INFLUENCE OF POST-FORMAL THOUGHT ON INTELLECTUAL TESTING

Kate Brown, B.A.

Abstract: Postformal thinking (PFT) is a newly defined stage of thinking that is unfamiliar in cognitive testing. In order to have appropriate assessments, clinicians must have a thorough understanding of what PFT is and the stages of how it develops. Hypotheses of how this may influence testing and how a clinician can discern scores that are impacted by PFT are provided with examples.

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The type of thinking measured on intellectual tests, such as the Wechsler Adult Intelligent Scales (WAIS), can be considered formal operational. The formal operations stage is noted by the ability to make and test hypotheses (Miller, 2011). Not only is the person able to solve problems presented, as in the operational stage, the person in formal operations is able to extrapolate future problems and solutions. When offered a novel problem, a person who has reached this stage will go about solving it in a scientific fashion, using logic, prior knowledge, and testing to reach an answer. This is not limited to science and math; these skills allow adolescents to make goals, engage in debate, and reflect on their own thinking. The general principle of this style of thinking is that there is a right, or at least a best, answer.

However, when a question is analyzed in depth, the concept of there being only one answer becomes less obvious. In Piaget’s model, cognitive development stops at adolescence at the formal operational stage. At the same time, even ignoring increased crystallized intelligence, the difference between how young adults and older adults approach cognitive tasks is clear. As such, the introduction of post-formal thought occurred.

Defining Post-formal Thought

Post-formal thought (PFT) is the person’s ability to understand and coordinate multiple perspectives and apply them appropriately. Kramer (1983) summarizes Post-formal thought into three skills: the realization that knowledge and information is limitless yet relative, the acceptance of paradoxical beliefs, and the integration of conflicting viewpoints into a whole of personal beliefs. This is quite different from formal operational thought. Formal operational thought holds that all knowledge is attainable given time and resources, while post-formal thinkers understand that some questions do not have answers and what is considered "knowledgeable" varies by context. For example, an undergraduate psychology student’s perspective of what “a lot” of research is significantly differs from a graduate student’s perspective.

Additionally, the post-formal thinker can accept paradoxical beliefs as having merit, or at least understands the argument of the other side, even if one strongly disagrees with the opposing viewpoint. In formal operational thought, it is generally held that there is one best answer that can be reached. However, reality is often more
complicated than having one simple solution and post-formal thought is better able to accommodate this reality. Finally, the post-formal thinker is able to sift through beliefs that seemingly contradict and create a sense of self from that. However, unlike other stages of development, the attainment of PFT means the loss of some other cognitive efficiency. Sometimes, in life, there is a correct answer or a best answer. While the development of PFT is useful in understanding that there are multiple perspectives, it slows the user in finding the correct answer. There is a common pattern in seeing older adults perform lower on intelligence testing, specifically in areas of fluid reasoning (James, Wilson, Barnes, & Bennett, 2011). Part of this may be due to increased PFT and not always due to other factors associated with old age, such as cognitive decline.

Cognitive Testing and PFT

Even though there are more theories and perspectives about intelligence, cognitive testing limits the definition of intelligence to a more concrete and academic model. This can put people who are vastly intelligent, but do not think in the approach typical for society, at a disadvantage in the testing process. While the ability to think and approach problems in a way that works with general society is important information to gather, the idea that approaching a problem how the majority of people do so quickly and accurately is the only expression of intelligence is clearly false.

In the real world, life cannot be broken down into simple math problems and questions of value are part of determining a feasible solution. What is generally considered to be perseverative or hyper-focusing can be evidence of PFT. For example, some questions on the Comprehension subtest on the Wechsler Intelligence Scale for Children (WISC) and WAIS may evoke in tested person questions about the context. One good illustration is a question, which asks what to do if someone smaller than you is trying to start a fight. It is not considered an acceptable answer to say “allow them to get a hit in and then gently stop the fight” (Wechsler, 1949). However, some cultures do not allow for fights to be shut down as not engaging in a fight initiated makes both parties appear weak (Brehmer, 1990). Additionally, an answer such as this may show consideration of the other person’s ego, the context behind why the fight was started, and evidence of the risk of getting hurt as compared to damaging the relationship.

Overall, in cognitive testing, it is crucial to remember that the specific answer serves only one purpose - to produce a score that summarize the intelligence quotient (IQ). However, this number only reflects the number of points earned on the IQ scale without considering the thought process behind it. By assessing why specific answers were provided, additional insight can be gained as to the mindset, cognitive abilities, and emotional functioning. In many cases, the quantitative analysis of intelligence is meaningless without the qualitative data which would go with it.

