



# Climbing the Higher Mountain: The Challenges of Multilevel, Multisource, and Longitudinal Research Designs

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**ABSTRACT** Management researchers are being encouraged to collect multilevel, multisource, and longitudinal (MML) data. In this essay, I identify the barriers that researchers might encounter in gaining university ethics committee approval for MML designs and the challenges researchers face when conducting MML research in organizations. I offer suggestions to overcome these challenges. I further discuss some long-term consequences of MML designs for researchers' relationships with organizations and the progress of the management field as a whole.

**KEYWORDS** longitudinal, multilevel, multisource, publishing, research ethics

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## INTRODUCTION

My university recently hosted a visit by a senior management scholar who gave an inspiring seminar encouraging us to reach for the 'high-hanging fruit'. He used this metaphor to describe the impact that history has on research. Researchers who came before us have already tackled the easiest questions – they picked the fruit that was hanging low on the tree. If we want to address the theoretical questions that are most relevant today, we have to pick fruit that is hanging much higher on the tree, and those questions demand more complex and sophisticated research methodologies. Over time, the questions become more interesting, but the challenges of answering those questions become greater, and our standards for evaluating the quality of research get higher.

After the seminar, a colleague compared the presenter's metaphor to a Chinese saying that 'beyond one high mountain lies yet a higher mountain'. The mountain metaphor may be even more aptly applied to research than the fruit metaphor, because it captures so clearly the extra effort in which today's researchers engage in order to meet the field's increasing standards for high-quality research. Sometimes, in my own research programme, I feel like I am climbing a very high

mountain with a heavy pack on my back – and I am convinced that the mountain I am climbing today is higher than the mountains I was climbing earlier in my research career.

Increasingly, climbing the higher research mountain means accessing data that are multilevel, multisource, or longitudinal – ideally all three in the same study. In this essay, I will call studies that collect multilevel, multisource, or longitudinal data MML designs. Multilevel means that data are sourced from multiple levels (e.g., individual and group; individual and organization; or even individual, group, and organization). Multisource means that the data for different variables come from different sources (e.g., an employee might report his or her job satisfaction, a supervisor might evaluate the employee's job performance, and the organization might provide records documenting the employee's absenteeism).

The journals are sending a loud and clear message about their preference for MML designs. The *Journal of Organizational Behavior* reports that 'reviewers consider multi-source (or at least multi-administration) data collection methods to be a pre-requisite for publication' (Ashkanasy, 2010: 1). The *Journal of Applied Psychology* warns that 'cross-sectional, single-source, survey-based studies are not encouraged' (Kozlowski, 2009: 1). In general, what journals want aligns well with my own research goals. Climbing the higher mountain means that I will need to combine data on organizational practices and performance (usually reported by human resource managers) with employee perceptions and outcomes (usually reported by employees), and I will need to collect data from both of those sources at least three times in order to do a truly longitudinal analysis (Ployhart & Vandenberg, 2010). This is *hard yakka*.<sup>[1]</sup> It is hard in the obvious ways – it is more labour and resource intensive. But it is also hard in many other ways that are not discussed very often, and which will be the focus of this article.

For example, MML designs create challenges for the university ethics committees who are charged with ensuring that research participants are not harmed by our research activities. Some of these university ethics committees have spent decades approving one anonymous cross-sectional survey after another. MML designs are still unusual in many contexts, and university ethics committees may not be familiar with them. How can researchers negotiate with their university ethics committees to get approval for MML data collection? What does it take to convince an ethics committee that an MML research design is low-risk for the research participants?

As we climb the higher mountain, we are asking better research questions, and we are answering them with more sophisticated research designs and analytical procedures. But are we losing anything along the way? Management researchers never act completely alone. Most studies involve a delicate negotiation among multiple parties (the researcher, the research participants, university ethics committees, and organizational gatekeepers). MML designs change the relationships

among these parties, providing them with different opportunities to shape and influence the management research agenda.

