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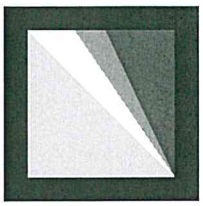

FEATURE ARTICLE

Occupational Science: A Data-based American Perspective

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The purpose of this research was to provide a data-based picture of the discipline of occupational science by identifying patterns of research in the first 5 years of presentations at the Society for the Study of Occupation: USA (SSO:USA). A grounded theory approach was used to examine 184 peer-reviewed presentation abstracts, from 2002 to 2006. Among the 108 data-based presentations, adults were the most studied group, with 46% of the data-based abstracts focused on participants with a disability or clear disadvantage. Presenters' research foci related to 4 themes: the personal experience of occupation, the context surrounding or impacting occupation, changes associated with occupation, and a descriptive perspective of occupation. Implications for occupational science are discussed.

Key Words: Occupational science, Occupational therapy, Research, Change, Individualism

Since its inception 20 years ago, widely variant visions have been expressed for the future of occupational science. Initially, it was described as basic research descriptive of occupation, serving occupational therapy's need to better understand its unique medium of intervention (Carlson & Dunlea, 1995; Clark et al., 1991; Molke, Laliberte Rudman, & Polatajko, 2004; Yerxa et al., 1989). Occupational therapy was founded on a principal belief in the healing power of occupation (Meyer, 1922/1977) and occupational science, through research, promised the development of theory and evidence to support that belief. The primary construct of the discipline of occupational science is that of occupation (Christiansen 1994; Gray, 1997; Trombly, 1995). In the earliest phase of occupational science, occupation was defined as an individual experience in context (Pierce, 2001b), and as form and performance (Nelson, 1988), drawing on theories from occupational therapy.

Theories and research from other disciplines have been widely explored in occupational science, seeking useful concepts for understanding occupation. Early occupational science researchers also sought suitable methods for needed descriptive work, adopting ethnography, grounded theory, participatory action research, narrative, experiential sampling, and case study methods from the disciplines of anthropology, sociology, and psychology. In keeping with this active search for concepts and methods, occupational science has been termed a social science, a disciplinary science, a multidisciplinary science, and a melding of viewpoints yielding inter-disciplinary pursuits (Hocking, 2000; Larson, Wood, & Clark, 2003; Lunt, 1997; Yerxa, 1991; Zemke & Clark, 1996).

This young science has now reached a point in its maturation that considerations of its potential and direction can and should be based in analyses of its growing body of work. The following study provides a data-based portrait of occupational science as it has been expressed in its country of origin. This analysis yields fresh insights as to the disciplinary identity of occupational science, the themes being developed by its researchers, and the inborn tensions that may be shaping its development.

Twenty Years of Growth

Occupational science officially began in 1989 at the launch of the occupational science doctoral program at the University of Southern California. Since that time, its research productivity has grown. In 1991 (Clark et al.), occupational science made its debut in the *American Journal of Occupational Therapy,* declaring its intent to produce research on occupation that would inform and strengthen practice. Since 1993, the *Journal of Occupational Science* has served as the discipline's primary publication outlet. In 1996, Zemke and Clark (1996) published the first edited occupational science collection, *Occupational Science: The Evolving Discipline.* In that same year, Wilcock (1996) completed her dissertation in community medicine, further demonstrating the globalization of occupational science by publishing that work as *An Occupational Perspective of Health* (Wilcock, 1988).

In a comparison of occupational science publications in 1990 and 2000, Molke, Laliberte Rudman, and Polatajko (2004) found that in 10 years, the number of publications had quadrupled, articles were published in a broader array of journals, authors were from many nations beyond the United States, a wider variety of methods were used, and a new focus on occupational justice was evident. In 2009, Glover also offered an analysis of patterns in the literature of occupational science over 11 years, finding publication increases in number of articles and in percentages of empirical articles, qualitative only studies, and articles not including persons with disabilities. A significant association was also found between publication in the *Journal of Occupational Science* and interdisciplinary authorship. In the United States and beyond, occupational science has been integrated into occupational therapy educational programs and has given rise to both baccalaureate and PhD degrees (Mounter & Ilott, 2000; Nielson, 1998), thus supporting the initial vision of the science as informing practice (Clark et al., 1991).

The Society for the Study of Occupation: USA (SSO:USA) was established in 2001 and has met annually since 2002. Its mission is to develop the discipline and disseminate its work, to support its researchers, to expand knowledge of occupation and its impacts on humans and their health, and to address the relatedness of occupational science and occupational therapy. Several other regional, national, or international occupational science societies also meet, although not all have reached the size of the SSO:USA or adopted its peer-reviewed research abstract format.

This study examines the abstracts of studies presented in the first 5 years of annual meetings of the SSO:USA. By examining abstracts, rather than publications, this study complements existing studies of publications by: 1) offering a perspective based in a community of scholars in ongoing interaction, 2) reflecting the regional perspective of the country of origin of occupational science, and 3) offering analysis of occupational science research prior to the screening effect that the editorial policies of various journals may exert on the degree to which different types of occupational science research easily find a publication venue. Based in this data, some conclusions can be made in regard to the type and conceptual foci of research being undertaken by occupational scientists presenting at the SSO:USA.

