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The problematic of Measuring Human Behavior Between Quantifiability and Contextuality: Toward an Integrative Model

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***Abstract*—**Measuring human behavior presents a fundamental challenge in psychology due to the tension between quantifiability and its contextual nature. This challenge raises questions about whether human behavior can be measured precisely using psychological tests and scales. In contrast, the contextual approach views human behavior as a complex, changing phenomenon influenced by social and cultural factors. It emphasizes the importance of qualitative methods, such as interviews. This debate highlights the need for an integrative model that combines quantitative and qualitative methods to measure human behavior, enabling a precise and comprehensive analysis of psychological phenomena.

***Keywords*—**Behavior Quantification; Behavioral Contextuality; Integrative Model.

1. Introduction:

The study of human behavior raises a fundamental epistemological and methodological problem in psychology, involving two main approaches. The first considers quantitative methods the most appropriate for studying human behavior. Behaviorism is at the forefront of this approach. Pavlov, Watson, and Skinner established an objective approach to psychology based on observation and experimentation. Similarly, the psychometric approach assumes that psychological and behavioral phenomena can be expressed in terms of quantity or magnitude. According to this view, if something exists, it exists in some quantity. For example, intelligence is understood as existing to a measurable degree (Faraj, 2007).

In contrast, the contextual approach is based on the premise that behavior cannot be separated from its social, cultural, and cognitive context. Albert Bandura, the founder of social learning theory, emphasizes the complex interaction between the environment and cognition, as well as the role of cognitive processes in acquiring new behaviors (Matrouni & Bouamama, 2024).

Accordingly, relying exclusively on quantification may oversimplify behavior and obscure its meaning, while focusing solely on its contextual dimension may limit scientific control and behavioral prediction. Mohammedi (2020) found that, despite their precise results, psychometric scales cannot capture the dynamic dimensions of behavior across different and changing situations (Mohammedi Fatima, 2020).

Conversely, Laaribi (2022) found that qualitative behavioral analysis sometimes lacks objectivity and generalizability (Laaribi, 2019).

The preceding discussion of the research problem and studies addressing quantitative and contextual approaches suggests the possibility of adopting an integrative model that combines both approaches. Accordingly, this study addresses the following research questions:

Can human behavior be reduced to precise quantitative indicators? Is studying behavior solely from a contextual and functional perspective sufficient? Can an integrative model be considered the most appropriate approach to studying behavior?

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2. Theoretical Framework of the Study:

2.1 Definition of Human Behavior:

According to Ibn Manzur's *Lisan al-Arab*, the linguistic meaning of behavior refers to the path or way a person follows. Following a path means entering it and proceeding along it.

In psychological terms, behavior is defined as any physical, mental, social, or emotional activity arising from an organism's dynamic interaction with its environment. It includes an individual's actions and responses to internal and external stimuli, whether overt and directly observable or covert and not directly observable (Borhan Eddine, 2010).

Behavior encompasses intentional and unintentional actions, spontaneous behaviors, and automatic reactions. It is also shaped by culture, values, and social norms (Al-Baraka, 2025)

2.2 Components of Human Behavior

Human behavior consists of three main components:

- **The cognitive component** is one of the primary determinants of human behavior. It encompasses mental processes such as perception, attention, and memory. Perception is not simply the reception of stimuli but a constructive process through which the nervous system interprets the external world. It is also directly related to behavioral regulation and learning (Kaddouch, 2024).
- **The emotional component** involves the feelings and emotions associated with behavior. For example, sadness and dejection may be reflected in facial expressions, while happiness may be expressed through laughter and smiling. Emotions are not merely temporary affective states but also serve as a framework for interpreting human behavior. As an essential component of behavior, emotion cannot be separated from an individual's actions. It therefore helps explain the underlying logic of human behavior rather than merely describing its observable outcomes (Al-Aswad, 2026).
- **The behavioral component** is reflected in observable verbal and nonverbal expressions, including facial expressions, silence, and body movements. It encompasses all actions and forms of conduct that can be observed and interpreted (Al-Aswad, 2026).

2.3 Quantification in the Study of Human Behavior:

2.3.1 Definition of Psychological Measurement

As an empirical concept, measurement has several definitions, including the following:

Measurement is defined as a branch of applied science closely related to applied statistics. It aims to describe, organize, and evaluate the quality of measurements, improve their precision, usefulness, and meaning, and propose methods for developing measurement instruments (Boulcherach, 2023).

