

# A Constructivist Revision of the Measure of Epistemological Reflection

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*The Measure of Epistemological Reflection (Baxter Magolda & Porterfield, 1988) was revised to reflect a constructivist view of epistemological development that emerged from a longitudinal study of young adults' development. This article includes a description of the new constructivist interpretation process, how it is used, and criteria upon which to judge its value.*

Student learning has come to the forefront of both curricular and cocurricular reform in recent years. Contemporary forms of pedagogy argue for incorporating students' narratives into teaching and learning, using students' lived experience as a foundation for learning, and helping students develop their own voices through mutual construction of meaning (Baxter Magolda, 1992, 1999b; Hopkins, 1994; Maher & Tetreault, 1994; Shor, 1992, 1996; Twomey Fosnot, 1996). These approaches represent a shift in higher education from a teaching-centered approach focused on knowledge acquisition to a learning-centered approach, focused on knowledge construction (Barr & Tagg, 1995). This shift is consistent with student affairs practitioners' long-standing philosophy that students' holistic development is the goal of education. Contemporary statements from professional associations urge student affairs practitioners to adopt learning as the primary mission of the field (ACPA, 1994) and to initiate partnerships with campus constituents to promote students' learning (AAHE, ACPA, & NASPA, 1998).

To help students construct knowledge for themselves, student affairs professionals must enhance their understanding of how students make meaning of their experience—the assumptions that they hold about the nature, limits, and certainty of knowledge; how they view themselves; and how they construct relations with others. Thus, ongoing theory building and assessment of students' holistic development is an essential component of the shift toward student learning.

## TENSIONS IN ASSESSING STUDENTS' DEVELOPMENT

Assessing students' holistic development is a challenge, due to the complexity of development, its constant evolution, and its dynamic interaction with the environment. Initial theories of college students' development were generated from open-ended interviews to access these complexities. Cognitive-developmental theorists, such as Perry (1970) and Belenky, Clinchy, Goldberger, and Tarule (1986), and psychosocial theorists, such as Chickering (1969), constructed their theories from student narratives. Perry and Belenky et al. explicitly expressed their constructivist approach, acknowledging that their interpretations came from their own connections to their data, that others might arrive at different interpretations, and that the experiences of their respondents might not represent the experiences of other people. As student development theory became a central foundation for organizing student affairs work

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(Brown, 1972), efforts to assess students' development on the major theories intensified. (Useful summaries of these efforts and the assessment techniques they produced can be found in Evans, Forney, & Guido-DiBrito, 1998; King, 1990; Miller & Winston, 1990.) These efforts were fraught with a tension between assessing a complex phenomenon accurately and developing practical assessment formats. Many assessment researchers advocated production formats in which respondents produced their own response (rather than choosing from available responses) because they believed that this format was necessary to access the underlying logic of respondents' thinking (King). These formats were sometimes written versions of interviews, as in the case of the Sociomoral Reflection Measure (Gibbs, Widaman, & Colby, 1982) that translated the Moral Judgment Interview (Colby & Kohlberg, 1987) into a paper-and-pencil instrument. In other cases production formats used the major domains of a theoretical perspective to determine questions for a paper-and-pencil instrument; the Measure of Intellectual Development (Moore, 1986) and the Measure of Epistemological Reflection (MER) (Baxter Magolda & Porterfield, 1988) are examples. Although these paper-and-pencil instruments were more practical to administer than interviews, the production data they produced still required extensive rater training for accurate interpretation. Only a few attempts to translate respondents' reasoning into recognition instruments (in which the responses are already designated for particular phases of development) succeeded (Gibbs et al., 1984; Moore, 1989).

Practitioners, interested in assessing development to guide and evaluate practice, relied more heavily on paper-and-pencil instruments than on interviews due to lack

of resources and training for interviewing and interpretation. Solicitation of student narratives in the original interviews offered rich data about complexities and multiple possibilities of development; paper-and-pencil assessment techniques, even those in the production format, solicited data to interpret the respondents' development on the original theory. Two concerns arose from this situation. First, theorists began to question the utility of the original theories for students who differed in gender, race, ethnicity, class, and sexual orientation from the students in the samples from which these theories were constructed. Using assessment techniques based on the original theories forced these students into the original theories and did not produce data to expand the theories according to these dynamics. Second, practitioners became uncomfortable with the potential risks of labeling students at particular developmental places. Assigning students to some static point in development sometimes overshadowed using theory to further understand students' development.

