

Facing a Fundamental Problem in Prevention Science: the Measurement of a Key Construct

J. Mark Eddy¹

Published online: 13 January 2017
© Society for Prevention Research 2017

Abstract While many attempts have been made to measure various aspects of parenting within a variety of theoretical frameworks, there remains much work to do on the development of reliable and valid measures. Common themes across the papers included in a special issue on the measurement of parenting are discussed. Parenting constructs are a vital part of the work of prevention scientists, and more support is needed for researchers to engage in measurement development. Fortunately, there are some bright spots in this regard today, such as the Common Fund Science of Behavior Change Program sponsored by the National Institutes of Health.

Keywords Parenting · Measurement · Reliability · Validity

The perceived influence, or lack thereof, of parents on their children has been an ongoing and intertwined concern of theologians, philosophers, dramatists, politicians, and the public in numerous cultures across the centuries, particularly in relation to delinquency and crime (Eddy and Swanson Gribbskov 1998). Given this, it is no surprise that when more “scientific” versions of the academic disciplines that constitute prevention science in the USA arose over a century ago, theorists and researchers joined the parenting fray and have yet to depart. Our societal preoccupation with this topic has likely been driven by the fact that parenting is something that is both experienced in one way or another by each of us and practiced

in one way or another by most of us. It is one of our most intimate, yet most public, experiences. In turn, it is one of the few areas of life where family, friends, and strangers alike feel free to editorialize to those who will listen, as well as to those who will not, on what is wrong with a given approach to parenting, let alone a given parent. All and all, parenting is probably one of the most multilayered and complicated topics we take on in prevention science. If ever there were a construct in need of reliable and valid measurement, it is parenting.

The measurement of the construct of parenting is particularly apropos for prevention science. Unlike some constructs, which are recognized to have an academic home within a particular discipline, theoretical and practical work on parenting has occurred within a wide variety of disciplines, and, at times, has even been multidisciplinary. Work on parenting has been influenced by numerous theorists—from Freud, Skinner, and Ainsworth, to Baumrind, Bronfenbrenner, and Patterson to name but a few—each of whom took a different approach to the examination of parent and child relationships. The populations, settings, and methods employed over the years when parenting has been examined have varied greatly, and undoubtedly have led to different points of view on what is, and what is not, fundamentally important about parenting. As noted by Lindhiem and Shaffer (2017), one result is that researchers have developed a plethora of measurement techniques, including observational coding systems, interviews, and questionnaires that focus on one aspect or another of what parents do, think, and/or feel relative to their social interactions with their children.

With theories in one hand and measurement techniques in the other, the prevention scientists of today are seemingly well poised to examine parenting constructs from a wide variety of perspectives within a wide variety of research designs. Unfortunately, this is not the case. Specificity about parenting constructs and their relationship to other constructs in many

✉ J. Mark Eddy
mark.eddy@nyu.edu

¹ Family Translational Research Group, Department of Cariology and Comprehensive Care, College of Dentistry, New York University, 137 E. 25th Street, New York, NY 10010, USA

theories remains vague. In some theories, hypothesized mechanisms of influence are either unclear or are untestable, at least with current technology. More importantly, however, little is known about most measures of parenting except for some index of their reliability. Validity information of any type is rare. Answers to other key questions, such as whether or not a measure is sensitive to change, are also unknown for most measures. In short, there remain numerous challenges in need of addressing related to the measurement of parenting constructs.

In this special issue of *Prevention Science*, several prominent groups of prevention scientists chose to tackle one or another measurement challenge in regards to parenting and present their findings in concert. Such a collective effort around the measurement of a key construct is most welcome. Few prevention science research teams focus on measurement topics in large part because the funding available to support measurement development and refinement is quite limited. Simply put, measurement does not have the “cutting edge,” novel feel of other topics in prevention science, and thus tends to draw little enthusiasm from either peers or funders. Conducting such work in addition to, and in the midst of, the projects that are of interest takes creativity and effort, and there is only so much of both to go around in a given day, week, or academic year. This point of view does put prevention science at odds with other fields, in which resolving measurement issues is not only highly valued but is viewed as the key to progress. Slighting measurement does not bode well for our future as a field.

Fortunately, measurement is gaining attention as of late in more places than on the pages of this special issue. The most prominent example is the recent federal Common Fund Science of Behavior Change Program (<https://commonfund.nih.gov/behaviorchange/index>), which involves eight institutes within the National Institutes of Health. Cooperative agreements are supporting the work of multiple research groups throughout the USA to implement an experimental medicine approach to behavior change research. One of the initial tasks in the program is the development of valid and reliable measures of three classes of behavior change targets—self-regulation, stress reactivity and stress resilience, and interpersonal and social processes, including parenting. Hopefully, this is the beginning of a new trend for both public and private funders, and a plethora of measurement work will follow. The value of prevention science to the peoples of the future depends on such investments today.