Below, I will first discuss the many questions that university ethics committees, who are charged with approving all research involving human respondents, may have with MML designs. I will offer strategies for gaining the support of these committees. Following that, I will discuss how MML designs may change researchers' relationships with the organizations in which they conduct their studies. I conclude with a cautionary note: MML designs are challenging and they must be carefully managed if they are to achieve our goal of producing higher quality research.

### **MML DESIGNS: UNIVERSITY ETHICS COMMITTEE JUDGMENT CALLS**

In the U.S. (where I received my graduate school training), university ethics committees operate under the Department of Health and Human Services' Federal Policy for the Protection of Human Subjects. In Australia (where I work now), university ethics committees follow guidelines issued by the National Health and Medical Research Council. In both countries, a system originally developed for the medical sciences is being applied to the social sciences. This can sometimes generate a conflict between the committee's interests and those of the researcher, and both countries have witnessed an ongoing debate about whether the system is sufficiently sensitive to the needs of social science researchers (e.g., Hamilton, 2005; Malouff & Schutte, 2005; Sanders, 2003). In both countries, there is considerable variation in how ethics committees at different universities might view the same proposal. The policy documents that govern university ethics committees are 'specific yet nebulous' (Hamilton, 2005: 192). They require considerable interpretation on a case-by-case basis and generate wide institution-to-institution variation in what is allowable and what is not (Azar, 2002). Here is where problems begin to emerge. MML designs take university ethics committees outside of their comfort zone and demand more judgment calls than anonymous single-administration surveys. What are some of these judgment calls? Below is a short and incomplete list of the questions that university ethics committees have to answer. They are not new questions – most ethics committees have dealt with them before, at least on occasion. But grappling with these questions is an increasingly common occurrence as researchers rely on more sophisticated research designs.

#### **Is it OK for Research Participants to be Identifiable?**

Longitudinal research designs require that surveys be matched across data collections. In my experience, research designs that attach respondents' names or other identifying information to their data make university ethics committees very

uncomfortable. In an effort to creatively match surveys without attaching respondents' names to surveys, some researchers have been experimenting with respondent-generated codes. They provide respondents detailed instructions about how to construct a unique (but replicable) code comprising the first two letters of their mother's first name, the first two letters of their father's first name, and the calendar day on which they were born (two digits, from 01 to 31). At my university, this coding method is regularly and easily approved. At another Australian university, this code caused some consternation within the ethics committee, who objected that the code was not truly anonymous and did not adequately protect respondents from the possibility that their data might be traced. This is just one small example of how judgment calls generate institution-to-institution variation affecting a researcher's ability to gain approval for MML designs.

### **Who Owns the Data?**

Multisource data must be 'matched' across sources. For example, researchers match employees' self-reports about job satisfaction or organizational commitment with organizational records about employees' performance or absenteeism. There is sometimes ambiguity about whose consent is required to access these organizational records – does the researcher need the consent of both the research participants and the employer, or just the employer (Sieber, 2000)? When I moved to Australia from the U.S., one of my strongest impressions was about how differently 'ownership' of those organizational records was perceived (Kulik, 2005). When I gathered data in organizations located in the U.S., employees gave informed consent to participate in the self-report measures, but it was the employer who gave permission to match those self-report measures with the organization's performance and turnover records. In Australia, the employee personally 'owns' his or her performance records, and individual employees have to consent to have those records matched to their survey responses. Recently, even U.S. employers are increasingly concerned about violating employee privacy and are demanding that individual employees agree to have their data matched to organizational records. Even when the employer *is* willing to make the data available, it is the university ethics committee's judgment call about whether employees have to provide consent for the matching to proceed. That is a judgment call that is likely to generate institution-to-institution variation, depending on local norms or laws about employment relationships.

