AN ANALYSIS AND REVIEW OF MIXED METHODS RESEARCH DESIGNS UTILISED
IN THE STUDY OF THE RELATIONSHIP BETWEEN HRM AND PERFORMANCE

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ABSTRACT
In this paper, we review HRM research with specific attention to mixed methods research designs. Our specific research objectives are: i) to define mixed methods for HRM researchers, ii) to identify the advantages of mixed methods, iii) to outline key mixed methods design considerations, and iv) to illuminate these with examples from HRM research. Mixed methods are examined via a review of articles published in top tier management journals and field specific human resource management journals between 2000 and 2011. Results indicate a preference for mixed methods research that is complementarity oriented, has a greater weight placed on the quantitative component, that is sequentially implemented and that follows a QUAN → qual design. Implications of these findings are presented.

Keywords: HRM, Mixed methods, Research methodology, Content analysis

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In this paper, we review HRM research with specific attention to mixed methods research designs. Our specific research objectives are: i) to define mixed methods for HRM researchers, ii) to identify the advantages of mixed methods, iii) to outline key mixed methods design considerations, and iv) to illuminate these with examples from HRM research. Mixed methods are examined via a review of articles published in top tier management journals and field specific human resource management journals between 2000 and 2011. Results indicate a preference for mixed methods research that is complementarity oriented, has a greater weight placed on the quantitative component, that is sequentially implemented and that follows a QUAN → qual design. Implications of these findings are presented.

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Mixed methods

Johnson, Onwuegbuzie, and Turner (2007, p.123) define mixed methods as that which “combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration.” A mixed methods approach is based on the premise that a choice between a quantitative and a qualitative design is unnecessary and assumes that both approaches can be combined to allow researchers to draw upon the respective strengths of each. Calls for mixed methods designs are based on the belief that a combination of quantitative and qualitative approaches allows research that is superior to that which is based on a single method. The mixed methods literature (e.g., Creswell & Plano Clark, 2007; Johnson & Onwuegbuzie, 2004) suggests several reasons why this expectation may be well founded. First, mixed methods allow the researcher to compensate for weaknesses in quantitative approaches via the strengths of qualitative approaches (and vice versa). For example, quantitative designs allow the modelling of complex
relationships between variables including tests of mediation that consider the “black box” between HRM practices and performance and the examination of the relative influence of diverse HRM practices on multiple performance measures. Quantitative designs also support the generalisation of findings of a focal study. By contrast, the depth of understanding provided by qualitative research reveals the underlying processes governing the HRM-Performance relationship and explains the “why” of complex phenomena – at the expense of external validity. Consistent with this, some researchers have proposed mixed methods designs as one way of alleviating the errors inherent with low survey response rates that are common in research into the HRM-Performance relationship (Ichniowski, Kochan, Levine, Olson, & Strauss, 1996).

Second, mixed methods allow research problems to be addressed that are inaccessible with a single method (Tashakkori & Teddlie, 2003a). For example, a study that aims to “test a theory of the relationship between characteristics of high performance work systems and the performance of Tasmanian organisations” is likely to require aspects of both qualitative research to facilitate theory building and quantitative research for theory testing. Combining the two approaches through a mixed methodology would be appropriate in order to allow the researcher to generate theory grounded in data, and to provide an initial verification of that theory.

Third, mixed methods allow a more comprehensive and insightful description of study phenomena. Stronger inferences can generally be made from data gathered utilising mixed methods (Teddlie & Tashakkori, 2003) and greater confidence can be held in the results (Johnson & Christensen, 2004). For example, collecting line managers’ perceptions of HRM implementation and combining these with a survey of HR managers and employees’ perceptions of the extent to which these HR practices are implemented provides a more complete understanding of the change process. Mixed methods thus provide one route for reducing biases and enhancing confidence in study findings (Becker & Huselid, 2006; Ichniowski et al., 1996; Kiessling & Harvey, 2005).

