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What's sex got to do with it? A multi-method study of asexuality

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SUMMARY

Despite the increasing attention for asexuality in sex research in the past ten years, there still few data available while many questions and uncertainties remain (Chapter 1). Usually in (a)sexuality research, asexuality is defined as the lack or absence of sexual attraction towards other people. Other definitions of asexuality are based on a self-identification as asexual or on an absence of sexual behavior. This doctoral research aimed at better understanding asexuality and characterizing asexual individuals. To achieve this goal, a multi-methods approach was used, comprising a qualitative study on asexual women and a quantitative, online study on asexual men and women. With the qualitative study, we aimed: 1) to gain more insight in how asexual women have experienced the development of their asexual identity; 2) to explore how asexual women experience intimacy and sexuality; and 3) to study asexual women's subjective experience of love and partner relationships (Chapter 2). The aim of the quantitative survey was threefold. First, we aimed to assess how many participants could be identified as asexual based on (combinations of) the three core criteria used to define sexual orientation, i.e., sexual attraction, sexual behavior and self-identification, and to explore whether and to what extent these categorizations overlap (Chapter 3). Second, we wished to compare asexual participants experiencing sexual attraction towards others with asexual participants not experiencing sexual attraction, in terms of physical and mental health, attachment style, self-esteem, body appreciation, genital self-image, solitary and dyadic sexual desire and history of sexual abuse (Chapter 4). Third, focusing on asexual participants who indicated not experiencing sexual attraction, we studied gender differences in terms of physical and mental health, attachment style, self-esteem, body appreciation, genital self-image, solitary and dyadic sexual desire and history of sexual abuse (Chapter 5).

In Chapter 2, we describe the results of a qualitative study in nine asexual women. A typical trajectory in coming to an asexual identity was identified. The participants described feeling 'different' from their peers, some had experienced these feelings since childhood. As this 'feeling different' continued, they started to look for

explanations in an attempt to understand their being different, for which some considered the option to be lesbian. Eventually, they found information – most often on the Internet – about the existence of asexuality, and therewith finally found an identity that truly fitted them. When coming out, the participants received mixed reactions: some were positive and accepting, others were negative and dismissive. Even though the participants in our study did not experience sexual attraction, most were able to become physically sexually aroused. Some participants expressed feeling an aversion for sex, but most indicated just not being interested in sex. A major variation in the experience with sex and physical intimacy was found: some women had never kissed another person, others regularly engaged in sexual behavior with a partner. Engaging in sexual behavior was mainly based on a willingness to comply with partner wishes. Most participants had ever engaged in masturbation. While some were clear that this is not a sexual act, others were still in doubt on how they should interpret masturbation in relation to their asexuality. When asked about their relational experience, most participants stated they could experience romantic attraction towards other people, while some described themselves as aromantic and stated not to desire a (romantic) relationship. The romantic asexual women were very aware of the difficulties their asexuality would cause in finding a partner. When they did engage in a relationship with a non-asexual partner, they would have to negotiate on how they would deal with sexuality. Most of the romantic asexual women described their ideal relationship exactly as an intimate sexual relationship, but without the sexual component. Some women stated that love and sex are incompatible: having sex while in a relationship diminished the worth of the feelings they have for their partner.

In Chapter 3, we describe, in a sample of 526 individuals, how the highest percentages of asexuality were obtained when using the criteria of self-identification (71.3%), lack of sexual attraction (69.2%) and the combination of the two (57.6%). When using a lack of sexual behavior as a criterion, only half of the participants (48.5%) were categorized as asexual. The combinations of self-identification and lack of sexual behavior (39.7%), and that of lack of sexual attraction and lack of sexual behavior (38.2%) resulted in lower percentages of participants being categorized as asexual. Finally, 33.5% of participants were categorized as asexual taking into account all three

criteria: they lacked sexual attraction, self-identified as asexual and had no sexual experience. Gender differences were found only for the percentage of participants indicating not to experience sexual attraction, with more women (72.8%) than men (58.8%) indicating a lack of sexual attraction. The majority of participants (79.1%) indicated that they did experience romantic attraction, with more women than men reporting experiencing romantic attraction. When asking participants which characteristics they found important in describing asexuality, more participants (81.4%) found "not experiencing sexual attraction" important for describing asexuality, than "calling yourself asexual" (43.3%). "Not behaving sexually with a partner" and "not masturbating" were rated as important by respectively 33.8% and 13.9% of participants. Finally, one out of four participants stated that "not having had negative sexual experiences in the past" is important when describing asexuality.

