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Do We Need More Productive Theorizing? A Commentary

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ABSTRACT

In this commentary, we argue that literacy research would be more productive if researchers had a clearer, more nuanced understanding of theory. Specifically, we argue that theory in a practice-oriented field is most fundamentally productive when it provides instrumental guidance *for* literacy beyond academic understanding *about* literacy. Premises for that argument are presented, as well as how productivity connects to an instrumental view of theory within the philosophy of science. We provide examples from authoritative sources and relevant studies suggesting that conceptions and uses of theory in literacy research are ambiguous, diffuse, and incoherent. We argue that productivity could be a unifying construct to ameliorate those limitations. To stimulate discussion about theory, we propose several ways that theorizing might be more productive. Those proposals comprise a critique of theorizing in the field and illustrate how more productive theorizing could close the gap between research and practice. Finally, we discuss how our proposals might be implemented in the field's research.

It is one of the shibboleths of educational research that theory...[is] valuable, if not essential. But if the morphology of theory is inconstant...its chameleon-like nature will allow it to escape serious scrutiny. (Thomas, 1997, p. 83)

Doctoral students in the field of education, who are typically former educators, discover early in their studies that embracing theory is a hallmark of their entry into academia. Labaree (2003) argued that a movement from a practical to an analytically theoretical orientation is the fundamental challenge of preparing doctoral students in education to transition from being educators to becoming education researchers (cf. Bulterman-Bos, 2008). Contributing to that end, a classic text for literacy researchers, in its seventh edition and often required reading for doctoral students, is *Theoretical Models and Processes of Literacy* (hereafter *TMPL*; Alvermann, Unrau, Sailors, & Ruddell, 2019).

It is unimaginable that promising new literacy researchers could not elucidate theoretical positions that inspire and provide meaning and guidance to their work. No doctoral dissertation is likely to be approved without some invocation of relevant theory (cf. Boote & Beile, 2005), and manuscripts and conference papers reporting research can be summarily rejected if they lack a theoretical grounding. Yet, the former editors of a leading literacy research journal (Anders, Yaden, Iddings, Katz, & Rogers, 2016) editorialized that the greatest concern across approximately 600 manuscripts reviewed during their editorship was “the need for literacy researchers to more clearly explicate the conceptual foundations of the theories invoked and subsequent impact of those theoretical

frameworks upon design, analysis, and interpretation of the studies conducted” (p. 3).

Given that theory is a touchstone of literacy research, it seems reasonable to expect a consensual understanding of precisely what it is and what role theorizing plays in our work. We would expect some agreement, for example, about responses to questions such as the following: Toward what ends do we engage in theorizing, and specifically, how does it serve the ultimate goals of the field? Are there particular views of theory that might be more, or less, meaningfully valid in literacy research as a practice-oriented field? Also, as implied by our title, are some theories and uses of theory more productive than others? In this commentary, we address such questions, proposing productivity as a unifying construct that might deepen our collective understanding of theory and better align theorizing with the ultimate goals of the field. Our motivation is derived partially from evidence, presented in a subsequent section, that, in the field of literacy research, the term *theory* has been used too loosely and amorphously and has lacked coherence, and thus, is subject to the critique that the introductory quote suggests.

We frame our argument as a commentary because, according to Trimbur (2013), it “is a genre of writing that uses analysis and interpretation to find patterns of meaning in events, trends, and ideas” (p. 283). A commentary allows us to make an argument traversing a diverse literature, allowing for more speculation and opinion than other genres of scholarly publication. Also, although we do not wish to press the point too strongly, a commentary seems consistent with our career-long involvement in diverse aspects of literacy research and theorizing, including conducting large-scale funded research projects, publishing, editing, reviewing, and mentoring. Nonetheless, we humbly realize that others, equally experienced, might offer reasonable counterarguments to the perspectives and interpretations that we present. Our goal is not to win an argument but to initiate what we believe to be a much-needed, and overdue, dialogue about the role of theory and theorizing in the field.

Premises About Productivity

Productive Theorizing Is More Than Claiming a Theory

- 3 We believe that an awareness and understanding of theory, if it is to be productive, must go beyond simply claiming one and comparing or contrasting individual theories that might frame and inform a body of research. To be productively theoretical, we believe, means something more. It means understanding the nature, role, and potential contributions of theory, as well as its pitfalls. It means understanding that theory is a multifaceted construct with many

uses and meanings, and it means being precise about how theory is defined and used when it is invoked. For example, Chambers (1992; see also Thomas, 1997) identified nine clusters of meanings for theory in education research. These meanings included hunches, heuristic speculation, dogmatic beliefs, and explanations of empirical data. Theory and the role of theorizing in research have also been contentiously debated in the physical sciences for decades (e.g., Feyerabend, 1970; Godfrey-Smith, 2003; Horwich, 1993; Kuhn, 1962; Morris, 2018; Popper, 1959; Richards & Daston, 2016) and also in the social sciences (see Chambers, 1992; Lincoln, Lynham, & Guba, 2018; Thomas, 1997). We believe that some of these meanings and uses of and perspectives about theory, given the nature and goals of literacy research, may be more productive, and others less so. If so, a first step in considering productive theorizing is for literacy researchers to explain what exactly they mean by *theory* and why they believe a particular meaning is well suited to the goals of their work. This commentary aims to contribute to that consideration.

A Productive Theory Is Useful in Accomplishing Goals

Box (see Box & Draper, 1987), a prominent statistician, introduced an aphorism that captures the essence of theoretical productivity: “Essentially, all models [and theories] are wrong, but some are useful” (p. 424). Similarly, polymath Bateson (1979) stated “that there are better and worse ways of constructing scientific theories, and in insisting on the articulate statement of presuppositions so that they may be improved” (p. 29). Consistent with these views, even a wrong or incomplete theory can usefully advance understanding and reliably meet practical challenges (e.g., Einstein’s theory of gravity replaced Newtonian physics, but the latter is productively useful in many situations). Fundamentally, then, a productive theory is a useful one, employed with a humble awareness that it is likely incomplete and, at least occasionally, entirely wrong. Yet, useful in what sense? We believe that a useful theory is one that contributes to accomplishing the ultimate goals of our research. Yet, what are the goals of education/literacy research?

Productive Theory Enhances Personal and Societal Well-Being

We agree with Unrau, Alvermann, and Sailors (2019), who stated in *TMPL* that a central goal of theorizing should be “to formulate new literacy theory that aligns with evidence and promises better outcomes in our schools and universities” (p. 30). That goal aligns with Hostetler’s (2005) position that, most fundamentally, good education research enhances people’s well-being. Or, as Ranis (2009) stated, “education research is a field that

inherently honors research for the social good” (p. 129). Thus, productive theories in education research in general and literacy research in particular are ultimately theories that facilitate conducting, interpreting, and applying research that enriches people’s, and by extension societal, well-being, most often in educational contexts. Productive theories, then, serve socially pragmatic goals (see Dillon & O’Brien, 2019). What constitutes well-being and the social goals that enable it may be contested, and should be, within democratic societies. Yet, productive theories facilitate, in practice, agreed-upon values and goals.

Less productive theories are those that do not substantively advance, or distract researchers from, striving for that overarching goal. Thus, productive theories should be more than attractive abstract academic constructs that are intellectually satisfying; they should be demonstrably useful toward enhancing literacy, however it might be defined, as a means for improving personal and societal well-being. However, we do not take the stance that less productive theories have no value, only that making a distinction between more and less productive theories, specifically in terms of enabling societal well-being, would be beneficial to the field. It would help ensure that literacy researchers accept responsibility for and remain focused on the field’s ultimate goals. Moving such a distinction into the consciences of researchers and the culture of literacy research would, we believe, stimulate more productive research and theorizing.

Distinguishing Theory for and About Literacy Is a Dimension of Productivity

We believe that the contrasting prepositions in the heading above capture a useful distinction that lays a foundation for considering theory’s productivity (cf. Biesta & Burbules, 2003; Labaree, 2004; Phillips, 2009). Such a distinction is justifiable, we believe, because contrasting theory and research *about* literacy and *for* literacy might, in one sense, be analogous to the distinction between psychology and applied psychology or between linguistics and applied linguistics (Labaree, 2004). Phillips (2009) made a similar distinction between education *research* and education *scholarship*. Education *research*, and literacy research carried out under its umbrella, is inherently applied research aimed at finding ways to better achieve educationally valued outcomes and goals. Education researchers hold themselves accountable for engaging in work that advances the goals of education. Education researchers, typically and appropriately, have had first-hand involvement in education practice at some level, and they are the mainstay of faculty in schools and colleges of education and in education agencies. Similarly, literacy researchers who are education researchers do research *for* literacy, seeking theories that productively

advance literacy as an educational endeavor carried out mainly by teachers and others in the realm of practice.

Education *scholarship*, in contrast, aims to better understand aspects and issues of education, or literacy, with grounding in disciplines such as history, anthropology, sociology, political science, psychology, economics, and philosophy. Education scholars view education as essentially a societal institution and those involved in aspects of that institution as enactors to be studied, rather than agents to be informed. Education, or literacy, scholarship does not necessarily assume responsibility for improving practice, although it may aspire to do so. Scholarship also includes critiques of education, or literacy, and its practice, sometimes focusing on its shortcomings, limitations, and unmet challenges, but less often on how to rectify them. That is, education scholars interested in literacy do work *about*, not necessarily *for*, literacy. Their work may offer needed perspective while expanding awareness and understanding of the multiple, fascinating dimensions of literacy.

However, we wish to highlight several caveats. First, we emphatically do not propose this distinction as a dichotomy. Instead, as we illustrate in a subsequent section, we conceptualize this distinction as a matter of emphasis existing fluidly and dynamically across a continuum—a distinction more of degree than of fixed kind. Put another way, we are not advocating for theories being sorted into clearly demarcated buckets, as one reviewer of an earlier version of this article suggested.

Further, as we illustrate and discuss in a subsequent section, the interplay of theorizing across a continuum *about* and *for* literacy can enhance productivity. For example, theories *about* literacy can reveal hidden or ignored dimensions of literacy and establish valued goals or a guiding moral conscience *for* literacy research, or as Suppes (1974) argued, what is superficial and what is important. Many theories imported into literacy research from other fields and disciplines seem to serve this latter purpose, such as postcolonial theory (literary theory), critical race theory and intersectionality (legal studies), posthumanism (philosophy, literary criticism, and artificial intelligence), semiotic mobility (semiotics), discourse communities (linguistics), spacetime-mattering (post-structural feminism), and third space and positioning theory (social psychology). However, as we argue in a subsequent section, such theories might be more productively moved from the realm of pure scholarship *about* literacy to the realm of research *for* literacy.

