

Toward a Better Understanding of Human Intelligence

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Abstract

This study was conducted for a better understanding of human intelligence and to explore factors and events that may influence the development and/or impediment of it. Using a phenomenological method, 48 participants with diverse experiential, vocational, academic, and cultural backgrounds were interviewed. From coding and analyzing the data three categories emerged: intrapersonal, interpersonal, and transpersonal. In this paper I discuss the complexity of understanding the phenomenon of human intelligence with particular focus on these three emerging categories.

Key Words: human intelligence, learning and development, education

Introduction

Since Plato's time, people have acknowledged and frequently attempted to define the existence of a so-called intelligence. However, except for a few holistic definitions left behind by the ancient oriental and occidental civilizations, others have only partially explained it. In many cases, descriptions have been heavily influenced and confounded by politics, economy, gender, and socially constructed attributes such as race and class.

The concept of intelligence has interested and fascinated philosophers and explorers since ancient time. For example, Confucius declared the goals of cognition and emotion to be equilibrium and harmony.

While there are no stirrings of pleasure, anger, sorrow, or joy, the mind may be said to be in the state of equilibrium. When those feelings have been stirred, and they act in their due degree, there ensues what may be called the state of harmony. This equilibrium is the great root from which grow all the human acts in the world, and this harmony is the universal path which they all should pursue. (Legge, 1971, p. 384)

Plato, in *The Republic*, emphasized utilizing intelligence to bring one's whole soul to its best nature (Bloom, 1991). Aristotle recognized two intellects. The intellect that is "by virtue of becoming all things," or the potential intellect, and the one that is "by virtue of making all things," or the active intellect. Alfarabi (d.950), Avicenna (980-1037), and Averroes (1126-1198, cited in Davidson, 1992) integrated the active intellect and human potential intellect into larger cosmic schemes. They adopted a cosmic scheme in which a hierarchy of beings consisting in pure intellect unfolds until the active intellect is reached. Freiberg (cited in Fuhrer, 1992) defined and interpreted intelligence as the act of understanding (*intelligere* in Latin) or an act of "reading within itself" based on etymology of *intelligere*, namely, *an intus legere*, a "reading within." He concluded, "...the intellect finds reflected in itself the essence of all beings, the universe of beings" (p. 29).

In her review of the literature, Woolfolk (1990) found three common themes: (1) the capacity to learn, (2) the total knowledge a person has acquired, and (3) the ability to adapt successfully to new situations and to the environment in general. In the 1921 *Journal of Educational Psychology* survey, 14 psychologists offered 14 views about the nature of intelligence. Updating the survey, Sternberg and Detterman (1986) asked a group of experts to respond to the very same questions that were asked in 1921. Sternberg concluded, "The molar level of theorizing seems to emphasize two principal aspects of mental functioning: the cognitive and the motivational" (p.5).

Although a few (general) unified theories of intelligence have been proposed, e.g., Newell (1990) and Wagman (1997), they focus mainly on cognitive and information processing components of intelligence. Thus, a common ground concept, which includes all components, is needed.

Apart from the many other psychologists who believe that intelligence is what intelligence tests measure or one's capacity to do well on IQ tests, Wechsler tried to link intelligence to successful coping in the world. Wechsler (1958) defined intelligence as "the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment" (p.7). Schank (cited in Sternberg and Detterman, 1986) viewed intelligence largely in terms of understanding. He suggested three levels of understanding, with the highest level involving emotional as well as cognitive understanding. Guilford (1967), for example, suggested that general intelligence should be seen as the product of 120 specific abilities. Gardner (1993), who has made the most influential recent contribution, stressed that there are different kinds of intelligences. Agreeing with Sternberg, Chi and Ceci (1987) regard knowledge and mental skills as being interdependent. In accordance with what Vygotsky and his successors (e.g., Bronfenbrenner) have demonstrated, Ceci (1990) also stated that the manner in which individual minds become endowed depends greatly on one's particular lifetime experiences. Because there are many ways to be intelligent, there are also many conceptualizations of intelligence. Overall, we know much less about the forms of intelligence that tests do not easily assess: wisdom, creativity, practical knowledge, social adaptability, and the like (Neisser, U., Boodoo, G., Bouchard, T. J., Boykin, A. W., Brody, N., Ceci, S. J., Halpern, D. F., Loehlin, J. C., Perloff, R., Sternberg, R. J., & Urbina, S., 1996). However, Neisser, et al., (1996) asserted that because ethnic differences in intelligence reflect complex patterns, no overall generalization about them is appropriate. Okagaki & Sternberg (1993) asked immigrant parents from Cambodia, Mexico, the Philippines, and Vietnam, as well as native-born Anglo-Americans and Mexican Americans, about their concepts of raising and teaching children and of children's intelligence. Although Anglo-American parents of first-grade children considered cognitive characteristics to be the most important indicator of their children's intelligence, all other groups emphasized such characteristics as motivation, social skills, and practical school skills.

Perspectives on Living Systems

Damasio's (1994) perspective on emotions and feelings delineated a link between the body and its survival-oriented regulations, on the one hand, and consciousness, on the other. He based his analysis on the following principles:

- (1) The human brain and the rest of the body constitute an inseparable organism, integrated by means of mutually interactive biochemical and neural regulatory circuits (including endocrine, immune, and autonomic neural components);
- (2) The organism interacts with the environment as an ensemble: the interaction is neither of the body alone nor of the brain alone; and
- (3) The physiological operations that we call mind are derived from the structural and functional ensemble rather than from the brain alone: mental phenomena can be fully understood only in the context of an organism's interacting in an environment (205-244).

The concept of autopoiesis (self-producing), articulated by Maturana (1980, 1981), has enabled a much broader perspective of science because of its attention to systemic organization. Contrary to the prevalent biological definition of living, the ability to reproduce, Maturana argued that the network of interactions of components that constitute a living system as a whole could characterize only a living organization. In this sense, emphasis is removed from system structure, and its replacement has been defined and explained in terms of relations. According to autopoiesis theory, the notion of cognition is extended to cover all the effective interactions that an organism has (Mingers, 1995).

