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Attachment in donor-conceived adults: Curiosity, search, and contact

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Abstract

Donor-conceived (DC) people represent a unique population with atypical family structures. This study examined whether individual differences in attachment predict adults' self-reported curiosity about their donor conception identity, as well as attempts to find the donor and establish contact. Data were collected from 488 DC people from the Donor Sibling Registry (DSR). People who were high in attachment-related anxiety were more curious than others about their donor conception. Despite this curiosity, however, highly anxious people were more disengaged from donor conception and were not more likely than others to search for or have made contact with their donor. These findings suggest that insecure attachment—particularly attachment anxiety—may contribute to people's willingness to incorporate donor conception into their identities.

KEYWORDS

attachment, curiosity, donor conception, identity

1 | INTRODUCTION

Most people never question who their parents are. But for those conceived using donor sperm or eggs, this is not the case. Donor-conceived (DC) individuals represent a unique population with atypical family structures that may involve relationships with biological and nonbiological parents. Although family types can vary considerably, many DC individuals possess at least three parents: a biological parent who is genetically related to the child; a nonbiological, "social" parent who plays a role in childrearing but bears no genetic relationship to the child; and a sperm/egg donor who may or may not be known to the child. Although some DC people elect to find and contact their donor,

others choose not to. Why is it that some DC people are more curious about their origins than others? Attachment theory may be a useful framework for answering this question.

Attachment theory seeks to understand the deep and enduring emotional bond that connects one person to another across time and space (Ainsworth, 1973; Bowlby, 1969). Despite an abundance of research on attachment relationships across the lifespan, little is known about attachment dynamics in DC adults. The focus of this research is on whether individual differences in attachment relate to self-reported curiosity about adults' DC identities, as well as attempts to search for the donor and establish contact. That is, it is possible that DC people who have secure relationships with their biological and social parents may be more likely to seek out their donor and report curiosity about their donor's identity. Alternatively, it could be the case that those who are insecurely attached to their parents are more likely to seek out the donor and exhibit greater curiosity as a means of compensating for inconsistent or unsatisfying parental relationships.

2 | IDENTITY AND DONOR CONCEPTION

According to the literature on donor conception, people born through assisted reproduction tend to experience obstacles in identity development (e.g., Ehrensaft, 2008; Harrigan, Dieter, Leinwohl, & Marrin, 2015; Hertz, Nelson, & Kramer, 2013). For instance, many DC individuals report a sense of "shock" upon learning that they are donor conceived, followed by disruptions in their sense of self and *who* constitutes their family (Hertz et al., 2013). DC people may also have an incomplete understanding of their genetic history or ancestry (Ravitsky, 2010). Analogizing gamete donation to adoption, the discovery of one's donor conception can spur identity confusion as being donor conceived presents individuals with new "self-defining information" (Erikson, 1980). In turn, this new identification may lead to the experience of poor self-perception and identity crisis (Sabatello, 2015).

One of the issues compounding identity-related concerns is the fact that many DC individuals have anonymous donors and possess little information, if any, about them. The donor often holds the key to the offspring's personal and ancestral identity, and it may be difficult to formulate a coherent sense of self without basic knowledge of one's progenitor (i.e., *who* this person is and *where* he or she comes from). Drawing on adoption work, Sants (1964) suggested that the absence or uncertainty of such information could lead to feelings of incompleteness and "genealogical bewilderment" (p. 133) in individuals who lack at least one biological parent. Critics of anonymous donor conception have expressed concern that access to the identity of one's genetic progenitors is necessary to help DC people make sense of their physical characteristics, talents, or interests (Velleman, 2005). For instance, anonymous donor conception raises important questions about family resemblance, for which an entire literature is devoted (e.g., Indekeu, 2015). It is important to note that family resemblance and the importance of biogenetic ties are pertinent issues for DC offspring born to heterosexual and homosexual parents alike (Jones, 2005; Nordqvist, 2010). Individuals who lack information about their donor might feel they are missing essential information about their identity, which could have wide-ranging consequences for the development of self-understanding (Ravitsky, 2010).

3 | NEW FAMILY FORMS

Assisted reproduction leads to diverse family forms involving "family" connections that extend beyond parents and their children. Connections may be formed between the ensuing child and the family of the donor (including extended relatives), between the donor and the recipients, or between

donor siblings. DC individuals are often confronted with questions about the donor's place in their lives and identity, such as "What type of relationship do I want with my donor and donor relatives (e.g., half-siblings)?" and "Who am I in relation to my donor?"

