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Asexuality, Graysexuality, and Demisexuality: Distinctions in Desire, Behavior, and Identity

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ABSTRACT

As identities within the ace spectrum gain greater visibility in describing those who experience limited or no sexual attraction, it is vital to understand points of commonality and distinction among individuals who identify as asexual, graysexual, and demisexual. Among respondents to the Ace Community Survey, a large international sample of individuals who identify on the ace spectrum, we found that those who identified as asexual (n = 9,476, $M_{age} = 22.3$, 61.0% female, 12.5% male), graysexual (n = 1,698, $M_{age} = 24.2$, 58.8% female, 16.5% male), or demisexual (n = 1,442, $M_{age} = 24.2$, 62.8% female, 12.6% male) varied in indicators related to sexual desire, behavior, and identity. Asexual individuals were the least likely to be in a relationship, experience romantic attraction, or identify with orientation labels signifying genders of attraction such as straight, bisexual, heteroromantic, and biromantic. Asexual individuals were the most likely to identify as aromantic, graysexual individuals the most likely to identify as grayromantic, and demisexual individuals the most likely to identify as demiromantic. Asexual individuals also scored the lowest on measures of sex drive, personal disposition toward engaging in sex, and masturbation frequency, with graysexual individuals scoring lower than demisexual individuals on the first two.

The emergence of new identity labels within the asexual community expands the range of ways that individuals can describe their sexuality and may in turn shift larger social and scientific understandings of sexual orientation. Although asexual is sometimes used as an umbrella term for anyone who experiences limited or no sexual attraction, the labels graysexual (or gray-asexual) and demisexual allow individuals to describe some of these other "ace spectrum" experiences more precisely (Chasin, 2015, 2017). Individuals who identify as graysexual are considered to fall in the "gray area" between asexuality and allosexuality (non-asexuality) when it comes to sexual attraction, and individuals who identify as demisexual are considered to experience sexual attraction only after forming an emotional connection with someone (Carrigan, 2011; Cowan & LeBlanc, 2018). Although allosexual individuals may choose to have sex only within an emotionally intimate relationship, sexual attraction is typically experienced in the presence of strangers or casual acquaintances. Demisexual identity is distinguished by the limited context in which any sexual attraction is felt (Chen, 2020). We follow ace communities and recent scholarship here in using the term allosexual rather than sexual or non-asexual, which is intended to resist privileging one identity as the assumed norm (Chen, 2020; Hille et al., 2020).

Although these distinctions across ace spectrum identities are increasingly recognized in popular and scientific discourse, there is little empirical research on the ways in which individuals who use different ace spectrum labels actually experience desire, behavior, and identity. The purpose of this study was to compare individuals who identify as asexual, graysexual, and demisexual on indicators of desire, behavior, and identity. Among a large international community sample of individuals who identified on the ace spectrum, we examined whether these three groups were distinct in the words they use to describe themselves, the desires they experience, and the behavior they engage in regarding both sexuality and romance.

Asexuality and the Ace Spectrum

Research over the past two decades has employed multiple definitions of asexuality and has increasingly rejected pathologizing models that dominated in the twentieth century (e.g., Bogaert, 2006; Chasin, 2017; Gressgård, 2013). Typically, asexuality has been operationalized as a lack of sexual attraction (Bogaert, 2004, 2013) or self-identification as asexual (Brotto et al., 2010; Greaves et al., 2017). Occasional scholarship has instead focused on the absence of sexual behavior (Rothblum & Brehony, 1993) or lack of desire (Scherrer, 2008). Some research has considered the relationship among these elements of identity, attraction, behavior, and desire (e.g., Poston & Baumle, 2010; Prause & Graham, 2007; Van Houdenhove et al., 2015).

Research on asexuality has paid little attention to graysexual and demisexual identities. Because some but not all individuals who identify as graysexual or demisexual also identify as asexual, these groups are likely being selectively included in research on asexuality. Research may also count those who identify as graysexual or demisexual as part of an asexual group without knowing if this is how these individuals understand their own identities (Greaves et al., 2017). Although it

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does not address these methodological issues, a dimensional approach to asexuality could be a helpful tool for offering some conceptual clarity here. If *target* of attraction is taken as a separate dimension than *degree* of attraction, then asexual, graysexual, and demisexual may be three identities located toward one end of the degree dimension.

The limited research on desire, behavior, and identity among those who identify with ace spectrum identities suggests key differences from those who can be considered allosexual. Asexual individuals report less sexual desire, arousal, and fantasies that involve sexual partners compared with allosexual individuals (Brotto et al., 2010; Prause & Graham, 2007; Yule et al., 2017). Asexual individuals report masturbation (Brotto et al., 2010) but frame it as a non-sexual activity (Scherrer, 2008; Yule et al., 2017), and they report less masturbation than allosexual individuals (Bogaert, 2013; Prause & Graham, 2007).

With regard to behavior, asexual individuals are also less likely than allosexual individuals to currently engage or have ever engaged in a variety of sexual activities. Reports vary on the proportion of asexual individuals who have ever had sex, with Brotto et al. (2010) reporting that most asexual individuals have never had sex but Hille et al. (2020) reporting that the vast majority of asexual individuals have engaged in activities they personally define as sex. Asexual individuals who do have sex do so for the first time at a later age than allosexual individuals (Bogaert, 2004). Asexual individuals also report fewer sexual partners (Bogaert, 2004, 2013; Prause & Graham, 2007) and less frequent sex (Bogaert, 2004, 2013).