Markus & Kitayama (1991) integrated theories of the self from both psychology and anthropology to define in detail the difference between 'self as independent' and 'self as interdependent' constructs. The authors argued that people in different cultures have different perceptions of the self, of others, and of the interdependence of the two. These perceptions can influence and determine the nature of individual experience, including cognition, emotion, and motivation. The authors use Asian and American cultures as examples within which many Asian cultures have distinct concepts of individuality that emphasizes the fundamental relatedness of individuals to each other.

Jantsch (1989) explored evolution through a new synthesis that he called self-organization. He contended that current theory usually considers evolution under the aspects of adaptation and survival. Therefore, the idea of evolution as “survival of the species,” exerts influence on the images we hold of ourselves and of human life in general. Jantsch’s self-organizing paradigm is based on the interconnectedness of natural dynamics at all levels of evolving micro and macro systems. Agreeing with such interconnectedness, Goody (1995) said:

From such an interconnectedness of the human world with overall evolution springs a new sense of meaning. As how the paradigm evolved, there is a growing view that intelligence evolved as a product of social interdependence. The unique development of human intelligence was probably linked to the use of spoken language, but language itself evolved in the context of social interaction, and in its development it has shaped—and been shaped by—social institutions. Taking as their starting point the social production of intelligence and of language, scholars across a range of disciplines are beginning to rethink fundamental questions about human evolution, language and social institutions (p. v).

To develop a better understanding of human intelligence, this qualitative research was conducted to deeply and insightfully explore the phenomenon. The research questions were: (1) what is intelligence? and, (2) how can the meaning of intelligence be understood differently by different cultures? Research methodology and the design of the study are discussed in addition to interpretation of the phenomenon with respect to the research questions.

Methodology

To unfold a holistic meaning of the concept or phenomenon of intelligence, phenomenology in general, and transpersonal phenomenology in particular were utilized. The transpersonal methods can more appropriately address rich, significant, and complex human experiences. “Emphasis may be placed on underrating how processes and issues interact complexly and dynamically in the everyday life circumstances and life journeys of individuals” (Braud & Anderson, 1998, p. 18). There is an epistemological stance of what William James (cited in Braud & Anderson, 1998) called radical empiricism, “a stance that excludes anything that is not directly experienced but includes everything that is directly experienced, by anyone involved in the research effort” (p. 241). Therefore, the transpersonal phenomenological inquiry was used because this method can explore individual’s experience of intelligence and intellectual potential comprehensively. This method of inquiry allows one to not only explore deeply and insightfully the experience of intelligence in individuals in an “every-day-ness” state, it also gives the researcher the opportunity to investigate the experience of a transcendental state of intellect in individuals.

Participants

In selecting the participants for this study, extreme efforts were made to select individuals with diverse vocational and academic knowledge, experiences, and expertise. Based on a review of the literature, one can infer that the study of human intelligence, traditionally, has been the realm of the field of psychology. Therefore, a group of participants with diverse academic, vocational, experiential, and personal interests was selected. Among the participants were the following: martial arts instructor, geologist, school principal, art historian, certified nursing assistant, nurse, medical doctor, anthropologist, butcher, baker, secretary, lawyer, musician, dance instructor, electrical engineer, artificial intelligence expert, Waldorf school teacher, social psychologist, medical anthropologist, social worker, marathon runner, biologist, and accountant.

This approach helped to answer the first research question: *What is intelligence?* And, for the second research question, *how may the meaning of intelligence be understood differently by different cultures?* Invited were individuals with different cultural and ethnic backgrounds. The participants were selected in two phases. In phase one, 15 participants based on their diverse academic, vocational, and experiential characteristics were selected. After setting up an appointment with each prospective participant, the researcher met with each participant in person and attempted to establish

rapport by introducing himself and briefly sharing the intend of the study. In the second phase of the participant selection, mail and e-mail were used to contact prospective participants, making it easier for unprepared or unwilling individuals to decline. Many individuals nowadays prefer the electronic method of communication. In both phases one and two, a total of 96 prospective participants were contacted. Among them, 48 individuals agreed to participate, 19 declined to be interviewed, and 29 did not respond. Of the 48 (N=48) who participated and shared their experiences, 31 were male (male, n=31) and 17 were female (female, n=17). The average age of participants was 48 years, with a 31-year-old being the youngest and a 64-year-old being the oldest. In regard to their cultural and ethnic backgrounds, the majority were American born, Caucasian (54%, out of which 6% were from Jewish heritage), African American (8%), Persian (6%), Greek (4%), Canadian (6%), Hungarian (2%), British (2%), New Zealand (2%), Slovenian (2%), Indian (2%), Native American (2%), Spanish (2%), Italian (2%), and Chinese (2%).

Although having rich life experiences was the prerequisite for selection of the participants, two other important factors were: (1) trustworthiness and (2) articulation. For articulation, the researcher was able to recognize this in the initial interview with participants or during phone conversations with them. It needs to be emphasized that the articulation here does not mean speaking English perfectly or refer to a “speaker-type presentation” and dialogue. Articulation refers to the participants’ abilities to convey their meanings by utilizing and tapping into their own adequate word depositories to the extent that the intended meanings could be conveyed adequately and be understood compatibly. As the demographic data represent, several of the participants who were from different cultural and ethnic backgrounds spoke English, but with very strong accents. Interviews with these participants, as expected, took much more time than other interviews. The researcher was intrigued as how the essence of intelligence was perceived in different cultures.

Study Procedure and Design

To minimize presuppositions and explore genuine experiences of the participants, initial questions were indirect and retrospective. The participants were asked to present examples from their own lives or the lives of others whom they knew well. This way, through explorations of the experiences, the emergence of a viable meaning was anticipated. For example, instead of asking the conductor of an orchestra what intelligence is, the conductor was initially asked to describe the worst conductor he or she had ever encountered, and the participant was allowed to elaborate on rationales, feelings, and experiences. Such an approach provided ample opportunity for the participants to delve deeper into the subject of inquiry and to explore any and all possibilities. The strength of the phenomenological approach to interview is that it allows the interviewer to be highly responsive to individual differences and situational changes (Patton, 1990). Overall, explorations were accomplished by conducting long semi-structured interviews (transpersonal-phenomenological) with the selected participants. The length and frequency of long interviews ranged from one and one half hours to about three hours, with follow up interviews if needed.