An important consideration in donor families is how to integrate donor relationships with existing family ties. A particularly poignant issue is concern for the feelings of DC people's parents. For instance, research by Hertz et al. (2013) suggests that DC individuals might be hesitant to express interest in the donor out of fear of hurting the parents who have raised them, particularly the nonbiological parent. Moreover, offspring may want to facilitate a bond between themselves and the donor that is separate from their relationship with their parents. They may also wish to assure their parents that their natal families are important and will not be disrupted. Not surprisingly, much of the work on donor conception has focused on the role of secrecy within the family and its psychological effects on DC offspring (e.g., Berger & Paul, 2008). Despite this research, we know little about the relationships that DC individuals have with their biological and nonbiological, social parents and how those relationships might affect their willingness to explore their genetic roots, search for the donor, and establish contact with him or her.

4 | ATTACHMENT THEORY AND DONOR CONCEPTION

Attachment theory emphasizes the emotional bonds that people form with their primary caregivers and the implications of those bonds for social and emotional functioning across the lifespan. This theory has the potential to be a useful framework for understanding the psychology of donor conception. That is, attachment to caregivers may contribute to representations of the self and other that provide a foundation for the organization of one's identity as a DC person. Bowlby (1969, 1973) argued that mental representations of the self and others (i.e., working models) inform a range of affects, cognitions, and behaviors relevant to social interactions, social relationships, and self-construal relationships throughout one's life. Parents who are available and responsive to a child's needs bolster the child's sense of security. The secure child knows that the caregiver is dependable and is able to use the caregiver as a secure base for exploring the environment. Conversely, unpredictable or unreliable caregiving can lead to insecure attachment, which may, in turn, inhibit exploration.

Although attachment theory is a normative theory of relationships and development, it emphasizes individual differences in the way people experience their relationships. For example, some people are comfortable opening up to others emotionally, whereas others are reluctant to do so. According to attachment theory and research, there are two fundamental ways in which people differ from one another in the way they think about relationships (Brennan, Clark, & Shaver, 1998). First, some people are more anxious than others. Those who are high in *attachment-related anxiety* tend to fear rejection and worry about whether others really love them. Second, some people are more avoidant than others. Those who are high in *attachment-related avoidance* are less comfortable depending on others and opening up to them.

Although some DC people may be generally secure or insecure in their relationships, it is possible that individuals may be more insecure with some targets (i.e., their nonbiological parent) than others (e.g., their biological parent). Attachment theory suggests that security will be higher in relationships that involve more contact or proximity. Specifically, DC people should be more secure in their relationships with their parents (both biological and social) than their donor parent. In contrast, evolutionary psychological perspectives predict that genetic relatedness trumps nongenetic ties, such that the bond with the genetically related donor parent should be more secure than that with the nongenetically related "social" parent (Indekeu, 2015; Turner & Coyle, 2000). Interestingly, some

research has found that people are more likely to develop an attachment bond with someone with whom they share a larger proportion of their genes (Tancredy & Fraley, 2006). Although that research was conducted with twins, the data suggest that shared genes may affect relational dynamics (e.g., empathy), which in turn promote the development of attachment. Despite this intriguing possibility, no other research on donor conception has examined differences in peoples' attachment styles with biological parents, nonbiological (i.e., "social") parents, and donors.

Pittman, Keiley, Kerpelman, & Vaughn, 2011 argue that one's attachment history serves as a foundation for identity formation, such that "identity formation is less an individual accomplishment than a co-construction of an individual with significant others" (p. 32). Parents may be especially important sources of support and verification when DC people integrate donor conception into their identities. For instance, secure individuals might use their biological and/or nonbiological, social parent as a secure base when exploring their identities. Seeking support and comfort from the parent (a "safe haven") in the event of a distressing identity disruption (e.g., discovering that one is donor conceived or being thwarted in the attempt to discover information about one's donor conception) could facilitate engagement of the identity exploration process (Pittman et al., 2011). In contrast, individuals who are insecurely attached to the parents who raised them may exhibit further disappointment in the event of identity-related distress. Those with insecure attachment orientations may rely too heavily on the parent or avoid the topic of donor conception altogether, which could negatively affect their willingness to explore their identities. Taken together, attachment relationships with primary caregivers (and close relationships in general) may be associated with the exploration of donor conception and immersion of donor conception into one's sense of identity.

