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Perceptions of Critical Thinking in Post Secondary Educational Research

by

Raina Stephens

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Abstract

The following is a review of existing literature on faculty perceptions, understandings, and definitions of Critical Thinking (CT) within a post-secondary context. CT is an ill-defined concept and individual understandings can be shaped by ontological or epistemological positions, as well as institutional and structural pressures. This paper explores researcher's explicit and implicit conceptualizations of CT through a process informed by critical discourse analysis. The findings show a little homogeneity of CT understanding among either researchers or their participants. I conclude that more nuanced and subjective perceptions of CT are needed among post-secondary faculty and researchers because of the incredibly complex nature of the construct.

Critical thinking (CT) is consistently included as a key objective of higher education for both academic and professional success (Browne & Hoag, 1995; Paul et al., 1997) yet student achievement associated with critical thinking is unclear (Liu et al., 2012). Further and, of more fundamental importance, faculty understanding of what constitutes CT is inconsistent due in no small part to the plurality of constructs included within the broad term of CT. Theoretical literature includes multiple discourses on CT but the dominant, instrumental discourse is what is most commonly represented in studies on faculty perceptions of CT (Merriam & Bierema, 2014). Although some evidence exists that shows student achievement of CT can be bolstered by purposeful post-secondary teaching, it in unclear how to increase faculty purpose towards a concept they may have varied and/or limited understandings of (Halpern, 1999; Tsui 2002). A more nuanced understanding of what is considering 'critical thinking' is needed before meaningful work toward faculty (or student) achievement of the same can be undertaken.

There is considerable research available on faculty members' definitions, perceptions, or conceptualizations of CT which has been undertaken through a variety of different ontological lenses. The particulars of these will be explicated later in this paper. However, the rationale for examining this body of literature with especial emphasis on how CT is defined, and how information about CT is codified into knowledge, is based on Michel Foucault's statement that "power perpetually creates knowledge [. . . and] knowledge constantly induces effects of power" (Foucault, 1976, p. 52). This research paper will provide a comprehensive review and analysis of literature on faculty understandings of critical thinking to answer how authors explicitly and implicitly conceptualize critical thinking in their research?

My interest in CT spans many years and my position on it has changed over that time. I had previously been a staunch supporter of CT rooted in rationalism and analytic reasoning but

this project forced me to accept that these constructs are of limited value in conceptualizing a broad and varied understanding of CT (Merriam & Bierema, 2014). Furthermore, I began to see that the prescriptive definitions of CT privilege a particular world-view with its canonical ways of forming and reproducing knowledge and that CT does not need to be party to this categorical hierarchy. The following paper is a journey through the detritus of epistemic oppression, both my own and of academia.

Theoretical Framework

As I alluded to, this research will be situated within the critical paradigm because this will allow me to challenge many of the assumptions about what CT is and how it can be measured. The critical paradigm exists within historical realism where the researcher accepts that everything, including themselves, has been, and continues to be, shaped by social, political and economic forces (Guba & Lincoln, 1994). This paradigm "includes epistemologies, ontologies, and methodologies associated with post-positivism and poststructuralism, theoretical perspectives focused on elucidating power and inequity" (Young & Diem, 2023, p. 2). A Foucauldian-inspired analysis will aim to uncover how dominant ideologies are masked within research on critical thinking – I hope to move beyond description of CT and demonstrate how the current discourses maintain social or material practices (Dorner et al., 2023). Foucault's writing on "subjugated knowledges" (1976, p. 81) provides a useful framework to inform my project because the concept of discursive formations can be used to tease apart the components which are commonly grouped together to form understandings of "critical thinking". I will work make clear how oppressive the categories that discursive formations reject can be if they are accepted without question. The second concept is the feedback loop of power and knowledge. This cycle is an ideal analytic tool for this paper's goal of understanding how CT is conceptualized both explicitly and implicitly, and how the underlying beliefs of the researchers operate as a force for

either reproduction or destabilization of western hegemonic epistemologies because CT simultaneously acts as knowledge and power.