Figure 1: Research Process and Time Line

Date	Research Task								Product	Collaborators
Feb. 2007	Code & Describe All Data	Code & Describe All Data	Code & Describe All Data	Code & Describe All Data	Code & Describe All Data	Code & Describe All Data	Code & Describe All Data	Code & Describe All Data	8 Coding Schemes 8 Full Data Descriptions	8 individuals, Independent Analysis
May	Combine Individual Coding Schemes through Team Discussion								Team Coding Scheme 1	Team of 8
May	Trial Coding, Define Codes, Develop Exclusion Criteria, Revise Coding Scheme								Team Coding Scheme 2	Team of 8
June	Memo on Data-based versus Non-data-based		Memo on Populations		Memo on Theoretical Perspectives		Memo on Focus in Relation to Occupation		4 Memos on Primary Codes, with Sub-code	4 Dyads
July	Team Focus Shifts to Analysis of 108 Data-based Abstracts Team Revision of Memos on Population & Data-based/Non-data-based								2 Revised Memos	Team of 7
Aug.	Team Revision of Theoretical Perspectives Memo, Lit Review, Themes Identified Team Rejects Focus in Relation to Occupation Memo: Sub-codes Redeveloped/Applied Seeking Trends over Time Population Memo Revised								1 Memo Revision 1 Memo 2nd Revision Tentative Themes List	Team of 7
Sept.	Focus in Relation to Occupation, Sub-code Analysis Memos: Experience, Context, Description, Change								4 Sub-code Memos	3 Dyads, 1 Individual
Oct.	Team Review of Research Focus in Relation to Occupation Sub-code Memos									Team of 7
Nov.	Revision of Focus in Relation to Occupation, Sub-code Memos								4 Revised Sub-code Memos	3 Dyads, 1 Individual
Dec.	New Primary Code: Perspectives on Occupation								1 Primary Code Memo	Team of 7
Thru Feb. 2008	Revision of New Memo on Perspectives on Occupation Team Collaboration and Independent Work Develop Thematic Memos & Memo Summaries								1 Memo Revision Thematic Memos Memo Summaries	7 Individuals Team of 7

Methods

Study purpose and data

The purpose of this research was to identify and describe research patterns in the first 5 years of peer-reviewed presentations at the SSO:USA. A grounded theory approach was used to examine 184 peer-reviewed presentation abstracts, from 2002 to 2006. The data was publicly available on the SSO:USA website. The peer-selected presentations were primarily offered as single papers, although related presentations were sometimes combined into panels, and there were also a few discussion forums. Because the intent of the study was to examine the aggregated research endeavors of occupational scientists presenting at the SSO:USA, invited presentations, such as the annual Ruth Zemke Lecture in Occupational Science, were not included in this analysis.

Data analysis

Grounded theory process

Primary analytic strategies included document review, constant comparison, coding scheme development, coding, memo writing, and a return to the literature (Figure 1) (Charmaz, 2005; Strauss & Corbin, 1998). The research process began with a group of eight individuals who independently read the 184 abstracts, generated first order codes, used their independently-developed coding schemes to code all data, and wrote descriptive memos describing the data. Team discussions of the eight 'individual coding schemes' were used to collapse the eight individually-generated coding schemes into the first 'team coding scheme,' which included: data-based versus non-data-based, populations addressed, theoretical perspectives, and focus in relation to occupation. Trial of the first team coding scheme refined use of the four primary codes, but did not substantively change them, producing 'team coding scheme 2' (Figure 1). Researcher dyads were then used to recode the full data set within one of the four codes in the team coding scheme, producing detailed descriptive memos that included sub-codes. Later, a fifth theme, perspectives on occupation, emerged from the analysis (Figure 1). Sub-codes of all primary codes are listed in Figure 2.

Figure 2: Primary Codes of the Analysis

- Types of Abstracts (all abstracts analyzed)
  - Non-data based
  - Data-based
- Theoretical Perspectives (all abstracts)
  - Extra-disciplinary Frameworks
  - Occupational Science/Occupational Therapy
- Disability/Disadvantage
- Populations Addressed (data-based abstracts only)
  - Gender
  - Age
  - Disability/Disadvantage
  - Domestic/International
- Focus in Relation to Occupation (data-based abstracts only)
  - Experience of Occupations
  - Context of Occupations
  - Change in Occupations
  - Description of Occupations
- Perspectives on Occupation (data-based abstracts only)
  - Individual alone/Individual shared context
  - Shared group characteristics/population level

In a series of meetings focused on each of the five primary codes, the team refined its analysis through the following steps: memo distribution to the team, discussion and critique of the dyad-generated memos in full team meetings and in comparison to the data, and memo revisions in response to team critique. This process was repeated until each memo was judged by the team to be adequately descriptive. Team discussion of the theoretical perspectives memo produced a tentative set of themes crossing through the data. A return to the literature supported comparisons of the research findings to the historical vision and development of occupational science. While working to develop descriptive memos of the first three primary codes, the team recognized striking differences between the data-based and non-data-based work, especially in terms of the degree they could be argued to represent active research endeavors of occupational scientists. At this point, the team further focused analysis solely on the data-based abstracts for the following primary codes: populations addressed, focus in relation to occupation, and perspectives on occupation (Figures 1 and 2).