Scholars know relatively little about DC offspring's attachment to their biological and nonbiological/social parents and the impact of their donor conception on how they think about themselves. To the best of our knowledge, there is only one investigation that has directly assessed attachment processes in DC individuals. Slutsky et al. (2016) studied 19 DC adolescents, aged 12–19 years, using a cross-sectional design. Participants were audio-recorded during a semistructured assessment (Friends and Family Interview [FFI]) and completed a self-report measure indexing their curiosity about donor conception (i.e., Donor Conception Identity Questionnaire [DCIQ]). They found that adolescents with secure attachment patterns were more interested in exploring their donor conception, whereas those with insecure attachment patterns were less likely to express curiosity. Furthermore, the authors' correlation matrix demonstrated that "insecure-preoccupied attachment" was positively associated with donor curiosity, although this correlation was nonsignificant, possibly because of the small sample size ($n = 19$).

5 | THIS STUDY

The goal of the current study was two-fold: We sought to examine whether individual differences in attachment relate to (a) self-reported curiosity about one's donor conception and (b) a person's choice to find or contact their donor. In accordance with previous research (Slutsky et al., 2016), we hypothesize that individual differences in attachment will predict whether DC people report curiosity about donor conception and elect to find/contact their donor. More specifically, those who are secure in their parental relationships (and close relationships in general) should have greater comfort approaching the donor and integrating donor conception into their lives. Alternatively, it could be that people who are insecurely attached to their parents are more likely to seek out the donor and exhibit greater curiosity about their donor conception as a means of compensating for inconsistent or

unsatisfying parental relationships. Put simply, insecure relationships with parents may either facilitate or inhibit donor exploration.

Previous research on attachment suggests that highly anxious people have a strong need for intimacy, and they more readily construe a relationship as "close," compared to those who are avoidant (e.g., Hudson & Fraley, 2017). In accordance with these findings, we suspect that highly anxious adults will make greater attempts to find/contact their donors and exhibit greater curiosity about donor conception than less anxious adults. On the other hand, highly anxious adults might not show curiosity about donor conception and initiate search/contact because they lack a sense of connectedness to their attachment figures (i.e., biological and nonbiological, social parents). That is, the absence of a secure base (availability, encouragement) does not allow for a growing sense of independence necessary for exploration. One of the objectives of this study was to examine these alternatives using data from a sample of DC adults.

5.1 | Method

5.1.1 | Procedure

The first two authors partnered with the Donor Sibling Registry (DSR), a nonprofit organization serving DC individuals, sperm/egg donors, and parents who have utilized assisted reproductive technology. The third author (W.K.) sent a mass email to all 18+ adults belonging to the DSR. The study was also advertised on the organization's website and social media pages (i.e., Twitter, Facebook). To be eligible to participate, individuals had to be (a) conceived through the use of a sperm or egg donor, (b) carried by a parent rather than a surrogate, and (c) raised in a two-parent household with one biological parent and one nonbiological, "social" parent. Participants were informed that the research was about personality and individual differences in DC individuals. Participation in the study entailed responding to several surveys and writing about the experience of being donor conceived.[1]

5.1.2 | Participants

A total of 488 DC participants took part in the study (312 female, 83 male, 12 nonbinary, 1 prefer not to disclose, 80 unreported).[2] Ages ranged from 18 to 74 years ($M = 28.76$, $SD = 10.81$). Of the 449 individuals who identified their ethnicity, 88.42% were White, 4.68% Hispanic, 1.78% Asian/Pacific Islander, 1.11% Native American, 0.67% African American (2.90% indicated "Other," and 0.45% chose not to disclose). Most participants were conceived through sperm donation (93.24% sperm donation, 3.69% egg donation, 3.07% not disclosed) and reported coming from a heterosexual family (67.21% heterosexual, 25.61% LGBT, 7.18% not disclosed). With respect to disclosure, approximately 85.5% of participants were told by their parents that they were donor conceived, 3.30% were told by someone else other than their parents, and 11.55% found out on their own.

