



# Belonging to the Ace Spectrum: Correlates of Cognitions, Feelings, and Desires of Ace Individuals

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## Abstract

**Introduction** Asexuality is typically defined as a lack of sexual attraction, and yet this definition fails to include the multitude of experiences within the ace community. We explored the correlates of different cognitions, feelings, and desires reported by ace individuals.

**Methods** Data for a cross-sectional study with 456 individuals from online ace communities (61.8% women;  $M_{\text{age}} = 24.62$ ,  $SD = 6.98$ ) were collected in 2019.

**Results** Higher scores on the Asexuality Identification Scale (AIS) were associated with fewer experiences with romantic partners, more experiences with intimate affective relationships, and higher avoidant attachment. In contrast, sexual and romantic attractions were associated with more experiences with romantic partners. However, sexual attraction was associated with fewer experiences with non-sexual romantic relationships and lower AIS scores, whereas romantic attraction was associated with lower avoidant attachment and higher anxious attachment. The desire to have physically intimate romantic relationships was associated with more experiences with romantic partners, lower avoidant attachment, higher anxious attachment, and lower AIS scores. Lastly, the desire to have intimate affective relationships was associated with more experiences with solely affective relationships and higher anxiety attachment.

**Conclusions** These findings show the importance of past experiences and individual differences in shaping the way ace individuals construe their identity, and experience feelings and desires.

**Policy Implications** By highlighting the need to acknowledge diversity within the ace community, this study offers insights into how to increase awareness and develop more inclusive social policies.

**Keywords** Ace identity · Asexuality · Attraction · Relationships · Attachment

## Introduction

Asexuality is often construed as a sexual identity and a distinct sexual orientation (Brotto & Milani, 2022; Guz et al., 2022). Researchers use the term “asexual” when referring to sexual identity, whereas the term “ace” or “a-spec” (asexuality spectrum) has been used by some members of the community as a more inclusive alternative to encompass the multiple experiences held by individuals. Here we use “ace” as an umbrella term to reflect such diversity. This sexual identity has gained visibility and recognition in the past years through the work of activists and spokespersons, and the creation of ace

communities worldwide. For example, the Asexual Visibility and Education Network (AVEN), an online community created in 2001, has worked to increase awareness and acceptance of ace individuals. Yet, the reach of this work is restricted to individuals who have access to the internet, understand English, and actively search for asexuality-related information.

There is a generalized lack of representation of ace individuals in research (e.g., Vrangalova & Savin-Williams, 2012), arguably because researchers tend to overlook this sexual identity in their surveys (Rothblum et al., 2020) or fail to include “ace” and its multiple labels as explicit sexual identity categories (e.g., Fausto-Sterling, 2019; Herek et al., 2010). This omission could have led to misclassifications or underrepresentation of ace individuals in research, forcing them to choose other identity labels. A growing interest in the experiences of ace individuals has been observed in the recent years among academics and professionals. For example,

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researchers have collected data with ace individuals from different countries across the world, including New Zealand (Greaves et al., 2017), Finland (Höglund et al., 2014), and China (Zheng & Su, 2018). Still, it remains among the least studied and understood sexual minority identities (Cranney, 2016; Van Houdenhove et al., 2014). Hence, researchers must work to have a more comprehensive understanding of the multifaceted and complex ace identity as well as its correlates.

## Ace Identity

Researchers tend to use a sexual lens to explore an ace identity, which is typically equated to asexuality and defined as the absence of sexual attraction to others (Bogaert, 2006; Brotto et al., 2010). Indeed, sexual desire, sexual functioning, and sex disgust are often used as premises in this field to illustrate the experiences of ace individuals (Bogaert, 2004; Brotto & Yule, 2011, 2017; Brotto et al., 2010; Yule et al., 2015; Zheng & Su, 2018). However, this approach fails to capture the diversity of personal and interpersonal experiences on the ace spectrum (Cerankowski & Milks, 2010). As such, some researchers have questioned the boundaries of the typical definition of asexuality (Chasin, 2011) and argued that sexuality is just one dimension of the complex ace identity (Cranney, 2016). For example, some individuals in the ace community consider that sexual and romantic attraction are separate and independent feelings (i.e., split attraction model), whereas others argue that such categorization fails to be inclusive (for discussions, see Ask-an-Aro, 2019; Sennkestra, 2020; Siggy, 2019). Indeed, we need to acknowledge recent discussions arguing asexuality as distinct from other sexual orientations (e.g., Brotto & Milani, 2022), while at the same time acknowledging differences between sexual and romantic identities. For example, ace individuals can experience little to no sexual attraction (i.e., asexual), experience sexual attraction after forming deep emotional connections (i.e., demisexual), or experience fluctuating levels of sexual attraction (i.e., graysexual; Copulsky & Hammack, 2023; Glatzer, 2021; Hille et al., 2020). Likewise, some ace individuals can feel little to no romantic attraction (i.e., aromantic), whereas others can experience these feelings (i.e., romantic; Carvalho & Rodrigues, 2022). These differences and nuances are related to distinct perceptions, feelings, and experiences within the ace community (e.g., how ace individuals construe and navigate social and affective relationships).

As an intrapersonally evolving sexual identity, ace individuals make sense of their self-exploration and experiences by having a common language and jointly creating new terms with other members of the community. Ace individuals gradually understand their sexual identity as they gain deeper insights into themselves and their experiences (Foster et al., 2019; Jones et al., 2017; MacNeela & Murphy, 2015). This is particularly relevant because an ace identity is not widely shared as a social construct (i.e., there is a generalized lack of knowledge about asexuality from the public; Robbins

et al., 2016) and is lesser known than other sexual minorities (Decker, 2015; Hayfield, 2020). Therefore, individuals tend to rely on their community as a useful source of information and discovery (Kelleher & Murphy, 2022). Informed by research on the development of other sexual identity minorities and on the development of an ace identity, we believe that the development of an ace identity is a dynamic process. Hence, a more comprehensive understanding must consider the multiple experiences of ace individuals, including (but not limited to) the distinction between sexual and romantic attractions, and how these experiences are shaped by past relations and individual differences.

