



Nurse scientists overcoming challenges to lead transdisciplinary research teams

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ABSTRACT

Increasingly, scientific funding agencies are requiring that researchers move toward an integrated, transdisciplinary team science paradigm. Although the barriers to and rewards of conducting this type of research have been discussed in the literature, examples of how nurse investigators have led these teams to reconcile the differences in theoretical, methodological, and/or analytic perspectives that inevitably exist are lacking. In this article, we describe these developmental trajectory challenges through a case study of one transdisciplinary team, focusing on team member characteristics and the leadership tasks associated with successful transdisciplinary science teams in the literature. Specifically, we describe how overcoming these challenges has been essential to examining the complex and potentially cumulative effects that key intersections between legal, social welfare, and labor market systems may have on the health of disadvantaged women. Finally, we discuss this difficult but rewarding work within the context of lessons learned and transdisciplinary team research in relation to the future of nursing science.

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“The difficulty lies not in the new ideas, but in escaping the old ones.”

—John Maynard Keynes (1936)

Noted over 75 years ago, this statement remains highly relevant for scientists today. Federal initiatives within agencies such as the [National Institutes of Health \(NIH\) \(2011\)](#) and the [National Science](#)

[Foundation \(NSF\) \(2011\)](#) are urging scientists to rethink the phenomenon they seek to understand from different disciplinary perspectives. These initiatives are, at least in part, based on the premise that viewing the same phenomenon or problem from multiple perspectives will facilitate not only scientific discovery but also more rapid translation of findings into the settings where they will have the greatest use. In response, and

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often with significant effort to overcome existing challenges, scientists have undertaken many different forms of what is generally referred to in the literature as interdisciplinary research (Stokols, Misra, Moser, Hall, & Taylor, 2008).

In a landmark article that predates recent interdisciplinary initiatives, Rosenfield (1992) made a number of key observations from her study of research teams that included investigators from the social sciences and from medicine working on common public health problems. Among them, two of the most important observations were that the models of scientific collaboration differ by the level of theoretical and methodological integration occurring within teams and that the academic, career, and societal/health outcomes from the research vary based on the level of integration. Given these findings, she recommended a taxonomy be applied to characterize these differences, with multidisciplinary, interdisciplinary, and transdisciplinary research representing distinct forms of collaborative research. From this taxonomy, multidisciplinary research represents the most basic level and is characterized by members working independently and sequentially and by members maintaining the theoretical and methodological perspectives of their own disciplines. Interdisciplinary research is considered a more advanced form of collaboration, occurring when team members work jointly to add, but not integrate, independent theoretical and methodological perspectives where needed. Finally, transdisciplinary research is considered the most progressive form and is conducted when team members integrate or fully synthesize concepts, theories, and/or methods across disciplinary perspective. Although clearly differentiated by Rosenfield as early as 1992, multi-, inter-, and transdisciplinary research have often continued to be used synonymously. The most frequently used of these terms—interdisciplinary research—has been cited as taking on such an array of meanings that it cannot be said to characterize any unique form of scientific collaboration based on its use in the literature (Klein, 2008). Even with the robust team science agenda originating from the NIH and the “transdisciplinary” initiatives within the NIH Roadmap, the NIH has not clearly defined how the composition and/or functioning of transdisciplinary research teams differ from those operating within a multidisciplinary or interdisciplinary framework (National Institutes of Health [NIH], 1998, 2012; Stokols, Misra, et al., 2008). Although there is some agreement that research benefits when perspectives from multiple disciplines come together at any level, transdisciplinary research is considered most likely to result in the theoretical and methodological paradigm shifts that Kuhn (1996) posited are essential for scientific progress to occur (Stokols, Hall, Taylor, & Moser, 2008).

Despite funding incentives and the genuine desires of researchers to engage in transdisciplinary research, few teams are able to overcome the inherent challenges of generating collaborative projects, and even

fewer are able to achieve long-term success. Scholars from diverse fields have chronicled these challenges, attributing many transdisciplinary team failures to the negotiation required to genuinely integrate perspectives (Angelstam et al., 2013; Gray, 2008; Kessel & Rosenfield, 2008; Klein, 2008; Rosenfield, 1992; Stokols, Hall, et al., 2008; Stokols, Harvey, Gress, Fuqua, & Phillips, 2005; Stokols, Misra, et al., 2008). As such, this form of collaborative research is highly labor-intensive and almost inevitably leads to some degree of conflict within the team (Gray, 2008; Kessel & Rosenfield, 2008; Stokols, Misra, et al., 2008). Given these inherent difficulties, there has been a growing interest in understanding what contextual factors and leadership qualities can best facilitate successfully launching and sustaining transdisciplinary research teams.

Transdisciplinary Science Representation in Nursing Research

In the nursing literature, scholars have tended to characterize most team science as “interdisciplinary.” Much of the writing in this area has focused on the greater inclusion of nurse scientists on interdisciplinary teams (Broome, 2007; McCloskey & Maas, 1998). Some scholars have pointed to the contributions nurse scientists can make as either members of or leading interdisciplinary teams given the skills they acquire related to interpersonal communication, crossing cultural boundaries, and coordinating the efforts of diverse groups when providing care to individuals and/or communities (McBride, 2010; McCloskey & Maas, 1998; Woods & Magyary, 2010). Grey and Connolly (2008) trace the lineage of interdisciplinary collaboration in nursing, noting that it has been historically robust among public health nurses. They attribute this in part to the fact that public health practice is less physician centered and highly dependent on collaboration across a wide array of health and social science disciplines. Despite more recent calls within the discipline for nurse scientists to more astutely attend to the differences between the different forms of team science and embrace the challenges and opportunities that accompany transdisciplinary research, its representation in terms of funding by the NIH, generally, and the National Institute of Nursing Research, more specifically, has remained negligible (Grey & Connolly, 2008; Mitchell, 2005).

Although it is difficult to come to any definitive conclusion about why transdisciplinary research lags behind other forms of team science in nursing, the challenges of transdisciplinary work likely play a key role. Other than having the opportunity to participate directly on transdisciplinary teams as a student, post-doctoral fellow, or junior faculty member, detailed descriptions of the experiences nurse investigators have had working on transdisciplinary science teams are

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