[1]Self-narratives were collected as part of a related project on attachment and language use in DC individuals. For more information, refer to our preregistered materials on OSF: https://osf.io/as9bm/

[2]The minimum sample size was determined *a priori*; it was determined that at least 200 people were needed to ensure 80% power to detect population correlations of .20 or higher using a two-tailed test. Thus, we made sure that we collected data from a minimum of 200 people before analyses were conducted. On the basis of unique Qualtrics identifiers, we ensured that participants provided data only once. Online consent was obtained from all participants.

5.2 | Measures

5.2.1 | Adult attachment

The Experiences in Close Relationships-Relationship Structures (ECR-RS; Fraley, Heffernan, Vicary, & Brumbaugh, 2011) questionnaire was administered to assess individual differences in attachment. Participants were asked to complete the 9-item ECR-RS with respect to their general attachment[3] (avoidance: $\alpha = .86$, anxiety: $\alpha = .85$), as well as their attachment to several interpersonal targets: (a) *biological parent* (avoidance: $\alpha = .95$, anxiety: $\alpha = .86$); (b) *nonbiological, social parent* (avoidance: $\alpha = .95$, anxiety: $\alpha = .91$); and (c) *donor*—if known to the participant[4] (avoidance: $\alpha = .89$, anxiety: $\alpha = .90$). Each item was rated on a Likert scale ranging from 1 = *strongly disagree* to 7 = *strongly agree.* Composite scores for each attachment dimension in each relational domain were computed such that higher scores reflect greater levels of insecure attachment (i.e., avoidance, anxiety).

5.2.2 | Curiosity

The DCIQ (Slutsky et al., 2016) assesses people's willingness to integrate knowledge of donor conception into their subjective sense of identity. The DCIQ has two subscales: Curiosity ($\alpha = .62$) and Disengagement[5] ($\alpha = .76$). Each item is rated on a 5-point scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*, with items averaged to form a scale score for each. Sample items include "I think a lot about the characteristics I might share with my donor" (Curiosity) and "I feel ashamed of being donor conceived" (Disengagement). Refer to the full set of items in Table 1.

The original subscales of the DCIQ were based on a factor analysis of data from a sample of 19 people. As such, the factor solution might not be robust and should be re-examined in a larger sample. We conducted an exploratory factor analysis using principal axis factoring, followed by oblimin rotation, for the 16 DCIQ items. According to our results, at least two factors were necessary to represent the data, accounting for 26% and 41% of the cumulative variance in Disengagement and Curiosity, respectively.

Table 1 shows the factor loadings for the DCIQ using a two-factor solution. Due to moderate cross-loadings on both factors (with loadings below the recommended cut-off of 0.40), we chose to eliminate the first item from the DCIQ: "I am still trying to figure out how donor conception relates to who I am." We created composites as follows: Factor 1 (Disengagement; $\alpha = .86$): 2, 4, 6, 7, 8, 12, 13, 14, 15, 16; Factor 2 (Curiosity; $\alpha = .74$): 3, 5, 9, 10, 11.

5.2.3 | Donor search/contact

To measure donor search, we used a forced choice question: "Have you tried to locate or find your donor?" (yes/no). In addition, we asked "Have you made any attempt to contact your donor?" (yes/no), although this question was only presented to participants who reported searching for their donor. Of the 470 adults who reported on whether they have searched for their donor, a total of

[3]Fraley et al. (2011) calculated their global attachment scores by aggregating across the specific targets. Following recent recommendations (see http://labs.psychology.illinois.edu/~rcfraley/measures/relstructures.htm), we assessed global attachment by separately assessing how people typically think and feel in close relationships rather than asking about specific targets.

[4]Of the 94 adults who had made contact with their donor, 50 adults completed the donor attachment scale.

[5]To avoid confusion with avoidant attachment, the "Avoidance" subscale of the DCIQ will be referred to as "Disengagement" throughout the article. The authors, Slutsky et al. (2016) state that the Avoidance subscale reflects a sense of disengagement from the topic of donor conception and negative feelings, such as anger and anxiety.

