Shaw 1988, p. 763). Although the intent of affirmative action is to ensure equal opportunities, these policies are, in many cases perceived as ineffective and unjust. Several

implementation problems and negative reactions associated to affirmative action have been identified. The majority of them are explained by the negative impact of preferential selection, which is based on irrelevant workplace characteristics (Gilbert et al. 1999; McMillan-Capehart et al. 2009).

Taking the limitations of affirmative action into account, many organizations have changed they way in which they address diversity, following a 'Diversity management' approach (Kelly and Dobbin 1998). Diversity management can be defined as "a voluntary and planned program designed to make differences between employees a source of creativity, complementarity and greater effectiveness" (Stockdale and Crosby 2004, p. 12). Under this new approach, organizations actively seek to take advantage of differences between employees (Ivancevich and Gilbert 2000; Yang and Konrad 2011). Authors as Syed and Kramar (2009) and Noon (2007) have recently criticized this 'business case approach' to managing diversity, arguing that it is detrimental to equality and social justice. The replacement of the social justice rationale by the business rationale has potentially 'fatal flaws which can undermine equality outcomes and might ultimately prove to be dangerous for social justice' (Noon 2007, p. 773). As a consequence of this, to what extent diversity management programs can help the organization to create a sustainable competitive advantage still remains in question (Kamp and Hagendorn-Rasmussen 2004; Bendick et al. 2010).

Considering the above arguments, we can conclude that neither 'affirmative action' nor the traditional 'diversity management' approach has been fully able to simultaneously achieve business and social justice outcomes associated with a diverse workforce. As Syed and Kramar (2009) explained, a relational, multilevel framework of managing diversity is required, focusing on a complete organizational culture change (Gilbert et al. 1999, p. 66).

Diversity management requires a complete reconsideration of strategic human resource management (SHRM), as Roberson and Park (2007) and Cook and Glass (2009) suggested. Commonly accepted definitions of SHRM describe it as a function that involves systematically linking human resource management philosophy and practices to the strategic and social needs of the organization (Wright and McMahan 1992; Jackson and Schuler 1995; Lavelle et al. 2009). SHRM involves designing and implementing a SHRM system, which can be defined as a specific set of internally consistent polices and practices that are directed at attracting, developing and maintaining firm's human capital (Martín et al. 2005a, b; Ferguson and Reio 2009).

As Kochan et al. (2003) explained the extent to which the organization achieves equality and competitive benefits from diversity depends on how it designs its SHRM system. Policies such as compensation, recruitment or motivation

should be substantially changed when they are oriented toward a heterogeneous workforce, as differences between employees normally involve disparities of interests and reactions. Nevertheless, as Benschop (2001) noted, the majority of SHRM models have implicitly assumed workforces to be generic and homogeneous categories, without considering internal differences between employees. Considering these limitations, authors as Kossek and Lobel (2001) and Kochan et al. (2003) have noted the need to incorporate diversity in the SHRM debate. This task has been highlighted as one of the main challenges that future research on SHRM must address (Curtis and Dreachslin 2008).

The purpose of this article is to contribute to this debate exploring how the SHRM function has to change to cope with diversity. In the first part of this article, we will analyze how extant literature in the field of SHRM has treated diversity. Secondly, we will move to the diversity literature, looking for evidences about the effects of diversity and the extent to which they can be managed through a certain set of practices. A diversity-oriented SHRM model will be proposed integrating arguments from both fields of research.

Group Diversity and SHRM: Review of the Literature

Efforts to develop SHRM models orientated toward managing diverse groups are still weak, and presented in too general terms (Kossek and Lobel 1996; Benschop 2001). Broadly speaking, and summarizing our review of previous research, we argue that the way SHRM models have introduced diversity has the following limitations.

1. A universalistic perspective: The majority of the studies reviewed were intended to identify the *best* SHRM practices to make heterogeneous groups perform better (Arvey et al. 1996, 1975, Barber and Daly 1996). These papers provide interesting suggestions about the way to manage diversity, although the recommended practices are analyzed in isolation and therefore fail to explain the role that an SHRM system can play in this context. Therefore, their conclusions must be taken with caution, because of the limitations of the universalistic approach. As Jackson et al. (1989), Brewster (1999), and Marchington and Grugulis (2000) have pointed out, universalistic models simplify reality in terms of direct and linear causal relationships, so complex effects of group diversity are difficult to explore.

2. *Prescriptive orientation* The few models proposed to explain the role of SHRM in diversity management have basically focused on recommending professional

tools rather than on explaining the conditions under which strategies can moderate the effects of diversity (Richard and Johnson 2001).

3. *"Black box" perspective* As a consequence of previous limitations, the effects of diversity have been considered only as simple relationships, without exploring potential mediating and moderating factors that could help to explain this complex reality (Lawrence 1997).

4. Lack of consensus regarding the concept of diversity: Reviewing previous studies, we found that academics normally do not select the same attributes to analyze differences between individuals. Thus, as Richard et al. (2002) indicated, scholars must pay special attention to their definitions of the concept of diversity, because their findings can vary substantially with respect to different individuals' characteristics.

5. Lack of specific SHRM typologies to describe the different combinations of policies and practices through which diversity can be managed. The majority of papers draw on generic strategic patterns, but very few empirical analyses have been proposed to describe particular systems of diversity management practices. Diversity-oriented initiatives are normally analyzed in isolation, without exploring interrelationships and synergies between them.

The Concept of Diversity

Several concepts and measures of diversity have been introduced, focusing on different attributes, or using different indices to assess heterogeneity. As outlined above, this explains the divergence of findings in prior research, making it difficult to compare results. As Jackson et al. (2003a, b) pointed out, the majority of scholars who have empirically analyzed the effects of diversity have focused on certain isolated demographic attributes. From their review of the literature, it emerges that 51% of the empirical studies focused on a single diversity variable, and that only 25% of them analyzed four or more attributes simultaneously. They also observed a clear preference for readily detected and objective variables. In fact, tenure, gender and ethnic diversity represented 38, 23, and 14%, respectively of the empirical studies included in Jackson et al.'s (2003a, b) meta-analysis. Nevertheless, it is also possible to find studies that have assessed other, less visible dimensions of diversity, such as values or cognitive attributes, measuring them through demographic proxies that

are not tested but assumed. These indirect measures have been criticized because, by simplifying reality, they fail to explain internal relationships among different diversity variables (Milliken and Martins 1996; Lawrence 1997; Priem et al. 1999). As Jackson et al. (2003a, b) and Harrison and Klein (2007) noticed, it is necessary to conceptualize diversity in a more complex manner, not only considering independent effects but also exploring more deeply the internal elements and relationships that comprise the diversity construct.

In an attempt to respond to Jackson et al. (2003a, b) call for a multidimensional approach to defining diversity, we propose a concept that differentiates between two dimensions that are closely interrelated: *demographic diversity* and *human capital diversity* (Fig. 1). Underlying this distinction is the assumption that demographic differences influence group work not by themselves but through other less visible variables that directly add value to group activity, such as "knowledge, skills and other forms of know-how" (Cornelius 2002, p. 119). In this context, we consider that demographic diversity influences group dynamics because it determines a heterogeneous composition of a group's human capital. Human capital measures the added value embedded in group members, so it can be considered the main input of group processes (Lin 2001). As we can observe, this definition of diversity is consistent with the SHRM model proposed, and it allows differentiation between two kinds of heterogeneity from which we can expect different consequences for group dynamics.

Specifically, the attributes that describe the demographic composition of workgroups can be classified according to the literature into two categories (Lawrence 1997; Hope-Pelled et al. 1999): (1) immutable characteristics such as age, gender and nationality and, (2) a certain set of variables that describe individuals' backgrounds, such as university degrees, training, tenure and functional experiences (Wiersema and Bird 1993).