Finally, the student development theory and assessment literature did not focus until recently on the tension between positivist and constructivist paradigms that undergirds the tension between quantitative and qualitative methods. Although some of the theories that student affairs practitioners heavily rely on do represent the constructivist paradigm (e.g., Belenky et al., 1986; Kegan, 1994; Perry, 1970), the construction of assessment instruments were still heavily dependent on quantitative methods to judge reliability and validity without attention to their incongruence with original theories. Recent attention to the paradigms inherent in theories and their assessment (Evans et al., 1998) brought this tension to the forefront and raises the possibility of rethinking assessment and

theory building for contemporary educational practice. A return to the constructivist roots of the theory-building process enables practitioners to (a) engage with students in diverse contexts to generate new theoretical possibilities and (b) bring their narratives into educational practice to promote student learning. Returning to the constructivist roots of theory building in my research led me to rethink the MER (Baxter Magolda & Porterfield, 1988; Taylor, 1983). This article is a description of a constructivist revision of the MER as a means of accessing epistemological development.

### THE MER

The tensions prevalent in assessing students' development played out in my research program, which initially focused on studying students' epistemological development, or their assumptions about the nature, limits, and certainty of knowledge. Enticed by the potential of Perry's (1970) scheme for guiding developmental educational practice, I devoted the early part of my research program to developing an accurate yet practical means of assessing Perry's theory. The result was the MER, a short-essay questionnaire intended to measure Perry's Positions 1 through 5. A detailed account of the MER's construction (Baxter Magolda & Porterfield, 1985) is beyond the scope of this article; a brief overview of the instrument and its original interpretation process serves as the context for the tensions that prompted its revision.

The MER consists of six series of short-answer essay questions set in the context of the college classroom. Each series addresses a separate domain or content area relevant to epistemological development. Domains include decision-making, the role of the

learner, the role of the instructor, the role of peers, evaluation, and the nature of knowledge. Each series of questions begins with a question to provide the frame of reference for that domain. Follow-up probes elicit justification for the respondent's thinking. The MER's production format requires respondents to construct their own response. This format has long been preferred for accessing epistemological development because it "reflects the subject's own approach to the problem presented rather than one that has been fitted into categories supplied by the investigator, and thus yields the most accurate and most complete assessment data" (King, 1990, p. 90). This format was somewhat consistent with Perry's constructivist approach because the questions are open-ended and require respondents to produce their thinking. Yet the approach does focus the respondents' thinking in domains that have emerged in epistemological development research. The interpretation of the MER focuses on the reasons for the respondent's thinking because epistemological development hinges on how people think about knowledge rather than their particular point of view.

### Original Rating Process

Loevinger and Wessler's (1970) empirical verification process was used to construct a rating manual. This process involved categorizing an initial set of MER responses according to Perry's five positions, then using those sets of responses to construct a more extensive explanation of development based on the empirical data. This approach merged the constructivist dynamic of allowing data to emerge from participants' responses with the concern for accurate interpretation of those responses. This process continued over a period of years, resulting in a compre-

hensive rating manual (Baxter Magolda & Porterfield, 1988) based on over 1,000 students' responses to the MER.

This empirical verification process yielded a rating manual for each of the six domains. Each domain manual contained an overview, a description of each of Perry's (1970) Positions 1 through 5, and from two to seven reasoning structures within each position, illustrated with examples from MER responses. These reasoning structures represented themes that had emerged from the empirical verification data as core reasons that participants used in each of the Perry positions. The original rating process involved reading each domain response of a MER to identify the central reasons the respondent expressed for her or his thinking. These central reasons—or reasoning structures—were then compared to the appropriate domain manual. The rater would begin reading in the position most likely to capture the response, then read the reasoning structures to find the one closest to the one identified in the response. If none matched, the rater would read adjacent positions to determine if a match was possible. If the rater was confident that the reasons represented a particular position but no reasoning structure match was found, a new reasoning structure would be recorded and kept for the ongoing empirical verification process. This process was repeated across all six domains. Once domain ratings were determined, they were combined to form an overall rating of the Perry position that the response best represented. Reasoning structures were used only to arrive at reasonable judgments of epistemological position. This process also required two raters to work independently first, then to come together to reconcile through discussion any disagreements on position ratings in each domain.

