

Use of Cigarettes and Alcohol by Preschoolers While Role-playing as Adults

“Honey, Have Some Smokes”

Madeline A. Dalton, PhD; Amy M. Bernhardt, MEd; Jennifer J. Gibson, MS; James D. Sargent, MD; Michael L. Beach, MD, PhD; Anna M. Adachi-Mejia, PhD; Linda T. Titus-Ernstoff, PhD; Todd F. Heatherton, PhD

Objective: To examine preschoolers' attitudes, expectations, and perceptions of tobacco and alcohol use.

Design: Structured observational study. Children used props and dolls to act out a social evening for adults. As part of the role play, each child selected items from a miniature grocery store stocked with 73 different products, including beer, wine, and cigarettes, for an evening with friends.

Setting: A behavioral laboratory at the Department of Psychological and Brain Sciences, Dartmouth College.

Patients: One hundred twenty children, 2 to 6 years old, participated individually in the role-playing.

Main Outcome Measure: Whether or not a child purchased cigarettes or alcohol at the store.

Results: Children purchased a mean of 17 of the 73 products in the store. Thirty-four children (28.3%) bought

cigarettes and 74 (61.7%) bought alcohol. Children were more likely to buy cigarettes if their parents smoked (adjusted odds ratio [OR], 3.90; 95% confidence interval [CI], 1.20-12.63). Children were more likely to buy beer or wine if their parents drank alcohol at least monthly (adjusted OR, 3.04; 95% CI, 1.02-9.10) or if they viewed PG-13- or R-rated movies (adjusted OR, 5.10; 95% CI, 1.14-22.90). Children's play behavior suggests that they are highly attentive to the use and enjoyment of alcohol and tobacco and have well-established expectations about how cigarettes and alcohol fit into social settings.

Conclusions: The data suggest that observation of adult behavior, especially parental behavior, may influence preschool children to view smoking and drinking as appropriate or normative in social situations. These perceptions may relate to behaviors adopted later in life.

Arch Pediatr Adolesc Med. 2005;159:854-859

Author Affiliations:

Departments of Pediatrics (Drs Dalton, Sargent, and Adachi-Mejia and Ms Bernhardt), Anesthesia (Dr Beach), and Community and Family Medicine (Ms Gibson and Drs Sargent, Beach, and Titus-Ernstoff), Dartmouth Medical School, Norris Cotton Cancer Center, Lebanon, NH; and Department of Psychological and Brain Sciences, Dartmouth College, Hanover, NH (Dr Heatherton).

MOST TOBACCO AND ALCOHOL prevention studies target children during adolescence, the peak age for initiating tobacco and alcohol use. Despite creative efforts and substantial resources, these programs have had limited long-term success,¹⁻⁹ perhaps because the attitudes and expectations that ultimately lead to tobacco and alcohol use are formed years before adolescence. Early exposure to alcohol and tobacco use through family members, community and social events, and media may influence children's perceptions of alcohol and tobacco long before they ever consider using these products themselves.

There is a striking lack of research that examines young children's perceptions of and receptivity to tobacco and alcohol. This

may be due partly to the methodologic challenges posed by studying children at young ages. Young children's attitudes are difficult to assess because they cannot read or write, have limited language skills, and may be easily influenced by the way questions are phrased. In this study, we developed and tested a method to examine preschoolers' attitudes, expectations, and perceptions of tobacco and alcohol use. We were particularly interested in assessing children's perceptions of the social utility of tobacco and alcohol and evaluating the extent to which children's perceptions are related to parental behavior or media exposure. To do this, we created a role-playing scenario for the children and used structured observations of their play behavior. We also surveyed parents about their own tobacco and alcohol use and their children's movie viewing.



Figure 1. Grocery store setup for the role-playing scenario.

METHODS

The study was conducted in a behavioral laboratory at the Department of Psychological and Brain Sciences, Dartmouth College, and the protocol was approved by the Committee for the Protection of Human Subjects. The role-playing scenario, developed for children 3 to 6 years of age, involved grocery shopping and a social evening for adults. Because of their limited language skills and cognitive ability, an abbreviated version of the role-playing scenario was used for 2-year-old children. Each child participated individually in the role playing, which was guided by a researcher. To standardize the interaction and minimize observer bias, the researcher used an age-appropriate script to guide the play. Unbeknownst to the children, parents were able to view the role playing from an observation room behind a 2-way mirror, but parents could not hear what their children said or see what they purchased from the store.