The fourth primary code, focus in relation to occupation, proved challenging. This portion of the analysis addressed the question, "What was it about occupation that was of primary research interest to occupational scientists?" The complexity of the phenomenon of occupation made distinguishing between overlapping foci difficult. This problem was approached by having team members individually code all data based abstracts to identify its primary focus within one of four collaboratively-developed sub-codes through repeated full team meetings. The four sub-categories were experience, context, change, and description of occupation (Figure 2). The assigned values were combined to produce a team guide to the abstracts most clearly focused within each of the four sub-codes and memos were developed and revised for each sub-code.

The fifth major code, perspectives on occupation, emerged naturally as analysis grew deeper (Figures 1 and 2). Initially the goal was to review the abstracts related to whether an occupation was individual, co-occupation, or taking place in a group. It was clear that these three codes did not cover the spectrum of what level of occupation was studied throughout the data-based abstracts. While exploring the focus in terms of occupation, it was recognized that perspectives on the occupations studied ranged from a solitary independent occupation to occupations at a population level, with a number of steps in between, and that this variation also shaped research designs.

Large team collaboration

Use of a large collaborative team strengthened the analysis by

drawing on multiple perspectives in the development of coding schemes, intensifying the degree of examination of patterns, supplying significant person power to the analysis, and requiring reflective depth to defend descriptions under team critique (Bartunek & Reis-Louis, 1996; Weiner, 2007). The research team's composition could also be considered what Bartunek and Reis-Louis referred to as insider/outsider team research, in which optimal analysis depends on having a mix in the degree to which each team member has experience with the setting under consideration. Guest and MacQueen (2007) proposed that team analysis can counter weaknesses of single-researcher qualitative analyses, in which a researcher's repeated re-reading of text can artificially support the created codes and ascribe meaning where it is actually lacking. On the other hand, team qualitative analysis requires careful task coordination and documentation. In this analysis, team procedures included team critique of memos, collaborative construction of on-site meeting records, structured tracking of team member activities, work in parallel and in dyads, and regular rotation of analysis of specific areas between team members.

Completion of analysis

The team reached theoretical saturation and discontinued coding and memo writing once primary areas of the description had been detailed in collaborative memos and tested against the data, and key themes and questions in regard to occupational science had been identified. In the final stages of all memo development the team searched for and discussed data points that contradicted developing descriptions (termed negative cases by Mays & Pope, 2000) to further refine the memos describing the four research foci. The trustworthiness of the analysis was indicated by a significant shift from initial categories to final descriptions and themes, the large team collaborative analysis process, and the multiple discoveries described in the following results. When presented at the SSO:USA in 2007, attendees found the results resonant with their own perspectives, as well as informing.

Descriptive Results

Types of abstracts

Non-data-based presentations

Non-data-based presentations comprised 76 of 184 (41%) of presentations during the first 5 years of SSO:USA. Fifty percent of the non-research presentations described aspects of occupation from a literature base. Twenty-one percent addressed occupational justice, including phrasing such as health disparity, social justice, social inequality, and advocacy and activism on behalf of particular groups. Twenty percent discussed specific research issues and methods in the study of occupation. Although this difference between the data based and non-data-based presentation abstracts was interesting to the team, at this point the focus of the investigation was tightened to address solely the data based work.

Data-based presentations

During the first 5 years of the SSO:USA, 108 out of 184 (59%) of presentations were based in original data and reported results of research. Of those studies, 91 of 108 (84%) were qualitative, 7 of 108 (7%) were quantitative, and 10 of 108 (9%) employed mixed methods. Where qualitative approaches were specifically identified, grounded theory was used in 17 of 91 (19%) of research reports, narrative in 10 of 91 (11%), phenomenology in 6 of 91 (7%), and ethnography in 5 of 91 (6%).

Theoretical perspectives

A primary finding of the study was the degree to which both the data-based and non-data-based abstracts referred to two primary theoretical perspectives: usefulness of research to occupational therapy, and social science theories and methods. At times, these perspectives were combined, but more often they were not. The team perceived this dynamic as a tension between perspectives emanating from the needs of occupational therapy versus the needs for developing social perspectives on occupation that drew occupational science in different directions. Implications and recommendations for occupational therapy were often included in abstracts and the flow of information between the discipline and the profession was widely acknowledged. Findings in regard to how theoretical perspectives were expressed within the data-based abstracts are reported in the following results through their incorporation into other primary codes for more detailed analysis: degree of individualism in how occupation was addressed in the abstracts, and in attention to gender, disability, and disadvantage.