The dynamic interplay between theories *about* and *for* literacy on a continuum is also consistent with the stance of Stokes (1997), who argued that the distinction between basic and applied research is a false dichotomy leading to the inaccurate and misleading perception that basic research is foundational to and drives applied research, even in the hard sciences. More typically, new fundamental

1 theoretical insights emerge from systematic attempts to
2 address the practical challenges of achieving a sought-after
3 goal. For example, aeronautics arose from the Wright
4 brothers attempts to go beyond theories of lift to enable
5 controlled flight. Theories of microbiology (and the undo-
6 ing of inaccurate theories that chemical, not biological,
7 processes were involved) emerged from Pasteur's efforts to
8 preserve food. Statistical theories and procedures were
9 developed in the context of improving agricultural yields.

10 Finally, we acknowledge that literacy is a broad and
11 multidimensional area of study, and we hold a strong com-
12 mitment to academic freedom among our colleagues who
13 wish to pursue any of its dimensions and any theories,
14 *about* or *for* literacy, that they deem relevant. Nonetheless,
15 an awareness of a distinction between literacy theory and
16 research *for* and *about* literacy may add a more nuanced
17 perspective to the field's theorizing, reminding literacy
18 researchers that, to be productive, theory must continually
19 move toward achieving the goals of an applied field.

21 **Productive Theories Are Consummated** 22 **in Practice**

23 Hoadley (2004) introduced the term *methodological align-*
24 *ment*, which we believe speaks to productive theorizing in
25 an applied field. Alignment, in his view, is an overarching
26 and coherent body of work that is not complete until it
27 speaks directly to achieving practical outcomes. Such
28 alignment has implications for theory because, as Hoadley
29 argued, "carry[ing] ideas all the way from explanation to
30 prediction to falsification *to application* [emphasis added]
31 seems like the missing link in educational research that will
32 ensure our theories have practical implications" (p. 205).

33 Put another way, in an applied field such as education,
34 theorizing is not consummated, and thus not fully produc-
35 tive, until it can demonstrate practical utility. In this view,
36 grand, abstract theories about literacy and its multiple
37 dimensions (theories *about* literacy), and the work they
38 inspire, are productive only when embedded within a pro-
39 gram of research ending in practical utility. Conversely,
40 productive theorizing in an applied field is limited when
41 overarching theories *about* literacy are isolated or discon-
42 nected from a consideration of theories *for* literacy. Failing
43 to make this distinction, we believe, constitutes less produc-
44 tive theorizing and sustains the frequently acknowledged
45 gap between research and practice. However, lest Hoadley's
46 (2004) and our point be misunderstood, consummated
47 theorizing is not productively achieved in a final sense only
48 through conventional experiments. Demonstrating, exper-
49 imentally, the effectiveness of instructional interventions
50 may be productively useful in making generalizations
51 across contexts. However, even more productively useful
52 for practice are finer tuned contextual understandings
53 related to process—how goals are achieved (see Pressley,
54 Graham, & Harris, 2006).

There are prominent historical and more contemporary
examples of Hoadley's (2004) notion of alignment in the
field, illustrating how theorizing and research can move
productively from *about* to *for* literacy. LaBerge and
Samuels's (1974) general theory of attention and automatic-
ity from the field of educational psychology led Samuels
(1979) to develop repeated reading as a theory-based
instructional activity to enhance reading fluency and com-
prehension. Brown and her colleagues (e.g., Brown,
Armbruster, & Baker, 1986) conducted theoretical and
empirical work on metacognition. Her laboratory research
about literacy led her to develop reciprocal teaching
(Palincsar & Brown, 1984) and inspired strategy instruction
(in effect, a pedagogical theory *for* literacy) as an approach
to teaching reading comprehension. Yet, Brown (1992) had
a palpable awareness that the methods and theories that
guided her laboratory work were not productive in guiding
attempts to move her laboratory findings into classrooms,
leading her to seek new methodologies and new theories of
implementation *for* literacy. Specifically, she replaced the
experimental methods of the laboratory work with what she
termed *design experiments*, mixing quantitative and qualita-
tive approaches, to develop pedagogical theory. For exam-
ple, she theorized from her data that reciprocal teaching was
more effective when students took a more active role in
their own learning and teachers were positioned as guides
rather than dispensers of knowledge.

Heath (1983) is another example. She used anthropo-
logical methods to develop theories *about* literacy in rural
Appalachia, which became foundational to informing her
efforts to enrich literacy there. More recently, Lee (2013)
used theory about African American students' mental
models of language to develop instructional activities that
used their vernacular to enhance responses to literature.
A special case is Rosenblatt's (e.g., 1994) transactional
theory of textual meaning and purposes. Although an
abstract theory *about* literacy, it contained easily under-
stood metaphors (e.g., the transaction between a river
and its banks) with transparent implications *for* pedagog-
ical practice. Similarly, González, Moll, and Amanti
(2005) proposed funds of knowledge as a theory with
clear implications for classroom practice and enhancing
social justice. We believe that productive theorizing in the
field would be enhanced if these examples were emulated
as an expected progression in moving theories *about* lit-
eracy to *for* literacy.

55 **Problems With Theory and** **Theorizing in Literacy Research**

In this section, we provide examples suggesting that many
theories within the field's literature are nebulously defined
and incoherently applied. As a commentary, we do not
offer a comprehensive review, only prominent examples in

support of an arguable position for proposing productivity as a needed, potentially ameliorative construct. We argue that the problems we highlight here are symptomatic, if not causal, in limiting theoretical productivity. Thus, we establish conditions suggesting the need for a clarifying construct such as productivity, and we set the stage for defining productivity and offering proposals for increasing it.

Lack of Terminological and Conceptual Clarity

Ambiguities, concerns, and even contradictions about theory in the field's literature are not difficult to find. For example, disciplinary literacy (e.g., Moje, 2015), reading engagement (e.g., Baker, Dreher, & Guthrie, 2000; Guthrie, 2004), and new literacies/multiliteracies (e.g., Coiro, Knobel, Lankshear, & Leu, 2008; Kalantzis, Cope, & Cloonan, 2010) have each been labeled interchangeably as theories or perspectives. In addition, translanguaging has been called a conceptual framework (MacSwan, 2017), a practical theory (Wei, 2018), as well as an ideology, a theory of bilingualism, a pedagogical stance, and a set of practices (Mazak, 2016). Whole language, across decades, has been called not only a theory but also a perspective, a philosophy, a movement, a set of principles, an approach, and a curriculum (cf. Chen, Cheng, & Chou, 2016; Goodman, Fries, & Strauss, 2016; Ridley, 1990). However, given the gravitas of theory, ambivalence often trades on hybrid terms such as *theoretical perspective* or *emerging theory*. Yet, we can find no precise explication of how such terms differ from the term *theory*. For example, we wonder what criteria must be met for an emerging theory to become a full-fledged one or how a theoretical perspective differs from a theory.

Previous Attempts to Clarify Theory

In an early attempt to impose order on theorizing in literacy research, De Beaugrande (1981) offered 16 design criteria for establishing valid and useful theoretical models of reading processes. Within an information-processing paradigm, he suggested that models should be evaluated on criteria such as the nature of processor contributions (i.e., bottom-up vs. top-down approach), type of memory storage (abstraction, construction, and reconstruction), utilization (complete vs. partial analysis of text elements), and so forth. After comparing nine reading and language processing models, including his own, De Beaugrande's conclusion was that no model of text processing provided an optimal explanation for complex language and literacy processing. However, we can find no prominent examples of his criteria subsequently being used widely to develop or apply theory.

Subsequently, Mosenthal (1984) claimed that the interpretation of theories in reading were increasingly

problematic because (a) literacy theorists are selective in what elements they choose to define and operationalize in their literacy models, and more importantly, (b) theories and models must be understood in light of the sociopolitical orientation of those who formulate them. Given this selectivity and the diversity of ideological orientations, Mosenthal concluded pessimistically that "until this sociopolitical process is understood, the question of what reading is will continue to be unresolved" (p. 221). We again find no evidence that the field subsequently attempted to resolve these problematic aspects of theory development and interpretation.

A decade later, Cunningham and Fitzgerald (1996) encouraged the literacy community to evaluate theories and claims about literacy in relation to researchers' epistemological orientations. For example, Cunningham and Fitzgerald contrasted Rumelhart's (1977, 1985) interactive, hypothetico-deductive model of reading with Rosenblatt's (1968, 1994) transactional, contextualist view. They then listed benefits of evaluating reading research according to the respective epistemological orientations, thus enabling researchers to "see that there are multiple ways of considering knowledge, each of which may potentially be valid" (Cunningham & Fitzgerald, 1996, p. 58). Although their work was often cited and furthered conceptual clarity, we find no convincing evidence that it had widespread or long-lasting influence on theorizing in the field. In fact, more contemporary sources, to which we now turn, suggest continued ambiguity.

Current Ambiguities on Uses of Theory in Research

To the extent that there is clarity about theory, we would expect to find it in two authoritative and widely used volumes in the field: the seventh edition of *TMPL* (Alvermann et al., 2019), the classic archival reference pitched toward researchers, and the third edition of Tracey and Morrow's (2017) *Lenses on Reading: An Introduction to Theories and Models* (hereafter *LR*), which is aimed more at practitioners. However, both volumes embrace an accommodating eclecticism, if not unsettling ambiguity, toward theory and its role. For example, in their introductory chapter framing *TMPL*, Unrau et al. (2019) portray theory in terms of classical science (e.g., as reflecting reality, having truth value, and producing durable generalizations). Yet, they also acknowledge that theories are subjective, interpretivist, and ideological and that the editors' placement of chapters in the volume may not "remain accurate over time as ideologies evolve" (p. 9). *LR*'s authors also see theories both as "*explanations for why they* [researchers] *expect something will happen*" (p. 9) and as lenses through which the world can be viewed.

Yet, in our view, the stance most oppositional to productivity—a stance shared across these volumes—is

1 that researchers are free agents who choose theories based
2 on their personal views about and dispositions toward liter-
3 eracy. In *TMPL*, for example, Unrau et al. (2019) state that
4 the book's purpose is to help "readers think through vari-
5 ous dichotomies and differences in the field of literacy
6 research to discover what perspectives they find compati-
7 ble with their present knowledge and beliefs" (p. 4). In *LR*,
8 the authors similarly suggest that for researchers, there is
9 no one correct theory for framing their work and, specifi-
10 cally, that "researchers can *choose* [emphasis added] from
11 a wide variety of theoretical perspectives...*available*
12 [emphasis added] to them" (p. 9). These exhortations to
13 literacy researchers seem unproductively solipsistic, even
14 unnecessarily anarchic (see Feyerabend, 2010), especially
15 in a practice-oriented field that ostensibly looks to
16 research for productive guidance. An apt analogy might
17 be shopping in a department store for clothing that one
18 finds attractive or that fits one's personal style, as opposed
19 to going to an outdoor store to find functional clothing
20 suitable for challenging terrain or inclement weather to be
21 encountered on a wilderness adventure.

