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Mothers' and Fathers' Prescription Drug Misuse in Family Contexts: Implications for the Adjustment of Parents of Children With and Without Autism

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Abstract

Although prescription drug misuse is an identified risk factor for individuals' outcomes, less is known about its occurrence in and implications for families. To address this limitation, we examined whether mothers' and fathers' prescription drug misuse is associated with the adjustment of parents, including those with a child with autism spectrum disorder (ASD) and those without. Mothers and fathers from families with a child with ASD ($n = 178$) and comparison families without a child with ASD ($n = 174$) completed surveys of past-year prescription drug misuse and their personal and relationship adjustment. In total, 7.7% ($N = 27$) of mothers and 8.2% ($N = 29$) of fathers reported recent prescription drug misuse. There was significant interdependence between mothers' and fathers' recent prescription drug misuse in families with a child with ASD but not in comparison families. Actor-partner interdependence modeling was used to examine associations between parents' prescription drug misuse and their own and their partner's adjustment, controlling for medical use of prescription drugs and demographic covariates. Across family diagnosis statuses, mothers' prescription drug misuse predicted higher levels of their own alcohol problems, whereas fathers' prescription drug misuse related only to mothers' poorer sleep quality. Moreover, mothers' prescription drug misuse was associated with higher levels of their own depression symptoms in ASD-status (but not in comparison) families. Understanding parents' prescription drug misuse and its effects on family members is critical for informing future research and prevention and treatment strategies.

Keywords

Adjustment; autism; family; parents; prescription drug misuse

Introduction

As the fastest growing substance problem in the United States (U.S. Department of Health and Human Services, 2016), studies that shed light on the occurrence and implications of prescription drug misuse remain imperative. To date, research on the use of prescription drugs for non-medical purposes—either taking prescription medication intended for another person, or in a way other than intended by a physician—has mainly focused on establishing

prevalence rates and identifying individual correlates of the behavior. The behavior itself is harmful and poses additional costs to individuals and society on the basis of its established links with illicit drug use, alcohol abuse, mental health problems, and overdose deaths (e.g., Benotsch, Koester, Luckman, Martin, & Cejka, 2011; Centers for Disease Control and Prevention, 2011; McCabe, Cranford, & Boyd, 2006; Scherrer et al., 2016). Recently, conceptual and empirical work has encouraged understanding misuse as it occurs in important ecological contexts (Nargiso, Ballard, & Skeer, 2015). Supporting this area of emphasis, investigations of married and dating couples' prescription drug misuse document negative implications of the behavior for couple relationship functioning (e.g., Homish, Leonard, & Cornelius, 2010; Papp, 2010). The current study extends understanding of the implications of misuse for multiple domains of adaptation to parental dyads in diverse family contexts, including those with a child with autism spectrum disorder (ASD) and those without.

Research based on couples documents a tendency for partners to influence each other's substance use behaviors, including concordance in married partners' drinking behaviors (Leonard & Eiden, 1999) and in recent misuse of prescription drugs among dating partners (Papp, 2010). Some researchers have noted that alcohol use problems of one person affect both partners (Rodriguez, Neighbors, & Knee, 2014), although these cross-partner effects are not always consistent and seem to be stronger for females' adjustment. For example, husbands' and wives' alcohol problems affect wives' depressive symptoms, but only husbands' alcohol problems affect husbands' depressive symptoms (Homish, Leonard, & Kearns-Bodkin, 2006). Similarly, relationship factors were associated with wives' (but not husbands') prescription drug misuse (Homish et al., 2010); however, these dyadic linkages remain untested in diverse family contexts, including those with children with a neurodevelopmental disability.