To explore the participants’ deepest thoughts, feelings, and perceptions, after establishing the initial mutual trust, long interviews semi-structured interviews were conducted. Each interview consisted of three parts. The first part involved a personal story. The second part dealt with an example of an intelligent person and elaboration on that. The third part required elaborations on the role of human intelligence in achieving life purpose as perceived by each of the participants.

Personal stories were critical in interpreting the attributes that were understood and expressed by the participants in the second part of the interview. The third part was the conclusion and interpretation of the prior two sections. These three parts in a sense were a marker of consistency of data (internal validity) provided by the participants and, in a sense, a marker of their trustworthiness.

By the same token, it can be said that these three sections provided a micro triangulation for the understanding and interpretation of the data. For example, in one of the stories, the participant (a plant biologist) told his story, by: [Part one] describing his childhood in a rural area where he grew close to nature. He described his living condition as that of four families who lived in the same house and helped each other tremendously. He concluded that child rearing and establishing a close family

relationship constitutes one the most important influences of his life. [Part two] for him, competition and facilitation or mutualisms were perceived attributes of intelligence. [Part three] the perceived role that intelligence plays was “to lead us beyond the basic necessities of other organisms which they also grow, reproduce, and die.”

Although the initial evaluation of the trustworthiness of the participants was based on intuitiveness and realizing their willingness and participation, the markers of their trustworthiness were more clearly revealed during the phenomenological interview. For example, one of the participants had reviewed the literature pertaining to intelligence theory. During the interview he reiterated what he had remembered instead of sharing his personal story. This data was not used. Again, during each interview, corresponding verbal and non-verbal gestures were carefully observed as they related to each segment of a shared experience. To ensure full comprehension of the matter dialogued, and to evaluate consistency of ideas expressed by the participants, they were asked to share some of their childhood experiences, then describe their perceptions of intelligence via exemplification, and finally to express their views on the purpose of life and role of intelligence in achieving that purpose, if any. By doing this, the researcher was aiming to see whether expressions from the three parts corresponded with each other—and if they do—in which ways?

Each interview session was conducted after an appropriate initial pre-screening was performed and after an appropriate time and place for the session was agreed upon. Each interview took place in a quiet environment, with confidentiality assured. Human subjects review approval was received from the university Institutional Review Board. The interview sessions were audio taped and data were transcribed. Participants received a copy of their own interview transcript and its interpretation. Participants were asked to review these documents and provide feedback, modifications, and clarifications, or arrange for another interview if they chose to do so.

Interpreting the Phenomenon/Understanding the meaning

A total of 48 participants shared their experiences and views about their perceptions of human intelligence and its role in achieving life’s purpose. This equates to a collective 2,350 years of experience among the participants. After analysis of the transcripts, notes taken during interviews, and other supplementary materials provided by the participants (e.g., their research writing samples, books, and articles), participants used their insights to compile a list of attributes an intelligent person might/might not exhibit. The final list consisted of 477 attributes. After data reduction, three main categories emerged: (1) intrapersonal, (2) interpersonal, and (3) transpersonal.

Intrapersonal Attributes. From the three categories that emerged, intrapersonal attributes are within the realm of a person. Such a personal boundary encases and connects those elements that interact at the cellular, tissue, organ, and finally whole, body function. The direction of interconnectivity within this complex micro system is from the simplest living unit (cell) to the most complex whole (organism) and vice versa. This connection can be circular, linear, or take any other possible form or direction, but always containing the essence of interconnectivity and interdependence. There are 250 attributes in this category. A subgroup of these relates to cognitive and emotion functioning (see Table 1).

Table 1. Examples of Cognition and Emotion Subcategory of Intrapersonal Attributes

Cognitive	Emotional
-good organizer	-plans ahead
-quick thinker	-passionate
-ability to find solutions	-live happily
-ability to process information	-well balanced
-analytic abilities	-wisdom as combination of intellectual and emotional mastery
-having a good memory	-expressiveness
-reasoning	-motivation
-genetic predisposition	
-mathematical abilities	

-problem solving -musical abilities	
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The next subcategories, which relate to learning and application of the learned knowledge, emerged from integration of the cognitive and emotion functioning (see Table 2).

Table 2. Examples of Learning Subcategory of Intrapersonal Attributes

Learning
<ul style="list-style-type: none"> -a continuous learner -ability to notice and make sense of things -ability to make good decisions -ability to see the alternatives -ability to transfer knowledge from one context to another -a survivor -achievement -capacity to grow and evolve -knowing what to do with their knowledge

Integrating the aforementioned categories resulted in the creation of the next subcategories. These represent the attributes that deal with a whole person (see Table 3).

Table 3. Examples of Wholeness Subcategory of Intrapersonal Attributes

Wholeness
<ul style="list-style-type: none"> -physically healthy -harmony -have a good perception of human nature -having strong values -integrity -interconnection -being able to recognize their strengths and weaknesses -continuously improving -knowledge of one's self -self-reflectivity -enjoying life

The emergence of the state of wholeness can be considered as a stage of self-initiation or freedom to a state of personhood. From this state, the attributes such as: "creativity," "being able to use most of their capacities," "imagination," "free flowing," "novelty," and "innovative," would be nurtured and freed. As mentioned earlier, the paths of interconnectedness are neither ascending-descending nor unidirectional. But, they are interdependent of each other within time/space boundaries until, consequently, the state of harmony and/or equilibrium ensues. For example, an attribute such as, "become withdrawn at times," may be viewed as a negative and defective attribute at first glance. However, with insightful evaluation, one sees the benefit of such reactions for the purpose of the stabilizing the overall system and bringing it back to the state of harmony and/or equilibrium. Therefore, such a reactive measure is a retreat not a defeat, as long as it does not persist for such an extended period of time that it becomes pathological and destabilizes the unit.