22 Further, unproductive theorizing may be exacerbated
23 when, as is clearly the case in these two authoritative vol-
24 umes, most of the theories highlighted are imported from
25 other fields and weighted toward theories *about* rather
26 than *for* literacy. Neither volume critiques the pedagogical
27 utility of these imported theories, nor are there justifi-
28 cable caveats about whether literacy researchers are
29 sufficiently familiar with such theories when applying
30 them to literacy. That issue has been raised in the litera-
31 ture. For example, despite the extensive literacy research
32 grounded theoretically in Vygotsky's work, literacy schol-
33 ars deeply familiar with his work have argued that it has
34 been mostly misread among literacy researchers (e.g.,
35 Smagorinsky, 2011; Yaden, 2017).

37 **Empirical Evidence That Theory Is** 38 **Problematic in Literacy Research**

39 Two studies investigated how theory has been used in the
40 field's research literature. Taken together, they reveal
41 problems and concerns about the coherency and produc-
42 tive use of theory in the field's literature across almost
43 three decades.

44 Dressman (2007) analyzed how theory was posi-
45 tioned in 69 articles published between 1992 and 2003 in
46 three leading literacy research journals (*Journal of*
47 *Reading Behavior*/*Journal of Literacy Research*, *Reading*
48 *Research Quarterly*, and *Research in the Teaching of*
49 *English*). Among his conclusions were that (a) "in some
50 instances it was difficult to separate what was 'theory' and
51 what was 'research'" (p. 341); (b) researchers typically
52 positioned their work in relation to more than one theo-
53 rist, making it difficult to integrate the report into a uni-
54 fied whole; and (c) "the nature of the relationship that

authors developed between their findings and the way
that theory functioned to define, support, or challenge
the meaning constructed from those findings varied
widely" (p. 344). Finally, he found that theory was used
within four different overarching frames: (1) a broad plat-
form for framing a research agenda, usually in the intro-
duction; (2) a foundational apparatus used in the
introduction and discussion, but little in between; (3) a
discursive scaffold, with explicit alignment of theoretical
precepts to data throughout the report; and (4) a dialecti-
cal scaffold creating a persistent tension between or
among theories and data.

Dressman's (2007) overall conclusion is particularly
relevant to our argument. Although the application of
theory in the articles he analyzed created a rich intellec-
tual narrative, they were "lacking in practical usefulness
or advancement of general knowledge about a phenome-
non" (p. 349). He found theory used frequently as a war-
rant for the study itself, rather than as a warrant for
specific findings. Theory as dialectical scaffold, which
created an inherent tension between theory and data, was
the only category that created an opportunity for con-
necting empirical data to building new, consequential
theory or refining existing theory. However, that category
contained only nine of the 69 studies. Social theories, in
contrast, were used typically as a rhetorical frame to
establish that a perspective, topic, or question mattered.
Thus, the relation between the theory and the data formed
a closed system. Theories frequently represented more of
a passionate idealism, with little commitment to further-
ing understanding based on empirical data—steering
"toward the stars rather than by the stars" (Alexander,
2000, as cited in Dressman, 2007, p. 353). He concluded
that this common orientation represented a lack of skepti-
cism about how theoretical constructs and data were
related.

More recently, Parsons, Gallagher, and the George
Mason Content Analysis Team (2016) analyzed the top-
ics, theoretical perspectives, research designs, and data
sources of more than 1,200 articles in nine peer-reviewed
literacy journals. In their initial analysis, they reported
categorizing the theoretical perspectives using those iden-
tified in the aforementioned authoritative sources on the-
ory (*TMPR* and *LR*). However, Parsons et al. found that
nearly half of the articles' initial codes were labeled *other*.
Adopting a more stringent approach, Parsons et al. cate-
gorized theory only when it was explicitly named and
connected to interpreting data. Notably, that approach
resulted in 76% of the articles having an unspecified the-
ory. Parsons et al. concluded that a reliance on implicit
theoretical perspectives suggested that literacy research-
ers felt no compulsion to be more explicit, because they
were operating within thought collectives (Fleck, 1979).

In summary, we believe that this brief overview of
work across almost four decades provides sufficient

evidence to justify continued concern about the status and role of theory in the field. Problematic ambiguities and documented limitations remain unaddressed, directly and systematically. We, unfortunately, agree with Calfee's (2014) assessment that "the field lacks a coherent disciplinary core, and so is vulnerable to the emergence of a virtually unlimited variety of claims, afflictions, and remedies" (p. 9). Focusing on theory and its role in terms of productivity, we believe, could be a unifying ameliorative frame.

Conceptualizing and Defining Productivity: An Instrumental View

Technically, productivity is an economic concept referring to efficiency in producing valued goods and services. We use the terms *productive* and *productivity* metaphorically to mean efficiency in generating useful knowledge in conjunction with achieving valued goals within a practice-oriented field. Although only a working definition, we believe that considering productivity in this sense could initiate a needed dialogue about theory among literacy researchers. The premises we outlined earlier in this commentary and the proposals we offer in a subsequent section flesh out our ideas about productivity. In this section, we take a rudimentary step toward a more precise definition grounded in the philosophy of science.

Productivity as an Operational Construct of Instrumentalism

In the philosophy of science, there are ongoing, contentious theories about theories and the role of theorizing (see, e.g., Godfrey-Smith, 2003). Alternative theories about theory, and the debates that they inspire, primarily revolve around epistemological differences about what constitutes knowledge, truth, and justifiable belief, which are often manifested in allegiances to methodological approaches and research paradigms (Dillon, O'Brien, & Heilman, 2000). Cunningham and Fitzgerald (1996) discussed how this broad array of epistemological differences about theory might apply to literacy research, including instrumentalism, which we see as a logical foundation for the construct of productivity and well matched to the goals of a practice-oriented field. These and other similar sources point to the complex entanglements among views of science, conceptualizations of theory, and the methods used to conduct research, and thus to the potential utility of a single unifying construct.

Instrumentalism has its roots in American pragmatism as advanced by John Dewey. Although, as Sleeper (1986) argued, instrumentalism played a subordinate role in Dewey's larger philosophical frame of transactional

realism (see also Boyles, 2012), that frame included "an involvement that is causally efficacious" (p. 3). As Biesta and Burbules (2003) stated,

the central idea of Dewey's pragmatism [is] that knowing and acting are *necessarily* related...[and that] the (alleged) separation between theory as the domain where we acquire knowledge independent of our activities, and practice as the domain where we apply this knowledge, can no longer be sustained. (p. 86)

Further, they stated that, for Dewey, "the difference between theory and practice is only a functional and gradual distinction" (p. 87) and that "the point of knowledge is not to know more simply for the sake of knowing, but to be able to exert greater control over the problematic situations we find ourselves in" (pp. 97–98). In short, theorizing is inseparable from practice, and from an instrumental view, it is reasonable to consider how theory might productively influence, guide, and indeed, reflect practice. Instrumentalism implicitly privileges theory that can be applied *for* literacy and counters the historical separation in education research between research and practice (Lagemann, 2000).

Thus, productivity can be conceptualized as a related, but separate, construct that flows naturally from an instrumental view of theory associated with Dewey and other pragmatists. We are not proposing productivity as a new, alternative theory about theory, nor do we believe that it is necessary to do so. Instead, we see productivity as useful because it holds theorizing accountable to the underlying rationale of instrumentalism. Productivity makes the abstractness of instrumentalism concrete. It presses for operationalizing the benefits that instrumentalism suggests theorizing can serve in practice. For example, productivity implicitly asks, How can we productively frame our theories as instrumental to achieving the goals of a practice-oriented field dedicated to developing literacy? To what extent have we been successful in achieving specific goals, and are we being successful? What are reasonable indicators of progress or the lack thereof?

Further, productivity more explicitly suggests discussions about what exactly our goals are, why they are valued, and the degree to which we have consensual, or at least coherent, understandings about the endpoints of our theorizing. As Dillon and O'Brien (2019) stressed, pragmatism is much more than achieving what works; it entails an explicit consideration of what is desirable. Productivity, as a construct, highlights that issue more than instrumentalism alone. That is, producing many products efficiently, if those products have little value, is not productive. It is also in this sense that productivity allows space for theories *about* literacy. Theories *about* literacy may not always be fully productive in their own right, but they can help clarify values and identify factors that might efficiently instantiate them. Nonetheless, achieving, not simply identifying and clarifying, values is

1 the ultimate measure of theoretical productivity in a prac-
2 tice-oriented field.

3 A good example of this relation between theories
4 *about* and *for* literacy is the questioning of deficit models
5 of literacy grounded in sociocultural theories, such as
6 funds of knowledge (e.g., Moll, 1990; Moll & González,
7 2004) and cultural-historical activity theory (see, e.g.,
8 Gutiérrez, Morales, & Martínez, 2009), both of which are
9 theories *about* literacy and were imported from cultural
10 anthropology. Yet, these theories have immediate impli-
11 cations for shifts in pedagogical perspective and have
12 productively inspired research into how they can be
13 implemented in practice (see, e.g., Rodríguez, 2013).

14 **Productivity Mitigates Limitations** 15 **of Theorizing**

16 There are other advantages when productivity is linked to
17 instrumentalism as an expression of pragmatism. For
18 example, Dillon et al. (2000) argued that a pragmatic stance
19 defuses paradigmatic disputations that distract researchers
20 from conducting research that is “prone to making a differ-
21 ence in students’ learning and teachers’ pedagogy” (p. 25),
22 thus increasing productivity. Productivity might also miti-
23 gate two general limitations of theorizing. Phillips and
24 Burbules (2000) reported an experience that illustrates
25 these limitations. They asked two doctoral students, one a
26 Freudian and the other a behaviorist, to provide commen-
27 taries on a video about an autistic woman. Phillips and
28 Burbules found “an amazing disparity—[the students]
29 noticed quite different things (often ignoring events and
30 features that the other pointed to as being significant), and
31 of course they used quite different terminology to speak
32 about what they were seeing” (p. 16).