In Chapter 4, we compare participants reporting a lack of sexual attraction, with participants who recognized themselves in a broad description of asexuality, but did indicate experiencing sexual attraction (*N* = 460). Participants not indicating sexual attraction were more often female, younger, single, and currently in full daytime education, less often reported experiencing romantic attraction and were less likely to have received higher education, to have had sexual experience and to have ever masturbated. Further, significant differences between the two groups were found with regard to history of sexual abuse before age 18, solitary sexual desire, dyadic sexual desire, physical health and attachment anxiety. Participants not experiencing sexual attraction less often reported a history of sexual abuse before age 18, scored lower on solitary and dyadic sexual desire, and on attachment anxiety, and higher on physical health, compared to participants who did indicate experiencing sexual attraction. These differences remained significant after controlling for differences between the two groups in gender, age category, education, relationship status, romantic attraction, sexual experience and masturbation frequency.

In Chapter 5, we compare asexual men and women who indicated an absence of sexual attraction (*N* = 324). We found that asexual men were more often single than asexual women, and less often indicated experiencing romantic attraction, while asexual women indicated more often to have never masturbated. Further, asexual men and

women differed with regard to solitary sexual desire, mental health, self-esteem and genital self-image. Findings showed that asexual men scored higher on mental health, and on solitary sexual desire, showed a higher self-esteem, and a more positive genital self-image. These differences remained significant after controlling for differences between asexual men and women regarding relationship status, romantic attraction and masturbation frequency.

Finally, in Chapter 6, we discuss our research findings in the light of previous studies on asexuality, and describe strengths and limitations of our studies. Further, we point out implications of our findings for understanding (a)sexuality, and formulate a number of guidelines for future asexuality research.

Samenvatting

Hoewel er het afgelopen decennium steeds meer aandacht is gekomen voor het thema aseksualiteit, zijn er nog steeds weinig onderzoeksgegevens beschikbaar en blijven er heel wat vragen en onduidelijkheden (Hoofdstuk 1). In het meeste onderzoek rond aseksualiteit wordt aseksualiteit omschreven als een gebrek aan of afwezigheid van seksuele aantrekking tot andere personen. Verder kan aseksualiteit ook worden gedefinieerd op basis van een zelfbenoeming als aseksueel, of op basis van een afwezigheid van seksueel gedrag. Dit doctoraatsonderzoek heeft tot doel aseksualiteit beter te begrijpen en de kenmerken van aseksuele personen duidelijker in kaart te brengen. Om dit te bereiken werd er gebruikt gemaakt van een multi-method design, bestaande uit een kwalitatieve studie bij aseksuele vrouwen en een kwantitatieve, online studie bij aseksuele mannen en vrouwen. Met het kwalitatieve onderzoek wilden we: 1) meer inzicht verwerven in de ontwikkeling van de aseksuele identiteit; 2) nagaan hoe aseksuele vrouwen seksualiteit en intimiteit ervaren; en 3) exploreren hoe aseksuele vrouwen liefde en partnerrelaties ervaren (Hoofdstuk 2). Het kwantitatieve onderzoek beoogde drie doelen te bereiken. Vooreerst wilden we nagaan hoeveel deelnemers als aseksueel konden worden geïdentificeerd op basis van de drie criteria die typisch gebruikt worden voor het bepalen van seksuele oriëntatie (i.e., seksuele aantrekking, seksueel gedrag en zelfbenoeming) en op basis van combinaties van deze criteria. Hierbij wilden we tevens exploreren of, en in welke mate, deze categorisaties overlappen (Hoofdstuk 3). Ten tweede wilden we aseksuele deelnemers die wel en geen seksuele aantrekking ervaren, met elkaar vergelijken in termen van fysieke en mentale gezondheid, zelfbeeld, lichaamsbeeld, genitaal zelfbeeld, hechtingsstijl, solitair en dyadisch seksueel verlangen en voorgeschiedenis van seksueel misbruik (Hoofdstuk 4). Tot slot wilden we nagaan of aseksuele mannen en vrouwen, die aangaven geen seksuele aantrekking te ervaren, verschillen op vlak van fysieke en mentale gezondheid, zelfbeeld, lichaamsbeeld, genitaal zelfbeeld, hechtingsstijl, solitair en dyadisch seksueel verlangen en voorgeschiedenis van seksueel misbruik (Hoofdstuk 5).

