Lack of ethical reasoning in the innovation narrative of Occupational Therapy and Occupational Science literature

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Abstract

Occupational therapy and occupational science are two fields that are impacted by innovations and are seen as innovative. Ethical reasoning is seen as essential for guiding innovative processes such as the development of new scientific and technological products. At the same time it is reported that ethicists “lack the appropriate intellectual tools for promoting deep moral change in our society” and that members of the public such as parents of children with disabilities do not necessarily use ethical theories and ethical reasoning to highlight their problems. The purpose of this study was to investigate how the fields of occupational therapy and occupational science engage with ethics within their innovation-covering academic literature and whether occupational therapy and occupational science were mentioned in academic journals that contained words starting with “ethic” in the title. We found little conceptual engagement with ethics principles and no employment of ethical theories in the academic literature covered. We also found little engagement with occupational therapy or occupational science in academic journals that...
contained words starting with "ethic" in the title. Our findings are another example of the limited use of the term ethics and limited uptake of ethical reasoning using ethical theories giving further weight to the concerns Sherwin voiced.

Key words: ethics, ethical theories, ethical reasoning, innovation, science, technology, occupational therapy, occupational science;

1. Introduction
Occupational therapy and occupational science focus on improving the health and well-being of people by enabling people to participate in the activities of everyday life [4]. Occupational therapists are responsible to remain current with new developments in the profession and to maintain excellence in their practice [5]. Occupational therapy and occupational science as fields and occupational therapists are continuously impacted by scientific, technological and innovation (STI) developments[6]. Ethical theories and ethical reasoning are employed with local and global scopes when one discusses for example the governance of scientific, technological and innovation (STI) developments [2,7-25].

Ethics is about what one ought to do. However, as Sherwin stated, “we [ethicists] lack the appropriate intellectual tools for promoting deep moral change in our society” ([1] quoted in[2]). Furthermore one study revealed that members of the public such as parents of children with disabilities do not use ethical theories and ethical reasoning to highlight their problems [3]. Our study investigated how the fields of occupational therapy and occupational science engage with ethics within their academic literature covering innovation and whether occupational therapy and occupational science were mentioned in academic journals containing words starting with "ethic" in the title.

1.1. Occupational Therapy and Occupational Science
According to the World Federation of Occupational Therapy, “Occupational therapy is the art and science of enabling engagement in everyday living, through occupation; of enabling people to perform the occupations that foster health and well-being; and of enabling a just and inclusive society so that all people may participate to their potential in the daily occupations of life” [4].

Occupational therapists work with people and communities “to enhance their ability to engage in the occupations they want to, need to, or are expected to do, or by modifying the occupation or the environment to better support their occupational engagement” [26]. In recent years occupational therapy added concepts such as occupational justice [27-29], ecological sustainability of occupations [30], occupational satisfaction [31,32], occupational enablement [33] and other areas [34] to its focus. According to Yerxa, one of the founders of the field occupational science in the 1990’s, occupational science is an emerging basic science which supports the practice of occupational therapy [35]. Occupational science is seen to assist in developing the understanding of the occupational nature of humans [36,37] as a method of achieving social justice and social reform [38] and it engages with many occupational concepts (Table 3 in [39]).

1.2. Occupational Therapy, Occupational Science and Innovation
The fields of occupational therapy and occupational science both have narratives around innovation. For example, innovation is listed as one value of the Canadian Association of Occupational Therapists [40]. The Canadian Association of Occupational Therapists has an award for innovative practice which is given for “exceptional leadership and innovation in the application of evidence-based principles of occupational therapy to clinical practice” which includes “client service, consumer advocacy, policy development, community development, education and/or fieldwork” [41]. On the webpage of the Canadian Association of Occupational Therapists it is stated that the “nominees shall have had a positive impact on clients, the community and/or the advancement of occupational therapy clinical practice” [41]. Occupational scientists are seen to “study ways of measuring participation, develop new and innovative methods of intervention to help individuals engage in activities, and examine the impact of participation on an individual’s health and well-being” [42].