Discursive formations exist if their elements/components/statements support a common theme, strategy, regularity or pattern instead of being grouped indiscriminately into clusters which arbitrarily form many of the essential knowledge formations in society (Cousins & Hussain, 2005). This system of making sense of different knowledge formations does not require them to fit into pre-existing, fixed definitions and their "validity is not dependent on the approval of the established regimes of thought" (Foucault, 1976, p. 81). This is to say that connections between and among ideas can be developed without the constrains of exist (and likely quite rigid) theoretical frameworks. CT is well understood as a discursive formation because this allows it to evidence how deeply entrenched educational ideologies are within the concept at the same time as it is used to validate those same beliefs and values. Furthermore, concepts that are discursively connected to CT are use to challenge the dominant thought patterns.

The tension present in the spectrum of conceptualizations of CT mirrors that of Foucault's understanding of the dynamic between power and knowledge. Power does not always manifest in the 'negative' as repression, blockage, and exclusion; power can also be generative and creates a desire for more knowledge and subsequent power (Foucault, 1976). Education, especially 'higher' education that takes place within the rarified spaces within academia, is a very fertile ground in which this cyclical reality power/knowledge can prosper. Knowledge produced within these structures is deemed more intrinsically valuable than other forms of knowledge and thus those who attend and work from within these spaces are imbibed with a greater degree of power through accumulation of this knowledge. As Foucault wrote in 1976, "mechanisms of power in general have never been much studied by history. [. . .] What has been

studied even less is the relation between power and knowledge, the articulation of each on the other" (p. 51). Using the framework described here, I will attempt to make more explicit any underlying biases that exist within the research on faculty perceptions of CT.

Critical Thinking Frameworks

There are countless frameworks used to conceptualize critical thinking and how it can be taught, nurtured, assessed and evaluated (Halpern, 1999). One of the problems in distilling these down to one universal understanding it that CT can be comprised of "at least six distinct, yet integrated and permeable, dimensions: 1) core skills in critical argumentation (reasoning and inference making), 2) critical judgements, 3) critical-thinking dispositions and attitudes, 4) critical being and critical actions, 5) societal and ideology critique, and 6) critical creativity or critical openness" (Davies & Barnett, 2015 , p. 8). Each individual's version of CT will value some of these aspects more heavily than others which is likely influenced by their ideological values. For instance, Brookfield (2005), traces CT to four theoretical foundations, each with its own paradigmatic assumptions: analytic philosophy and logic; Marxism/Critical theory; psychoanalysis; pragmatist constructivism. Another framework for organizing CT separates it into categories of Technical, Humanist, and Emancipatory, which are describes respectively as "1) a set of technical reasoning skills, 2) as a humanistic mode of accessing creativity, relating to others, and exploring self, and 3) as a mode of ideology critique with a goal of emancipation" (Kahlke, 2016, p. 16). Although a three pronged approach is fairly common with similar trios of philosophical, educational, and socially active or philosophical, cognitive psychology, and educational appearing in the literature, it should be noted that an individual's understandings of CT never fits completely within one category (Davies & Barnett, 2015; Kahlke, 2006).

The most prevalent understandings of CT resemble those put forward by Robert Ennis who describes the phenomena as, “reasonable reflective thinking focused on deciding what to believe or do” (2015, p. 32). This understanding is often used to ground research on the application of specific CT skills, such as data analysis and argumentation, within formal educational or workplace settings (Behar-Horenstein & Lian, 2011; Morgan, 1998). Although not as “critically active” as many critical theorist would like, the necessity of application or production in clear in Ennis’ definition due to the inclusion of the verb, do (Paul et al., 1997). Facione’s Delphi consensus produced something more all-encompassing which defined CT as “purposeful, self-regulatory judgement which results in interpretations, analysis, evaluation, and inference, as well as explanations of the evidential, conceptual, methodological, criteriological or contextual considerations upon which judgement is based” (1990, p. 2).