## Ace Identity Development

Research conceives the development of sexual identities as a dynamic process that continuously changes and can be revisited as individuals explore and experience their sexuality (e.g., Horowitz & Newcomb, 2001; Rosario et al., 2006). For example, individuals from sexual minorities (but not exclusively) can experience changes in their sexual identity over time, as a result of an identity formation process that occurs on a *continuum* marked by experimentation (Van de Meerendonk & Probst, 2004). Ace individuals negotiate sexual assumptions, desires, intimacy expectations, and other normative scripts with themselves and others (Carrigan, 2011; Dawson et al., 2019; Mitchell & Hunnicutt, 2019; Scherrer, 2008). Yet, only a handful of studies aimed to gain insights into the development of an ace identity by asking individuals to think about their past and current personal and interpersonal experiences. Among other topics, researchers have focused on how ace individuals explored their identity (Van Houdenhove et al., 2015), managed their identity (MacNeela & Murphy, 2015), and experienced their coming out (Robbins et al., 2016). Broadly, these studies have shown that ace individuals question their feelings and relational motives (often distinct from those expressed and enacted by their peers), search for more information about their feelings and motives (e.g., in online groups and communities), go through the process of accepting their identity (sometimes marked by social resistance and denial), and come to terms with an ace identity (e.g., feeling comfortable and disclosing their identity to others). For example, Mitchell and Hunnicutt (2019) found that some ace individuals start by identifying as demisexual before having more knowledge about the ace spectrum and recognizing that being asexual has a better fit to their identity. Individuals in this study described a fluid and nuanced unfolding of an ace identity that involved searching online for information and connecting with ace communities to discuss their beliefs, attitudes toward sex, attraction desires, and romantic orientations. Likewise, Cranney (2016) found that sexual attraction fluctuated among young adults who indicated not experiencing sexual attraction. Specifically, the author found that most individuals who were not sexually attracted to others experienced changes in sexual attraction

later on, with only a few individuals maintaining their lack of sexual attraction over time. To some extent, then, this research echoes the concept of sexual fluidity, conceived as a predisposition to experience transient or stable changes in sexual attractions, identities, and/or behaviors (Diamond, 2016).

Taken together, these studies defy the assumption that lacking sexual attraction is a temporally stable and shared attribute across the ace spectrum, and add to the discussion that relationships often contribute to individuals exploring their sexuality and developing an ace identity. However, the way ace individuals construe and experience intimacy, and how this connects to an ace identity, have remained largely understudied (Scott & Dawson, 2015). One exception is the relational approach proposed by Dawson et al. (2019), which conceptualizes the development of an ace identity as a process resulting from (and shaped by) social interactions and the negotiation of intimate practices in relationships. Intrinsically related to these negotiations are individual views about sexual activity and past experiences with intimate relationships.

### Sexual Behavior and Intimate Relationships

Ace individuals have romantic relationships with both ace and allosexual partners (i.e., those who identify as sexual; e.g., Antonsen et al., 2020). When compared with demisexual or graysexual individuals, those who identify as asexual are more likely to be single and less likely to engage in sexual behaviors (Hille et al., 2020). The assumption that ace individuals have an overall negative attitude toward sexual behaviors has been supported by research (Bulmer & Izuma, 2018; Clark & Zimmerman, 2022; Dawson et al., 2019). Nonetheless, some ace individuals engage in solitary sexual activities (e.g., masturbation; Yule et al., 2014, 2017), and others consider having partnered sex (Decker, 2015). Indeed, even though most ace individuals report sex aversion, are unwilling to have sex, or are even disgusted by sex (Van Houdenhove et al., 2015), others are neutral or indifferent when it comes to sexual activity, and others still have favorable attitudes and construe sexual activity as a healthy practice (Carrigan, 2011). These latter individuals are more likely to have romantic relationships with an allosexual partner and consider engaging in sexual activity to satisfy the desires of their partner (Antonsen et al., 2020; Brotto et al., 2010; Dawson et al., 2016; Prause & Graham, 2007; Van Houdenhove et al., 2015). This clearly shows that diverse motives and experiences with sexuality must be acknowledged for a more accurate understanding of an ace identity.

Differences in attitudes toward sex may also be related to (a)romantic orientations. In their study, Carvalho and Rodrigues (2022) explored personal and interpersonal differences depending on whether ace individuals experience romantic attraction or not. The authors found that romantic ace individuals reported less sex aversion, more sexual and romantic experiences, more sexual

partners, and a stronger desire for romantic relationships (either with or without sexual intimacy), when compared with aromantic ace individuals. Note that having an aromantic orientation does not necessarily equate to lacking or avoiding interpersonal intimacy. Indeed, aromantic ace individuals develop meaningful and intimate connections void of romantic feelings (e.g., intimate friendships; Mitchell & Hunnicutt, 2019; Scott & Dawson, 2015). Adding to their experiences with sexuality and relationships, the experiences that ace individuals have with significant others might also contribute to how they identify and relate to others.

### Attachment

Research has been using attachment theory as a framework to understand social identity development, conceptualizing it as a construction that arises from the assimilation and integration of experiences in the context of evolving relationships (Kerpelman & Pittman, 2018). This theory postulates that experiences with significant individuals throughout the lifespan (particularly in infancy) contribute to relatively stable internal dynamic models that shape future relationships (Mikulincer & Shaver, 2007). Research has consistently shown that attachment styles are related to motives, feelings, and behavior in romantic relationships (Shaver et al., 2005). In contrast to securely attached individuals, those with an avoidant attachment tend to be emotionally distant from their partners, avoid closeness, and fear intimacy, whereas those with an anxious attachment tend to seek care and attention, fear abandonment, and worry about rejection (Brennan et al., 1998; Simpson & Rholes, 2017). Consequently, both avoidant and anxious individuals tend to adopt defensive strategies in their interactions with romantic partners (Fraley & Shaver, 2000; Mikulincer et al., 2003).

