An Overview of Contemporary Models of Personal Epistemology:

An Analysis of Models and Synthesis with CFT

[Don't use the acronym in the title; spell it out]

An alternative:

An *Analysis of Contemporary Models of Personal Epistemology*

with contrast to Cognitive Flexibility Theory

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Research regarding the genesis of knowledge, beliefs and assumptions about knowledge, and how knowing is integrated into cognitive processes has been addressed by multiple theoretical models, with most ~~of their frameworks~~ traceable, in some way, to the pioneering studies conducted by Perry (1970). This paper will first examine three contemporary models, providing brief summative discussions of and investigating criticisms received by each. The next section attempts to synthesize ~~a~~ more situated models of personal epistemology (Hammer & Elby, 2002; Niessen et al., 2008; Falmagne, 2013) and *Cognitive Flexibility Theory* (CFT) (Spiro, Coulson, Feltovich, & Anderson, 1988). [One sentence at least on why.] A summary of discussions and implications of such discussions are presented in the conclusion [period]

Contemporary models of personal epistemology: Reflection, Dimensions, Theories

The work of William Perry (1970) is often referenced as pioneering and has proved influential to other developmental models of epistemology (Baxter Magolda, 1992; Schommer 1990; Hofer & Pintrich, 1997; Hofer, 2000). This work came in opposition to the behaviorist movement which sought to eliminate knowing from the construct of intelligence (Hofer & Pintrich, 1997). Perry's two longitudinal studies (1970) examined the manner in which college students made meaning of their academic [??] experiences. Of particular interest to this work was how their meaning making processes developed from being characterized by dichotomous (right and wrong), multiplistic (different opinions can hold equal value), and relativistic (what we know is contextual) conceptualizations of knowledge. [Good short summary!]

Expansion [best word? Extension?] of Perry's studies was partially derived from criticism ~~to~~ of the fact that they were heavily male-biased. Belenky et al. (1986) addressed this

by examining similar questions to Perry (1970) with an all female sample. Baxter Magolda (1992), intrigued by the results of Belenky et al., particularly regarding the dissonance it held with relation to Perry concerning the operationalization of the terms subjectivity and connection, discusses a constructivist epistemological development with her *Epistemological Reflection* (ER) model. The ER model posits that people are continually constructing meaning through experience interpretation and evaluation driven by current perspective, leading to a conclusion of what an experience means (Baxter Magolda, 2004). [How different from Perry?]

Also drawing upon the work of Perry, Schommer (1990) proposed a model of personal epistemology that consisted of a system of epistemic beliefs. This model consists of five dimensions of epistemic beliefs: structure, stability, source of knowledge, and control and speed of knowledge acquisition (Schommer, 1994). [I think that you need to say something about each one.] In a study of reading and mastery testing, Schommer (1992) suggests that the dimensions in this model may be predictive of comprehension and learning, particularly the *simplicity* (knowledge is simple versus complex) dimension. [But "simplicity" is not one of the five listed dimensions.]

Hofer (2000) suggests most developmental theories of epistemology, whether explicitly stated or inferred, are made up of discrete and possibly interrelated dimensions. Hofer and Pintrich (1997) offer a model of epistemic theories influenced by such developmental models (Perry, 1970; Baxter Magolda, 1992; Schommer, 1990) ~~which categorizes~~ that distinguishes four dimensions ~~of personal epistemology~~: *certainty of knowledge, simplicity of knowledge, source of knowledge,* and *justification of knowledge* with the former two grouped as *nature of knowledge* and the latter two as *nature or process of knowing* (Hofer & Pintrich, 1997). Each dimension describes, in a way, how the nature of knowledge and nature of knowing look at early stages of

development and at [??] maturity. Though there are terms used to describe both early and mature development of each dimension, the process of development itself is thought to operate on a continuum not characterized by binary labeling. [Don't know what you mean there.]

Certainty of knowledge concerns the fluidity of knowledge, meaning an individual may possess more fixed notions of knowledge than continuous and vice a versa. [How does "fixed" vs. "continuous" relate to "certainty"?] Influencing the development of this dimension is work by King and Kitchener (1994), particularly, regarding reflective judgement and the process of multiple interpretation. [You need to say more to make your idea clear.] *Simplicity of knowledge* is a term also used to describe how concrete or relative one's understanding of knowledge exists. [Again, I don't get it yet. Is "concrete" simpler?] Hofer and Pintrich (1997) present simplicity similarly to Schommer's (1990; 1994) conceptualization of the dimension. *Source of knowledge* depicts the genesis of knowledge, first developed via external authority, that transitions towards the individual as the maker of knowledge. [Clearer!] Source of knowledge also serves as Schommer's (1990; 1994) fifth dimension in her theory of epistemological beliefs. This notion may be compared to Perry (1970) which suggests individuals are receivers then become makers of meaning. *Justification for knowing* is the dimension of the *epistemological theories* model which describes how one evaluates knowledge claims. Influenced by Kitchener (1994) *Reflective Judgement Model* (RCJ), this dimension suggests that during early development, one may evaluate based on input given by authority and during more mature stages, integrate rules of authority with personal ideas in order to evaluate claims. [Good. Got that one too.]

