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Psychological Dysregulation During Adolescence Mediates the Association of Parent-Child Attachment in Childhood and Substance Use Disorder in Adulthood¹

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Abstract

Objective—This prospective study tested the hypothesis that psychological dysregulation in mid-adolescence (age 16) mediates the association between parent-child attachment in late childhood (age 10-12) and development of substance use disorder (SUD) in adulthood (age 22).

Method—The *Youth Attachment to Parents Scale (YAPS)* was developed in 10-12 year old boys and girls (N = 694) at baseline residing in western Pennsylvania. Psychological dysregulation was measured by the neurobehavior disinhibition trait. Substance use was assessed at ages 10-12, 12-14, 16 and 19. SUD was diagnosed at age 22 using the Structured Clinical Interview for DSM Disorders. The mediation of parent-child attachment and SUD by neurobehavior disinhibition was tested separately for mothers and fathers while controlling for baseline substance use.

Results—Psychological dysregulation mediates the association between attachment to mothers and SUD, and partially mediates the association between attachment to fathers and SUD. Significant mediation effects remains after controlling for baseline substance use.

Conclusion—Optimal prevention of SUD should include ameliorating both psychological dysregulation predisposing to SUD and quality of the parent-child relationship.

Keywords

Parent-child attachment; substance use disorder; psychological dysregulation

Introduction

Substance use (SU) and its medical/psychiatric outcome, substance use disorder (SUD) constituting abuse and dependence, exert a heavy toll on society. While it is not possible to precisely specify the cost, government-sponsored insurance programs are billed for over half of all hospital stays for problems directly caused by or co-occurring with SU and SUD (1). Expenditures exceed all other medical/psychiatric disorders (2), approximating six hundred billion dollars annually (3). Over two million emergency room visits in 2011 pertained to

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substance use (4). Enormous societal resources allocated for health services delivery are a consequence of the high prevalence of SUD. For example, lifetime prevalence of SUD in the U.S. consequent to habitual consumption of tobacco, alcohol, and illegal drugs is 25%, 20%, and 10% (5, 6, 7). Costs related to crime, accidents, underemployment, injury, disease transmission and loss of life further add to the societal burden. Accordingly, high priority is attached to elucidating the origins of SU/SUD within a developmental framework so that effective prevention can be implemented at targeting the predisposing factors.

Toward this goal, it is well known that deficient parenting skills (8), inconsistent and conflictual communication (9, 10), low supervision (11) and punitive discipline (12) amplify risk for initiating SU and subsequently developing SUD (13). In addition, neglectful parenting augments risk for these outcomes (14). Although neglectful parenting occurs for a variety of reasons, the common thread linking neglect to SU and SUD is a weak emotional bond between parents and child. Parental bonding to a newborn requires investment of resources and effort, whereas in older children, maintaining a strong parent-child bond is contingent on both parent and child. This mutually influencing process is especially important for elucidating the etiology of SUD, considering that characteristics of the child that commonly presage SUD (e.g. difficult temperament, ADHD, conduct problems) and characteristics of parents (e.g. SUD-related impairments) hamper maintenance of the parent-child bond.

Parental attachment, defined as an enduring emotional bond and engagement between child and parent (15), has not been systematically studied with respect to development of SUD. This is not surprising considering that attachment typically manifests by two years of age (15, 16) and peak incidence of SUD occurs almost two decades later (17). Hence, long-term tracking is required to document the influence of parent-child bonding on SU and SUD etiology. Furthermore, many factors occurring throughout the long period of development influence the quality of the parent-child relationship, such as changing life circumstances in the parent (e.g. divorce, job loss, medical illness, psychiatric disorder) and the child (e.g. friendships, school).

Instruments measuring attachment have been developed for young children (*Strange Situation*) (18), as well as for youths during middle childhood and adolescence (*People in My Life Scale*) (19, 20, 21). A gap exists, however, for measurement of attachment in pre-adolescent older children. This shortcoming impedes delineating SUD etiology within an ontogenetic framework, considering that first exposure to abusable substances often occurs during this developmental period or soon thereafter. Accordingly, the first aim of this study was directed at deriving an attachment scale for 10-12 year old children.

Additionally, behavior undercontrol in childhood, often manifesting in context of a psychiatric disturbance (e.g. ADHD, conduct disorder), predisposes adolescents to SU and SUD (22, 23) and is frequently linked to the parent-child relationship. In view of these findings, the hypothesis is advanced that psychological dysregulation at middle adolescence (age 16) mediates the association between attachment to parents during childhood (age 10-12) and SUD in early adulthood (age 22). Confirmation of this hypothesis advances understanding of SUD etiology, as well as informs prevention. Specifically, in conformance

with the NIH Roadmap (24), confirmation of this hypothesis illustrates the need for a two-pronged approach to SUD prevention directed at potentiating acquisition of psychological self-regulation during ontogeny along with consolidating a strong parent-child affectional bond.