Fourth, there is evidence that mixed methods are positively associated with measures of research impact. In a recent study Molina-Azorin (2012) found that mixed methods articles receive, on average, a greater number of citations than articles that utilise a single method. This finding was
true when citations were measured either in terms of average citations per year, or their cumulative total. Molina-Azorin (2012) suggests that such differences in citations may arise from differences in the quality of mixed methods research versus research that utilises a single method. One possibility is that qualitative and quantitative approaches enable both the depth and the breadth of explanation that constitutes high impact research. In so doing, mixed methods are particularly likely to beneficial in furthering our understanding of complex research problems that cut across cultural, institutional, regional, values and moral dimensions – areas that are especially characteristic of research focussed on the HRM-Performance relationship (Kiessling & Harvey, 2005).

The current study

The current paper’s focus on the utilisation of mixed methods in the context of research examining the HRM-Performance relationship is appropriate given calls for a consideration of new methodological approaches in this field (e.g., Boselie et al., 2005; Hesketh & Fleetwood, 2006; Hoobler & Johnson, 2004; Kiessling & Harvey, 2005; Martín-Alcázar, Romero-Fernandez, & Sanchez-Gardey, 2008). Reviews of the HRM literature indicate a strong disposition towards quantitative research designs with Boselie, Dietz, and Boon (2005) finding that a majority of the 104 HRM studies they reviewed utilised quantitative methods and only a small number could be categorised as either qualitative (4 studies) or as combining both quantitative and qualitative methods (2 studies). Teagarden et al. (1995) also identified that quantitative techniques are the norm in international HRM research, and Hayton, Piperopoulos, and Welbourne (2011) reported that quantitative studies significantly outnumbered qualitative studies in the journal Human Resource Management between 2000 and 2010. This widespread use of quantitative over qualitative analytical techniques and the paucity of mixed methods research has been a subject of sustained debate and critique in the HRM literature (e.g., Hesketh & Fleetwood, 2006; Hoobler & Johnson, 2004; Martín-Alcázar, Romero-Fernandez, & Sanchez-Gardey, 2008). As a result, over the past decade, several researchers in the HRM field have called specifically for an increased utilisation of mixed methods designs (e.g., Boselie et al., 2005; Kiessling & Harvey, 2005). Given this, a review of the strengths and complexities of mixed methods and a discussion of the major design considerations in the
undertaking of mixed methods research would facilitate the utilisation of this approach by researchers interested in examining the HRM-Performance relationship. Furthermore, the current study is motivated by an understanding that while many good overviews of mixed methods are available, these resources either provide generalised introductions or are developed for specialised (non-HRM) fields of enquiry. Few resources exist specific to the requirements of HRM researchers considering mixed methods designs. This important because discipline specific resources would i) provide guidance on how to evaluate the suitability of mixed methods in a HRM research program, and ii) allow the most to be made of a promising research approach. In this paper, we thus aim to provide an accessible introduction to mixed methods, and to contextualise this discussion with reference to HRM issues. In the following section, we discuss mixed methods design considerations and outline how these have been addressed by HRM researchers. We conclude by reflecting on the HRM literature and suggesting future directions and opportunities for mixed methods HRM research.

**DESIGN CONSIDERATIONS IN MIXED METHODS IN HRM RESEARCH**

A mixed methods approach benefits from a consideration of the research question at the outset and an understanding of how this question is connected to design choices. For example, should one undertake a qualitative study prior to the quantitative study or a quantitative study prior the qualitative study? Or should the researcher aspire to undertake both studies simultaneously in the hope that the understandings flowing from each study will inform the other? In such matters, a clear identification and description of the available design choices is central to a well planned research.

The past twenty years have seen a proliferation of typologies advanced with the aim of organising the mixed methods literature (see for example, Creswell 1994, 2002; Creswell, Plano Clark, Guttmann, & Hanson, 2003; Greene & Caracelli 1997; Greene, Caracelli, & Graham, 1989; Johnson & Onwuegbuzie, 2004; Leech & Onwuegbuzie, 2009; Maxwell & Loomis, 2003; McMillan & Schumacher, 2001; Morgan, 1998, 2006; Morse 1991, 2003; Onwuegbuzie & Johnson, 2004; Patton, 1990; Tashakkori & Teddlie, 1998, 2003b; Teddlie & Tashakkori, 2006). Elements of much of this body of research are however in broad alignment with the themes outlined in the influential contribution of Tashakkori and Teddlie (1998). They identified four general approaches to mixed
Mixed methods research is characterised by four general purposes: i) development, ii) complementarity, iii) expansion, and iv) triangulation (Greene et al., 1989). Mixed methods research with a development purpose uses the results of one method to inform the construction of the subsequent study. Such research is more likely to state their purpose as focusing on developing concepts or measures for use in another component of the research. Thus, the first study should lead, via an iterative process, to research that is increasingly well adapted to answer the problems that is designed to assess. Often such as study would involve a qualitative component which considers the how a concept might be operationalised through interviews with well-informed individuals. This qualitative research then supports the development of quantitative measures for use in a latter survey.