Although some constructs have a slightly more holistic bent than others, within the broadly technical view of CT, there is much energy devoted to compiling lists of discrete skills and associated dispositions considered essential to the overall ability to think critically within a specific epistemological or ontological system (Ennis, 2015; Facione, 2000; Paul et al., 1997). For example, critical thinkers can “judge the credibility of a source [. . . and] use their background knowledge, knowledge of the situation, and previously established conclusions” (Ennis, 2015, p. 33) to better employ their ability to “take into account the total situation [. . . and] use credible sources and observations” (ibid, p. 32). Identifying specific dispositions and abilities may make it easier to assess one’s CT efficacy but it also illustrates how intrinsically assumptions about hierarchies, judgments, and validation are linked to technical CT. The level of detail might account for the volume of research into technical CT because of relative ease of designing and assessing instruction using such a structured framework.

The disciplines or habits considered alongside CT abilities are of particular interest in this conversation because they represent engagement in critical thought across the various contexts on one's life. The inclusion of dispositions within the 1990 Delphi consensus was very influential but although this definition is well used across current CT scholarship, there are some suggestions that innate or personal characteristics towards CT, or the "skills-plus-dispositions view" (Davies & Barnett, 2015, p. 13) are contentious (Kahlke, 2016; Facione, 2000). Halpern suggest that no one can excel in any discipline without "engaging in the effortful process of thinking" (1999, p. 72) and indeed, CT is not something that either students or instructors can achieve passively (Clarke & Gabert, 2004; Halx & Reybold, 2005; Tsui, 2001). Thinking critically can be conducive of a transformative learning experience, not only in the practice of questioning assumptions and developing a better understanding of the world and your place in it (Brookfield, 2009; Halpern, 1999; Walker & Finney, 1999). Accordingly, findings from a 2015 meta-analysis of learning strategies found that "the exposure of students to authentic or situated problems and examples" (Abrami et al., 2015, p. 290) was one of the most effective for developing CT abilities and dispositions. Situated learning is viewed not only in terms of how it might result in better individual outcomes but also in terms of how community learning results in more substantial cognitive learning and affective or emotional change (Volman & ten Dam, 2015).

Support for a universal application is evident in a more humanistic model of CT which provides individuals with a more holistic and empathetic understanding of our interconnected world (Khalke, 2016). It can be argued that "an overabundance of human rationality has separated us from our ethical moorings" (Carver & Harrison, 2015, p. 286) and that an acknowledgment of pluralistic forms of knowledge creation and lived experience would benefit

all global citizens. Interestingly, most evidence of this understanding comes from applied programs in higher education which teach students to reflect on their connection to others and to society, specifically in terms of their professional practice (Nilsson, 2010; Ronnlund et al, 2019). Praxis and pedagogy are essential to this form of CT because in a socio-cultural understanding of learning, students must see themselves as part of a diverse learning community that is collectively engaged in meaningful thinking and learning which requires movement away from an educational model of lectures, readings, and individual responses (Volman & ten Dam, 2015). In this way, humanistic CT in a liminal form of CT that tries to cope with some of the western and individual pitfalls of CT by including the social realities of the person doing them. Literature on citizenship education and the social prerogative of CT can reflect this model although some scholars note that the act of being critical is much more political than humanist conceptions allow (Brookfield, 2009; Volman & ten Dam, 2015).

If humanistic perceptions of CT frame it as a means to a more empathetic and engaged citizenry, emancipatory understandings challenge how we form our beliefs and opinions, what it means to be a citizen, and whom empathy really serves. Critical thinking that is emancipatory in nature often requires more than just thought; it demands action. This is addressed in the final perspective, emancipatory, which is grounded in critical theory (e.g., anti-race theory, queer theory, feminist theory, transformative theory, etc.) and suggests that truly 'critical' CT disrupts dominant thought patterns of western society such as colonialism, neo liberalism, and corporatization (Davies & Barnett, 2015; Merriam & Bierema, 2014). A conceptualization like this also destabilizing the dominant, technical form of CT because they challenge the belief that absolute knowledge, truth and sound judgement exist and that operating within these norms is essential to becoming a critical thinking (Paul et al., 1997). The idea that, "validity is not

dependent on the approval of the established regimes of thought" (Foucault, 1976, p. 81) is supported by emancipatory forms of thinking which establish their own bases for what counts as reason, argument, truth, knowledge and value through their very being and through the action that they inspire (Brookfield, 2015; Mignolo, 2013).