In the only study to our knowledge to examine differences within ace spectrum identities, Hille et al. (2020) found that asexual individuals were less likely than graysexual individuals to want to engage in a variety of physically intimate behaviors with a partner in the future, including kissing and cuddling; manual, oral, anal, and vaginal sex; and play with toys. Similarly, graysexual individuals were less likely than demisexual individuals to want to engage in these same partnered behaviors (Hille et al., 2020).

These patterns of reduced sexual desire and behavior relative to allosexual people may have implications for the intimate relationships of asexual people. Asexual individuals are less likely than allosexual individuals to currently be in a romantic relationship (Greaves et al., 2017) or to have ever been in a long-term relationship (Bogaert, 2004, 2013). Although most asexual individuals have been in a relationship at some point, most are not currently in a relationship (Brotto et al., 2010; Hille et al., 2020). This pattern extends to comparisons among ace spectrum identities, with asexual individuals less likely than graysexual and demisexual individuals to be in an intimate relationship. In Hille et al.'s (2020) study, asexual individuals were more likely than graysexual individuals, and graysexual individuals were more likely than demisexual individuals, to be single. Likewise, asexual individuals were less likely than graysexual individuals, and graysexual individuals were less likely than demisexual individuals, to currently be in a sexual relationship (Hille et al., 2020).

With regard to identity, asexual communities often make a distinction between sexual and romantic attraction, sometimes conceptualizing these attractions as two different kinds of orientation. Romantic attractions are described with terms like heteroromantic, homoromantic, and biromantic (Copulsky, 2019) or broader labels like straight, gay, lesbian, and bi (Chasin, 2015). Thus, someone might say that their sexual orientation is demisexual and that their romantic orientation is biromantic.

However, romantic attraction may also be considered a part of sexual orientation and reflected in the choice of sexual orientation labels. When individuals who identify as asexual choose sexual orientation labels such as heterosexual, homosexual, and bisexual on surveys, despite the availability of asexual or write-in options, some are likely emphasizing the importance of romantic attraction for their social identities (Brotto et al., 2010; Prause & Graham, 2007). Others may also use these sexual orientation labels to describe limited experiences of sexual attraction.

Many members of the asexual community also appear to identify as aromantic, describing a lack of romantic attraction (Gazzola & Morrison, 2011). Asexual individuals are more likely than graysexual and demisexual individuals to identify as aromantic and less likely to identify as biromantic or panromantic (Hille et al., 2020). Hille et al. (2020) also found that asexual individuals were less likely than graysexual individuals to identify as heteroromantic.

The Current Study

This study examined differences in response patterns in sexual and romantic desire, behavior, and identity among respondents who identified as asexual, graysexual, and demisexual. Building on Hille et al.'s (2020) study, we compared these three groups on additional measures of sexual and romantic behavior along with measures of sexual desire, romantic attraction, and intimate behavior. Patterns of similarity and difference among asexual, graysexual, and demisexual individuals across these measures clarify our understandings of these identities as related but distinct groups.

Method

The Ace Community Survey is an annual survey organized by members of the broad asexual community and focused on the experiences of those across the ace spectrum. The Ace Community Survey (acecommunitysurvey.org) is an independent project, organized by a group of volunteers from the asexual community and unaffiliated with any universities, research institutions, or other ace organizations. The project aims to serve the community by increasing knowledge and understanding of ace spectrum individuals. Data are shared with outside researchers to further this goal.

The sample we analyzed was drawn from the 2018 dataset. The full 2018 survey consisted of 129 questions and took approximately 30 minutes to complete. Sections of the survey included demographics, relationships, sexual history, health and ability, and involvement in asexual communities. The contents of the survey are informed by the survey team's own experiences as part of the asexual community and ongoing feedback from others. Before the survey is released each year, the survey team considers previous feedback, checks the survey with a diverse pool of ace and non-ace beta testers, and reaches consensus on proposed updates to the text (C. Bauer, personal communication, October 14, 2021). Like previous years, the 2018 survey included a question at the end asking for feedback on the survey.

Participants

Respondents to the 2018 survey were recruited through links shared to asexual websites and forums, along with snowball sampling. Respondents were told that the purpose of the survey was "to understand more about the diversity of the ace community, including asexual, demisexual, gray-asexual, and related identities." Anyone over the age of 13 and from any country was eligible to participate. However, the survey was only available in English. In total, 15,177 respondents completed the survey.

All participants completed informed consent materials, highlighting that the data were anonymous, that their participation was voluntary, and that they could stop participating at any time before submitting the completed survey. Because requiring parental consent can force sexual minority youth to disclose their identities, both placing youth at risk and effectively excluding the most marginalized voices, parental consent was not required (Macapagal et al., 2017). Participants were also warned about sensitive questionnaire topics and advised that they could skip sensitive sections and that most questions were optional. The only required questions were country of residence, the asexual spectrum question described below, and navigation questions asking participants if they wanted to skip sections of the survey. No material incentive was provided to participants, and there was no financial gain to survey organizers. Secondary data analysis based on the non-identifiable dataset provided by the Ace Community Survey team was exempt from review by the Institutional Review Board at our institution.