TABLE 1 Factor loadings for Donor Conception Identity Questionnaire (DCIQ) items

Item	*F1* (disengagement)	*F2* (curiosity)
1. I am still trying to figure out how donor conception relates to who I am.	0.35	0.35
2. Being donor conceived makes me feel special.	**−0.47**	0.27
3. I have thought a great deal about donor conception.	−0.03	**0.72**
4. After a conversation about donor conception I tend to feel upset.	**0.66**	0.26
5. It's important for me to be in contact with other donor-conceived individuals.	0.03	**0.64**
6. Being donor conceived is just part of who I am.	**−0.49**	0.18
7. I try to avoid the topic of donor conception because it raises a lot of questions.	**0.68**	−0.16
8. I feel angry that I am donor conceived.	**0.58**	0.31
9. I think a lot about the characteristics I might share with my donor.	0.04	**0.60**
10. Donor conception doesn't enter into my life or my decisions at all.	−0.07	**−0.62**
11. I understand myself better because I have thought about who I am in relation to my parents and donor.	−0.25	**0.46**
12. I feel embarrassed if others know I am donor conceived.	**0.72**	0.09
13. I like to keep my donor conception a secret.	**0.74**	−0.12
14. I am happy to tell anyone about my donor conception	**−0.71**	0.18
15. I feel ashamed of being donor conceived.	**0.71**	0.11
16. I worry about being bullied or teased about being donor conceived.	**0.45**	0.14

332 respondents answered affirmatively. Of the 143 people who reported on whether they have contacted their donor, approximately 66% (see Table 2; or 94 people) had made contact.

6 | RESULTS

Descriptive statistics and correlations are depicted in Table 2. Our basic analytical plan was preregistered on the Open Science Foundation (OSF) project page before data analysis began. Multiple logistic regressions were conducted in *R* using the generalized linear model, or glm(), function. All other multivariate models were fit with the *lavaan* package. Missing data (i.e., missing survey responses) for the aforementioned models were handled using full information maximum likelihood (FIML). Prior to conducting analyses, continuous predictor variables (i.e., attachment anxiety and avoidance) were mean-centered to assist in interpretability as these variables do not have meaningful zero points. At the request of our reviewers, we performed secondary analyses to examine covariates (i.e., age, gender) and exploratory regressions to assess the association between curiosity and disengagement with respect to search/contact behavior. These results are reported in the supplemental materials (see Tables S1–S6).

6.1 | Attachment by parental target

As previously discussed, DC individuals might be more insecure with specific kinds of targets (i.e., nonbiological parents). To explore this possibility, we compared levels of attachment anxiety

TABLE 2 Means, standard deviations, and correlations among all variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Anxiety (bio parent)	1.00											
2. Avoidance (bio parent)	0.59*	1.00										
3. Anxiety (social parent)	0.33*	0.21*	1.00									
4. Avoidance (social parent)	0.20*	0.31*	0.61*	1.00								
5. Anxiety (donor parent)	0.38*	0.29*	0.13	0.06	1.00							
6. Avoidance (donor parent)	0.12	0.05	−0.04	−0.21	0.33*	1.00						
7. Anxiety (general)	0.28*	0.30*	0.22*	0.25*	0.30*	0.11	1.00					
8. Avoidance (general)	0.21*	0.34*	0.17*	0.34*	0.04	0.02	0.40†	1.00				
9. Find donor	0.08	0.12*	0.06	0.04	0.11	0.02	0.07	0.00	1.00			
10. Contact donor	0.15	0.17	0.07	0.09	NA	NA	0.09	−0.01	0.36*	1.00		
11. DCIQ disengagement	0.20*	0.26*	0.18*	0.17*	0.52*	0.08	0.25*	0.29*	0.06	−0.06	1.00	
12. DCIQ curiosity	0.19*	0.13*	0.21*	0.16*	0.21	−0.35*	0.21*	0.03	0.37*	0.11	0.07	1.00
N	437	438	425	425	50	51	453	453	470	143	429	429
M	1.66	2.95	2.10	3.74	2.68	4.22	4.09	3.42	0.71	0.66	1.89	3.64
SD	1.27	1.78	1.62	1.88	1.82	1.56	1.76	1.33	0.46	0.48	0.76	0.83

Note: Means and *SD*s presented for raw attachment avoidance and anxiety scores, prior to mean centering. Find donor = whether an attempt has been made to find the donor (no = *0*, yes = *1*); Contact donor = whether an attempt has been made to contact the donor (no = *0*, yes = *1*); DCIQ disengagement = reluctance to integrate knowledge of donor conception into one's subjective sense of identity (factor average); DCIQ curiosity = willingness to integrate knowledge of donor conception into one's subjective sense of identity (factor average).