On the other hand, to introduce human capital diversity, we have expanded its traditional definition as a set of knowledge, skills and abilities (Schultz 1961; Becker 1964; Kilker 1966). For this purpose, we have considered two other attributes that also add value to group dynamics and that have been specially highlighted by diversity research: *values* and *individuals' cognitive approaches* (Daniels et al. 1994; Gelfand et al. 1996). These concepts refer to those "other forms of know-how" introduced by Lin (2001). Following Lawrence (1997) and Harrison et al. (1998), we consider that human capital diversity is directly determined by demographic differences, so a causal relationship between both concepts has been included in the model, as Fig. 1 shows.
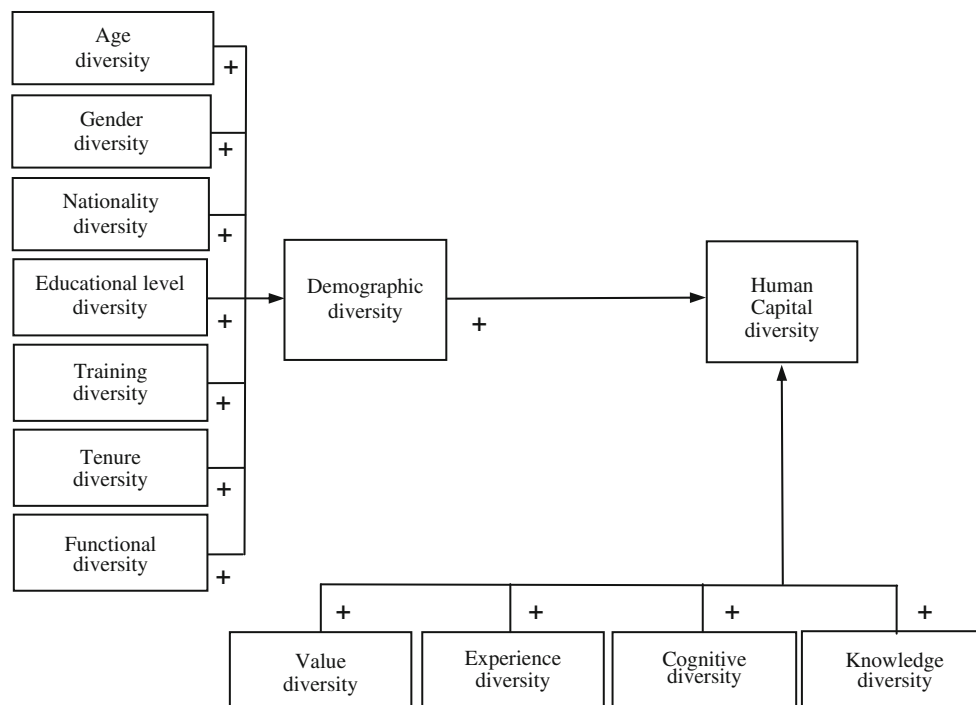
Fig. 1 Multidimensional concept of diversity

The Effects of Diversity on Group Dynamics

As suggested previously, a major assumption of our model is that demographic diversity influences group dynamics by determining a heterogeneous human capital pool (Gelfand et al. 1996; Appelbaum et al. 1999). To understand the effects of diversity, it is first necessary to consider certain mediating processes through which heterogeneity influences group performance. The necessity to include these intervening variables has been empirically demonstrated, through formal tests for mediation that explored whether group dynamics intervene in the relationship between diversity and performance. Studies such as those proposed by Shaw (1981), Elron (1997), and Chatman and Flynn (2001) found support for this hypothesis, concluding that diversity affects group outcomes through certain processes. Reviewing the literature, we found several potential mediators of the effects of diversity. To include these in the empirical model, it was necessary to classify and order them. To do so, and drawing on Milliken and Martins (1996) and Benschop (2001), we distinguished between the two following categories.

1. *Cognitive effects* Several studies have stressed that diversity affects the way in which groups perceive stimuli, process information and adopt decisions. Underlying this argument is the assumption that diverse demographic characteristics lead to different cognitive characteristics (Olson et al. 2007). These different mental models influence the decisions groups

make and how individuals interact in groups (Phillips et al. 2006). Following Klimoski and Mohammed (1994) and Prahalad and Bettis (1986), it is also possible to speak of a "group mental model" as a shared cognition that emerges from the interaction of individuals. Diversity defines work groups characterized by the confluence of different cognitive approaches, and this has consequences for basic group processes. In this context, Cox (1993) and Rosenzweig (1998) suggested that heterogeneity can lead to positive synergies in idea generation and the perception of opportunities, because of the broader basis of the shared mental model. Positive consequences have also been posited about the meaning of decision-making processes, basically in terms of creativity and innovation (Rosenzweig 1998; Shaw and Barrett-Power 1998; Dunphy 2004; Bassett-Jones 2005). Nevertheless, negative cognitive effects have also been found because of the difficulty in achieving consensus, conflict resolution, decision making or because of the generation of too many alternative solutions (Jehn 1995; Milliken and Martins 1996; Knight et al. 1999).

Hypothesis 1 Cognitive processes mediate the relationship between diversity and group performance.

2. *Affective effects* In addition to cognitive effects, scholars have argued that diversity is also likely to have affective consequences on *group cohesion*,

satisfaction and *commitment* (McKay et al. 2009; Bendick et al. 2010). Affective effects of diversity have been supported mainly by the social identity and social categorization theories (Taylor et al. 1978; Turner 1987; Jackson et al. 1995; Williams and O'Reilly 1997). Byrne's (1971) similarity attraction paradigm has also contributed to this debate with interesting propositions regarding inter-individual perceptions. The basic assumption that underlies these approaches is that individuals' feelings of identification depend on their perceptions of similarity (Chrobot-Mason 2004; Dalton and Chrobot-Mason 2007). In this context, and following Pugh et al. (2008), one can argue that heterogeneous groups are less likely to be cohesive than homogeneous ones. In fact, perceived differences lead group members to infer that their colleagues do not share their values and attitudes. If we consider that diversity has also been associated with problems of stereotyping and prejudice (Jackson et al. 1995; Mayo et al. 1996), it could be expected that diverse groups will find it more difficult to create a positive climate. Problems of lack of satisfaction and commitment will easily appear (Tsui et al. 1992; Rosenzweig 1998), and interpersonal conflict will become more important than task conflict (Janssen and Veenstra 1999). Nevertheless, some studies have concluded that these effects were not significant, and that it was even possible to find positive consequences (Harrison et al. 1998; Jehn et al. 1999). To explain those results, Watson et al. (1993) and Benschop (2001) argued that it is necessary to consider other influences, such as human resource management or leadership, which can moderate the affective effects of diversity, fostering cohesion, commitment and satisfaction in high diversity contexts.

Hypothesis 2 Affective processes mediate the relationship between diversity and group performance.

Common to the different perspectives from which diversity has been studied is an appreciation that heterogeneity can have both negative and positive consequences for groups. Due to these opposite consequences, it is difficult to predict the effect of diversity on group performance without considering potential moderators. In this context, the analysis of the literature on cognitive and affective consequences of diversity leads to the conclusion that the effects of diversity will depend on a firm's ability to reinforce workforce integration, group cohesion and commitment, and to foster open decision-making processes, consensus seeking mechanisms, and internal communication through formal and informal social interaction (Benschop 2001; Pless and Maak 2004).

The Moderating Role of Strategic Human Resource Management

Drawing on the literature reviewed in the previous section, we can conclude that the extent to which consequences of diversity are positive or negative will depend on how SHRM practices are articulated and integrated in a diversity-oriented system. The orientation of this system determines group composition and orientates group dynamics, intervening in the relationship between heterogeneity and group outcomes. In this context, and drawing principally on the propositions of Benschop (2001), Sánchez and Medkik (2004) and Shen et al. (2009), we consider in our model the orientation of the SHRM system as a construct that moderates the effects of demographic and human capital diversity on group performance.

