Theories of Human Development

In recent years, there has been a considerable amount of concern among human developmentalists about the utility of the concept of objectivity. The notion of objectivity from which science was originally derived is now being questioned. What is true and correct? How do I know what is true? What is science? What is relevant? Is there only one way of interpreting reality? Is it possible to maintain a position of unbiased observer? Theories of human development are scientific in nature (i.e. are bound by the rules of science), and scientific research is always influenced by the worldviews of the researchers as well as the context in which it is done. The discussion that follows will support the claim that there is no objective-free science. It is important to consider both the historical impacts and the influence of worldviews on objectivity. Several examples will be presented to illustrate how particular variables might influence objectivity in developmental theory and research, and then relevant arguments in favor of continued research into human development processes will be assessed. And finally, an examination of an alternative method for understanding psychological and behavioral ontogenesis will be offered.

With an increased understanding of the concept of objectivity, we must be aware of the underlying assumptions that drive scientific practices. Is there such a thing as a value-free science? The utility of objectivity is affected and influenced by the researcher's worldview (which directly influences how one utilizes the scientific method) and historical context. All scientific research involves theoretical and empirical knowledge; qualitative research and quantitative research are *scientific*; inductive and deductive reasoning form a circle. The point to be made here is that science is defined by its method, and the kind of science you do depends on your social context and value presuppositions. Scientific method requires that you begin

with a theory (rational knowing). This theory may be drawn on a hunch and may not be well defined – or it may be based on a firm hypothesis, but you cannot begin a scientific project with a blank slate – you *always* have some ideas. All theory incorporates assumptions and all research involves theory. You cannot "do science" without theory. We live in a world where we hypothesize everything and these hypotheses are directly influenced by our personal values. The nature of your personal views and values influences what and how you do/study. Even the transparent daily values, which constitute the basis of social construction, affect how you "do science". Furthermore, the notion of "doing science" as an objective uncovering of truth and a subjective distribution of knowledge obscures the fact that truth and knowledge are socially defined and legitimated by dominant power structures.

When you begin to question objectivity, there is a tendency to revert to 'facts'. Lerner (2002) stresses the notion that science consists empirically – it is derived from descriptions and explanations of reality; it is the empirical knowing that sets it apart, and the empirical that sets the boundaries of what can and cannot be studied. Do you think that Skinner would be comfortable with Freud's notion of an 'ego'? No; he was a behaviorist and the ideas of a behaviorist had to be derived from empirically verifiable sources. The ego then, to the behaviorist, does not exist - it's not a fact. Freud, on the other hand, would argue that the ego *is* a fact. So, when you are operating from different sets of premises and worldviews, you are operating from different sets of 'facts'. Then there is the concept of reality to consider. Reality can mean different things based on what you believe as well. In relevance to science, there are three assumptions about the ways in which you can look at reality: (1) I

assume that I am a being and that I exist, (2) I assume there is a tangible, material world that is beyond me, that is not me (beyond the boundaries of me), and (3) I assume that a knowing relationship exists between that which is me and that which is not me. Science may not be practiced without making these assumptions, and these assumptions lead to analysis in deductive science. So, one may conclude that even if you *try* to look at science objectively, you simply cannot. There is no way to be 'objective' since the manner in which you regard reality was determined before you decided to try and be 'objective'.

In an effort to understand the implications of science and to make sense of our own construction of meaning, it is critical to explore how a person's worldview affects his or her objectivity when actively involved in science. A scientist's worldview is certainly not objective. Every single human being has experience, which is comprised of perceptions, ideas, and opinions about the world and the way it 'works'. Therefore, what is visualized as an 'objective study' of human development by one paradigm would be considered biased and presumptuous under a different paradigm. Kuhn (1996) suggested that the institutions of science discourage researchers from questioning the principles of the current scientific paradigm; he also claims that typical scientists are not impartial and independent thinkers – they are conformist individuals who aim to determine what they already know. Moreover, he argued that a scientist's indoctrination into a particular worldview is usually so complete that it affects her/his observations and experiments. Scientists do not just perform experiments to collect raw data and 'facts', but to find support or non-support for some hypothesis that has been grounded and formulated in the assumptions of their worldview. The hypothesis determines which variables to separate and which to

disregard, and lack of objectivity limits the acceptable explanations of the results of the research findings. It is the paradigmatic context that defines the issues, sets the restrictive boundaries for adequate explanations, and approves the methods for achieving fundamental justification.