1.3. Code of Ethics and Occupational Therapy Organizations
Codes of ethics are documents that are developed to give guidance to organizations and groups working under them. The Canadian Framework for Ethical Occupational Therapy Practice addresses the ethics principles of autonomy, beneficence, non-maleficence, and justice [43]. Ethics is used as an umbrella term, combining elements of identity and knowledge, as an everyday way of behaving and what each person values and considers important [43]. The framework primarily discusses the professional ethical conducts that are important for occupational therapists to follow in a way that is
“technically proficient and honors the stories and lived experience of both the therapist and the client” [43].

Occupational therapists are furthermore expected to be courageous, competent, mindful, respectful, sensitive, and reflective when they are working with clients, as occupational therapists are accountable to those they serve and to society [43]. According to the World Federation of Occupational Therapy Code of Ethics, occupational therapists must maintain many personal attributes such as integrity, reliability, open mindedness, and loyalty [44]. Occupational therapists must respect their clients and their unique situation as well as not discriminate against their clients and keep the client information confidential [44]. Occupational therapists must be able to collaborate with other occupational therapists as well as other professions [44]. A combination of knowledge, skills, and evidence must be acquired by the occupational therapist to help their clients in the best way as well as to improve their professional field [44]. It also states that the occupational therapy field has to be promoted to the public, other professional organizations, and government bodies in an ethical way [44].

1.4 Ethics and Innovation
There are many discourses around innovation and ethics, for example, medical technology [45], inclusive innovation [46], critical social innovation [47], tripartite innovation for global health [48], sticky ethics and corporate responsibility [49], ethical considerations in the innovation business [50], the politics of blood ethics [51], the ethics of clinical innovation in psychopharmacology [52], legal ethics and technological innovation [53], ethical technology management and innovation [54], and the ethics of innovation [55]. 93% of the articles in the Journal of Responsible Innovation mention words starting with “ethic” [56]. Empirical ethics and responsible innovation are linked [57] and ethics education is seen as useful for responsible innovation [58].

Given that ethical reasoning is seen as essential for guiding scientific, technological, and innovation developments, given Sherwin’s concern that ethicists “lack the appropriate intellectual tools for promoting deep moral change in our society” ([1] quoted in [2]) and that members of the public such as parents of children with disabilities do not perceive ethical theories and ethical reasoning to highlight their problems [3] and given that occupational therapy and occupational science see innovation as important for their respective fields, the purpose of this study was to investigated how the fields of occupational therapy and occupational science engage with ethics within their innovation covering academic literature and whether occupational therapy and occupational science were mentioned in academic journals that contained words starting with “ethic” in the title.

2. Data Source and Sampling
We employed three approaches accessing three types of sources to generate descriptive quantitative and qualitative data answering the questions the study posed.


We searched the website search engines of the five occupational therapy journals and the occupational science journal for the term “innovation” in the abstracts of articles on May 5, 2015. We identified n=121 articles from the American Journal of Occupational Therapy, n=129 articles from the British Journal of Occupational Therapy, n=142 from the Canadian Journal of Occupational Therapy, n=19 from the Scandinavian Journal of Occupational Therapy and n=6 articles from the Hong Kong Journal of Occupational Therapy and n=41 articles from the Journal of Occupational Science. The articles were downloaded as PDF and uploaded into Atlas-Ti 7, a qualitative analysis software, for descriptive quantitative and qualitative content analysis.

Approach 2: We accessed three academic databases (EBSCO All - an umbrella database that consists of over 70 other databases including Medline; Scopus and Web of Science) that contain journals that cover a wide range of topics. These databases include many journals that have occupational therapy in the title of the journal such as: British Journal of occupational therapy; American journal of occupational therapy; Australian occupational therapy journal; Physical & occupational therapy in pediatrics; Occupational therapy in health care; Physical & occupational therapy in geriatrics; Canadian Journal of occupational therapy; Scandinavian Journal of occupational therapy; Occupational therapy in mental health; Indian Journal of physiotherapy & occupational therapy; Occupational therapy international; Indian Journal of occupational therapy; Mental health occupational therapy; Occupational therapy journal of research; South
African journal of occupational therapy; New Zealand journal of occupational therapy; Journal of occupational therapy, schools & early intervention; Hong Kong journal of occupational therapy; Irish journal of occupational therapy and Physiotherapy & occupational therapy journal.