Conceptual and methodological issues

Since its introduction (Perry, 1970), there have been conceptual and methodological criticisms to the each of the models listed in the previous section. Though issues among

contemporary models have been addressed by each model (Belenky et al., 1986; Baxter

Magolda, 1992; King & Kitchener, 1994; Hofer, 2000; Tafreshi & Racine, 2015), early

developmental models (Perry, 1970; Schommer, 1990; Hofer & Pintrich, 1997) have been

described as individually distinctive yet convergent in their theoretical assumptions of discrete

dimensions (Hofer, 2000).

Piaget (1950) has been noted as influential to prominent developmental theories of the

1970s (Hofer, 2000; Baxter Magolda, 2004), particularly in its interview methodology used to

examine how ~~people~~ children constructed reality. Later models have addressed the issue of

domain generality versus specificity, and many have revised assumptions of early work in

development and personal epistemology. Schommer (1990) and Schommer et al. (1992) adapted

upon Perry's (1970) stages, suggesting more independent beliefs about knowing (Hofer, 2001).

["More independent" than what? Do you mean to say growth in the ability to develop one's own

beliefs about knowing?] Some contemporary models have argued that epistemological beliefs

operate independent of domain (King & Kitchener, 1994; Schommer & Walker, 1995), [Stop

your sentence here.] ~~discussing that~~ Though students in certain fields of study may display

various tendencies regarding their epistemological beliefs (Schommer, 1990) or theories (Hofer

& Pintrich, 1997) (Paulson & Wells, 1998), research has not indicated the existence of domain

specific epistemological function (Hofer, 2000).

While Piagetian theory has left a prominent mark in constructivist and developmental

research, theoretical assumptions of domain generality and domain independence has been

criticized by more recent work (Hammer & Elby, 2002; Elby & Hammer, 2010; Tafreshi &

Racine, 2015) which suggests a more situated approach to researching personal epistemology.

[Good (clear) statement of the theoretical pivot.] Criticism of previously proposed models (Perry,

1970; Schommer, 1990, Hofer & Pintrich, 1997) has ~~indicated~~ taken [??] issue with the

traditional cognitivist perspective, inferred in each. "Traditional cognitivist framework," in this

context, refers to the assumption that epistemological beliefs occur within the mind and brain.

Hammer and Elby (2002) began a move away from the notion that personal epistemology is

bound to the physical constraints of the head, suggesting that knowledge is contextually situated.

This model, referenced as a *resource* model of epistemology (Tafreshi & and Racine, 2015),

foreshadowed work by Falgmane et al. (2013) which supported the notion that epistemology as

solely an internal entity is too rigid of a conceptualization. Radford (2014) argues for a more

embodied conception of cognition, discussing the role of the individual's environment (including

culture) in cognitive processes of problem solving. Niessen et al. (2008) supports this notion by

arguing that personal epistemology should not be confined to the body, rather it should consider

too, the relationships between the individual and their environment of the individual [period]

      The influence of the conceptual issues on methodology in contemporary models of

personal epistemology has been discussed since the inception of personal epistemology research

(Perry, 1970). Gilligan (1982) critiqued Kohlberg's (1969) study of moral development,

asserting that ~~the~~ his sample had led to a normative view of morality. [Explain why that was

considered a problem.] Belenky et al. (1986) and Baxter Magolda (1987; 1992) ~~too,~~ also sought

to address the gender representation inequality in Perry's pioneering longitudinal studies.

Schommer (1990) constructed the dimensions of her epistemological beliefs model by adapting

Perry's original five dimensions, and King and Kitchener (1994) sought to revise his (Perry)

model with the *Reflective Judgement Model*. Hofer & Pintrich (1997) constructed the

epistemological theories model discusses preceding models of personal epistemology and

constructs a model that excludes elements explicitly concerning educational experience and learning, while focusing on knowing. [Are these last two issue methodological?]