### **What is Coercion?**

MML designs may require longitudinal data, in which we return to the same respondents multiple times over a week, a year, or even several years. As a result, longitudinal researchers need to develop long-term relationships with their respondents. Social relationships involve reciprocity (Blau, 1964; Cropanzano & Mitchell,

2005) and we now see management researchers offering incentives to participants that go far beyond the generic feedback report that was the traditional ‘thank you’ gift during my early career. Historically, university ethics committees have been sensitive about incentives, worried that incentives that were too large might be ‘coercive’. My university committee, for example, is very cautious about language – we may ‘reimburse’ research participants for their time and effort, but we never ‘pay’ them. Recently I was developing a research grant budget and I informally polled colleagues at other Australian universities about participant incentive norms. I was surprised to see the extent of institution-to-institution variation on incentives: an hour of research participation can be worth \$10, \$15, \$30, or \$50 around the country. We saw even greater variation in a recent Organizational Behavior listserve thread about whether university ethics committees permit ‘lucky draws’ (OB-List, 2010) – yes, no, it depends on the size of the prize, it depends on the probability of winning. This is another example where the judgment calls made by university ethics committees will generate institution-to-institution variation. The ethics committee’s decision on the allowable incentive will have a big impact on the MML researcher’s response rate.

### **What is ‘Informed’ Consent?**

One of the basic tenets of research ethics in management is ‘informed consent’ – the researcher should provide participants with enough information about the study so that participants can make an informed choice about whether to participate or not. Usually, researchers provide participants with an information sheet that provides basic information about the research and contains some standard text recommended by the university ethics committee. At my university this text includes phrases describing where the data will be stored, when the data will be destroyed, and who will have access to the data. Over time, the elements included in information sheets have become more numerous and more contract-like. As research designs become more complex, and we ask more of our participants, the information sheets get longer and longer. Researchers have argued that participants probably do not understand or even read the fine print in information sheets, negating the intended purpose of informed consent (Scott, 2005). I have personally been struggling with what ‘informed consent’ means in a MML design. I could tell the human resource managers I invite to my research that my intention is to conduct a 3 year study that matches their organization’s practices with employee reactions – and scare them running in the opposite direction. Alternatively, I could invite the human resource managers to participate in one little organization-level survey, let them experience the workload associated with that survey, see the benefits I deliver with a subsequent feedback report, and then invite them to participate in later modules of the research. Which group of managers is in a better position to provide ‘informed’ consent? I think it is the latter – but some university

ethics committees may think it is the former. This is yet another judgment call that generates more institution-to-institution variation.

## **MML DESIGNS: RESEARCHER CALLS TO ACTION**

Now let us discuss how researchers can respond to these issues. The researcher has chosen an MML design because of its potential to generate high-quality research outcomes. However, this design raises questions for the researcher's university ethics committee because it generates ambiguity about whether research participants' well-being is adequately protected. What should the researcher do? Dougherty and Kramer (2005) collected 57 narratives from communication researchers about their experiences with university ethics committees. When the committee's procedures conflicted with the researcher's goals, researchers responded in one of three ways: (i) they complied, sacrificing elements of the research design in order to go along with the committee's recommendations; (ii) they confronted, arguing with the committee in an effort to educate and refocus the committee's attention; or (iii) they circumvented, complying with the spirit of their ethics committee's intentions while ignoring some of the detail in the requirements.

If we are going to climb the higher mountain, researchers need to be ready to do a bit more confronting and educating of our university ethics committees. I would like to share two recent success experiences. The first experience was about gatekeeper permission to access employees. At my university, when a researcher plans to collect data within an organization (e.g., when the researcher is collecting data from the employees of a company), the researcher must produce a signed letter on company letterhead approving that the research can proceed. This is a very reasonable request when you are collecting data within a single organization. When you are trying to collect multilevel data from hundreds of organizations, it is a pretty unmanageable demand. Eventually, we negotiated a compromise. I developed a standard university-approved permission form that I could ask organizational gatekeepers to sign and date, rather than asking each one to generate a unique company letter.