Through the interrelated set of practices that build the SHRM system organizations manage their human capital. As literature has explained, this system must be linked to the firm's business strategy, and both influences and is influenced by the organizational and environmental context (Delery and Doty 1996). Following the patterns proposed by Tichy et al. (1982), Devanna et al. (1981), Miles and Snow (1984), Walton (1985), Schuler and Jackson (1987a, b), and Wright et al. (2001), it is considered in the proposed model that the SHRM system can be divided into the following functional areas: *staffing, job design and planning, training and development, performance appraisal* and *compensation*.

Various attempts have been made to develop typologies to categorize different orientations of the SHRM system. Some studies assessed how generic strategic typologies lead to certain patterns of human resource management practices (Tichy et al. 1982; Fombrun et al. 1984; Miles and Snow 1984). Other studies have proposed specific human resource management configurations (Walton 1985; Wright and Snell 1991; Arthur 1994; Peck 1994; Lepak and Snell 1999; Bamberger and Meshoulam 2000). However, moving to the diversity literature, we find fewer typological analyses. In fact, as we have concluded from our review of the literature, one of the main limitations of diversity management research was the lack of typologies that could help us to understand different diversity management alternatives. For this reason, following Richard and Johnson's (2001) call for research, this paper proposes an empirical exploratory analysis, based on a generic HRM typology. Considering this objective, we have opted to use a broad and comprehensive typology. Concretely, we will draw on the classical distinction between *control* and *commitment* approaches to HRM (Walton and Lawrence 1985; Bamberger and Meshoulam 2000). These two alternatives represent the extremes of a continuum between which each possible

SHRM system can be located. Drawing on the data obtained from our sample, we will empirically extract human resource management patterns and analyze to what extent they tend to the *control* or *commitment* extreme.

Control HRM strategies have their origins in traditional personnel practices, focusing mainly on specialization and a precise definition of tasks (Walton 1985). Compensation in these HRM systems is normally based on the assessment of individual performance, and relationships with employees almost exclusively on conflict resolution (Arthur 1994). Furthermore, employee participation in management decisions is restricted to union activity through collective bargaining (Kerklaan 2011). *Commitment* strategies represent the other side of the continuum. Organizations characterized by this approach to managing human resources define jobs in a broader way, emphasizing more coordination and objective alignment than control procedures. Hierarchical barriers are reduced, and compensation reflects a not so objective performance appraisal. Processes are focused on work groups and the participation of employees in organizational objectives is fostered (Johnson et al. 2002). Training is much more extensive, and offered to a broader set of workers and the relationships with trade unions are based not only on conflict (Kerklaan 2011).

Walton and Lawrence (1985) presents *commitment* strategies as the last step in the evolution of the relationship between employer and employee in organizations. But, as outlined above, more than closed types, *control* and *commitment* strategies represent a continuum with infinite intermediate possibilities. As Jan et al. (2009) posited, the movement from *control* to *commitment* entails an important shift in the underpinning philosophy of SHRM, and a clear preference for human and social capital development over efficiency and cost reduction.

Considering what previous literature has explained about the effects of diversity, we can conclude that *commitment* SHRM strategies are more effective in managing workforce heterogeneity. From a cognitive point of view, a *commitment* approach makes it easier for the organization to build "shared mental models", because of their emphasis on social interaction processes and their orientation to employee participation (Prahalad and Bettis 1986; Klimoski and Mohammed 1994). Groups managed under this approach also benefit from the different ways of perceiving stimuli, interpreting information and making decisions that are embedded in heterogeneous groups. On the other hand, by focusing their relationship with employees on the mutuality of interests, *commitment* strategies reinforce positive affective reactions to diversity. In addition, as policies like assessment, compensation and socialization are orientated toward groups rather than individuals, *commitment* is also related to higher group
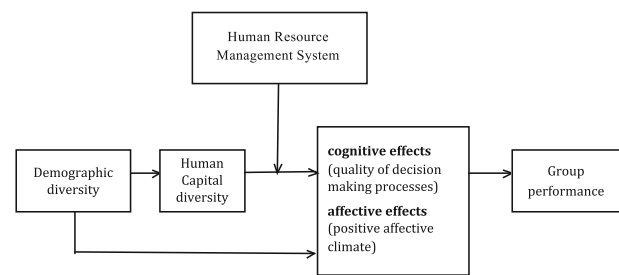

Fig. 2 Theoretical model

cohesion and workforce integration. As research on diversity has pointed out, these are prerequisites for groups to effectively accommodate heterogeneity (Benschop 2001).

Hypothesis 3 Commitment oriented Human Resource Management Systems positively moderate the effects of diversity on group performance.

As it was explained before, this hypothesis will be verified through an exploratory procedure. The lack of specific diversity-oriented configurations made us draw on a generic typology. Therefore, the first step of the empirical analysis will be to identify the different SHRM orientations present in the sample, and analyze to what extent they fit the theoretical typologies that have been just described. In a second stage of the analysis, these empirically defined orientations will be used to explore how SHRM moderates the effects of diversity on group performance (Fig. 2).

Methodology

To test the set of relationships identified, this paper proposes a quantitative analysis using data from a sample of groups. Because of the complexity of the effects of diversity, many authors in this field have preferred to use qualitative techniques, generally through case studies (Totta and Burke 1995; Iles and Hayers 1997; Gilbert and Ivanicevich 2000; Jones et al. 2000; Kochan et al. 2003; Kwak 2003). Nevertheless, the application of advanced statistical methods, such as structural equation modeling (SEM), allows testing of complex sets of causal relationships, including mediating and moderating effects (Diamantopoulos and Siguaw 2000) and accounting for the effect of nonobservable constructs (Chin 1998).

Unit of Analysis and Sample

The empirical analysis in this paper is proposed at the group level. Considering the research object of this article, the selection of this unit of analysis is almost compulsory, since diversity has been defined as a group characteristic.

Results can differ substantially depending on the kind of group selected in each case. Top management teams have attracted the attention of a group of scholars (Wagner et al. 1984; Wiersema and Bantel 1992; Smith et al. 1994; Knight et al. 1999; Bunderson and Sutcliffe 2002; Campbell and Minguez-Vera 2008; Francoeur et al. 2008). However, research has also reached relevant conclusions analyzing other kind of groups, such as operations units (Tsui et al.1992) and research and development groups (Ancona and Caldwell 1992; Hope-Pelled et al. 1999; Jassawalla and Sashittal 1999; Keller 2001; Reagans and Zuckerman 2001). Following the latter references, we decided to focus the empirical analysis on a single kind of group devoted to new product development activities

To avoid biases because of the influence of contextual variables, we opted to focus only on big firms (with more than 250 employees) in the Spanish chemical industry. Data show that this sector has experienced an interesting growth in sales in the last 15 years and that much of this evolution is explained by its ability to introduce new products (Díaz Fernández 2003). Therefore, we can expect that sampling in this sector could provide us sufficient variance in innovation variables to explain causal relationships. SABE (a database of Spanish firms) shows that there are 238 chemical organizations with more than 250 employees in Spain. As the total population was small, we did not perform any random sampling procedure, following Thietart and Ed (2001) advice. Therefore, all of the firms were contacted, and sample representativeness was controlled for afterward.

Two different questionnaires were sent to each of the 238 firms. The first one was to be completed by group managers. It included information about their own demographic and human capital attributes, as well as about group processes and outcomes. In the second questionnaire (a reduced version of the previous one), the remaining members of the group responded only to a set of items regarding their own demographic and human capital profiles. The reason for using two different questionnaires was that, as we found, to obtain diversity measures it was necessary to draw on individual information. These individual measures were used to build group heterogeneity indicators, using *Blau's index* or *Coefficients of variation*.