Abbreviation: DCIQ, Donor Conception Identity Questionnaire.

*$p < .05$.

and attachment avoidance among the different parental targets. (We only examined attachment to donors in cases in which people indicated that they knew their donor.) Because participants completed attachment measures for each parent, we ran a series of paired sample *t*-tests to answer this issue.

6.1.1 | Biological parents and nonbiological, social parents

People reported more attachment anxiety in their relationships with their nonbiological, social parents ($M = 2.10$, $SD = 1.62$) than their biological parents ($M = 1.66$, $SD = 1.27$), $t(418) = -5.29$, $p < .001$, $d = 0.30$. In addition, people reported higher attachment avoidance with their nonbiological, social parents ($M = 3.74$, $SD = 1.88$) than their biological parents ($M = 2.95$, $SD = 1.78$), $t(419) = -7.59$, $p < .001$, $d = 0.43$.

6.1.2 | Biological parents and donor parents

On average, people reported greater attachment anxiety with their donor parents ($M = 2.68$, $SD = 1.82$) than their biological parents ($M = 1.66$, $SD = 1.27$), $t(46) = -3.63$, $p < .001$, $d = 0.65$. Adults also reported more avoidance with their donor ($M = 4.22$, $SD = 1.56$) than their biological parent ($M = 2.95$, $SD = 1.78$), $t(47) = -3.01$, $p < .01$, $d = 0.76$.

6.1.3 | Nonbiological, social parents and donor parents

No significant difference was observed in attachment anxiety for the nonbiological, social parent ($M = 2.10$, $SD = 1.62$) and donor parent ($M = 2.68$, $SD = 1.82$); $t(46) = -1.62$, $p = 0.11$. Furthermore, the means of attachment avoidance did not significantly differ between the nonbiological, social parent ($M = 3.74$, $SD = 1.88$) and donor ($M = 4.22$, $SD = 1.56$); $t(47) = -0.97$, $p = 0.34$.

6.1.4 | Summary

On average, people tended to be more insecure with their donors (when they knew these individuals) relative to their biological and nonbiological/social parents. In addition, people tended to be more insecure with their social parent than their biological parent.

6.2 | Curiosity about donor conception

To assess whether anxious adults exhibited greater self-reported curiosity about their donor conception, we performed multiple regression analyses with anxiety and avoidance, predicting curiosity about donor conception, as measured by the DCIQ (see Table 3). Individuals high in attachment anxiety reported greater curiosity about being donor conceived. Individuals who were highly avoidant with their donor were less likely to be curious about donor conception as it pertains to their identity. However, avoidance with other parents (i.e., biological, nonbiological) and avoidance in general was not related to curiosity about donor conception.

We also ran separate multiple regression models with anxiety and avoidance predicting disengagement on the DCIQ (see Table 4). Results suggested that people who were high in attachment anxiety and attachment avoidance with respect to their close relationships in general tended to disengage from donor conception. Interestingly, those who were anxiously attached to the donor were more likely to report being disengaged from donor conception.

TABLE 3 *Multiple regression models:* Donor Conception Identity Questionnaire (*DCIQ) curiosity*

Variables	β	*SE*	R^2
Intercept	3.64*	0.04	.04
Avoidance (general)	−0.03	0.03	
Anxiety (general)	**0.11***	0.02	
Intercept	3.64*	0.04	.04
Avoidance (bio parent)	0.01	0.03	
Anxiety (bio parent)	**0.12***	0.04	
Intercept	3.64*	0.04	.05
Avoidance (social parent)	0.03	0.03	
Anxiety (social parent)	**0.09***	0.03	
Intercept	3.67*	0.04	.21
Avoidance (donor parent)	**−0.24***	0.06	
Anxiety (donor parent)	**0.16***	0.05	

*$p < .05$.

TABLE 4 Multiple regression models: Donor Conception Identity Questionnaire (DCIQ) disengagement

Variables	*β*	*SE*	R^2
Intercept	1.90*	0.04	.11
Avoidance (general)	**0.13***	0.03	
Anxiety (general)	**0.07***	0.02	
Intercept	1.90*	0.04	.07
Avoidance (bio parent)	**0.09***	0.03	
Anxiety (bio parent)	0.04	0.04	
Intercept	1.89*	0.04	.04
Avoidance (social parent)	0.04	0.03	
Anxiety (social parent)	0.05	0.03	
Intercept	1.87*	0.04	.27
Avoidance (donor parent)	−0.05	0.06	
Anxiety (donor parent)	**0.23***	0.04	

*$p < .05$.