This concept has been supported by personal stories told by two of the participants. In the first story, the withdrawal stage was extended due to the participant's family situation. This situation prompted the person to use alcohol and other drugs. In the second case, the participant used a temporary state of withdrawal to recuperate from his life stresses, but then resumed his previous productive lifestyle.

Examples of Participants' Experiences and Reflections:

"Perception of intelligence in engineering terms can be abstracted as the mind that independently processes information and uses the input to give a valid, understandable, and cohesive output... To be able to sort of combine this input and make it cohesive and understandable, and easy as an output, in daily job, life, and work, and the people you work with, to me that's intelligence."

"I think, the so called "destiny" is the consequence of choices you make. How we make these choices is by using our intelligence. We can utilize it to make good choices. This process also requires hardship to support it. Although sometimes the choices we make may end in failure. But I think an intelligent person do not look at that failure as an end but as a new beginning. An intelligent person learns from those circumstances, moves on, and goes to the next level."

"I think emotion and cognition are parts of human organism. So therefore they interact. But I do think they are separate aspects of the human personality....for being able to do deductive reasoning there is multiple causal thinking like system thinking. There's the ability to see themes and patterns in seemingly unrelated data there's the ability to do that quantitatively and then there's a way to do that with people verbally there's the ability to do theme or pattern invention which is even different than observation or recognition. So, cognitive capabilities are complex. Similarly emotional or behavioral capabilities are just as complex. There are competencies or capabilities that have to do with how we manage ourselves, how we think about ourselves how much we are aware of ourselves. There are those that have to do with how we sense others in our environment how we work with others."

"...just like muscle, some people have better genetic development, therefore more developed muscles than others. Weight lifters talk about what they have but what the genetic is like. Who is going to be Mr. America. So clearly, just like most of us don't develop our muscles as much as we could, I think there's a thing about intelligence that many of us we have much more potential and depending on what kind of a life one leads how much one develops one's potential."

"Emotion plays as a connecting medium in a musical performance, First, it lets you connect with the musicians, then, it's a cycle, we connect with the audience. Then, the audience connects back to us. If we make that triangular connection that's when the performances have the most meaning."

"An intelligent conductor communicates well, has ability to establish goals and prioritize. Certainly organizational skills. A good motivator. Get the students/performers to do sometimes what they don't want to do and sometimes what they think they can do, and being able to deal with different personalities. A good leader... Part of a conductor's job is to highlight the strengths of the group and hide the weakness of the group compliment them so that everything works together to make a unify whole. You can have one section that is so good that makes the rest of the group sound bad."

"I believe Mozart was a good example of an intelligent person, not only was he an absolute prodigy in music and his every note is pure gold. If you look at his operas for instance there's such depth going beyond musical depth the way he characterizes human emotions through his music. You realize that he knew so much about human relationship and psychology. He had very definite views and profound views on good and evil."

"I think intelligence is connected with creativity. Creativity is an essential aspect of intelligence. You cannot find intelligence without finding underneath somewhere creativity. It's very simple it just fits the pieces and willing to watch how it works and having created a model of how things work."

"One of the fundamental differences between human intelligence and artificial intelligence is 'common sense': a human having decided to walk out that door a human plans. I put my left foot forward and then after that I put my right foot forward. Keeping more or less in that order. If I have to make a correction I make a correction about 3 steps ahead. Never do I reproduce my path. But this more or less is correct. This is common sense knowledge. But for a robot, sensing the common sense is impossible."

"Intelligence and wisdom are two different things. My perception of intelligence is learning, problem solving, and discriminating logically. On the other hand wisdom is application of the learned knowledge and experiences. Quoting from Aristotle, I call these experiences "life's lessons of wisdom."

"... in agreement with John Dewey's viewpoint, I believe that ...the core of the fact is problem solving ability."

"I really think about intelligence more in terms of cognitive complexity, as an ability to grasp complex ideas, as an ability to integrate competing ideas or just different ideas and function cognitively at a complex rather than a simplistic level. That's experientially how I experience intelligence."

"I perceive intelligent people (dancers) as the ones who fully immerse themselves in what they are doing. Emotional and cognitive balance is evident in their performances, and in a sense they delve into a much deeper layer of their knowledge. This is expressed in their performances, not merely in more movements but in much deeper thought movements, embodiment, representing more layers to their experiences."

"...ability to rapidly assess and quickly understand and articulately describe and to analyze in complex ways things that happen around them. Those are to me somewhat universal markers of intelligence. People who are able to enter into a situation and immediately cease, what is going on to grasp it to understand it to respond in appropriate ways in particularly people who are able to speak fluently and articulately to voice their thoughts. I associate all those things with intelligence."

"...you know, pain is amazing. When you say pain to people, they don't want to hear it. Because pain hurts. But the more you understand about pain, the less it hurts. Pain is just as real as that sun shining out there. But the thing of it is, is that pain helps you to remember too."

"An intelligent mechanic really understands the motorcycle. You have to live with it, take it apart, put it back together, listen to a lot of them take a lot apart, put back together, you have to continue to immerse yourself in that experience of taking things apart and putting back, and realize that something there is more than just all the parts. There's something about that machine that is like a work of art. It's not just a group of parts. And they're all different, and some predictable sometimes, but you just know, because you've done it so many times, you just know, you don't know how to tell that you know what's wrong, but you just know."

"I say architects of the Taj Mahal were very intelligent. The perfection and harmony of the individual parts the scale to human beings... Everything fits together in harmony and it has to be perfection of the lines everything is clean, precise very different from most paintings. Very free flowing, irregular and asymmetrical."

“I think that we’re morally disconnected and we need to reconnect and one way we can do it is by educating our children emotionally and not just cognitively. Sure they need to know the geography and their math and social studies, they got to know how the government works, but there’s an emotional education they need too. They need to be able to experience love from people that aren’t their mother’s and father’s. And there’s where we dry up.”

“Something that always has fascinated me is that what is musical knowledge?... how is it different than language knowledge, verbal knowledge. I guess the study of this is psychology of music. Whether it’s music cognition whether it’s musical communication, there’s lots of things to that. But, it certainly different than language learning, verbal learning. There are some fantastic musicians who are technicians play notes very well but people don’t want to listen to them. My guess it’s a lack of emotionalism, a lack of emotional understanding in their music.”

