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Discussion

Risk assessment and decision making in child protective services: Predictive risk modeling in context

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ABSTRACT

In an era in which child protective service agencies face increased demands on their time and in an environment of stable or shrinking resources, great interest exists in improving risk assessment and decision support. In this article, we review the literature and provide a context for predictive risk modeling in the current risk assessment paradigm in child protective services. We describe how predictive analytics or predictive risk modeling using linked administrative data may provide a useful complement to current approaches. We argue that leveraging technology and using existing data to improve initial triage and assessment decisions will enable caseworkers to focus on what they do best: engaging families and providing needed services.

1. Introduction

In 2014, the U.S. child protective services (CPS) system received 3.6 million allegations of child abuse and neglect, involving an estimated 6.6 million children. Of these, approximately 3.2 million children experienced an investigation or received an alternative response and an estimated 702,000 were found to have been victims of abuse or neglect. From there, 21% (n = 147,462) entered foster care (U.S. Department of Health and Human Services, 2016). Thus, every day through a series of decisions often made by multiple individuals, children and families are referred to CPS and then triaged. Yet a comprehensive understanding of how most effectively to screen and then serve children and their families is still emerging. Correctly ascertaining levels of acute and chronic maltreatment risk among the millions of children referred to CPS agencies each year is no easy task, nor is matching and tailoring services to meet the needs of these children and families.

The risk factors for child maltreatment have been well documented for decades. Multiple individual, family, and community risks are often present for these vulnerable children, including poverty (Gil, 1971; Jones & McCurdy, 1992; Pelton, 1989, 1994; Sedlak & Broadhurst, 1996; Wolock & Horowitz, 1979) and its many correlates, such as female-headed families (Brown, Cohen, Johnson, & Salzinger, 1998; Gelles, 1989, 1992; Gillham et al., 1998; Sedlak & Broadhurst, 1996), low parental education (Brown et al., 1998; Kotch et al., 1995; Zuravin & DiBlasio, 1996; Zuravin & Grief, 1989), unemployment (Gelles, 1989; Gillham et al., 1998; Kotch et al., 1995), welfare receipt (Brown et al., 1998; Jones & McCurdy, 1992; Needell, Cuccaro-Alamin, Brookhart, & Lee, 1999; Paxson & Waldfogel, 2002), and impoverished neighborhoods (Coulton, Crampton, Irwin, Spilsbury, & Korbin, 2007; Coulton, Korbin, Su, & Chow, 1995; Drake & Pandey, 1996).

Characteristics observable and universally collected at the time of birth also have been documented as related to risk of CPS referral, including early maternal age, late or absent prenatal care, low birth weight, birth abnormalities, and positive toxicology (Hussey, Chang, & Kotch, 2006; Putnam-Hornstein & Needell, 2011; Stith et al., 2009). Higher rates of CPS reporting also have been found among Black and Native American children relative to their White and Hispanic counterparts (Ards, Myers, Malkis, Sugrue, & Zhou, 2003; Drake, Lee, & Jonson-Reid, 2009; Font, Berger, & Slack, 2012; Putnam-Hornstein & Needell, 2011). Although child maltreatment is found disproportionately among non-White and teen-parent families, considerable evidence suggests that socioeconomic status also may confound these relationships because minorities and adolescent parents are disproportionately likely to be single and poor (Bolton, Laner, & Kane, 1980; Garfinkel & McLanahan, 1986; Gil, 1971; Kinard & Klerman, 1980; Saunders, Nelson, & Landsman, 1993).

Despite the wealth of literature regarding risk factors for child maltreatment, the accurate identification of referred children for whom the threat of maltreatment is most immediate and consequential has proven difficult. High rates of subsequent maltreatment referrals among children with initially unfounded allegations (Drake, 1996; Fluke, Shusterman, Hollinshead, & Yuan, 2005; Jonson-Reid, Drake, Chung, & Way, 2003) and increased risk of child maltreatment deaths

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despite CPS involvement (Barth & Blackwell, 1998; Jonson-Reid, Chance, & Drake, 2007; Putnam-Hornstein, 2011; Putnam-Hornstein, Cleves, Licht, & Needell, 2013; Sabotta & Davis, 1992; Sorenson & Peterson, 1994) point to the enduring struggle to accurately assess children's current and future risk of abuse and neglect.

For nearly three decades, risk assessment tools have been employed in CPS to help improve the accuracy of workers' frontline decision making. Although these tools are generally considered more effective than clinical attempts to weight the complex factors associated with a child's risk of harm, there are numerous operational and statistical limitations to such operator-driven assessments. These include: (a) questionable tool implementation fidelity; (b) the time and expense of using these tools on repeated occasions; (c) the absence of tool validation for the populations to which they are administered; (d) over-reliance on static or historical risk factors; (e) limited predictive accuracy; and (f) a crude stratification of risk based on arbitrary thresholds (e.g., low, medium, high).

In short, the success of operator-driven risk assessment tools in the world of child protection relies on a frontline worker who is adequately trained and motivated to properly employ them (which is, at least anecdotally, a notable barrier in organizations) and who has the time to administer the tool in a fashion such that new data are incorporated into the risk or safety assessment. Importantly, the value of risk assessment tools are also premised on their utility—specifically their ability to influence decision making to facilitate better outcomes for children (D'Andrade, Benton, & Austin, 2005; Russell, 2015).