Methods

Subjects

Based on extensive evidence showing that children of SUD+ fathers are at greatly elevated risk for SUD, the proband was the biological father who either qualified for SUD diagnosis concomitant to consumption of illegal drugs (SUD+; N = 344) or had no adult onset Axis I or II psychiatric disorder (SUD-; N = 350). Fathers were recruited from the western region of Pennsylvania using public service announcements, advertising, and random digit telephone calls. Approximately 20% of the SUD+ men were recruited from treatment facilities. Forty-nine percent of all contacts with potential probands who met study criteria agreed to participate. Their sons were evaluated at age 10-12 and re-contacted for follow-up study when the sons attained 12-14, 16, 19, and 22 years of age. Four years after recruitment was initiated, the study was expanded to include daughters, resulting in a smaller female subsample. Exclusion criteria, limited to factors that could invalidate the results, were positive urine drug or breath alcohol screen, neurological disease, physical disability, uncorrected sensory impairment, psychosis, and fetal alcohol effects determined from mother's report of her drinking history and direct physical examination of the child.

Attrition, defined as failure to locate the individual or his/her refusal to participate between baseline and age 22 follow-up, was 35%. The demographic characteristics of the retained and attrited subjects are shown in Table 1. Ethnicity, sex distribution, and rate of parental SUD did not differ between these two segments of the sample. IQ measured by the Wechsler Intelligence Scale for Children, 3rd edition (WISC-III-R) (25) was, on average, six points lower in participants who attrited. However, both attrited and retained subjects scored in the average range of intelligence. The participants who attrited before age 22 also scored three points lower on the *Hollingshead index* (26). Nevertheless, retained and attrited participants were at baseline derived from the lower middle socioeconomic stratum.

Measures

Youth Attachment to Parents Scale (YAPS) (age 10-12)—The YAPS was designed to measure trust, communication, and alienation specific to the child's relationship with each parent. These measurement domains parallel the *People in My Life* (PIML) scale (19, 20). The items comprising the YAPS were selected from the *Revised Parent-Adolescent Communication Form* (27), *Child's Relationship with Caretaker Scale* (27), *Supervision/Involvement Scale* (28), *Children's Report on Parental Behavior Inventory* (29), and the *Dyadic Scale* in the *Family Assessment Measure* (30). Using a 4-point Likert format, the children rated their relationship with each parent. The items comprising the YAPS are presented in Table 2.

Exploratory factor analysis (EFA) was conducted on items shown in Table 2 using SPSS 19 (31). Although confirmatory factor analysis (CFA) is frequently used when an *a priori* model is implied, replication of a hypothesized factor structure by a data-driven EFA provides stronger confirmation of the model (32). In the EFA, factors were extracted using the maximum likelihood estimation method with varimax rotation. The criteria used to determine retention of factors included scree plots, item loadings, proportion of item covariances accounted for by each factor, eigenvalue-greater-than-one rule, interfactor correlations and face validity based on the *PIML*. It was expected, based on previous literature, that (a) the EFA would result in three first-order factors corresponding to *trust*, *communication*, and *alienation*, (b) the factors are highly correlated, and thus (c) a single second-order factor (attachment) exists (19, 20, 33). This implied model (i.e., three first-order factors and one second-order factor) is just identified, which superficially imposes perfect fit in CFA (34). Thus, to statistically test the fit of this model, EFA was conducted on the first-order factors (each summed scores of their respective items) using the same criteria noted above. In addition, a factor difference ratio [(eigenvalue 1) – (eigenvalue 2) / (eigenvalue 2) – (eigenvalue 3)] of three or greater was required to accept a single higher order factor (35).

