



Detecting initiation or risk for initiation of substance use before high school during pediatric well-child check-ups



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ABSTRACT

Background: Youth substance use (SU) is prevalent and costly, affecting mental and physical health. American Academy of Pediatrics and Affordable Care Act call for SU screening and prevention. The *Youth Risk Index*[®] (YRI) was tested as a screening tool for having initiated and propensity to initiate SU before high school (which forecasts SU disorder). YRI was hypothesized to have good to excellent psychometrics, feasibility and stakeholder acceptability for use during well-child check-ups.

Design: A high-risk longitudinal design with two cross-sectional replication samples, ages 9–13 was used. Analyses included receiver operating characteristics and regression analyses.

Participants: A one-year longitudinal sample ($N=640$) was used for YRI derivation. Replication samples were a cross-sectional sample ($N=345$) and well-child check-up patients ($N=105$) for testing feasibility, validity and acceptability as a screening tool.

Results: YRI has excellent test–retest reliability and good sensitivity and specificity for concurrent and one-year-later SU (odds ratios = 7.44, CI = 4.3–13.0) and conduct problems (odds ratios = 7.33, CI = 3.9–13.7). Results were replicated in both cross-sectional samples. Well-child patients, parents and pediatric staff rated YRI screening as important, acceptable, and a needed service.

Conclusions: Identifying at-risk youth prior to age 13 could reap years of opportunity to intervene before onset of SU disorder. Most results pertained to YRI's association with concurrent or recent past risky behaviors; further replication ought to specify its predictive validity, especially adolescent-onset risky behaviors. YRI well identifies youth at risk for SU and conduct problems prior to high school, is feasible and valid for screening during well-child check-ups, and is acceptable to stakeholders.

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1. Introduction

Substance use (SU) and consequent disorder (SUD) harms large proportions of youth, society and healthcare systems. U.S. prevalence of lifetime SUD consequent to using tobacco, alcohol and illegal drugs, respectively, is 24%, 20% and 10% (Compton et al., 2007; Hasin et al., 2007). SU consequences cost the U.S. over \$600 billion annually (e.g., due to SUD treatment, crime, medical and psychiatric disorders, and sexually transmitted infection; NDIC, 2011). Globally, the 4th, 5th, and 15th leading contributors to disease

burden are smoking, alcoholism and illegal drug use, respectively (Lopez et al., 2006).

SU before high school confers multifold increased propensity for SUD and is not rare (Hingson et al., 2006; Ystrom et al., 2014). Of U.S. 8th graders, 33.1% drank alcohol, 18.4% smoked tobacco, and 16.4% smoked marijuana (Johnston et al., 2012). Such high-risk youth need intervention before high school (about age 14) when access to addictive substances increases (Andrews et al., 2003; Windle et al., 2008). Etiology research documents numerous factors that bias child development toward SU/SUD (e.g., stress, disinhibition, peers, family characteristics; Caspi et al., 1996; Garner et al., 2012; Kirisci et al., 2009; Tarter et al., 2003). Screening for propensity of SU before high school (when SU incidence sharply increases) provides long-term opportunity to intervene before SUD onset, a propitious strategy, given the high rate of SUD relapse.

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“Would you like to jump from a plane with a parachute someday?”