Under a mechanistic worldview, the necessity of a hypothetical prediction is confirmation of the intrinsic bias in all science that is generated. One would acknowledge that there is in fact an absolute truth, a 'T', and that with sufficient scientifically based research, conclusions may be drawn and 'facts' and 'truths' need only be discovered. For example, a researcher operating under a mechanistic perspective believes that all types of human behavior are determined by genes. Therefore, s/he will try to predict and identify specific genes for specific behaviors and explain any variation in human behavior in terms of the variation in genes. In research, the scientific method is employed; here, objectivity is disrupted in the early stages of the scientific process. In order to utilize the scientific method, one must first form a hypothesis and theory. The assumptions involved in hypothesizing and theorizing are contingent upon the ways in which you view reality, including personal biases and values, and cultural and historical factors. Then, following collection, the data is interpreted. The interpretation of the data includes (even though sometimes unconsciously) making conclusions to support the theory that are directly influenced by your values and expectations and beliefs. All this – in and of itself – identifies an individual's judgments, attitudes, and assumptions about any specific phenomena.

Operating under an organismic worldview, one would not make the primary aim of research to *predict*; rather, the scientist hopes to *explore* and *explain* the pluralistic systems within scientific processes that may help expose *anticipated*

truths. Researchers with an organismic viewpoint focus less on prediction and put more emphasis on description in scientific study. Furthermore, research is promoted that takes into account and reflects upon the complex interactions between the multiple influences on behavior. For example, a researcher operating under an organismic perspective believes that all types of human behavior are shaped by contingent environmental experiences and will conduct experiments to see how different stimuli will produce different reactions in the subjects. It is in the explanation of phenomena, under this worldview, that a person's values become apparent. Justification and description are inadvertently shaped by the norms and standards of society (e.g. interpretation is often parallel with cultural and technological expectations – if results of a study indicates any contradiction to public beliefs, the likelihood of having the study published is not good, and even if it is published, the findings will probably be neglected or rejected by the public and other researchers), and objectivity is obscured by a researcher's self-fulfilling prophecies in maintaining expected cultural values.

Operating under a developmental-contextual approach, a researcher would ascertain that there is no single response, no absolute truth, no 'T'. There are few scientific 'answers' that are even applicable to the human race, and for this reason, contextualist researchers are not only very aware of, but also very fixed in, a concept of non-objective reality. There are levels of influence on human development, and there is a constant interaction between the effects of these influences (influences that are in fact value-loaded themselves). In research, because of underlying biases and morality, a contextualist would have the flexibility to recognize multiple factors that may be influencing the study (e.g. race, class, stereotypes, gender, etc). So, as in the

other worldviews, objectivity is crushed as the research subjects, preferred methodology, and data interpretation are subject to the values and beliefs of the researcher.

Particular variables((1)educational and class background of the researcher, (2)public policy and political considerations, (3)university/departmental/laboratory environment and priorities, and (4)researcher sex/gender, ethnicity, and personal values) influence objectivity in developmental theory and research. *Educational background*: Research studies within university programs are pursued according to the departmental agendas and priorities (which include tenure, grants, academic reputation, or control of a laboratory). Without a doubt, the limitations on *how* research is to be conducted influence the objectivity of the researchers by asserting predetermined conditions (which are directly influenced by the values embedded in the college and department of the researcher). Scholarly articles and contributions to developmental theory and research are limited not only by the value-loaded educational background of the researcher, but also by the value-loaded educational background of the editors and professors. Even the larger social structures (networks of professors and researchers) within the particular educational system influence objectivity. *Sex/gender, ethnicity, and personal values*: Objectivity of the researcher is very strongly influenced by the complex matrices of oppression (which no doubt include these issues). Women's strategic choices as scientists are shaped by an intricate set of constraints, resources, needs and opportunities. Symbols of opposition and resistance, feminist researchers acknowledge and address their own personal values and thoughts (which directly result from the oppression of women) by considering the 'facts' that traditional science posits as 'good' and 'right' and 'true' in alternative ways in order to explore