Mixed methods with a complementarity purpose utilise one method for clarifying, enhancing, or illustrating the results from one method with the results from the other method. Studies should thus be combined or “mixed” so that strengths of one compensate for the weaknesses of the other (Johnson & Turner, 2003).

Expansion oriented mixed methods research provides an improved, more rounded understanding by utilising different methods that have unique strengths in revealing different characteristics of a phenomenon. For example, a researcher might survey HR managers about their implementation plan for a new set of HRM practices before making field observations of the process by which the practices were implemented.

A triangulation purpose refers to studies that use different methods to examine the same phenomenon to assess the degree of convergence in the findings and corroborate the results of one study through the findings of another. Triangulation can include multiple collections of the similar
data from different respondents. For example, a triangulated study of a high performance work system (HPWS) might draw upon interviews with HR managers, line managers, and employees. Triangulation also occurs when the perspectives of different researchers are incorporated into a study. For example, an organisational behaviour and a strategy researcher might observe the implementation of a HPWS in the same organisation. Where their interpretations of events vary, these different perspectives provide breath and richness to the study. Where they converge, confidence in the conclusions is enhanced.

**Priority.** Mixed methods research is also characterised in terms of the priority that is attached to different components of the investigation. Mixed methods research often involves giving a different status or weight to one component of the research rather than treating each component as having equal status (Molina-Azorin, 2012). A common example of this is the tendency for research that has a strong emphasis on a quantitative survey, complemented by supporting interviews that are conducted to assist with the development of survey measures, to refine the survey sample, or to explain the “main” survey findings at the project conclusion. The extent of familiarity of either method by the researchers can also influence the weighting of each component. Researchers tend to lean towards the method that they are more familiar with but including a collaborator who has dissimilar methodological experience to oneself can open up alternative possibilities for prioritisation across components of the research.

**Implementation.** Mixed methods research can be implemented in a sequential or a simultaneous approach. A tendency towards sequential implementation choices in published research may be a reflection of research in which the quantitative component is prioritised and supported by the collection of preliminary or follow-up qualitative data.

**Design.** In 1991, Janice Morse used a system of notation to represent the different mixed method designs. In this now widely utilised system, the main or dominant method appears in capital letters (QUAN, QUAL) while the complementary method is in lowercase (quan, qual). The symbol “+” indicates studies that are conducted simultaneously and “→” indicates where studies are conducted sequentially. Using this system, priority and implementation can be combined to specify
nine distinct mixed methods designs.

- Equal status / simultaneous implementation: (1) QUAL + QUAN
- Equal status / sequential implementation: (2) QUAL $\rightarrow$ QUAN; (3) QUAN $\rightarrow$ QUAL
- Different status / simultaneous implementation: (4) QUAL + quan; (5) QUAN + qual
- Different status / sequential implementation: (6) qual $\rightarrow$ QUAN; (7) QUAL $\rightarrow$ quan; (8) quan $\rightarrow$ QUAL; (9) QUAN $\rightarrow$ qual

METHOD

Sample and Procedure

**Sample.** We focus on examining the relationship between HR practices and performance. The empirical basis of this study comprises articles published between 2001 and 2010 in leading mainstream management journals and field specific HRM journals (see Table 1 for a complete list). These journals were selected because their articles are widely cited and because these journals have formed the basis of much prior research on methodological choices in management (e.g., Johnson & Podsakoff, 1994; Scandura & Williams, 2000) and HRM research (e.g., Boselie et al., 2005; Hoobler & Johnson, 2004).