Populations addressed

The 108 data-based SSO abstracts from 2002 to 2006 were analyzed in terms of the populations studied. Strong patterns emerged in this category.

Gender

Gender was not explicitly stated in 42 of 108 (39%) of the data-based abstracts. When gender was clearly specified in 66 of 108 (61%) abstracts, 28 of 66 (42%) mentioned women, 8 of 66 (13%) mentioned males, and 3 of 66 (4%) mentioned non-heterosexual individuals. There was overlap among these groups, since some studies included both men and women.

Age

Age was described in 93 of 108 (86%) of the data-based abstracts. Adult was the age group most studied, making up 56 of 93 (59%) of the data-based abstracts. Older adults were studied in 35 of 93 (38%) of the time and people under the age of 18 constituted 26 of 93 (28%) of research presentations. These different age groups were often overlapping in different abstracts. The definitions of these age groups were also vague (i.e. unclear age range for adult).

Disability and disadvantage

Of the data-based presentations, 35 of 108 (32%) addressed persons with disabilities. However, 15 of 108 (14%) of studies examined occupations in persons who, although they were not disabled, could be considered disadvantaged (i.e. victims of racism, prisoners). In combination, 50 of 108 (46%) of the

data-based abstracts focused on participants with a disability or a clear disadvantage. Some overlap resulted from studies comparing groups with and without disabilities or disadvantages.

Domestic versus international

Eighty seven of 108 (81%) of the data-based abstracts focused on US populations, and 21 of 108 (19%) on international. In 2005, when the meeting was held on the east coast, there was a spike to 7 of 17 (40%) of data-based abstracts focused on international populations. Studies of international populations were primarily conducted in countries beyond the United States (e.g. in Japan by Japanese researchers). Of research on domestic populations, where research setting was specifically identified, 16 of 87 (19%) of studies occurred in a home, 13 of 87 (15%) in the community, 13 of 87 (15%) in a clinic or healthcare setting, 11 of 87 (13%) in schools, 3 of 87 (4%) in urban settings and 6 of 87 (7%) in rural settings.

Focus in relation to occupation

Experience of occupations

Of the data-based presentations, 36 of 108 (33%) focused primarily on the personal experience of occupation. Studies looked at a wide variety of experiences of occupation, such as lesbian women making a home together (Jackson & Bailey, 2003) and elder women of three cultures preparing holiday food (Pierce, Shordike, Wright-St. Clair, & Bunrayong, 2004). Constructs within the individual experience of occupation that were frequently studied included meaning, personal identity, quality of life, health and well-being, motivation, spirituality, and emotional responses to occupations.

Context of occupations

Of the data-based presentations, 31 of 108 (29%) focused primarily on the context surrounding or impacting occupation. The dimension of context that was of greatest research interest was the socio-cultural. Interactions between mother and child, caregiver and care receiver, and peers were most frequently examined. Often, studies compared interactions between groups of people or spatial contexts: for example, mothering among women who worked in universities, were in prison, or were hospitalized for mental health concerns (Olson, Frances, Jose, & McKay, 2005). Several abstracts described the influence of the spatial context on occupation (e.g. impact of water quality on Eastern Kentucky coal mining communities, by Marshall, in 2003). A smaller number of abstracts reported on temporal features and their influence on occupations (e.g. the impact of teenage mothering on daily occupations by DeLany & Hershkowitz, 2005).

Change in occupations

Of the data-based presentations, 22 of 108 (20%) focused on change in occupation, including historical change, changes in living conditions, changes due to illness or disease, and the use of occupation as an intervention to produce life change. Although occupational scientists expressed in the non-data-based presentations a significant interest in occupational justice, which might be viewed as occupational change in populations due to injustice, this interest did not translate into data-based presentations at the Society.

An interesting discovery was that occupational scientists differentiated the way they used the related concepts of change and adaptation. The term change was generally used to describe alterations in occupation that were more personally controlled and less in response to an external event or illness. Change usually referred to experiences intended to improve occupational engagement, enhance success, or accomplish a larger purpose related to the occupational patterns of a group, program, or community. For example, one study examined changes in occupation in immigrant women (Sullivan, Gupta, & Spiegel, 2003), and another study showed how historical and technological change shaped the daily activities of a dairy farmer (Crepeau & Morneau, 2003). On the other hand, the word adaptation was usually used in regard to disruptions in occupation as a result of disability, illness, aging, or some other unanticipated or less desirable event or condition, such as in a study of elders adapting to a move to assisted living (Hersch & Spencer, 2002) and in research on adaptations by people with multiple sclerosis to cope with disability (Erickson & Matuska, 2006).

One grouping of research presentations examined the use of occupation to change health, commonly called occupation-based practice (AOTA, 2002). Some of the settings and populations within which occupation-based practice was studied included, for example, interventions for youth at risk (Fehringer, Marshall, & Pierce, 2003). Occupation was described as serving multiple purposes in intervention, such as involving the client in determining goals, using occupation to promote engagement, maximizing occupational success, and enhancing life quality.