human development from a more liberated standpoint. In other words, feminism considers the need to analyze the underlying patriarchal assumptions of the academic tradition from which science has emerged. *Class background, public policy, and political implications*: Uneven economic development, the underclass, homelessness, and the stable war economy are all maintained in dominant research positions held by Western scientific ventures. The assumptions and ideals, as well as the political philosophies upheld by tradition, are not just embellishments of the researchers that are otherwise value neutral. Rather, they help to establish the *kinds* of scientific questions that are asked by the researcher, the *ways* in which scientific methods are conceptualized and applied by the researcher, and *for whom* the results of the research is especially useful. These examples clearly illustrate the influences on objectivity in developmental theory and research.

It is important now to ask ourselves, "Why, then, do research?" If all data and knowledge we gather is unconditionally biased from its notion, if scientific objectivity cannot be achieved, then how do we know what is true? Continued research into human development processes encourages the researcher's need for understanding human nature in order to identify with the world. Scientific research is essential in creating a reality for the world at large. For each scientist, the ultimate truth lies in his or her own interpretation of information. Although scientific research continues to be influenced by value and belief structures that are formed by individual and personal experience and familiarity, it remains the role of the researcher to forever investigate and give explanation about intricate phenomena in context. Continued research within our field will also strengthen the communication and co-operation with other interdisciplinary researchers. In collaboration with researchers outside of

our own field, the interpretation of scientific phenomena and revolutions will be based in a broader academic and scientific background, thus enhancing ecological validity for research conclusions. Bernstein said that "there are deep urges and needs for solidarity, community, sharing and reciprocal understanding" (p.12). It is within the exchange of ideas and reciprocal understanding that promising trends of research can be found.

For an alternate (perhaps 'enhanced' would be a better word) understanding of psychological and behavioral ontogenesis, one should consider doing science within a contextual worldview, rather than the other worldviews that employ strict scientific research. A contextualist perspective creates an arena for scientific revolutions by taking into account historical developments and contexts. This paradigm captures the complexity and plasticity of development, and enables conclusions about the 'truths' of human development to be drawn in a more eclectic manner. Utilizing multiple theories and examining development from different perspectives in diverse situations may provide a sense of 'totality' to the understanding of human development. Doing research and theoretical work from this worldview invites creativity and innovativeness in contemporary science. In contextualism, the aim of scientific research and activity is not to seek a universal truth, but rather to find a theory (or group of theories) that has as much efficacy as possible in detailing constant change and embeddedness of all levels of analysis with one another within multiple dimensions of development, while furthering our explanation of the world around us. It is difficult to identify "alternatives" to scientific research, thus scientific research is currently the best technique available to investigate development.

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Within the study of human development, the distinct worldviews are comprised of assumptions that attempt to infer and explain developmental change over the life span. This discussion attempts to describe the comparative contributions of nature and nurture in developmental change. Before addressing the assumptions of the worldviews, it is necessary to define the developmental constructs of continuity-discontinuity and stability-instability.

Continuity refers to the notion that the same laws and/or variables are involved in development at different times in the ontogeny of a species. If different laws are accounted for and/or there are diverse psychological functions involved in development at different times in the ontogeny of a species, discontinuity exists. Within the field of human development, the continuity-discontinuity issue pertains to matters of the description and explanation of within-person change; these descriptions and explanations of development can involve quantitative or qualitative changes (Lerner, 2002). Any testimony about the character of intraindividual development entails taking a position in regard to three components of change: descriptive continuity-discontinuity, explanatory continuity-discontinuity, and the quantitative versus the qualitative nature of one's descriptions and explanations (that is, the quantitative–qualitative dimension pertains to *both* description and explanation).