The complexity of this construct might suggest that the preceding attempt to define, or at least catalogue, CT was a moot point. After all, a study on faculty perceptions of CT invalidate these theoretical ramblings by producing wholly new data that can be considered separately, won't it? Not quite, because the researcher's own specific understanding of CT, whether that be something very precise or more nebulous, is central to the research design of the study from data collection to interpretation. The majority of studies on CT use quantitative data to determine adherence to a particular CT framework which presupposes the veracity of said framework (Tsui, 2001). As I have already shown, CT is by no means a homogenous construct so positioning research as if it is, creates a body of literature concerned with confirming dominant understandings instead of exploring those that are new, challenging, or underrepresented.

Research Design

As I will delineate further, CT is by no means a homogenous construct so positioning research as if it is, creates a body of literature concerned with confirming dominant understandings instead of exploring those that are new, challenging, or underrepresented. The assumption that CT is a discursive formation will be explored through an analysis inspired by the principles of Critical Discourse Analysis (CDA) to uncover these biases. I would like to use heavily modified, general understanding of CDA inspired by Foucault rather than rather than Fairclough (Dorner et al., 2005; Jørgensen & Phillips, 2002). I believe that CDA allows for deep exploration of hidden hegemonic practices as evidenced through communications choices.

This research will use a discursive analysis to situate the researchers explicit conceptualizations of CT within the three commonly accepted categories of CT; instrumental, humanistic, and emancipatory. Secondly, I will mine for implicit conceptualizations of CT by analyzing the dispositive data available in their research, namely their methods, but also reviewing the language used. This method posits that research methodology, including forms of knowledge dissemination, are a form of action which can be critiques effectively using CDA (cite this).

Literature Review

A review of the literature showed that CT is a heterogeneous term that encompasses a plurality of ideological bases and educational manifestations. After reviewing the researcher's definitions of CT, I classified each study to one of the three groups (instrumental, humanistic, emancipatory). The number of studies that did not clearly state their definition of CT was surprising; five of the thirteen did not include a direct reference for their understanding of CT, as used to inform their study and three of these did not even define CT (Browne & Hoag, 1995; Halx & Reybold, 2005; Janssen et al., 2019; Jones, 2007; Phillips & Greene, 2011). These studies were also classified but using forms of action, generally in the form of methodology.

Instrumental

Six papers were categorized as instrumental based on their description of CT. They all used rigid and finite definitions of CT that very closely aligned a view of CT as "purposeful, self-regulatory judgment, which results in interpretation, analysis, evaluation, and inference, as well as explanation of evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based (Facione et al. 1990)." Stedman & Adams used the verbatim quote above to explicate their understanding of CT as a concept (2012). Carlson (2012) and Paul, Elder & Bartell (1997) both cited a 1987 paper by Scriven and Paul

which is similar to Facione's but includes additional references to how CT , when in "its the exemplary form, it is based on universal intellectual values that transcend subject matter divisions" (Scrivens and Paul, 1987). Tsui's definition, which draws on a 1984 work written by Furedy and Furedy, operationalizes CT as a group of skills more than dispositions, namely as, "the ability to identify issues and assumptions, recognize important relationships, make correct inferences, evaluate evidence or authority, and deduce conclusions" (Tsui, 2001, p. 4). Thonney & Montgomery's research also considered CT a multi varied skill set that students should acquire in order to have successful careers (2019). It is worth noting that their understanding of CT did emphasis dispositions for open-mindedness, curiosity, and an acceptance of complexity to a greater extent than most of the others authors in the instrumental category. However, the authors insistence that CT is a skill to be applied specifically in workplace settings ensured that they stayed firmly within the most restrictive category of this research. Finally, Foster & Pikkert's 1991 research "Perceptions of Agriculture College Faculty Regarding Integration of Higher Level Thinking Skills in the Curriculum" is included as an outlier. Their study defined CT using Bloom's taxonomy as "those higher mental processes involving application, analysis, synthesis, and evaluation of material" (Foster & Pikkert, 1991, p. 23). This definition is less robust than others and thus more difficult to categorize. However, any gaps left in the explicit definition are answered implicitly.