After a long period of telephone follow-up of the responses, 351 valid questionnaires were received. 81 of them corresponded to group managers, while 270 responded to the shorter version directed to the rest of members of the groups. As a consequence of this, our final sample was comprised of 81 different groups (34.03% of the initial sample). An ANOVA analysis verified that the sample was representative of the entire population and that it was proportionally distributed in terms of size, sales and revenues. The nature of the analysis proposed, in which at least four responses were necessary to validate a case, explains the reduced final sample, which is similar to those obtained in a similar empirical analyses of the effects of diversity at the group level (i.e., Smith et al. 1994; West and Schenk1996; Hope-Pelled et al. 1999; Knight et al. 1999; Bunderson and Sutcliffe 2002).

Measures

To design both questionnaires, we followed the recommendations of Drucker et al. (2001), Fowler (2002), and Johnson and Harris (2002). These authors provided interesting arguments about how items and scales should be created in order to maximize the validity and reliability of measures. A demographic profile of each member of the group was measured directly using continuous, categorical or ordinal variables, depending on the nature of each of the attributes analyzed (Harrison et al. 1998; Ancona and Caldwell 1992; Chuang et al. 2004). To measure human capital diversity, we had to gather information about individuals' knowledge and experiences, as well as about their cognitive characteristics and their individual values. The first two were measured through Likert scales in which group members were asked to evaluate their own level of knowledge and experience in a certain set of areas of chemical R&D (Mason and Wagner 1994; Walsh and Lodorfos 2002). To measure cognitive abilities of group members, we used the Cognitive Style Inventory (Van den Broeck et al. 2003), which is a validated set of Likert scale items that assesses individual approaches to perceiving and interpreting information. To complete our human capital diversity construct, it was also necessary to measure values. For this purpose, Schwartz's scale was selected (Schwartz 1999; Glazer et al. 2004). The literature on work cultures offers alternative tools to assess individual values, such as the Big Five Model (Digman 1990) or Adler's (1991) Cultural Dimensions, but for the purpose of this study, we preferred to use Schwartz's Scale, as it has been previously applied and validated to measure cultural heterogeneity (Gelfand et al. 1996).

All these measures helped us to identify individual demographic and human capital profiles. To measure diversity in the above-mentioned attributes at the group level, we had to use heterogeneity indicators. Two different approaches were used, depending on the nature of the variables available in each case. For nominal and categorical variables, diversity was measured through Blau's index (Blau 1977; Smith et al. 1994), while coefficient of variation was used with continuous and Likert scale variables (Harrison et al. 1998; Chatman and Flynn 2001).

The two mediating constructs (cognitive and affective processes) were measured through both sets of indicators, based on scales developed in previous studies. Specifically,

to assess cognitive effects, we introduced a group of items designed to obtain information about a group's ability to perceive and interpret information, formulate problems, generate alternative solutions, make decisions and reach consensus (Ancona and Caldwell 1992; Watson et al. 1993; Janssen and Veenstra 1999). To measure affective processes, a second set of Likert scale items was included, with the objective of measuring cohesion, relational conflict and cooperation between the members of the group (DiTomaso et al. 1996; Hope-Pelled et al. 1999; Chatman and Flynn 2001). Nevertheless, to simplify the analysis of the moderating effect of SHRM, the variables used to describe cognitive and affective effects were summarized into two latent variables, using SEM: (1) quality of decision-making processes and (2) positive affective climate.

To explore the role of SHRM, we also needed information about the orientation of human resource management policies and practices. In this case, we opted to use Schuler and Jackson (1987a) menu of practices. Using this scale, we could gather information about how firms designed group tasks, and about how they managed staffing, performance assessment, compensation and training and development.

Finally, to assess performance, we preferred not to use organization-level indicators such as economic or financial profitability. Following Rogers and Wright's (1998) suggestion we selected group performance indicators, directly linked to group's activity. As all the groups in our sample were devoted to new product development, performance was analyzed through innovation outcomes at the group level. To be precise, eight items specifically designed to

measure innovation in the chemical industry were introduced, drawing on previous literature in this field (Holmes et al. 1993a, b; Arora 1997; Werner and Souder 1997). Drawing on Werner and Souder (1997) recommendations, we combined objective and subjective items, measuring not only *quantity* of innovation, but also *incrementality*, and the *quality* of innovation processes. The resulting construct allowed us to assess collective innovation outcomes, and isolate the effects that workgroup diversity has on this measure of performance (Hutcheson et al. 1996).

The reliability of the measures selected was assessed using the criteria described by Barclay et al. (1995). Following these authors, we assume that the set of indicators measuring each latent construct must meet two conditions: namely, *convergent* and *discriminant* validity. *Convergent* validity evaluates the internal consistency of the indicators as related to a latent construct. To measure it, we employ the composite reliability index (ρ_c), as developed by Werts et al. (1974). On the other hand, *discriminant* validity assesses the extent to which the indicators associated with a construct are significantly different from the others when measuring a singular reality. Following Fornell and Larcker (1981), we assess discriminant validity using the average variance extracted index (AVE), which measures the amount of variance captured by the construct in relation to the amount of variance from measurement error. The ρ_c and AVE values obtained are shown in Figs. 3 and 4. The estimation of the measurement model confirmed the reliability of the constructs designed to measure diversity, cognitive and affective processes, performance, and SHRM orientations.

Fig. 3 Moderating effect of SHRM patterns on cognitive effects of diversity
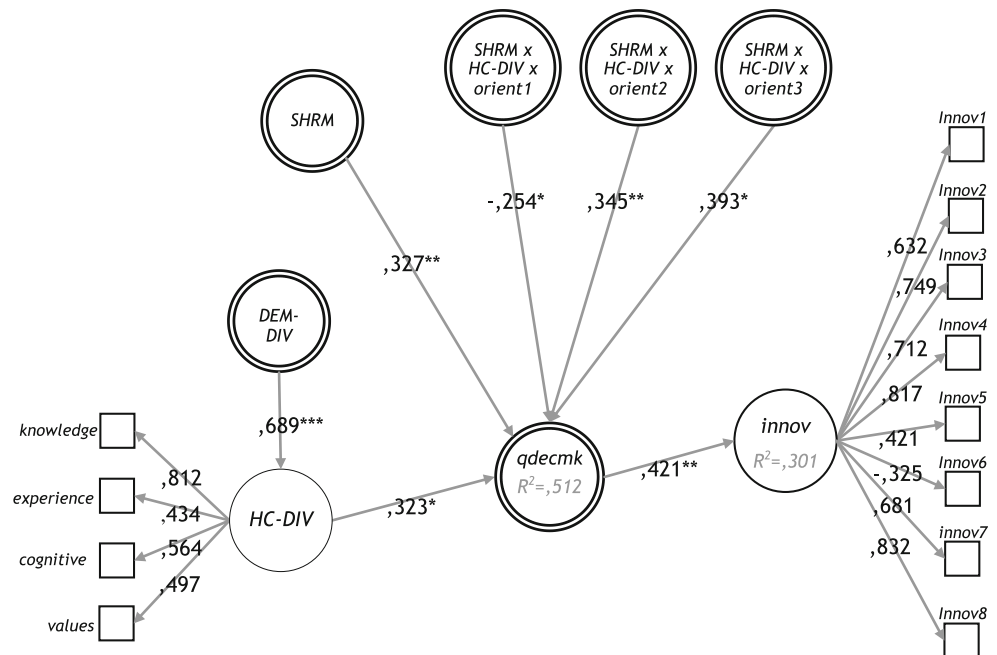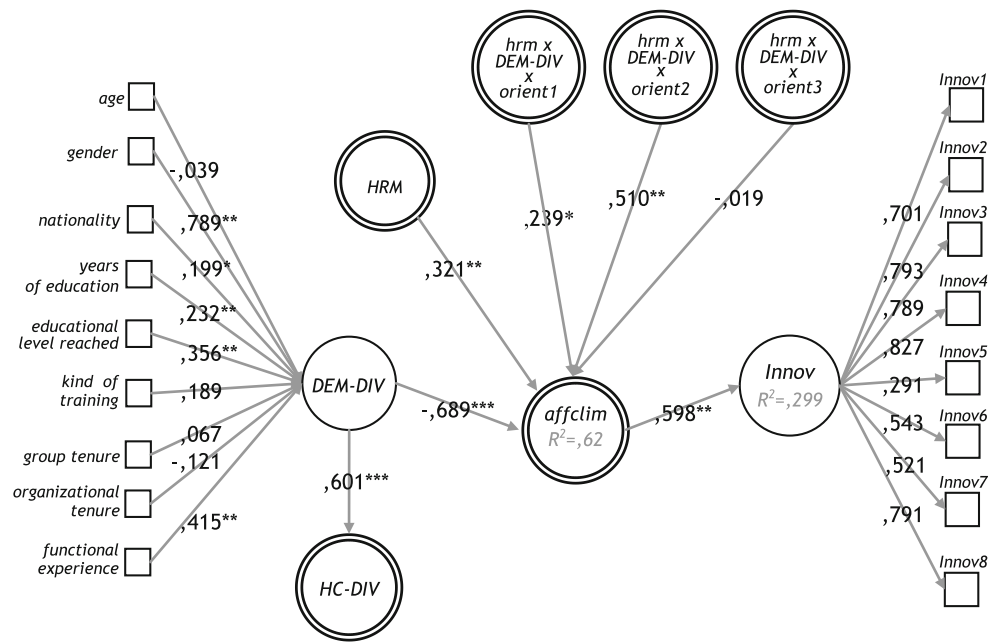
Fig. 4 Moderating effect of SHRM patterns on affective effects of diversity