We take advantage of a unique sample of parents of children with ASD and comparison parents of typically developing children to examine interrelations between parents' prescription drug misuse and test whether individuals' misuse has implications for their own and their partners' adjustment. Parents of children with ASD are faced with a high level of child-related challenges due to their son or daughter's symptoms (i.e., impairments in social communication, restricted and repetitive behaviors, and sensory sensitivities) and co-occurring behavior problems (e.g., inattention and anxiety; Maskey, Warnell, Parr, Le Coutuer, & McConachie, 2013). Results from comparative studies consistently find that parents of children with ASD evidence more parenting stress and psychological symptoms than parents of matched-control children with no disability (Baker-Ericzén, Brookman-Frazee, & Stahmer, 2005) or with other types of disabilities (e.g., Down syndrome) and chronic illnesses (Rao & Beidel, 2009). Although studies of differences in substance use behaviors are substantially less common, there is some evidence that parents of children with ASD engage in more alcohol use and less tobacco and illegal drug use relative to adults in comparison samples (Wade, Cox, Reeve, & Hull, 2014). Furthermore, prescription drug misuse remains untested in ASD contexts. We therefore test family status (i.e., families with vs. without a child with ASD) as a moderator in addressing the following two hypotheses:

First, in light of established similarity in romantic partners' risky health behaviors (e.g., smoking; Etcheverry & Agnew, 2008), we expected a greater likelihood of recent misuse of prescription medications among parents whose partner endorsed recent misuse. Furthermore, we predicted a more robust dyadic association in prescription misuse among parents from ASD families than comparison families due to their potential shared source of parenting stress.

Second, we predicted that mothers' and fathers' misuse of prescription drugs would be associated with their own and their partners' indicators of poorer adjustment, broadly defined. Substance use generally is associated with more negative mood (and less positive mood) and elevated depression symptoms (Kassel & Veilleux, 2010). Also, prior work on the co-use of multiple substances reveals links between prescription misuse, in particular, and problems with alcohol use (Teter, McCabe, Boyd, & Guthrie, 2003), along with elevated physical health and sleep problems (Lund, Reider, Whiting, & Prichard, 2010). In terms of relationship functioning, Papp (2010) found associations between individuals' prescription drug misuse and their own and their romantic partners' impaired relationship quality, and substance abuse, in general, is highly disruptive to family bonds (Mayes & Truman, 2002).

Prescription drug misuse was hypothesized to positively relate to parents' problematic alcohol use, depression symptoms, negative affect, and physical health symptoms. Prescription drug misuse was also expected to be inversely related to levels of sleep quality and positive affect. Prescription drug misuse was hypothesized to relate to lower levels of relationship satisfaction and to higher levels of parenting strain. Individuals' misuse of prescription drugs was expected to be more consistently associated with their own adjustment levels compared to those of their partners. Prescription drug misuse-adjustment linkages generally were expected to be stronger among parents in ASD relative to comparison families, given their potential shared source of parenting challenges.

Past research has identified lifetime history of prescription medications as a risk factor for prescription misuse (McCabe, West, Teter, & Boyd, 2014). Therefore, all analyses controlled for individuals' medically-appropriate prescription drug use as well as relevant demographic covariates. We further accounted statistically for testing multiple domains of parental adjustment, and present the conservatively-adjusted set of results.

Methods

Recruitment

The present study is based on Time 1 of a longitudinal study originally including 183 couples who had a child with ASD and 182 couples who had a child without a disability aged 5–12 years. Recruitment occurred through school mailings, fliers at ASD clinics and community settings (e.g., libraries), and research registries. Inclusion criteria for both groups included being in a longstanding relationship (≥ 3 years), having a child aged 5–12 years, and both partners participating in the study. In the ASD families, parents provided medical/educational records to document the child's ASD diagnosis; the diagnostic evaluation had to include the Autism Diagnosis Observation Schedule [Lord et al., 2000]). Twelve families in the ASD group had more than one child with ASD; the oldest was the study focus. Parents in

both the ASD and comparison group completed the Social Responsiveness Scale – Second Edition (SRS-2; Constantino & Gruber, 2012) to assess the focus child’s current ASD symptoms. Five children with ASD had a SRS-2 Total t -score < 60 , and these families were excluded. Couples in the comparison group could not have any children with a suspected or diagnosed developmental disability or who had received Birth-to-3 or special education services (verified with screening questions). A target child (i.e., who was study focus) was selected in comparison group families to match the age and gender of a child in the ASD group. Eight target children in the comparison group had a SRS-2 Total t -score ≥ 60 and these families were removed.