The role of attachment on sexual desire and sexual functioning has been widely discussed (for a review, see Birnbaum & Reis, 2019). Overall, individuals with an avoidant attachment tend to report less dyadic sexual desire (Attaky et al., 2022), experience discomfort with or avoid sexual activity (Tracy et al., 2003), report lower emotional intimacy when having sex (Gentzler & Kerns, 2004), and are less sexually satisfied (Lafortune et al., 2022). Individuals with an anxious attachment tend to report more sexual desire (Mark et al., 2018), have more casual sexual partners (and fewer committed sexual partners; Busby et al., 2020), and tend to engage in sexual activity to increase relationship intimacy (Davis et al., 2004; Impett et al., 2008). Extending this reasoning to ace individuals, Brotto and colleagues (2010) suggested that having an ace identity could be related to having an avoidant attachment style, given their predominant low sexual desire. This hypothesis received some empirical support in the study by Carvalho and Rodrigues (2022), who found that aromantic ace individuals scored higher in avoidant attachment when

compared to romantic ace individuals. No differences between both groups of ace individuals emerged for anxious attachment scores. Hence, attachment theory assumptions might be helpful to understand how ace individuals perceive themselves and relate to others.

## Current Study and Hypotheses

Our goal was to explore the correlates of feelings of sexual and romantic attraction, as well as desires to have intimate relationships in the future, among ace individuals. More specifically, we explored whether feelings and desires were associated with past experiences with romantic partners (distinguishing between ace and allosexual partners), non-sexual intimate relationships (distinguishing between romantic and solely affective relationships), insecure attachment styles (distinguishing between avoidance or anxious), and asexuality identification.

Similar to individuals from other sexual minorities, past experiences of ace individuals—whether questioning social scripts or experimenting with relationships and sexuality—may shape the way these individuals construct their own identity. Indeed, some authors have argued that the development of an ace identity is a dynamic process shaped by personal factors and interpersonal experiences and relationships (MacNeela & Murphy, 2015; Mitchell & Hunnicutt, 2019; Scott & Dawson, 2015). However, having an ace identity is often equated to asexuality and is typically defined as a lack of sexual attraction or sexual behavior that is relatively stable over time (Bogaert, 2004). To better understand the correlates of having an ace identity, we used scores on the Asexuality Identification Scale (AIS; Yule et al., 2015). This measure was originally developed to categorize individuals as asexual (i.e., individuals who lack sexual attraction), regardless of whether or not they identify as such. Research has already shown that ace individuals with higher AIS scores are more likely to identify as aromantic, tend to have less experience with sexual and romantic relationships, and score higher in avoidance attachment (Carvalho & Rodrigues, 2022). Replicating and extending these findings, we expected ace individuals with higher scores on the AIS to also report having *less* experience with romantic partners (H1a) and *less* experience with intimate relationships (H1b), and score *higher* in avoidant attachment (H1c).

We also expected ace individuals who feel more sexual and romantic attraction to report having *more* experience with romantic partners (H2a) and *more* experience with intimate relationships (H2b), score *lower* in avoidant attachment (H2c), and score *lower* on the AIS (H2d). Likewise, ace individuals with a stronger desire to have physically intimate romantic relationships were expected to report having *more* experience with romantic partners (H3a) and *more* experience with intimate relationships (H3b), score *lower* in avoidant attachment (H3c), and score *lower* on the AIS (H3d). Lastly,

we expected ace individuals with a stronger desire to have solely affective intimate relationships (e.g., intimate friendships) to report having *less* experience with romantic partners (H4a) and *more* experience with intimate relationships (H4b), score *lower* in avoidant attachment (H4c), and score *higher* on the AIS (H4d). Given the lack of studies examining the role of anxious attachment in the experiences of ace individuals, we did not offer a priori hypotheses.

## Method

### Participants

Of the 714 individuals who started the online survey, 256 did not complete the survey and were removed from the analyses. The final sample included 456 individuals from different online ace communities. As shown in Table 1, participants were, on average, 25 years old ( $M = 24.62$ ,  $SD = 6.98$ ), and most identified as cisgender (69.3%), women (61.8%), and asexual (76.8%). Also, most participants lived in the USA (54.8%), resided in urban areas (77.2%), were attending college (35.7%), had a bachelor's degree (28.1%), and were not romantically involved (82.5%).

### Measures

#### Identification with Asexuality

We used the AIS (Yule et al., 2015) and asked participants to “keep in mind a definition of sex or sexual activity that may include intercourse/penetration, caressing, and/or foreplay” when answering the scale. This scale uses mostly sex-based items, including sexual attraction (e.g., “I experience sexual attraction towards other people” [reverse-scored]) and lack of interest in sex (e.g., “I would be content if I never had sex again”), but also asexual identity (e.g., “The term “nonsexual” would be an accurate description of my sexuality”). Participants were asked to indicate their agreement with 12 items on a 7-point scale (1 = *Strongly disagree* to 7 = *Strongly agree*). Items were mean aggregated ( $\alpha = .84$ ), with higher scores indicating a stronger identification with asexuality.