We searched (May 19, 2015) the three academic databases for the terms “occupational therapy” and “innovation” in the abstract (EBSCO ALL), abstract, title, keyword (Scopus), Web of Science (topic: meaning Title, Abstract, Author Keyword and Keywords Plus®) limiting the searches to articles, editorial material, review and proceeding papers (Web of Science); review, article, conference paper, editorial (Scopus) and scholarly peer reviewed journals (EBSCO ALL). Of the positive hits n=108 were duplicates from the search conducted in Approach 1 and discarded. The n=71 new articles found were downloaded as PDF uploaded into Atlas-Ti a qualitative analysis software for descriptive quantitative and qualitative content analysis.

Approach 3: We searched for the presence of the terms “occupational science” and “occupational therapy” in the abstract of articles from journals with words starting with “ethic” in the title of the journal that are listed in EBSCO ALL and Scopus (March 3, 2016). We did not use Web of Science as it does not generate a hit count for all publications with words starting with “ethic” in the journal title.

3. Data Analysis
To obtain descriptive quantitative data we employed three approaches.

Approach 1: We searched all the downloaded articles obtained as described under section 2.1. Approaches 1 and 2 for terms and phrase containing words starting with “ethic” and using the advanced search feature of the software Adobe Acrobat X Pro to record the numbers of how often a given term or phrase linked to ethics was present in a given article and in how many articles (Table 1).


We used again the advanced search feature of the software Adobe Acrobat X Pro to record the numbers of how often a given term or phrase linked to ethics was present in a given article and in how many articles (Table 2). We also used the advanced search feature of the software Adobe Acrobat X Pro to record how often a term linked to ethics was present in an article within 20 words from a word starting with “inno” (Table 2).

Approach 3: We recorded how often the terms “occupational science” and “occupational therapy” were present in the abstract of articles from journals with a word that starts with “ethic” in the title of the journal that are listed in EBSCO All and Scopus (March 3, 2016) (section 3.1.3.). The descriptive quantitative data generated by the three approaches was generated by both authors and no discrepancy was evident in counts obtained by the two authors.

To obtain qualitative data the downloaded articles were auto-coded for words starting with “inno” which generated n=1075 hits and for words starting with “ethic” which generated n=1442 hits. A co-occurrence code was then generated that indicated the co-occurrence of the two words within 20 words (n=21 quotes). A thematic analysis was performed on the co-occurrence (n=21 quotes) and the n=1442 ethics-related quotes. Both researchers performed the analysis and results were compared between the researchers. No dispute occurred partly due to the few articles that linked content to ethics and related terms.

4. Limitations
Only documents that were in English were considered. We did not cover all the occupational therapy journals in existence and all academic databases that might have articles that cover occupational therapy and occupational science. As such our conclusions are linked to the sources covered and cannot be generalized.

5. Results
In a first step we generated descriptive quantitative data on which phrases were linked to words starting with “ethic” (Table 1), which of the n=34 ethics terms mentioned in the section 2.1 were present in the sources covered (Table 2) and how
often occupational therapy and occupational science show up in ethics journals. **Quantitative Data:** Table 1 shows how the term ethics was used in the n=417 occupational therapy and n=41 OS articles. Words and phrases containing words starting with “ethic” were mentioned n=1442 in n=160 occupational therapy articles and n=56 in n=16 OS articles. “Ethical approval” had the highest counts with n=530 in n=34 articles.

Table 2 shows with the hit count and the article count for each of the n=34 ethics discourse terms. It demonstrated that many ethical theories were not employed in the literature investigated, and also that key bioethics principles such as beneficence and maleficence were not employed.

**Mentioning of Occupational Therapy and Occupational Science in Ethics Journals:** Of the 45,588 articles found in the databases that have words starting with “ethic” in the title of journals, n=5 articles mentioned occupational therapy in the abstract. Not one article mentioned occupational science in the abstract.