Props for the play scenario included a Barbie (Mattel Inc, El Segundo, Calif) store stocked with miniature products, a kitchen and living room setup, a car, and 4 adult dolls (2 male and 2 female). The store was set up to resemble a grocery store, with shelves for pantry items, a fresh produce section, a refrigerator case, a check-out counter, and a shopping cart (**Figure**). The store was stocked with 133 miniature items that represented 73 different products, including meats and dairy (10 items); fruits and vegetables (16 items); breads and cereals (13 items); desserts (15 items); snacks and candy (23 items); condiments, spreads, and prepared foods (17 items); medicine, toiletries, and nonfood items (13 items); nonalcoholic drinks (11 items); beer and wine (9 items, including Budweiser, Coors, Schlitz, and Pabst); and cigarettes (6 items: 3 packs of Camels and 3 packs of Marlboros). The products were placed on the shelves in the same location for all children.

For children 3 to 6 years of age, the researcher asked each child to choose 2 dolls and explained that the child would pretend to be one of the dolls and the other doll would be a friend who was invited over to watch a movie and have something to eat. The scenario began in the living room. Acting as the friend, the researcher commented that there was nothing to eat and suggested to the other doll (acted by the child) that he or she go to the store to get some “things.” At the store, the researcher told the children that they could buy whatever they wanted and that when they finished shopping or when their cart was full, they should come to the checkout counter. The

researcher then played the role of the cashier while the child shopped. After “purchasing” the groceries, the child returned to the “house” and was given time to play with the products he or she selected at the store. At the house, the researcher resumed playing the part of the friend. For 2-year-old children, the researcher simply asked them to choose a doll and take it shopping. In most instances, they did not bring the doll back to the house to play with the products they purchased.

To verify that children knew what they were buying, each child was asked by the “cashier” to identify the products they selected as they placed them on the checkout counter. The researcher recorded each child’s purchases, identification of the items, and comments made during the play on an observation sheet. Identification of beer or wine as any alcoholic beverage (beer, wine, whiskey, etc) was considered a correct identification.¹⁰ Terms such as “Daddy’s juice” or “booze” were also considered correct identifications because they indicated an understanding that they were buying an adult-only product. If a child misidentified cigarettes or alcohol or asked the researcher what they were, the researcher replied by saying “cigarettes,” “wine,” or “beer.” The researcher then asked the child if he or she still wanted to purchase the product. We counted alcohol and tobacco purchases only if children correctly identified the item or if they were told what it was and still chose to buy it. However, we did not count tobacco or alcohol purchases if a child continued to misidentify the product after being told what it was (eg, using a pack of cigarettes as a book or pretending that beer was soda). In a post hoc analysis, we classified all children who were told what the product was as “non-purchasers,” and this did not change the findings.

PARENT QUESTIONNAIRE

We used a self-administered questionnaire to measure parental alcohol and tobacco use, children’s exposure to movies, and demographic characteristics. Parents completed this questionnaire in the observation room while children were engaged in the role playing. Parental smoking was measured by asking, “How often do you smoke?” and “How often does your spouse or partner smoke?” to which they could respond “never,” “occasionally,” or “every day.” These responses were combined into a dichotomous variable indicating whether one or both parents smoked at least occasionally. Parental drinking was measured by asking, “How often do you drink beer, wine, or li-

quor?" and "How often does your spouse or partner drink beer, wine, or liquor?" to which they could respond "never," "less than once a month," "1 to 3 times a month," "1 to 6 times a week," or "every day." These responses were combined into a single dichotomous variable indicating whether one or both parents drank "less than monthly" or "monthly or more." Parents were asked how often their children watched G-, PG-, PG-13-, and R-rated movies. Responses were used to create a 5-point index that indicated the highest movie rating level children watched and the frequency with which they watched movies (0 indicates G movies monthly or less; 1, G movies weekly or more; 2, PG movies monthly or less; 3, PG movies weekly or more; 4, ever watch PG-13- or R-rated movies). For example, if a child watched G-rated movies every day and PG-rated movies once or twice a month, that child's score for the movie-viewing index would be 2 (ie, PG movies monthly or less).