#### Sexual and Romantic Attraction

We asked participants to indicate the extent to which they currently experience sexual attraction (“To what extent do you feel sexual attraction for other people, i.e., desire for a sexual relationship or sexual contact with someone?”) and romantic attraction (“To what extent do you feel romantic attraction for other people, i.e., an emotionally intimate connection with

**Table 1** Sociodemographic characteristics of ace individuals

	<i>M (SD)</i>	<i>n (%)</i>
Age	24.81 (7.20)	
Sex assigned at birth		
Woman		282 (61.8%)
Man		172 (37.7%)
Prefer not to answer		2 (0.4%)
Gender identity		
Cisgender		316 (69.3%)
Non-binary/Genderqueer		41 (9.0%)
Transgender		25 (5.5%)
Other (e.g., agender, genderflux, indifferent)		10 (2.2%)
Prefer not to answer		64 (14.0%)
Sexual orientation		
Asexual		350 (76.80%)
Graysexual		34 (7.5%)
Demisexual		23 (5.0%)
Other (e.g., heterosexual, lesbian, gay)		47 (10.3%)
Prefer not to answer		2 (0.4%)
Country of residence		
USA		250 (54.8%)
UK		41 (9.0%)
Canada		40 (8.8%)
Germany		16 (3.5%)
Australia		16 (3.5%)
Other (e.g., Poland, Portugal)		89 (19.5%)
Prefer not to answer		4 (0.9%)
Residence		
Urban areas		352 (77.2%)
Rural areas		103 (22.6%)
Prefer not to answer		1 (0.2%)
Education		
High school or less		86 (18.9%)
Attending college		163 (35.7%)
Associate degree		32 (7.0%)
Bachelor's degree		128 (28.1%)
Master's degree		44 (9.6%)
Other (e.g., Doctorate's degree)		3 (0.7%)
Relationship status		
Without a romantic relationship		376 (82.5%)
In a romantic relationship		80 (17.5%)

someone, not related to sex?”). Responses to each item were given on a 7-point scale (1 = *Not at all* to 7 = *Very much*). Items were treated separately in our analyses.

### Desire to Have Intimate Relationships

Participants were asked to indicate their desire (1 = *Strongly disagree* to 7 = *Strongly agree*) to have physically intimate romantic relationships using two items: “To what extent would you like to be in a significant romantic relationship with

physical intimacy, including sex?” and “To what extent would you like to be in a significant romantic relationship with physical intimacy, but excluding sex?” Responses were mean aggregated,  $r(456) = .25$ ,  $p < .001$ , with higher scores indicating a stronger desire to have physically intimate romantic relationships. We also asked participants their desire (1 = *Strongly disagree* to 7 = *Strongly agree*) to have solely affective intimate relationships without sexual activity using two items: “To what extent would you like to be in a non-romantic relationship with physical intimacy but excluding sex?” and “To what extent



would you like to be in a significant non-romantic relationship without physical intimacy (friendship-like)?” Responses were also mean aggregated,  $r(456) = .30$ ,  $p < .001$ , with higher scores indicating a stronger desire to have solely affective intimate relationships.

### Past Romantic Partners

Participants were asked to indicate if they had experiences with asexual (“Have you ever had romantic partners who were asexual?”) and allosexual (“Have you ever had romantic partners who were not asexual?”) romantic partners. Responses to each item were given on a 7-point scale (1 = *Never* to 7 = *Always*). Items were treated separately in our analyses.

### Past Intimate Relationships

We asked participants to indicate if they ever had non-sexual romantic relationships (“Have you ever had a significant relationship that can be considered romantic, i.e., a close and intimate non-sexual relationship based exclusively on affection [e.g., holding hands, kissing, etc.]?”) and solely affective intimate relationships (“Have you ever had a significant relationship that can be considered non-romantic, i.e., a close and intimate non-sexual relationship, in which affective gestures [e.g., holding hands, kissing, etc.] were rarely expressed?”). Responses to each item were given on a 7-point scale (1 = *Never* to 7 = *Always*). Items were treated separately in our analyses.

### Attachment Style

We used the Adult Attachment Questionnaire (Rholes, 1996) to assess avoidant attachment style (eight items; e.g., “I’m not very comfortable having to depend on other people”) and anxious attachment style (nine items; e.g., “I usually want more closeness and intimacy than others do”). Responses to each item were given on 7-point scale (1 = *Completely disagree* to 7 = *Completely agree*). Items on each subscale were mean aggregated, with higher scores indicating a more avoidant attachment ( $\alpha = .79$ ) and a more anxious attachment ( $\alpha = .77$ ).

### Procedure

This study followed the guidelines issued by the Ethics Council of Iscte-Instituto Universitário de Lisboa. We recruited participants from social networking groups and Reddit discussion boards (e.g., r/Asexuality) used by the ace community, between July and August 2019. Permission to post any study advertisements was requested beforehand

from administrators or moderators. Individuals were invited to take part in an anonymous online survey about asexuality and ace individuals. To participate, individuals had to be at least 18 years old, have an ace/asexual identity, and be part of an ace community. After accessing the provided weblink, participants were informed about their rights as participants and asked to give their consent before proceeding with the study. There was no compensation involved for participating in the survey. The survey started with sociodemographic questions (e.g., age, sex assigned at birth, gender identity), followed by the remaining measures. In the end, participants were thanked and debriefed. Data were collected on Qualtrics, and participants took, on average, 16 min to complete the survey.

### Analytic Plan

We first examined the overall pattern of correlations between variables. To have an overview of the experiences reported by our participants, we computed one-sample or pairwise comparisons using *t*-tests. We tested our hypotheses by computing five hierarchical linear regressions to examine the correlates of AIS scores (model 1), sexual attraction (model 2), romantic attraction (model 3), desire for physically intimate romantic relationships (model 4), and desire for solely affective intimate relationships (model 5). In model 1, predictor variables were past experiences with asexual and allosexual romantic partners, past experiences with non-sexual romantic relationships and solely affective intimate relationships (step 1), and anxious and avoidant attachment scores (step 2). In all other models, predictor variables were the same in both steps, and we added AIS scores as a predictor variable (step 3).

## Results

### Preliminary Analyses

Overall descriptive statistics and correlations are presented in Table 2. As shown in Fig. 1, AIS scores were significantly above the mid-point of the response scale,  $t(455) = 33.79$ ,  $p < .001$ ,  $d = 1.58$ , participants reported experiencing more romantic (vs. sexual) attraction,  $t(454) = 30.32$ ,  $p < .001$ ,  $d = 1.42$ , reported a stronger desire to have solely affective intimate relationships (vs. physically intimate romantic relationships),  $t(455) = 8.13$ ,  $p < .001$ ,  $d = 0.38$ , were more likely to have had allosexual (vs. asexual) romantic partners,  $t(453) = 17.97$ ,  $p < .001$ ,  $d = 0.84$ , and were more likely to have had non-sexual romantic relationships (vs. solely affective intimate relationships),  $t(455) = 2.89$ ,  $p = .004$ ,  $d = 0.14$ . Lastly, participants scored higher on avoidant (vs. anxious) attachment style,  $t(455) = 6.34$ ,  $p < .001$ ,  $d = 0.30$ .