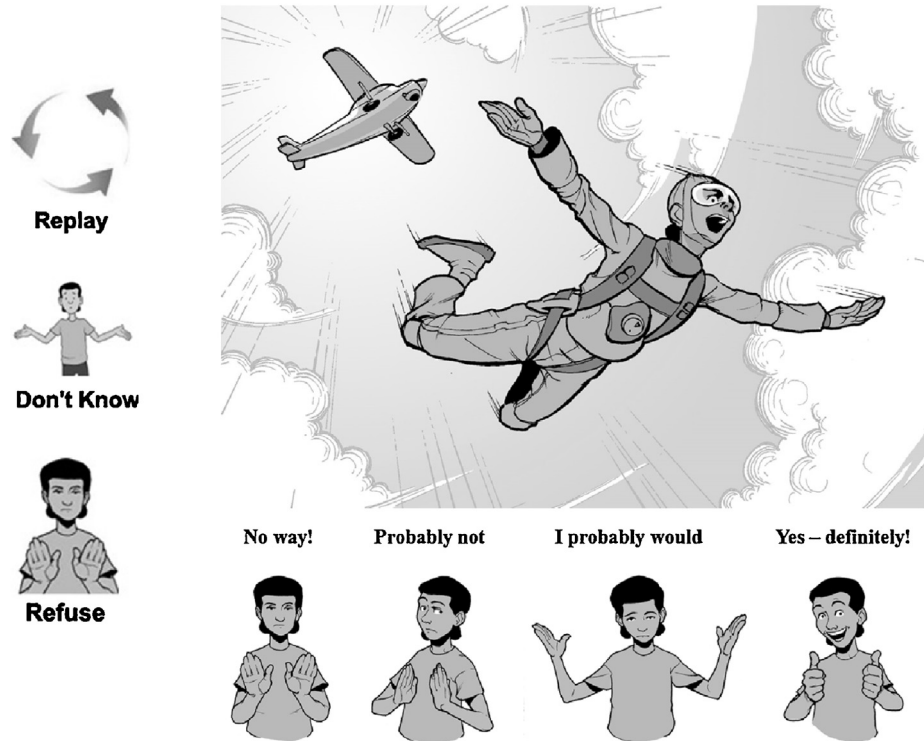


Fig. 1. Illustration of the Youth Risk Index item format. Note: the electronic version of the picture depicting “No way!” is animated with Alex or Alexis shaking his/her head in a “no” motion. The electronic version of the picture depicting “Yes – definitely!” is animated with Alex or Alexis nodding his/her head.

SU initiation almost always occurs during adolescence. SU/SUD prevention traditionally has occurred via schools, policy, and policing, although pediatricians are increasingly sought for assistance (NIAAA, 2011). As purveyors of youth healthcare, pediatricians are in a critical position to improve such efforts. Affirming American Academy of Pediatrics long-standing position, recent policy states that “Pediatricians should . . . recognize risk factors for . . . alcohol and other substance abuse among youth, screen for use, provide appropriate brief interventions, and refer to treatment. . . . prevention programs . . . from elementary school through college should be promoted by pediatricians and the health care community” (AAP, 2010). The Affordable Care Act mandated that youth SU be assessed without copayment and insurance cover preventive services (DHHS, 2012). However, the U.S. Preventive Services Task Force (2013) deemed that evidence is insufficient to recommend for or against screening and counseling for youth SU.

Pediatrician use of standardized screening tools for developmental delays has recently increased (Radecki et al., 2011) whereas using standardized tools for risk of behavior problems has lagged (Jee et al., 2011; Kelleher and Stevens, 2009). Reasons for their reluctance include practice burden (time, staffing cost), unfamiliarity with treatment resources for referral, high false-positive rates of screens, and fear of alienating patients or parents with queries about sensitive behaviors (Van Hook et al., 2007). Given the Affordable Care Act opportunities for expanded medical home models, including co-located mental health and SUD prevention services, a screening tool for early identification of SU risk (per the Bright Futures guidelines) is the final component needed for healthcare-based SU prevention. Reinforcing the strategy of implementing prevention prior to high school, well-child check-up compliance is nearly 1/3 more prevalent in U.S. 6- to 12-year-olds than older youth (Selden, 2006).

As mentioned, one barrier to pediatricians using behavioral screening tools is fear of alienating patients and parents with use

of sensitive questions, such as child SU. Also, many young adolescents who have high propensity for SUD have not initiated SU (e.g., due to availability). Thus the objective of this study was to develop the Youth Risk Index[®] (YRI[®]) screening tool to measure propensity for SU/SUD rather than SU per se. This study tested the YRI for identifying 9- to 13-year-olds who have or are at risk for initiating SU before high school using a rigorous approach of replicating results in two samples and for a second outcome, conduct disorder behaviors, which frequently precedes SU/SUD. YRI items were from the Assessment of Liability and Exposure to Substance use and Antisocial behavior[®] (ALEXSA[®]) system which is more developmentally appropriate than paper-and-pencil alternatives for pre-teens (Ridenour and Feinberg, 2007; Ridenour et al., 2009, 2011a,c, 2012). Youth are the best informants for many of their own characteristics (e.g., affect and behaviors they conceal) and their perspective provides unique information not available from parents or teachers (de Los Reyes and Kazdin, 2005). ALEXSA's reliability and validity spans ages 6–16, different races/ethnicities, genders, psychiatric functioning, academic abilities, residential settings, and in utero drug exposure (Ridenour and Feinberg, 2007; Ridenour et al., 2009, 2011a,c, 2012; Min et al., 2010). ALEXSA is computerized, cartoon-based (Fig. 1), and appealing to children; its audios read questions and response options; and it can output electronic records. It can be completed by illiterate children, a critical feature considering 38% of U.S. 4th graders (51% in urban settings) cannot read at basic levels (Lutkus et al., 2005). To avoid querying sensitive behaviors, YRI items were drawn from ALEXSA “risk factor” subscales, each of which has a well-developed theoretical foundation and documented statistical prediction of behavior problems (Table 1).

YRI was hypothesized to have sensitivity, specificity, reliability and validity for measuring propensity for SU and conduct problems prior to high school. A brief YRI, consisting of the items that correlate most with SU, was hypothesized to be feasible, acceptable to stakeholders, and valid for screening during pediatric well-child

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