Despite the constructivist underpinnings of the rating manual and the mechanism for developing new reasoning structures, the rating process still essentially sorted responses into the preexisting categories of Perry's first five positions. The implications of this process and other related problems became clear to me in the next phase of my research program.

### **A Longitudinal Interview Study of Young Adults' Development**

The tensions of assessing students' development and particular issues with the MER emerged through my longitudinal study of college students' epistemological development. Although I've detailed this story elsewhere (Baxter Magolda, 1992), I tell a brief version here to explain my shift in thinking about how to assess students' epistemological development. Belenky et al.'s (1986) *Women's Ways of Knowing* precipitated my longitudinal study to explore the role of gender in development across the college experience.

I used an open-ended interview to allow multiple possibilities to emerge from students' narratives (see Baxter Magolda, 1992 for methodological details). I initially interpreted their narratives according to existing models of epistemological development. In doing so I matched the narratives to stages and used the quantification of those stages to determine whether differences were apparent among the thinking of the men and women in the study. The participants also completed the MER; their MER ratings offered another source of information about gender differences. Looking at the outcomes of these analyses compared to the perspective I acquired sitting with my participants and reading over their full narratives, I sensed that my reducing their stories to quantifiable

stages lost the complexity of the narratives. It also skimmed over new possibilities that differed from the original theoretical framework. This dilemma, and extensive study of alternate ways of thinking about student development and assessment, led me to conclude that students' epistemological development is best understood as a complex, multilayered phenomenon that is bound to context. Thus, rather than interpret the data according to preexisting categories, I shifted to allowing the complexity of the narratives to ground my interpretation.

Continuing this project after participants' college graduation, I followed 39 of my original 101 students to their early 30s. This postcollege phase of the project led me to view epistemological development in a broader way as well—as interwoven and inseparable from the intrapersonal and interpersonal dimensions of development (Baxter Magolda, 1999a, 1999c, 2000, 2001). This expansion stemmed from participants' stories about how their own identities and their relationships with others mediated their ability to decide what to believe. This perspective is evident in other current theoretical work. Robert Kegan's (1994) theory of self-evolution emphasized the integration of epistemological, intrapersonal, and interpersonal development, framing how one thinks, feels, relates to others, and relates to oneself as an underlying organizing principle or structure of development. Similarly, professional position statements such as the Student Learning Imperative (ACPA, 1994) portray an educated person as characterized by complex ways of knowing, a coherent sense of self, and the ability to interact with others in complex and healthy ways. Viewing student development as holistic is another dimension of constructing it as a complex, context-bound phenomena.

This view of student development is consistent with the long-standing tradition of constructivism, and in many ways closer to the foundational works from which my work grew. This tradition is based on the assumptions that reality is multiple and dynamic, that to know it adequately requires interaction of the knower and the known, and that understanding a phenomenon (in this case, students' development) requires understanding the context in which it occurs. These assumptions became central to my construction of the epistemological reflection model—my attempt to capture the stories of my longitudinal participants (Baxter Magolda, 1992, 2001).

### **The MER Revisited**

My shift of perspective caused me to revisit the MER to explore the degree to which it matched these constructivist assumptions. Although the original rating process for the MER included a component through which to identify new reasoning structures, we did not take gender into account when constructing the original manual. Now that gender-related patterns of epistemological development have emerged (Baxter Magolda, 1992; Belenky et al., 1986), clearly these patterns are confounded in the original manual. The original construction process did not attend to other dynamics such as race, ethnicity, socioeconomic class, and sexual orientation—dynamics that affect development when it is viewed as socially constructed. The manual is also dated, the last revision dated 1988. Finally, despite the manual's flexibility for revision with new data, it still promoted the reduction of ratings to specific stages of development. Given these considerations, the rating process warranted revision to become consistent with new constructivist approaches to epistemological development.