Eigenvalues on the scales measuring attachment to fathers are 1 = 8.89, 2 = 2.18, 3 = 1.46, 4 = 1.21, 5 = 1.09, +5 < 1. For mothers, they are 1 = 7.81, 2 = 2.29, 3 = 1.65, 4 = 1.19, 5 = 1.08, +5 < 1. Scree plots of the eigenvalues reveal a three-factor solution accounting for 40.4% and 38% of inter-item variance on the YAPS in fathers and mothers, respectively. The factors, shown in Table 2, indicate that each item loads on only one factor. However, the three first-order factors are significantly inter-correlated: *communication* and *alienation* (father $r = .62$, $p < .001$; mother $r = .52$, $p < .001$), *communication* and *trust* (father $r = .53$, $p < .001$; mother $r = .46$, $p < .001$), and *alienation* and *trust* (father $r = .54$, $p < .001$; mother $r = .42$, $p < .001$). Accordingly, a second order factor may therefore constitute a more parsimonious measure of attachment. To examine this possibility, EFA was performed on the scores of the first-order factors. The results, shown in the bottom of Table 2, reveal that the second order factor accounts for 70.7% of variance in fathers and 64.6% of variance in mothers. In addition, Cronbach's alphas are .91 and .90, respectively, for fathers and mothers. Moreover, the factor difference ratio index values (father = 15.21; mother = 10.85) exceed the criterion to accept a higher order factor (35). Based on these findings, the second order factor score was used in the analyses.

Substance Use (age 10-12, 12-14, 16, 19)—Past thirty-day frequencies of cannabis, alcohol, and tobacco use were evaluated using the *Drug Use Screening Inventory* (DUSI-R) (36). A continuous substance use involvement index (SII) was also derived from the *Drug Use Chart* (37) as previously described using item response theory (38). The *Drug Use Chart* measures lifetime exposure to 42 psychoactive substances grouped into 10 drug categories aligned with the DSM-IV.

Substance Use Disorder—The Structured Clinical Interview for DSM-III-R (SCID) (39) was administered by trained master-level clinical associates when the participants reached 22 years of age. Notably, this approximates the peak incidence age for SUD (17).

The “best estimate” procedure (40) was used by a committee consisting of a psychiatrist certified in addiction psychiatry, another psychiatrist or clinical psychologist, and the clinical associates who conducted the interviews to consensually formulate SUD diagnosis. The binary outcome variable was presence or absence of any type of SUD with exception of disorder related to nicotine and caffeine use. These latter disorders are not usually associated with social maladjustment. Thirty-three percent of the sample qualified for SUD (39% of children of SUD+ fathers; 29% of children of SUD– fathers).

Drug use evaluated by the DUSI-R and SII, and SUD diagnosis evaluated by the SCID, provided the predictive validity criteria of the YAPS. In this fashion, correspondence between the purposeful use of the YAPS and different prospective manifest processes, namely substance use and SUD, was evaluated (32).

Psychological Self-Regulation—The neurobehavior disinhibition (ND) trait (41) was measured at age 16 pursuant to the hypothesis that low psychological self-regulation mediates the association between attachment in childhood and SUD in adulthood. This trait has been previously demonstrated to predict SUD (41). The variables comprising the ND trait encompass executive cognitive functioning, affect regulation, and behavior control. The executive cognitive variable is the factor score derived from the *Stroop*, *Porteus Maze*, *Vigilance*, *Forbidden Toys*, and *WISC-III-R Block Design* test scores. The affect variable is the difficult temperament index (12) derived from the revised *Dimensions of Temperament Survey* (42). The behavior variable is the factor score of the number of symptoms endorsed in the conduct disorder, oppositional defiant disorder, and attention deficit/hyperactivity disorder sections of the Kiddie-Schedule for Affective Disorders and Schizophrenia interview (43), and score on the *Disruptive Behaviors Disorders Rating Scale* (44). Predictive, construct, concurrent, and discriminant validity of the ND trait have been documented (45).

Statistical Analysis

Predictive criterion validity of the YAPS was evaluated by computing its correlation with the DUSI-R and SII scores, and performing logistic regression between the YAPS and SUD diagnosis. Temporal stability of the factor was examined using Pearson correlation between YAPS score at age 10-12 and YAPS score at age 12-14. Effect size (46) of .10, .30, and .50 indicate low, medium, and strong validity. The statistical analyses were conducted using Mplus (47) and Sobel’s method (48) for examining mediation with the following parameters: 1) Independent variable (attachment at age 10-12) predicts dependent variable (SUD at age 22); 2) Attachment predicts putative mediator (ND trait at age 16); and 3) ND predicts SUD. Full mediation is present if the ND trait reduces the association between attachment and SUD to non-significance whereas partial mediation is present if the magnitude of association is reduced but still significant. The timing of the variables was selected to attain temporal precedence and increase the strength of the mediation model (49). Mediation analyses were conducted separately for attachment to mothers and fathers, while controlling for baseline (age 10-12) substance use measured by the *Drug Use Chart*. Additional mediation analyses were conducted separately for children having SUD+ and

SUD– fathers. Differences in YAPS and ND scores between the two groups of subjects were analyzed using one-way ANOVA.

