similar to those in the general population, with 75% using the Internet and 78% using a cell phone at least daily or weekly.[7] And, as with the rest of the country, AI/AN Internet use will only expand. Anecdotally from our work, many tribal members attest to the pervasiveness of social media for connecting people and families within and across tribes, particularly among tribal youths.

TECHNOLOGY IS NOT A PANACEA

Technology, of course, does not solve every challenge commensurate with conducting rigorous adolescent pregnancy prevention research within tribal communities. Aside from issues of hardware, connectivity, data plans, and the fast pace of industry change, technology cannot replace community engagement and meaningful participation in the research process, or the trust and rapport such partnership builds. Technology cannot replace the value of cultural connectedness among family, kin, and community that makes AI/AN tribal communities unique, vital, and resilient. However, when used judiciously and in the context of strong research partnerships, technology can complement the community and cultural life of AI/AN adolescents, provide adolescent pregnancy prevention information and skills-building they may otherwise not receive, and facilitate youth and family participation in rigorous evaluation research to generate evidence for interventions relevant to their communities. AJPH

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Exploring Alternative Outcome Measures to Improve Pregnancy Prevention Programming in Younger Adolescents

Adolescent pregnancy prevention efforts have shifted over time to include middle school youths as a way to educate young people before they become sexually active. Unfortunately, the field draws on the same individual-level sexual behavior outcomes that are used for high school populations, such as sexual initiation or recent vaginal intercourse without condoms or birth control, to evaluate adolescent pregnancy prevention programs in younger adolescents, and this often results in prevalence rates that are too low to adequately assess a program's effectiveness.

LITTLE ROOM FOR IMPROVEMENT

From a statistical viewpoint, inadequate power to detect the effects is not the primary issue, because the variance of a binomial distribution is minimized at the lower end of the distribution. Rather, the problem is one of having very little room for improvement: Consider an outcome such as unprotected vaginal sex in the past three months. If the prevalence rate in the control arm is four percent by the time students complete middle school, as it was in the Office of Adolescent Health–funded replication study of *It's Your Game* in South Carolina,[1] the biggest impact the program can hope to achieve is a reduction to one percent (assuming a reduction to zero percent is unrealistic) in the intervention arm, which corresponds to a small Cohen's d effect size of 0.20. Consequently, the size of the intervention's potential effect is constrained to be small, solely because of the low prevalence outcomes, given the age of the sample. Perhaps more importantly, these sexual behavior outcomes may be less salient to younger adolescents' current experiences, thus missing opportunities to shape programs and evaluate their effectiveness using factors and behaviors that are more relevant to the adolescents' current stage of sexual development.

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PROXIMAL PRECURSORS TO SEXUAL BEHAVIORS

What are our options when working with younger populations? Some might argue that theory-based psychosocial outcomes such as knowledge and attitudes are a natural choice for alternative outcome measures in younger adolescents given their prevalence, but these have not always been predictive of later behavior. We believe it is critical to explore more proximal precursors to sexual behaviors that are mutable and may be stronger predictors of later sexual risk. These could serve as alternative educational targets and primary outcomes for younger populations. They could be drawn from studies of risk and protective factors for this age group, other literatures (e.g., developmental neuroscience), or alternative theoretical frameworks (e.g., stages of change).

For example, in one of our recent studies involving middle school youths, we found that having more relationships, dating alone, ever touching each other's private parts, and ever having oral sex were associated with an increased likelihood of having vaginal sex.[2] These variables should be explored further as alternative primary outcomes for younger adolescent populations. Another potential alternative outcome is exposure to risky situations (e.g., lying down alone with someone you like), which was an important mediator of sexual risk behavior in a recent study.[3] Furthermore, developmental neuroscience literature suggests that behavioral willingness—measured by questions such as "Imagine you are alone with someone you like very much, would you let them . . . touch your private parts? . . .have sex with you?, etc."—may be more predictive of sexual risk behavior for younger adolescents than are traditional behavioral intention items.[4]

RISKY BEHAVIOR INDEX

Another possibility would be to use a behavioral index to assess movement toward risky sexual behaviors. O'Sullivan et al.[5] used data from the second wave of the National Longitudinal Study of Adolescent to Adult Health to examine the progression of social, romantic, and sexual behaviors in a subsample of youths who reported involvement in a romantic relationship in the past 18 months. Within relationships, romantic activities (e.g., holding hands, thinking of themselves as a couple, declaring love for each other) were most commonly endorsed, followed by social activities (e.g., spending time with partner in group, meeting parents), then sexual-related activities (e.g., touching, having sex). Studies like this may spur thinking about an index that could serve as an alternative outcome measure for younger adolescents. Hennessy et al.[6] used a similar approach to develop a hierarchical index for exploring associations between exposure to sexual content through the media and sexual behavior. One benefit of using combination measures as opposed to a single lower-prevalence outcome is that evaluators can detect changes in sexual behavior that they might otherwise miss focusing on just one behavior. Finally, thinking beyond individual-level outcomes is important as well, given that individual behavior is influenced by an array of other determinants, such as physical and social, policymaking, and health services. For younger populations, outcomes such as changing school-wide norms or increasing access to comprehensive sexual health education and services may better serve our goal of promoting adolescent health.