6.3 | Donor exploration—Search and contact

We ran a series of multiple logistic regressions to test the hypothesis that individual differences in attachment would predict one's search for the donor. The dichotomous dependent variable, whether the donor had been found (i.e., yes/no), was regressed onto attachment anxiety and avoidance for each interpersonal target (e.g., biological parent, non-biological parent). As Table 5 illustrates, there were no statistically significant associations between individual differences in attachment and attempts to locate or find donors. The only exception was that individuals who scored higher in

TABLE 5 Logistic regression models: Donor search (attempt to find donor; 1 = *yes*, 0 = *no*)

Variables	*β*	*SE*	*OR* [95% CI]	Pseudo-R^2
Intercept	0.93*	0.10	2.53 [2.06, 3.11]	.00
Avoidance (general)	−0.05	0.09	0.95 [0.80, 1.13]	
Anxiety (general)	0.10	0.06	1.11 [0.97, 1.26]	
Intercept	0.90*	0.11	2.46 [2.00, 3.04]	.01
Avoidance (bio parent)	**0.15***	0.08	1.17 [1.01, 1.36]	
Anxiety (bio parent)	0.03	0.11	1.03 [0.83, 1.29]	
Intercept	0.89*	0.11	2.44 [1.98, 3.02]	.00
Avoidance (social parent)	0.00	0.07	1.01 [0.88, 1.16]	
Anxiety (social parent)	0.08	0.09	1.09 [0.92, 1.29]	

*$p < .05$.

TABLE 6 Logistic regression models: Donor contact (attempt to contact donor; 1 = *yes*, 0 = *no*)

Variables	*β*	*SE*	*OR* [95% CI]	Pseudo-R^2
Intercept	0.70*	0.18	2.01 [1.42, 2.91]	.01
Avoidance (general)	−0.06	0.15	0.94 [0.70, 1.27]	
Anxiety (general)	0.13	0.12	1.14 [0.91, 1.44]	
Intercept	0.69*	0.19	2.00 [1.39, 2.94]	.03
Avoidance (bio parent)	0.15	0.14	1.17 [0.88, 1.56]	
Anxiety (bio parent)	0.15	0.22	1.16 [0.77, 1.87]	
Intercept	0.73*	0.19	2.07 [1.43, 3.04]	.01
Avoidance (social parent)	0.09	0.13	1.09 [0.84, 1.43]	
Anxiety (social parent)	0.03	0.18	1.03 [0.73, 1.48]	

*$p < .05$.

attachment avoidance with their biological parents were more likely to search for their donors, Wald $\chi^2(1) = 4.00$, $p = .046$, $OR = 1.17$, 95% CI [1.01, 1.36].

We also ran a series of logistic regressions predicting whether or not participants had contacted their donors. This dichotomous variable (i.e., yes/no) was regressed onto attachment anxiety and avoidance for each interpersonal target. There were no significant associations between individual differences in attachment and contacting the donor (see Table 6.) In summary, attachment styles were not associated with contacting donors.

7 | DISCUSSION

The objective of the present research was to examine whether individual differences in attachment relate to (a) self-reported curiosity about one's donor conception and (b) a person's choice to find or contact his or her donor. Overall, we found that attachment styles were unrelated to whether people sought out the donor or made contact with him or her. However, results indicated that participants high in attachment anxiety were more curious about their donor conception, albeit disengaged from it. Considered together, these findings imply that insecure attachment—particularly attachment anxiety—may contribute to a person's willingness to incorporate donor conception into his or her identity but not necessarily to act on it.

Our results provide support for the idea that DC people who are anxiously attached to their parents are more likely to exhibit curiosity about donor conception, potentially as a means of offsetting their unmet attachment needs. Previous research underscores the possibility that attachment anxiety may warrant exploration of donor conception due to a lack of perceived closeness (Hudson & Fraley, 2017) in one's relationships. That is, greater attachment anxiety might lead individuals to exhibit

more curiosity about their DC identities. In doing so, they may seek out social experiences (e.g., communicating with other DC people) or acquire further information about donor conception (e.g., how the donor relates to him/her) as a way of managing their anxiety.