In Hoofdstuk 2 beschrijven we de resultaten van een kwalitatief onderzoek bij negen zelfgeïdentificeerde aseksuele vrouwen. Op basis van de resultaten konden we een typisch traject identificeren in het ontwikkelen van een aseksuele identiteit. De deelnemers beschreven hoe ze zich 'anders' voelden dan hun leeftijdsgenoten, sommigen hadden dit gevoel reeds in hun kindertijd. Na enige tijd gingen ze op zoek naar verklaringen voor dit gevoel anders te zijn, sommigen overwogen de mogelijkheid dat ze lesbisch waren. Uiteindelijk vonden ze – veelal via internet – informatie over aseksualiteit, waarmee ze een identiteit vonden die wel volledig bij hen paste. Op hun coming out kregen de deelnemers gemengde reacties: sommige waren positief en aanvaardend, andere waren negatief en afwijzend. Hoewel de deelnemers aangaven geen seksuele aantrekking te ervaren, waren ze wel in staat om fysiek seksueel opgewonden te raken. Sommigen gaven aan afkerig te staan tegenover seks, de meerderheid stelde echter gewoon niet in seks geïnteresseerd te zijn. We vonden opvallend veel variatie op het vlak van ervaring met seks en fysieke intimiteit: sommige deelnemers hadden nog nooit iemand gekust, anderen hadden geregeld seks met hun partner. Deelnemers met seksuele ervaring gaven aan dat ze vooral seks hebben, of hadden, om hun partner te plezieren. De meeste deelnemers hadden ervaring met masturbatie. Hoewel sommigen duidelijk meenden dat masturbatie geen seksueel gedrag is, was het voor anderen nog onduidelijk wat voor hen de betekenis van masturbatie was. Wanneer er gevraagd werd naar relationele ervaring, stelden de meeste deelnemers dat ze wel romantische aantrekking tegenover anderen konden ervaren, terwijl anderen zichzelf aromantisch noemden omdat ze niet verlangen naar een partnerrelatie. De romantisch aseksuele vrouwen waren zich zeer bewust van de moeilijkheden die ze zullen ervaren wanneer ze op zoek gaan naar een partner. Indien die partner niet-aseksueel was, zou er moeten worden onderhandeld over hoe ze als koppel zouden omgaan met seksualiteit. De meeste romantisch aseksuele vrouwen omschreven hun ideale relatie als een doorsnee intieme seksuele relatie, maar dan zonder de seksuele component. Sommige vrouwen gaven aan dat liefde en seks voor hen niet met elkaar te rijmen zijn: voor hen leidde seks hebben met hun partner tot het minder waardevol worden van de gevoelens die ze voor hun partner hebben.

In Hoofdstuk 3 beschrijven we hoe, in een steekproef van 526 individuen, de hoogste percentages van aseksualiteit werden gevonden, wanneer aseksualiteit werd gedefinieerd op basis van zelfidentificatie (71.3%), ontbreken van seksuele aantrekking (69.2%) en de combinatie van beide (57.6%). Wanneer het ontbreken van seksuele ervaring als criterium werd gebruikt, werd slechts de helft van de deelnemers (48.5%) als aseksueel gecategoriseerd. De combinatie van zelfidentificatie en ontbreken van seksueel gedrag (39.7%), en de combinatie van ontbreken van seksuele aantrekking en ontbreken van seksueel gedrag (38.2%), resulteerde in lagere percentages van deelnemers die als aseksueel kon worden gecategoriseerd. Ten slotte kon 33.5% van de deelnemers als aseksueel worden gecategoriseerd op basis van een combinatie van de drie criteria: ze gaven aan geen seksuele aantrekking te ervaren, identificeerden zichzelf als aseksueel en hadden geen seksuele ervaring. Meer vrouwen (72.8%) dan mannen (58.8%) gaven aan geen seksuele aantrekking te ervaren, voor de andere criteria werden geen significante geslachtsverschillen in percentages gevonden. De meerderheid van de deelnemers (79.1%) gaf aan wel romantische aantrekking te ervaren, waarbij romantische aantrekking eerder door vrouwen dan door mannen werd aangegeven. Aan de deelnemers werd ten slotte ook gevraagd welke aspecten zij zelf belangrijk vinden voor het omschrijven van aseksualiteit. Hieruit bleek dat “geen seksuele aantrekking ervaren” door meer deelnemers als belangrijk werd omschreven dan “zichzelf aseksueel noemen” (respectievelijk 81.4% en 43.3%). “Niet seksueel actief zijn” en “niet masturberen” werd respectievelijk door 33.8% en 13.9% van de deelnemers als belangrijk beschouwd. Verder gaf ongeveer één op vier deelnemers aan dat “geen negatieve seksuele ervaring hebben gehad in het verleden” belangrijk was voor het omschrijven van aseksualiteit.