Results

The small portion of the sample living away from their biological fathers ($N = 46$) trended toward lower attachment scores ($t = 1.857, p = .064$). Removing these individuals from the analysis did not, however, change the results. Accordingly, the following description of results includes this subgroup.

Validity and Stability of the Youth Attachment to Parents Scale (YAPS)

Correlations between attachment and substance use frequency and involvement are shown in Table 3. As can be seen, attachment to fathers and mothers at age 10-12 correlates with cannabis use frequency at ages 16 and 19, but at age 12-14 this association is present for only the fathers. Attachment to fathers and mothers correlates with alcohol use frequency at age 19, but at age 12-14, this association is present for only the fathers. Tobacco smoking correlates with attachment to fathers and mothers at ages 12-14, 16 and 19. In addition, attachment to fathers and mothers correlates with substance use involvement at ages 16 and 19, but at age 12-14 this association is present for only the mothers. Attachment to the fathers ($OR = .900, p < .001, 95\% CI [.852, .951]$) and mothers ($OR = .921, p = .008, 95\% CI [.867, .978]$) predicts SUD at age 22. Furthermore, the YAPS score at age 10-12 correlates with YAPS score at age 12-14 (fathers: $r = .518, p < .001$; mothers: $r = .546, p < .001$). These results, in combination with analyses reported above, document the predictive criterion validity and temporal stability of the YAPS.

Neurobehavior Disinhibition Mediates the Association Between Attachment to Parents and SUD

Figures 1 and 2 depict the path coefficients relating attachment, ND score and SUD. As observed in Figure 1a,b, 1) stronger attachment to mothers predicts lower rate of SUD; 2) stronger attachment to mothers predicts lower ND score; and 3) higher ND score predicts SUD. The association between attachment to mothers and development of SUD ($\beta = -.192, p = .009$) reduces to non-significance upon adding the ND mediator ($\beta = -.118, p = .097$). Hence, ND mediates the association between attachment to mother and SUD ($\beta = -.073, z = -2.926, p = .003$). After controlling for substance use at baseline, the model retained all significant path coefficients (see Figure 1c) and a significant mediation effect ($\beta = -.083, z = -3.379, p = .001$) with good fit ($\chi^2 = 5.389, d.f. = 2, p = .068, CFI = .945, TLI = .835, RMSEA = .049$).

Following the same procedure for fathers, it can be seen in Figure 2a,b that 1) stronger attachment to fathers at age 10-12 predicts lower rate of SUD; 2) stronger attachment to fathers predicts lower ND scores; and 3) higher ND predicts SUD outcome. The association between attachment to father and SUD ($\beta = -.272, p < .001$) remains significant upon adding ND as the mediator ($\beta = -.194, p = .008$). However, ND retains a significant mediation effect on the association between attachment to fathers and child's SUD outcomes ($\beta = -.076, z = -3.201, p = .001$). Hence, ND is a partial mediator of the relationship

between attachment to father and risk of developing SUD at age 22. The model retained all significant path coefficients (see Figure 2c) and a significant mediation effect after controlling for baseline substance use ($\beta = -.112$, $z = -4.091$, $p < .001$) with good fit ($\chi^2 = 5.19$, $d.f. = 2$, $p = .075$, $CFI = .969$, $TLI = .908$, $RMSEA = .048$).

Upon separating subjects having either SUD+ fathers or SUD- fathers, it was found that ND remained a mediator, except in the association between attachment to mothers and SUD in subjects with SUD+ fathers, where the mediation effect trended toward significance ($\beta = -.090$, $z = -1.791$, $p = .073$). Subjects having SUD+ fathers exhibited weaker attachment to fathers ($F(1,571) = 10.094$, $p = .002$) and mothers ($F(1,577) = 4.522$, $p = .034$) along with more severe ND ($F(1,505) = 43.255$, $p < .001$).

Discussion

Two main findings emerged from this study. First, the *Youth Attachment to Parents Scale* (YAPS) was shown to have sound construct, predictive criterion validity, temporal stability, as well as excellent internal reliability. Hence, the YAPS is a useful measure of child's attachment to fathers and mothers. And second, applying the YAPS in prospective analysis, it was demonstrated that psychological dysregulation in mid-adolescence mediates the association between attachment in late childhood and SUD in early adulthood. Thus, conforming to findings obtained in young children (50, 51, 52), it can be concluded that quality of parent-child attachment in late childhood is integral to risk for developing SUD. Notably, however, the role of attachment on development of SUD is not identical in the mother-child and father-child relationship.

