COMPARING SCIENTIFIC PARADIGMS: POSITIVISM, INTERPRETIVISM, CONSTRUCTIVISM

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Abstract*: This article systematically compares three foundational scientific paradigms: positivism, interpretivism, and constructivism. It delves into their distinct ontological, epistemological, and methodological underpinnings, highlighting how each framework shapes the understanding of reality, knowledge acquisition, and research design. Positivism emphasizes objective reality and empirical verification, while interpretivism focuses on subjective meaning and social construction. Constructivism, in turn, posits that knowledge is actively built by individuals through interaction with their environment. By elucidating their core tenets and divergences, this analysis provides researchers with a critical lens to evaluate the philosophical foundations of their studies and appreciate the diverse approaches to generating valid knowledge within the social sciences.*

Keywords: *Positivism, Interpretivism, Constructivism, Scientific Paradigms, Research Methodology, Epistemology, Ontology, Social Sciences*

Introduction

Scientific inquiry is fundamentally shaped by underlying philosophical assumptions that guide the pursuit and validation of knowledge. These foundational beliefs, coalescing into distinct research paradigms, dictate how researchers

conceptualize reality (ontology), what constitutes valid knowledge (epistemology), and the appropriate methods for its discovery (methodology) [1], [2]. A clear understanding of these philosophical underpinnings is crucial for enhancing research quality and defending findings [2]. Within the social sciences and beyond, three prominent paradigms—positivism, interpretivism, and constructivism—offer profoundly different frameworks for engaging with the world and generating understanding.

The philosophical underpinnings of scientific inquiry, as introduced, necessitate a deeper exploration of positivism, interpretivism, and constructivism to fully appreciate their distinct contributions and limitations in shaping research. These paradigms represent fundamental divergences in how reality is perceived, what constitutes valid knowledge, and the appropriate methods for its acquisition, profoundly influencing the trajectory and interpretation of scientific findings.

Positivism, rooted in an empiricist tradition, asserts the existence of a singular, objective reality that is independent of human perception and can be apprehended through direct observation and measurement [1], [2]. Ontologically, positivists maintain that reality is external and governed by immutable natural laws, much like the physical sciences. Epistemologically, knowledge is considered valid only if it is derived from sensory experience and empirical evidence, demanding value-free and theory-free observation to ensure objectivity [4]. This perspective posits that scientific knowledge accumulates through the systematic collection of quantifiable data, aiming to establish universal laws and uniform descriptions across observers [1], [4]. Consequently, phenomena that are not directly observable or measurable are often deemed beyond the scope of scientific inquiry or of lesser importance [4]. Methodologically, positivism inherently favors quantitative approaches, employing experimental designs, surveys, and statistical analyses to test hypotheses and identify causal relationships [1], [2]. For instance, in health education, positivist methods such as meta-analysis and content analysis are considered appropriate for addressing "whether and what" questions, focusing on the effectiveness of interventions through measurable outcomes [3]. The emphasis

is on replicability, generalizability, and the prediction of future events based on established patterns.

In stark contrast, interpretivism, often used interchangeably with social constructivism in some contexts, challenges the positivist notion of an objective, singular reality [1]. Ontologically, interpretivists contend that reality is subjective, multiple, and socially constructed, meaning it exists within the minds of individuals and is shaped by their unique experiences, historical contexts, and social interactions [1], [4]. This paradigm posits that understanding an individual's reality requires grasping their subjective meanings and perspectives, rather than seeking an external, objective truth [4]. Epistemologically, knowledge is not discovered but rather co-created through interaction between the researcher and the researched. The researcher's role is to engage in dialogue and careful reflection, interpreting and constructing new understandings of phenomena from the participants' viewpoints [1]. This approach rejects the idea of value-free research, acknowledging that both the researcher and the participants bring their own values and biases to the inquiry process. Methodologically, interpretivism is intrinsically linked to qualitative methods, such as in-depth interviews, ethnography, and focus groups, which aim to generate rich, deep, and nuanced understandings of human experiences and social processes [1], [4]. These methods facilitate the exploration of attitudes, opinions, and the intricate ways individuals make sense of their worlds.

Conclusions

This article has systematically elucidated the profound divergences among positivism, interpretivism, and constructivism across their ontological, epistemological, and methodological tenets. Positivism champions an objective, measurable reality, seeking universal laws through quantitative means. Conversely, interpretivism and constructivism embrace multiple, subjective realities, emphasizing meaning-making and social construction through qualitative inquiry. Recognizing these distinct philosophical commitments is paramount for researchers to consciously align their questions with appropriate methodologies, ensuring coherence and enhancing the validity of their contributions. Ultimately, a pluralistic

understanding of scientific knowledge, valuing diverse pathways to truth, is essential for comprehensively addressing the multifaceted nature of reality in academic inquiry.

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