The socio-demographics for the ASD and comparison group are displayed in Table 1. In six families (4 ASD and 2 comparison), the target child had been adopted (< 5 years prior). Five couples (2 ASD and 3 comparison) were not married. In 21 families (12 ASD, 9 comparison) one parent was a stepparent. Independent samples t -tests and chi-square comparisons indicated no significant group differences (ASD vs. comparison) in parent age or race/ethnicity (Caucasian, non-Hispanic vs. other), paternal education, number of children in the family, or couple relationship length. However, the ASD group had lower household income and maternal education level than the comparison group.

Procedure and Measures

Parents were interviewed and independently completed questionnaires during a 2.5-hour home or lab visit. Parent education and income were independently reported on by parents and included as covariates in models. Parent education was coded as high school degree (0), high school diploma/General Equivalency Diploma (1), some college (2), college degree (3), some graduate school (4), and graduate/professional degree (5). Parents reported their individual income coded $\leq \$9,999$ (0) to $\geq \$160,000$ (14).

Parents independently reported on their prescription drug use (medical and nonmedical) in the past year, following procedures described by McCabe (2008). Parents were asked, “Based on a doctor’s prescription, on how many occasions in the past year have you used the following types of drugs?” in regards to the following list of drugs: 1) sleeping medication (e.g., Ambien [zolpidem], Halcion [triazolam], Restoril [temazepam], temazepam, triazolam); 2) sedative or anxiety medication (e.g., Ativan [lorazepam], Xanax [alprazolam], valium [diazepam], Klonoin [clonazepam], diazepam, lorazepam); 3) stimulant medication (e.g., Ritalin [methylphenidate], Dexedrine [dextroamphetamine], Adderall [dextroamphetamine and amphetamine], Concerta [methylphenidate], methylphenidate); and 4) pain medication (i.e., opioids such as Vicodin [hydrocone and acetaminophen], OxyContin [oxycodone], Tylenol 3 [acetaminophen with codeine], Percocet [oxycodone and acetaminophen], Darvocet [propoxyphene and acetaminophen], morphine, hydrocodone, oxycodone). Response options included: ‘never’ (0), ‘1–2 occasions’ (1), ‘3–5 occasions’ (2), ‘6–9 occasions’ (3), ‘10–19 occasions’ (4), ‘20–39 occasions’ (5), ‘40 or more occasions’ (6), and an average of the responses to the four classes was included as a respondent’s medical use of prescription drugs.

Parents were also asked, “Sometimes people use prescription drugs that were meant for other people or in ways that do not follow their own doctor’s orders. On how many

occasions in the past year have you used the following types of drugs, either without a physician's order (prescribed to someone else), or in greater frequency or amount than prescribed to you, or for a different reason than intended for you?" in relation to the same list of drugs. Response options for both items included: 'never' (0), '1–2 occasions' (1), '3–5 occasions' (2), '6–9 occasions' (3), '10–19 occasions' (4), '20–39 occasions' (5), '40 or more occasions' (6). On the basis of limited variability in these responses, prescription drug misuse was coded as any past-year misuse (i.e., at least one medication class response of 1 or greater) versus no past-year misuse.

Parents independently reported on their alcohol use, alcohol dependence symptoms, and alcohol-related problems using the Alcohol Use Disorders Identification Test (AUDIT; Babor, Higgins-Biddle, Saunders, & Monterio, 2001). The first two items inquire about frequency of drinking alcohol (rated: 'never' [0], 'monthly or less' [1], '2–4 times a month' [2], '2–3 times a week' [3], and '4 or more times a week' [4]) and number of alcoholic drinks on a typical day when drinking (rated: '1 or 2' [0], '3 or 4' [1], '5 or 6' [2], '7 to 9' [3], and '10 or more' [4]). Six items ask about the frequency of having six or more drinks on one occasion and alcohol-related problems (e.g., unable to remember what happened, rated as 'never' (0), 'less than monthly' (1), 'monthly' (2), 'weekly' (3), or 'daily or almost daily' (4)). The final two items ask whether someone else has been injured as their drinking alcohol and whether someone has expressed concern about their drinking rated as 'no' (0), 'yes, but not in the last year' (2), and 'yes, during the last year' (4). The AUDIT has been shown to have adequate internal consistency in young adult men (Cronbach $\alpha = .72$) and women (Cronbach $\alpha = .72$) (Papp, 2010). There was also adequate internal consistency in the current sample (ASD: Cronbach $\alpha = .70$; comparison: Cronbach $\alpha = .73$).