Although the survey was open for people with any sexual identity to complete, all respondents were required to answer the question "Do you consider yourself to be on the asexual spectrum?" The survey noted that this spectrum includes "asexuals, gray-asexuals, demisexuals, aces, etc." Respondents answering "yes" or "unsure" were subsequently asked which label they preferred. Inclusion in this analysis was limited to the 12,616 ace spectrum individuals who reported most closely identifying with the labels asexual (n = 9,476), demisexual (n = 1,442), or graysexual (n = 1,698). Because the focus of the survey was participants' self-identification with these labels, definitions were not provided in the survey text. Those who said they were questioning or preferred an "other" ace spectrum identity are not considered here, given our focus on distinctions among these three specific groups.

The mean age of participants was 22.8 years old, and the median age was 21. The sample was 60.9% woman or female, 13.0% man or male, and 25.5% none of the above. Most of the sample was White (84.0%) and from the United States (58.1%). Another 8.9% was from the United Kingdom and 6.7% from Canada, with other countries each representing less than 5% of participants.

Measures

Desire

Three questions addressed the topic of sexual desire. One question assessed strength of *sex drive* or libido, measured on a scale of 0 (*nonexistent*) to 4 (*very strong*). Another question asked about *masturbation frequency*, with six answer choices converted to a 0–5 scale where 0 represents the lowest frequency and 5 the highest. (These choices were "I have never masturbated," "I have masturbated before but do not do so currently," "a few times a year or less," "at least once a month," "at least once a week," and "at least once per day"). Respondents were also asked about their personal *disposition* toward engaging in sex. The five response options were converted to a 0–2 scale, with 0 representing *repulsed*, 1 representing *indifferent* or *uncertain*, 2 representing *favorable*, and the 962 participants who selected *other* excluded from the analysis.

Romantic attraction was measured with one question asking about the gender groups that respondents are romantically attracted to, with respondents asked to check all that apply from six options, which are listed in Table 3.

Behavior

Sexual behavior was assessed with four items. Respondents were first asked if they had *ever had sex*. Those who had had sex were also asked to estimate their *age of earliest sex*. A question about age at most recent time of having sex was compared to year of birth to calculate a measure of approximate *years since last sex*. Respondents were also asked about their *frequency of sex* in the past year, with seven options converted to a 0–6 scale where 0 represents the lowest frequency and 6 the highest. (These choices were: "not at all," "1–2 times," "3–5 times," "6–10 times," "11–25 times," "26–50 times," and "at least 50 times.") We limited analysis of this frequency question to respondents who said yes to ever having had sex. Sex was not defined in the survey text, a point we discuss further below as a limitation of the study.

Four questions addressed romantic and intimate behavior by asking about experiences with significant relationships. The survey described this category as including "close relationships other than family or close friends" and specified that they "need not necessarily be sexual or even romantic." These questions asked if respondents were in a *current relationship* and had ever been in a *past relationship*, *past romantic relationship*, or *past nonromantic relationship*. We looked at the proportion of respondents who affirmed that they had each type of relationship experience.

Identity

Along with the question about ace spectrum labels, two additional questions assessed identity. One question asked which *sexual orientation* label other than asexual, graysexual, or demisexual respondents identified with most closely, with the eight answer choices listed in Table 6. A separate question asked about *romantic orientation* labels, with respondents asked to check all that applied from the 15 options listed in Table 7.

Results

Statistical Analysis

Means were assessed with ANOVAs and post-hoc pairwise comparisons. Proportions were assessed with chi-square tests and post-hoc pairwise comparisons using continuity-corrected z-tests. Because of the large number of analyses conducted, we adopted a stricter threshold for claiming statistical significance: all findings we report were statistically significant at an adjusted p < .001 level.

Participant Characteristics

Table 1. Demographic characteristics.

An ANOVA for age showed a significant difference between groups (F (2, 12,425) = 90.90, p < .001, $\eta^2 = .014$). Post-hoc pairwise comparisons confirmed that the asexual group was the youngest but did not show a statistically significant difference between the graysexual and demisexual groups at the p < .001 level. The mean age for the asexual group was 22.3, and the mean age for both the graysexual and demisexual groups was 24.2. The median age for the asexual group was 21, and the median age for both the graysexual and demisexual groups was 23.

A chi-square test detected significant variation among the three groups for gender identity (χ^2 (6, N = 12,616) = 23.91, p < .001, V = .031). However, post-hoc pairwise comparisons only detected a significant difference between the asexual and graysexual groups for identification as man or male (Asex: 12.5%, Gray: 16.5%, Demi: 12.6%). There were no significant differences between the groups for identification as woman or female (Asex: 61.0%, Gray: 58.8%, Demi: 62.8%) or with none of the above (Asex: 26.0%, Gray: 24.2%, Demi: 24.1%).

Significant variation among the three groups was shown in a chi-square test for identification as White or of European descent (χ^2 (2, N = 12,616) = 16.81, *p* < .001, V = .037.) Posthoc pairwise comparison showed that the asexual group was more likely to identity as White than the graysexual group but could not detect a significant difference between either of these groups and the demisexual group (Asex: 84.7%, Gray: 81.0%, Demi: 82.5%). A chi-square test also detected significant variation among the groups for country of residence (χ^2 (158, N = 12,616) = 222.15, *p* < .001, V = .094). Post-hoc pairwise comparisons did not detect significant differences for the demisexual group but did show that the asexual group was less likely than the graysexual to come from the United States (Asex: 57.0%, Gray: 62.1%, Demi: 60.7%) and more likely to come from the United Kingdom (Asex: 9.6%, Gray: 7.0%, Demi: 7.0%). No differences were detected in the proportion of respondents who came from Canada (Asex: 6.8%, Gray: 6.3%, Demi: 7.1%) (See Table 1.).