Description of occupations

Nineteen of 108 (18%) of the data-based abstracts primarily focused on the description of an occupation. The sub-code, description, differed from the sub-code, experience, in that description did not primarily address personal perspectives and interpretations of occupation by particular persons or groups. Such an etic perspective has been defined by Pierce (2001b) as addressing activity, rather than occupation, because it focuses on a general cultural idea of action instead of an actually occurring experience that is observable and interpreted by the engaged individual.

Studies that described specific activities fell into two groups: descriptions of common everyday activities or descriptions of creative and expressive activities. Examples of everyday activities described included managing finances (Bailey & Jackson, 2004) and doing homework (Segal, 2004). Levels of complexity ranged from quite specific, such as using chopsticks (Asaba & Jackson, 2004), to much broader descriptions of occupation, such as teens hanging out (Krishnagiri, 2002). Examples of creative and expressive activities included pottery making (Leimbach & McCauley, 2005), song (Humphry, 2005), and legacy creation by women with cancer (Hunter, 2006).

From 2002 to 2006, there was also consistent research interest in description of broad patterns of occupation across time, from daily patterns to lifestyle or lifespan, such as in studies of occupational balance (Blessing, 2003; Jonsson & Persson, 2005; Matuska & Henderson, 2002), habits and routines (Crepeau & Morneau, 2003; Gupta, 2006; Yeager, 2006), orchestration (Asaba & Jackson, 2005; Larson, 2004; Sullivan et al., 2003), and life trajectories (Billock & Huecker, 2004; Meltzer, Martin, & Bilics, 2003). Either cumulative patterns were explored, using life histories or time logs, or a comparison of patterns was made between types of people, groups, or environments. For example, comparisons were made between typical and atypical children (Daunhauer & Cermak, 2002) and between school and home settings (Dunn, 2002).

Perspectives on occupation

Analysis of the data revealed that research on occupation varies in terms of the perspective from which it was being studied. The data-based abstracts took an interesting variety of perspectives to the social context of occupation, falling into three distinct types that ranged from purely individual occupation to population level occupation; there were multiple perspectives within some abstracts.

Individual alone/individual shared context

Only 13 of the 108 (12%) abstracts of reported research focused on individual experience, including purely individual interpretations of occupation, 4 of 108 (4%), as well as clearly individual perspectives on occupations within a shared social context, 9 of 108 (8%).

Shared group characteristics/population level

The second and largest type of data-based abstracts in terms of perspective on occupation, 72 of 108 (67%), included studies that examined occupation from the perspectives of like individuals: primarily studies of individuals with shared group characteristics, 71 of 108 (66%), and 1 of 108 (1%) was a study at the population level.

Co-occupation at dyad/group/community level

The third type addressed occupation as it was interactively experienced by multiple individuals in 23 of 108 (21%) abstracts, including co-occupation within a dyad, 8 of 108 (7%), in an ongoing group with established relationships, 13 of 108 (12%), and at a community level, 2 of 108 (2%).

Discussion

The current state of occupational science in the United States

To date, data-based reviews of occupational science have been limited. Initially, a typology of form, function, and meaning was used to describe types of occupational science research (Clark, 2001; Larson et al., 2003; Zemke & Clark, 1996). In her 'stock take' of occupational science, Hocking (2000) proposed that occupational science research fell within three research aims: discerning essential elements of occupation, describing occupational processes, and demonstrating the influence of occupation on other phenomena such as health. Since its inception, publications have increased and have become more empirical, been published in a greater number of journals, become more international, diversified in methods, and come to include the new concept of occupational justice (Glover, 2009; Molke et al., 2004). The study reported here supplements and expands existing understandings of occupational science by describing the populations and aspects of occupation upon which research is being focused, as well as confirming an increasing interest in occupational justice, and raising key developmental questions in the emergence of the science.

Of course, caution should be used in generalizing these results. The analysis was based on conference abstracts that were brief, were at times unclear or insufficiently descriptive, and the accuracy of which in portraying the research presentation was unknown. Also, since the majority of the abstracts reflected occupational science in the United States, results cannot be assumed to represent occupational science on an international level. Despite these limitations, the produced description is valuable in providing a complementary analysis of the development of occupational science that is not grounded in publication data.

Populations studied and unstudied in occupational science

Adult, white women without disabilities and living in the United States were the most frequently studied group. However, adults living with a disability or disadvantage were another population that received considerable research attention. Three factors may be influencing study of this population. First, recruiting non-majority populations is more difficult (Corbie-Smith, 2004; Yancey, Ortega, & Kumanyika, 2006). Second, data describing occupation in 'typical' populations may be important in the early years of occupational science, building a base from which the occupations of 'atypical' populations can be studied. And third, the roots of occupational science are in occupational therapy, a predominantly female profession with feminist origins and a strong interest in persons with disability (Frank, 1992).