## MER CONSTRUCTIVIST INTERPRETATION PROCESS

The longitudinal study convinced me that interviews provide the most in-depth means to access and understand students' and young adults' epistemological reflection. The informal conversational interviews (Patton, 1990) generate rich information regarding how the participants think as well as how they view themselves and their relations with the larger world. However, interviewing is not always feasible as an approach to understanding students' development. Since its construction in 1983, the MER has been used in both research and practice contexts to access students' thinking and has consistently produced useful data from which to understand epistemological development. Although it does focus the respondent's thinking on a particular set of issues rather than offering complete freedom of response, the questions do offer freedom to express one's thoughts and reasons for them. Similarly the MER focuses on particular areas rather than being open to any arena, yet these six areas cover a wide range of topics established by the epistemological research tradition as relevant to accessing students' thinking. Due to its open-ended nature, the MER can still be used to access epistemological reflection from a constructivist vantage point.

### Constructivist Assumptions

Before articulating the constructivist interpretation process for the MER, it is essential to clarify the core assumptions of a constructivist approach that undergird this process. About the constructivist assumption that reality is socially constructed and thus takes multiple forms, Guba and Lincoln wrote,

Realities are apprehendable in the form of multiple, intangible mental construc-

tions, socially and experientially based, local and specific in nature (although elements are often shared among many individuals and even across cultures), and dependent for their form and content on the individual persons or groups holding the constructions. (1994, pp. 110-11)

Translating this assumption to epistemological development means that students' ways of knowing are their own mental constructions, stemming from their particular experience and context. These may be shared by others who share similar experiences and contexts—certainly a possibility for college students who, despite their individual differences, may have some common experience in the college classroom.

The assumption that reality is socially constructed leads to another core assumption: Interaction between investigator and participants is necessary to access these multiple realities. Constructing a theory of students' epistemological development then requires soliciting students' individual constructions, refining them through dialogue among the investigator and respondents, and arriving at "a consensus construction that is more informed and sophisticated than any of the predecessor constructions (including, of course, the etic construction of the investigator)" (Guba & Lincoln, 1994, p. 111).

These assumptions stood at the base of the construction of the epistemological reflection model. Participants' individual constructions were solicited through the open-ended nature of the interviews and refined through dialogue during the interview and subsequent dialogue about my constructions of their stories. The extensive stories told in *Knowing and Reasoning in College* recount the various particular experiences and contexts that led to individual

participants' constructions and how their collective stories were interpreted into four ways of knowing and gender-related patterns. Because this model was developed in a constructivist manner, it may not capture the experience of other college students, particularly those whose contexts and experiences were not represented among the participants.

At the same time, the model does offer a construction of epistemological reflection that is informed by a particular group, whose experience may be shared by others. I presented the epistemological reflection model as a possibility, using Frye's (1990) concept of patterns to convey its meaning. Frye noted that developing patterns was similar to charting the prevailing winds over a continent, realizing that they do not affect every part of the continent in the same way. Naming the four ways of knowing from the mutual dialogue with my participants represented naming the prevailing winds of their experience, realizing that these winds did not affect all of them in the same way. These may be the prevailing winds for other groups of students as well. Thus the constructivist interpretation process proposed for the MER uses the epistemological reflection model as a foundation, but makes clear that the interpretation process is a continual effort to refine our construction of students' epistemological reflection through continued dialogue with them and with other models of epistemological development. Although the notion of dialogue usually connotes personal conversation, the MER can be perceived as a form of dialogue in which respondents are invited into a focused conversation created by the series of questions.

For example, the focus question in the domain for role of peers asks: "Do you prefer classes in which the students do a lot of talking, or where students don't talk very

much?" A small space gives respondents room to record their preference. Four more questions appear spaced across the page to engage respondents in explaining their preference and the reasons for it. The first one, "Why do you prefer the degree of student involvement/participation you chose above?" is intended to solicit an overarching reason. The next two, which ask for advantages and disadvantages of this preference respectively, attempt to draw out respondents' thinking about details of their reasoning. The final question on the page, "What type of interactions would you like to see among members of a class in order to enhance your own learning?" is a means of learning more about the respondents' preferences and reasoning. Although reading these written questions differs from an active exchange with an interviewer, respondents are guided in exploring their preferences and reasons for them. The open-ended nature of the questions are consistent with the openness of a constructivist dialogue. Verbal dialogue is a part of the interpretation phase (see below).