Desire

Significant differences were detected by ANOVAs for sex drive (F (2, 11,488) = 351.97, p < .001, $\eta^2 = .058$), masturbation frequency (F (2, 11,481) = 213.33, p < .001, $\eta^2 = .036$), and disposition toward engaging in sex (F (2, 11,632) = 1269.26, p < .001, $\eta^2 = .179$).

Post-hoc pairwise comparisons confirmed that, at a p < .001 level, asexual individuals had the lowest mean scores for sexual desire on all three measures of sex drive (Asex: 1.3, Gray: 1.8, Demi: 1.9), masturbation frequency (Asex: 2.4, Gray: 3.1, Demi: 3.0), and disposition toward engaging in sex (Asex: 0.5, Gray: 1.0, Demi: 1.2). Differences for sex drive and disposition were also significant between the graysexual and demisexual groups (See Table 2.).

Chi-square tests detected significant differences among the three groups in the proportions reporting attraction to men (χ^2 (2, N = 12,576) = 587.13, *p* < .001, V = .216), women (χ^2 (2, N = 12,576) = 321.20, *p* < .001, V = .160), and nonbinary genders (χ^2 (2, N = 12,576) = 363.46, *p* < .001, V = .170), or reporting they do not experience romantic attraction (χ^2 (2, N = 12,576) = 677.41, *p* < .001, V = .232). Because participants could select more than one romantic attraction, we treated these as different measures and analyzed the proportion of respondents who answered "yes" to each item separately.

Measure	Tot	al	Ase	xual	Grays	sexual	Dem	isexual	р	V
Age ^a	(n = 12	,428)	(n =	9,321)	(n =	1,677)	(n =	1,430)		
М	22.	8	22	2.3	24	.2 _b	24	4.2 _b	<.001	.014
SD	6.7	7	6	.5	7.0		7	7.1		
Median	21		2	21	2	23	:	23		
Range 13–78		13	-78	13	-66	13	-67			
	(N = 1	2,616)	(n =	= 9,476)	(n =	: 1,698)	(n =	= 1,442)		
	n	%	n	%	n	%	n	%		
Gender									<.001	.031
Woman or female	7,683	60.9	5,779	61.0 _a	998	58.8 _a	906	62.8 _a		
Man or male	1,645	13.0	1,183	12.5 _a	281	16.5 _b	181	12.6 _{ab}		
None of the above	3,223	25.5	2,464	26.0 _a	411	24.2 _a	348	24.1 _a		
Race (% White)	10,592	84.0	8,026	84.7 _a	1,376	81.0 _b	1,190	82.5 _{ab}	<.001	.037
Country of residence									<.001	.094
United States	7,334	58.1	5,403	57.0 _a	1,055	62.1 _b	876	60.7 _{ab}		
United Kingdom	1,129	8.9	909	9.6 _a	119	7.0 _b	101	7.0 _{ab}		
Canada	849	6.7	640	6.8	107	6.3 _a	102	7.1 _a		

Columns with different subscript letters are statistically different at p < .001. ^aNot all respondents answered this optional question.

Table 2. Sexual desire in ace spectrum individuals.

Measure	-	Total ^a			Asexual			Graysexual			Demisexual			
incubale	n	М	SD	n	М	SD	n	М	SD	n	М	SD	р	η^2
Sex drive (0-4)	11,491	1.4	1.0	8,512	1.3 _a	1.0	1,611	1.8 _b	1.0	1,368	1.9 _c	1.0	<.001	.058
Masturbation frequency (0-5)	11,484	2.6	1.5	8,498	2.4 _a	1.6	1,613	3.1 _b	1.3	1,373	3.0 _b	1.3	<.001	.036
Disposition (0–2) ^b	11,635	0.6	0.6	8,832	0.5 _a	0.6	1,515	1.0 _b	0.6	1,288	1.2 _c	0.6	<.001	.179

Columns with different subscript letters are statistically different at p < .001.

Not all respondents answered these optional questions.

^bDisposition is how participants felt about the idea of personally engaging in sex (0 = *repulsed*, 1 = *indifferent* or *uncertain*, 2 = *favorable*).

Post-hoc pairwise comparisons confirmed that, at a p < .001 level, asexual individuals were the least likely to report attraction to men (Asex: 45.4%, Gray: 66.9%, Demi: 73.7%), women (Asex: 44.9%, Gray: 62.5%, Demi: 64.4%), or people with nonbinary genders (Asex: 34.4%, Gray: 52.3%, Demi: 55.0%), and the most likely to report that they do not experience romantic attraction (Asex: 31.5%, Gray: 11.7%, Demi: 4.5%). Differences in romantic attraction to men and in not experiencing romantic attraction were also statistically significant between the graysexual and demisexual groups (See Table 3.). These findings align closely with the findings for romantic orientation labels (see below), with both romantic identity and attraction showing a clear relationship to ace spectrum identities.

Behavior

A significant difference in the proportions of the three groups that had ever had sex was detected with a chi-square test (χ^2 (2, N = 12,616) = 1129.88, *p* < .001, V = .299). ANOVAs also revealed a significant difference in number of years since last having sex (F (2, 3474) = 38.05, *p* < .001, η^2 = .021) and frequency of sex (F (2, 3459) = 87.62, *p* < .001, η^2 = .048). The ANOVA for age of earliest sex did not show a statistically significant difference between groups at the *p* < .001 level (F (2, 3514) = 4.704, *p* = .009, η^2 = .003).