Interpersonal Attributes. The second category that emerged from the data analysis is interpersonal. After initiation into the state of personhood and working toward establishing the state of harmony and equilibrium within oneself, one realizes it is possible to reach to such a state via interdependence and interconnectivity with a larger and more complex system. Due to the essence of wholeness, interdependence, and interconnectivity, some of the perceived attributes have been repeated in different categories. For example, the two attributes of “love” and “caring” are considered intrapersonal attributes because one can care and love oneself, and interpersonal refers to caring about and loving others.

The interpersonal attributes represent interdependence and interconnectivity at individual, societal, and environmental levels. With interdependence and interconnection established at an individual and small group level, one can also interconnect with a larger group. Such interdependence and interconnection become stronger and more meaningful, in the realm of human living, when they are for the benefit of others as well. In addition, what make such interconnection coherent and strong are the common elements agreed upon by the individuals within a unit, group, society, community, and the world at large (see Table 4).

Table 4. Examples of Interpersonal Attributes Representing Interconnectivity at the Individual, Environmental, and Societal Levels

Individual	Environmental	Societal
-a giving person -a good leader -a good listener -a good parent -a good writer -a good command of language -ability to communicate with very educated or less educated individuals -ability to relate to small children and elderly -a good sense of humor -artistic abilities -ability to ask good questions	-ability to find the right context that she/he can function optimally -ability to relate to environment -ability to utilize resources efficiently -adaptation -awareness of surrounding -helping to make the world a better place -nature appreciation -recycling -concerned about the ecosystem	-altruism -doing good things for the society -having a sense of community -aware of what is requiring of him as a human being -engagement with social world -fairness -good work ethics -having strong values and moral -respects other people’s rights

Examples of Participants’ Experiences and Reflections:

“The guy I work with is very intelligent. He amazes me ...you know... him being profoundly deaf, gets as much information about the world as he does. And yet by the academic

standards he reads at the 8th grade level and writes at the 2nd or 3rd grade level. He can explain anything to you and me with his ASL but then there are times that he does not appear very 'intelligent'...He has a good heart that's what makes him intelligent. He is honest. When he makes mistakes he comes and tells me what he did. So, yes he is as intelligent as you can get. So reading, writing, using ASL, and communicating with others are important but one is intelligent when helping others, is honest, staying away from too many false selves."

"To me intelligence goes beyond survival. To me survival is barley getting along and surviving. Intelligence is what's beyond that. What do you contribute beyond that. Taking care of yourself is one thing. Taking care of others is something entirely different. I don't know that I would say some one who just takes care of themselves is intelligent. Some one takes care of others there's something there."

"Some people are very good at collecting knowledge and doing research but the hard part is applying some of that and to get it to the people who can benefit from their research. A lot of times it's not another scholar who can benefit from your research. Unless you can communicate that information in an understandable manner to them what good is your research other than you got another publication."

"Mind is a term that I would say is the subjective impression we have of internal states that are manifest in behaviors in real life and that are maps to brain functions in ways that we don't clearly understand." Travis views the mind not as a sole entity but as one that interacts with other factors. Although the mind is a function of the entire body as well because there are other endocrinological system that will affect my mind. Mind is also affected by the environment that I'm in a real time."

"I think this verse by a Persian poet (Saadi) will sum up the essence of human intelligence:
The children of Adam are limbs of each other
Having been created of one essence.
When the calamity of time afflicts one limb
The other limbs cannot remain at rest.
If thou has no sympathy for the troubles of others
Thou art unworthy to be called by the name of a man. "

"I perceive an intelligence lawyer as the one who is a good listener, has analytic skills, empathy, is strong reader, writer, and is patient...However, there are some people that rank very high up on those skills and are not necessarily the most intelligent lawyers because they miss the human interpersonal attention in their practice or they miss the ethical dimension."

"I consider Mark Twain as an example of an intelligent person because:
I just liked his books his perception of people. His books his characters were always well formed. You could really identify with his characters. I don't think you can do that unless you have had life experience and been very observant in your life."

"You know there's a lot research to support the notion that interaction with other people is important in intellectual development. So the idea of intelligence may operate in isolation of other people seems foolish to me. I mean even in special Ed one of the most profound studies done in 1939 actually showed some kids diagnosed as being mentally retarded. It may sound strange, but they were in an orphanage they placed them with teenagers and adults in a state institution."

"I've seen it a lot in various other countries, especially in Africa. Kids who are given physical affection, they're bright and they're eager to learn and they maximize their potential....If you isolate a child, keep him in a closet for a certain period of time, that child will end up being organically brain damaged."

“...the inter-connectedness or the interdependence expresses itself in the layout of the family home. It expresses itself in the art forms, the songs, the dances, it's there's definitely an aesthetic that really juxtaposes,..... I mean they are not just touchy feely people all of the time, of course they are human beings, so they have two of these opposing principals. The principle of solidarity and the principle of rivalry and competition which actually derives from their family structures.”

Transpersonal Attributes. The third category that emerged was transpersonal. Interconnection of one to oneself and then to friends, family, community, society, environment, and ecosystem, through a realization of a sense of wholeness, gives one the freedom to get closer and ultimately unite with one's spiritual essence. The attributes in this category univocally express such a realization (see Table 5).

Table 5. Examples of Transpersonal attributes

Transpersonal
<ul style="list-style-type: none"> -ability to recognize and cultivate those factors that make us human -aware of sufferings and work to better the world -ability to bring together science, soul, and spirituality -find rewards in searching for something deeper than day-to-day life activities -having an art of living a human life -reverence for life -self-actualization -transcending with the nature -liberation of mind -spirituality

As it was said elsewhere, the majority of researchers in the field of human intelligence view intelligence as means of adaptability and survival.

The transpersonal dimension of human intelligence has not been given enough consideration in scientific community. Therefore, more research on the topics such as transcending with the nature, liberation of mind, and connection between science and spirituality may promote better understanding of this complex phenomenon.