The second experience was about collecting employee demographic data. At my university, an open-ended question about employee age ('how old are you?') will automatically trigger a demand to replace the open-ended question with a series of forced-choice options. In my last few data collections, I complied with the demands of the university ethics committee. I substituted the 'approved' category format for my original open-ended age question. But I am a diversity researcher, and I need to know the employee's age relative to his or her supervisor, or relative to his or her workgroup. *To climb the higher mountain in the relative demography literature, you need continuous measures of age.* The last time I applied for approval, and was told to use forced-choice, I asked 'why'. The committee was apparently concerned

that individual employees could be identified by data associated with their exact age. When I pointed out that the employees sent their surveys directly to the research team, and individual demographics were never available to their organization's management, the committee approved the continuous measure.

In both of these cases, it was not difficult to negotiate a satisfactory outcome. But in both cases it took time and it delayed my data collection. And in both cases, what I negotiated was an exception to the general rule. The university is still automatically asking researchers to get gatekeeper permission on organizational letterhead, and the university is still automatically asking researchers to use categories when they ask employees about age.

### **The First Steps up the Mountain**

As researchers, let's get ready to educate our research ethics committees to understand the need for modified procedures in relation to MML designs. But as reviewers and editors, we also need to recognize that institution-to-institution variations exist and some university ethics committees might be more resistant to change than others. What concerns me about the editorial statements we are seeing in journals is that they are so hard line. Increasingly, a study reporting cross-sectional survey data is likely to trigger a desk reject from our most respected journals (see Rupp, 2011, in this issue, for a discussion of ethics in the desk rejection process). However, there is still something to be learned from cross-sectional single-source surveys, and I worry that our enthusiasm for MML is pushing reviewers to conclude that MML designs are the *only* way to achieve quality research outcomes. I recently reviewed a Ph.D. thesis in which the student had negotiated agreements within several organizations to match employee self-report data with supervisory performance ratings. One organization delivered, but the others reneged at the last minute. The thesis data went from being publishable in a top-tier journal to being completely unsuitable overnight. There is something about that black-and-white distinction that makes me very uncomfortable. We are all climbing the higher mountain and our methodologies are being judged by a common set of criteria at top tier journals. These criteria force researchers to ask more from our research partners and our research participants. But our university ethics committees, our organizational gatekeepers, and the institutional contexts within which we are collecting data, are not necessarily going to converge on those criteria – at least not immediately. During this transition period, our journals (and their readers) need to maintain a thoughtful and reflective stance – and an open mind – towards non-MML studies, particularly when those studies have been conducted in contexts where MML might be especially difficult to implement.

The other thing that we need to do – and quickly – is gather some data. We have studies examining how question formats change respondents' answers (Schwartz, 1999), we have studies examining how incentives affect response rates (Cycyota,

Harrison, & Stahl, 2002), and we have studies examining how respondents differ from non-respondents (Rogelberg, Luong, Sederburg, & Cristol, 2000). But I am not aware of any management studies on the ethics-relevant reactions of research participants to MML research design features. Take informed consent, for example. The *Journal of Empirical Research on Human Research Ethics* published a special issue devoted *entirely* to the concept of informed consent. One of the most fascinating articles in this issue is one by Matsui, Lie, and Kita (2007), in which researchers contrasted the routine 'information sheet' approach to obtaining informed consent with a more intense educational approach that provided much more information about the study and its associated risks and benefits. You might expect that the second approach would be more effective in fully informing research participants. In a peculiar way it was – the participants in that condition got more information but, as a result, they were more aware of how *little* they understood, in contrast to the participants in the routine condition, most of whom had not even bothered to read the information sheet and yet claimed that they understood. Both Australian and U.S. policy documents about ethical procedures in research involving human participants suggest that informed consent procedures should be tailored to the needs of individual respondents, but university ethics committees often insist on 'one size fits all' procedures for ensuring informed consent (Sieber, 2004). Studies like Matsui et al. (2007) would help researchers to be more effective when they make their case to university ethics committees that standard information sheets do not necessarily communicate the information that respondents need in order to provide consent that is truly informed about the issues that concern them.