Method of Analysis

As mentioned above, to test the proposed model, we used SEM, which has been considered a "second generation of multivariate analysis" (Fornell 1987, p. 408). Compared with other statistical techniques, such as regression, principal component and variance analysis, SEM offers interesting advantages under certain research conditions. It is particularly useful for testing complex models, and when scholars need to incorporate underlying variables that cannot be directly measured (Chin 1998).

Due to the reduced size of our sample, we opted to use SEM based on *partial least squares* (PLS) methodology, which is an alternative to covariance-based procedures, specifically designed to work with small datasets. It was introduced by Wold (1980) and subsequently developed by Hui (1982) and Lohmöller (1989). PLS constructs the latent variables from their respective indicators, determining in each case the set of weights that maximize the variance explained. From these, it extracts composite scores for the different nonobservable variables that are finally used to estimate causal relationships (Chin 1995). To do so, PLS does not use a *maximum likelihood* procedure but an iterative *least squares* method. Therefore, it does not require data to be normally distributed (Haenlein and Kaplan 2004). Moreover, PLS does not need to manage the entire covariance matrix, which can be especially large when the model has many variables. In fact, it simply estimates partial causal links between related constructs, and that is the reason it is able to provide reliable parameters from a small number of cases (Barclay et al. 1995; Chin and Newsted 1999).

Results

Defining the SHRM Construct

As was explained above, to measure SHRM, we used Schuler and Jackson's (1987a) menu of practices. Reliability of these measures was confirmed by performing a Cronbach's α analysis. Nevertheless, this scale had too many items to be included in the SEM model, so it had been reduced. In this case, we had no theoretical rationale to explain how the different indicators should be grouped, so we performed a factorial analysis with Varimax rotation (using SPSS 11.0). This technique provided information about the underlying structure of the SHRM system and confirmed that it is a multidimensional construct. As Table 1 shows that this construct can be described generally through three alternative dimensions, which explain 73.2% of the variance.

Component 1   This contains group indicators that describe the extent to which the SHRM system is oriented to individuals or groups. Therefore, it was labeled *group orientation*.

Component 2   This was formed by a set of items that measure flexibility of the SHRM system. This component gives information about the extent to which the group makes their own decisions or if, on the other hand, they are directly managed from outside the unit (*flexibility*).

Component 3   This is formed by only two items, but they describe a singular dimension of the SHRM system: the extent to which human resource managers prefer to use

Table 1 Factorial analysis of HR practices (rotated matrix)

Items	Component		
	1 Group orientation	2 System flexibility	3 Market orientation
HR Planning—fosters interactions between employees	**.952**	.061	−.136
HR Planning—the group does not avoid confrontation of perspectives	**.939**	.102	−.084
HR Planning—open channels to express points of view	**.932**	−.013	−.093
HR Planning—a member receives and distributes the information	**.918**	.121	.022
HR Planning—no pressures for decision making	**.912**	.032	−.145
Training—focus on diversity	**.911**	.197	.034
HR Planning—collective tasks	**.909**	.038	−.153
HR Planning—there are periodical meetings with all members of the group	**.908**	.131	.034
Training—focus on interdependence	**.907**	.170	.023
Compensation—group oriented	**.905**	.100	−.056
Training—participation	**.901**	.182	−.085
HR Planning—informal, mutual coordination	**.899**	.034	−.132
HR Planning—use of information systems to communicate within the group	**.894**	.052	.146
Training—group oriented	**.889**	.121	−.034
HR Planning——mutuality of interests	**.881**	.048	−.189
HR Planning—Employee involvement	**.871**	.302	−.185
HR Planning—long range	**.812**	.187	.043
Performance appraisal—employee participation	**.813**	.232	−.167
Performance appraisal—group oriented	**.777**	.345	−.232
Training—emphasis on work climate improvement	**.699**	.165	−.324
Training—planned and systematic	**.658**	−.165	−.168
Compensation—objective criteria	**.632**	.543	−.023
Training—long range	**.610**	.321	−.127
Training—offered to a reduced group	**−.523**	.040	.318
Staffing—emphasis on socialization	**−.501**	−.033	−.106
HR Planning—tasks are not strictly delimitated	−.161	**.919**	−.066
HR Planning—flexibility	−.191	**.912**	−.064
Compensation—long range incentives	.222	**.911**	−.062
Staffing—open, flexible	.054	**.909**	.127
Compensation—flexibility	.132	**.904**	−.027
Compensation—extras	.203	**.894**	.064
Staffing—employees mobility	.121	**.893**	.194
Staffing—dual careers	.122	**.890**	.127
Staffing—Work/family balance	.103	**.887**	.156
Compensation—security	.304	**.818**	−.056
Compensation—high base pay	.034	**−.701**	.297
Staffing—implicit criteria	.182	**.587**	−.223
Staffing—multiple promotion possibilities	.381	−.323	**−.613**
Staffing—preference for external recruitment	.272	.334	**.608**
Performance appraisal—oriented to improve performance	−.149	−.058	−.154
Performance appraisal—results oriented	−.222	.171	.123

The possibility to use Factorial Analysis was confirmed through KMO index (0.751) and Bartlett Sphericity test (p value < 0.000)

Extraction method: principal components

Rotation method: Varimax normalization (Kaiser)
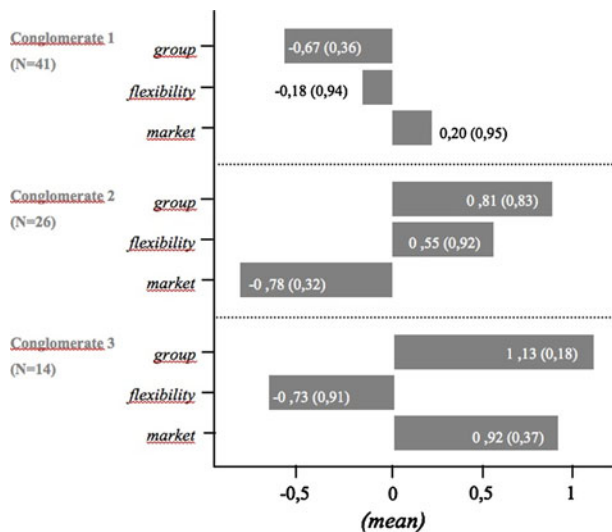
Rotation converged in 6 iterations

Fig. 5 Comparison of SHRM patterns: mean (standard deviation)

internal or external recruitment to cover job positions within the group. This third component described the traditional *make* or *buy* decision, so it was labeled *market orientation* of the system.