These results add to a substantial literature documenting the importance of the parent-child relationship on child's risk for SUD. However, whereas previous studies have shown that parenting style (53) and parenting skills (54, 55) are related to the child's propensity to engage in socially non-normative and illegal behaviors including substance use (10, 21, 56, 57), the present study demonstrates the importance of affective bonding during the developmental period proximal to adolescence, when opportunities for substance use initiation markedly increase.

Suboptimal parent-child attachment hampers caregiver motivation to invest in the child's well-being and accordingly impedes consistent and effective supervision and protection (58). Where low attachment is the outcome of parental disengagement and neglect, the child's risk for antisocial behavior, which often occurs in conjunction with substance abuse, is greatly increased (59). Even in the absence of neglect, the results obtained in this study indicate that low attachment needs to be taken into account along with parenting skills and discipline practices to reduce the child's SUD risk. In effect, family-based prevention programs should support a positive father-child and mother-child relationship as the foundation for receptivity to and motivation for behavior change in each member of the dyad.

The results reported herein underscore the importance of longitudinal research to clarify how parents and children reciprocally influence each other during attachment formation and

its maintenance with respect to charting the developmental trajectory to SUD. For example, insecure attachment at five years of age predicts emergence of callous-unemotional disposition (60), which in turn, impacts on parental involvement (61). Inasmuch as valid instruments for measuring attachment in early, middle, and late childhood, as well as adolescents are now available, it is therefore feasible to monitor quality of the parent-child bond within an ontogenetic model of SUD etiology (62, 63). Moreover, considering that quality of attachment fluctuates concomitant to changes in parent (e.g. progressive adverse effects of substance use and SUD) and child's characteristics (e.g. sexual, physical, and neurological maturation), it is important to monitor the strength and stability of the dyadic relationship so that interventions can be implemented in a timely fashion. Thus, while the dyadic bond may weaken consequent to disengagement by the parent or the child, the outcome remains increased risk for SU and SUD.

The findings reported herein must be considered in the context of study limitations. Convergent validity of the YAPS was not tested directly, although the three component scales align with other instruments measuring attachment, specifically the PIML (19, 20) and the *Inventory of Parent and Peer Attachment* (33). An assessment of peer attachment and items consistent with the peer attachment scale of the PIML were not available in the sample. Also, consequent to the long timespan of this longitudinal investigation, 35% of the sample did not return for the age 22 assessment. Whereas the analyses investigating differences between retained and attrited subjects do not point to systematic differences, the possibility of biased results cannot be completely discounted. In addition, caution needs to be exercised in interpreting the correlations between attachment and substance use since quantity consumed during each occasion was not measured. Furthermore, attachment was measured only from the child's perspective. Future research needs to elucidate the congruity between parents and children. Whether parental report of attachment is a superior predictor of SUD in the child also remains to be investigated. Lastly, the limited number of girls in the sample precluded examining whether males and females differ with respect to the role of attachment on development of SUD (e.g., the ratio of N to parameters in the factor analysis is insufficient to obtain robust estimates).

In summary, this investigation demonstrated that the *Youth Attachment to Parents Scale* has content, construct, and criterion validity. Using this scale, it was found that psychological dysregulation measured by the neurobehavior disinhibition trait in mid-adolescence (age 16) mediates the association between low attachment during late childhood (age 10-12) and SUD in early adulthood (age 22). Prevention programs thus may improve by incorporating interventions that target the child's vulnerability (ND) while concomitantly promoting affective bonding between the child and parents.