The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) was used to assess positive and negative affect in the past week. The PANAS consists of a 10-item positive affect (e.g., excited, determined, and proud) and 10-item negative affect (e.g., ashamed, distressed, and guilty) scale. Each item was rated from 'none of the time' (0) to 'all of the time' (4). The PANAS is one of the most widely used affect scales and shows strong reliability (Crawford & Henry, 2004) and good convergent and discriminant validity (Watson et al., 1988). The two PANAS scales also had adequate internal consistency in the current sample (ASD: Cronbach $\alpha = .79$ and $\alpha = .82$; comparison: Cronbach $\alpha = .81$ $\alpha = .80$).

Depressive symptoms were assessed by the Center for Epidemiological Studies-Depression Scale (CES-D; Radloff 1977), a 20-item self-report questionnaire of depressive symptoms over the past week. The CES-D has shown high internal consistency in parents of children with ASD (Taylor & Warren, 2012). The CES-D had strong internal reliability in the current sample (ASD: Cronbach $\alpha = .82$; comparison: Cronbach $\alpha = .81$).

Parents rated the presence (1) (versus absence [0]) of 48 physical health conditions (e.g., migraine headaches, heart disease, diabetes, thyroid diseases, etc.). The total number of health conditions was summed and used to assess physical health.

Sleep quality was assessed using a single item from the Pittsburgh Sleep Quality Index (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989): “During the past month, how would you rate your sleep quality overall?” rated ‘very bad’ (0) to ‘very good’ (3). Similar single-items have been used to assess overall sleep quality in previous work and show strong convergent validity with multiple-item measures of sleep quality (Cappelleri et al., 2009). In the current sample, this single-item was significantly positively associated with the average number of hours slept reported in a 14-day daily diary (ASD: $r = .47$, $p < .001$; comparison: $r = .53$, $p < .001$).

The 32-item Couple Satisfaction Index (CSI; Funk & Rogge, 2007) was used to assess satisfaction with the couple relationship. The CSI was developed through an item-response theory analysis of 180 items commonly used to measure relationship satisfaction. The CSI has strong reliability and construct validity (Funk & Rogge, 2007). Sample item: “In general, how often do you think that things between you and your partner are going well?” Higher total CSI indicates higher satisfaction with the couple relationship. The CSI had adequate internal consistency in the current sample (ASD: Cronbach $\alpha = .80$; comparison: Cronbach $\alpha = .81$).

The Burden Interview (Zarit, Reever, & Bach-Peterson, 1980) assesses the subjective perception of difficulty and distress associated with caregiving as well as objective burden related to caregiving. This measure has been used with parents of children with ASD (Hartley, Baker, Seltzer, Greenberg, & Floyd, 2011). Parents rate 29 items on a 3-point scale from *not at all* (0) to *extremely* (2). Sample item: “I feel stressed between trying to give to my child as well as to other family responsibilities, job, etc.” The Burden Interview has strong reliability and concurrent validity in the general population (Vitaliano, Young, & Russo, 1991) and in mothers of children with ASD (Hartley et al., 2011). The Burden Interview had good internal consistency in the current sample (ASD: Cronbach $\alpha = .84$; comparison: Cronbach $\alpha = .87$).