The three papers that were categorized as instrumental based on their implicit understandings of CT as analysed by me. Although their specific methodologies differed all were engaged in a process of confirming a single understanding of CT. For instance, Janssen et al's 2019 paper "Training higher education teachers' critical thinking and attitudes towards teaching it" used a pre-test/post-test design which tested how faculty member understood and valued

various characteristics of CT and then provided training on the same. Browne & Hoag provided faculty respondents with following list of skills and asked them to rank them "a) Identifying central issues or hypotheses; b) producing a consistent argument; c) formulating formal models; d) identifying assumptions; and e) identifying errors/flaws (using inconsistent statements, failing to suggest tests of hypotheses, confusing correlation with causation)" (1995, p. 179). It is worth noting that these researchers specifically did not define CT in their theoretical framework as defining it was the stated purpose of their research. However, the inclusion of such a short list of options suggests a very rigid understanding of CT.

A number of protocols have been developed to empirically measure individual's CT abilities; the Cornell Critical Thinking Test, the Watson-Glaser Critical Thinking Appraisal, and the California Critical Thinking Skills Test are the most widely used and collectively establish the baseline for technical concepts and criteria for critical thinking (Behar-Horenstein & Liu, 2011; Paul et al., 1997). These tests were developed by big names in the field of CT such as Ennis, Glaser, and Facione and although they represent a very technical alignment they are infrequently used to test faculty members, potentially because it is assumed that faculty already possess excellent CT abilities and student's lack of acquisition is due to their error, not that of instructors (Clarke & Gabert, 2004, Paul et al., 1997). Janssen et al. (2019) do not specifically define CT but they do state that they are explicitly focussing on rational thinking as an essential aspect of CT so we can reasonably assume that their underpinnings are fairly aligned with technical CT like the other study that tested faculty and used Facione's Delphi consensus to base their research (Stedman & Adams, 2012). The Critical Thinking Basic Skills Test appears to be a measure of one's knowledge of the author's definition of CT rather than something that assesses one's CT ability, privileging answers like "critical thinkers assess thinking in order to *determine*

what thinking to accept and what to reject" (Stedman & Adams, 2012, p. 11) instead of "critical thinkers assess thinking in order to *take their thinking apart and examine it"* (ibid). This study concluded that additional training was needed to address the disconnect between faculty's perceptions of their own CT abilities and classroom application and their assessed abilities (Stedman & Adams, 2012). Interestingly, findings from the earlier study informed the later research by Janssen et al. the results of which showed that targeted CT training did not improve test scores. In fact, in many cases scores decreased and it was suggested that this may have been because confidence in CT skill was negatively impacted by the formal training process (Janssen et al., 2019).

Like formal tests, surveys and questionnaires also require the researcher to start with a definitive construct of CT in mind which is then reflected in the available answers to their questions. It should be noted that the Stedman & Adam's study (2012) used multiple methods including a survey but the results from this did not seem to influence their findings meaningfully. As might be expected given the theoretical pluralism of CT, surveys unearthed inconsistency among faculty perceptions in disciplinary studies which focussed on Chairs or administrators of graduate Economics programs across the United States, and instructors within a single Agriculture faculty (Browne & Hoag, 1995; Foster & Pikkert, 1991). The survey of agricultural instructors found that they did not share the same beliefs about CT or its incorporation into curriculum or pedagogy and suggested a number of means to educate individuals towards a common understanding (Foster & Pikkert, 1991). Although the survey of economists was quite balanced on the surface, by choosing those in senior positions, they assume that the perceptions of those in power reflect entire departments, which is problematic and shows very limited criticality on the part of the researchers. They did not include a definition of CT in their study

instead focussing on four highly-ranked CT variables for economists: “identifying central issues or hypotheses, producing a consistent argument, formulating formal models, and identifying assumptions (Browne & Hoag, 1995).