It is also defined as a scientific method for assessing behavioral phenomena related to various aspects of an individual's personality, including personal, social, educational, and occupational dimensions, using both quantitative and qualitative approaches (Boudari & Bouazza, 2019).

Psychological measurement involves identifying and quantifying individuals' psychological processes, mental abilities, and personality traits using psychological instruments, tests, and scales (Manhouri, 2000).

Adams and Smith (1972) defined measurement as the systematic collection and organization of information, encompassing both the process and its outcomes.

Nunnally (1972) defined measurement as a set of rules for assigning numbers to objects to represent their attributes (Khemnou, 2023).

The objectives of psychological measurement are as follows:

- Converting traits and characteristics into numerical scores that represent objects and phenomena.
- Providing quantitative assessments by comparing what is measured with an agreed-upon standard unit.
- Evaluating and determining the level of the behavior or trait being measured.
- Obtaining objective data and valid information from multiple sources to generate quantitative estimates and qualitative evidence that support judgments and decisions (Boulcherach, 2023).

2.3.2 Instruments for Quantifying Behavior

These instruments include objective, standardized tests and scales that measure samples of behavior under specific conditions or in response to tasks requiring maximum effort or exertion. These tasks often take the form of questions (Djaadjaa, 2022, p. 307).

Saad Jalal defined psychological tests as "scientific tools that can be highly useful, require experience and skills, and are used only by specialists."

Psychological tests can also be defined as systematic methods for measuring traits through samples of behavior. They are developed through a series of systematic steps to ensure desirable characteristics and provide quantitative data for research purposes. The final stage involves collecting and organizing data for statistical analysis, followed by the presentation and discussion of results (Boudari & Bouazza, 2019).

Psychometric scales include measures of mental and cognitive abilities, such as intelligence scales, academic achievement scales, and ability and aptitude tests (Boudari & Bouazza, 2019).

Standardized observation is conducted under scientifically controlled conditions involving the observer, the individuals being observed, and the observation setting. It focuses on predetermined topics and is designed to answer the researcher's questions or test formulated hypotheses using an observation grid. This type of observation relies on procedures and instruments that ensure the highest possible scientific precision and allow for valid measurement of the observed elements (Manhouri, 2000).

2.3.3 Conditions for Scientific Measurement

A. Validity:

Validity refers to the extent to which a test measures what it is intended to measure. Types of validity include content validity, predictive validity, concurrent validity, expert judgment validity, face validity, and factorial validity.

B. Reliability:

Reliability refers to the consistency of test results over time. When a test is administered to an individual or group and then readministered later, it should yield similar or comparable results. This consistency is assessed using a correlation coefficient. If the coefficient is statistically significant, the test is considered reliable (Djaadjaa, 2022,).

C. Objectivity:

Objectivity requires procedures that minimize the subjectivity of both the examiner and the examinee. These include specific test instructions, clearly defined scoring procedures, and an answer key. Test items must also be clearly worded to avoid ambiguity and differences in interpretation (Khouiled, 2017)

2.3.4 Approaches to Explaining the Quantification of Behavior

A. The Behaviorist Approach:

According to Skinner, personality consists of overt, observable behaviors rather than internal traits or ideas. Behaviorism holds that behavior can be observed and measured. Through laboratory experiments using the Skinner box, Skinner sought to measure behavior precisely by providing reinforcement and observing quantitative changes in salivation.

Similarly, Watson emphasized that research should focus on overt behaviors that can be observed and measured, reinforcing the quantitative nature of behavioral research (Horeidi, 2011).

B. The Psychometric Approach:

This approach uses various tests to measure abilities, personality traits, attitudes, and interests across different fields. It primarily relies on developing tests that provide quantitative estimates of aspects of psychological performance at a given moment. It is based on two general principles drawn from the natural sciences:

- **If something exists, it exists in a certain quantity.** For example, intelligence is considered to exist in some measurable quantity. According to this principle, psychological and behavioral phenomena can be expressed in terms of quantity or magnitude.
- **If a characteristic exists in a certain quantity, that quantity can be measured.** Accordingly, this approach uses scales to measure specific characteristics and determine their quantity or intensity. This allows them to be incorporated into a mathematical system suitable for different forms of statistical analysis (Faraj, 2007).

2.4 Behavior as a Contextual Characteristic:

In psychology, context refers to the environmental and social framework in which behavior occurs. Behavior reflects the interaction between individuals and their environments (Lewin, 1951, p. 240). Its dimensions are outlined below.