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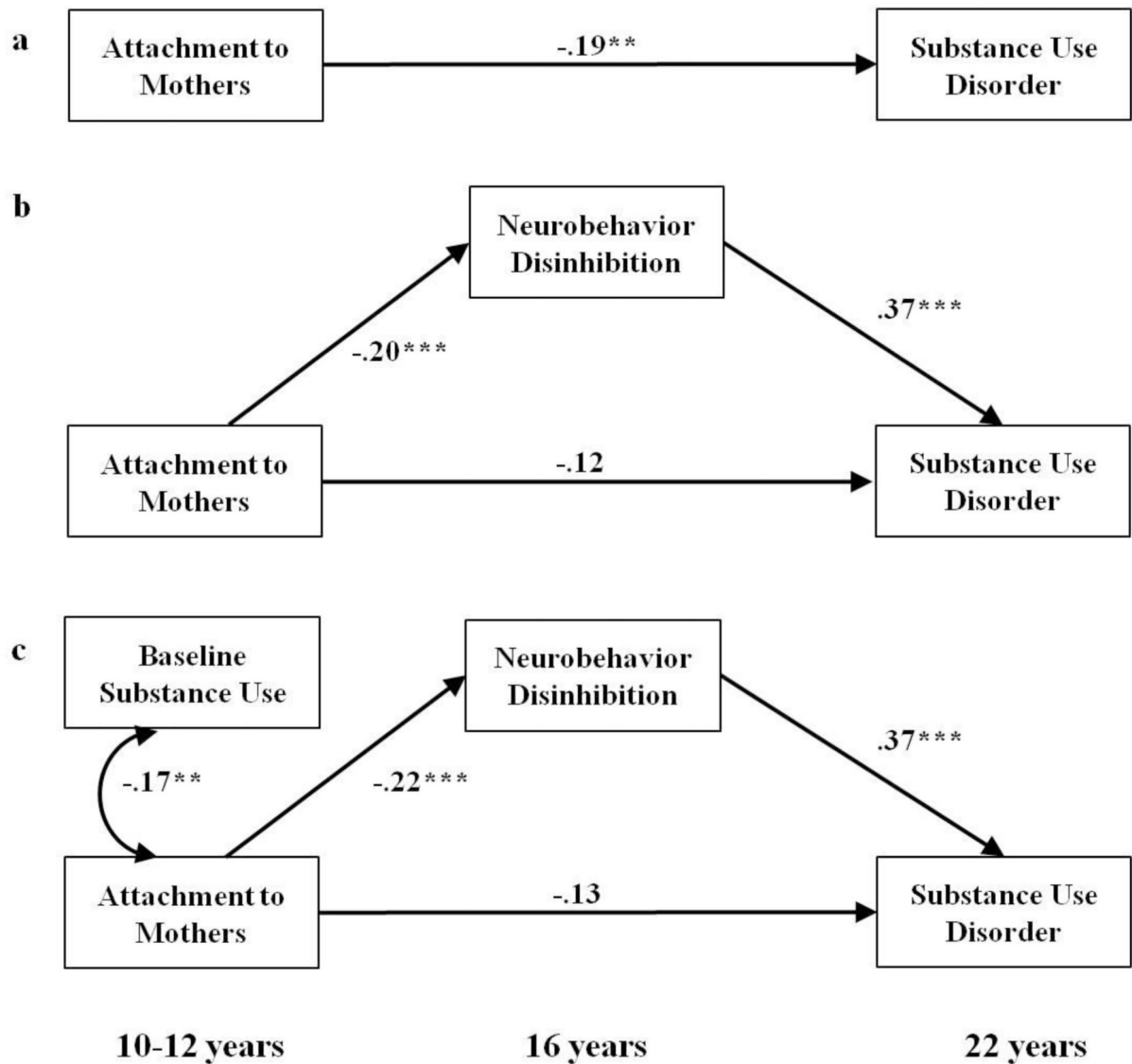
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**Figure 1.**

Neurobehavior Disinhibition Mediates Attachment to Mothers and Substance Use Disorder

Note: Results of mediation analysis depicting associations and standardized beta

coefficients. Mediation analysis controlled for substance use at baseline (age 10-12) in (c).