More recent literature has discussed the issue of approaching conceptual issues, not with Conceptual analysis, rather seeking to modify existing theories, constructing operational terminology, and empirical studies (Tafreshi & Racine, 2015). It has been proposed (Hacker, 2013) that conceptual issues of epistemology are not best nor effectively addressed by empirical inquiry. Drawing from the influence of Wittegenstein (1967), it is argued [Wo argued? Avoid the passive voice.] that terminology such as "*beliefs*" should be investigated within the everyday context in which it is understood in order to understand the possible and impossible conceptualizations (Harré & Tissaw, 2005), meaning a single operational definitions should not be an objective of personal epistemology research. [Sentence needs help.] Another methodological concern, concerning empirical research, from a Wittgensteinian perspective, is the notion that people must already have meaning before empirical tests indicate discovery of knowing of meaning (Baker & Hacker, 1982). [Not sure I grasp your point. What does the "knowing of meaning" mean?] With this in mind, correlational models of research have been criticized as invalid methodologies of which to investigate the meaning of beliefs of knowledge (Tafreshi & Racine, 2015) [period] [What is being correlated?]

Synthesis of personal epistemology research and CFT

Early ~~contemporary~~ models of personal epistemology appear to subscribe to a more traditional cognitive approach (Perry, 1970; Schommer, 1990) in that they discuss the mental process of knowing as occurring within the physical space of the brain, and in ~~that they~~ suggest epistemological beliefs may operate independently from each other (Schommer, 1990; Hofer, 2000). More recent models are taking a more situative approach in where and how processes of

knowing occur (Hammer & Elby, 2002; Niessen, 2008; Falgmane et al., 2013; Tafreshi &

Racine, 2015). By situative, I discuss the notions that cognitive activity occurs continuously

(Hammer & Elby, 2002) and operates in a context sensitive manner (Niessen, 2008; Falgmane et

al., 2013). [Cognitive models can easily accommodate "continuous activity."]

     Cognitive Flexibility Theory (CFT) (Spiro, Coulson, Feltovich, & Anderson, 1988). CFT

offers a framework ~~of which~~ to think about knowledge acquisition in a constructivist perspective

regarding ill-structured domains. [What are those and what are well-structured ones?] This

theory emphasizes processes of knowing ~~in~~ via complex and nonlinear processes based on a

world full of complex situations in which generality of knowledge may not provide adequate

construction of knowledge to address ill-structured problems. CFT also addresses epistemic

issues (Spiro, Feltovich, & Coulson, 1996) regarding prefigurative schemas, of which may lead

to oversimplification of complexity. [Explain.] Interested and sensitive to the notion that

epistemology is situative and fluid in its development, CFT offers a good theoretical framework

to guide future research interested in examining such context sensitive epistemological research.

[Explain how CFT is situative in nature.]

Conclusion

     Since its inception (Perry, 1970), research in personal epistemology has produced several

models that represent both traditional and more contemporary cognitive assumption (Tafreshi &

Racine, 2015). A developmental approach to epistemology (Perry, 1970; Belenky et al, 1986;

Baxter Magolda, 1987; King & Kitchener, 1994) laid the foreground for both the *epistemological*

beliefs (Schommer, 1990; 1992) and *epistemological theories* (Hofer & Pintrich, 1997) models.

More recent work has examined personal epistemology as situative and context sensitive (Elby

& Hammer, 2002), challenging the assumption that knowing processes are confined to the brain

(Niessen et al., 2008). This embodied and enactive perspective is also influenced by research in cognitive psychology (Sprio, Coulson, Feltovich, & Anderson, 1988; Spiro, Feltovich, & Coulson, 1996; Radford, 2014) as well as philosophical insights discussed by Wittgenstein (1967). It is clear that more research with a situative approach to epistemology is needed in order to explore how people know and come to know in an ill-structured world. [I don't think that you have made that case yet in your paper.]

Aric,
Good start on what will clearly be a longer road. My one summary comment about this paper is that I don't think that you got to CFT and its place in your discussion in any serious way. This does not mean that you did not accomplish anything in this first step; quite the contrary. Where your discussion of prior theories of "personal epistemology" was not always as clear as it needed to be to communicate, you made a good start in that direction and some of your analytic summary was quite clear and accurate. Since some of the work that you have summarized was carried out at U-M, I wondered whether you learned about any of this work as an undergrad. On the written expression side of things, I note that your shorter sentences are generally clearer than your longer ones. Take that as a useful strategy; look for the long sentences; and consider how best to break them up and restate them. I also wanted to note that your interest in how people make sense of knowledge claims in the internet-dominated world did not appear in the paper. As you move forward, look for a place to make that connection; it will only take a paragraph to do so.
3.5

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