2.4.1 The Psychological Dimension

Numerous studies have demonstrated the role of motivation, emotion, and cognitive processes in shaping behavioral responses.

Motivation is defined as an internal energy that drives an organism to behave in a particular way in its external environment. It is considered essential because behavior cannot occur without a motive (Djedidi, 2014).

This definition highlights the important role of motivation in generating different behavioral responses.

Cognitive errors also play a significant role in behavioral disturbances. According to Ellis, individuals develop behavioral and emotional problems when they regard personal preferences, such as the desire for love, acceptance, and success, as essential needs without which they cannot live. This way of thinking generates negative emotions and leads to ineffective behaviors, such as aggression.

2.4.2 The Environmental (Ecological) Dimension

Bioecological systems theory examines child development within the interconnected systems of relationships that constitute a child's environment. It emphasizes the biological aspects of a child's life as the primary foundation that influences and guides development. It also highlights the interaction between these biological factors and the family, environment, and society during the child's biological maturation. Changes in one system also affect other interconnected systems and their levels.

2.4.3 The Social Dimension

Rotter's social learning theory highlights the role of social factors and reinforcement in shaping human behavior and the emergence of behavioral responses. According to Rotter, individuals' behavior is guided by their expectations, which determine their progress toward goals driven by their motives. Different forms of reinforcement support their progress toward satisfying these motives. Human behavior is therefore goal-directed, as individuals respond in ways they have learned will lead to satisfaction in a particular situation. Moreover, individuals' behavior and immediate responses cannot be controlled without considering environmental stimuli (Matrouni & Bouamama, 2024).

2.4.4 Theories Explaining the Contextual Nature of Behavior

A. Bandura's Social Learning Theory

Bandura's social learning theory explains how individuals acquire new behaviors through observation and imitation of a model. His explanation emphasizes the complex interaction among environmental, cognitive, and behavioral factors. Bandura describes behavioral modeling, which involves observing and imitating a model, as a process consisting of four essential stages required for learning to occur. These stages involve paying attention to the observed behavior, retaining it in long-term memory, and retrieving it when motivated to do so.

Bandura further explains that observational learning enables individuals to acquire new behaviors and skills that were previously absent from their repertoire, including values, habits, and various behaviors, through observation and imitation of a model (Matrouni & Bouamama, 2024).

Bandura's theory highlights the significant role of cognitive processes, such as attention, memory, and recall, in acquiring new behaviors through observation and modeling.

B. Vygotsky's Social Constructivist Theory

This theory emphasizes the significant role of culture and society in learning and language acquisition. According to Vygotsky, "Children's thought and language begin as separate functions but become linked during the preschool years, when children begin to use language as a means of thinking. Gradually, children's learning begins to be influenced by language, particularly knowledge associated with culture that is difficult to acquire through direct interaction with the environment. Children acquire most of their cultural knowledge through communication with others and expand it through thinking, inquiry, and inner speech. In fact, learners live within a group of people with whom they interact and communicate, and everything they learn is influenced in one way or another" (Guemmaz, 2021).

Vygotsky's theory explains the relationship between language and thought and the role of cultural factors in language acquisition. Accordingly, learning new behaviors, including language, involves an interaction between internal factors, such as thinking, and external social and cultural factors.

2.5 The Problem of Quantification in Light of Behavioral Contextuality

2.5.1 The Limits of Quantification

Human behavior has psychological and contextual meanings, whereas quantification reduces it to scores, percentages, and indicators. Bouziane Mourad's study (Bouziane, 2024) highlighted this limitation, noting the difficulty of accurately capturing the complexity of psychological phenomena through psychological measurement. The study also called for reconnecting measurement with human reality.

2.5.2 Limitations of Psychometric Measurement Instruments

Psychological instruments do not capture all dimensions of psychological phenomena and behavior. They focus on quantitative aspects while overlooking the broader context in which behavior occurs. Cognent's study (Cognent, 2021) highlighted this limitation, emphasizing that although intelligence tests are precise scientific instruments, they must be used in ways that respect individuals and their human context rather than reducing them to numbers or scores. The study also stressed the importance of using these tests within a framework that integrates clinical psychology, cognitive sciences, and professional ethics (Cognent, 2021).

2.5.3 The Influence of the Measurement Situation Itself

The conditions under which a scale is administered can affect test results by inducing anxiety and fear in examinees. This was demonstrated in Hachouf's (Hachouf, 1991) study of students using the Domino 48 intelligence test. The results indicated weak reasoning abilities, which Hachouf attributed to the testing situation. This situation evoked a school setting that students recognized and rejected once again (Hachouf, 1991).