Data Analysis Plan

Associations between prescription drug misuse and indicators of parental adjustment were tested using the Actor-Partner Interdependence Model (APIM; Cook & Kenny, 2005; Kashy & Kenny, 2000). In brief, the APIM is a dyadic data analytic approach that simultaneously estimates the effect that a respondent’s independent variable has on his or her own dependent variable (i.e., actor effect) and on his or her partner’s dependent variable (i.e., partner effect), while controlling for shared variance in the partners’ independent variables and dependent variables and accounting for potential covariates (Campbell, Simpson, Kashy, & Rhoads, 2001). APIMs were fit using Analysis of Moment Structures (AMOS, v. 17.0; Arbuckle & Wothke, 1999). Traditional model-fit statistics are not presented because APIMs are recursive (Cook & Kenny, 2005). APIMs simultaneously estimated the associations between mothers’ and fathers’ prescription drug misuse and their own adjustment (i.e., actor effects) and between mothers’ and fathers’ prescription drug misuse and their partner’s adjustment (i.e., partner effects), while accounting for the positive covariation in parents’ likelihood of misuse, the residual covariation in partners’ adjustment, and the covariates of individuals’ appropriate use of prescription medication (correlated) and education and

income levels (the two family socio-demographic characteristics that differed by family status). Adopting strategies for a more conservative interpretation of the results (Maxwell & Delaney, 2004), we applied the false discovery rate (Benjamini & Hochberg, 1995) set at $\alpha = .05$ to control for testing multiple adjustment domains. Corrected results are reported under Results.

Equivalence of associations across family statuses (i.e., ASD vs. comparison) was tested using multi-group analyses for each of the eight models. We compared resultant model fit statistics when the four actor and partner paths were constrained and then allowed to vary across family statuses. A significant difference in the chi squared statistics would indicate that one or more of the constrained pathways differed by family status and therefore moderated by family status. Results from these comparisons are shown in Table 3. Only one significant difference test emerged, specifically, in the model that examined prescription drug misuse as a predictor of parental depression symptoms (described in Results).

Results

Prescription Drug Misuse Frequencies

Table 2 presents the frequency of prescription drug misuse by medication class reported by mothers and fathers across the ASD and control family statuses. The majority of parents (ASD: 161 mothers and 163 fathers, comparison: 164 mothers and 160 fathers) did not endorse recent misuse of prescription medications. Overall, 7.7% of all mothers and 8.2% of all fathers endorsed engaging in misuse of prescription medications in the past year. Parents' misuse rates did not reliably vary across ASD- vs. comparison-family statuses for either mothers (9.9% vs. 5.7%, $X^2 = 1.80$, $df = 1$, $p = .180$) or fathers (8.4% vs. 8.0%, $X^2 = 0.02$, $df = 1$, $p = .897$). Descriptive examination revealed that most parents who reported misuse engaged in misuse of a single medication class during the past year. In the autism families, 14 mothers and 11 fathers misused 1 medication, and 3 mothers and 4 fathers misused 2 medication classes. In the comparison families, 7 mothers and 12 fathers misused 1 medication, and 3 mothers and 2 fathers misused 2 or more medication classes.

Interdependence

Supporting our first hypothesis, tests of interdependence show that there was a significant within-couple association between mothers' and fathers' past-year misuse of any medication among the ASD families ($X^2 = 10.73$, $df = 1$, $p = .001$, $\Phi = .25$) but not among the comparison families ($X^2 = 2.05$, $df = 1$, $p = .152$, $\Phi = .11$).

Associations with Outcomes

APIM results that provide estimates of the associations between prescription drug misuse and parental adjustment after accounting for effects of the appropriate use of prescription medication and relevant socio-demographic covariates are shown in Table 4. Mothers' past-year prescription drug misuse was significantly related to higher levels of their own alcohol problems. Fathers' recent prescription drug misuse was significantly linked to lower levels of mothers' sleep quality. The single moderated family-status finding (noted above) indicated that mothers' recent prescription drug misuse was positively linked to higher levels

of their own depression symptoms among families of children with ASD but not among comparison families.