The range of possibilities on which investments might focus is highlighted by their inclusion, or lack thereof, in this set of papers. Like most studies that are concerned with parenting and “externalizing” child behaviors, this collection of papers centers on parenting during early childhood to early adolescence, and focuses primarily on behaviors (including emotional expression) exhibited by parents on a moment-to-

moment basis during parent–child interactions. This particular aspect of parenting, which as Lindhiem and Shaffer (2017) note is just one of many aspects, was a primary focus of Patterson and colleagues (e.g., Patterson et al. 1975). Years of experimental and clinical work led to the development of the Coercion Theory (Patterson 1982), which over the years has inspired studies within prevention science and elsewhere that have significantly increased our understanding of how externalizing behaviors are shaped, maintained, and extinguished across development (cf. Dishion and Snyder 2016). Similar work on other aspects of parenting might prove to be equally as fruitful.

At their core, the measurement techniques typically used to assess this aspect of parenting can be classified along three dimensions, with one continuous axis representing the time period an observer is asked to report on (i.e., from the present to sometime in the past), another continuous axis representing the number of occasions an observer is asked to consider (i.e., from one parent–child interaction to many parent–child interactions), and one nominal axis representing who the observer is (i.e., self or other, with a variety of possible “others”). However, other important dimensions can exist as well. A fourth dimension of interest present in these papers involves how the information flow from parent and child to observer is directed, most notably through the degree of structure provided by the researcher during an interview or a task (e.g., the analogue tasks used by Fleming et al. 2017), and how and by whom this information is encoded. These four dimensions were combined in this set of papers into two major (and common) approaches. The first focused on one parent–child interaction in the present, as seen by independent adults who were trained and supervised to use a “micro” and/or “macro” coding scheme. The second focused on many parent–child interactions, from the past to the present, as seen and summarized by the parent, who did so through either filling out a questionnaire or completing an interview with a trained research assistant. Typically, these approaches are correlated positively and weakly with each other (e.g., $r = 0.04$ to 0.12 ; O’Dor et al. 2017), whereas different versions within each approach are correlated positively and moderately (e.g., $r = 0.31$ to 0.63 ; O’Dor et al. 2017).

Importantly, however, and as discussed in a number of papers in the special issue, the measurement approach used reflects only one set of decisions that may impact conclusions regarding the parenting construct of interest and its relation with other dependent or independent variables. A second set, discussed by Shaffer et al. (2017) and Chen et al. (2017), is how the information collected is summarized into a final score that will be used in analyses. Examples of this include whether or not a behavior ever occurred, how often it occurred relative to time (referred to in these papers as “frequency”), or how often it occurred relative to how often other behaviors of interest occurred (referred to in these papers as “proportion”). A

third set is whether to consider the behavior of a parent as an individual (e.g., a parenting score that considers only certain behaviors emitted by a parent) or as part of a parent–child dyad (i.e., a dyadic score that considers how long certain types of behaviors of interest are emitted in a sequence, back and forth, between parent and child). Two of the six groups of researchers took some version of a dyadic approach here (i.e., Dishion et al. 2017; Fleming et al. 2017), considering “parenting” as a property of the dyad, rather than as a trait of an individual parent that transcends specific dyads. This particular frame is one that various fields have been discussing for years (e.g., in psychiatry in relation to the diagnosis of interactional versus individual problems; Beach et al. 2006), and is very much in need of further study. Finally, a fourth set is the analytic approach taken, and the myriad of considerations related to such, including those noted by Chen et al. (2017) and Zheng et al. (2017). The decisions that a particular researcher makes in each of these areas are likely to influence what is found in a given study. What parenting “is” may be in the eye of the beholder, but there are many such eyes to consider when interpreting a given finding.

What might perhaps be most important in this set of papers is the consideration of issues in the measurement of parenting that are relevant to the testing of preventive interventions, an enterprise which serves as the heart of the prevention research cycle (Mrazek and Haggerty 1994) and that has been central to the development of prevention science. Chief among these is examining some aspect of the predictive validity of parenting measures in relation to key intervention outcomes (e.g., child behavior), which each of these papers addresses. Other key issues include whether a given parenting measure is sensitive to change (e.g., Dishion et al. 2017; Shaffer et al. 2017) and whether a measure provides incremental predictive information over and above other parenting measures (e.g., O’Dor et al. 2017). Discovering which parenting measures are not only reliable, but also valid and sensitive to change, and within which subpopulations, is critical to the future development of the field.