Post-hoc pairwise comparisons showed that asexual individuals reported the least sexual behavior across multiple measures at a p < .001 level. Asexual individuals had the lowest rates for ever having sex (Asex: 19.9%, Gray: 46.6%, Demi: 55.0%), had the highest mean number of years since last having sex, if they ever had sex (Asex: 2.8, Gray: 2.1, Demi: 1.5), and had the lowest mean score for frequency of sex in the past year among those who had ever had sex (Asex: 1.6, Gray: 2.0, Demi: 2.7). Differences between the graysexual and demisexual groups on having ever had sex and frequency of sex were also statistically significant (See Table 4.).

Chi-square tests revealed statistically significant differences among the three groups in proportions that were in a current relationship (χ^2 (2, N = 12,616) = 549.64, *p* < .001, V = .209), had ever been in a relationship (χ^2 (2, N = 12,616) = 520.10, *p* < .001, V = .203), had ever been in a romantic relationship (χ^2 (2, N = 12,616) = 667.00, *p* < .001, V = .230), and had ever been in a non-romantic relationship (χ^2 (2, N = 12,616) = 61.32 *p* < .001, V = .070).

Across multiple measures, asexual individuals also reported the lowest levels of romantic and intimate behavior, as confirmed by post-hoc pairwise comparisons significant at a p < .001 level. Asexual individuals were the least likely to be in a current relationship (Asex: 18.5%, Gray: 32.3%, Demi: 44.1%) or to have ever been in any relationship (Asex: 45.1%, Gray: 63.5%, Demi: 73.2%), a romantic relationship (Asex: 36.3%, Gray: 56.3%, Demi: 68.0%), or a non-romantic relationship (Asex: 30.2%, Gray: 36.5%, Demi: 38.9%). Differences were also statistically significant between the graysexual and demisexual groups for currently being in a relationship and for experience with either any past relationship or a past romantic relationship (See Table 5.).

Identity

Most respondents identified with the label as exual (75.1%), with fewer choosing the labels grays exual (13.5%) or demise xual (11.4%). Selection of additional sexual orientation labels varied substantially between these three groups. A chi-square test found a statistically significant overall difference in sexual orientation labels between groups, χ^2 (16, N = 12,616) = 1111.80, *p* < .001, V = .210.

Table 3. Targets of romantic attraction for ace spectrum individuals.

Target ^a	Total ^b (N :	= 12,576)	Asexual (n = 9,446)		Graysexual (n = 1,696)		Demisexual $(n = 1,434)$		р	V
	n	%	n	%	n	%	n	%		
Men	6,477	51.5	4,285	45.4 _a	1,135	66.9 _b	1,057	73.7 _c	<.001	.216
Women	6,229	49.5	4,245	44.9 _a	1,060	62.5 _b	924	64.4 _b	<.001	.160
People with non-binary genders	4,927	39.2	3,251	34.4 _a	887	52.3 _b	789	55.0 _b	<.001	.170
I don't experience romantic attraction	3,240	25.8	2,977	31.5 _a	198	11.7 _b	65	4.5 _c	<.001	.232
I prefer not to use a/romantic attraction terminology	408	3.2	314	3.3 _a	50	2.9 _a	44	3.1 _a	.668	.008
Questioning or unsure	2,920	23.2	2,364	25.0 _a	336	19.8 _b	220	15.3 _b	<.001	.079

Columns with different subscript letters are statistically different at p < .001.

^aRespondents could select more than one romantic attraction.

^bForty respondents were excluded who left this question entirely blank.

Table 4. Sexual behav	ior in ace s	pectrum individuals.
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Measure		Total Asexual				Graysexual				Demisexual								
	n				n				n				n				р	
		%				%				%				%				V
Ever had sex	3,474	27.5			1,889	19.9 _a			792	46.6 _b			793	55.0 _c			<.001	.212
		М	SD	Range		М	SD	Range		М	SD	Range		М	SD	Range		η^2
Age of earliest sex	3,517	19.0	3.4	4–48	1,924	19.1 _a	3.5	10–48	794	18.7 _a	3.3	8–35	799	19.1 _a	3.5	4–36	.009	.003
Years since last sex	3,477	2.3	3.7	0-40	1,898	2.8 _a	4.1	0-40	784	2.1 _b	3.2	0–26	795	1.5 _b	2.9	0-27	<.001	.021
Frequency of sex (0-6)	3,462	1.9	2.1		1,883	1.6 _a	1.9		789	2.0 _b	2.0		790	2.7 _c	2.2		<.001	.048

Columns with different subscript letters are statistically different at p < .001.

Table 5. Intimate behavior in ace spectrum individuals.

Measure	Total (N =	= 12,616)		Asexual (n = 9,476)		exual 1,698)		sexual 1,442)		
	n	%	n	%	n	%	n	%	р	V
Current relationship	2,935	23.3	1,751	18.5 _a	548	32.3 _b	636	44.1 _c	<.001	.209
Past relationship	6,412	50.8	4,278	45.1 _a	1,079	63.5 _b	1,055	73.2 _c	<.001	.203
Past romantic relationship	5,374	42.6	3,437	36.3 _a	956	56.3 _b	981	68.0 _c	<.001	.230
Past non-romantic relationship	4,044	32.1	2,863	30.2 _a	620	36.5 _b	561	38.9 _b	<.001	.070

Columns with different subscript letters are statistically different at p < .001.