From a constructivist perspective, interpretation is an ongoing, complex process mediated by the interpreter's subjectivity. Peshkin (2000) portrayed the interpretive process as a journey of successive choices that shape interpretation, each choice favoring a particular direction while abandoning others. Peshkin emphasized Denzin's stance that "all interpretations are unfinished, provisional, and incomplete" (as cited in Peshkin, p. 9). Thus the MER constructivist interpretation process is not an attempt to reach a final, correct interpretation of students' epistemological development. Rather it is an attempt to guide the process of making reasonable choices about interpretation that can be introduced into dialogue for further exploration.

### Phases in the Process

The constructivist interpretation process involves five phases: understanding the foundation and specifics of the process, identifying central reasons in responses, interpreting how central reasons relate to ways of knowing, extending interpretation beyond ways of knowing to include dynamics that mediate ways of knowing, and continued dialogue to refine one's interpretation. Each phase is summarized below; a step-by-step outline of the process, including examples of data and their possible interpretation, is available from the author. Forms through which to request permission to use the MER are also available from the author.

*Phase 1: Learning the process.* The constructivist interpretation process outlined here hinges on an in-depth understanding of existing theoretical perspectives of epistemological development in young adulthood. These perspectives frame the interpreter's ability to make meaning of students' responses to the MER, both in terms of existing theory and new possibilities. The primary framework used to guide this constructivist interpretation of the MER is the epistemological reflection model. Familiarity with this framework, detailed in *Knowing and Reasoning in College* (Baxter Magolda, 1992) and *Making Their Own Way* (Baxter Magolda, 2001), is essential. The phases below refer to tables from *Knowing and Reasoning in College* that serve as outlines of the larger story told in that volume. *Making Their Own Way* also contains information on the intrapersonal and interpersonal dimensions of development and their interconnections to epistemological development. The study of closely related models of development (e.g., Belenky et al., 1986; Hofer & Pintrich, 1997; King & Kitchener, 1994; Perry, 1970) also helps provide useful

perspective on epistemological development.

*Phase 2: Identifying central reasons in the respondent's thinking.* This phase involves two readings of the MER. First, the entire MER response is read to gain an overall sense of the respondent's thinking to serve as context for interpretation. Next, each domain (or page) is studied to identify the central reasons expressed for the respondent's thinking. The particular stance they chose at the top of the page is not the key element in understanding their epistemological reflection, as it represents what they think. The responses to the follow-up questions on the page convey why they think what they stated. The combination of these responses is interpreted to identify the central reasons that the person uses in this domain. Because reading takes place on two levels—overall and by domain—the context of the entire response may help arrive at an accurate interpretation of the central reasons on each page.

For example, a respondent named Fran wrote in response to the opening question on the role of the learner that she "liked classes that focus on factual information because I like to know the answer." In explaining why, she wrote, "If I can come up with an answer I like to know if it is the right one. I don't like to rely on theories and concepts which could be wrong." In describing the advantages of this perspective, Fran wrote, "It gives instant self-recognition, because either your answer is right or it isn't. If it is wrong, you can go back and get it right." Under disadvantages she wrote, "In all conditions it is not always appropriate to get a 'right' answer. So theories are often good to learn." Finally, in advice regarding how to succeed in college, Fran offered, "Being in class and paying attention is not enough, you must go through your notes after class and make sure



you understand them because the classes move quickly and if you don't understand one point, it may lead to other confusing ideas." Fran suggested that her role as a learner is to get the right answer. In explaining this preference, she conveyed that right answers are available in factual information but not in theoretical information, yet there is some value to learning theories. Finally she pointed out that understanding is crucial. Thus the central reasons for Fran's thinking can be interpreted as getting the right answer when there is one and understanding when a right answer is not appropriate. This content represents one sixth of the content that would be generated assuming the respondent completed all six series of questions.

*Phase 3: Interpreting ways of knowing from the central reasons.* A series of steps constitute this phase, depending on the outcome of particular steps. This phase begins with comparing the central reasons identified in the response to those inherent in each of the four ways of knowing. These reasons are articulated in overview tables as well as in stories in *Knowing and Reasoning in College* (Baxter Magolda, 1992) and *Making Their Own Way* (Baxter Magolda, 2001). Beginning with domains in which the interpreter is confident of the reasons in the response is a way to focus the interpretation. For example, let's return to Fran's responses about the role of the learner. The central reasons interpreted in Phase 2 initially look like obtaining knowledge from the instructor, which is characteristic of absolute knowing. However, considering her whole response suggests that this is only possible in factual arenas, implying that knowledge is certain in those arenas. Because Fran argued that it is not always appropriate to get a right answer, this implies that some knowledge must be uncertain. Added to her focus on