**Coding/Measures.** A content analysis is defined as “any methodological measurement applied in text (or other symbolic materials) for social science purpose” (Shapiro & Markoff, 1997, p. 14). The articles were coded based on a detailed coding taxonomy and a set of explanatory notes for the four aspects of mixed methods design. **Purpose** was assessed in relation to four categories (Development, Complementarity, Expansion, and Triangulation). **Priority** was assessed in relation to (Different status – quantitative dominant, Different status – qualitative dominant, and Equal status). **Implementation** was assessed in relation to (Simultaneous, Sequential), and **Design** was assessed in relation to nine distinct mixed methods designs described by Morse (1991). These are: Equal status / simultaneous implementation: (1) QUAL + QUAN), Equal status / sequential implementation: (2, 3), Different status / simultaneous implementation: (4, 5), and Different status / sequential implementation: (6-9).

RESULTS

**Purpose.** Mixed methods research is characterised by four general purposes: i) development, ii) complementarity, iii) expansion, and iv) triangulation (Greene et al., 1989). Mixed methods research
with a *development* purpose uses the results of one method to inform the construction of the subsequent study. For example, Bartel (2004) investigated the impact of high performance work system on retail banking performance using a mixed methods approach. Initial site visits and interviews with branch managers and non-managerial employees revealed how feedback, recognition of good work, and incentives are used to manage employee performance by describing individual managerial differences in implementation of the practices. As the interviews identified individual managerial variance, the author formulated an equation to estimate the sales with managerial variance as a fixed effect which allowed her to interpret the coefficients of HRM variables as estimates of the HRM effect on performance.

Mixed methods with a *complementarity* purpose are less well represented in the HRM literature. Despite this, such designs seem quite appropriate. For example, a researcher might collect archival data to study turnover intentions and find that turnover was concentrated in one specific division of the firm. Subsequent exit interviews conducted with employees who had resigned from the firm might clarify why they had left. Shipton, West, Dawson, Birdi, and Patterson (2006) represents one example of a *complementarity* purpose study in which they examined the relationships between:

> “data gathered in managerial interviews in 22 companies (1996) and data from innovation surveys of the same companies in 1995 and 1997” (Shipton et al., 2006: 9).

*Expansion* oriented mixed methods research is also infrequently undertaken. Clarke (2006) provides a rare example of this approach in which understandings provided by survey data was augmented by focus group research. Specifically, Clarke (2006) states that:

> “Following analysis of the survey results, letters were sent again to all 161 hospices, containing a brief summary of the findings and an invitation to attend a half-day workshop to discuss the findings” (Clarke, 2006: 194).

A *Triangulation* purpose was identified in several HRM studies. For example, Truss (2001) examined the complexities of HRM and firm level performance using mixed methods.

> “It was hoped that by studying such an organization in some depth, it would be possible to advance both our empirical knowledge of HR practices and our theoretical
Unlike a typical study investigating the relationship between HRM practices and firm performance, the research questions of Truss (2001) are presented in order to examine what HRM practices and policies are implemented in a financially successful company and how this occurs. To have a more complete understanding of high performance work practices adaptation by successful organisations, she collected data from employees of all levels of a company by conducting interviews and focus groups, and surveys. The quantitative component allowed her to measure the perception of the formal HRM environment and establish its relationship with the financial outcomes. The qualitative component provided insights into the “reality” of the work experience of the employees which was found to be inconsistent with the formal ‘rhetoric’ of the company’s HRM policies. Combining the two methods provided a unique opportunity to demonstrate the complex relationship between HRM practices and firm performance.

**Priority.** Mixed methods research varies in terms of priority that is attached to different components of the investigation. Several articles gave a different status or weight to one component of the research. For example, Browning (2006) undertook mixed methods research in which the quantitative component was the dominant aspect of the overall study. In this research, the “first stage” consisted of exploratory semi-structured interviews and focus groups. As noted by Browning, these qualitative data provided a supporting role and were not the main focus of the final analysis.

> “the objective of the first stage [was] to collect information that would inform the development of a questionnaire. The second stage of the research involved piloting the questionnaire to identify any issues or problems that might arise when administering the questionnaire. In stage 3, a revised version of this questionnaire was administered...” (Browning, 2006: 1324).