SEXUAL TOUCHING

Any alternative measures used for younger populations should be predictive of later sexual behavior, sensitive to change by prevention programs, and more prevalent than currently used sexual behavior outcomes. Of critical importance, new measures for this age group should not stigmatize normal adolescent development or encourage program goals that aim to halt or slow such development. Indeed, according to Peper and Dahl,[7] adolescence is a developmental stage in which youths gain experience to attain adult levels of social competence. Midadolescence (ages 12–14 years, or middle school in the United States) involves developing opposite-sex friendships, group dating, and the beginning of multiple shorter romantic relationships that are less group-focused.[8] It is crucial that we keep these developmental milestones in mind as we explore alternative measures for younger populations, and perhaps even create a measure of safe, positive alternatives to sexual risk behaviors (e.g., spending time together, hugging, holding hands, sharing confidences) as a key outcome.

At the same time, reducing certain types of noncoital intimate behaviors, such as touching each other's private parts, may offer a way of acceptably slowing behaviors whose early occurrence, especially in certain contexts or in association with other known risk factors (e.g., older partners), is an indicator of future sexual risk. We are keenly interested in the potential of sexual touching as an alternative outcome for this age group given its higher prevalence (24% in one of our studies of middle school youths vs nine percent for vaginal intercourse[2]; and its association with vaginal intercourse. We encourage others in the field to explore with us whether there is sufficient evidence that these and other potential alternatives predict sexual risk and, eventually, adolescent pregnancy, and that slowing their occurrence in middle school would not interfere with normative developmental pathways.

BEYOND INDIVIDUAL LEVEL OUTCOMES

Finding alternative measures will require curiosity, exploration of existing data, and collecting new data. It will also require funding dedicated to support measurement development and conversations about the behavioral outcomes accepted by the field and evidence review efforts, or used by policymakers and funders in establishing outcomes for state- and federally funded initiatives. Even in evaluations conducted in communities with high rates of adolescent pregnancy, like some described in this special issue, we see that measuring the

impact of adolescent pregnancy prevention programs for younger adolescents is often limited to a small portion of the population already engaging in the outcomes being evaluated. Finding salient, proximal precursors that are prevalent in a larger percentage of the population receiving the interventions, more predictive of sexual risk, and sensitive to change could help address this challenge. Theory-based psychosocial outcomes are prevalent, sensitive to change and serve as important secondary outcomes of prevention programs, but because they are not always predictive of sexual behavior we need more persuasive alternatives. We advocate exploring a set of strongly predictive, more proximal precursors that fall between high-prevalence, theory-based psychosocial variables and low-prevalence sexual behaviors; we also support looking beyond individual-level outcomes. AJPH

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Establishing an Evaluation Technical Assistance Contract to Support Studies in Meeting the US Department of Health and Human Services Evidence Standards

This special issue highlights the results of the Office of Adolescent Health's (OAH) substantial investment in rigorous evaluations of teen pregnancy prevention (TPP) programs. Through a two-tiered funding strategy, OAH procured cooperative agreements with 94 grantees to replicate programs deemed evidence-based by the US Department of Health and Human Services' (HHS) TPP evidence review (tier 1) or to implement promising and innovative TPP programs that did not yet have evidence of effectiveness (tier 2). In addition, the Family and Youth Services Bureau, under the Administration for Children and Families (ACF) at HHS, also funded 13 cooperative agreements to implement promising programs through the Personal Responsibility Education Program Innovative Strategies program. A subset of the cooperative agreements required the grantees to evaluate the effectiveness of their funded programs through random assignment or quasi-experimental impact studies led by independent evaluators. The goal of this investment in evaluation was to infuse the field with dozens of new, internally valid studies whose evidence would meet the rigorous research standards established by the HHS TPP evidence review[1] and would inform the field of public health. These new findings would be used to further understand the effectiveness of evidence-based programs when implemented in different contexts and for different populations, and to potentially identify new, effective programs.

OAH's investment is part of a larger federal effort to use and create evidence through tiered-evidence grant programs.[2] As the government encourages and incentivizes rigorous evaluations,[3] some large-scale federal grant programs provide evaluation technical assistance (TA) to their grantee-led evaluations, including the Investing in Innovation Grants (I3), administered by the US Department of Education; and the Workforce Innovation Fund Grants, administered by the Employment and Training Administration under the US Department of Labor. To support grantees in producing credible evidence of program effectiveness, OAH (with support from ACF) funded Mathematica Policy Research and its subcontractors to be the evaluation technical assistance

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