In Hoofdstuk 4 vergelijken we deelnemers die aangaven geen seksuele aantrekking te ervaren met deelnemers die zichzelf herkenden in een ruime omschrijving van aseksualiteit, maar wel aangaven seksuele aantrekking te ervaren (*N* = 460). Deelnemers die aangaven geen seksuele aantrekking te ervaren waren vaker vrouw, jonger, alleenstaand en volgden vaker voltijds dagonderwijs, hadden minder vaak een diploma hoger onderwijs, rapporteerde minder vaak romantische aantrekking te ervaren en hadden minder vaak ervaring met seks en masturbatie, dan deelnemers

die aangaven wel seksuele aantrekking te ervaren. Verder werden statistisch significante verschillen tussen de groepen gevonden op vlak van voorgeschiedenis van seksueel misbruik voor de leeftijd van 18 jaar, solitair seksueel verlangen, dyadisch seksueel verlangen, fysiek welzijn en angstige hechtingsstijl. Deelnemers die aangaven geen seksuele aantrekking te ervaren, rapporteerden minder vaak seksueel misbruik te hebben meegemaakt voor de leeftijd van 18 jaar, scoorden lager op solitair en op dyadisch verlangen en op angstige hechtingsstijl, en hoger op fysiek welzijn, dan deelnemers die wel seksuele aantrekking rapporteerden. Deze verschillen bleven significant na controle voor verschillen tussen de groepen op vlak van geslacht, leeftijd, opleidingsniveau, relationele status, romantische aantrekking, seksuele ervaring en masturbatie frequentie.

In Hoofdstuk 5, maken we een vergelijking tussen aseksuele mannen en vrouwen die aangaven geen seksuele aantrekking te ervaren (N = 324). We vonden dat meer aseksuele mannen dan aseksuele vrouwen alleenstaand waren en aangaven geen romantische aantrekking te ervaren, en dat aseksuele vrouwen vaker rapporteerden nog nooit gemasturbeerd te hebben. Verder vonden we verschillen tussen aseksuele mannen en vrouwen met betrekking tot solitair seksueel verlangen, mentaal welzijn, zelfbeeld en genitaal zelfbeeld: aseksuele mannen scoorden hoger dan aseksuele vrouwen op mentaal welzijn en solitair seksueel verlangen, en rapporteerden een meer positief zelfbeeld en genitaal zelfbeeld dan vrouwen. Deze verschillen bleven significant na controle voor verschillen tussen aseksuele mannen en vrouwen op vlak van relationele status, romantische aantrekking en masturbatiefrequentie.

In Hoofdstuk 6, ten slotte, beschrijven we de belangrijkste onderzoeksbevindingen in het kader van voorgaande studies rond aseksualiteit, en bespreken we sterktes en beperkingen van onze studies. Verder worden de implicaties van onze bevindingen voor het begrijpen van (a)seksualiteit besproken, en worden enkele richtlijnen voor toekomstig onderzoek naar aseksualiteit geformuleerd.

Chapter 1 : General introduction

Based on: Van Houdenhove, E., Gijs, L., T'Sjoen, G., & Enzlin, P. (2014). Asexuality: few facts, many questions. *Journal of Sex and Marital Therapy, 40,* 175-192.