By contrast, Budhwar, Luthar, and Bhatnagar (2006) utilised a different status qualitative dominant approach in which the quantitative component provided data in support of the interviews with managers which were the main focus of the exploratory research.

> “Given the exploratory nature of the research, we adopted a mixed-method approach...”
Mixed methods research (comprising in-depth interviews of managers, self-completing questionnaires, and secondary sources). Our direct sources of information were the HR managers of Indian BPOs who agreed to be interviewed” (Budhwar et al., 2006: 345).

The remaining articles (i.e., Truss, 2001; Tsai, 2006) utilised research designs in which both quantitative and qualitative component were treated as having equal status. A good example of this is the research of Tsai (2006) who notes that:

“Interviews and the survey method were the two main approaches used for collecting data in the study” (Tsai, 2006: 1517).

**Implementation.** The reviewed literature contained research that utilised a sequential as well as research that utilised a simultaneous approach. For example, Innocenti, Pilati, and Peluso (2011) used a sequential approach that drew upon two sources – first a questionnaire to measure the employees’ trust in management, and second, follow up telephone interviews with HR managers of the participating firms to validate the measures and acquire further information on the implemented HRM policies and practices. The qualitative interview data added validity to the quantitative measures but beyond that, the extent to which the interviews contributed to the overall study was limited.

A simultaneous approach to implementation was less prevalent in the literature. One example in which multiple studies are undertaken in parallel is that of Truss (2001) who conducted a longitudinal investigation in which both quantitative and qualitative data were collected (1994, 1996).

“400 questionnaires were distributed to randomly selected employees at middle manager level and below…” “A two-hour focus group was held with senior members of the HR department, and 36 interviews were carried out.” (Truss, 2001: 1128).

**Design.** Several examples of mixed methods research help to illustrate the approaches that are available for the design of an investigation. For example, Truss (2001) followed an equal status / simultaneous implementation design (i.e., [1] QUAL + QUAN).

“Had we merely relied on questionnaire data obtained from a single informant... and carried out a quantitative analysis linking performance with human resource processes, we would have concluded that this organization was an example of an...
organization employing 'High Performance Work Practices' to good effect. However, employing a contextualized, case-study method has enabled us to see below the surface and tap into the reality experienced by employees, which often contrasts sharply with the company rhetoric” (Truss, 2001: 1128)

Clarke’s (2006) research into HRM policies and workplace learning in healthcare followed an equal status / sequential implementation design (i.e., [3] QUAN → QUAL).

“Following analysis of the survey results, letters were sent... containing... an invitation to attend a half-day workshop to discuss the findings.” (Clarke, 2006: 194).

The utilisation of a different status / simultaneous implementation design (i.e., [4] QUAL + quan) is evident in the research of Budhwar et al. (2006) who utilised a mixed methods approach involving both in-depth interviews and a short 23 item questionnaire to analyse the nature of HRM systems in business process outsourcing organisations in India.

“During the interviews, the managers provided qualitative data on the firm's HRM practices... the participants also completed a questionnaire related to a number of HR practices and policies” (Budhwar et al., 2006: 345)

An example of a different status / sequential implementation design is represented by the research of Bartel (2004) who conducted an initial set of interviews before conducting an analysis of employee attitude survey data (i.e., [6] qual → QUAN). These initial interviews were justified by Bartel (2004, p. 188) based on prior methodological literature that stated the importance of establishing “(1) the appropriate measure of organisational performance given the context of the study.” Bartel’s (2004) interviews with managers at branch and at headquarters indicated that branches were evaluated based on sales data (primarily deposits and loans) and helped to ensure that the subsequent quantitative component of the research was properly specified.

“Interviews with managers and employees were used to guide the specification of the branch-level production function” (Bartel, 2004: 201).