* P 0.05, ** P .01, *** P .001

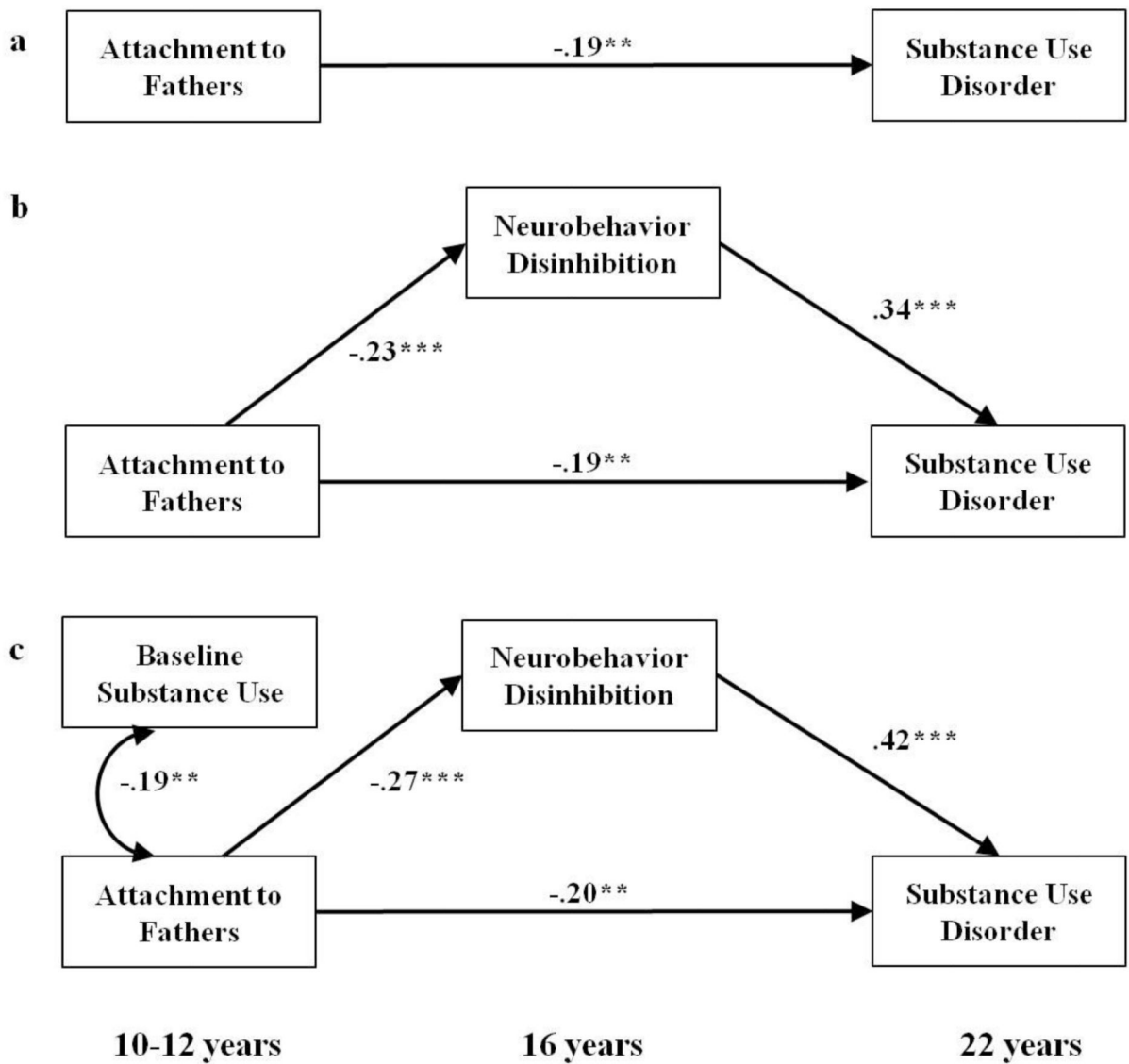


Figure 2.
Neurobehavior Disinhibition Mediates Attachment to Fathers and Substance Use Disorder

Note: Results of mediation analysis depicting associations and standardized beta coefficients. Mediation analysis controlled for substance use at baseline (age 10-12) in (c).

* P 0.05, ** P .01, *** P .001

Table 1

Characteristics of the Sample at Baseline (10-12 years of age)

	Retained		Attrited		t	p
	Mean	SD	Mean	SD		
Family Socioeconomic Status	42.1	13.8	39.0	13.3	2.8	.005
Full-Scale IQ	108.8	16.1	102.9	15.6	4.5	<.001
	N	%	N	%	χ^2	p
Ethnicity					1.0	.59
European American	319	74	166	71		
African American	99	23	60	26		
Other	11	3	8	3		
Sex					5.0	.03
Male	305	71	185	79		
Female	124	29	49	21		
Risk Group					3.0	.57
SUD+ fathers	201	47	115	49		
SUD- fathers	228	53	119	51		

Note: SUD+ and SUD- fathers indicate fathers with DSM-III-R lifetime substance use disorder and fathers with no Axis I or II psychiatric disorders, respectively. Range of Family SES: 6 to 66. Range of IQ: 68 to 150.

Table 2

Factor structure of the Youth Attachment to Parents Scale Attachment to Father – Attachment to Mother