As in past research (Slutsky et al., 2016), our findings suggest that an individual's attachment style is related to one's curiosity about donor conception. Although the results of Slutsky and colleagues show a general trend for attachment security and curiosity (contrary to ours), their correlation between insecure-preoccupied attachment and curiosity was in the positive direction. Given that their study was insufficiently powered to detect an association, one of the major contributions of this study was our ability to examine these associations with adequate statistical power.

Although the current investigation is the first of its kind to investigate individual differences in adult attachment with respect to donor conception, it is not without its shortcomings. The findings are limited by the characteristics of our sample; that is, participants were largely White females born via sperm donation, which affects the generalizability of our conclusions. However, it is important to note that the recruitment of DC individuals is nearly impossible without a database such as the DSR. Second, the vast majority of the sample was conceived via sperm donation, and the majority of participants had heterosexual parents. Thus, there is a distinction between biological/social parent status and parent sex. That is, biological parents were largely mothers, and social parents were largely fathers.[6] Thus, one potential explanation for why people were more secure overall with their biological parents than their social parents is that people tend to be more secure with their mothers than their fathers on average (Fraley & Heffernan, 2013). However, it is also possible that this difference is due to differences in genetic relatedness. Unfortunately, we did not ask about the sex of each parent, and as such, we cannot unconfound genetic relatedness and parental sex in the present research. Third, it is possible that our sample suffers from selection bias given that those who opted to register with the DSR are potentially those who have already begun to accept DC into their identity and have some curiosity about it. Although this is a valid concern, the DSR is home to many users who simply use the site for informational purposes—in other words, they have no desire to forge connections with their donor. Nonetheless, these people may not be fully representative of DC adults more generally. Fourth, the single-item dichotomous variables for donor search/contact may not be particularly sensitive, accounting for the null findings. It is important to note that there will be individual variation in the level of motivation, time, effort, and resources put into searching for one's donor and the amount of contact sought from that person (e.g., content to receive one email/photo vs. keen to meet in person and establish a relationship). Future research should address these limitations.

Despite these flaws, our findings contribute new insights to the literature on attachment and donor conception. Overall, the current study demonstrates that people who are anxious in their attachments with the parents who raised them tend to be more curious about their donor conception than those who are not. However, they are not necessarily more likely to have searched for the donor or established contact with him or her. These results suggest an approach-avoidance conflict (Lewin, 1935). That is, anxiously attached individuals may find the prospect of contacting the donor both appealing and unappealing simultaneously. They are curious about exploring their DC identity but possibly fear that their donor might not want a relationship with them, so they do not initiate contact.

In a related vein, it is possible that individuals high in attachment anxiety may choose not to find/contact the donor in fear of disappointing their attachment figures (i.e., biological and/or non-biological, social parents) or appearing too "needy" to the donor. Attachment theory proposes that more insecure individuals will tend to see their parents as providing less effective support for exploration (see Green & Campbell, 2000 for a review), which could negatively impact the decision to

[6]Approximately 67% of the sample reported coming from a heterosexual family.

approach the donor. In addition, parents who do not demonstrate sensitivity and responsiveness to their children's needs may discourage them from exploration altogether. Future research should extend this line of work and explore the reasons why DC individuals may or may not contact the donor. Also important is the extent to which individual differences in attachment predict successful or unsuccessful contact attempts.

In conclusion, Hazan and Shaver (1990) once lamented that the link between attachment theory and adult exploration was not well understood, and they hoped that further research would "enable the formation of a more powerful and complete theory of adult attachment" (p. 278). Despite its relative importance, research on attachment and identity exploration of donor conception has been neglected. Our work was intended to be a step toward addressing this gap in the literature. Although largely exploratory, the current study is the first to examine the role of individual differences in attachment and donor approach behavior. It is our hope that future research will seek to better understand the conditions under which DC individuals elect to find their donor and establish contact. As the results of our study demonstrate, special attention should be devoted to the quality of parental relationships for influencing how people think about their DC identities.

AUTHOR CONTRIBUTIONS

The first two authors contributed to the writing and revising of the manuscript. The third author made substantial contributions to study design and acquisition of data.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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