Post-hoc pairwise comparisons confirmed several differences in the asexual group's selection of additional labels, all statistically significant at a p < .001 level. Asexual individuals were least likely to identify as straight (Asex: 12.7%, Gray: 20.4%, Demi: 22.4%), bisexual (Asex: 12.3%, Gray: 23.3%, Demi: 24.1%), or pansexual (Asex: 11.1%, Gray: 19.6%, Demi: 20.7%), but most likely to choose the "none of the above" option (Asex: 34.2%, Gray: 7.9%, Demi: 7.6%) or leave this question blank (Asex: 1.7%, Gray: 0.4%, Demi: 0.5%). Because we expected graysexual and demisexual individuals to experience more sexual interest, it is fitting that these groups would also find sexual orientation labels more useful (See Table 6.).

There were also statistically significant differences in the use of romantic orientation labels. Chi-square tests found statistically significant differences among the three groups on most romantic orientation labels, including aromantic (χ^2 (2, N = 12,603) = 806.16, *p* < .001, V = .253), grayromantic (χ^2 (2, N = 12,603) = 207.12, *p* < .001, V = .128), demiromantic (χ^2 (2, N = 12,603) = 3810.11, *p* < .001, V = .124), heteroromantic (χ^2 (2, N = 12,603) = 85.85, *p* < .001, V = .083), biromantic (χ^2 (2, N = 12,603) = 80.14, *p* < .001, V = .080), panromantic (χ^2 (2, N = 12,603) = 83.12, *p* < .001, V = .081), and polyromantic (χ^2 (2, N = 12,603) = 18.86, *p* < .001, V = .097). Because participants

could select more than one romantic orientation, we treated these as different measures and analyzed the proportion of respondents who answered "yes" to each item separately.

Post-hoc pairwise comparisons confirmed several statistically significant differences in specific romantic orientation labels, all significant at a p < .001 level. Asexual individuals were most likely to identify as aromantic (Asex: 40.5%, Gray: 18.4%, Demi: 7.7%), graysexual individuals most likely to identify as grayromantic (Asex: 11.1%, Gray: 22.8%, Demi: 8.4%), and demisexual individuals most likely to identify as demiromantic (Asex: 12.6%, Gray: 13.3%, Demi: 32.2%). Ace spectrum individuals in our sample often reported similar experiences of sexual attraction and romantic attraction. The difference in aromantic identity between the graysexual and demisexual groups was also statistically significant.

Asexual individuals were also least likely to identify with alloromantic orientations such as heteroromantic (Asex: 14.9%, Gray: 20.8%, Demi: 23.1%), biromantic (Asex: 20.4%, Gray: 28.4%, Demi: 27.5%), panromantic (Asex: 21.4%, Gray: 28.1%, Demi: 30.5%), and polyromantic (Asex: 4.0%, Gray: 9.1%, Demi: 8.9%). This pattern suggests that asexual individuals may be less likely to have romantic interests that are important to their identities (See Table 7.).

Table 6. Preferred sexual orientation labels of ace spectrum individuals

Label	Total (N =	= 12,616)		Asexual (n = 9,476)		/sexual 1,698)		isexual 1,442)		
	n	%	n	%	n	%	n	%	р	V
Sexual Orientation									<.001	.210
Straight	1,877	14.9	1,208	12.7 _a	346	20.4 _b	323	22.4 _b		
Gay	526	4.2	374	3.9 _a	98	5.8 _b	54	3.7 _{ab}		
Lesbian	904	7.2	674	7.1 _a	133	7.8 _a	97	6.7 _a		
Bisexual	1,913	15.2	1,170	12.3 _a	396	23.3 _b	347	24.1 _b		
Pansexual	1,681	13.3	1,050	11.1 _a	332	19.6 _b	299	20.7 _b		
None of the above	3,489	27.7	3,245	34.2 _a	134	7.9 _b	110	7.6 _b		
Questioning or unsure	1,495	11.9	1,175	12.4 _a	180	10.6 _{ab}	140	9.7 _b		
Other	559	4.4	421	4.4 _a	73	4.3 _a	65	4.5 _a		
Blank	172	1.4	159	1.7 _a	6	0.4 _b	7	0.5 _b		

Columns with different subscript letters are statistically different at p < .001.

Table 7. Preferred romantic orientation	labels of ace spectrum individuals.
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Label ^a	Total ^b (N	= 12,603)		xual 9,468)		rsexual 1,698)	Demisexual $(n = 1,437)$			
	n	%	n	%	n	%	n	%	р	V
Aromantic	4,259	33.8	3,835	40.5 _a	313	18.4 _b	111	7.7 _c	<.001	.253
Heteroromantic	2,096	16.6	1,410	14.9 _a	354	20.8 _b	332	23.1 _b	<.001	.083
Homoromantic	1,247	9.9	878	9.3 _a	219	12.9 _b	150	10.4 _{ab}	<.001	.042
Biromantic	2,805	22.3	1,927	20.4 _a	483	28.4 _b	395	27.5 _b	<.001	.080
Panromantic	2,942	23.3	2,026	21.4 _a	477	28.1 _b	439	30.5 _b	<.001	.081
Polyromantic	663	5.3	380	4.0 _a	155	9.1 _b	128	8.9 _b	<.001	.097
WTFromantic or quoiromantic	1,058	8.4	851	9.0 _a	138	8.1 _a	69	4.8 _b	<.001	.048
Lithromantic	382	3.0	289	3.1 _a	72	4.2 _a	21	1.5 _b	<.001	.040
Gray-romantic or gray-aromantic	1,554	12.3	1,047	11.1 _a	387	22.8 _b	120	8.4 _a	<.001	.128
Demiromantic	1,880	14.9	1,192	12.6 _a	226	13.3 _a	462	32.2 _b	<.001	.174
Queer	3,546	28.1	2,618	27.7 _a	521	30.7 _a	407	28.3 _a	.037	.023
I am unfamiliar with some or all of these	1,094	8.7	726	7.7 _a	197	11.6 _b	171	11.9 _b	<.001	.063
I prefer not to use a/romantic orientation terminology	477	3.8	355	3.7 _a	54	3.2 _a	68	4.7 _a	.071	.020
Questioning or unsure	2,077	16.5	1,715	18.1 _a	212	12.5 _b	150	10.4 _b	<.001	.078
Other	318	2.5	249	2.6 _a	38	2.2 _a	31	2.2 _a	.410	.012