Descriptive continuity exists when a behavior seen at one point in the life span can be represented or depicted in the same way as behavior at another point in the life span. For example, if a person plays the violin as a child, as a teenager and as an adult, then that behavior would be characterized as descriptive continuity. In

contrast, *descriptive discontinuity* exists when a behavior seen at one point in the life span cannot be represented or depicted in the same way as behavior at another point in the life span. For example, if a person plays soccer as a child, but then took up tennis as a teenager, and as an adult became a golfer, then that behavior would be characterized as descriptive discontinuity. *Explanatory continuity* exists when the same explanations are used to account for behavior across a person's life; this means that behavior is interpreted as involving unchanging laws or rules. For example, if the reason a person gave for playing the violin throughout his/her life was "because it is relaxing," then explanatory continuity would exist. *Explanatory discontinuity* exists when different explanations are used to account for behavior across a person's life; this means that behavior is interpreted as involving changing laws or rules. For example, if the reasons given as to why the behavior is different in each stage change- "because my parents made me," "because it is fun," "because it is relaxing," -then explanatory discontinuity exists. In summation, if the laws regulating behavior remain the same with time, continuity exists; if the laws regulating behavior change with time, discontinuity exists. It is important to note that a fusion of descriptive continuity-discontinuity and explanatory continuity-discontinuity is possible as well.

Lerner (2002) asserts that quantitative and qualitative changes are implicated in descriptions or explanations of development. Descriptive *quantitative* changes occupy differences in 'how much' or 'how many' of something exists. Descriptive *qualitative* changes occupy differences in 'what' exists (e.g. what sort of phenomenon is present). Explanations of development can vary in regard to whether one accounts for change by considering quantitative changes or by considering a new reason for

behaviors. So, it is possible to propose an explanatory discontinuous interpretation of development involving *either* quantitative *or* qualitative change.

In addition to the aforementioned empirical issues of continuity-discontinuity, there are theoretical implications of the issues as well. A given theoretical position may lead to interpretation of a given piece of empirical information in one way, while another theoretical position leads to interpretation of the same piece of information in another way. Theoretical perspective is a key determinant of what particular change structure is deemed representative of development, both in explaining intraindividual change as continuous or discontinuous. Each worldview operates according to particular assumptions regarding developmental change. The mechanistic paradigm assumes an external locus of development that accounts for quantitative, open-ended, and continuous change. Under this viewpoint, reductionism and elementarism are engaged for a better understanding of the antecedent-consequent analysis of multidirectional behavioral change. Finally, a concept of relativity is highlighted within this worldview. The organismic paradigm assumes an internal locus of development that accounts for qualitative, closed (fixed endpoint), and discontinuous change. Emergent change and a concept of holism are seen under this worldview, and structure-function analysis is used to examine irreversible structural changes. The notion of universality is also used in regards to change within this paradigm. Both the mechanistic and organismic worldviews hold that the universe is uniform and permanent; the basic laws that run the universe are and forever will be the same, and the universe is what it always has been and always will be.

Under a mechanistic worldview, there is no true descriptive qualitative discontinuity; there is no novelty that exists in development. A mechanist operates under the assumption of an external locus of development, which is to say that either environment or genetics are determinant factors of behavior and change. Given the mechanist's commitment to reduce all developmental phenomena to a common set of constituent elements, this paradigm promotes reductionism; behavior, which is not adaptive, can be reduced to simpler forms. Thus, the same behavior has the exact same meaning (both descriptively and explanatorily) at different ages in the life span. In this worldview, continuity is necessary in the explanation of development and behavior. Furthermore, continuity is represented by quantitative measures (quantitative invariance is emphasized). Under the assumptions of a mechanistic worldview, it is impossible to have qualitative changes since there are no emergent qualities in development.

An organicist operates under the assumption of an internal locus of development and places much emphasis on emergent change occurring within given structure-function patterns. In this worldview, qualitative change is a feature of an individual's development, since development is characterized by a series of stages (each of which is an emergent property of the last stage). As a result of the novel qualities that develop, change is described qualitatively (qualitative invariance is stressed). As anti-reductionists, organicists believe in the principle of emergence, that is, new properties emerge in new stages. As a result, new principles or laws are needed to account for behaviors (functions) within a particular stage (structure). Under an organismic perspective, there is also a focus on descriptively discontinuous change and explanatorily discontinuous change. Even though you may be able to

describe a behavior with the same "description framework" over time, the explanation of the behavior will change across the life span. If behavior is continuous (continuity is not discredited entirely in this paradigm), however, it is not always considered an important change to recognize or investigate. Continuity can be achieved only when there is no change or development occurring; within the organismic paradigm, discontinuity and qualitative change indicate growth.