Finally, interviews were used by two research teams but these semi-structured protocols presupposed values and understanding on the part of their faculty respondents (Paul et al., 1997; Phillips & Green, 2011). Phillips & Green used a case study methodology to interview students and faculty members. They found a lack of cohesion among the faculty’s understanding of CT and suggested the use of CT testing protocols such as the Ennis-Wier Critical Thinking Exam. This exam defines CT as a set of skills including “as competence in getting the point, stating one's point, offering good reasons, seeing other possibilities and responding appropriately while avoiding equivocating, irrelevance, circularity, straw-person fallacy, overgeneralization, excessive skepticism, credibility problems, use of emotional language" (Ennis & Wier, 1985, p. 1). Paul et al. also analysed for respondent’s adherence to what they considered baseline elements of CT, one of which, “mastery of language contributes to critical thinking" (1997, p. 13). This suggests that CT can only take place in a language one has complete mastery over, which immediately marginalizes the abilities and contributions of anyone thinking, writing, or living in a language they are not perfect in. This was one of the most troubling pieces of evidence I found for how faculty perceptions of CT can contribute to the oppression of less dominate epistemologies.

Humanistic

Evidence of a Humanistic CT was limited in the research I studied. Only three papers were put in this category total, and only two because of their explicit definitions of CT. Renate Kahlke’s dissertation was undertaken to develop an understanding of CT that was specific to

nursing professions (2016). Her work is what actually inspired the three categories in my own because of the excellent synthesis of the plurality of discourses that exist on CT within adult education in her writing. This research largely confirmed the earlier Dephi consensus work done by Facione et al from 1990 with a few notable additions; creativity and intuition were deemed to be central to CT within the discipline of nursing (Kahlke, 2016). Furthermore, she notes that there is a large degree of overlap between what is considered CT and reflective practice, to the extent that the terms are sometimes used interchangeably (Kahlke, 2016, p. 216). The research methods supported this understanding of CT because they were flexible, responsive and allowed for a multitude of understanding to be considered without privileging those that aligned with an established definition.

Although most of the research on faculty perceptions of CT showed a high degree of agreement between the implicit and explicit definitions used to inform their research, there were a few notable exceptions. Thonney & Montgomery consider CT a prescriptive set of skills with workplace benefits but they also emphasize the power of learning communities for developing and shaping understanding of complex ideas and applications; the latter reflects a more subjective understanding of CT which is somewhat in tension with their explicit definition (2019). An even great gap is present in Tsui's research because the rigid definition of CT cited in her papers is immediately problematized "because critical thinking is a complex skill, any attempt to offer a full and definitive definition of it would be futile" (2001, p. 200). Similarly, Paul et al. (1997) included in their paper the caveat that no single definition of CT would ever be sufficient and that CT "can be approached both as a universal ideal and an intensely personal undertaking" (p. 12.).

Furthermore, Lisa Tsui published several papers on various aspects of faculty CT perceptions following in-depth research into four different institutions in the United States (2001; 2002; 2003; 2008). Tsui's investigation into faculty perceptions of CT is mediated through an institutional lens, with research sites chosen based on one axis of institutional selectivity and another of institutional growth in CT based on a national study of student CT abilities (2001). The differences between institutions is staggering with faculty in the high performing schools showing confidence in their student's ability to think critically and enthusiasm for their teaching, often likening CT instruction to "a process of mutual learning" (Tsui, 2001, p. 21). The fact that institutions with poor CT scores are populated by faculty who do not value CT and consider their students "like a brick wall" (Tsui, 2001, p. 11) seems logical. Tsui does not recommend CT training for faculty, instead suggesting that large-scale institutional and societal change is needed so that CT is not confined to 'selective' institutions, effectively reproducing class-differentiated CT skills (2003).