During the week of writing this commentary, I spent most of Monday in two parenting classes for incarcerated men and women. These 40 parents had a total of 103 children, and several were currently expecting, including a few mothers who were pregnant and who would deliver while in prison. It is likely that many of these fathers and mothers began to exhibit externalizing behaviors at some point during their childhood or adolescence. If they, their parents, their teachers, and the other key adults in their lives had access to effective preventive interventions at that time, or better yet, prior to that time, they might have desisted from such behaviors and not been in prison today. At the end of the men’s class, a father came up to me and started to talk about his childhood. He said that his dad had been in prison when he was a child, and that he used to say to himself that when he became a father, he

would not be in that same situation. Yet here he was, apart from his sons and daughters and behind razor wire, on a warm summer’s evening when he wished he could be outside playing together with his children at a park.

Imprisonment, immigration, migration, war—these old, but seemingly “new” issues—are some of the many reasons that families living in the USA are separated and stressed today. Hopefully, as the measurement of the key construct of parenting matures, the field at large can take on how to conceptualize and encourage effective parenting under contexts that span out from the idea that parenting is the exclusive domain of parents at home with their children. The fortunate have this opportunity, but there are many in less fortunate situations. Measurement is how we tell the stories of the people who we have been given the privilege to work with as prevention scientists. Let us, as a field, honor each of their stories by telling them in the most reliable and valid way possible. I am thankful to the researchers who contributed to this special issue and their attempts to do just this.

Compliance with Ethical Standards

Funding This study was supported by the National Institutes of Health (NIH) Common Fund Science of Behavior Change Program through an award by the National Institute of Dental and Craniofacial Research 1UH2DE025980.

Conflicts of Interest The author declares that he has no conflict of interest.

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed Consent Because this article is a commentary, informed consent is not applicable.

References

- Beach, S. R. H., Wamboldt, M. Z., Kaslow, N. J., Heyman, R. J., First, M. B., Underwood, L. G., & Reiss, D. (Eds.). (2006). *Relational processes and DSM-V: Neuroscience, assessment, prevention, and treatment*. Arlington: American Psychiatric Publishing.
- Chen, K., Cheng, Y., Berkout, O., & Lindhiem, O. (2017). Analyzing proportion scores as outcomes for prevention trials: A statistical primer. *Prevention Science*. doi:10.1007/s11121-016-0643-6.
- Dishion, T. J., & Snyder, J. J. (Eds.). (2016). *The Oxford handbook of coercive relationship dynamics*. New York, NY: Oxford University Press.
- Dishion, T. J., Mun, C. J., Tein, J., Kim, H., Shaw, D. S., Gardner, F., . . . Peterson, J. (2017). The validation of macro and micro observations of parent–child dynamics using the relationship affect coding system in early childhood. *Prevention Science*.
- Eddy, J. M., & Swanson Gribskov, L. (1998). Juvenile justice and delinquency prevention in the United States: The influence of theories and traditions on policies and practices. In T. P. Gullota, G. R.

- Adams, & R. Montemayer (Eds.), *Delinquent violent youth: Theory and interventions* (pp. 12–52). Thousand Oaks: SAGE Publications.
- Fleming, A. P., McMahon, R. J., & King, K. M. (2017). Structured parent–child observations predict development of conduct problems: The importance of parental negative attention in child-directed play. *Prevention Science*. doi:[10.1007/s11121-016-0672-1](https://doi.org/10.1007/s11121-016-0672-1).
- Lindhiem, O., & Shaffer, A. (2017). Introduction to the special series: Current directions for measuring parenting constructs to inform prevention science. *Prevention Science*.
- Mrazek, P. G., & Haggerty, R. J. (Eds.). (1994). *Reducing risks for mental disorders: Frontiers for preventive intervention research*. Washington: National Academy Press.
- O'Dor, S. L., Grasso, D. J., Forbes, D., Bates, J. E., McCarthy, K. J., Wakschlag, L. S. & Briggs Gowan, M. J. (2017). The Family Socialization Interview - Revised (FSI-R): A comprehensive assessment of parental disciplinary behaviors. *Prevention Science*.
- Patterson, G. R. (1982). *A social learning approach: Coercive family process*. Eugene, OR: Castalia.
- Patterson, G. R., Reid, J. B., Jones, R. R., & Conger, R. D. (1975). *A social learning approach to family intervention: Families with aggressive children*. Eugene, OR: Castalia.
- Shaffer, A., Lindhiem, O., & Kolko, D. J. (2017). Treatment effects of a primary-care intervention on parenting behaviors: Sometimes it's relative. *Prevention Science*.
- Zheng, Y., Pasalich, D. S., Oberth, C., McMahon, R. J., & Pinderhughes, E. E. (2017). Capturing parenting as a multidimensional and dynamic construct with a person-oriented approach. *Prevention Science*. doi:[10.1007/s11121-016-0665-0](https://doi.org/10.1007/s11121-016-0665-0).