understanding, a more reasonable interpretation is that Fran's comments reflect transitional knowing. Determining whether the reasons in each of the six domains relate to one or more of the four ways of knowing is the central task of this phase. The specific steps in the process outline ways to make these judgments as well as alternatives to pursue via other models or new construction to account for data that does not seem to be reflected in the epistemological reflection model. These steps remind the interpreter that the MER responses, not the epistemological reflection model, should drive the interpretation. The epistemological reflection model is simply the first resource for interpretation. Other models of epistemological development may be useful at this point to inform the interpretation. I do not claim that the MER assesses epistemological development on other models, many of which are accompanied by assessment measures specific to those models. However, from a constructivist perspective, considering other models in interpretation can be a form of "dialogue" to arrive at more refined constructions of students' thinking.

*Phase 4: Extending the interpretation to include additional dynamics.* This phase is intended to deepen the interpretation through consideration of gender, race, ethnicity, class, sexual orientation, or other additional dynamics that may mediate epistemological reflection. Because gender-related patterns are already a central part of the epistemological reflection model, the gender layer of the interpretation begins with use of the tables and stories that articulate these patterns. Other resources for understanding gender might also be helpful here. Because the epistemological reflection model does not include a basic construction of other dynamics beyond gender, extending the

interpretation in these directions requires consulting models that speak to these dynamics (See Evans et al., 1998 for an overview of such models).

*Phase 5: Dialogue with respondents.* This phase focuses on the goodness of the interpretation (see section that follows for additional steps to achieve goodness). If at all possible, the researcher should engage in a dialogue with respondents to share the interpretation and check its accuracy from their perspective. If the assessment is of a group, for example, and will be used to shape some practice with that group, it is important to have a high-quality interpretation from which to operate. Although it is not appropriate to post a table of the four ways of knowing with the percentage of students determined to represent each one, it is appropriate to share descriptions of various ways of thinking evident in the responses and engage the group in a discussion of whether these seem to resonate with their experience. Reconstruction can occur based on the nature of this discussion. Similarly, if the assessment is an individual matter, talking with the individual to see how he or she views the interpretation can assure its quality because it allows for revision based on the dialogue. This phase represents the interaction between investigator and respondent central to the constructivist paradigm.

### **Criteria for Goodness**

The assumptions of constructivism alter the means through which the “goodness”—adequacy, quality—of an assessment process is judged. The original MER rating process relied on the well-known criteria of internal and external validity, reliability, and objectivity—criteria central to the tradition of positivism. These criteria were implemented through studies of concurrent and construct

validity, and interrater reliability and agreement (Baxter Magolda & Porterfield, 1988). Lincoln and Guba (1985, 1989) proposed what they refer to as parallel criteria, or criteria appropriate to constructivism that parallel the more familiar criteria in positivism. Although Lincoln and Guba discussed these criteria in the context of inquiry, I translated them to assessing students’ development here.

Positivism’s internal validity criterion assures that outcomes are an adequate representation of objective reality. Thus the internal validity criterion seeks the truth value of an inquiry (in this case, an assessment process). Because constructivism assumes that an objective reality does not exist, but rather that the nature of reality is multiple and constructed in context, the parallel criterion for constructivism is *credibility*. *Credibility* refers to the degree to which the assessment process adequately represents the multiple realities that are constructed in a particular context. Similarly, the reliability criterion in positivism seeks consistency of the inquiry or the extent to which the same results are obtained over time due to the assumption of objective reality. Because constructivism assumes multiple realities, the parallel criterion for assessing consistency is *dependability*, or the degree to which the assessment takes into account instability and change. As is the case with the relationship between validity and reliability (if an inquiry reflects truth value it will also be consistent), an assessment that is credible will also be dependable.