**Table 2** Overall descriptive statistics and correlations

	<i>M (SD)</i>	Correlations									
		1	2	3	4	5	6	7	8	9	10
1. AIS scores	5.61 (1.02)	–									
2. Feelings of sexual attraction	1.48 (0.71)	–.50***	–								
3. Feelings of romantic attraction	4.21 (2.02)	–.19***	.32***	–							
4. Desire to have physically intimate romantic relationships	3.50 (1.45)	–.47***	.31***	.63***	–						
5. Desire to have purely affective intimate relationships	4.29 (1.67)	.07	–.06	.00	.12**	–					
6. Past asexual romantic partners	1.29 (1.09)	–.11*	.12**	.13**	.17***	.05	–				
7. Past allosexual romantic partners	3.83 (2.75)	–.17***	.21***	.34***	.29***	.01	–.05	–			
8. Past non-sexual romantic relationships	3.30 (2.59)	–.13**	.08	.20***	.22***	.06	.25***	.59***	–		
9. Past purely affective intimate relationships	2.91 (2.31)	.09	–.10*	–.01	.03	.35***	.19***	.16***	.31***	–	
10. Avoidant attachment scores	4.32 (1.17)	.14**	–.07	–.25***	–.20***	–.03	–.05	–.13**	–.16***	–.10*	–
11. Anxious attachment scores	3.85 (1.10)	–.02	.04	.16***	.23***	.18***	–.01	.01	–.05	–.02	.04

AIS Asexuality Identification Scale

\* $p \leq .050$ ; \*\* $p \leq .010$ ; \*\*\* $p \leq .001$ 

## Main Analyses<sup>1</sup>

### AIS Scores

As shown in Table 3, participants who scored higher on the AIS had less experience with asexual,  $p = .008$ , and allosexual romantic partners,  $p = .008$ , more experience with solely affective intimate relationships,  $p < .001$ , and scored higher on avoidant attachment,  $p = .010$ .

### Sexual and Romantic Attraction

The results are summarized in Table 4. Participants who reported more sexual attraction feelings had more experience with asexual,  $p = .004$ , and allosexual romantic partners,  $p < .001$ , had less experience with non-sexual romantic relationships,  $p = .045$ , and scored lower on the AIS,  $p < .001$ . Participants who reported more romantic attraction also had more experience with asexual,  $p < .001$ , and allosexual romantic partners,  $p < .001$ , and scored lower on avoidant attachment,  $p < .001$ , and higher on anxious attachment,  $p < .001$ .

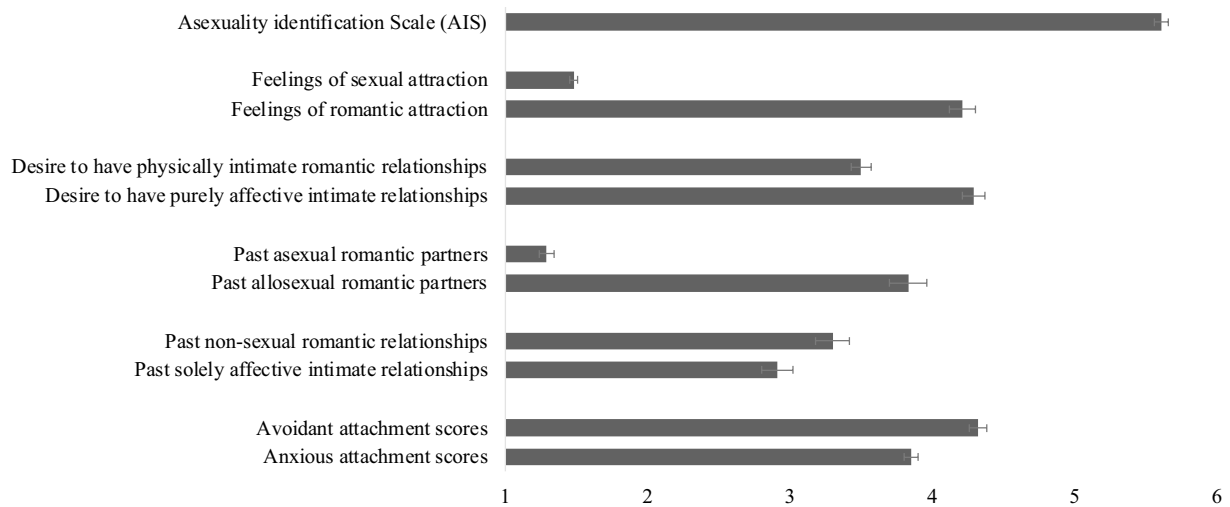
### Desire for Intimate Relationships

As shown in Table 5, participants with a stronger desire to have physically intimate romantic relationships had more experience with asexual,  $p = .002$ , and allosexual romantic partners,  $p < .001$ , scored lower on avoidant attachment,  $p < .001$ , and higher on anxious attachment,  $p < .001$ , and scored lower on the AIS,  $p < .001$ . Participants with a stronger desire to have solely affective intimate relationships had more experience with solely affective intimate relationships,  $p < .001$ , and scored higher on anxious attachment,  $p < .001$ .