**Qualitative Analysis:** Most of the quotations generated for the articles uploaded into Atlas T17 contained content that did not engage in a meaningful or conceptual way if at all with the n=34 ethics-related terms in question. As such we only recap here our findings for the quotes generated with words and phrases containing words starting with “ethic”. First, we will discuss the ones not linked to innovation within a 20-word distance, and then we will discuss the quotations that co-occurred with “inno*”.

**Ethic* and Occupational Therapy** Although n=1442 quotations were generated for words starting with ethic most of the quotations reflect a bureaucratic use of words containing ethic, such as ethics approval or using a term without giving content. Only seven articles were found to have some content.
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<th>Number of hits/article with terms in proximity (20 words) of term innovation in the OS journal</th>
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Abermethy, in her 2010 article *The assessment and treatment of sensory defensiveness in adult mental health: a literature review*, stated that none of the articles in her literature review covered ethical implications [64]. Two articles engaged with the phrase “ethical reasoning”. One linked issues of sustainability with occupational therapy philosophy and discusses how employing a sustainability lens with professional reasoning can help practitioners integrate sustainability into their practice [65]. The authors stated: “In addition to addressing issues related to individual client care in our day-to-day practice, occupational therapy practitioners should also consider ethical dimensions of the issues by utilizing the sustainability lens discussed in this paper. This lens encourages practitioners to focus on the consequences of our actions and consider our duties, responsibilities, and the morally correct action to be taken, which is an extension of ethical reasoning” [65].

Wendy Wood’s article covered the process of curriculum redesign of an occupational therapy Master’s degree in which Wood engages with the term “ethical reasoning”. Wood states “Ethical reasoning is defined in the curriculum as processes of enacting the highest standards of ethical conduct and of generating solutions to problems on the basis of a systematic study of morality. The article examined current threats to the field “in light of past compromises that weakened occupational therapy’s sociopolitical position and diminished its power to meet the occupational needs of people and society” [66].

Taff et al assessed “how contemporary challenges and a need for ethical identity require a philosophical shift” [67] and their article has a section called “Occupational Rights and Human Dignity: Defining Ethics and Accountability” [67]. The phrase “ethical considerations” was mentioned in n=25 articles. However, the phrase was mostly linked to ethics approval. Again, Taff et al provide some content: "There is some debate in recent years about the core values as well as the ethical considerations in the definition and practice of occupational therapy” [67]. Ethical dilemmas were brought to light in one paper where they are "related to an inability to offer new technology to all clients due to funding short falls” [68] whereby the lack of access was seen as being able to be addressed and resolved through public opinion and client experience [68].

Vincent reported on a survey saying that people say ethics is important [69]. However, it was not explained what is meant with ethics. Although the term “ethical implication” was mentioned in n=8 articles in only one case was it not linked to ethics approval. Castro et al. stated “As culture is difficult to define, and has political and ethical implications, an investigation into its usage is warranted” [70] and flagged the possibility that “a lack of critical insight into professional knowledge increases the risk that occupational therapy will remain satisfied with the current understanding of culture, based on the dominant knowledge. The discipline could fail to address the political, ethical, and theoretical issues required to reach the targeted diversity in its practice” [70].

Taff et al. in their article *The Accountability–Well-Being–Ethics framework: A new philosophical foundation for occupational therapy*, engage with Rortyian thoughts and they have “particular relevance in occupational therapy, where the focus on possibilities and local meanings resonates heavily with people’s lived experience. His contextualism differs from most philosophical perspectives because it is not concerned with great truths. Instead, it is a “lowercase” philosophy that ponders the joys, dilemmas, and improvement of daily life. The discoveries of science are crucial to support the continued growth of professional knowledge. No less important, though, is the philosophical view of the person as an active agent in achieving a good life, and it is equally critical that this facet of occupational therapy be sustained to facilitate both local and global influence. The person-centred philosophy must be nourished, and it is here where Rorty plays a key role. Rorty brings philosophy out of the realm of scientists and academics and presents it as a tool for solving problems and achieving equity in everyday experience. This “lower-case” philosophy requires collaboration, promotes capabilities, and is available to everyone. As such, it is a valuable ally to occupational therapy as the profession seeks ways to address the new challenges of changing health care policies, globalization, and sociopolitical and climate-driven determinants of health. The Rortyian concepts of hope, solidarity, and contingency provide new and needed concepts upon which occupational performance, participation, and well-being can be addressed as we move through the 21st century” [67].