The corollary to the positivist criterion of objectivity to insure neutrality is the constructivist criterion of *confirmability*. *Confirmability* refers to the ability to assure that the interpretation is rooted in the context and persons whose development is being

assessed. Constructivism assumes that objectivity is not possible, nor is the complete separation of the investigator and participants. Yet an adequate interpretation does require managing the investigator's subjectivity. Finally, positivism's external validity criterion seeks to show that outcomes that adequately reflect objective reality are generalizable to other settings. Because constructivism assumes that reality is local and context-bound, the issue of applicability of interpretations outside of their context hinges on transferability. *Transferability* refers to the degree to which the interpretation is relevant to similar contexts.

Assuming that students' epistemological development is socially constructed in the context of their particular experience requires using the constructivist criteria for goodness. Numerous means of meeting these criteria exist and are discussed in detail in many research texts (e.g., Guba & Lincoln, 1994; Patton, 1990). Those most appropriate for judging the goodness of the MER constructivist interpretation process include:

1. *Managing Subjectivity*. As interpreters of students' responses we do have subjectivities that may influence understanding respondents' constructions adequately. Managing these subjectivities involves recording initial constructions prior to the assessment process and recording developing constructions throughout the process. Having these constructions on paper allows the interpreter to decide (or solicit others' help in deciding) whether she or he is giving too much preference to her or his own constructions at the expense of those of the respondents. These efforts do not eliminate subjectivity; they bring it into the process of striving for a high-quality interpretation.
2. *Multiple Theories or Perspectives*. Acknowledging multiple realities means not restricting interpretation to one theoretical perspective. Although the MER interpretation process is grounded in the epistemological reflection model, it is not limited to this model. Steps are included in Phases 3 and 4 that suggest consulting other relevant models or creating new perspectives that capture the data. In some cases another model or a new perspective may offer a more adequate interpretation of the MER data. Using additional dynamics in interpretation is another aspect of using multiple perspectives. Acknowledging multiple perspectives, however, does not mean all perspectives are equally valid in interpreting students' responses. The interpreter must choose those that seem most useful in interpreting the data.
3. *Multiple Analysts*. Because we all enter the assessment process with our own constructions and interpretations, having two persons interpret the responses independently offsets personal subjectivities we bring to the task. Discussing both interpretations then helps create a more adequate interpretation than either person could achieve independently. Kvale (1996) calls this "dialogical intersubjectivity," describing it as "agreement through a rational discourse and reciprocal critique among those identifying and interpreting a phenomenon" (p. 65). This notion is the constructivist corollary to interrater agreement routinely used in assessment processes to convey reliability. It is not an attempt to arrive at a "right" interpretation but rather an attempt to arrive at a high-quality interpretation through exchange of perspectives. This dialogue

is also a means of expanding understanding and theory building among analysts.

4. *Peer Debriefing*. Similar to seeking multiple perspectives through the dialogue among multiple analysts, peer debriefing involves extensive dialogue with someone who has no stake in the assessment outcome. This dialogue helps surface tacit assumptions held by the interpreter, potential shortcomings in interpretation, and aspects of the respondents' constructions that may have been overlooked. In the case of interpreting the MER, a peer debriefer would be asked to read a subset of the responses, listen to the interpretation, and offer insight on the consistency of the two. Again this attempts to increase the quality of the interpretation rather than find a "right" interpretation.
5. *Member Check*. This technique involves checking the adequacy of interpretation with the MER respondents. They are the best source of insight because they produced the original constructions. In the case of an individual assessment (for advising or counseling purposes), this would involve articulating an overall description to the respondent and asking for his or her sense of its adequacy. In the case of a group assessment (for programming, staff training, group advising), this would involve articulating a collective description of the responses to the respondents as a group and asking for their sense of its adequacy. In either case, the interpreter would seek ideas and comments that would help to refine the interpretation to an adequate blend of the respondents' and interpreter's construction. This technique is included in Phase 5 of the MER constructivist

interpretation process.

6. *Thick Description*. In constructivist inquiry, the judgment of transferability to other contexts lies with those in that context. However, the responsibility for providing the information needed to make that judgment lies with the investigator. For example, the professional who conducts an assessment of first-year students' epistemological development for the purpose of structuring first-year courses, programs, and experiences on her campus is responsible for describing the context of the campus and the nature of the first-year student population sufficiently for a professional on another campus to judge whether the epistemological profile that emerged is relevant on that other campus. Thus the profile emerging from the MER data should be accompanied by an extensive (thick) description of the campus context, the nature of the student population, and particulars about the collective respondents relevant to epistemological development (e.g., gender, race, college major, year in college). This description helps keep the data and profile in context.