Columns with different subscript letters are statistically different at p < .001.

^aRespondents could select more than one romantic orientation.

^bThirteen respondents were excluded who left this question entirely blank.

Discussion

The ace spectrum is an understudied area within studies of asexuality. These findings deepen our understanding of the ace spectrum by revealing how individuals who identify as asexual, graysexual, and demisexual report distinct experiences of sexual and romantic attraction, behavior, and identity. As such, our study contributes to the growing documentation of heterogeneity within the large community of those who identify with ace spectrum identities or the broader asexual community. Differences across these facets can critically shape how individuals experience interpersonal relationships, interact with the world, and think about themselves. Our work both points the way to additional research in this area and shows the importance of attending to different experiences within this community while doing broader research.

Our findings related to identity revealed a close link between sexual and romantic identification, with asexual individuals the most likely to identify as aromantic, graysexual individuals the most likely to identify as grayromantic, and demisexual individuals the most likely to identify as demiromantic. Although the distinction between sexual and romantic attraction is important for understanding many ace spectrum experiences, it is also notable that feelings of sexuality and romance may be intertwined in this way for substantial portions of all three groups.

Our findings also add a complementary measure of romantic attraction, showing that asexual individuals were the least likely to experience attraction to men, women, or nonbinary people and most likely to say they did not experience romantic attraction. In addition, we found that graysexual individuals were more likely than demisexual individual to report no experiences of romantic attraction. Romantic attraction is likely related to the experiences of emotional connection that are central to demisexual identity, although our data do show that some demisexual individuals do not experience romantic attraction. The high proportion of individuals across the ace spectrum who reported that they were questioning or unsure about both romantic orientation labels (16.5%) and experiences of romantic attraction (23.2%) is also intriguing. This may highlight that what constitutes romance and the lines between romance and friendship could be challenging to discern in the absence of sex or sexual attraction.

Previous research has found that some ace spectrum individuals identify with other sexual orientation labels, even selecting these labels when asexual is also an option in a multiple-choice question (Brotto et al., 2010; Prause & Graham, 2007). Our confirmation that many participants select labels like straight and gay when ace spectrum identities are not available has important implications for researchers, which we discuss below. Our findings also build on previous work by looking specifically at which labels respondents prefer other than asexual, graysexual, and demisexual. We found that asexual individuals are less likely than graysexual and demisexual individuals to choose labels such as straight, bisexual, and pansexual, which likely suggests that minimal experiences of sexual attraction do play a role in this selection of labels.

It is also notable that across ace spectrum groups we see relatively high rates of identification with labels describing attraction to two or more genders, including both sexual orientation labels of bisexual (15.2%) and pansexual (13.3%) along with romantic orientation labels of biromantic (22.3%), panromantic (23.3%), and polyromantic (5.3%). This may demonstrate that gender plays a less important or different role in partner selection for ace spectrum individuals, which may also relate to the high proportion of the sample that did not identity as either men or women (25.5%).

Consistent with previous research (Hille et al., 2020), we found that asexual individuals were least likely and demisexual individuals most likely to currently be in a relationship. We also found that this pattern held generally true of past relationships, across relationships of any kind, and both romantic and non-romantic relationships (except for no significant difference on past non-romantic relationships between graysexual and demisexual groups). The correlation we observed between sexual orientation and romantic orientation could support that this pattern reflects different desires for relationships rather than difficulties in forming or maintaining relationships.

We also confirmed a general pattern that asexual individuals are least likely and demisexual individuals most likely to engage in sexual activity (Hille et al., 2020), building on previous work with additional measures of years since last engaging in sex and frequency of sexual activity. Although these findings are not surprising, they do contribute to a more robust understanding of sexual activity in the ace spectrum. We also note that these measures focus on a subsample of participants who have at some point previously had sex. Individuals from the graysexual and demisexual groups are more than twice as likely to be included here than individuals from the asexual group.

Our findings related to sexual desire complement and expand previous research. Hille et al. (2020) found that asexual individuals were least likely and demisexual individuals most likely to state an interest in engaging in a variety of partnered sexual activities in the future. We similarly found that asexual individuals had the lowest and demisexual individuals the highest measures for sex drive and personal disposition toward engaging in sex. We also found that asexual individuals had a lower masturbation frequency than graysexual and demisexual individuals. Our findings converge with previous findings to suggest that interest in various specific sexual activities may be driven by a more central construct of drive or desire.