33 The example illustrates the limitation of theory-laden
34 perception (e.g., Hanson, 1958), where commitment to a
35 theory dictates what is noticed. Established or preferred
36 theories can limit, and delimit (cf. Mosenthal, 1984), what
37 data are observed, how they are interpreted, and even
38 what studies are conducted and how they are designed.
39 Theory-laden perception can distort understanding the
40 fullness of phenomena and may inhibit researchers from
41 generating new, potentially more useful theoretical per-
42 spectives. A strong, even unshakable, attachment to a
43 theory may set up a closed system in which the evidential
44 checks and balances that act as a self-corrective for inad-
45 equate, incomplete, or incorrect theories are suppressed.
46 Productivity may help researchers resist becoming uncriti-
47 cal devotees of attractive theories. Instead, they would
48 become more open-minded problem solvers seeking theo-
49 ries that demonstrably move the field forward, ulti-
50 mately enhancing practice toward achieving valued goals.

51 A second limitation is incommensurability (e.g.,
52 Feyerabend, 1970; Hacking, 2012; Kuhn, 1962), illustrated
53 in the example when students used different discourses to
54
55

describe what they saw. Using incommensurate terms and
language inhibits potentially productive interactions
among researchers using diverse theories and perspec-
tives. That limitation is amplified when there is a broad
palette of theories from which to choose. In the extreme,
an entire field may become balkanized and separated into
thought collectives (Parsons et al., 2016), thus restraining
productivity. In that vein, Calfee (2014) characterized the
field as “like the Tower of Babel, [where] the inhabitants
speak different languages and communication can be a
challenge” (p. 9). Considering the productivity of theory
and theorizing might mitigate such incoherency, encour-
aging researchers to build bridges across their differing
terminologies, discourses, and disciplinary perspectives
(see Almasi, 2016).

Proposals for More Productive Theorizing

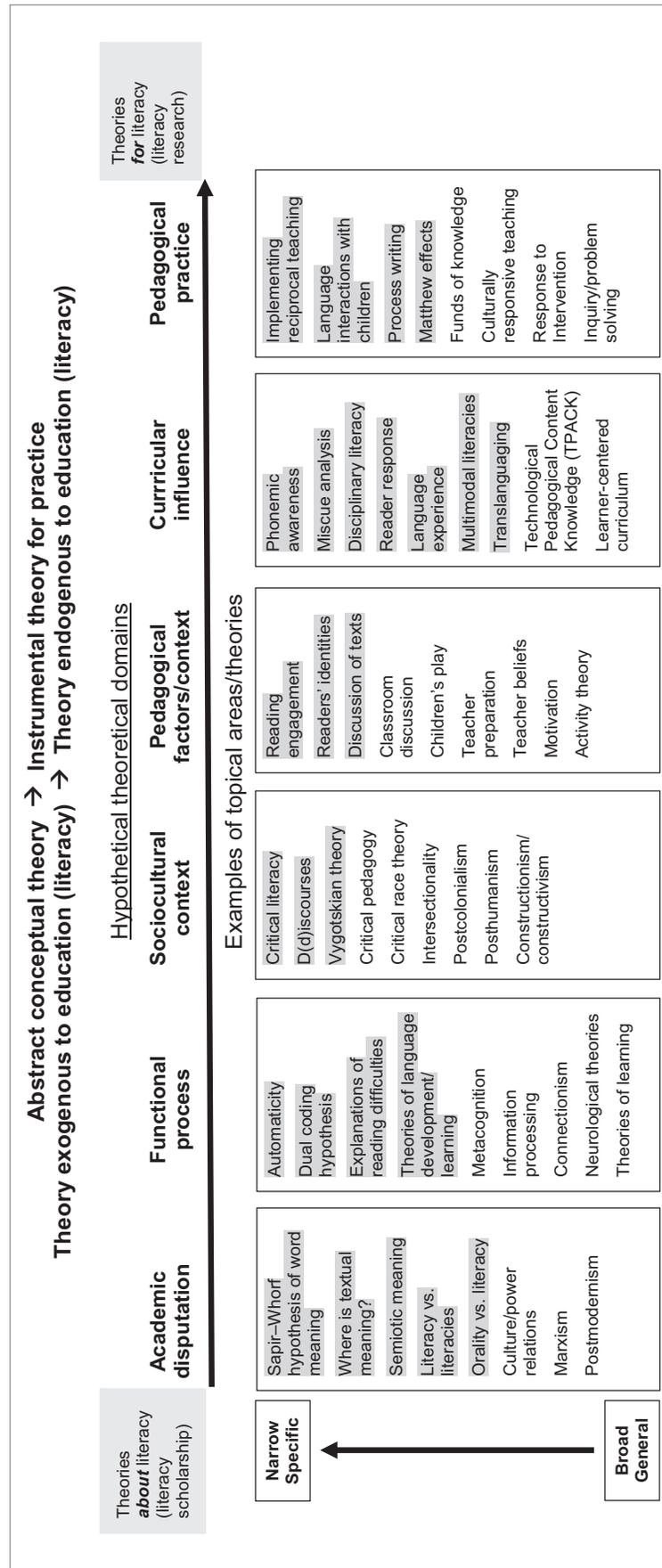
Guided by the issues raised in the previous sections, we
propose several ways that theorizing in literacy research
might be more productive. We offer the following propo-
sals, not prescriptively but to initiate conversations that
might lead to more productive theorizing.

Conceptualize Theorizing on a Continuum Between Theories About Literacy (Literacy Scholarship) and Theories for Literacy (Literacy Research)

Figure 1 is a purely illustrative continuum that helped us
clarify our thinking and that might be useful for initiating
discussions about the role of theory and productive theo-
rizing in the field. The figure has several hypothetical ele-
ments related to issues raised in this commentary. The
main element is conceptualizing theories on a continuum
from theories *about* literacy to *for* literacy. We then added
hypothetical categories along that continuum to illustrate
that as theorizing moves from *about* to *for* literacy, theories
become less abstract and more instrumental to informing
practice. These categories also illustrate comparable move-
ment from theories that are exogenous to education and
literacy to those that are endogenous. Finally, we created a
vertical continuum from broad, general theories to narrow,
specific theories, highlighting the latter that are more
directly related to literacy research. In general, then, theo-
ries that fall naturally (or can be moved, as we discuss in
the subsequent section) toward the upper right area of
Figure 1 are more productive in a practice-oriented field.

The specific examples of topical areas of theory or spe-
cific theories offered within the boxed areas are decidedly
idiosyncratic to our own knowledge and experience.

FIGURE 1
Conceptualizing Theoretical Productivity in Literacy Research on a Continuum With Hypothetical Components, Domains, and Examples



Note. Shaded examples more directly relate to language and/or literacy.

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1 Further, trying to create the categories along the *about/for*
2 axis and choosing and placing examples was not easy or
3 completely satisfactory. We did not completely agree with
4 each other or with our own respective placements during
5 sequential attempts to refine Figure 1. There was much
6 room for equivocation and debate. Yet, our increasing
7 frustration gradually gave way to the realization that pre-
8 cisely establishing categories and placements within a con-
9 tinuum of productivity was less important than the
10 reflective discussion that it provoked.

11 Thus, we believe that Figure 1 might serve as a useful
12 heuristic for generating needed discussions about the role
13 of theorizing in the field in general and productive theory
14 in particular. For example, it might be critiqued in a doc-
15 toral seminar on theory where participants could challenge
16 the continua, categories, and topics/examples, perhaps
17 substituting their own examples or creating an entirely dif-
18 ferent approach to conceptualizing productivity.

21 **Shift Theories and Theorizing to the** 22 **Practice End of the Continuum**

23 Beyond its acknowledged limitations, the continuum in
24 Figure 1 might also promote thinking about how theoriz-
25 ing could become more productive by (a) moving
26 abstract, conceptual, exogenous theories further toward
27 the upper right area of the continuum and (b) increasing
28 theories and theorizing that exist or evolve naturally in
29 that area. An example of the former is social constructiv-
30 ism, which we placed hypothetically near the midpoint of
31 Figure 1. However, Au's (1998) application of social con-
32 structivism to the literacy development of students from
33 diverse backgrounds moved the general theory more spe-
34 cifically toward literacy practice. That movement is con-
35 sistent with the concept of methodological alignment
36 (Hoadley, 2004) and the examples provided in previous
37 sections (Brown, 1992; González et al., 2005; Heath, 1983;
38 Lee, 2013; Rosenblatt, 1994; Samuels, 1979). Such move-
39 ment is consistent with what Lagemann (2008) termed
40 *translational research*, which she argued is best done by
41 education researchers.

42 Considering movement on the continuum also opens
43 up the possibility of acknowledging, or arguing, that some
44 theories exist in a realm where they are unlikely to achieve
45 meaningful productivity—maybe a dead-end zone at the
46 extreme abstract end of the continuum. We created such a
47 category in Figure 1, which we labeled less colloquially as
48 academic disputation. That is, some theories may inspire
49 interesting intellectual debates among academics but are
50 unlikely to be resolved or applied meaningfully and pro-
51 ductively to practice in the foreseeable future. Examples
52 might be neurological theories, which have been argued
53 to be a bridge too far to inform pedagogy (cf. Ansari,
54 Coch, & De Smedt, 2011; Bruer, 1997; Hruby & Goswami,
55 2011; Mayer, 2017); theoretical explanations of dyslexia,

especially if students so diagnosed benefit from the same
pedagogy as other readers having difficulties (see Elliott &
Grigorenko, 2014); and whether it is necessary to accept
postmodern views of the world before endeavoring to bet-
ter it through literacy (see the discussion of Rorty's post-
modern synthesis in Linn, 1996). As Willingham (2008)
stated astutely, "as one gets more distant from the desired
level of analysis (the child in the classroom), the probabili-
ty of learning anything useful diminishes" (p. 422).

Increasing Local, Humble Theorizing

Productivity can also be increased through generating,
assessing, and refining theory that originates in and speaks
directly to practice. Cobb, Confrey, diSessa, Lehrer, and
Schauble (2003) referred to such theories as humble or
local; "theories...are humble not merely in the sense that
they are concerned with domain-specific learning pro-
cesses, but also because they are accountable to [creating
workable instruction]" (p. 10). Such theories address the
inevitable variation and complex interacting influences and
outcomes operating in classrooms. Consequently, these
theories need little translation to be immediately useful to
practitioners and, thus, to be instrumentally productive.