Whereas continuity and discontinuity pertain to the intraindividual manifestation of the functioning of the laws affecting development, the concepts of stability and instability describe the relative position of a developing person (i.e. what happens to a person relative to other people as the relations among the variables that affect development change or remain the same)(Lerner 2002). The stability-instability issue expresses differences that occur between people within groups as a consequence of within-person change. Thus, two types of change or modifications involving people are occurring simultaneously.

Instability exists when a person's position relative to his/her reference group changes with development. *Stability* exists when a person's position relative to his/her reference groups remains the same with development. It is important to note that whether instability or stability occurs is not indicative about whether any absolute change took place – a person can change, and this change may still be labeled 'stability'. So, the terms 'stability' and 'instability' describe relative, not unconditional changes. As Lerner (2002) so clearly illustrates, a developmental change may be one of four types: **(1)** *continuity and stability* (the laws regulating behavior remain unchanged between two points in development and the ranking of people in a reference group affected by the continuous functioning of these laws

remains unchanged as well) **(2)** *continuity and instability* (the laws affecting development remain unchanged over time, but people's relative positions in their reference groups change with development) **(3)** *discontinuity and stability* (the laws affecting development are altered with time, but people's relative positions in the reference groups remain unchanged) **(4)** *discontinuity and instability* (the laws governing behavior development change, and so do the relative positions of people in a reference group affected by these changed laws). It is important to conclude here that phenomena resultant of continuity-discontinuity does not imply instability. The notions of *continuity* and *discontinuity* pertain to the description and explanation of intraindividual change, while the notions of *stability* and *instability* refer to interindividual variations - and whether these variations remain the same or change - across time.

Both the mechanistic and organismic worldviews acknowledge both stability and instability, but different theoretical assumptions are involved in each. The mechanistic worldview holds that human development is controlled by external forces (external locus of development) and that the changes in life are open-ended. For a given group, stability can be obtained by similar environmental stimuli or similar genetic makeup and similar maturation rates. On the contrary, instability in human development arises from different environmental stimuli or different genetic makeup or different maturation rates for individuals. The organismic worldview holds that developmental stability asserts that everyone will progress through the same developmental sequence of stages. However, varying maturation rates and acute environmental influences may facilitate or delay this development, which can account for the occurrence of instability. Given the same maturation rate and normal

environment, people are able to maintain their stable status within their groups.

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Over the last 15 years, technological advances have greatly increased the rate and possibilities of scientific discovery. Genetic research has given scientific researchers hope for future discovery not only in the correlations between hereditary diseases and defective genes, but also in behaviors that are thought to have genetic heritability. In a recent study, an association was found between a 'pleasure gene' and risk-taking behavior. It was established that persons endowed with the 'pleasure gene' were four times more likely to become addicted to various chemical substances than persons lacking the gene. Theoretically, the discovery of this gene would have huge implications for the societal dilemmas that have overwhelmed human civilization for years by making the eradication of defective genes possible.

As the assumptions of the proposed claim are mechanistic and nature oriented, a nature-mechanistic approach is clearly reflected as the scientific perspective. In nature-mechanism, you are your genetic endowment – you are a passive element in developmental processes. Behavior genetics attempts to separate what part of development is due to genes and what part of development is due to the environment by specifying the genetic contribution of a behavior or developmental process (Lerner, 2002). Under this paradigm, a reductionist perspective assumes that an individual's development may be reduced to singular components of significance. In "doing science" this way, the complexities of the interaction between nature and nurture are denied. The discovery of this so-called 'pleasure gene' indicates that social behaviors of humans are determined by the inheritance of genes – that there is an isomorphism between a particular gene and a specific behavior. One problem with "doing science" under this nature-mechanism worldview in this

situation is this: the effects of inheritance are investigated as context-free variables. Nature and nurture are *intertwined* in human development; the functions and impacts of nature and nurture are dependant upon interactions with each other. The exclusion of the concept of nurture is a fundamental flaw in this research claim, as it does not take in to consideration the well-established, active relationships between nature, nurture, and self.