SAMPLE

Participants were recruited from the pediatric outpatient clinic at Dartmouth-Hitchcock Medical Center and local supermarkets and day care centers in Lebanon, NH. Potential participants were told that this study was about children's attitudes toward popular products sold in supermarkets and adult social behaviors. One hundred twenty children between 2 and 6 years of age participated in the study. One hundred nine (91%) of the parents who completed a questionnaire were mothers, 7 (5.8%) were fathers, and 4 (3.3%) were other guardians.

DATA ANALYSIS

The primary outcome measure was whether or not a child purchased cigarettes or alcohol at the store. We used χ^2 tests to compare differences in proportions for nominal variables. Cochran-Armitage tests for trend were used to examine the trend of binomial proportions across each ordinal variable.¹¹ Results were judged statistically significant at $P < .05$ in a 2-sided test. Logistic regression was used for multivariate analyses. The quotations presented in this article were purposefully selected to illustrate themes and highlight areas that warrant further research. Most of the comments children made while shopping or playing were spontaneous. If a child's comment was made in response to the researcher's question, this is noted.

RESULTS

Children 2 to 6 years of age purchased a mean \pm SD of 17 ± 8.8 of the 73 products in the store. The total number of products purchased did not differ by child's age or sex. Overall, children were discerning in their choice of products. Their purchases reflected both items we expected would be popular among children (eg, 79 [65.8%] purchased cake, and 49 [40.8%] purchased Reese's candy) and items that adults would typically buy at the grocery store (eg, 92 [76.7%] purchased at least 1 fresh fruit or vegetable, and 45 [37.5%] purchased chicken). Products used predominantly by adults (eg, medicine and toiletries) were purchased less frequently. For example, 21 children (17.5%) bought ibuprofen (Advil) and only 14 (11.7%) bought a newspaper.

Thirty-four children (28.3%) bought cigarettes. Seventeen (50.0%) of the children who bought the cigarettes identified them by product type (eg, "cigarettes" or "smokes") and 6 (17.7%) identified them by brand name (Marlboro or Camel). One third of the children who

bought cigarettes were told by the researcher that these products were cigarettes before purchasing them, either because they asked ($n=4$) or they initially misidentified them ($n=7$) as another product. Fifteen (44.1%) of those who purchased cigarettes bought more than one brand. Camel and Marlboro cigarettes were selected with similar frequency (26 children purchased Camels and 23 purchased Marlboros).

Seventy-four children (61.7%) bought alcohol, of whom 43 (58.1%) identified it by type (eg, "beer," "wine," or "booze"). Forty-two percent of those who purchased it were told by the researcher that it was alcohol (ie, beer or wine) because the child asked ($n=6$) or initially misidentified it ($n=25$) as another product. Twenty-six (35.1%) of the children who bought alcohol purchased both beer and wine. Twenty-nine children (24.1%) purchased both cigarettes and alcohol.

In the unadjusted analysis, children's cigarette purchases were inversely associated with parent age and education and positively associated with parental tobacco use (**Table 1**). However, after adjusting for other covariates, only parental tobacco use and children's age significantly predicted whether or not a child purchased cigarettes. The adjusted odds that children bought cigarettes were almost 4 times (odds ratio [OR], 3.90; 95% confidence interval [CI], 1.20-12.63) higher if their parents smoked compared with those whose parents did not smoke. Children 3 to 4 years old were significantly more likely to buy cigarettes than 2-year-old children (OR, 4.94; 95% CI, 1.09-22.32) (Table 1).

Children's alcohol purchases were significantly associated with parental alcohol use in both the unadjusted and fully adjusted models (Table 1). The adjusted odds that children purchased alcohol were approximately 3 times (OR, 3.04; 95% CI, 1.02-9.10) higher if their parents drank alcohol at least monthly compared with those whose parents reported drinking less than monthly. In addition, the multivariate analysis indicated that children were more likely to purchase alcohol as their viewing of movies rated for older audiences increased. The adjusted OR for purchasing alcohol was 5 times (OR, 5.10; 95% CI, 1.14-22.90) greater if children watched PG-13- or R-rated movies compared with those who watched only G-rated movies infrequently (Table 1).

After leaving the grocery store, children 3 to 6 years of age returned to the dining room and living room setup and were free to play with the products they purchased. Twenty-two children played with the cigarette packs and 44 children played with the alcohol, representing 71% and 72%, respectively, of children in this age group who purchased these products. Children were more likely to play with the cigarettes if their parents smoked ($P = .002$). Parental alcohol use was not related to whether or not a child played with or "used" the alcohol ($P = .18$).