Extraction of SHRM Systems

As indicated above, the elements that build the SHRM system (group, flexibility and market orientation) can be combined in different ways, describing alternative strategic orientations. To identify these configurations, we grouped the firms according to the relative importance that they place on group, flexibility and market dimensions. This was performed using a hierarchical cluster analysis (Ketchen and Shook 1996), which is a post-hoc classification technique, so conglomerates are not previously known nor conceptually defined. As Gordon (1999) indicated, conglomerates are formed according to the data and must be subsequently interpreted by the researcher. The cluster analysis identified three groups of firms. As can be observed in Fig. 5, each group represents an alternative pattern of SHRM practices, characterized by a concrete combination of group, flexibility and market dimensions.

The first pattern, which groups 41 of the 81 firms of our sample, represents an SHRM orientation characterized by: (1) individual work systems, (2) a certain degree of rigidity, and (3) a stronger emphasis on buying human capital rather than on building it internally. As further analysis showed, these firms used performance assessment practices to control results and improve performance, through processes that are normally organized and managed from the human resource management department, without the participation of group members. Training and planning policies, on the other hand, do not emphasize employee

involvement or integration. Tasks are strictly defined and controlled using formal procedures, and individuals have very limited capability to manage their own work. Therefore, we could say that this orientation represents the most traditional approach to SHRM (Chang and Huang 2005; D'Art and Turner 2006). Groups are perceived as an element to be managed, not as a strategic factor that could be developed. This fact could explain SHRM centralization, as well as the firms' preference for recruiting potential employees externally. Considering the above comments and combining the terminologies previously used by Walton and Lawrence (1985), Gunnigle (1992), and Von Glinow et al. (2002), we labeled this pattern the "individualistic-control orientation".

On the other hand, the second of the clusters shows the opposite orientation. Despite the lower number of firms grouped in this conglomerate, their SHRM strategic orientation seems more clearly defined. As can be observed in Fig. 5, compared with the first cluster, values for the three dimensions are more divergent from sample means. It can be seen that firms in this group are characterized by a much more collectivistic approach, which influences their planning, training, and compensation policies. Therefore, interaction between employees is fostered, as well as their participation in group dynamics. Similarly, these organizations emphasize establishment of mutual interests, and to do so, they use group criteria in performance assessment and compensation decisions. To define the market dimension, data show a second distinctive characteristic. Figure 5 shows how these firms prefer to build competences internally instead of buying them in labor markets. This evidence seems to indicate that firms in the second cluster recognize the importance of idiosyncratic human capital (Rodríguez Pérez and Ordóñez de Pablos 2002). To establish these collective systems, they use open and flexible SHRM practices that allow groups to manage themselves. Human resource management decisions are not uniformly adopted for the whole group. In fact, many of these decisions are made in consideration of individual requirements, something that, as Heneman et al. (1996) argued, is necessary to include different individuals within the same group. Trying to highlight both its collectivistic orientation and its emphasis on human capital accumulation, we labeled this second cluster as the "group development" pattern, drawing on Peck's (1994) concept of *building* strategies.

Conceptual interpretation of the third cluster is not so easy, because it does not represent such an extreme orientation. In fact, we could say that it is an intermediate approach between the two previous patterns. As can be observed, firms in this conglomerate place a strong emphasis on group issues. As cluster 2, they also try to foster interactivity and participation, but they differ
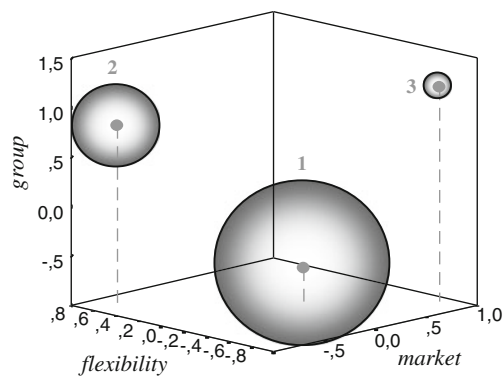
- **Conglomerate 1:** *Individualistic control orientation* (-0,18; -0,67; 0,20)
- **Conglomerate 2:** *Group development orientation* (0,55; 0,81; -0,78)
- **Conglomerate 3:** *Group management orientation* (-0,73; 1,13; 0,92)

Fig. 6 Results of cluster analysis of SHRM patterns

substantially in the procedures that they use to do so. If firms with a group development approach prefer flexible SHRM systems and self-managed groups, organizations within this third conglomerate manage groups through formal policies, strictly defining work systems and controlling them through rigid mechanisms. Groups are therefore perceived as a strategic factor but are not empowered. On the contrary, they are managed in a much more paternalistic way, so we labeled this approach the "group management" SHRM pattern. Considering the reduced number of firms grouped in this cluster, we could say that this approach represents a minority orientation in our sample or even a particular case of conglomerate 2. Nevertheless, analyzing the hierarchical classification process described in the dendrogram, we can observe that the "group management orientation" represents a single management pattern, which is separated from the two previous clusters in an early stage of the clustering process. As the three SHRM patterns found have been defined on the basis of three orthogonal variables, they can be represented in a three-dimensional graphic, as Fig. 6 shows. This representation helps us to understand and compare their positions in the geometrical space in which clusters have been defined (x: flexibility, y: group, z: market). Sphere diameters are proportional to the size of each of the clusters.

The Moderating Effect of HRMS

Considering the differences between the three management orientations identified, we suspected that they would have different effects on the internal dynamics of diverse groups. According to the arguments in previous literature, we could expect that the "group development" approach would be the best SHRM pattern to take advantage of heterogeneity

(and minimize its potential problems). Nevertheless, the effects of diversity are too complex to be explained in such a simple manner. A deeper analysis is required to differentiate between the effects of demographic and human capital diversity as well as the consequences that both have on cognitive, affective and communication processes. With this objective, a set of structural models was estimated. It was necessary to analyze how the SHRM system moderates the effects of diversity, distinguishing between firms with "individualistic control", "group development" and "group management" orientations. To do so, a new construct (SHRM) was defined, using the three dimensions of the system as observable indicators (group, flexibility and market). Because we wished to explore how the moderating role of this construct varied when the firm followed a concrete orientation, we built three new variables to capture these differences, using a two-step procedure.

To analyze how the system moderates the effects of demographic and human capital diversity, we created interaction terms (SHRM*DEM-DIV and SHRM *HC-DIV).

To analyze how this moderating effect varies when firms follow a concrete SHRM orientation, three dummy variables (Searle and Udell 1970; Craig and Henry 1975) were created, with the following values.

orient1: 1 - if the firm follows an "individualistic control" pattern
0 - any other case
orient2: 1 - if the firm follows a "group development" pattern
0 - any other case
orient3: 1 - if the firm follows a "group management" pattern
0 - any other case

By multiplying these variables with the interaction terms, it is possible to isolate the moderating effect of each of the SHRM configurations. For example, the coefficient estimated for the term SHRM*DEM-DIV*orient2 would describe how SHRM systems oriented to group development influence the consequences of demographic diversity. As PLS algorithms are not affected by multicollinearity, it was possible to include simultaneously the three dummy variables in the models, so their effects could be analyzed together and compared (Cassel et al. 2000).

Causal relationships in the first model confirm that when groups are managed with an "individualistic-control" approach, the cognitive benefits of diversity on decision-making processes are lower ($\beta = -0.254*$). In contrast, this coefficient is positive in the other two management patterns, which, as was observed before, are characterized by a collectivistic orientation. This result seems to indicate that, to strengthen diverse groups' capability to perceive

and interpret information and make high-quality decisions, the SHRM system needs to emphasize employee interaction and participation. When the dummy variables *orient2* and *orient3* are introduced, coefficients for their respective interaction terms are similar ($\beta = 0.345$** and $\beta = 0.393$*). Two main conclusions can be extracted from this result: (1) to manage the cognitive dynamics of human capital diversity, the SHRM system must focus on collective issues, and (2) this group-oriented system can be implemented both through flexible structures (empowering groups and giving them higher autonomy) and through rigid mechanisms (controlling group functioning).