1. Asexuality: few facts, many questions

During the last decade, there has been growing attention for asexuality, both in scientific as well as in popular literature. In 2004, Bogaert's article: 'Asexuality: prevalence and associated factors in a national probability sample' was published. He reported that 1.05% of the British population were asexual. A number of factors appeared to be related to asexuality, including gender, religiosity, shorter stature, lower education level, lower socio-economic status and poor health. This study was the starting point for more systematic research on the subject of asexuality. However, the increasing attention has not yet resulted in an elaborate knowledge of asexuality. As a consequence, a lot of questions remain unanswered.

Nevertheless, it is worthwhile to study this fascinating topic. We will describe the history of the concept asexuality, the common definitions and the corresponding prevalence rates. Further, attention is paid to the distinction between asexuality and Female Sexual Interest/Arousal Disorder (American Psychiatric Association, 2013). A number of characteristics of asexual individuals will be discussed and biological, psychological, socio-demographical factors and aspects of sexual functioning will be described.

1.1 History of the terms 'asexuality' and 'asexual'

Asexuality is not a new phenomenon. Kinsey, Pomeroy and Martin (1948) and Kinsey, Pomeroy and Gebhard (1953) already noticed that not all individuals could be situated on the Kinsey-scale that ranged from exclusively heterosexual to exclusively homosexual. They created a separate category to describe individuals "without socio-sexual contacts or reactions", which they labeled 'category X' (Kinsey et al., 1948; p.407). Of the unmarried men, 3 to 4% were classified in this category X. None of the married men could be classified in this category. In their book on the sexuality of women, Kinsey and colleagues described category X more precisely as: "individuals… [that] do not respond erotically to either heterosexual or homosexual stimuli, and do not have overt physical contacts with individuals of either sex in which there is evidence of any response" (Kinsey et al., 1953; p. 472). They ascribed 14 to 19% of unmarried

women and 1 to 3% of married women between age 20 and 35 to category X. Further, 5 to 8% of previously married women were also categorized in this group. The numbers reported by Kinsey and colleagues were considerably higher for women than for men.

It is striking that during the 1970s, asexuality is mentioned in the index of a number of books (e.g., Fisher, 1973; Kaplan, 1979; Lazarus, 1978; Money & Musaph, 1977), but none of these authors elaborated on this phenomenon. Johnson (1977), using letters of asexual women to the editors of women's magazines, was the first to use the term 'asexual' for human beings defined as "men and women who, despite their physical or emotional condition, sexual history and relational status or ideological orientation, chose not to engage in sexual activity" (Johnson, 1977; p. 99). She also differentiated between autoerotic women and asexual women: " the asexual woman … has no sexual desires at all [while] the autoerotic woman… recognizes such desires but prefers to satisfy them alone" (Johnson, 1977; p. 99). She described asexual women as an invisible group, abandoned both by the sexual revolution and the feminist movement. Also, she pointed out that society either ignores or denies their existence, or states that these women have become asexual because of religious, neurotic or political reasons. Although Johnson was one of the first to bring attention to this interesting topic, she did not conduct formal research on asexuality.

Storms (1979) depicted asexuality as a fourth category of sexual orientation. He suggested to expand Kinsey et al.'s unidimensional model of sexual orientation (1948, 1953) and argued that homosexuality and heterosexuality are separate orthogonal erotic dimensions, rather than opposite extremes of the same bipolar dimension. He defined heterosexual people as individuals who are strongly attracted to the opposite sex and therefore score high on hetero-eroticism. Homosexual people then, are individuals who are strongly attracted to the same sex and therefore score high on homo-eroticism. Bisexual people are individuals who are strongly attracted to both sexes and therefore score high on both homo-eroticism and hetero-eroticism. Finally, there are asexual people who are described as individuals who are attracted to neither sex and, as a consequence, score low on both hetero-eroticism and homo-eroticism. Storms (1979) reported that 10% of women scored low on both homo-erotic fantasy and hetero-erotic fantasy, compared to 0% of men. According to Storms, "the orientation of

an individual's erotic fantasies is the core psychological dimension underlying sexual orientation" (Storms, 1981).

In the early 1980's asexuality seemingly disappeared as a topic from the scientific agenda. It took until 2004, before the scientific discourse on asexuality restarted (Bogaert, 2004) and more systematic research on its prevalence and associated characteristics was conducted (see Table 1 for a detailed overview). Possibly, the founding of the Asexuality Visibility and Education Network (AVEN) in 2001 – an online community where asexual individuals can 'meet' and discuss their experiences – played an important role in this renewed and increased attention for asexuality. AVEN (see: www.asexuality.org) does not only create a forum where asexual individuals can exchange their experiences. From the start, they have been asking for more scientific research on the topic (Brotto, Knudson, Inskip, Rhodes, & Erskine, 2010).