Table 2 presents selected vignettes from the role-playing scenario. While shopping and playing, children expressed both positive (eg, "I like smokes") and negative attitudes toward cigarettes and alcohol. As illustrated, negative attitudes were generally supported by either knowledge of the negative consequences of alcohol or tobacco (eg, "I'm definitely not going to buy those; they can kill you") or recognition that these products are

Table 1. Child Cigarette and Alcohol Purchases by Child and Parental Characteristics

Characteristic	No.	Purchased Cigarettes, %	Adjusted OR (95% CI) for Cigarette Purchases*	Purchased Alcohol, %	Adjusted OR (95% CI) for Alcohol Purchases*
Child's age, y					
2	25	12.0	1.00	52.0	1.00
3-4	52	36.5	4.94 (1.09-22.32)	71.2	1.92 (0.62-5.92)
5-6	43	27.9	2.81 (0.54-14.54)	55.8	0.92 (0.27-3.10)
Child's sex					
Male	54	22.2	1.00	55.6	1.00
Female	66	33.3	1.30 (0.45-3.78)	66.7	1.76 (0.70-4.42)
Movie exposure					
G-rated movies monthly or less	35	20.0	1.00	48.6	1.00
G-rated movies weekly or more	18	22.2	1.52 (0.30-7.66)	50.0	1.97 (0.53-7.37)
PG-rated movies monthly or less	39	33.3	1.10 (0.31-3.91)	74.4	3.00 (1.00-8.98)
PG-rated movies weekly or more	6	33.3	1.34 (0.15-11.71)	83.3	13.11 (0.95-180.42)
Any PG-13- or R-rated movies	20	40.0	1.53 (0.33-6.98)	70.0	5.10 (1.14-22.90)
Parental age, y					
≤29	34	41.2†	1.00	70.6	1.00
30-39	63	25.4	0.64 (0.17-2.45)	61.9	0.42 (0.11-1.55)
40-49	23	17.4	0.39 (0.06-2.60)	47.8	0.25 (0.05-1.29)
Parental education					
High school or job training	16	56.3‡	1.00	62.5	1.00
One went to college	26	38.5	0.50 (0.09-2.73)	65.4	1.48 (0.25-8.64)
Both went to college	78	19.2	0.31 (0.05-1.84)	60.3	1.66 (0.28-9.70)
Parental tobacco use					
Neither parent smokes	93	19.4§	1.00	59.1	1.00
One or both parents smoke	27	59.3	3.90 (1.20-12.63)	70.4	1.26 (0.37-4.32)
Parental alcohol use					
One or both drink less than once a month	41	26.8	1.00	51.2	1.00
One or both drink once a month or more	79	29.1	1.34 (0.41-4.40)	67.1	3.04 (1.02-9.10)

Abbreviations: CI, confidence interval; OR, odds ratio.
 *The ORs are adjusted for all other variables in the table.
 †*P* = .005 for unadjusted trend test.
 ‡*P* < .001 for unadjusted trend test.
 §*P* < .001.
 ||*P* = .02.

used only by adults. Despite awareness of the negative aspects of tobacco and alcohol use, some children still expressed a desire to try these products (eg, "I wish I could smoke . . . but I won't, because it's yucky"). Children's play behavior suggests that they are highly attentive to the use and enjoyment of alcohol and tobacco and have well-established expectations about how cigarettes and alcohol fit into social settings (eg, smoking after dinner; leaving the men home to drink beer while the women go shopping). Some children even mimicked the use of these products as if it were scripted¹² (see "Social Scripts" in Table 2). Several children were also highly aware of cigarette brands, as illustrated by the 6-year-old boy who was able to identify the brand of cigarettes he was buying as Marlboros but could not identify the brand of his favorite cereal as Lucky Charms (see "Brand Awareness" in Table 2).