Emancipatory

Not all research that recommended faculty interventions reflect a highly prescriptive understanding of CT. The research of both Jones (2007) and Halx & Reybold (2005) avoid defining CT altogether instead listing multiple potential characteristics in different contexts. They consider it a combination of consistent purposeful reasoning but that logical and analytic skills alone are not enough – CT must "include personal perception and reflection" (Halx & Reybold, 2005). Jones includes multiple understandings of the term as the basis for her research: "Critical thinking is a very complex notion and operates at a number of levels and this paper acknowledges that the term critical thinking' covers and array of ideas and practices, from technical problem solving to a critical examination of a discipline to a much broader critique of society" (p. 211).

The research undertaken by Ronnlund et al. centered a definition of CT developed by the European Commission's Report on Education "critical thinking is commonly described, in line with frameworks for '21st century skills' as an individual analytical and civic competence that includes, among other components, 'reasoning and analysis skills', 'questioning', "multi-perspectivity' and 'understanding the present world" (2019, p. 302-3). This definition of CT could be interpreted as either humanistic or emancipatory but my secondary analysis showed that the actions taken by the researchers, including methods and conclusions, firmly situated this research in the latter category. This research utilized an ethnographic approach determine discursive gaps in how faculty in various tyles of institutions understood CT as either a cognitive or civic competency (Ronnlund et al*.,* 2019).

Findings

Universality

Several studies assessed faculty understandings of CT against a static definition (Carlson 2012; Foster & Pikkert, 1991; Paul et al., 1997; Phillips & Green, 2011; Stedman & Adams, 2012; Thonney & Montgomery, 2019). The fact that these tests were generally poorly met by the faculty members concerned the author more than it does me. Instruments designed to test CT such as the Ennis-Wier completely agree with another's definition of CT and/ or competencies of CT. This represents a tautological quagmire because you are asking people to align themselves with a pre-existing definitions instead actually demonstrating critical thinking. Instead of considering that the baseline of CT is flawed, researchers found that faculty members need more education on these formal CT rules.

One study found that faculty members had difficulty thinking critically about their own teaching even as they struggled to articulate what CT was in an academic context but I would extend this critique to most CT researchers as well. (Jones, 2007). As higher education has

become increasingly commodified and academics have become accountable for delivering prescriptive student outcomes, “critical thinking is in the process of being packaged, shrinkwrapped, and is in danger of losing its power. It is used to promote the value of a university education yet at the same time the real power and value of CT to interrogate is declining" (Jones, 2007, p. 210). This phenomena is evident in the type of research which is not critical of itself, academia, or faculty, and instead suggests that more alignment with a prescriptive version of CT that does not push faculty or students out of this cycle (Janssen et al, 2019).

It is important to note that research that uses interviews are not necessarily designed to mitigate bias or explore multiple perspectives. For instance, the rigidity of CT in some of the most cited research on faculty perceptions of CT determined that CT can only be taught by those who agreed with the absolute objectivity of knowledge and truth because “we assume that critical thinking is incoherent without “intellectual standards” and, hence, if a faculty member thinks of knowledge as purely subjective, that faculty member could not help students develop essential intellectual standards” (Paul et al., 1997, p. 12). Coding of interview transcripts can be done against a rigid definition of CT and can thus produce proof of a “lack of common language to discuss critical thinking” (Phillips & Green, 2011, p. 46) or evidence that “only a small minority (19%) could give a clear explanation of what critical thinking is” (Paul et al., 1997, p. 18). These studies that suggest that more training/skill development at the faculty level is needed fail to consider that a plurality of CT constructs and a heterogenous vocabulary with which to talk about it might be conducive to CT and institutional and classroom levels.

At the core of this issue is the positioning of CT as a form of “Universal Intellectual values” (Scrivens & Paul, 1989) assumed (or enforced) universality of epistemic beliefs is done

in service of dominant white ideology. The continued use of this concept within academia broadly, and within research on CT more specifically, actively reproduced hegemonic power structures where alternative ways of knowing are marginalized. This occurs within the realms of academic research, granting, and publishing but also trickles down to students through pedagogy. I have already shown that a number of researchers sought to confirm pre-established conceptions of CT but Janssen et al. actively tried to norm faculty member's understandings of CT through training within the scope of the research, with little success (2019).