Analysis of who was being studied also revealed those not being studied. The occupations of men were underrepresented. When men were the population of study in the first 5 years of research reported at the SSO:USA, they were often part of a parental pair (3 of 13, or 23%), or faced with disability (6 of 13, or 46%). Although abstracts aimed at international populations brought diversity to the studies presented at the SSO:USA, no research specifically addressing Hispanic or African-American persons in the United States were included. To address these population gaps in occupational science research, it could be argued that research exploring male perspectives on occupation, particularly among minorities in the United States, could make an important contribution. While there are male roles that have their foundation in social inequalities between men and women, it would also be invaluable to explore differences in power between groups of men in society, such as sexual minorities, ethnic minorities, and poor working class men (Williams, 2007).

Aspects of occupation being studied

The emerging themes of this research support and extend Hocking's findings, identifying four primary foci of study of occupations: experience, context, change, and description. The discovered category of studies reporting personal experiences and interpretations of occupation was the largest focus of the research reported at the SSO:USA. This category differs significantly from Hocking's (2000) three research aims of occupational science, yet appears more holistic and centered on the central phenomenon of occupational science.

The second largest type of research focus in regard to occupation was on the context of occupations. The importance of describing occupation within, and in interaction with, context has been acknowledged in occupational science from its inception (Yerxa et al., 1989). Whiteford and Wright-St. Clair (2005) stated that contextual factors "to a greater or lesser extent, shape the form and performance of the occupation as well as the meaning ascribed to it by an individual or group" (p. 10).

The third discovered category, change in occupations, might be considered a part of Hocking's categories of occupational processes, or even the influence of occupation on other phenomena in the case of studies of occupation-based practice. Further, the findings of this study suggest that researchers are not only interested in learning how people respond to disruptions in occupations, but also how they deliberately choose to improve or expand their occupations within everyday life.

The last category of aspects of occupation being studied was description. Descriptions of broad patterns of occupation or of everyday and expressive activities that are of special interest to occupational scientists does not echo any of Hocking's (2000) categories, although it did include her own research presentations focusing on her career-long interest in describing particular occupations.

Questions raised by the study

Is occupational science a unique discipline or a multidisciplinary focus of study?

At its debut, occupational science was presented as a discipline that would produce research on occupation in order to support the effectiveness of occupational therapy (Clark et al., 1991). A discipline has been defined by different authors as displaying specific hallmarks, such as an identified core problem, a specific ambition or envisioned outcome, unified methods, an identified body of theory and research, a system of social relations between scientists, and institutional structures such as academic departments granting degrees in the discipline, journals, and associations (Good, 2000; Heilbron, 2003; Powell, O'Malley, Muller-Wille, Calvert, & Dupre, 2007). Noted sociologist of disciplines and professions, Andrew Abbott (1988, 2001, 2004), has stated that mature disciplines are distinguished by a unique focus of study, general agreement in regard to methods, and self-sufficiency in producing PhDs to fully staff academic departments. Occupational science demonstrates many of these hallmarks. This study further demonstrates that occupational science possesses a clear focus of study and strong methodological agreement. It may not, however, be self-sufficient in doctoral graduates. In this sense, occupational science could be considered a discipline that is not yet fully mature.

Clearly, in this data, there was a wide variety of interdisciplinary theories and methods being used to study occupation. In 2000, Hocking described occupational science as a collection of interdisciplinary literature. Interdisciplinarity is "an adjective describing the interaction among two or more different disciplines" (Smelser, 2003, p. 53). Use of interdisciplinary knowledge is especially common in professional schools, where interdisciplinary breadth is balanced by preparation for a clearly defined professional role. Inter-disciplinarity is generally viewed as positive, indicating willingness to cross knowledge boundaries and potential for broad dissemination of work (Garber, 2001; Smelser). Interdisciplinarity has also, however, been considered a threat to focused work that can mark the decline of a discipline, and as risky in terms of academic career progression (Keith, 2000; Smelser; Turner, 2003). Garber described "discipline envy" (p. 18) as the efforts of members of one discipline to assume desirable characteristics of a higher status discipline by adopting some of its theoretical or methodological aspects. It is evident in this analysis that the SSO:USA does serve as a forum within which the potential usefulness of an interdisciplinary variety of theories and methods can be considered. Similarly, results revealed that occupational science is drawing heavily on other disciplines, especially in the social sciences. Thus, in research presented during the first 5 years of the SSO:USA, this analysis did substantiate Hocking's description of occupational science as highly interdisciplinary.

At its inception, Czikszentmihalyi (1989) raised the question of whether occupational science was going to become a unique science or an interdisciplinary studies program.