In our own work (Bradley & Reinking, 2011; Colwell,
Hunt-Barron, & Reinking, 2013; Colwell & Reinking,
2016; Howell, Butler, & Reinking, 2017; Reinking &
Watkins, 2000; Scott-Weich & Yaden, 2017; Yaden, Gort,
Martinez, & Rueda, 2019; Yaden et al., 2015), we engaged
in such theorizing as we worked with teachers to imple-
ment various instructional interventions in their class-
rooms. We ground our work in general perspectives such
as disciplinary literacy, new literacies, and multimodal
literacies, which justify the pedagogical goals we seek and
provide a broad frame for an intervention. Yet, as we col-
lect data to determine what enhances or inhibits progress
toward our goal and how consequent modifications of the
intervention play out, we are able to adduce assertions or
conjectures (Sandoval, 2004) that can evolve into peda-
gogical theories that may be extended, refined, or replaced
in subsequent research in other contexts.

However, theories that are directly relevant to peda-
gogy are not necessarily local or humble. A prominent
example is Ladson-Billings's (1995) pedagogical theory of
culturally responsive teaching. Its scope was writ large yet
with immediate implications for practice. Further, the
theory inspired a wide range of investigations of how it
could be productively implemented in classrooms,
including several prominent studies in the area of literacy
(see Morrison, Robbins, & Rose, 2008).

Acknowledge Ignorance and Failure as **Productive Elements of Theorizing**

Strong arguments have been made that ignorance and
failure propel systematic efforts to understand, predict,

and enable phenomena (Feyerabend, 2010; Firestein, 2012, 2016; Stokes, 1997). In engineering science, investigating failure is often an essential, and therefore planned, component of creating workable solutions and furthering understanding (e.g., wind tunnels identify the conditions that can cause an airplane wing to fail; see Petroski, 2012). In practice-oriented fields such as education, failure need not be created or induced, as it is inevitable (Bryk, Gomez, Grunow, & LeMahieu, 2015). Studying failure can generate useful pedagogical theories about when and why failure occurs, and ignoring it undermines productivity. As Walker (2006; see also Bryk et al., 2015) argued, “every form of practice degrades under severe conditions. We need [pedagogical theories that allow practice to] degrade gracefully rather than catastrophically” (pp. 12–13). Likewise, Wagner (1993) argued that education research and theorizing are more appropriately viewed as reducing ignorance rather than finding a truth that negates failure.

Focusing on failure in practice inherently means acknowledging ignorance about how to address it. Thus, we propose moving theorizing into the realm of failure and ignorance about practice, a realm that is virtually an empty set in the field’s literature, although there are tacit examples. Samuels (1981) and Hoffman and Rutherford (1984) identified factors associated with unexpectedly high reading achievement in disadvantaged schools. Payne (2008) documented the consistent failure of education reforms introduced in urban schools, synthesizing factors common to those few that succeeded. In our own work (Colwell et al., 2013), we reported reasons for why a pedagogical intervention was less than successful. However, these studies only marginally, or indirectly, attended to failure.

Acknowledging and studying failure may expand productive theorizing beyond effectiveness to include factors such as efficiency (e.g., affordability, time constraints) and appeal (are teachers invested in and do students like an intervention, and why?; see Reigeluth & Frick, 1999). This might productively distinguish operational (i.e., instructional method) and structural factors (e.g., curricula, financial exigencies, teacher training, inservice opportunities) that may enhance or inhibit success (Pressley et al., 2006). It might also generate productive theories from phenomenological data (see Roth, 2009) exploring, for example, what aspects of practitioners’ professional, personal, and cultural experiences make it more, or less, likely that they will embrace or resist promising interventions or perspectives.

Expect Theorizing to Go Beyond Identifying a Researcher’s Perspective or Justifying a Line of Research

In our view, productive theorizing is more than identifying one’s perspective in conducting a research study or simply justifying a line of research. Further, we wonder if

theorizing can legitimately include simply making rhetorical arguments, as Dressman (2007) and Parsons et al. (2016) documented is often the case. Further, declaring allegiance to a particular perspective or justification in advance of designing studies and collecting data invites theory-laden perception, perhaps increasing the likelihood that researchers will find what they already presume to exist.

One example is new literacies, which is often referred to ambiguously as a theoretical perspective or emerging theory, notably in a lengthy edited volume (Coiro et al., 2008). The editors of that volume defined new literacy theory as a set of assertions, arguing that digital texts, especially on the internet, (a) require new skills, strategies, and dispositions; (b) are increasingly central to full civic and economic participation; (c) are rapidly changing and evolving; and (d) are multimodal and multifaceted. These assertions comprise a coherent rationale for conducting research that addresses a certain domain of questions and issues, and a researcher may reasonably signal agreement with them. These assertions might also be useful rhetorically to argue for more attention to the broad issues and challenges facing literacy educators that arise from forms of digital communication such as the internet (e.g., International Reading Association, 2009).

Yet, alone, these assertions do not represent a productive theory in the sense of predicting or explaining specific phenomena or directly informing pedagogy. It is one thing to establish that there are aspects of literacy meriting our attention. It is another to generate theories that help us understand them and inform us about how to deal with them pedagogically. For example, new literacies, in an expanded version, was offered as the theoretical perspective for a useful study convincingly reporting troubling differences between the online skills of readers from advantaged or disadvantaged schools (Leu et al., 2015). However, there was no theoretical connection that might account for those differences or what might be done to eliminate them.

A study by Lewis and Fabos (2005) illustrated how new literacies might be more productively combined with other theory. They used new literacies, along with literacy as social practice, as a general orientation and rationale for their study of adolescents’ views about and use of instant messaging. However, going beyond that orientation, Lewis and Fabos used identity theory as a more specific interpretive frame to productively understand their data. That is, their findings and interpretations expanded that theory productively into the domain of pedagogy by theorizing that adolescents saw instant messaging in school as intruding on their nonacademic social identities outside of school.

In contrast, if new literacies (perhaps also disciplinary literacy: see Hinchman & O’Brien, 2019; and translanguaging: see Wei, 2018) were presented as a perspective

1 instead of a theory, it might then be productively trans-
2 lated into new curricular goals and instructional activities.
3 In fact, there is evidence of movement in that direction.
4 For example, Coiro (2020) referred to new literacies as a
5 perspective, not a theory. Likewise, Leu, Kinzer, Coiro,
6 Castek, and Henry (2017) referred to new literacies as a
7 theory not only of literacy but also of instruction and
8 assessment and identified broad areas of skills and dispo-
9 sitions that need to be taught. Yet, to move fully into the
10 domain of productive theory, there needs to be theorizing
11 about how those curricular and instructional goals can be
12 achieved or what inhibits such efforts.

13 **Frame Theorizing as a Dialectic**

14 This proposal has two dimensions. First, it reinforces
15 Dressman's (2007) recommendation that theory should
16 serve as a dialectical scaffold, defined as a "persistent ten-
17 sion between the theory used and the data collected" (p.
18 347). In that sense, productive theorizing means taking a
19 more open, if not skeptical, stance where data can push
20 back against theory and where researchers are more will-
21 ing to see the limitations or inadequacies of their theories.
22 It means placing theory itself under investigation, partic-
23 ularly in regard to its practical utility, as we argue here. It
24 means a conscious effort to avoid the pitfalls of theory-
25 laden perception and incommensurability. Also, it means
26 engaging in dialogue with researchers to cross boundaries
27 of theory and method (see Almasi, 2016), acknowledging
28 common goals and committing to bridging differences
29 toward achieving them.

30 A second dimension is adopting Dewey's view that
31 knowledge and practice are inextricably linked along a
32 continuum, instead of conceptualizing knowledge as
33 being separate from practice where it is then applied
34 (Biesta & Burbules, 2003). It also means being aware and
35 respectful of practitioners' theories of practice and not
36 ascribing low status to those theories (Cochran-Smith &
37 Lytle, 1999; Harste & Burke, 1977). If a productive dialectic
38 about theory is to be opened up between researchers
39 and practitioners, we believe that researchers must attend
40 to and respect practitioners' theories of practice. A first
41 step might be to recognize that some theories in the field's
42 literature today, particularly those *about* rather than *for*
43 literacy and imported from other fields, are not, at least
44 not yet, conversation starters with practitioners. We
45 believe that considering productivity suggests that a use-
46 ful next step would be to consider how such theories
47 might be presented meaningfully to practitioners and
48 policymakers.

49 That is not to ignore that practitioners' theories of
50 practice may be wrong, unwarranted, ineffective, or mis-
51 guided. Productive theorizing also includes identifying
52 when theories of practice conflict with research data or
53 ignore useful perspectives *about* literacy, determining

54 how practitioners may be motivated to engage in more
55 enlightened pedagogy, and refining useful theories of
teacher change. It may also include developing respectful
ways to nudge practitioners further toward the more
abstract *about* literacy end of the continuum in Figure 1
or, as Biesta and Burbules (2003) argued, to get theory
meaningfully into the minds of educators.

56 **Other Avenues to 57 Productive Theorizing**

58 The previous proposals are only preliminary, and we hope
59 our colleagues will expand, extend, and debate them. In
60 this section, we provide a few other potential avenues
61 toward increasing productive theorizing that merit fur-
62 ther consideration. For example, some methodological
63 approaches are more accommodating of the productive
64 theorizing we envision. In addition to the phenomeno-
65 logical methods alluded to in a previous section, design-
66 based research (Cobb et al., 2003; McKenney & Reeves,
67 2012; Reinking & Bradley, 2008) is naturally aligned with
68 developing theories of practice. Such methods address
69 Pressley et al.'s (2006) argument that literacy researchers
70 should attend more to understanding the processes, not
71 just the outcomes, of classroom interventions.

72 Another possibility is deemphasizing a priori theories
73 in framing research, which may help avoid the risks of
74 investing uncritically in an established theory. Instead,
75 researchers could focus on observed phenomena and
76 puzzling results and then theorize about possible causes,
77 which historically has been a more generative and pro-
78 ductive approach in the physical sciences (Firestein, 2012;
79 Stokes, 1997). In fact, Sloman and Fernbach (2017) found
80 that being exposed to causal explanations in advance
81 restricts consideration of a full range of explanations.
82 Further, they argued that causal thinking is less sophisti-
83 cated and less productive than diagnostic thinking, the
84 latter being more divergent, creative, and generative and
85 arguably more attuned to the goals of a practice-oriented
86 field.