Examples of Participants' Experiences and Reflections:

“I think human intelligence is the ability to recognize and cultivate those things which makes us human and that covers a very broad range of skills. I think intelligence ultimately is the willingness.... the art of living a human life. Human intelligence assists us in the art of living a human life. It is purposeful, there is a teleological thrust to it which I don't understand but it's almost as if life only evolves.. All these things that make us uniquely human, which we cultivated, nurtured and which assist us in the art of living a human life. ...The goal is self-awareness. As being self-aware you are also become aware of your connection to everyone else. And ultimately you become aware of your divine identity.”

“[using runners analogy]...some are running very hard. The harder you run the more tired you get. You need to get off the tread mill and then walk around and see what's going on. The intelligent person is one who doesn't exercise on a tread mill, so to speak. I guess that's the best way to put it. Only an idiot would exercise on a tread mill. But an intelligent would get off the tread mill and see what life has to offer. The intelligent person is excited about life. That's the energy I try to create in my students.”

“I give you a couple of examples of intelligent scientists who were also aware of the world around them. They were not sort of autistic savants wrapped up in their subjects and oblivious to everything else. Einstein was aware of the world around him. Leibnitz in fact was

politically active and tried to organize various treaties between cities and states and such etc. Bring to an end some of the conflict in his day... These fellows were aware of suffering and actually were productive at the same time and strived to better the world.”

“Wisdom has two meanings for me in that sense. One is that it’s practical knowledge, which is a virtue in knowing how to properly apply and use the knowledge that you have. I distinguish between knowledge and understanding wisdom. That’s the ambiguity of knowledge per say and how it’s going to be used. The wise person knows how to use it or to apply it in a practical useful way, but also a good way. It has an idea it’s a moral judgment or good and proper use of the knowledge that we have. And the extended meaning of wisdom is that is has to do not with just knowledge of this world but knowledge of the supreme world and the reality and god.”

“I’ve heard the saying once; there’s a lot of intellectual fools walking around. They’re smart, and yet they are foolish. So, I would say intelligence is gathering of information through experience, assimilating it, and applying it in your life, and utilizing it to help others. To reach out a helping hand and help lift them up too. As to whether they use it or not, remains to be seen, but at least you have exercised your intellect to help this person, and then moving on.”

“I am not agreeing that human intelligence consists of just associations of ideas. I believe also in spiritual dimensions play a great role in that. So, there is a part that deals with analysis, but I think spirituality is also very important.” In my opinion, for example, Galileo had to be hanged, not just imprisoned. But not for what he said but for other reasons. He wrote to one of his friend: Senior Rojo: the whole world that I have discovered are within a mathematical language. Yes, that is true the whole world can be written in a mathematical language. But there is another world that is not written in this way. Who said that the discreetness is totality? O.K., the world can be written in mathematical language. So, here we go!! We have submitted ourselves to the loss of quantity.”

“I perceive intelligence as one’s potential to connect with his/her conscious as well as to the collective unconscious. Collective unconscious even for Jung is essentially bound up with the vital life. There is anger and rage and aggression and sexual drive and love and affection. Basically responses, human responses of attraction. You can’t teach without them. That includes the emotions of the teacher also.”

“There’s bad translation of a passage of Jesus in the Gospel of John that’s badly translated. It says you shall know the truth and the truth shall make you free. So, knowledge by itself is not a good thing or bad thing because it can be used or abused. And that brings the question of human freedom and will decision making, choosing alternative, values that are very much a part of that as well.”

Discussion

The intention of this study was to explore the attributes of human intelligence through which the essence of intelligence unfolds, and subsequently the role of intelligence in achieving the purpose of life. A qualitative research was conducted. An interpretative phenomenological approach was used. Three main categories emerged: (1) intrapersonal, (2) interpersonal, and (3) transpersonal. Each one of the attributes revealed the element or essence of interdependence and interconnection at different levels, from micro to macro. Therefore, the common theme or the essence of intelligence unfolded as interdependence and interconnections.

The overall underpinning theories for this endeavor were self-organizing theory, which explains interconnections and relationships at the micro and macro levels; social cognitive theories, which helped to construct the Interpersonal components; and philosophical and spiritual concepts, which

assisted in constructing the transpersonal components. Overall, the participants' stories provided the *intersubjective* (Merleau-Ponty, cited in Hoeller, 1994) experiences by which we could *objectively* explore the essence of human intelligence. Here, *objective* connotes the state of emergence through consistency and rigor. Intelligence, since ancient time, has been conceptualized and considered as one's potential or energy that will be actualized later on during one's developmental process. These findings strongly support this concept.

Elaborations on the Intrapersonal Attributes

The intrapersonal attributes are within the realm of a person. Such a personal boundary encases and connects those elements that interact at the cellular, tissue, organ, and finally the whole body function. Simplistically, these elements working dynamically, harmoniously, and in concert would enable one to function, at minimum, as an organismic (able to interact with the environment) sentient being. At this level of functioning, one is capable of thinking, feeling, and acting, having other supportive and conducive factors present.

This category consists of two main subcategories of emotion and cognition. These two in concert, supported by the conducive elements (goal-directed motives) would result in an emergence of the state of health or wholeness. This stage can be considered as a stage of self-initiation or freedom to a state of personhood. Although these attributes may look different at first glance, they all share a common essence of interconnection or interdependence. For example, *analytic ability* denotes one's ability to compare and contrast qualities or quantities of events, situations, and data. Having analytic ability, in essence, is the ability to realize interconnection among two or more factors or events. For *problem solving*, the same principle is in effect. In this, one's ability allows realization of interconnection among numbers, equations, actions, reactions, situations, and occurrences.

Mathematical ability follows the same principle and essence. Here, however, it points to one's ability to see interconnections among mathematical symbols. The same can be said about *musical ability*, interconnections among musical symbols and notations. As was mentioned earlier, dissecting the attributes in this mechanistic way is only for a better understanding of the main essence. Otherwise, there are no such classifications and distinctions as solely cognitive or emotive elements. They are all intertwined and work in concert. For example, *musical ability* is a combination of cognitive and emotive factors. The next subcategory relates to emotive factors such as *planning ahead*, *living happily*, *motivation*, and *expressiveness*.