2.5.4 Stripping Behavior of Its Dynamic Nature

Behavior is dynamic and constantly changing rather than static. Reducing it to fixed values therefore deprives it of its dynamic nature. Bentoumi (Bentoumi, 1993) indicated that motor behavior reflects the degree of nervous system maturation and the integration of muscular functions. It is also closely linked to cognitive processes such as perception, attention, and memory. Children's motor and cognitive development do not occur independently but through continuous interaction, with each dynamically influencing the other (Bentoumi, 1993).

3. Results and Discussion

Numerous studies and theories have attempted to quantify behavior. Among them, the behaviorist school sought to explain behavior through stimulus-response relationships, emphasizing its observability and quantitative measurability. However, this approach has faced considerable criticism, particularly for neglecting the psychological dimension and the social and cultural context in which behavior occurs, which it regarded as fixed. This view is problematic because behavior is dynamic and constantly changing. Consequently, the assumption that behavior can be reproduced under identical conditions is imprecise.

The psychometric approach, meanwhile, treated the assignment of a statistical value to behavior as evidence of its existence. However, this position is illogical because the inability to assign a fixed numerical value to a psychological phenomenon does not establish its nonexistence.

Overall, quantitative measurement remains insufficient to explain certain psychological phenomena. This limitation was highlighted by Abdullah's (2018) study, which found that quantitative measurement of behavior fails to adequately explain deeper psychological meanings that cannot be captured by numerical indicators (Abdullah, 2018).

Amid this debate, an alternative to the quantitative approach emerged: the contextual approach. Its proponents, including Vygotsky, Bandura, and Steven Hayes, argue that behavior cannot be studied independently of the cultural and social context in which it occurs. Ben Salem's (2020) study demonstrated that contextual analysis explains variations in behavioral responses more effectively than purely quantitative models.

One criticism of this approach concerns the difficulty of measuring behavior quantitatively. Context is multifaceted and constantly changing, making behavioral control and prediction extremely difficult. Arous Mohamed's (2019) study highlighted this limitation, noting that the approach draws on multiple frames of reference, including historical, social, and psychological perspectives. This diversity raises concerns about the lack of a clear methodological framework (Arous, 2019).

Another criticism concerns the limited objectivity and generalizability of qualitative behavioral analysis. Yennoun Fatima Zahra's (Yennoun, 2023) study highlighted this issue, noting that objectivity has a different meaning in qualitative research and remains a significant challenge because of the researcher's involvement in the phenomenon under investigation (Yennoun, 2023).

Amid the debate between the quantitative approach, which emphasizes measurement and generalization, and the qualitative approach, which seeks an in-depth understanding of behavior within its context, a third approach emerged: mixed methods. This integrative approach seeks to overcome the limitations of both methods by combining them within a single study. The case study method offers the most appropriate solution to this methodological divide. It combines quantitative instruments, such as tests and scales, with in-depth qualitative analysis to diagnose and understand the dynamics of behavior within its real-life context.

Numerous studies have employed mixed methods, including the following:

Houhou and Salem's (Houhou & Salem, 2020) study, entitled "Aggressiveness as a Trait in the Orphaned Child: A Case Study," used psychological tests and clinical interviews to establish the presence of aggressiveness as a trait in an orphaned child (Houhou & Salem, 2020).

Laadj and El Mahi's (Laadj & El Mahi, 2024) study, entitled "Post-Traumatic Stress Disorder in Women Victims of Physical Violence (A Case Study)," used the Davidson Scale to diagnose post-traumatic stress disorder. The results indicated that the case exhibited symptoms of post-traumatic stress. A clinical interview was also conducted to explore the case's psychological dynamics, enabling an in-depth understanding and accurate diagnosis based on both quantitative and qualitative aspects (Laadj & El Mahi, 2024).

4. Conclusion

The preceding discussion demonstrates that human behavior is a highly complex phenomenon that cannot be reduced to quantitative data alone. Similarly, contextual approaches cannot provide a scientifically precise understanding of behavior without measurement instruments. This highlights the importance of adopting an integrative model that combines quantification and contextuality as complementary rather than opposing approaches. Such a model enables a more precise and comprehensive understanding of human behavior by using the case study method to interpret behavioral indicators within the contexts in which they emerge. The current epistemological objective is therefore not to compare quantitative and qualitative methods but to develop a methodology that integrates them to produce comprehensive and realistic knowledge.

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