**Ethic* and Occupational Science**: Words starting with ethic were mentioned in n=16 articles n=56 times with n=6 articles having some content. One article stated that occupational science needs to engage with ethical considerations in order for it to be a socially responsible [71].

According to Rudman, it is important to consider “how occupational science is ethically, morally and politically responsible for the knowledge it generates” which “challenges
occupational scientists to redefine the boundaries between ‘professional’ (sometimes framed as applied) and ‘scientific’ (sometimes framed as basic) knowledge and practices” [72] and the “broader dialogue addressing the types of knowledge production falling within the domain and practices of occupational science is essential to optimize relevance and ethical and social responsibility” [72]. Willis link Protestant ethics to social history of deadlines [73].

Halahan states “competence can be regarded as a process*not merely as an outcome*and used to enrich practices by opening the arena of human action to its ethical, or value-laden, nature. Participants in occupation become agents of safe, effective, lifegiving, meaningful pursuits, not mere technicians of action, because competence consists as much in people's ability to articulate why they act the way they do as it does in their capacity to act in the first place” [74]. In an article by Elelwani Ramugondo, an ethics idea governing human engagement called Ubuntu, an interactive ethics also called African ethics, is discussed as it is more of a community based ethics rather than just concerning the individual [75]. In this article the Ubuntu “raises consciousness around the responsibility of both individuals and communities to allow meaningful existence for all” [75]. This form of ethics governing is concerned with how each individual impacts other individuals [75].

Dickie et al make a case for “Transactional occupational science based on Dewey and his allies” which they assert is "a solid foundation on which to place the concept of occupation" as it "provides a philosophical basis for the importance of occupation in everyday life and because it "enables occupation to be directly related to a wider range of experience and inquiry, from ethics to cultural analysis to political issues such as occupational justice” [76].

Ethic* and Innov*: N=21 quotations in n=8 occupational therapy articles were generated for the presence of “inno*” and "ethic*” within 20 words. All but two articles used the term “ethics approval” and did not use ethics in relation to innovation. No article was obtained for “inno*” and "ethic*” within 20 words distance in the occupational science articles.

As to the two occupational therapy articles mentioning “ethic*” and “inno*” within 20 words distance; Hoffmann in a 1979 article Continuing Education: An Answer to Professional Obsolescence recognized “that new innovations have also fostered a host of problems” [77], stating further that “Organ transplants, for example, have opened a Pandora’s Box in terms of ethical questions. The debate of prolonging life by mechanical means when there is virtually no hope for recovery, has fostered a major debate of the right to die issue. A good example of this situation is the Karen Quinlan case in New Jersey. Another example is biological research on recombinant DNA. It is now possible for scientists to combine genetic material from different molecules and generate biological matter in the laboratory that are not found in nature. Another example is the recent debate concerning test tube fertilization” [77]. However, Hoffman does not explicitly state what the ethical issues are and he does not employ ethical reasoning to discuss some of the specific innovations highlighted.

Anita Atwal’s paper stated that “The challenge for action researchers is to act ethically. When instigating change in the health service, investigators must let professionals drive change innovations even though the investigator may find himself or herself challenging assumptions. Action researchers have to ensure that the quality, value and honesty of their inquiries are not jeopardised by unrecognised bias and influence” [78].

6. Discussion
Based on the articles investigated, our findings suggest that the occupational science and occupational therapy academic literature around innovation did not engage with ethics in a substantial matter such as employing ethical theories or ethics principles. Further, we found little engagement with occupational therapy and no engagement with occupational science in ethics journals searched. We posit that this is problematic given that occupational therapy and occupational science is seen to be in constant need to innovate [40-42] and given that science and technology products are an area of interest to occupational therapy and occupational science [79-86], products that constantly are influenced by advancements in science and technology. Furthermore, advances in science and technology are seen as innovative and they influence innovation discourses including social innovation. As Jarvis states: “As stated in our Code of Ethics, it is our obligation to keep up to date with changes in our field” [87]. This quote is trying to show the connection that ethics has with innovation in the occupational therapy field [87].