## Discussion

Research must go beyond the mere absence of sexual attraction when studying an ace identity, as the diversity of feelings and experiences within the ace community is often concealed by this operationalization. As suggested by recent research, ace individuals need to navigate and negotiate the expectations and demands of others while striving to achieve the forms of intimacy they desire (e.g., Dawson et al., 2016; Mitchell & Hunnicutt, 2019). We built upon this reasoning and hypothesized that affective experiences, interpersonal

<sup>1</sup> Results from the hierarchical linear regressions were overall consistent after adding covariates to the analyses (i.e., age, country of residence, area of residence, education level, sex assigned at birth, gender identity, sexual identity, and relationship status).



**Fig. 1** Overall mean scores. *Note.* Error bars indicate standard errors

relationships, sexual experiences, and attachment styles could also be relevant to their identity.

Overall, we found mixed support for our hypotheses. As expected, participants who had fewer experiences with asexual and allosexual romantic partners (H1a) scored higher on the AIS. Also, as expected, having had more experience with asexual and allosexual romantic partners (H2a) and scoring lower in the AIS (H2d) were associated with feelings of romantic and sexual attraction. Likewise, having had more experiences with asexual and allosexual romantic partners (H3a) and scoring lower in the AIS (H3d) were associated with a stronger desire to have physically intimate romantic relationships. Lastly, having had more experiences with solely affective intimate relationships (H4b) was associated with a

stronger desire to have this type of relationship. These findings clearly show the variability of experiences within the ace community and highlight the extent to which different understandings of an ace identity (even within the same community) are related to differences in sexual desire, romantic intentions, and intimacy. As such, these findings contribute to current discussions around the distinction, or lack thereof, between sexual and romantic attraction. Equally important, these findings extend past research (e.g., Diamond, 2016; Mitchell & Hunnicutt, 2019) and suggest that experimenting with sexuality and relationships (either with asexual or allosexual partners), and perceiving sexual activity more favorably (i.e., seeing sex as a healthy practice), can contribute to a more fluid ace identity. This also resonates with

**Table 3** Hierarchical linear regressions for AIS scores

	AIS scores	
	Step 1	Step 2
	<i>b</i> ( <i>SE</i> )	<i>b</i> ( <i>SE</i> )
Past experiences		
Past asexual romantic partners	−0.12** (.05)	−0.12** (.05)
Past allosexual romantic partners	−0.06** (.02)	−0.06** (.02)
Past non-sexual romantic relationships	−0.02 (.02)	−0.02 (.02)
Past purely affective intimate relationships	0.07*** (.02)	0.07*** (.02)
Attachment style		
Avoidant attachment scores		0.10** (.04)
Anxious attachment scores		−.02 (.04)
Adjusted <i>R</i> <sup>2</sup>	.06	.07
Δ <i>F</i>	7.64***	3.41***

Collinearity statistics, as represented by the Variance Inflation Factor (VIF), revealed the absence of collinearity between predictors. VIFs ranging from 1.01 to 1.84

*AIS* Asexuality Identification Scale, *b* unstandardized regression coefficients, *SE* standard error

\**p* ≤ .050; \*\**p* ≤ .010; \*\*\**p* ≤ .001



**Table 4** Hierarchical linear regressions for sexual and romantic attraction

	Sexual attraction			Romantic attraction		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
	<i>b</i> ( <i>SE</i> )	<i>b</i> ( <i>SE</i> )	<i>b</i> ( <i>SE</i> )	<i>b</i> ( <i>SE</i> )	<i>b</i> ( <i>SE</i> )	<i>b</i> ( <i>SE</i> )
<b>Past experiences</b>						
Past asexual romantic partners	0.12*** (.03)	0.12*** (.03)	0.08** (.03)	0.33*** (.09)	0.31*** (.08)	0.29*** (.08)
Past allosexual romantic partners	0.08*** (.02)	0.07*** (.02)	0.06*** (.01)	0.29*** (.04)	0.27*** (.04)	0.26*** (.04)
Past non-sexual romantic relationships	−0.02 (.02)	−0.02 (.02)	−0.03* (.02)	−0.04 (.05)	−0.04 (.05)	−0.04 (.04)
Past purely affective intimate relationships	−0.05*** (.02)	−0.05*** (.02)	−0.03 (.01)	−0.08 (.04)	−0.09* (.04)	−0.08 (.04)
<b>Attachment style</b>						
Avoidant attachment scores		−0.03 (.03)	0.00 (.03)		−0.39*** (.07)	−0.37*** (.07)
Anxious attachment scores		0.02 (.03)	0.02 (.03)		0.30*** (.08)	0.30*** (.08)
<b>Asexuality</b>						
AIS scores			−0.32*** (.03)			−0.16 (.09)
Adjusted $R^2$	.08	.08	.27	.14	.21	.21
$\Delta F$	11.05***	0.96	118.83***	19.36***	20.74***	3.28

Collinearity statistics, as represented by the Variance Inflation Factor (VIF), revealed the absence of collinearity between predictors. VIFs ranging from 1.01 to 1.84 in both regressions

AIS Asexuality Identification Scale, *b* unstandardized regression coefficients, *SE* standard error

\* $p \leq .050$ ; \*\* $p \leq .010$ ; \*\*\* $p \leq .001$

recent longitudinal evidence indicating that ace individuals who report more dyadic sexual desire and sexual attraction, and who are less likely to identify as asexual, have a more fluid sexual identity (Su & Zheng, 2023). In other words, ace

individuals may have to engage in different experiences to realize their ideal forms of intimacy (Dawson et al., 2019).