87 A view of productive theory as instrumentally predic-
88 tive also suggests alternative ways of collecting, analyzing,
89 and interpreting data in relation to testing and refining
90 theory. For example, abduction, introduced by the phi-
91 losopher Peirce (see McKaughan, 2008), extended deduc-
92 tive and inductive reasoning into a less logic-bound
93 domain. In its simplest form, abduction is an educated
94 guess serving as a most likely explanation or as a prag-
95 matic rule of thumb (see Dillon et al., 2000). Successive
96 replications of a rule of thumb make guesses more edu-
97 cated. Such an approach aligns with Bayesian statistics, an
98 alternative to the frequentist approaches to quantitative
99 analysis employed in education research. In Bayesian sta-
100 tistics, an expanding array of objective and subjective data
101 is quantified and then accumulated across studies/cases

toward making increasingly accurate predictions. The potential of that approach was recognized in 2011, when the Institute of Education Sciences funded a three-year project to explore the use of Bayesian statistics in education research (Kaplan, 2011).

Can the Field Embrace Productive Theorizing?

We realize that the perspective we propose here may threaten the status quo. Theory, we believe, has been left comfortably unexamined, undifferentiated, and amorphous in the field's literature for many decades (Calfée, 2014). The only unwavering imperative is that all research in the field must be theoretical in some sense. Conveniently, there is a broad array of recognized theories across many disciplines from which to choose. Also convenient is that there has been little impetus to explicitly consider what exactly counts as theory, what purposes it serves in achieving the field's ultimate goals, and how it relates to methodological issues in collecting, analyzing, and interpreting data. In short, theory has existed too comfortably apart from any dedicated commitment to considering how it might be more, or less, productive in moving the field forward toward well-defined goals.

The status quo permits researchers to select theories that they find personally appealing and consistent with their interests, perspectives, and preferred research agendas. It does not hold researchers explicitly accountable for the productivity of their theorizing. Thus, some researchers may feel uncomfortable leaving a space where theory captures their passionate imaginings of a better future (Dressman, 2007), where it represents a stimulating intellectual perspective, or where it aligns them with like-minded researchers (Parsons et al., 2016). Yet, as we have argued, that comfortable space too often provides little explicit guidance for how theory might inform practice. In this commentary, we argued that explicitly considering theory as instrumentally productive in a practice-oriented field may mitigate these shortcomings and address the gap between research and practice.

We have no illusions about the difficulty of convincing our colleagues to make such a transformation in their approach to theory. In many cases, it will likely make their theorizing and research, at least initially, more burdensome, necessarily more nuanced, and less driven by personal beliefs. However, we wish to emphasize again that it does not mean abandoning theories *about* rather than *for* literacy or theories from other disciplines. It means, however, accepting that such theories cannot be isolated from the pragmatic needs of instructional practice, especially for those who claim to be literacy researchers doing research *for* literacy under the umbrella of education research. It means a commitment to translating theory

about literacy into terms that practitioners can understand, appreciate, and apply in their work. It means putting theories in harm's way to discover where they are inadequate or where they break down.

Our position does not require abandoning the intellectual stimulation of academic theorizing. From our own experience, we find that there is nothing more intellectually stimulating than trying to contemplate what does or does not work in practice and why. In fact, theory that exists too comfortably, or too firmly, in an individual's work may do just the opposite: create a stagnating, stifling, and ultimately unproductive posture.

There are encouraging signs that the time is ripe for reconceptualizing and thinking more critically about theory. For example, Snow (2015) bluntly stated that "the awful reputation [of education research] can be traced, at least in part, to its alarming fecklessness" (p. 461). She advocated for what she called practice-embedded education research (see also Coburn & Penuel, 2016), in which the role of theory and research become more aligned with practice-oriented fields such as medicine, agriculture, and highway safety. Further, the Institute of Education Sciences in the U.S. Department of Education now includes both technical and practice reviewers on panels for grant funding (Feuer et al., 2016). In a newsletter, Schneider (2019), the director of the institute, stated, "I want to emphasize how we are focusing on the mission of IES [Institute of Education Sciences] as an *applied research agency*" (para. 3). As these sources suggest, the issues we highlight here are clearly broader than literacy research, applying to education research in general. Yet, they also create an opportunity for literacy researchers to lead the way for colleagues in related disciplines and fields of education.

More productive theorizing is unlikely to occur without dedicated action that values and nurtures it, beginning with the development of doctoral students and new scholars. The next generation of researchers needs more than methodological expertise and a menu of potential theories from which to claim their own. They need a clear understanding of a practice-oriented field's ultimate goals and how research and theory may productively serve those goals. They need an abiding commitment to bridging the chasm separating theory/research and practice. They need permission to draw on their craft knowledge, often derived from their own experiences as classroom teachers. Also, they need opportunities to critique theories and studies along the dimensions of productivity highlighted in this commentary, most appropriately in courses and seminars focusing on theory in literacy research. Proposal and dissertation defense committees should expect doctoral candidates to explain specifically not only what theory or theories they are drawing on but also questions regarding in what sense their theory is productive, how their line of research connects to practice, and so forth.

Likewise, editors and reviewers need to hold researchers accountable for how the theories that anchor their work productively serve the goals of a practice-oriented field. Researchers should explicitly state and justify how theory is positioned conceptually in relation to the research conducted and reported. Is theory used to explain phenomena, predict outcomes, reveal unknown or neglected aspects of literacy, inform pedagogy, express or argue an ideological position, provide a rationale for a study, or other purposes? More importantly, researchers should connect theory to research designs and to how data are collected, analyzed, and interpreted, ideally with a commitment to allowing data to push back against the theory.

Further, there should be a heightened expectation that research reports include a section on educational or instructional implications. Publications committees in our professional organizations and editors of journals should consider how to involve successful, experienced, and knowledgeable practitioners in the peer review of research reports. When theories are imported into literacy research from other fields, the use and application of those theories should be reviewed by experts in the field of origin, or alternatively such experts should be included as coauthors with the literacy researchers.

We also need authoritative sources in the field that clearly state the role of theory and theorizing. More nuanced definitions of theory are needed with clarification of hybrid terms such as *theoretical framework*, *theoretical perspective*, *emerging theory*, and *theoretical model*. We need to move beyond accepting any theory or theorizing as unquestionably appropriate or adequate simply because it exists in the literature. We need to disabuse ourselves of the notion that we are all free agents in selecting theories based solely on personal preference, intellectual appeal, or connecting us to like-minded colleagues. Also, we must hold one another accountable for explaining how our theories serve the ultimate goals of a practice-oriented field.

Finally, we need to ask, and if necessary challenge, all members of the literacy research community to address the questions and issues about theory that a consideration of productive theorizing raises. To accept the status quo is to ignore the empirical findings suggesting that theory has been problematic in the field's research literature and to cavalierly dismiss the long-lamented gap between theory/research and practice. Accepting the status quo risks allowing theorizing, as Dressman (2007) cautioned, to become an intellectual parlor game that is "a performance that matters mostly as a display of intellectual and cultural capital *within the game itself* and not the field as a whole or the broader audience of practitioners and policy makers it purports to serve" (p. 349). Although he was optimistic that theory would evolve beyond such shallow

purposes, we find little evidence that it has, now more than a decade later. Arguably, theorizing for its own sake may have become even more entrenched. Considering the productivity of the field's theorizing is one way to reverse that trend.

NOTES

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REFERENCES

- Almasi, J.F. (2016). Crossing boundaries in literacy research: Challenges and opportunities. *Literacy Research: Theory, Method, and Practice*, 65(1), 24–46. <https://doi.org/10.1177/2381336916661542>
- Alvermann, D.E., Unrau, N.J., Sailors, M., & Ruddell, R.B. (Eds.). (2019). *Theoretical models and processes of literacy* (7th ed.). New York, NY: Routledge.
- Anders, P.L., Yaden, D.B., Iddings, A.C., Katz, L., & Rogers, T. (2016). Improving theory in literacy research [Editorial]. *Journal of Literacy Research*, 48(1), 3–4. <https://doi.org/10.1177/1086296X16637169>
- Ansari, D., Coch, D., & De Smedt, B. (2011). Connecting education and cognitive neuroscience: Where will the journey take us? *Educational Philosophy and Theory*, 43(1), 37–42. <https://doi.org/10.1111/j.1469-5812.2010.00705.x>
- Au, K.H. (1998). Social constructivism and the school literacy learning of students of diverse backgrounds. *Journal of Literacy Research*, 30(2), 297–319. <https://doi.org/10.1080/10862969809548000>
- Baker, L., Dreher, M.J., & Guthrie, J.T. (Eds.). (2000). *Engaging young readers: Promoting achievement and motivation*. New York, NY: Guilford.
- Bateson, G. (1979). *Mind and nature: A necessary unity*. New York, NY: E.P. Dutton.
- Biesta, J.J., & Burbules, N.C. (2003). *Pragmatism and educational research*. Lanham, MD: Rowman & Littlefield.
- Boote, D.N., & Beile, P. (2005). Scholars before researchers: On the centrality of the dissertation literature review in research preparation. *Educational Researcher*, 34(6), 3–15.
- Box, G.E.P., & Draper, N.R. (1987). *Empirical model-building and response surfaces*. New York, NY: John Wiley & Sons.
- Boyles, D. (2012). Dewey, ecology, and education: Historical and contemporary debates over Dewey's naturalism and (transactional) realism. *Educational Theory*, 62(2), 143–161. <https://doi.org/10.1111/j.1741-5446.2012.00440.x>
- Bradley, B.A., & Reinking, D. (2011). A formative experiment to enhance teacher-child language interaction in a preschool classroom. *Journal of Early Childhood Literacy*, 11(3), 362–401. <https://doi.org/10.1177/1468798411410802>
- Brown, A.L. (1992). Design experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *Journal of the Learning Sciences*, 2(2), 141–178. https://doi.org/10.1207/s15327809jls0202_2
- Brown, A.L., Armbruster, B., & Baker, L. (1986). The role of metacognition in reading and studying. In J. Orasanu (Ed.), *Reading comprehension: From research to practice* (pp. 49–76). Hillsdale, NJ: Erlbaum.
- Bruer, J.T. (1997). Education and the brain: A bridge too far. *Educational Researcher*, 26(8), 4–16. <https://doi.org/10.3102/0013189X026008004>
- Bryk, A.S., Gomez, L.M., Grunow, I., & LeMahieu, P.G. (2015). *Learning to improve: How America's schools can get better at getting better*. Cambridge, MA: Harvard Education Press.