As shown in Table 4, no significant associations between fathers' prescription drug misuse and their own adjustment levels were documented. Neither maternal nor paternal prescription drug misuse in the past year was reliably related to their own or their partner's positive or negative affect, physical health conditions, relationship satisfaction, or parenting strain. The reliable associations documented between recent prescription misuse and parental alcohol problems (i.e., mother actor effect), depression symptoms (i.e., mother actor effect in the ASD family group), and sleep quality (i.e., father partner effect) provide partial support for our second hypothesis and were robust to medical use of prescription drugs, demographic covariates, and statistical controls for conducting multiple tests (see bolded results in Table 4).

Discussion

The present study is among the first to examine the occurrence of parental prescription drug misuse in family contexts, and to test implications of the misuse for parents' adaptation and maladaptation. Descriptive results indicate that parents across the family contexts (i.e., having a child with ASD vs. comparison families) did not show differences in past-year prescription drug misuse rates, while only partners in ASD families (and not those in comparison families) showed within-couple similarity in their recent prescription misuse. Post-hoc analyses were conducted to explore within-couple similarity based on misuse of specific classes of medication. Parents in the ASD family group showed significant interdependence in the misuse of pain ($X^2 = 10.15$, $df = 1$, $p = .001$) and stimulant ($X^2 = 28.50$, $df = 1$, $p < .001$) medications. There was insufficient data to test similarities in misuse of sleep or anxiety medications. Parents in the comparison group demonstrated significant interdependence in the misuse of anxiety ($X^2 = 7.18$, $df = 1$, $p = .007$) and stimulant ($X^2 = 86.50$, $df = 1$, $p < .001$) medications, but not pain ($X^2 = 0.92$, $df = 1$, $p = .336$) or sleep ($X^2 = 0.02$, $df = 1$, $p = .878$) medications. Future studies using larger samples are needed to elucidate why ASD families experience heightened interdependence of prescription drug misuse and particularly in pain medications. The vulnerability could be due to numerous factors, including shared level of high parenting stress among partners, greater access to medications via child prescriptions, or a parent's own subtle ASD-like personality traits due to a genetic etiology for ASD (Bora, Aydin, Saraç, Kadak, & Köse, 2017). For example, our post-hoc examination revealed that children in the ASD-status families were significantly more likely than children in the comparison-status families to be taking the prescription medications studied among the parents.

Analyses were conducted to understand associations between prescription drug misuse and parents' adjustment, and effects were documented for multiple outcome domains. The linkage between mothers' recent prescription misuse and alcohol problems aligns with findings from young-adult samples that individuals who misuse experience more alcohol- and drug-related problems than those who did not misuse (Teter et al., 2003); the implications are concerning given that co-use of substances has been shown to lead to more serious risks of health problems, drug abuse and dependence, and overdose (Jones, Mogali,

& Comer, 2012). Interestingly, fathers' prescription drug misuse uniquely predicted lower levels of mothers' self-reported sleep quality, encouraging future work to incorporate objective indicators of physiological responding. Conclusions regarding the direct associations between prescription drug misuse and parental adaptation that met conventional levels of statistical significance ($p < .05$) but were not robust to corrections for multiple statistical tests await future research; it is possible that these linkages, practically speaking, have a cumulative effect over time.

Associations between parents' prescription drug misuse and their broadly-assessed adjustment levels were similar across parents of children with and without ASD. Overall, the family context was a weaker moderator than expected, with only one of eight models showing a reliable difference across family status comparisons. In that instance, mothers' prescription drug misuse was positively related to their own depression symptoms for those in ASD (but not comparison) families. The finding may be interpreted in light of evidence that mothers of children with ASD and other neurodevelopmental disabilities evidence poorer mental health compared to their partners as well as comparison mothers (e.g., García-López, Sarriá, & Pozo, 2016; Herring et al., 2006); longitudinal data will allow us to establish whether the misuse behavior is a predictor or consequence of mental health symptoms and other adjustment indicators over time in mothers of children with ASD.