> It is clear that a field of occupational studies is definitely beginning to take shape. Such a designation may describe a group of researchers from various disciplines, interested in the enhancement of human life through the understanding of occupations. The group would be involved in developing shared goals, a specialized vocabulary, a common body of knowledge. But unlike a full-fledged 'science,' its practitioners would not necessarily invent new methods of research, and their theoretical advances would continue to rest on the general laws of the parent disciplines. (p. xvi)

Interdisciplinary studies are areas of research that draw on multiple disciplines (Garber, 2001). The term studies has shifted historically, from regional emphases, such as Latin American studies, to historical period studies (i.e. medieval studies), to population studies (i.e. African-American studies or gender studies). Unlike a discipline, areas of study do not usually display methodological agreement, are not distinct academic departments, and produce few graduates. In studies programs, university courses are commonly offered by cross-listing courses located within multiple academic units. Instead

of constituting full degrees, studies courses more typically make up a minor or a certificate.

Based on the data reported here, it appears that occupational science is emerging as a discipline, rather than as an interdisciplinary studies program, although it is clear that it draws on a wide range of interdisciplinary theories and methods. Given the youth of occupational science, the question of whether or not it will become more focused into a unique discipline or will remain an inter-disciplinary focus of research is unlikely to be fully answered in the immediate future.

What is the relationship of occupational science to occupational therapy?

It was evident in this data set that, at least in the United States, occupational scientists retain a strong orientation to occupational therapy and the societal relevance that their research promises through its use by therapists. Since the publication in 1997 of the Well Elderly Study (Clark et al., 1997), a randomized control trial demonstrating occupational therapy's effectiveness, occupational science has continued to include research addressing the use of occupation as an intervention (Clark et al., 2006; Clark & Lawlor, 2008; Horowitz & Chang, 2004; Matuska, Giles-Heinz, Flinn, Neighbor, & Bass-Haugen, 2003; Ward, Mitchell, & Price, 2007). Larson et al. (2003) characterized the relationship between occupational science and occupational therapy as influencing occupational therapy to adhere to its core belief in occupation and the individualization of interventions. Clark (2006) described how occupational science and occupational therapy are "symbiotic" (p. 172) and Pierce (2001a) has argued that the translation of occupational science to support occupation-based practice requires discourse, demonstration, and education. Authors in occupational therapy have deemed occupational science a scientific revolution, necessary to address the anomalies of occupational therapy's identity challenges and need for unique disciplinary knowledge to support a post-baccalaureate level of entry into practice (Molke et al., 2004; Mounter & Ilott, 2000; Whiteford, Townsend, & Hocking, 2000; Yerxa, 1998).

The clearest examples of the link between occupational science and occupational therapy existed in this data within presentations of occupation-based practice research: usually studies of innovative, community-based, and highly client-centered approaches, and often identifying new populations for service. In some presentations, information was intended to flow, not from occupational science to occupational therapy, but in the opposite direction. For example, clinicians working with breast cancer survivors (Arnold, Paisley, & Nelson, 2005), and who became interested in increases in quality of life, called for the discipline of occupational science and the profession of occupational therapy to collaborate in commencing quality of life research in this area.

It is evident that occupational science, as it was represented in the first 5 years of presentations at the SSO:USA and as it promised at its inception, is committed to linking its research to application by occupational therapists. A primary function of the SSO:USA may be to provide knowledge of occupation to occupational therapy, through research on occupation in typical and challenged conditions, in populations of special interest to occupational therapists, and on occupation as it is applied by occupational therapists.

Is occupational science research too qualitative?

As reported, 91 of 108 (84%) of the research abstracts presented at the SSO:USA were qualitative. Clark (2006) has argued that, due to the methodological preferences of funding sources for health-related research in the United States, the success of occupational science requires increases in quantitative and mixed method research. Simultaneously, Clark argued that a unified paradigmatic focus is required for the survival of occupational science. Is the use of qualitative methods simply an appropriate and wide-spread methodological response by researchers to the science's central phenomenon of interest, occupation? Or, are current methodological approaches inadequate and require supplementation with quantitative data? The question of the best methods for occupational science is complex. An answer will require a summative examination of occupational science's productivity, and of the many methodological choices made by its researchers, in the distant future.

Qualitative approaches are designed to access and honor individual perspectives (Yerxa, 1991). The early methodological shaping of occupational science as qualitative may have pulled it toward studies at an individual level, or viewed in another way, may have responded to its interests in the experiences and perspectives of individuals. As the data revealed in this study, the perspective of occupation taken by the different studies varied greatly from purely individual to population level. The vast majority focused on individuals with group characteristics (e.g. cancer, widowed), with the second most frequent perspective being occupation interactively experienced by multiple individuals (e.g. toddlers in a classroom, a dance program). With this in mind there seems to be room to increase quantitative and mixed methods as they would easily fit research questions looking at multiple individuals with shared characteristics and potentially interactive occupation among groups. Although researchers' decisions to use specific methodological approaches are guided by the design needs of their studies, other factors also influence these choices. Using qualitative or quantitative methods also signals the positioning of the researcher within a recognizable tradition or discipline. Methods may also be shaped by the interests, skills, and experiences of those completing the research, those being studied, the intended uses and venue of the findings, and financial and staff resources (Hathaway, 1995).