Against our original predictions, having had *more* experiences with solely affective intimate relationships was

**Table 5** Hierarchical linear regressions for the desire to have intimate relationships

	Desire to have physically intimate romantic relationships			Desire to have solely affective intimate relationships		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
	<i>b</i> ( <i>SE</i> )	<i>b</i> ( <i>SE</i> )	<i>b</i> ( <i>SE</i> )	<i>b</i> ( <i>SE</i> )	<i>b</i> ( <i>SE</i> )	<i>b</i> ( <i>SE</i> )
<b>Past experiences</b>						
Past asexual romantic partners	0.25*** (.06)	0.24*** (.06)	0.18** (.06)	−0.03 (.07)	−0.03 (.07)	−0.02 (.07)
Past allosexual romantic partners	0.16*** (.03)	0.15*** (.03)	0.12*** (.03)	−0.02 (.03)	−0.03 (.03)	−0.03 (.03)
Past non-sexual romantic relationships	0.01 (.03)	0.01 (.03)	0.00 (.03)	−0.02 (.04)	−0.01 (.04)	−0.01 (.04)
Past purely affective intimate relationships	−0.04 (.03)	−0.05 (.03)	0.00 (.03)	0.27*** (.03)	0.27*** (.03)	0.26*** (.03)
<b>Attachment style</b>						
Avoidant attachment scores		−0.20*** (.05)	−0.14** (.05)		−0.01 (.06)	−0.02 (.06)
Anxious attachment scores		0.30*** (.05)	0.29*** (.05)		0.29*** (.07)	0.29*** (.07)
<b>Asexuality</b>						
AIS scores			−0.57*** (.06)			0.05 (.07)
Adjusted $R^2$	.12	.19	.34	.12	.15	.15
$\Delta F$	15.72***	21.04***	100.72***	16.09***	9.30***	0.52

Collinearity statistics, as represented by the Variance Inflation Factor (VIF), revealed the absence of collinearity between predictors. VIFs ranging from 1.01 to 1.84 in both regressions

AIS Asexuality Identification Scale, *b* unstandardized regression coefficients, *SE* standard error

\* $p \leq .050$ ; \*\* $p \leq .010$ ; \*\*\* $p \leq .001$

associated with higher AIS scores (H1b), and having had fewer experiences with non-sexual romantic relationships was associated with more feelings of romantic attraction (H2b). Some of these results were not necessarily surprising and suggest that ace individuals may be comfortable establishing non-sexual and non-romantic relationships and still perceive those experiences to be congruent with their identity. Other results may be explained by the fluidity underlying the development of an ace identity (Mitchell & Hunnicutt, 2019). For example, ace individuals with restricted sexual and relational experiences may be less likely to question their identity, and therefore behave in accordance with their beliefs and feelings. Converging with the findings of Dawson and colleagues (2016), some ace individuals may need to experiment with relationships to realize and accept their lack of sexual attraction, whereas other individuals are still exploring their desires but at the same time struggle to form relationships. In this latter case, ace individuals may be afraid to disclose their questioning identity to potential partners, which can prevent them from establishing certain relationships.

We also found support for the role of attachment styles on the experiences and desires of ace individuals (Brotto et al., 2010). As expected, avoidant attachment scores were associated with higher AIS scores (H1d), having fewer romantic attraction feelings (H2d), and desiring physically intimate romantic relationships to a lesser extent (H3d). These findings are consistent with recent research showing that ace individuals with fewer romantic feelings (i.e., aromantic ace individuals) scored higher on avoidant attachment and reported stronger identification with asexuality (Carvalho & Rodrigues, 2022). Hence, having an avoidant attachment may create a conflict between an ace identity and romantic attraction feelings, and lead some individuals to fear intimacy, avoid closeness, and keep an emotional distance from their partners. Even though we had no *a priori* hypotheses, we also found that having an anxious attachment was positively associated with romantic attraction feelings and the desire for intimate relationships—either physically intimate romantic relationships or solely affective intimate relationships. By having an anxious attachment, ace individuals may experience romantic attraction and consider the possibility of having intimate relationships in the future, but at the same time may be anxious around potential intimate partners, possibly due to fear of being rejected or uncertainty regarding relational and sexual expectations and norms.

Overall, our results showed that AIS scores uniquely contributed to feelings of sexual attraction and desire for intimate romantic relationships (both negatively), but not to feelings of romantic attraction or the desire to have solely affective intimate relationships. Individuals categorized as asexual using the AIS tend to lack sexual desire and perceive sex as physically aversive (Yule et al., 2015). However, even though individuals with higher AIS scores are likely to

avoid having romantic partners and romantic relationships (Carvalho & Rodrigues, 2022), this does not seem to extend to relational experiences that are not necessarily bound to sexuality or sexual activity. Hence, using the AIS without a broader understanding of past experiences and individual differences can lead to a biased understanding of the feelings and desires of ace individuals.

## Limitations and Future Studies

Our findings must be taken with caution in light of some limitations. Our cross-sectional data prevents us from establishing causality, and we did not control for secure attachment styles in our analyses. This can increase the risk of pathologizing ace identities by leading to a stigmatizing view of ace individuals (e.g., assuming that ace individuals tend to have an avoidant attachment to others) and potentially biasing our understanding of the role of attachment styles during the process of developing and accepting an ace identity. Future studies could expand our current findings by examining the implications of attachment styles for the individual and relational well-being of ace individuals. For example, a longitudinal approach with ace individuals would help understand processes such as identity exploration and the construction of relational expectations and concerns, determine *which* and *how* attachment styles facilitate or inhibit the initiation and maintenance of different types of relationships (e.g., non-romantic intimate relationships; romantic relationships), and examine factors that contribute to the development of resilience against personal adversities (e.g., experienced social stigma).

We were also unable to determine how the type and quality of past experiences with romantic partners or intimate relationships (e.g., romantic relationships vs. intimate friendships) shaped the ace identity development process. Arguably, ace individuals who had negative experiences in the past may have a different understanding of their identity when compared to ace individuals who had positive experiences. Relatedly, we did not assess for how long participants identified as ace, the self-acceptance of their identity, or their past experiences with social stigma. For instance, some of our participants might have their identities more stable, whereas others might be still exploring their identities. Informed by sexual orientation research (e.g., Mustanski et al., 2014; Rosario et al., 2006), future studies could address the stability of different components of an ace identity from a longer life course perspective. For instance, researchers could examine in greater detail the different stages of developing an ace identity, if, how, and under which conditions motivations to have (or not) different types of intimate relationships vary according to each stage, and the role of individual differences (e.g., attachment style) in these processes. These studies could also take a step further and examine the implications of having an ace identity for

personal satisfaction and well-being, and how intimate relationships (whether physically intimate or solely affective) can help ace individuals fulfill their needs for affection.