- Bulterman-Bos, J. (2008). Will a clinical approach make education research more relevant for practice? *Educational Researcher*, 37(7), 412–420. <https://doi.org/10.3102/0013189X08325555>
- Calfee, R.C. (2014). Introduction—knowledge, evidence, and faith: How the federal government used science to take over the public schools. In K.S. Goodman, R.C. Calfee, & Y.M. Goodman (Eds.), *Whose knowledge counts in government literacy policies? Why expertise matters* (pp. 1–17). New York, NY: Routledge.
- Chambers, J.L. (1992). *Empiricist research on teaching: A philosophical and practical critique of its scientific pretensions*. Dordrecht, The Netherlands: Kluwer.
- Chen, L.-C., Cheng, J.-C., & Chou, M.-J. (2016). Literacy development in preschool children: A whole language curriculum. *European Journal of Language Studies*, 3(1), 24–49.
- Cobb, P., Confrey, J., diSessa, A., Lehrer, R., & Schauble, L. (2003). Design experiments in educational research. *Educational Researcher*, 32(1), 9–13. <https://doi.org/10.3102/0013189X032001009>
- Coburn, C.E., & Penuel, W.R. (2016). Research–practice partnerships in education: Outcomes, dynamics, and open questions. *Educational Researcher*, 45(1), 48–54. <https://doi.org/10.3102/0013189X16631750>
- Cochran-Smith, M., & Lytle, S.L. (1999). Relationships of knowledge and practice: Teacher learning in communities. *Review of Research in Education*, 24, 249–305.
- Coiro, J. (2020). Toward a multifaceted heuristic of digital reading to inform assessment, research, practice, and policy. *Reading Research Quarterly*. Advance online publication. <https://doi.org/10.1002/rrq.302>
- Coiro, J., Knobel, M., Lankshear, C., & Leu, D.J. (2008). Central issues in new literacies and new literacies research. In J. Coiro, M. Knobel, C. Lankshear, & D.J. Leu (Eds.), *Handbook of research on new literacies* (pp. 1–21). New York, NY: Erlbaum.
- Colwell, J., Hunt-Barron, S., & Reinking, D. (2013). Obstacles to developing digital literacy on the internet in middle school science instruction. *Journal of Literacy Research*, 45(3), 295–324. <https://doi.org/10.1177/1086296X13493273>
- Colwell, J., & Reinking, D. (2016). A formative experiment to align middle-school history instruction with literacy goals. *Teachers College Record*, 118(12), 1–42.
- Cunningham, J.W., & Fitzgerald, J. (1996). Epistemology and reading. *Reading Research Quarterly*, 31(1), 36–60. <https://doi.org/10.1598/RRQ.31.1.3>
- De Beaugrande, R. (1981). Design criteria for process models in reading. *Reading Research Quarterly*, 16(2), 261–315. <https://doi.org/10.2307/747559>
- Dillon, D.R., & O'Brien, D.G. (2019). Pragmatism [not just] practicality as a theoretical framework. In D.E. Alvermann, N.J. Unrau, M. Sailors, & R.B. Ruddell (Eds.), *Theoretical models and processes of literacy* (7th ed., pp. 582–600). New York, NY: Routledge.
- Dillon, D.R., O'Brien, D.G., & Heilman, E.E. (2000). Literacy research in the next millennium: From paradigms to pragmatism and practicality. *Reading Research Quarterly*, 35(1), 10–26. <https://doi.org/10.1598/RRQ.35.1.2>
- Dressman, M. (2007). Theoretically framed: Argument and desire in the production of general knowledge about literacy. *Reading Research Quarterly*, 42(3), 332–363. <https://doi.org/10.1598/RRQ.42.3.1>
- Elliott, J.G., & Grigorenko, E.L. (2014). *The dyslexia debate*. New York, NY: Cambridge University Press.
- Feuer, M., Neild, R.C., Carr, P., McLaughlin, J., Brock, T., & Lesnick, J. (2016, April). *Meet the Institute of Learning Sciences leadership*. Session at the annual meeting of the American Educational Research Association, Washington, DC.
- Feyerabend, P.K. (1970). *Problems of empiricism*. Cambridge, UK: Cambridge University Press.
- Feyerabend, P.K. (2010). *Against method* (4th ed.). New York, NY: Verso.
- Firestein, S. (2012). *Ignorance: How it drives science*. Oxford, UK: Oxford University Press.
- Firestein, S. (2016). *Failure: Why science is a success*. Oxford, UK: Oxford University Press.
- Fleck, L. (1979). *Genesis and development of a scientific fact* (T.J. Trenn & R.K. Merton, Eds.; F. Bradley & T.J. Trenn, Trans.). Chicago, IL: University of Chicago Press.
- Godfrey-Smith, P. (2003). *Theory and reality*. Chicago, IL: University of Chicago Press.
- González, N., Moll, L.C., & Amanti, C. (2005). *Funds of knowledge: Theorizing practices in households, communities and classrooms*. New York, NY: Routledge.
- Goodman, K.S., Fries, P.H., & Strauss, S.L. (2016). *Reading—the grand illusion: How and why people make sense of print*. New York, NY: Routledge.
- Guthrie, J.T. (2004). Teaching for literacy engagement. *Journal of Literacy Research*, 36(1), 1–30. https://doi.org/10.1207/s15548430jr3601_2
- Gutiérrez, K.D., Morales, P.Z., & Martínez, D.C. (2009). Re-mediating literacy: Culture, cultural difference, and learning for students from nondominant communities. *Review of Educational Research*, 33(1), 212–245. <https://doi.org/10.3102/0091732X08328267>
- Hacking, I. (2012). Introductory essay. In T.S. Kuhn (Ed.), *The structure of scientific revolutions* (50th anniv. ed., pp. vii–xxxvii). Chicago, IL: University of Chicago Press.
- Hanson, N.R. (1958). *Patterns of discovery: An inquiry into the conceptual foundations of science*. Cambridge, UK: Cambridge University Press.
- Harste, J.C., & Burke, C.L. (1977). A new hypothesis for reading teacher research: Both the teaching and learning of reading is theoretically based. In P.D. Pearson (Ed.), *Reading: Theory, research and practice: Twenty-sixth yearbook of the National Reading Conference* (pp. 32–40). Clemson, SC: National Reading Conference.
- Heath, S.B. (1983). *Ways with words: Language, life, and work in communities and classrooms*. Cambridge, UK: Cambridge University Press.
- Hinchman, K.A., & O'Brien, D.G. (2019). Disciplinary literacy: From infusion to hybridity. *Journal of Literacy Research*, 51(4), 525–536. <https://doi.org/10.1177/1086296X19876986>
- Hoadley, C.M. (2004). Methodological alignment in design-based research. *Educational Psychologist*, 39(4), 203–212. https://doi.org/10.1207/s15326985ep3904_2
- Hoffman, J.V., & Rutherford, W.L. (1984). Effective reading programs: A critical review of outlier studies. *Reading Research Quarterly*, 20(1), 79–92. <https://doi.org/10.2307/747653>
- Horwich, P. (Ed.). (1993). *World changes: Thomas Kuhn and the nature of science*. Cambridge, MA: MIT Press.
- Hostetler, K. (2005). What is “good” education research? *Educational Researcher*, 34(6), 16–21. <https://doi.org/10.3102/0013189X03406016>
- Howell, E., Butler, T., & Reinking, D. (2017). Integrating multimodal arguments into high school writing instruction. *Journal of Literacy Research*, 49(2), 181–209. <https://doi.org/10.1177/1086296X17700456>
- Hruby, G.G., & Goswami, U. (2011). Neuroscience and reading: A review for reading education researchers. *Reading Research Quarterly*, 46(2), 156–172. <https://doi.org/10.1598/RRQ.46.2.4>
- International Reading Association. (2009). *New literacies and 21st-century technologies* [Position statement]. Newark, DE: Author. Retrieved from https://www.literacyworldwide.org/docs/default-source/where-we-stand/new-literacies-21st-century-position-statement.pdf?sfvrsn=ec4ea18e_6
- Kalantzis, M., Cope, B., & Cloonan, A. (2010). A multiliteracies perspective on the new literacies. In E.A. Baker (Ed.), *New literacies: Multiple perspectives on research and practice* (pp. 61–87). New York, NY: Guilford.
- Kaplan, D. (2011). *Bayesian inference for experimental and observational studies in education* (Institute of Education Sciences grant R305D110001). Retrieved from <https://ies.ed.gov/funding/grantsearch/details.asp?ID=1125>