Additionally, the developmental timing of families' participation may help explain why ASD status was not identified as a consistent moderator of the associations. Specifically, the average age of target children in our study was the age at which the elevated risk of divorce among ASD parents was found to level off (i.e., around 8 years, Hartley et al., 2010). Therefore, parents whose personal and relationship adjustment was particularly taxed in the face of their child's ASD diagnosis would have been likely to separate prior to the time point investigated here. Also, it is likely that our treatment of child ASD-status as a moderator failed to capture a complete understanding of parental substance use and family functioning, thus encouraging future work to incorporate additional contextual characteristics (e.g., severity of challenging behaviors, comorbid disorders; Hayes & Watson, 2013). Finally, it is possible that ASD's limited moderating role reflects U.S.-based practices, including increased public awareness and policies to promote early intervention (Johnson & Myers, 2007), which could diminish the expected differences in links between prescription drug misuse and parental adjustment among ASD and comparison families.

Limitations

This study examined cross-sectional associations between parental prescription drug misuse and a host of personal and relational outcomes, with findings that encourage longitudinal work. Future process-oriented research will be needed to investigate whether fathers' misuse plays a role in their own or their partner's adjustment over time, and if there is an interaction between parental prescription drug misuse and alcohol use or other coping behaviors in predicting longer-term parent or child health and well-being. In addition, substance use in the family is concerning for its potential to alter parental perceptions of child emotional and behavioral problems (Killeen & Brady, 2000) and actual parenting behaviors (e.g., monitoring; Chapple, Hope, & Whiteford, 2005) alike. Future work is needed to examine the

effects of prescription drug misuse on a broader assessment of family constructs using multiple methods across family contexts. Finally, growing evidence based on individuals indicates differential correlates and outcomes as a function of the misuse of different medication classes; research on family members awaits this specification based on samples that offer sufficient variability in response rates for these sub-type analyses (e.g., testing effects of opioid misuse among families with a parent with chronic pain).

Conclusion

Understanding parental prescription drug misuse in family contexts remains imperative in light of the key role that parental adjustment plays in family-wide functioning (Killeen & Brady, 2000). In our early study of prescription drug misuse in the family, we focused on linkages between the substance behavior and parents' broad adjustment. Our ongoing longitudinal assessments of family members will provide an ideal avenue for extending these tests to longer-term effects of mothers' and fathers' prescription drug misuse on children and family dynamics (e.g., parent-child interactions) and identifying mediational processes. Notably, these factors may set the stage for youths' eventual prescription medication behavior as well, given that nationally-representative survey data has shown that adolescents with stronger family relationships are less likely to engage in prescription drug misuse (Ford, 2009).

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Table 1

Socio-Demographic Characteristics of the Autism Spectrum Disorder (ASD) and Comparison Families

	ASD (<i>n</i> = 178)	Comparison (<i>n</i> = 174)	<i>t</i> -value or χ^2 , <i>p</i> -value
Mother			
Age in years (M [SD])	38.71 (5.59)	38.76 (5.99)	<i>t</i> (350) = 0.32, <i>p</i> = .75
Race/Ethnicity (N [%])			
White, Non-Hispanic	160 (89.9%)	150 (86.2%)	χ^2 (2, <i>N</i> = 351) = 1.13, <i>p</i> = .29
Other	18 (10.1%)	24 (13.8%)	
Education (N [%])			
No HS Degree	3 (1.7%)	5 (2.9%)	χ^2 (5, <i>N</i> = 349) = 9.70, <i>p</i> = .05
HS Degree or equivalency	11 (6.2%)	10 (5.7%)	
Some college	31 (17.1%)	19 (10.2%)	
Associates or Bachelor's degree	96 (53.9%)	81 (46.6%)	
Graduate degree	37 (20.8%)	59 (33.9%)	
Father			
Age in years (M [SD])	40.44 (6.24)	40.51 (6.58)	<i>t</i> (350) = 0.33, <i>p</i> = .74
Race/Ethnicity (N [%])			
White, Non-Hispanic	156 (87.6%)	146 (83.9%)	χ^2 (2, <i>N</i> = 350) = 1.01, <i>p</i> = .32
Other	22 (12.4%)	28 (16.1%)	
Education (N [%])			
No HS Degree	10 (5.6%)	4 (2.3%)	χ^2 (5, <i>N</i> = 349) = 7.22, <i>p</i> = .12
HS Degree or equivalency	22 (12.4%)	14 (8.0%)	
Some college	25 (14.0%)	23 (13.2%)	
Associates or Bachelor's degree	88 (49.4%)	85 (48.9%)	
Graduate degree	33 (18.5%)	48 (27.6%)	
Relationship Length (M [SD])	11.30 (5.23)	11.91 (4.64)	<i>t</i> (350) = 1.17, <i>p</i> = .24
Household income (M [SD])	9.00 (3.19)	10.63 (2.85)	<i>t</i> (349) = 5.06, <i>p</i> < .01
Number of Children (M [SD])	2.41 (1.08)	2.55 (1.05)	<i>t</i> (350) = 1.22, <i>p</i> = .22
Target Child			
Male (N [%])	155 (87.3%)	146 (83.4%)	χ^2 (2, <i>N</i> = 351) = .75, <i>p</i> = .39
Age in years (M [SD])	7.88 (2.24)	7.99 (2.35)	<i>t</i> (351) = 0.39, <i>p</i> = .70
Birth order (N [%])			
Oldest	110 (61.8%)	105 (60.3%)	χ^2 (2, <i>N</i> = 351) = .01, <i>p</i> = .95