DISCUSSION
Decisions about research design should be based on their fitness for addressing the research questions (Morse, 2003; Thurston, Cove, & Meadows, 2008). Thus, while quantitative approaches have important strengths, the extent of the imbalance identified by Boselie et al. (2005) suggests some risk that researchers may be overemphasising quantitative modes of enquiry. We thus encourage a more critical assessment of the merits of alternative research approaches. This can be assisted by a clear articulation of the merits of a mixed methods approach. Thus, we sought to define mixed methods, to identify the advantages of the approach, to outline major design considerations and to illuminate these with examples from mixed methods research. We hope that the opportunities that are made apparent by such comparisons provide the impetus for future researchers to address some of those gaps. Our review indicates that there are few examples of mixed methods research in research into the HRM-Performance relationship and that the technique remains little known in this field. Moreover, there is limited evidence of an increase in mixed methods articles over time. Furthermore, the findings indicate that when mixed methods are utilised, it tends to be in the form of research with a developmental or a complementarity purpose. Development is an important consideration for many researchers as it provides the foundation for the creation of quantitative measures of concepts. However the bias towards development oriented mixed methods indicates that there are opportunities for research that, for example, utilises quantitative and qualitative approaches to provide complementary perspectives on phenomena, to expand understanding and to triangulate the research. Such research would provide us with additional confidence about study relationships and address common method variance concerns in HRM research. We also note an emphasis on different status, quantitative dominant designs. Future research that utilises qualitative dominant or equal status approaches to prioritisation would allow researchers to make important contributions to the HRM field. Future researcher might extend the current study by considering a broader time period and a wider range of journals. Finally, we note that it was not always a straightforward process to determine the characteristics of the mixed methods articles reviewed in this research. We thus encourage future researchers using mixed methods to clearly specify the methodological features of their investigations – particularly in terms of its purpose, priority and implementation.
REFERENCES


Table 1. Characteristics of mixed methods studies examining the HRM-Performance relationship: Purpose, priority, implementation and design

<table>
<thead>
<tr>
<th>Author/Co-authors</th>
<th>Journal</th>
<th>Purpose</th>
<th>Priority</th>
<th>Implementation</th>
<th>Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budhwar (2000)</td>
<td>BJOM</td>
<td>Expansion</td>
<td>Equal status</td>
<td>Sequential</td>
<td>QUAN + QUAL</td>
</tr>
<tr>
<td>Truss (2001)</td>
<td>JMS</td>
<td>Expansion</td>
<td>Equal status</td>
<td>Simultaneous</td>
<td>QUAN + QUAL</td>
</tr>
<tr>
<td>Bartel (2004)</td>
<td>ILRR</td>
<td>Development</td>
<td>Different status - Quantitative dominant</td>
<td>Sequential</td>
<td>qual → QUAN</td>
</tr>
<tr>
<td>Hatch and Dyer (2004)</td>
<td>SMJ</td>
<td>Complementarity</td>
<td>Different status - Quantitative dominant</td>
<td>Sequential</td>
<td>QUAN → qual</td>
</tr>
<tr>
<td>Browning (2006)</td>
<td>IJHRM</td>
<td>Triangulation</td>
<td>Different status - Quantitative dominant</td>
<td>Sequential</td>
<td>qual → QUAN</td>
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<td>Budhwar et al. (2006)</td>
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<td>Different status - Quantitative dominant</td>
<td>Sequential</td>
<td>QUAN → qual</td>
</tr>
<tr>
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<td>IJHRM</td>
<td>Triangulation</td>
<td>Different status - Quantitative dominant</td>
<td>Sequential</td>
<td>QUAL → QUAN</td>
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<td>IJHRM</td>
<td>Development / Complementarity</td>
<td>Equal status</td>
<td>Sequential</td>
<td>QUAL → QUAN</td>
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<tr>
<td>Shipton, West, Dawson, Birdi, and Patterson (2006)</td>
<td>HRMJ</td>
<td>Complementarity</td>
<td>Equal status</td>
<td>Simultaneous</td>
<td>QUAN + QUAL</td>
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<td>Tessema and Soeters (2006)</td>
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<td>Different status - Quantitative dominant</td>
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<td>QUAN + qual</td>
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<td>Tsai (2006)</td>
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<td>Nikandrou and Papalexandris (2007)</td>
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<td>QUAN → qual</td>
</tr>
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<td>Rao (2007)</td>
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<td>CCM</td>
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<td>Townsend, Lingard, Bradley, and Brown (2011)</td>
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