More generally, if we do not understand the kinds of concerns that our research designs raise for our research participants, we are not going to be able to design MML research that protects them against these problems. Sieber (2004) lays out a beautiful framework for Empirical Research on Research Ethics, in which she advocates using social and behavioural tools to understand the factors that create barriers to ethical and valid social and behavioural research. She recommends, for example, more research on what our research participants think about privacy, because the views of researchers and ethics committees on privacy may differ from that of participants. She also recommends more research on how risks and benefits are perceived from the viewpoint of researchers, ethics committees, and research participants. How sensitive, for example, was my continuous question on age? Are we protecting participants from imaginary risks that they are not actually concerned about? Are those respondent-generated codes doing enough to reassure employees that their responses are truly anonymous? A colleague recently used the code I described earlier to match two administrations of a survey conducted 2 months apart. At Time 2, 79 respondents said they had completed the Time 1 survey – but only 30 Time 1 and Time 2 surveys had matching codes. The 49 'unmatchable' repeaters had the lowest satisfaction and commitment scores in the



Time 2 data. Does this suggest that they had deliberately modified their codes to ensure they were non-identifiable to organizational management? What kinds of coding systems will meet the matching needs of MML researchers – and simultaneously provide a strong enough sense of security to our respondents?

### **MML Designs: The Long-Term Impact**

Negotiating MML access with organizational gatekeepers and negotiating approval for MML designs with university ethics committees is going to slow down the start of data collection, and gathering our multisource and longitudinal data is going to delay publication of research findings. We can put that time to good use by reflecting on the long-term impact of MML practices. Are there costs associated with encouraging researchers to climb the higher mountain and embrace MML research designs? Below are a few questions to ponder.

*Is our enthusiasm for MML designs transforming us from a field that studies management wherever it happens into a field that studies management in large organizations?* MML enthusiasm will drive us towards the contexts where MML is easiest to implement unless we deliberately keep researching the contexts where MML is difficult to implement. Multilevel designs have to include enough social units to facilitate analysis (Hox, 2010); longitudinal designs have to start with large enough samples to accommodate ongoing attrition (Ployhart & Vandenberg, 2010). MML designs seem to be proliferating most quickly when researchers have access to large organizations with many workgroups or branches (e.g., Felps, Mitchell, Hekman, Lee, Holtom, & Harman, 2009; Jehn, Rispens, & Thatcher, 2010; Liu & Batt, 2010). But in many countries, the economy is dominated not by large organizations but by small-to-medium size enterprises. For example, over a million private sector small firms operate in Australia, employing over 3 million workers (Bartram, 2005). These small firms, and their employees, might fall out of favour with researchers who are chasing MML data.

*Is our enthusiasm for MML designs pushing us to the mesolevel to the exclusion of other levels?* MML enthusiasm will drive us towards the mesolevel unless we consciously keep researching higher levels. Mesolevel research focuses on the level in between the individual level (micro research) and the organizational level (macro research). Calls for mesolevel research first started appearing in the mid-1990s (e.g., House, Rousseau, & Thomas-Hunt, 1995; Rousseau & House, 1994) but were slow to catch on. Now, we are seeing a rise in workgroup- and workunit-level research published in management journals. MML designs are popular in mesolevel research because it is easier to get a large sample of groups or business units than a large sample of organizations. In my particular area of interest (workforce diversity management), e.g., we are seeing multilevel research being conducted

across workgroups (Nishii & Mayer, 2009), bank branches (Pugh, Dietz, Brief, & Wiley, 2008), hotel franchises (Herdman & McMillan-Capehart, 2010), retail organization store units (McKay, Avery, & Morris, 2008), and regional chain restaurants (Gonzalez & DeNisi, 2008). It is very interesting and useful research. I just wish that we were seeing a parallel increase in diversity research using *organizations* as the second level (see Button, 2001 for a notable exception). Many management theories are positioned at the organizational level, and studying them at the workgroup or branch level is substituting the nearby mountain for the higher one. More than a decade ago, Ostroff and Harrison (1999) observed that the management literature in general, and the human resource management literature in particular, were dominated by studies conducted within a single organization, industry or region. In the parts of the management literature I monitor most closely (the human resource management and diversity management parts), I do not yet see evidence that researchers' enthusiasm for MML is changing this to a great extent, despite the fact that organization-level variations in policies and practices are likely to have a big impact on employee reactions (Arthur & Boyles, 2007).