Figure 4 shows the structural model that was estimated to analyze how the SHRM configurations moderated the affective effects of diversity. Data confirmed that when firms applied a "group development" system to their R&D groups, they were most able to reduce the negative consequences of demographic diversity on interpersonal relationships. As we said before, this pattern is characterized not only by their focus on building collective competences but also by their strong emphasis on system flexibility. Considering that the remaining approaches do not show a significant moderating effect, we can conclude that affective reactions to demographic diversity can only be mitigated through flexible management and control structures. As previous literature has explained, social identification and subgroup formation would only disappear if the SHRM system is able to make employees "recategorize" themselves (Harrison et al. 1998; Clark et al. 2000; Richard and Shelor 2002; Cunningham 2007). To do so, it is necessary to motivate them to identify with the group as a whole and not with demographic subgroups. Nevertheless, as Chatman and Flynn (2001) argued, these processes cannot be imposed, because recategorization processes depend on informal interactions between employees. As has been pointed out before, this fact could explain the results obtained for the "group management" pattern. To moderate affective dynamics in diverse units, not every group-oriented system is useful. It is necessary to promote inclusion, participation and mutual interests, but through informal procedures that foster interpersonal contact between employees.

Analyzing the statistics that PLS analysis uses to evaluate structural models (R^2 and Q^2), we concluded that by analyzing the joint effect of practices (SHRM systems), it is possible to explain relevant moderating effects. This fact would confirm that there are synergic relationships between practices that it is necessary to introduce in models, as the configurational literature has suggested (Delery and Doty 1996). In fact, isolated SHRM decisions seem to have a very limited ability to manage the effects of diversity. To promote cognitive benefits or minimize potential affective conflicts, it is necessary to change the orientation of the whole SHRM system toward certain objectives, depending on the type of diversity that the organization wants to manage and the concrete effects that it causes.

Conclusions and Implications

The empirical analysis developed in this paper shows that, to take advantage of group diversity a complete reconsideration of SHRM is needed, as Gilbert et al. (1999) or Syed and Kramar (2009) suggested. To benefit from cognitive, affective and communicational effects of diversity, organizations need to promote inclusiveness, collectivism, and appreciation of individual differences. The results obtained from our structural equations model confirm that these outcomes can be achieved through certain patterns of SHRM practices that can help the organization to moderate the effects of diversity on group performance.

To propose the model, we have integrated previous research on *diversity* and *SHRM*. As Benschop (2001) or Kochan et al. (2003) previously noticed, much seems to be gained by integrating constructs and relationships from both fields. The analysis developed in this paper shows that this integration is possible, as multiple common points exist between the diversity and SHRM literature in terms of concepts and measures.

Trying to avoid deficiencies in the diversity literature that authors such as Lawrence (1997) and Lau and Murnighan (1998) have indicated, we started from a multidimensional concept of diversity. Our main independent construct was defined by two connected dimensions: a first set of primary observable demographic characteristics, which we labeled *demographic diversity*, and another group of personal attributes related to human capital measures (*human capital diversity*). Testing this concept, we verified that demographic heterogeneity has consequences for group working and performance not only in itself but also by fostering the other type of diversity (related to employees' knowledge, skills, abilities, values and cognitive approaches). As evidence confirmed, this kind of differences was particularly important in groups that perform complex tasks, such as those analyzed in this paper.

The estimation of the model confirmed that cognitive and affective processes mediate the relationship between diversity and group performance, so hypotheses 1 and 2 could be accepted. The evidence analyzed rejected a deterministic view of the consequences of diversity, assuming that the extent to which they benefit group performance depends on certain conditions that can be directly or indirectly managed by the SHRM function.

In exploring the nature of diversity management mechanisms, we also reached interesting conclusions.

Contrary to the explanation of the universalistic approach, it was not possible to find a best diversity management option. On the contrary, the best pattern of SHRM practices would depend on the type of diversity that the organization is facing (*demographic* or *human capital*) and the concrete effects that heterogeneity causes in each case (*cognitive* or *affective*). Different SHRM configurations can be used, depending on the effects of diversity that the organization wishes to moderate, so it is especially interesting for the organization to analyze and understand which differences are more important within their own groups, and which internal dynamics they induce.

Hypothesis 3 could be only partially accepted. The model estimation confirmed the moderating effect of the SHRM system. Nevertheless, the effect is not as simple as predicted. The traditional distinction between *control* and *commitment* SHRM systems does not fully explain how organizations can achieve business and social justice outcomes of diversity. To do so, more specific typologies are needed. Identifying these configurations would provide managers with tools for managing differences, as well as criteria for choosing an adequate pattern of SHRM practices. This was the main objective of the exploratory analysis developed in this paper. Drawing on the results of cluster and structural equations models, we identified three alternative approaches, from which different moderating effects can be expected.

1. "Individualistic control orientation": The majority of the firms analyzed showed an SHRM system characterized by an individualistic orientation. Employee participation or integration is not a strategic objective for the firms in this cluster. On the contrary, human resource managers are much more interested in establishing rigid control mechanisms. The tasks that each employee is expected to develop are clearly delimited, and the firm places a strong emphasis on performance appraisal techniques. Human resources are seen more as factors that firms must manage than as strategic resources to develop. This fact could explain the preference for labor markets as sources of recruitment in this kind of organization. The structural analyses developed showed that the adoption of an *individualistic control orientation* hinders decision-making processes in heterogeneous groups. Individualistic management does not facilitate open discussion, which, as we have seen, is a necessary condition to take advantage of the benefits that diversity has on a group's perceptual and interpretative capabilities. Similarly, internal communication processes are negatively affected by the isolation caused by task delimitation and the absence of shared objectives. Nevertheless, not all the effects of this management

approach are so negative. We observed that the individualistic control orientation had no moderating effect on affective processes. Therefore, we can conclude that it does not complicate the relational problems that demographic diversity causes, as interaction between members of the group is reduced.

2. "Group development orientation". This approach is opposite to the *individualistic control configuration*. In fact, firms in this cluster are characterized by a collectivistic orientation. Interaction between members of the group is valued and fostered, as well as employee involvement. Similarly, common objectives are emphasized in planning, performance appraisal and compensation practices. A second distinctive characteristic of the *group development approach* is its preference for flexible work systems. Contrary to the centralization and strict control of the previous cluster, this approach fosters group self-management and reinforces informal mutual adaptation as a coordination mechanism. Regarding the market dimension, firms in this cluster also showed a different behavior. In fact, they place a stronger emphasis on the internal development of knowledge and abilities, instead of acquiring them externally. This leads us to believe that *group development* systems value, at least implicitly, idiosyncratic human capital as a strategic factor. Data confirmed that this type of SHRM system incorporates almost all of the positive moderating effects identified in previous literature. The collectivistic orientation identified in this pattern explains its positive moderating effect on decision-making processes, as perceptual and interpretative capabilities of diverse groups are substantially improved. At the same time, firms with this SHRM approach normally rely on mutual adaptation to coordinate behaviors. Informal relationships between members of the group are not only valued but also encouraged. This result confirms Harrison et al. (1998) contact hypothesis, which explained that the problems originating in the perception of demographic differences could be reduced if SHRM systems fostered interactions between individuals. According to these authors, continued contact between members of a heterogeneous group helps them to disconfirm stereotypes and dissolve identity subgroups.