Note. HS = High school.

Table 2

Frequency of Prescription Drug Misuse by Mothers and Fathers of Children With and Without Autism Spectrum Disorder (ASD)

Prescription Drug Misuse	Respondents			
	ASD Families		Comparison Families	
	Mothers	Fathers	Mothers	Fathers
Pain	14	13	6	12
Sleeping	3	0	2	2
Sedative/anxiety	0	4	5	4
Stimulant	3	2	2	1

Note. Results are drawn from 178 mother-father dyads in the ASD families and 174 in the comparison families.

Table 3

Results from Chi-Squared Difference Tests for Free to Vary Model Versus Constrained Model

Model	χ^2	df	χ^2	df
Alcohol problems	299.7	68	8.4	4
Positive affect	289.0	68	3.5	4
Negative affect	290.1	68	6.9	4
Depression	293.6	68	11.7 [*]	4
Physical health conditions	287.7	68	6.3	4
Sleep quality	286.1	68	3.7	4
Relationship satisfaction	290.2	68	8.2	4
Parenting strain	298.9	68	6.1	4

^{*}
 $p < .05$.

Table 4
 APIM Results: Associations Between Prescription Drug Misuse and Parental Adjustment in Family Contexts

	Actor effects			Partner effects		
	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers
Alcohol problems ^a	0.36	0.63	1.21 [*]	2.76	-0.29	-0.70
Positive affect ^a	-1.63	-1.49	-2.07	-1.88	-2.49 [*]	1.77
Negative affect ^a	0.75	0.87	0.22	0.22	1.38	-0.36
Depression ^b	-0.93	-0.59	5.87 [*]	3.34	-0.94	-1.17
ASD status					-0.51	-0.79
Comparison status	2.69	1.74	-0.49	-0.26	2.80	1.61
Physical health conditions ^a	-0.11	-0.38	-0.41	-0.94	0.40	-0.16
Sleep quality ^a	-0.17	-1.48	-0.15	-1.18	-0.46 [*]	-0.19
Relationship satisfaction ^a	-0.58	-0.22	-6.66 [*]	-2.20	1.23	-5.76 [*]
Parenting strain ^a	2.61 [*]	2.23	3.10 [*]	2.32	0.51	-0.56

Note. Models account for the covariance between fathers' and mothers' medical use of prescription drugs, prescription drug misuse, and adjustment measures residuals, and the demographic covariates of education and income. Table presents unstandardized coefficients with *t*-values. Bolded results reflect a significant association ($p < .05$) after controlling for multiple tests conducted.

^a Associations did not vary by family status.

^b Results shown for different family statuses due to significant moderation effect.

^{*} $p < .05$.