Pre-planning is one's ability to see interconnections among many factors. For this, one should be able to connect one's past and present experiences, evaluate weaknesses and strengths, and be aware of the available resources to plan for the future. This as a function of prefrontal cortex is an activity of the emotive system. The theme of interconnection and interdependence is seen here as well.

Expressiveness allows one to connect with others. *Motivation* is a force or energy that connects or helps one attain a goal. *Living happily* requires the ability to realize connections among many factors in life and bring them into balance.

The next subcategory relates to learning and the application of learned knowledge. In this, examples are *a continuous learner*, *ability to make good decisions*, *an achiever*, and *knowing how to use their knowledge*. To be a continuous learner, one needs to evaluate and see connection(s) between what one already knows and things that one needs to know. Such a realization can lead to a continuity of learning. *An ability to make good decisions* requires one to connect, compare and contrast past and present experiences, realizing rewards and constraints. Similarly, *an achiever* is one who uses available resources efficiently by avoiding or conquering obstacles to achieve one's goals. One of the important articulated attributes of an intelligent person expressed was *autonomy*. To be autonomous, one needs to be connected with one's own sense of self. This brings interconnection of other factors such as self-esteem, self-concept, and self-reflection into play.

Application of knowledge was another unidentified attribute of intelligence. To apply one's knowledge, one must recognize the connection between knowledge and its relationship to contexts, events, and situations. As these examples show, these attributes are interlaced and they cannot be strictly

demarcated. For example, the *application of one's knowledge* can be interlaced with other attributes such as *autonomy, decision making, pre-planning, and motivation*.

There are several attributes that deal with physical and emotional well-being, including *healthy, moral development, having strong values, and integrity*. And finally, attributes that may free one to experience the next category, that is, *interpersonal*, include *imagination, novelty, and creativity*. Health, referring back to its Latin root, means whole. To achieve such wholeness, one needs to be aware of the interconnection among many factors—nutritional, lifestyle, environmental, physiological, and psychological—in order to maintain a healthy state. *Having strong values* and *integrity* denotes one's ability to realize interconnection between different moral and ethical codes, and adhere to them.

The intrapersonal attributes of intelligence, as presented, point to interconnections and interdependence within one's physiological and psychological boundary: at the micro level (i.e., cells, neurons, brain) and at the macro level (i.e., whole body functioning). This journey started by exploring a unit of life or cell. Such a unit, capable of self-organizing and self-producing, is interdependent with its environment. Applying this same principle on a larger scale, one can see the same interdependence at work; that is, one's interdependence with its environment and ecosystem. In the same token, the Gaia system (planet Earth, as whole, as a living unit) is interdependent with its surroundings' media.

Again some of the intrapersonal attributes repeated here as well. This is due to recursive interconnections and the embedded nature of the attributes (one may belong to two or more categories). For example, an attribute such as *being thoughtful* can be considered an intrapersonal attribute when it is analyzed as a cognitive process interconnecting bits and pieces of information. It can be considered interpersonal when it is analyzed and defined as a function of thinking about other things or other people, a way of interconnection with the others. Another example is *having a good command of language*. At the intrapersonal level of analysis, this deals with subcomponents ranging from low-level process, such as the ability to discriminate between speech and non-speech sounds, to highly abstract rules of grammar. In addition, *a good command of language* also means as a way of interconnecting or relating with others.

Elaborations on the Interpersonal Attributes

overall, all the attributes listed as interpersonal attributes in one way or another connote one's interconnection or interdependence with the ecosystem and all entities present in one's environment. These include, but are not limited to, family, school, community, society, ecosystem, workplace, culture, economy, and technology.

What follows is a brief overview and exploration of the principles expressed by experts in related fields as to the importance and influence of environmental factors on one's intellectual development. Based on studies from the 1970s and 1980s on contextual and cross-cultural views of intelligence, a derived concept of social intelligence is one that focuses not on social insight or reasoning ability, but more broadly on people's effectiveness in accomplishing valued social goals within a particular context or cultural setting (Ford, 1994). Accordingly, social intelligence is not an attribute of the person but a quality of person-environment interactions that can be assessed only in relation to a set of social goals and boundary conditions such as norms, values, and laws. These define the nature and meaning of socially effective behavior patterns in a particular context. This implies that social intelligence is not a unitary or fixed trait (Ford, 1994).

Social cognitive psychology assumes that the most important human activity requires planning that is directed toward the attainment of desired ends and the avoidance of unwanted ends. Our ability to set goals, develop plans or strategies, and implement those plans influences our emotional states, our relationships with other people, and our adaptation to life's challenges (Barone, Maddux, & Snyder, 1997). To support this statement, the authors cite Piaget, who said, "Life is essentially auto-regulation" (p. 247).

Such interdependence and interconnection become stronger and more meaningful in the realm of human living, when the following attributes benefit one and others: *altruism, caring, and having a sense of community*. In addition, what make such interconnection coherent and strong is the common elements set and agreed upon by the individuals within a unit, group, society, community, and the world at large: *aware of what is requiring of him as a human being, having strong values and moral, and justice*.

Elaborations on the Transpersonal Attributes

The last sets of attributes are those that enable one to connect with a different level of being, a novel state, and a state of unlimited possibilities. The attributes in this category univocally express such a realization: *ability to recognize and cultivate those factors that make us human, aware of sufferings and work to better the world, self-actualization, transcending with the nature, and spirituality*.

Cobb (1990) contended that while the modern theories propose that each individual acts from pure self-interest and leaves the coordination to the market, or Adam Smith's *invisible hand*, the postmodern theory sees that communities are interdependent. The transpersonal category refers to interconnection of one to oneself and then to others' is possible through self-realization. The attributes in this category, all and all, point to such realization leading to the state of *Oneness*.