We recruited a diverse sample of individuals from ace communities around the world, but our sample was biased by including more women and cisgender individuals. We also failed to account for possible cultural differences (e.g., individuals from more accepting cultural contexts may have more access to information and feel safer discussing their ace identity with others). Moreover, our sample included individuals motivated to search for information and access online resources, who were likely to participate in discussions surrounding the multiple experiences of ace individuals, have more knowledge about their own experiences, embrace specific language within the community, be more self-aware of their identity, and take their identity as a central part of themselves. This may be relevant when considering the generalization of our findings (e.g., past studies suggest a higher sexual fluidity among women; Diamond, 2016), particularly when it comes to individuals who struggle to access information, are questioning their identity, lack support from an ace community, or are unaware of the diversity within the ace spectrum.

Lastly, we only had a small subsample of participants who identified with labels other than “asexual” (e.g., graysexual, demisexual), which prevented us from conducting finer analyses considering the intersections between sexual orientation, sexual identity, and romantic orientation. For example, an ace individual can identify as demisexual and have a romantic orientation (Copulsky & Hammack, 2023). Future studies (and particularly those with representative samples) should seek to examine in detail the diverse experiences of ace individuals while accounting for the nuances and intersections between identities. Studies could also consider complementing quantitative analyses with qualitative methodologies to gain insights into the complexities surrounding the development of an ace identity (for example, see Kelleher & Murphy, 2022). We believe that using the AIS was not a limitation, nor did it go against our main argument, because we used the AIS scores as an indicator instead of using scores to categorize participants. Still, future studies should question the validity of this approach for identification purposes, as it may be reductive and fail to acknowledge the diverse lived experiences of ace individuals. Alternatively, future studies could consider revising the AIS and developing a more detailed instrument to properly assess such diversity.

## Conclusion and Implications

This study explored a range of lived experiences of ace individuals, a sexual identity minority often overlooked in research and society. Taken together, our findings suggest that ace identity is a complex and multifaceted construct,

filled with nuances and diverse lived experiences. We also extended the attachment framework to better understand the development of an ace identity. However, we have no empirical evidence suggesting that an ace identity is caused by certain childhood experiences. Making empirically unfounded assumptions is likely to have negative political and social ramifications, perpetuate harmful stereotypes, and stigmatize asexuality as a disorder. Despite the increasing awareness of the ace community, ace individuals are still underrepresented and misrepresented in society (Gupta & Cerankowski, 2017). This contributes to misconceptions about what it means to have an ace identity (including for people working in the healthcare system; Jones et al., 2017) and can facilitate externalized and internalized stigmatization (e.g., Mollet, 2021). For example, our results highlighted that sexual attraction and romantic attraction are distinct experiences (with different correlates) that sometimes can coexist (but not necessarily) within the ace community. Including our current findings in discussions about diversity in communities (both in person and online) would offer additional opportunities for the self-discovery and self-acceptance of individuals who are struggling with their ace identity. These discussions could also offer opportunities to improve societal knowledge about the ace community, promote accepting discourses from the media and the general public, and ultimately ensure fundamental rights of acceptance and equity for ace individuals.

Therapists might also benefit from having more knowledge about the diversity within the ace community, how past experiences and individual differences can contribute to the development of an ace identity (and in which direction), and the different processes that underlie its development. Along with existing results, our study contributes to preventing the risk of fitting ace individuals into the prototype of asexuality, disregarding their feelings and experiences, and perpetuating stigmatizing views of the ace community, even among mental health professionals. Moreover, by understanding the barriers and concerns related to the process of developing an ace identity, therapists are better equipped to help patients who are struggling with their sexual identity, some of whom may be unaware of specific ace terms or online ace communities. Based on our findings, therapists can make use of individual past experiences, create safer spaces to discuss sexual and relationship expectations and normative views, and work around issues related to internalized negativity. Likewise, our findings offer preliminary evidence on how attachment styles can facilitate (or prevent) ace individuals from exploring their identity and relationships. Based on these findings, therapists can develop tools to help individuals develop more secure attachment styles with others and have more positive experiences.

Our results can also inform the development of policies aimed at increasing awareness and promoting safer spaces for ace individuals. For example, policymakers working in healthcare can

help create conditions for ace individuals to have better (and more adequate) social and psychological support, feel that their interpersonal and relationship needs are acknowledged and met (based on their past experiences), and consequently improve their psychological and physical well-being. For example, our results show that some ace individuals have sex, and therefore healthcare professionals should be prepared to discuss sexual health issues in their practice. Policymakers working with education can also use our findings to inform the development of accurate and comprehensive modules on asexuality and ace identities, most of which tend to be left out of current sexuality education curricula. By addressing the unique challenges faced by individuals during their identity development (e.g., what does it mean to have an ace identity), throughout their socialization (e.g., individuals in romantic relationships are expected to have sex), and during their interactions with others (e.g., different understandings of physical intimacy), sexuality educators can help foster positive discourse and accepting attitudes in younger generations. Lastly, policymakers working with human rights can advocate for the recognition of asexuality as a valid sexual identity and work to ensure that ace individuals are not discriminated against based on their identity.

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**Author Contribution** ACC and DLR conceived the study. ACC collected the data and performed statistical analyses, interpreted the data, and drafted the manuscript. DLR coordinated the study, reviewed the data analyses, and helped to draft the manuscript. All authors read and approved the final manuscript.

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**Data Availability** All materials and anonymized data are available upon reasonable request from the first author.

## Declarations

**Ethics Approval** All study procedures and measures were in accordance with the guidelines issued by the Ethics Council of Iscte-Instituto Universitário de Lisboa, and was in accordance with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Consent to Participate** Informed consent was obtained from all individual participants included in the study.

**Conflict of Interest** The authors declare no conflict of interest.

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