*Is our enthusiasm for MML going to increase the size of the research-practice gap?* MML enthusiasm will drive us to write increasingly complex academic articles unless we keep our non-academic readers in mind. Scholars have expressed concern about the gap between research findings and management practice (Rynes, Bartunek, & Daft, 2001; Rynes, Colbert, & Brown, 2002). One reason for the gap is the fact that very few practitioners read research articles in top-tier scholarly journals (Rynes et al., 2002). If practitioners are not reading articles featuring regression equations and structural equation modelling, I suspect they are even less likely to read articles featuring hierarchical linear modelling and latent growth modelling. The complex research designs may widen the research-practice gap – even though our intentions are to address better research questions.

*Will our enthusiasm for MML provide more opportunities for organizational gatekeepers to shape our research agenda?* MML designs require that researchers form more intense relationships with organizational gatekeepers. This is new territory for some researchers. Most management researchers have casual, short-term relationships with the organizations they study, focusing on the questions of most interest to the researcher, rather than committing to a long-term 'marriage' in which the organization has more opportunity to impact the research question (Rynes & McNatt, 2001). A trend towards researcher–organization 'marriages' could profoundly shape the field. For example, we may move even more strongly towards 'hard' performance outcomes. Organizations care more about organizational performance than any other outcome (Wasti & Robert, 2004), and Bartunek and Rynes (2010) have already observed that the 'implications' sections of management research articles are emphasizing performance outcomes of interest to

managers far more than nonmonetary outcomes such as satisfaction or sustainability that might be of greater interest to other stakeholders (e.g., employees, customers, or the general public). MML designs might, ironically, pull us away from the higher mountain instead of bringing us closer to it. Organizational gatekeepers are most concerned about solving their current problems in their immediate contexts. These practical goals may not be compatible with the researcher's goal of producing knowledge that is generalizable across organizations and over time. This could in the long run lead to a lack of general theory development in the field' (Hulin, 2001).

*Is our reliance on organizational gatekeepers for implementation of MML designs going to hurt the integrity of our data collections?* In my current research, I want to understand how organization-level diversity management practices impact the satisfaction and motivation of majority-group and minority-group employees. I have invited a national sample of human resource managers to participate in the research. The managers provide me with information about the organization's practices and performance. I also ask the managers to distribute a survey to their employees. I carefully script the email that the managers should send to their employees inviting participation in an online survey. Survey responses are delivered directly to the research team. In order to protect the confidentiality of individual employees, all managers were promised a feedback report but only organizations with 20 or more respondents get a customized version of the report benchmarking their employee responses against the national sample. Some managers are more enthusiastic than others about sending out reminders and encouraging participation – things I cannot control. This clearly affects the response rates across organizations. It might also affect how voluntary employee participation is, if some employees feel pressure from their human resource managers to participate (Sieber, 2000). I know these variations can also happen in research conducted within single organizations, where supervisors communicate the information differently to the people they supervise. My point is only that these variations are more likely, and the researcher has even less control, when we conduct MML research that crosses organizational boundaries.

## CONCLUSION

I have identified the challenges associated with using MML designs in our research. Should we climb the higher mountain in our research programmes? Yes, of course! Should we adopt MML research designs? Yes, of course! But we need to recognize that MML designs are not just more labour-intensive than cross-sectional surveys. MML designs change the relationship between key parties – researchers, university ethics committees, research participants, and organizational gatekeepers – in fundamental ways.

## NOTES

I am grateful to my Australia- and North America-based colleagues for providing feedback on an early draft of this essay. Whether they agreed or disagreed with my opinions, their comments helped me to articulate those opinions more clearly.

[1] *Hard yakka* is Australian rural slang for hard work. The meaning is derived from the very tough yakka wood.

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