Following is an integration or collage of concepts, constructs, and theories from a broad spectrum of knowledge base. Throughout, they consistently and with rigor aver to the essence of intelligence; that is, *interconnections/ interdependence*. Interconnections are used here to represent only connected entities; however, they do not clearly describe the nature of the connections or the state and nature of such connections. For example, the unit A is interconnected to the unit B. This state of interconnection is conceived as a passive delineation, for it does not describe whether the unit A took the initiative to connect with the unit B, or vice versa. In addition, it does not identify whether unit A can exist without being connected to unit B. Thus, throughout this writing, the term *Interdependence* is used to define such a relationship. One has to take immense precautions not to interpret

Interdependence vs. Co-dependence.

To make a clear distinction, first, let us look at two other terms *dependence* and *independence*. In general, the unit A and the unit B are said to be dependent on each other when each cannot exist when it is not connected to the other. The unit A is independent of unit B when it can be without the other and, in fact, they prefer not to be with other. In a co-dependent state of interconnections, both units A and B must be together to exist; otherwise, each one separately cannot exist. And finally, interdependence, as defined here, is the state of interrelationships or interconnections in which both units of A and B take the initiative to interconnect with the other for the sake of its own survival and the survival of the other.

In a co-dependent relationship, each of the entities has one or several deficiencies, which must be reified and compensated mutually by them. However, in an interdependent relationship, each of the involved entities is a fully functioning one. If there is any deficiency, it can be reified by the same unit, by and large, although others may assist as well. In an abstract way, it can be said that a co-dependent relationship involves more of *taking* energy by each unit from the other; thus, it makes evolution of each or both unlikely. On the other hand, an interdependent relationship involves each entity to contribute energy to (sharing with) the system. Exchanging energies in this manner leads to entropy, evolution of the system, as well as evolution of each contributing unit.

Establishing interdependence as a salient factor or the essence of intelligence, one can infer that, in general, whatever active and reactive behavior that (directly or indirectly) disrupts such continuance can cause cleavage of the web. This is not an intelligent kind! Referring to the Latin root of the word health, that is, whole or holy, breakage of the continuance of whole or health would have an ill effect for one and for all.

As a reminder, there are many examples we can use to illustrate behaviors which are not compatible with the meaning of intelligence as it emerged from this study. For example, one who becomes alcoholic or addicted to drugs, compromises such interconnections at the intrapersonal level. The harmful effect of this also can extend to affect the interpersonal and transpersonal levels as well. This may result in disruption of interdependence, if it was established. And, if it has not been established, this disruption may prevent its development. Using chemicals whose byproducts harm the environment can be considered an unintelligent act because it disrupts interpersonal (person-environment) interconnections. Self-centeredness brings attention to the welfare of oneself, and the one's motifs become survival of *Me!* Having such a mentality leads to isolation and alienation of that person and eventually precludes establishment of inter-personal and transpersonal interconnections. Another example is racism. In this, race-centeredness makes one believe that one's race is a *better* race than others, and that gives one the illusion of supremacy to decide for others. Such a mentality and its operational consequences may not allow establishment of interconnections at the either levels.

Summary and Conclusion

This journey began by exploring the meaning of human intelligence via examining existing theories, constructs, and concepts of intelligence from different disciplines juxtaposed by data that emerged from this phenomenological-transpersonal inquiry. To accomplish this, a recursive approach was taken, exploring it from the state of *becoming* to the state of *being*, and to *becoming*, again and again.

Unlike many traditional approaches in the field of human intelligence, in which researchers looked for *differences* in intelligence functioning and the causes in their subjects, the study was to find *commonalities* among the participants. Upon analyzing a gathered thick and rich database (transcript of the interviews and supporting documents), three components emerged: intrapersonal, interpersonal, and transpersonal. The attributes in each component share the same *essence*, that is, interdependence/interconnection: physical interdependence, social interdependence, and spiritual interdependence, respectively.

The purpose of the study was to explore the essence of human intelligence. Many theories have informed and helped guided this study. There is an abundance of theories on human intelligence. Interestingly, almost all of them in one way or another examine human intelligence as a factor or potential, which enables one to see interconnections among signs, symbols, objects, events, occurrences, patterns or lack thereof.

Human intelligence is where all our thinking, acting, and feelings originate. Thus, cognitive and affective components were described explicitly. One of the main characteristics of the study was its emphasis on finding the essence of intelligence within the context of human life. This approach, a posteriori, enabled the researcher to explore intelligence, one's purpose of life, and the role that intelligence plays to achieve that purpose. In other words, helping us seeing interconnections within and between. Although the participants were from different cultural and ethnic backgrounds, their perceptions of intelligence appeared influenced by the host culture. This requires much extensive follow up study to investigate the degree of acculturation by the host culture. The exposure to the host culture among the participants varied from 8 months to 36 years.

People throughout history have felt that they are more than just a physical body, and this has been conceptualized as an entity called *the mind*. This entity carries out the functions of thinking and feeling. Human beings are the result of many millions of years of evolution (mentally, physically, culturally, etc.). Intelligence is our guiding force and influences our choices in everyday life. Despite the evolutionary term assigned to the latest human species, Homo-sapiens (literally means the wise human), many humans act homo—not so *sapiens* by acting in ways that compromises their own health, societal health and health of the ecosystem. At the same time, while science and technology have been very successful and made life easier for many of us, people today are subject to more and more stress and illness.

Though researchers have spent years looking for individuals' differences in their intellectual functioning, this researcher found it beneficial to explore commonalities as well. For more than seven billion individuals on this planet, we can find at least seven billion differences and/or combinations of differences. This can be in their abilities and/or their outcomes. However, seven billion humans in the human species share one unique entity. That is their *being human* element. If this is the case, then we need to concentrate on finding out more about human intelligence, more about its purpose in humans' lives, and more about the purpose of being human and being alive. Such an all-encompassing solidarity, not an anthropocentric one, will give us a focal point to on which to concentrate, and will guide us in our future explorations of human intelligence.

Holistic understanding of human intelligence requires an integrative and interdisciplinary approach, as some researchers have already begun to do in the recent years. Research on human intelligence is not the realm of one discipline only—psychology, anthropology, physiology, physics, mathematics, philosophy, art, or the spiritual realm—but all of them. Quantitative and qualitative methods, both, need to be employed to understand the phenomena fully.

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