The criteria for goodness summarized here reveal that the assessment must be both flexible and systematic. Flexibility is required to uncover multiple realities, yet a systematic effort is required to construct adequate interpretations. The MER interpretation process is grounded in the epistemological reflection model and a systematic process through which to compare MER responses to that model. Yet the process is flexible in consulting with other relevant models for interpretation or constructing new models based on the data that emerge. Similarly, the process of individually interpreting the responses is flexible in pursuing numerous

options for interpretation; this flexibility is balanced with the systematic effort to insure adequacy through the means to meet the goodness criteria.

### USING THE MER AND CONSTRUCTIVIST INTERPRETATION IN EDUCATIONAL PRACTICE

Most college faculty hope that students will become critical thinkers—able to identify relevant evidence, evaluate it effectively, and make informed judgments within their discipline. Student affairs educators, whose classroom is the cocurriculum, hope that students will develop a coherent sense of self, an appreciation of diversity, and a productive construction of relations with others to guide their adult lives. These hopes are for self-authorship, or the capacity to internally define one's beliefs, identity, and relations with the world. Self-authorship requires a transformation from external to internal self-definition. As Parks Daloz, Keen, Keen, and Daloz Parks wrote, "This movement toward a mature capacity to hold firm convictions in a world which is both legitimately tentative and irreducibly interdependent is vitally important to the formation of citizens in a complex and changing world" (1996, p. 223).

Kegan (1994) pointed out that the majority of the demands of contemporary society (including higher education) are beyond adults' ways of making meaning. Certainly the demand of self-authorship is a stretch for absolute and transitional knowers. Kegan advocated building an evolutionary bridge to facilitate transformation from particular ways of making meaning to more complex meaning-making. In the case of epistemological development, this means simultaneously welcoming students' current ways of knowing and inviting them to

consider more complex ways of knowing. Welcoming students' current ways of knowing requires understanding their current ways of knowing. Thus the MER and accompanying constructivist interpretation process is one means through which to access and understand particular students' epistemological assumptions. Constructing a portrait of students' ways of knowing would help an instructor understand areas in which students struggle in her classroom and create conditions to help them develop ways of knowing to promote their learning. Such a portrait would guide a career counselor in how to structure counseling sessions and workshops to help students make informed judgments about their futures. Portraits of student leaders' epistemological development could help educators design effective campus decision-making roles for students to learn self-authorship. Such portraits would guide effective exploration of multicultural diversity because multicultural competence requires complex development. Responding to the MER, or to similar questions through reflective writing or personal conversations with educators, offers an opportunity for students to actively participate in their own self-development. Creating conditions for self-authorship in the context of students' epistemological development is described extensively elsewhere (e. g., Baxter Magolda, 1992, 1999b, 2001; Belenky et al., 1986; King & Baxter Magolda, 1996; King & Kitchener, 1994).

The MER also has utility in research arenas. As educators craft experiences to steward the transformation to self-authorship, it is crucial to determine to what extent those experiences were effective. The MER could provide an overview of students' development prior to a potentially transformative experience and again at some point after the

experience to understand how the experience affected their ways of knowing. Transformative experiences might include classes, service-learning opportunities, living-learning programs, leadership roles, or campus employment. MER data could be used to structure these experiences and to revise them to further promote self-authorship. Student discussion of their responses to the MER could also serve as a means to facilitate the self-reflection so critical to developing internal authority. In some research efforts, however, the interview approach is preferable. Developing new models of epistemological development based on gender, race, socioeconomic class, or sexual orientation would require a more extensive exploration than what would be afforded by the focused approach of the MER. Similarly, exploring the connections among various dimensions of development would require more extensive data than would be achieved with the MER.

This constructivist revision of the MER,

although not a means to new theory development, has potential for shaping developmental practice. Because the constructivist revision cautions against labeling students according to preexisting theories, regards their development as complex and context-bound, and uses their words and stories as a driving force for interpretation, it overcomes some of the concerns associated with positivist paper-and-pencil measures noted at the outset of this article. The focus on dialogue is consistent with student affairs practice and helps practitioners systematically study students' ways of making meaning. This dialogue informs educators about shaping and evaluating practice, engenders reflection on the part of students, and enhances educator-student engagement in learning.

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