As illustrated in the Lerner text (2002), Anne Anastasi made the following assertions: that nature and nurture are *both* fully involved in providing a foundation of any behavioral development; that they cannot function in isolation from one another but must always interact (be systematically fused) in their involvement; and that interaction can be conceptualized as a *multiplicative* type of interrelation in which the presence of each source is completely intertwined with each other. As a result of genotypic uniqueness, all individuals will interact with their environments in exclusive ways. Thus, the environment always contributes to behavior, but the precise result of this influence can only be completely understood in the context of the genetic individuality of the person. Likewise, individual differences in genetic makeup do not in and of themselves directly shape behavior. "The specific indirect contribution of nature can only be understood in the context of the particular contribution of nurture with which it is interacting" (Lerner, 102). In turn, a precise comprehension of how a certain environmental contribution affects behavior can be reached only by recognizing how it interconnects with the organism's nature.

One's individual genetic makeup provides her/him a range of possible developmental outcomes. The environment can have effects of varying magnitude (e.g. weak, moderate, or strong) on a person's genetic potential, partly because some

aspects of inheritance are more difficult than others to be altered by environmental influences. Because of the range of influence of environmental factors, individuals having a distinct genetic makeup will have different developmental outcomes even when in the exact same environment. Likewise, people in different environments will have diverse developmental outcomes - even when they are endowed with exactly the same environmental inheritance. This is the *norm-of-reaction* concept, which shows that heredity alone does not determine behavior (an isomorphism does not exist between a genotype and a phenotype). Instead, the way that genes function is to make available a variety of possible outcomes of development. These outcomes will result from the varying specifics of the interactions between the environment and the genotype, and divergent phenotypes can be expected to result from different interactions. The norm-of-reaction cannot be predicted in advance, nor can it be approximated. So in actuality, those restrictions set by our hereditary endowment (by our genotype) can never be specified; individual human genotypes cannot be replicated and exposed to all possible environmental situations. Even though we cannot know any individual's range of genetic potential, we can distinguish that the norm of reaction is exclusive with each individual and therefore (since it can be expected to vary from one individual to another) individuals will interact differently with their environments.

Taking this into account, how did the declaration of a 'pleasure gene' violate the norm of reaction? It asserted that a social behavior (risk-taking behavior) was determined by a gene. Actually, individuals with a similar genetic makeup may exhibit different social behaviors if they have grown up in different environments; or, people with a very different genetic makeup may exhibit the same behaviors under

certain circumstances. So what made the researchers assume that people behave in the same manner because they have the same genetic inheritance? They started out with the assumption that individuals demonstrate certain types of social behaviors *because* of their inherited genes, and then proceeded to single out this specific 'pleasure gene' for the group of people who are involved in risk-taking behaviors. They concluded that those individuals with the 'pleasure gene' were *four times* as likely to become addicted to a variety of substances. My question -- how is it even possible to draw a quantitative conclusion as such given the complex interactions between genes and environment? How did these researchers account for the people who are lacking this 'pleasure gene' but still addicted? For those who are endowed with the 'pleasure gene' but are not addicted? Heredity should be considered a contributing factor or constituent, not a predictive element of the behavior. The reactions between the 'pleasure gene' and the environment are mutually dependent components in the description of behavior. The researchers mistook the correlation between a specific gene and a specific behavior as a causal relationship. In fact, there is no 'pleasure gene'; it is non-existent. Genetic function is an important part of human development, but a direct connection between genes and social behavior is impossible. There is no doubt that understanding the function of genes is of great importance; however, it is only one key ingredient in *really* understanding human behavior. The influence of a 'pleasure gene' in its context would involve an analysis of the environment in which the predisposed individual was fostered. A developmentalist would not admit that an individual is passively activated by any genetic force. In order to attain a higher, more comprehensive understanding, we

need to consider the wider environmental factors and systems in trying to assess the function of a specific gene in a specific human social behavior.

Rather than a nature-mechanistic worldview, it would be beneficial to examine the relationships between the environment and genetic inheritance from a contextualist perspective. By taking into account (and emphasizing) context, qualitative methodology would better illustrate the interactions between nature and nurture constructs. Furthermore, a contextualist assumes emergent change and novelty occur in development, and would be able to examine the influence of the many contextual factors (and the interactions between these factors) and their effects on behavior. A contextualist would probably deem this particular research study (with its singular focus on genetics) as full of loopholes, unconvincing, and unacceptable since the 'pleasure gene' was not observed or investigated in different environmental situation.

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