The propensity toward qualitative methods in occupational science has been discussed in other studies. Glover (2009) found that of the 244 overtly labeled occupational science articles published in peer-reviewed journals between 1996 and 2006, 107 were data based, with 75 (70%) being solely qualitative and 32 (30%) using quantitative or mixed methods. This data was not correlated to the social perspective of the studies, so there is no way to know if the qualitative

methods were primarily being used in studies of individual occupation. During the formative stages of a science, the goal is to learn as much as possible about the target of study and a host of research methods provides many different data "viewpoints" for seeing the big picture. It is safe to say that understanding occupation through a variety of perspectives and methods would be advantageous to the development of the discipline (Glover; Tickle-Degnen & Bedell, 2003).

Is research in occupational science too individualistic?
According to Dickie, Cutchin and Humphry (2006), the individual perspective has been over-emphasized in occupational science and an increased focus on the transactional relationship between the individual, the environment and the occupation is needed. These authors argued that, "occupational science is not served well by definitions of occupation that focus investigation and interpretation almost entirely on individual experience" (p. 83). Wilcock and Hocking (2004) have also advocated for an increased population-level focus within occupational science, in order to insure that research produces public health benefits that cannot be achieved through a more individual, medical, and reductionist approach to the study of occupation. According to Wilcock and Townsend (2000), "the concept of occupational justice is about recognizing and providing for the occupational needs of communities as part of a fair and empowering society" (p. 84). Occupational justice differs from the perspective of individualism in that it focuses on larger societal issues, policies and, often, political issues. For example, Whiteford (2004) advocated for occupational therapists to become researchers, advocates, educators, and lobbyists meeting the challenges posed by refugee populations around the world.

As reported here, the research presented in the first 5 years of meetings of the U.S. occupational science research society fell across a social continuum, from a focus on a single individual's perspective on his or her occupations (12% of studies), to a focus on occupations as perceived by groups of individuals with shared characteristics (67%), to a focus on the co-occupations of individuals within a dyad, ongoing group, or community (21%). Within occupational science, this is the first data to describe the degree to which occupational science is, or is not, highly individualistic in its focus. In fact, the largest focus of the data-based abstracts was on describing the perspectives of multiple individuals with shared characteristics on a particular occupational experience or pattern. Although this focus still values the subjectivity of those studied, it attempts to look more broadly across multiple individuals within shared conditions.

When research abstracts were categorized according to their focus in relation to occupation, 33% did focus primarily on the individual experience of occupation. Yet, 29% of the research reported at the SSO:USA in the first 5 years had a primary focus, not on the experience of the individual or individuals studied, but on the context of the occupation and the influences of that context on occupation. This strong emphasis on context in occupational science research may indicate that the emphasis on the individual may be overstated, or may not necessarily result in research that excludes attention to contextual aspects of occupation.

It is widely acknowledged that American culture is highly individualistic (Bellah, Madsen, Sullivan, Swidler, & Tipton, 1985). The Protestant work ethic combines with capitalism to create a highly individualistic perspective permeating United States culture. The tie of occupational science to occupational therapy, which largely occurs within interventions focused on a single individual's occupations, may also support the individualistic focus of occupational science. Clearly, to produce knowledge that will be helpful to occupational therapy, a focus on research honoring the individual perspective on occupation is a logical strategy (Larson et al., 2003).

This research team has discussed the possibility that a focus on the perspectives of individuals may be a defining element of occupational science, separating it from other disciplines who may not locate their phenomenon of central concern at the level of the individual (i. e., anthropology's primary focus on culture). Although Dickie, Cutchin, and Humphry (2006) have argued that occupation itself should be defined in a way that is less centered on the individual, this would require quite radical change, as definitions of occupation within the field do not take this approach (Clark et al., 1991; Pierce, 2001b). As can be seen from the data reported here, redefining the central phenomenon of interest in occupational science away from such a individualistic emphasis would require changes by the majority of researchers in their conceptualization, design, and reporting of studies of occupation.

Conclusion

This study complements the founding visions of the potential of occupational science with a critical and data-based description of its research products, its central concerns, and its emerging questions. Within the limits of this particular data set, occupational science appears to be an emerging discipline that draws on a wide variety of interdisciplinary perspectives, that has stronger research interests in the occupations of able-bodied white women and persons challenged by disability or disadvantage, that is largely qualitative, that primarily studies occupation as it is perceived by individuals across groups with shared characteristics, and that is still committed to an ongoing research exchange with occupational therapy on the topic of occupation.

Two highly related questions remain unanswered. Is occupational science too individualistic, and is it too qualitative? Or, rephrased, is the focus on the experience of the individual a defining characteristic of occupational science that can be traced to many origins? And, are qualitative methods the appropriate response to that disciplinary focus? Answers to these questions can only be provided by analysis of future patterns of occupational science research. For now, this study provides a useful synthesis of occupational science as it appeared from 2002 to 2006, in the research society of its country of origin.

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