3. "Group management orientation". This approach is not as clearly defined as the *individualistic control* or *group development orientations*. Nevertheless, by analyzing how it moderates the effects of heterogeneity, we can also extract interesting conclusions about how diversity can be managed. According to the scores obtained by the firms in this cluster in the three SHRM factors, we observe that the *group management*

orientation describes an intermediate position. As the *group development* approach, it also places a strong emphasis on collective work systems, as well as fostering interaction and employee participation. However, to achieve these objectives, it follows a different management model. In this sense, it is much more similar to the first configuration described because it defines rigid systems, strictly controlled by SHRM. Because of this, individuals are not empowered to make decisions by their own, and groups are normally managed from outside the unit. Firms in this cluster also showed a clear preference for external markets to recruit potential employees. In our opinion, this result is consistent with the above remarks about *group management orientation*. In fact, we consider that external recruitment and selection processes can be more easily controlled by a firm than internal building of capabilities, which is directly influenced by informal dynamics within the group. The SHRM system identified in this third conglomerate is similar to the *paternalistic* model described by Guest (1989). The strategic importance of teamwork is recognized, but firms do not allow groups to develop by themselves and manage their own processes. On the contrary, group working is directly supervised and controlled by SHRM. Including the moderating effect of this cluster in structural models, we reached especially interesting conclusions. We observed that, as also happened with the first configuration, decision-making processes were substantially improved when a *group management* approach was applied. However, a different result was obtained with regard to relational processes. In fact, data showed that this type of SHRM has no effect at all on the negative affective reactions that normally appear in demographically diverse groups. This evidence suggests that to foster cognitive benefits of diversity, it is only necessary to adopt a collectivistic and interactive strategy, regardless of whether SHRM is implemented through rigid or flexible management systems. However, to mitigate affective problems associated with stereotyped perceptions and identity subgroups, something more is necessary. Data confirmed that recategorization processes require groups to be flexible and self-managed rather than strictly controlled by the organization. In these cases, group members will be encouraged to coordinate, and informal relationships will easily appear. This result confirms the propositions of a group of authors (Harrison et al. 1998; Clark et al. 2000; Richard and Shelor 2002) who qualified the contact hypothesis, arguing that not all types of interaction help to disconfirm stereotypes and dissolve identity groups. To do so, individuals need to define and establish

relationships with different individuals on their own, without perceiving that they are forced to do so or that such interactions are strictly controlled by the organization.

In interpreting the results of this study, some limitations should be kept in mind. First, from a conceptual point of view, it must be remembered that demographic and human capital attributes have been analyzed in an aggregated form. It would be interesting to explore whether the concrete indicators from which these constructs have been defined create particular effects, as Jackson et al. (2003a, b) suggested. Similarly, we must also acknowledge that our analysis has been restricted to just two of the effects that diversity may cause. In fact, we have not included in our structural models the impact that this variable has on group communication processes. Milliken and Martins' (1996) work provides interesting arguments in this context, explaining how differences between individuals can affect the way in which they communicate. These authors also propose that diversity influences how external agents perceive the group, and how these symbolic images influence their contacts outside the organization. Secondly, we also acknowledge some empirical limitations of this study. Generalization of the results is conditioned by the particularities of our sample, which was restricted to a single sector in a single country (Spain). Further studies are necessary to confirm that the moderating effects identified and the relationships described are influenced by specific contingent factors. Similarly, the empirical analysis was also conditioned by sample size. As explained above, to measure human capital attributes accurately, we had to assume a significant reduction in the size of the dataset. In fact, to validate one sample case, we needed direct responses from at least four members of the group. The study of group conclusions would be much stronger if the results of the structural analysis could be confirmed with a bigger sample, using another estimation procedure, such as covariance-based SEM techniques (LISREL, AMOS).

While recognizing these limitations, we still believe that the results of the empirical analyses developed in this article are relevant for SHRM professionals and academics. As we have seen, differences between individuals can have both positive and negative consequences on group functioning. They may improve creativity and decision-making processes, but at the same time diversity can also be a source of relational conflict, dividing the unit into opposite identity groups. The results of the structural analyses confirmed that the overall effects of diversity depend to a great extent on the orientation of the SHRM system. However, as the empirical analysis suggests, there are different types of diversity that have different consequences on group functioning. Therefore, to define

diversity-oriented SHRM strategies, firms must avoid universalistic prescriptions, and start with a systematic analysis of their diversity profiles, studying the concrete affective and cognitive dynamics that heterogeneity causes.

Appendix

See Table 2.

Table 2 Summary of measures

Variable	Measures	Scales	References
Block I: Diversity			
1. Demographic attributes:			
Age	Direct	Continuous	Tsui and O'Reilly (1989); Harrison et al. (1998)
Gender	Direct	Dichotomic	Graves and Powell (1995)
Nationality	Country of origin (open)	Categorical, nominal	Chatman et al. (1998)
Education	Number of years of education	Continuous	Ancona and Caldwell (1992)
	Highest educational level reached	Categorical, ordinal	Tsui and O'Reilly (1989), Farh et al. (1998), Chrobot-Mason (2004)
Kind of training	Degree	Categorical, nominal	Wiersema and Bantel (1992); Spanish Ministry for Science and Education
Tenure	Number of years working in the group	Continuous	Smith et al. (1994)
	Number of years working in the organization	Continuous	Chuang et al. (2004)
Functional experience	Functional area in which the individual has developed mainly his/her career	Categorical, nominal	Krishnan et al. (1997)
2. Human capital attributes			
Knowledges	Subjective evaluation on individuals' knowledge on certain relevant categories	Likert scale 1–7	
Experiences	Subjective evaluation on individuals' knowledge on certain relevant categories	Likert scale 1–7	
Cognitive Styles	Cognitive Style Inventory	Likert scale 1–5	Van den Broeck et al. (2003)
Values	Schwarz's Scales Version: Glazer et al. (2004)	Likert scale 1–7	Schwartz (1992, 1994, 1999) Gelfand et al. (1996)
3. Heterogeneity measures			
For nominal and categorical variables.	Blau's index	0 (homogeneity) to 1 (high diversity)	Smith et al. (1994), Eigel and Kuhnert (1996), Harrison et al. (1998), Knight et al. (1999), Blau (1977)
For continuous variables and Likert scales.	Coefficient of variation	0 (homogeneity) to 1 (high diversity)	Harrison et al. (1998), Hope-Pelled et al. (1999), Knight et al. (1999), Chatman and Flynn (2001).
Block II: group processes			
1. Cognitive effects			
Capability to perceive and interpret information	1 item	Likert scale 1–7	Watson et al. (1993)
Capability to formulate problems	1 item	Likert scale 1–7	Watson et al. (1993)
Capability to generate alternatives of solution	2 items	Likert scale 1–7	Watson et al. (1993)

Table 2 continued

Variable	Measures	Scales	References
Capability to define decision-making processes	7 items	Likert scale 1–7	Janssen and Veenstra (1999), Ancona and Caldwell (1992)
Capability to reach consensus	8 items	Likert scale 1–7	Knight et al. (1999), Chatman et al. (1998), Kilduff, Angelmar & Mehra (2000)
2. Affective effects			
Cohesion	4 items	Likert scale 1–7	Di Tomaso et al. (1996)
Relational conflict	4 items	Likert scale 1–7	Hope-Pelled et al. (1999)
Cooperation	4 items	Likert scale 1–7	Chatman and Flynn (2001), Eigel and Kuhnert (1996)
BLOCK III: SHRM			
1. Job design & Planning:	Schuler & Jackson's	Scale 1–5	Schuler (1987), Schuler and Jackson (1987a)
2. Staffing:	Menu of HR practices		
3. Performance assessment:			
4. Compensation:			
5. Training & development:			
Block IV: Group performance			
1. Innovation outcomes:	Number of new products	Continuous	Hutcheson et al. (1996), Werner and Souder (1997)
	Number of improved products	Continuous	Hutcheson et al. (1996), Werner and Souder (1997)
	Number of patents registered	Continuous	Arora (1997)
	Innovation incrementality	Categorical, nominal	Hutcheson et al. (1996)
	Subjective assessment of group innovation outcomes	Likert scale 1–7 (4 items)	Werner and Souder (1997)

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