In this article, we review the strengths and weaknesses of the current risk assessment paradigm in CPS practice. We then describe predictive analytics or predictive risk modeling (PRM) using linked administrative data as an alternative method of prospective risk assessment that may help overcome many of the shortcomings of current approaches. In an era in which child protective service agencies face increased demands on their time and in an environment of stable or shrinking resources, great interest exists in improving risk assessment and decision support. We argue that leveraging technology and using existing data to improve initial triage and assessment decisions will enable caseworkers focus on what they do best: engaging families and providing needed services.

2. Risk assessment in child protection

The accurate assessment of child safety and risk is foundational to effective CPS practice (Gambrill & Shlonsky, 2000; Gelles & Kim, 2013; Rycus & Hughes, 2003). The inaccurate identification of risk can have significant implications for children and families that come into contact with the CPS system (Gambrill & Shlonsky, 2000; Shlonsky & Wagner, 2005). For instance, children and families misidentified as low risk may not receive necessary preventive services and may go on to experience abuse and neglect. Conversely, those misidentified as high risk may be subjected to unnecessary involvement with social services, disruption of the family environment, and loss of family autonomy (Gambrill & Shlonsky, 2000).

Risk assessment in CPS is largely a human enterprise. Clinical judgment or naturalistic decision making (Kahneman & Klein, 2009), however, has been shown to be prone to both human error and bias. Practitioners have difficulty processing large amounts of available information and often used flawed heuristic strategies instead of rational models. Practitioners' personal beliefs and biases and the culture of the agency can also affect assessment (Ægisdóttir et al., 2006; Dawes, Faust, & Meehl, 1989; Kahneman, Slovic, & Tversky, 1982; Kahneman & Tversky, 1973; Meehl, 1954; Nisbett & Ross, 1980). Given the well-documented limitations of clinical judgment, standardized risk assessment tools have been developed to help improve the accuracy of predictions of maltreatment recurrence (Rycus & Hughes, 2003; Shlonsky & Wagner, 2005). These tools combine risk factors related to child maltreatment risk to provide decision support to practitioners, and have proliferated during the last 30 years (Child Welfare League of America [CWLA], 2005).

2.1. Standardized tools

Two general categories of tools have been developed in an effort to help standardize CPS risk and safety assessments—theoretical or consensus-based and actuarial tools (Baird, Wagner, Healy, & Johnson, 1999; English & Pecora, 1994). Theoretical or consensus-based tools are typically guided by a theoretical approach and examine child maltreatment risk factors identified by experts through clinical experience or research. These risk factors are often combined into an instrument or scale that can assist practitioners with information gathering during assessment. Clinicians use these data to help determine recidivism risk. Despite their utility, such tools are often criticized as less precise, subjective, and inconsistent (D'Andrade et al., 2005).

Actuarial tools examine risk factors that are empirically related to child maltreatment and they are typically validated statistically (CWLA, 2005; Gambrill & Shlonsky, 2000; Shlonsky & Wagner, 2005). Unlike theoretical or consensus-based tools, actuarial tools can incorporate risk factors not theoretically related to abuse and neglect. When these tools are administered, weights are given to specific factors and combined into scales, resulting in specific probability estimates for recurrence risk. Actuarial tools are often criticized for failing to take into account the role of expert clinical judgment or causal theories (Grove & Meehl, 1996; Schwalbe, 2004). Additionally, they may ignore the role of services or other strengths in mitigating risk (D'Andrade et al., 2005).

Today, both categories of standardized risk assessment tools are considered more accurate than clinical judgment alone in predicting the recurrence of child maltreatment (Dawes et al., 1989; DePanfilis & Girvin, 2005; Grove & Meehl, 1996; Grove, Zald, Lebow, Snitz, & Nelson, 2000; Johnson & L'Esperance, 1984; Munro, 1999; Shlonsky & Friend, 2007; Shlonsky & Wagner, 2005). As a result, during the past two decades, the majority of state CPS agencies have adopted standardized risk assessment tools. A 2011 national survey conducted by Casey Family Programs found that the most widely used tools included Structured Decision Making (SDM) from the National Center on Crime and Delinquency (NCCD), the ACTION for Child Protection and National Resource Center for Child Protective Services model, and the Signs of Safety model (Casey Family Programs, 2011; Harbert & Tucker-Tatlow, 2012).

2.2. Standardized tool performance

Among standardized tools, actuarial models have generally been shown to be more effective than theoretical or consensus-based models in predicting child maltreatment recurrence (Baird & Wagner, 2000; Baird et al., 1999; Begle, Dumas, & Hanson, 2010; D'Andrade et al., 2005). In 2005, the Bay Area Social Services Consortium conducted a structured performance review of the five most widely used tools[1] for determining recurrence of abuse and neglect (D'Andrade et al., 2005). Five areas of instrument performance were assessed: predictive and convergent validity, interrater reliability, outcomes, and racial and ethnic group differences. Findings suggested that actuarial tools had greater predictive validity and interrater reliability than consensus-based tools in each area. Overall, the authors concluded that the implementation of actuarial tools has improved the accuracy of workers' risk assessment.

The actuarial tool most widely used today is the SDM system developed by the NCCD. The SDM system includes 10 decision support

[1] These include (a) the Washington Risk Assessment Matrix; (b) the California Family Assessment Factor Analysis (or the "Fresno" model); (c) the Child at Risk Field System; (d) the Child Emergency Response Assessment Protocol; and (e) the actuarial risk assessment instruments developed by the Children's Research Center.