Testing for PFT

PFT is vastly complex concept and includes a variety of levels. While included in the stepwise stages of Piaget, Commons & Ross (2008) propose that PFT has stages that lead to the development of full PFT. These stages include systematic, meta-systematic, paradigmatic, and cross-paradigmatic. Similarly as in Piaget’s stages, each PFT stage builds on the complexity of the thought processes gained before. Of course, different tasks require different skill demands, which means that while basics of each stage must develop in order, expertise in the skills associated with each stage is much more variable than the term sub-stages suggests. In general, however, it is easiest and mostly accurate to assume that stages develop more or less in order.

The first stage of PFT, systemic, include people solving multivariable problems (Commons & Ross, 2008). Tasks at this point include seeing and understanding the multiple and intertwining causes that can lead to a variety of effects. In essence, the person internalizes the concepts of multifinality and equifinality, realizing that different causes lead to the same solution and that the same cause can lead to a variety of outcomes. The person then creates a way to organize this information, using cognitive mapping and/or concrete data tables. Finally, at this level the person can use both types of information to plan action and beliefs based on their preferred outcome and prioritization of factors. The world is seen as a set of interlocking relationships. Though the person is advanced beyond formal operational thought in their ability to take different
perspectives, they still process in a way that is remarkably similar to earlier thinking in formal operational thinking. This person, when presented with a problem, will give the ‘correct’ answer but then provide an explanation why it is not the real answer.

The person at this stage starts to recognize that the complexity of the world’s relationships means that they must think about the world differently and that there is really hard to give one simple answer to any given question. At this point, the person enters the multi-systemic stage (Commons & Ross, 2008). In this stage, the person can vary their actions by comparing, analyzing, and synthesizing the relationships and systems they learned to conceptualize in the systemic stage. Each variable the person has learned to see and analyze are now formed into an equation that their perceptions are analyzed with. The comparison and contrast of the systems allows the person to organize the systems into another level of systems, also known as the supersystem. It is hypothesized that only about 2% of the United States population function at this level, mostly professors, researchers, and academics. This population will most likely do the reverse of the previous group, first explaining the ‘best’ answer and then clarifying with the answer they believe the question was seeking.

The last two stages are reached by only a small fraction of the population. These stages, paradigmatic and cross-paradigmatic, include the ability to understand the multifinality and equipollency of the super-system, use this system to explain and predict the world (or explain why it cannot be predicted), and then understand how different models interact and conflict. In essence, the generation of Post-formal thought happens through the person gaining the understanding of increasingly complex relationships and systems. Because such a small proportion of the population functions on this level, and by nature involves the connection of information from a variety of sources over time, it is difficult to test for these levels of post-formal thought.

In fact, it is difficult to determine the stage of post-formal thought in tested person. In general, psychological testing is better to determine if the person has post-formal thought or not, not for determining on which level of post-formal thought they are at. Testing for post-formal thought can be done through a combination of self-report measures and through qualitative analysis of responses to intellectual tests. For example, one question on the WAIS-IV asks about the equal distribution of toys. A person with post-formal thought may lose the point because they think about the answer too long, but provides an explanation of what ‘equal’ means (e.g., if the toys are not all the same, should they be weighted based on quality). This can both identify the presence of post-formal thought and categorize the person into either systemic or multi-systemic post-formal thought. Self-report measures are potentially beneficial to see if the person identifies as thinking in similar patterns as other post-formal thinkers, similar to how self-report is used in identifying Attention Deficit Hyperactivity Disorder (ADHD). However, formal measures to assess the thought patterns of PFT and different thought organizations have not yet been developed.

Conclusion
When conducting psychological assessments, it is not only important to consider what is being measured but also the theory on which the selected measurement is based on. It is important to not over-embrace the typical assumption of testing: lower scores indicate lower abilities. Instead, it is crucial to remember that lower scores on a standardized measure of intelligence which indicate lower performance, can occur for multiple reasons, one of which is cognitive impairment. However, a low score may also be indication of a higher level cognitive functioning, a sign of post-formal thinking. Therefore, in the use of standardized testing, conclusions about the intellectual level of an individual should only be made after careful consideration of their thought processes and approach to testing.

References


**Kaitlin (Kate) Brown** has completed her Bachelor of Arts in English and of Science studying Psychology and Human Development at the University of Wisconsin at Green Bay. Currently, she is a third year student and working on her externships at DC Court and National Children's Hospital. Her current research focus is on the use of poetry in therapy with Deaf clients. Past presentations include "The Use of PowerPoint Background to Increase Memory" and "Emotional Expression in Deaf Poetry".