Although there was a strong pattern of differences among the asexual, graysexual, and demisexual groups, there also remained substantial similarity across these groups. Asexual, graysexual, and demisexual individuals all appear to experience relatively low levels of desire, attraction, and behavior, and these commonalities remain important in understanding ace spectrum communities.

Researchers studying ace communities should therefore be thoughtful about how they define their study population, how they communicate this to potential participants, what they use as inclusion criteria, and how these choices might affect their results. Only some individuals who identify as graysexual or demisexual also identify with the label asexual, so if a study is explicitly about people who are asexual, this will include only part of the ace spectrum, and results should be interpreted with this in mind. If a study intends to include the broader ace spectrum, this should be communicated consistently through recruitment and screening materials.

Because some asexual, graysexual, and demisexual individuals will select other options on questions about sexual orientation (even when ace spectrum identities are available), a choose-one sexual orientation question is probably not the ideal method for defining an ace spectrum study sample. Researchers might instead use a "check all that apply" approach for the sexual orientation question, although this can pose its own challenges at the data analysis stage. In this approach, researchers could add additional options for graysexual, demisexual, and other ace spectrum identities. They might also test a combined option like "asexual or ace spectrum" if distinguishing these identities is not important to the project.

For research specifically focused on ace spectrum identities, it may also be appropriate to use a separate question as the inclusion criteria, like the one in this study: "Do you consider yourself to be on the asexual spectrum?" This question may be complemented by a choose-one or choose-all sexual orientation question, or by a question specifically about which ace spectrum labels the participants use. Researchers should of course consider the merits of all these options for their specific project and research questions. A single version of the sexual orientation question will not be appropriate for all contexts and testing new approaches will continue to inform best practices for the future.

Limitations and Future Directions

The Ace Community Survey benefits from a remarkable amount of community participation and a methodological approach that ensures the survey is open to anyone who feels an affiliation with the asexual or ace spectrum community defined in the broadest terms. However, respondents constitute a nonprobability sample, and the data may better reflect how those involved in online asexual communities are making sense of their identities rather than a representative asexual experience. The survey also does not offer a comparable allosexual sample. Although allosexual individuals can participate in the survey, it is uncertain who this group represents. Individuals with a connection to the ace community, such as allosexual partners to aces or aromantic allosexual individuals, are likely participants whose own experiences would also be shaped by these identities.

Future research should continue both to explore the wealth of data from the Ace Community Survey and make use of other approaches that can help fill these gaps. For example, research that samples from in-person ace events and community spaces or recruits through private listservs offers an important complement to samples driven by social media recruitment. Aceinclusive LGB+ groups, either online or in person, might offer one opportunity for a comparison group of allosexual individuals who also experience marginalization as sexual minorities. Given that ace spectrum individuals make up a small proportion of the population, it may be particularly resource-intensive to use random population sampling to recruit a representative sample, although there are clear benefits to this option when it is possible. Including questions that measure ace identity in existing large-scale demographic surveys is one way to do this.

One specific limitation in the current study is that the survey questions about whether participants had ever had sex and the frequency of sex they had did not define sex, allowing participants to answer based on their own personal definitions. Which activities are considered sex varies widely between individuals (Sanders & Reinisch, 1999), so some participants would likely answer these questions differently if specific definitions were provided in the text. When Hille et al. (2020) asked ace spectrum participants whether they considered 22 specific behaviors sex, they only found significant differences between the asexual, graysexual, and demisexual groups for kissing and cuddling, the two activities least likely to be considered sex by any of the three groups. We do not expect that different definitions of sex were driving the disparate responses to the two questions here, but future research could examine this possibility more closely.

Similarly, the terms asexual, graysexual, and demisexual were not defined in the survey text, and participants may have responded differently if definitions were provided. The data we present here represent differences in the groups that self-identify with each of these three labels. As individuals understand these terms in multiple ways, the boundaries of these categories would likely shift with any definitions provided. Because survey respondents selected asexual, graysexual, and demisexual identities in a forced-choice question, we also do not know the extent to which individuals may identify with more than one of these labels.

In particular, some participants are likely less familiar with the labels graysexual and demisexual, as they are newer and less common identities. If a definition of these terms was provided, participants may recognize their own experiences and decide to select these options. Individuals may also recognize that a label's definition fits their experience even while they choose not to take it on as a personal identity, because of social considerations such as knowing that others are unfamiliar or have negative associations with the term (Chen, 2020). Therefore, how some participants respond to a question about which terms they regularly use will be different than how they respond to a question about which terms are accurate descriptions.

A future study might consider how closely selfidentification with ace spectrum identities matches specific definitions of asexual, graysexual, and demisexual labels. Researchers could also ask participants about their familiarity with each of these terms. Qualitative studies may be particularly well suited to continue to investigate how individuals on the ace spectrum define these labels and navigate decisions around which terms to use.

Conclusion

Our study highlights differences in desire, behavior, and identity among ace spectrum groups of asexual, graysexual, and demisexual individuals. Our findings demonstrate the importance of recognizing heterogeneity within the ace spectrum, considering specific identities like graysexual and demisexual, and inquiring further into these distinct experiences. While each of these groups is itself heterogeneous, the experiences of graysexual and demisexual individuals are different than the experiences of asexual identities in important ways. We should continue both to build our understanding of these specific identities and expand our examination of other identities on the ace spectrum. The identities and language emerging in ace groups not only offer insight into these communities but also new ways to think more broadly about complex relationships among sexuality, romance, intimacy, gender, partnership, and identity.

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