It is also a problem from the perspective of the ethics field. Ethicists want to influence social and political change; but some see problems with doing so. Sherwin recently stated: "We lack the appropriate intellectual tools for promoting deep moral change in our society. To find ways of addressing these difficult questions, we need to learn about the levers of social and political change.
We probably need also to develop skills in communicating effectively with the public and to engage in some version of political lobbying. In other words, we must develop new types of understanding and new ways of practice” ([1] quoted in [2]). Our findings provide evidence for the problem Sherwin outlines. Ethical theories, one of the main tools used in academic ethics discourses to justify certain reasoning and conclusions are not taken up by the occupational therapy and occupational science academic literature. Given our findings, it is reasonable to assume that occupational therapists do not employ ethical theories in their reasoning.

Sherwin asks for the re-orientation of theoretic tools used in bioethics to guide the field in a new direction [1]. She asks for adopting an ethics of responsibility; exploration of the responsibilities of various kinds of actors and relationships among them and the expansion of the types of participants engaged in bioethics ([1] quoted in [2]). We posit that occupational therapy and occupational science based on their focus on occupation deal with many issues that raise ‘ethical issues’. As such we posit that the active and knowledgeable involvement of occupational therapy scholars, students, practitioners and occupational science scholars and students is fitting Sherwin’s demand. This inclusion however demands that occupational therapy scholars, students and practitioners and occupational science scholars and students employ ethical theories and ethical reasoning beyond what we found which we posit means that a curriculum change is needed that trains occupational therapy and occupational science students how to use ethical theories and ethical reasoning. Indeed given certain emerging science, technology and innovation development such as using robots for employment [88] it seems fruitful to develop a community of practice around an “ethics of occupation” a phrase which so far only has 41 hits in Google scholar whereby the focus is not on jobs and being busy but occupation of ones space by others.

To develop an ethics of occupation as in job, work, and being busy fits with the goal of occupational therapy and occupational science. It also is an pressing issue, given anticipated trends in robotics [88], 3D printing [89-91] and molecular manufacturing (Star Trek food replicator) a process where a machine builds up products atom by atom [92] and areas such as the body enhancements of humans which will impact ability expectations of humans linked to occupation and with that the education of humans [93].

7. Conclusion
Ethics is discussed in relation to innovation for some time. Innovation plays an important role in occupational therapy and innovation science. However, the occupational therapy and occupational science literature around innovation did not engage with ethics in a substantial matter such as employing ethical theories, ethics principles and ethical reasoning. More concrete engagement with ethics is needed in occupational science and occupational therapy in order to clarify what is deemed ethical and what ethical issues might arise in terms of innovation in the occupational therapy field.

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On Being the Hippocratic Doctor: Views of House officers in a Nigerian Teaching Hospital

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Abstract
Medical students in many countries take a medical oath on graduation from medical school. Given that there is little or no formal medical ethics education in many Nigerian medical schools, the current relevance of swearing to these medical oaths is being questioned. This study determined mainly the views of pre-registration house officers (PRHOs) on the relevance of the Hippocratic-based medical oaths and some selected issues related to the ideals espoused therein. Using self-administered questionnaires, a cross-sectional survey of PRHOs was conducted in 2013 as a pre-orientation workshop activity in Nigeria. Respondents were simply required to indicate if they agreed/disagreed with 29 perception statements related to the medical oaths and their ideals. Simple descriptive analysis was done using the Statistical Package for Social Sciences version 19. The sample included 63 males and 41 females, who had all sworn to the Physician's Oath at their 9 respective medical schools. Though only two respondents (1.9%) were confident about reciting the Physician's oath/any medical oath from memory or recalling all the specific details contained in it, the majority of them agreed with all the traditional ideals espoused in the Hippocratic-based oaths, including the prohibitions on abortion, euthanasia/physician-assisted suicide and sexual misconduct. Contemporary issues like doctors' strike actions, job security/self-preservation issues and demand for payment of hospital fees before service were shown to be contentious issues for which there was no explicit guidance from the medical oaths. For these oaths to gain greater relevance and priority among these doctors, they should be recited within the context of a reformed

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