- Kuhn, T. (1962). *The structure of scientific revolutions*. Chicago, IL: University of Chicago Press.
- Labaree, D.F. (2003). The peculiar problems of preparing educational researchers. *Educational Researcher*, 32(4), 13–22. <https://doi.org/10.3102/0013189X032004013>
- Labaree, D.F. (2004). *The trouble with ed schools*. New Haven, CT: Yale University Press.
- LaBerge, D., & Samuels, S.J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology*, 6(2), 293–323. [https://doi.org/10.1016/0010-0285\(74\)90015-2](https://doi.org/10.1016/0010-0285(74)90015-2)
- Ladson-Billings, G. (1995). But that's just good teaching! The case for culturally relevant pedagogy. *Theory Into Practice*, 34(3), 159–165. <https://doi.org/10.1080/00405849509543675>
- Lagemann, E.C. (2000). *An elusive science: The troubling history of education research*. Chicago, IL: University of Chicago Press.
- Lagemann, E.C. (2008). Comments on Bulterman-Bos: Education research as a distributed activity across universities. *Educational Researcher*, 37(7), 424–428. <https://doi.org/10.3102/0013189X08325558>
- Lee, C.D. (2013). Revisiting is October Brown Chinese? A cultural modeling activity system for understanding students. In D.E. Alvermann, N.J. Unrau, & R.B. Ruddell (Eds.), *Theoretical models and processes of reading* (6th ed., pp. 265–296). Newark, DE: International Reading Association.
- Leu, D.J., Forzani, E., Rhoads, C., Maykel, C., Kennedy, C., & Timbrell, N. (2015). The new literacies of online research and comprehension: Rethinking the reading achievement gap. *Reading Research Quarterly*, 50(1), 37–59. <https://doi.org/10.1002/rrq.85>
- Leu, D.J., Kinzer, C.K., Coiro, J., Castek, J., & Henry, L.A. (2017). New literacies: A dual-level theory of the changing nature of literacy, instruction, and assessment. *Journal of Education*, 197(2), 1–18. <https://doi.org/10.1177/002205741719700202>
- Lewis, C., & Fabos, B. (2005). Instant messaging, literacies, and social identities. *Reading Research Quarterly*, 40(4), 470–501. <https://doi.org/10.1598/RRQ.40.4.5>
- Lincoln, Y.S., Lynham, S.A., & Guba, E. (2018). Paradigmatic controversies, contradictions, and emerging confluences, revisited. In N.K. Denzin & Y.S. Lincoln (Eds.), *Sage handbook of qualitative research* (5th ed., pp. 108–150). Thousand Oaks, CA: Sage.
- Linn, R. (1996). *A teacher's introduction to postmodernism*. Urbana, IL: National Council of Teachers of English.
- MacSwan, J. (2017). A multilingual perspective on translanguaging. *American Educational Research Journal*, 54(1), 167–201. <https://doi.org/10.3102/0002831216683935>
- Mayer, R.E. (2017). How can brain research inform academic learning and instruction? *Educational Psychology Review*, 29, 835–846. <https://doi.org/10.1007/s10648-016-9391-1>
- Mazak, C.M. (2016). Introduction: Theorizing translanguaging in higher education. In C.M. Mazak & K.S. Carroll (Eds.), *Translanguaging in higher education: Beyond monolingual ideologies* (pp. 1–10). Bristol, UK: Channel.
- McKaughan, D.J. (2008). From ugly duckling to swan: C.S. Peirce, abduction, and the pursuit of scientific theories. *Transactions of the Charles S. Peirce Society*, 44(3), 446–468.
- McKenney, S., & Reeves, T.C. (2012). *Conducting educational design research*. New York, NY: Routledge.
- Moje, E.B. (2015). Doing and teaching disciplinary literacy with adolescent learners: A social and cultural enterprise. *Harvard Educational Review*, 85(2), 254–278. <https://doi.org/10.17763/0017-8055.85.2.254>
- Moll, L.C. (Ed.). (1990). *Vygotsky and education: Instructional implications and applications of sociohistorical psychology*. Cambridge, UK: Cambridge University Press.
- Moll, L.C., & González, N. (2004). Engaging life: A multicultural approach to education. In J. Banks & C.A.M. Banks (Eds.), *Handbook of research on multicultural education* (2nd ed., pp. 699–715). San Francisco, CA: Jossey-Bass.
- Morris, E. (2018). *The ashtray (or the man who denied reality)*. Chicago, IL: University of Chicago Press.
- Morrison, K.A., Robbins, H.H., & Rose, D.G. (2008). Operationalizing culturally relevant pedagogy: A synthesis of classroom-based research. *Equity & Excellence in Education*, 41(4), 433–452. <https://doi.org/10.1080/10665680802400006>
- Mosenthal, P. (1984). The problem of partial specification in translating reading research into practice. *The Elementary School Journal*, 85(2), 199–227. <https://doi.org/10.1086/461401>
- Palincsar, A.S., & Brown, A.L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction*, 1(2), 117–175. https://doi.org/10.1207/s1532690xc10102_1
- Parsons, S.A., Gallagher, M.A., & Team, George Mason Content Analysis (2016). A content analysis of nine literacy journals, 2009–2014. *Journal of Literacy Research*, 48(4), 476–502. <https://doi.org/10.1177/1086296X16680053>
- Payne, C.M. (2008). *So much reform, so little change: The persistence of failure in urban schools*. Cambridge, MA: Harvard University Press.
- Petroski, H. (2012). *To forgive design: Understanding failure*. Cambridge, MA: Harvard University Press.
- Phillips, D.C. (2009). A quixotic quest? Philosophical issues in assessing quality of education research. In P.M. Walters, A. Lareau, & S.H. Ranis (Eds.), *Education research on trial: Policy reform and the call for scientific rigor* (pp. 163–196). New York, NY: Routledge.
- Phillips, D.C., & Burbules, N.C. (2000). *Postpositivism and educational research*. Lanham, MD: Rowman & Littlefield.
- Popper, K.R. (1959). *The logic of scientific discovery*. London, UK: Hutchison.
- Pressley, M., Graham, S., & Harris, K. (2006). The state of educational intervention research as viewed through the lens of literacy intervention. *British Journal of Educational Psychology*, 76(1), 1–19. <https://doi.org/10.1348/000709905X66035>
- Ranis, S.H. (2009). Blending quality and utility: Lessons learned from education research debates. In P.M. Walters, A. Lareau, & S.H. Ranis (Eds.), *Education research on trial: Policy reform and the call for scientific rigor* (pp. 125–141). New York, NY: Routledge.
- Reigeluth, C.M., & Frick, T.W. (1999). Formative research: A methodology for creating and improving design theories. In C.M. Reigeluth (Ed.), *Instructional-design theories and models: Vol. 2. A new paradigm of instructional theory* (pp. 633–651). Mahwah, NJ: Erlbaum.
- Reinking, D., & Bradley, B.A. (2008). *On formative and design experiments: Approaches to language and literacy research*. New York, NY: Teachers College Press.
- Reinking, D., & Watkins, J. (2000). A formative experiment investigating the use of multimedia book reviews to increase elementary students' independent reading. *Reading Research Quarterly*, 35(3), 384–419. <https://doi.org/10.1598/RRQ.35.3.4>
- Richards, R.J., & Daston, L. (Eds.). (2016). *Kuhn's structure of scientific revolutions at fifty: Reflections on a science classic*. Chicago, IL: University of Chicago Press.
- Ridley, L. (1990). Enacting change in elementary school programs: Implementing a whole-language perspective. *The Reading Teacher*, 43(9), 640–646.
- Rodriguez, G.M. (2013). Power and agency in education: Exploring the pedagogical dimensions of funds of knowledge. *Review of Educational Research*, 37(1), 87–120. <https://doi.org/10.3102/0091732X12462686>
- Rosenblatt, L.M. (1968). *Literature as exploration* (Rev. ed.). New York, NY: Noble & Noble.
- Rosenblatt, L.M. (1994). The transactional theory of reading and writing. In R.B. Ruddell, M.R. Ruddell, & H. Singer (Eds.), *Theoretical models and processes of reading* (4th ed., pp. 1057–1092). Newark, DE: International Reading Association.
- Roth, W.M. (2009). Phenomenological and dialectical perspectives on the relation between the general and the particular. In K. Ercikan &

W.-M. Wolf (Eds.), *Generalizing from educational research: Beyond qualitative and quantitative polarization* (pp. 235–260). New York, NY: Routledge.

Rumelhart, D.E. (1977). Toward an interactive model of reading. In S. Dornic (Ed.), *Attention and performance VI* (pp. 503–531). Hillsdale, NJ: Erlbaum.

Rumelhart, D.E. (1985). Toward an interactive model of reading. In H. Singer & R.B. Ruddell (Eds.), *Theoretical models and processes of reading* (3rd ed., pp. 722–750). Newark, DE: International Reading Association.

Samuels, S.J. (1979). The method of repeated readings. *The Reading Teacher*, 32(4), 403–408.

Samuels, S.J. (1981). Characteristics of exemplary reading programs. In J.T. Guthrie (Ed.), *Comprehension and teaching: Research reviews* (pp. 255–273). Newark, DE: International Reading Association.

Sandoval, W.A. (2004). Developing learning theory by refining conjectures embodied in educational designs. *Educational Psychologist*, 39(4), 213–223. https://doi.org/10.1207/s15326985ep3904_3

Schneider, M. (2019, April). *First year accomplishments* [Institute of Education Sciences director's remarks]. Retrieved from <https://ies.ed.gov/director/remarks/4-23-2019.asp#>

Scott-Weich, B., & Yaden, D.B., Jr. (2017). Scaffolded writing and early literacy development with children who are deaf: A case study. *Early Child Development and Care*, 187(3/4), 418–435. <https://doi.org/10.1080/03004430.2016.1246446>

Sleeper, R.W. (1986). *The necessity of pragmatism: John Dewey's conception of philosophy*. New Haven, CT: Yale University Press.

Slooman, S., & Fernbach, F. (2017). *The knowledge illusion: Why we never think alone*. New York, NY: Riverhead.

Smagorinsky, P. (2011). *Vygotsky and literacy research: A methodological framework*. Amsterdam, The Netherlands: Sense.

Snow, C.E. (2015). Rigor and realism: Doing educational science in the real world. *Educational Researcher*, 44(9), 460–466. <https://doi.org/10.3102/0013189X15619166>

Stokes, D.E. (1997). *Pasteur's quadrant: Basic science and technological innovation*. Washington, DC: Brookings Institution Press.

Suppes, P. (1974). The place of theory in educational research. *Educational Researcher*, 3(6), 3–10. <https://doi.org/10.3102/0013189X003006003>

Thomas, G. (1997). What's the use of theory? *Harvard Educational Review*, 67(1), 75–105. <https://doi.org/10.17763/haer.67.1.1x807532771w5u48>

Tracey, D.H., & Morrow, L.M. (2017). *Lenses on reading: An introduction to theories and models* (3rs ed.). New York, NY: Guilford.

Trimbur, J. (2013). *The call to write* (6th ed.). Boston, MA: Cengage.

Unrau, N.J., Alvermann, D.E., & Sailors, M. (2019). Literacies and their investigation through theories and models. In D.E. Alvermann, N.J.

Unrau, M. Sailors, & R.B. Ruddell (Eds.), *Theoretical models and processes of literacy* (7th ed., pp. 3–34). New York, NY: Routledge.

Wagner, J. (1993). Ignorance in educational research or, how can you not know that? *Educational Researcher*, 22(5), 15–23. <https://doi.org/10.3102/0013189X022005015>

Walker, D. (2006). Toward productive design studies. In J. van den Akker, K. Gravemeijer, S. McKenny, & N. Nieveen (Eds.), *Educational design research* (pp. 8–13). New York, NY: Routledge.

Wei, L. (2018). Translanguaging as a practical theory of language. *Applied Linguistics*, 39(1), 9–30. <https://doi.org/10.1093/applin/amx039>

Willingham, D. (2008). When and how neuroscience applies to education. *Phi Delta Kappan*, 89(6), 421–423. <https://doi.org/10.1177/003172170808900607>

Yaden, D.B. (2017, June). *Reintroducing Marxist thought back into new literacy theorizing*. Paper presented at the 47th annual meeting of the Jean Piaget Society, San Francisco, CA.

Yaden, D.B., Jr., Gort, M., Martinez, C., & Rueda, R. (2019). The education of young emergent bilingual children: An update and call for action. In O. Saracho (Ed.), *Handbook for research on the education of young children* (4th ed., pp. 234–253). New York, NY: Routledge.

Yaden, D.B., Jr., Rueda, R., Tardibuono, J., Martinez-Yaden, C., Mirzaei, A., Scott-Weich, B., & Tsai, T. (2015). Interviewing young children using psycho- and micro-genetic design methodology to assess understandings of reading and writing: The promise and challenge. In O. Saracho (Ed.), *Handbook of research methods in early childhood education: Review of research methodologies* (Vol. 2, pp. 309–348). Charlotte, NC: Information Age.

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