Pedagogy and Prescriptive Learning Outcomes

Within much of the research, there was a degree of muddiness when determining how faculty members understood CT and how they operationalized it within their classrooms. In some cases, this was because the research positioned pedagogy as inherent to the definition of CT and used faculty member's discussion of the former to inform the latter (Carlson, 2021; Halx & Reybold, 2005; Tsui, 200). In other cases, pedagogy was not central but it seemed to be the way faculty participants understood and thus communicated their perceptions of CT to researchers (Jones, 2007; Paul et al., 1997; Phillips & Green; 2011; Stedman & Adams; 2012). Much of the literature suggests a "discontinuity between rhetoric and reality might exist" (Brown & Hoag, 1995, p. 179) and that even faculty who can conceptualize CT personally have challenges reproducing this regularly in their teaching or research (Kahlke, 2016; Paul et al., 1997). Ambivalence regarding CT constructs seem to manifest in teaching in a very tangible way but this disconnect between theory and practice might also point to disciplinary, institutional, or sociocultural factors that limit an instructor's ability to include criticality in their own praxis due to 'ontological insecurity' (Laing, 1965, cited in Jones, 2007, p. 217) (Tsui, 2001; Tsui, 2003).

I worry that emphasizing CT only as a learning outcome is too closely tied to a technical understanding of CT and will further instrumentalize the process and support commodification and vocationalization of education (Jones, 2007; Tsui, 2003). This concern is not shared by Halx & Reybold (2005) who used a pedagogical lens to explore CT perceptions and found that,

> pedagogy implies a philosophy of practice based on personal definitions of critical thinking. Pedagogy refers to instructional philosophy, teaching style, and teaching strategies. Based on their epistemology of critical thinking, then, they [faculty participants] developed— sometimes hesitantly—a comparative methodology of teaching and learning. (p. 300)

It is unclear from the paper what questions were asked in the semi-structured interview that elicited such criticality but the participants verbalized a much more conflict-positive and transgressive understanding of CT that was present in any other participant data. Faculty thought that the act of thinking critically did not come naturally to students and that some cognitive discomfort was needed to push students out of a static state with seven of eight using the word 'force' and the final participant choosing 'aggressive' to describe their pedagogy (Halx & Reybold, 2005).

The tension between CT that critiques the world at large and that intended to be applied in a very specific discipline offers insight into the changing role of adult learning and "scholars frequently criticize higher education's increasing focus on vocationalism at the expense of curricula more centered on critical thinking (Carver & Harrison, 2015, p. 283). The continued commodification of adult education is another reason why students must be empowered to look for and understand the tensions and paradoxes of western society in a way that transcends the disciplinary boundaries of their specific educational programme. Disciplinarily specific language

and theory are required for applied CT in some professional contexts, but a more holistic understanding of CT and willingness to employ the dispositions of a critical thinker generally, is indicative of a different conceptualization of CT than those that privilege CT as a means to an end (Halpern, 1999).

Conclusions

This research has shown that there are substantial gaps in our knowledge of faculty perceptions of CT across post-secondary institutions. The majority of papers reviewed evidenced that CT is too complex and personal a concept to distill down to a single, easily operable definition either explicitly or, in a few cases, the authors appeared to miss these implications but a critical analysis of their findings suggests it. Another conclusions that can be drawn from this literature review is that an increasingly neo-liberal academic milieu is eroding academic autonomy and decreasing the ability of faculty to challenge their own epistemic assumptions. Although outside of the scope of this research, there are repercussions for students who are being trained to do a job instead of developing intellectual capabilities that will serve them in their professional, civic, and personal lives. The development of a more robust body of knowledge on how CT is understood by faculty members, and thus operationalized through their own teaching and research, is prudent to ensure post-secondary education continues to be of value in a rapidly changing society.

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