Factor Matrix	Loadings					
	Father			Mother		
1 st Order Factors	C	A	T	C	A	T
<i>C1. Can you discuss your beliefs with your father/mother without feeling afraid</i>	.58	.09	.14	.59	.04	.16
<i>C2. Is your father/mother a good listener</i>	.47	.21	.20	.57	.23	.09
<i>C3. Are you very satisfied with how your father/mother and you talk together</i>	.53	.21	.17	.57	.15	.11
<i>C4. If you were in trouble, could you tell your father/mother</i>	.59	.11	.17	.59	.12	.16
<i>C5. Do you openly show your father/mother that you like him</i>	.46	.22	.16	.50	.15	.17
<i>C6. Does your father/mother try to understand what you think</i>	.53	.20	.10	.52	.20	.08
<i>C7. Do you think you can tell your father/mother how you feel about some things</i>	.34	.05	.15	.40	.11	.10
<i>C8. Do you tell your father/mother about your person problems</i>	.56	.17	.18	.59	.12	.24
<i>C9. Do you keep your feelings to yourself rather than tell your father/mother</i>	.39	.10	.18	.45	.10	.15
<i>C10. If you get upset, does your father/mother try to find out what is the matter</i>	.43	.21	.13	.39	.15	.10
<i>C11. Does your father/mother encourage you to think about things yourself</i>	.47	.20	.06	.39	.15	.07
<i>C12. Can you let your father/mother know what is bothering you</i>	.67	.12	.17	.68	.08	.14
<i>C13. If you do something wrong, does your father/mother need to listen to your side</i>	.50	.26	.17	.47	.23	.20
<i>C14. Does your father/mother make you feel free to say what you think</i>	.49	.14	.21	.50	.13	.18
<i>C15. How often have you thought your father/mother was really good</i>	.34	.18	.19	.38	.15	.12
<i>C16. How often does your father/mother find time to listen to you when you want</i>	.44	.23	.18	.46	.15	.19
<i>A1. My father/mother makes me feel better after I talk over my worries</i>	.37	.44	.23	.32	.41	.21
<i>A2. My father/mother understands my problems and my worries</i>	.35	.55	.20	.34	.54	.14
<i>A3. My father/mother gives me a lot of care and attention</i>	.32	.60	.23	.24	.58	.13
<i>A4. My father/mother seems proud of the things I do</i>	.18	.59	.16	.15	.58	.11
<i>A5. My father/mother isn't interested in changing me, but likes me as I am</i>	.13	.42	.20	.09	.45	.14
<i>A6. I like to talk to and be with my father/mother much of the time</i>	.24	.56	.20	.20	.49	.18
<i>T1. When I'm upset, my father/mother usually knows why</i>	.25	.21	.43	.23	.10	.39
<i>T2. When I'm upset, I know my father/mother really cares</i>	.17	.13	.68	.08	.06	.62
<i>T3. When I have a problem, my father/mother helps me solve it</i>	.19	.13	.63	.10	.01	.65
<i>T4. My father/mother is available when I want to talk to him/her</i>	.23	.20	.51	.16	.08	.54
<i>T5. My father/mother expects too much of me</i>	.21	.18	.43	.18	.18	.40
<i>T6. Even if my father/mother disagrees, he still listen to my point of view</i>	.20	.22	.50	.20	.21	.47
<i>T7. My father/mother really trusts me</i>	.15	.11	.69	.14	.14	.51
<i>T8. I can count on my father/mother to help me in a crisis</i>	.15	.14	.69	.16	.16	.63
<i>T9. We don't really trust each other</i>	.11	.10	.42	.12	.15	.44
2 nd Order Factor	Attachment			Attachment		
<i>Communication</i>	.79			.77		
<i>Alienation</i>	.78			.68		
<i>Trust</i>	.68			.61		

Note: Bold values indicate largest loadings onto each factor and corresponding factor items. Factor items summed for 2nd order factor analysis. C = Communication, A = Alienation, T = Trust. Cronbach's alpha: fathers = .91, mothers = .90.

Table 3

Criterion Validity of the Youth Attachment to Parents Scale

Substance Use	Age	Mean (SD)	Attachment	
			Father	Mother
Cannabis Use Frequency				
	12-14	.05 (.30)	-.17***	-.06
	16	.33 (.85)	-.16***	-.16***
	19	.88 (1.32)	-.19***	-.17***
Alcohol Use Frequency				
	12-14	.12 (.45)	-.08*	-.07
	16	.33 (.65)	-.07	-.03
	19	1.07 (1.07)	-.09*	-.08**
Smoke Tobacco Frequency				
	12-14	.19 (.74)	-.16***	-.09*
	16	.63 (1.33)	-.10*	-.17***
	19	1.24 (1.70)	-.20***	-.16***
Substance Use Involvement Index				
	12-14		-.07	-.13**
	16		-.13**	-.16***
	19		-.18***	-.17***

Note: Frequency of use in the past 30 days range on Likert scale: 0; 1 = 1-2; 2 = 3-9; 3 = 10-20; 4 = more than 20 times. Substance Use Involvement Index was constructed to be normally distributed. Correlations are Pearson *r*.

* P .05,

** P .01,

*** P .001