COMMENT

Our findings that preschoolers are familiar with and have attitudes about alcohol and tobacco are consistent with the few studies^{10,13-19} of young children that have been published in this area. However, our study is the first to demonstrate that preschool children possess social cognitive scripts¹² of adult social life in which the use of al-

cohol and tobacco play central roles. Children not only demonstrated their knowledge of alcohol and tobacco, but their behavior indicated that they have assimilated it as part of their understanding of how adults socialize. Research in social cognition suggests that cognitive scripts play key roles in guiding behavior.^{12,20,21} For example, children learn at a very young age that the script of going to the movies involves paying for admission, buying popcorn, and not talking while the movie is playing. Subtle scripts, such as these, that are learned during childhood shape many of our behaviors later in life. These behaviors, which are perceived as normative, can be unconsciously triggered by environmental or social cues that have been associated with the behavior.²² Enactment of scripts can also influence one's expectations about the behavior.^{23,24} We postulate that positive expectations developed early in life that link tobacco and alcohol use with social settings may prompt individuals to smoke or drink when they are old enough to find themselves in similar social situations. Further study is needed to determine the extent to which these basic cognitive scripts related to alcohol and tobacco use influence the use of these products during adolescence and adulthood.

We found that children were more likely to "purchase" alcohol or cigarettes if their parents used these products. Because parents are often the primary adult role

Table 2. Vignettes From Role-playing Scenario

Positive Attitudes

A 6-year-old boy offered Barbie the newspaper and cigarettes: "Honey, have some smokes. Do you like smokes? I like smokes."

When selecting Camels in the store, a 4-year-old girl said, "I need this for my man. A man needs cigarettes."

When pouring drinks for the female dolls, a 4-year-old girl said, "That one really likes champagne."

Negative Attitudes

A 6-year-old boy pointed to cigarettes in the store and said, "I'm definitely not going to buy those; they can kill you."

A 6-year-old girl's first purchase was 2 packs of cigarettes. She then selected wine but put it back, saying, "That's only for grown-ups—it's not good for you."

A 5-year-old boy pointed to the beer and said, "I'm not going to buy that; my daddy drinks that."

A 6-year-old girl put 2 bottles of wine in the cart. As the cart filled up, she returned the bottles to the refrigerator, saying, "He has enough of these." When the researcher asked what it was, the girl responded, "Wine. He gets drunk enough!"

Contradictory Messages

In the grocery store, a 5-year-old boy selected the wine and asked, "Is this alcohol?" The researcher replied, "Yes," and the boy said, "I want it, and I want some smokes." After a pause, the boy asked, "Do you go to church?" The researcher replied that she went to synagogue, and the boy said, "Oh, my church says you can't smoke or drink alcohol."

On returning from the grocery store, a 6-year-old boy passed out cigarettes to the dolls. "These [Marlboros] are for you, and these [Camels] are for me." As he found more, he gave the same brand to each doll. "I wish I could smoke . . . but I won't, because it's yucky."

Brand Awareness

At the checkout counter, a 3-year-old girl identified the cigarettes she was buying. Camels: "Animal ones for Daddy." Marlboros: "Mommy smokes these."

On returning from the store, a 6-year-old girl gave the male doll 2 packs of cigarettes. "Here, honey, I brought you some Marlboros. And I bought some for myself."

A 6-year-old boy identified 2 of the products he was purchasing as "cereal" and "cigarettes." When asked if he knew what kind of cereal it was, he looked at the box of Lucky Charms and said, "I don't know, but it's my favorite cereal." When asked what kind of cigarettes he was buying, he replied, "Marlboros."

Social Scripts

A 6-year-old boy said to one of the female dolls, "Here's cigarettes. Let me take one out for you. Let me light it. Blow on it. Now for me."

After serving "birthday cake" and "beer" (actually wine), a 5-year-old girl said, "Now we are going to smoke; here's one for you, and one for you, and one for you. . . ." There were only 3 packs of cigarettes and 4 dolls. "Oh dear, we need some more."

After "eating," a 6-year-old girl said to her "friend" [the other doll], "Let's smoke these now. Here, which ones do you want?" The child took the Marlboros and gave the Camels to her friend. "Let's go outside and smoke these." The researcher asked why they had to go outside, and the child replied, "Because it's bad for your lungs or something."

After returning from the store with beer, a 4-year-old girl said, "The girls are going to go back to the store [to shop] while the boys stay here and drink [the beer]."

As soon as they returned to the apartment, a 5-year-old girl poured wine for the dolls. Later she poured a little more, saying, "Another half a glass."

