**Question 1 Supplemental Literature Findings**

***Philosophies in Symptom Science and How They Can Help Inform SSM 2.0 Concepts***

Assumptions inform various philosophical foundations of how symptoms can be categorized and captured. Different philosophies inform the science of nursing and are translated into nursing theories and models,, patient symptom inquiry and symptom science to inform nursing practice(Risjord, 2011), (Table 1, Figure 1). We highlight relevant nursing philosophy foundations and provide example links to relevant SSM 2.0 concepts. Where it is possible, we also provide links to the proposed model as a whole.

For example, an empiricist philosophy is based on the assumption that only symptoms which are physically observable and measurable are real and true (e.g., a quantitative laboratory assay that confirms a patient’s self-report of chest pain), (Figure 1, Complex Symptom, Clinical Application, Biobehavioral Factors), (Reed, 2020). Comparatively, a phenomenological philosophy assumes there are limitations to what is observable by the five senses (Figure 1, Patient Centered Experience, Social Determinants of Health). Reality is deeply subjective and dynamic, and thus both the clinician and the patient are to “agree” together on certain language in order to quantify a patient’s subjective experience and the clinician to properly understand and clinically treat the symptom (Fu & Rosedale, 2009), (Figure 1, Patient Centered Experience, Phenotype Characterization, Clinical Application). Scientific realism is a central concern in philosophy of science and knowledge development, and this is also true for nursing and symptom science. Scientific realism is a knowledge-based attitude that states the best theories and models incorporate both observable and unobservable characteristics (Chakravartty, 2017), (Table 1, Figure 1). What exists is independent of whether it is detectable through scientific methods, and may be influenced by constructions of culture, language, mental apparatus, and behavior (Chakravartty, 2017), (Figure 1, Social Determinants of Health, Patient Centered Experience, Phenotype Characterization).

A contemporary form of scientific realism that can support nursing science’s aim of generating new knowledge through creation and manipulation of scientific theory and models is intermodernism (Reed, 2019). Intermodernism components related to nursing theory that can be applied to symptom science advances include ontologic, epistemologic, and semantic philosophies. Ontologic philosophy includes a belief that we live in a reality that has a structure independent of ourselves and can be uncovered by science (Reed, 2019), (Figure 1, Patient-Centered Experience). Epistemologic philosophy supports the creation of theories and models that are partial aspects of the world and can range from cellular signaling molecules to spiritual beliefs and practices (Reed, 2019), (Figure 1, Biobehavioral Factors to Policy and Population Health). Semantic philosophy aims to derive truth from accurate descriptions and representations of the world, such as processes, relations and events, including those that may be unobservable (Reed, 2019), (Figure 1, Policy and Population Health; based on Patient-Centered Experience and Phenotype Characterization).

**References**

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