Many more children purchased alcohol than cigarettes, perhaps reflecting the higher prevalence of alcohol use compared with smoking among the parents. Children were also more likely to purchase alcohol if they watched movies rated for older audiences, suggesting that the findings of studies linking entertainment media with adolescent alcohol use^{25,26} may also apply to much younger children. Although previous studies have demonstrated a link between movie viewing and adolescent smoking behavior,^{27,28} the apparent association was not statistically significant in this study. This could be due to the small sample size, the lower exposure to PG-13- and R-rated movies among younger children compared with adolescents, or differences in the way smoking and alcohol are portrayed in movies.²⁹ However, because we did not measure or control for parental characteristics related to child rearing, further study is needed to evaluate media influences that are independent of parent or family characteristics.

We found that the role-playing scenario was a particularly effective method for examining preschoolers' attitudes and perceptions about tobacco and alcohol. The method was especially well suited for preschoolers because they became so absorbed in the play that they expressed themselves freely, despite the presence of an adult researcher. This approach is more likely to yield valid information about attitudes than methods that require young children to respond to direct questions.³⁰ An advantage of the shopping component was that it allowed us to quantify the number of children who spontaneously selected cigarettes or alcohol. The playtime "at home" provided an opportunity to gather more in-depth information about children's perceptions of the social utility of these products. Although the observational data are more difficult to quantify, they are useful for generating hypotheses and identifying themes for future research. For example, several of the children's comments demonstrated a high level of brand awareness for cigarettes that was not apparent for alcohol, perhaps reflecting children's appreciation of brand loyalty among smokers.

This study involved a convenience sample of 120 children. Almost all of the children were white and lived in a rural or semirural area; 86.7% of the children had parents with college degrees or higher. We do not know if these findings can be generalized to other populations. Each role-playing session was unique, which meant that there was some variability in the interactions between the researcher and child participants. Because we did not change the placement of the items in the store, we were unable to examine ordering effects for the products. In addition, we did not use an equal number of items for each product category, which may have influenced a child's likelihood of choosing different products. Cigarette and alcohol products accounted for 15 (11%) of the 133 items stocked in the store. Although this proportion is probably greater than what one would find in a supermarket, it is possible that the proportion of cigarettes and alcohol products was underrepresented relative to a convenience store. We also did not use prominent displays of alcohol or tobacco products, as are typically found in most stores.³¹ Our intent was not to replicate a supermarket with all products in exact proportions but to create a scenario in which the children

models for young children, it is not surprising that parental cigarette and alcohol use would influence children to choose these products while role-playing as adults.

could freely choose what products they wanted for an “evening with friends.” We believe that the store setup achieved this intent, and our observations of the play behavior indicated that children intentionally chose specific products rather than randomly selecting items. Nonetheless, we believe that it would be worthwhile to vary the proportions of products in future studies to evaluate the extent to which this may affect children’s choices.

Adults are often reluctant to introduce the topic of alcohol or tobacco to young children because they are afraid that it may be too suggestive. Others do not believe that children think about tobacco or alcohol at such a young age. However, the results of this study demonstrate that preschoolers have already begun to develop behavioral expectations regarding the use of cigarettes and alcohol. The data suggest that observation of adult behavior, especially parental behavior, may influence preschool children to view smoking and drinking as appropriate or normative in social situations. Although it is not clear whether these expectations predict future use, the data provide compelling evidence that the process of “initiation,” which typically involves shifts in attitudes and expectations about the behavior,³²⁻³⁴ begins as young as 3 years of age. The results from this study suggest that alcohol and tobacco prevention efforts may need to be targeted toward younger children and their parents.

Accepted for Publication: March 19, 2005.

Correspondence: Madeline A. Dalton, PhD, Department of Pediatrics, Dartmouth Medical School, One Medical Center Drive, Lebanon, NH 03756 (Madeline.Dalton@Dartmouth.edu).

Funding/Support: This study was funded by grant 37642 from The Robert Wood Johnson Foundation, Princeton, NJ.

Acknowledgment: We thank Diana Leddy, MEd, for helping to develop the method for the role playing; Marguerite Stevens, PhD, for her input on study design; M. Bridget Ahrens, MPH, for recruiting participants; Susan Martin, BS, Holly Pierce, BA, Laura Brown, BA, and Cynthia Patch for providing administrative and research support for the study; Katharine Dougherty, PhD, for her input on the analysis and interpretation of the data; and Meghan Longacre, PhD, for her editorial comments.

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