1.2 Definition of asexuality

Currently, to characterize asexuality, four different approaches have been proposed with definitions either based on: a) absence of sexual behavior, b) absence of sexual attraction, c) self-identification as asexual or d) a combination of the previous. Further, some authors question to what extent asexuality differs from a deficiency in sexual desire.

In the first approach, asexuality is equated to an absence of sexual behavior (Scherrer, 2008). Behavioral asexuality is typically associated with certain groups, such as disabled and/or sick people (e.g., Milligan & Neufeldt, 2001), elder people (Bogaert, 2004) and lesbian women (Rothblum & Brehony, 1993). However, although the frequency of sexual behavior is typically declining in older people and in individuals with chronic illnesses, it is not absent (e.g., Nicolosi, Laumann, Glasser, Moreira, Paik, & Gingell, 2004; Nusbaum, Hamilton, & Lenahan, 2003). Also lesbian couples are believed to be less sexually active, and may thus respond to the definition of behavioral asexuality (e.g., Blumstein & Schwartz, 1983).

A second approach to define asexuality is to describe it as an absence of sexual attraction (Bogaert, 2004). Attraction is defined by Bogaert (2012) as "that rather basic,

even primal, lure that draws us to someone or something" (p. 11), sexual attraction is defined as the "lust lure for others" (p. 11). Bogaert (2004) considers asexuality as the absence of one of the traditional sexual orientations and an asexual person as a person who is sexually attracted to neither sex. He conceives sexual attraction as the psychological core of sexual orientation (Bogaert, 2003). Hinderliter (2009) – a prominent representative of AVEN – states that a definition of asexuality based on sexual attraction, raises two questions. First, there is the question of an absolute or a gradient definition of asexuality. Do we define asexual people as individuals who experience *no* sexual attraction or as individuals who experience *little or no* sexual attraction? Further, one can wonder where to draw the line: how little is enough to not be considered an asexual person? A second question concerns the duration of the absence of sexual attraction. Do we expect that asexual individuals have never experienced any sexual attraction, or is a certain fluidity over time in the experience of sexual attraction accepted? In line with this question, is it possible to make a distinction between lifelong/primary asexuality and acquired/secondary asexuality? While most asexual individuals indicate they have always felt this way, others report possible 'causes' of their asexuality in their history (www.asexuality.org). Within the asexual community, there is an ongoing debate on whether people with a potential cause in their history, such as an experience of sexual abuse, can be considered 'truly' asexual. Until now, no research has focused on this possible distinction between lifelong and acquired asexuality.

A third approach in which asexuality is defined based on self-identification, postulates that every person who calls himself asexual, is in fact asexual (Prause & Graham, 2007). Asexuality, based on self-identification, has been operationalized in different ways. Prause and Graham (2007) used open-ended as well as forced choice questions about sexual orientation. Only 53.7% of the participants, who identified as asexual on the forced choice question about sexual orientation, also gave an asexual response on the open-ended question about sexual orientation. Brotto and colleagues (2010) used a multiple choice question about sexual orientation. Only 75% of the asexual participants chose the asexual response, and 11% chose the 'other' response (Brotto et al., 2010; Brotto & Yule, 2011). Hinderliter (2009) suggested three possible

reasons for these remarkable findings. Firstly, it is possible that individuals wrongly interpreted this question as asking for romantic orientation, instead of for sexual orientation. After all, some asexual individuals may experience romantic attraction that can be directed towards either or both sexes (see paragraph 1.1.5.2 Sexual and relational experiences of asexual individuals). Secondly, it is possible that people may have experienced sexual attraction at some point in their life and responded to the question based on their previous experiences. Thirdly, it is possible that some participants are still in doubt about their (a)sexual orientation and chose the orientation they felt closest to, other than asexuality. Further, Prause and Graham (2007) reported the intriguing finding that only 41.5% of the self-identified asexual individuals did not experience attraction to neither men nor women. Of the participants who reported not experiencing attraction to neither men nor women, 89.5% self-identified as asexual. Prause and Graham (2007) concluded that asking about sexual attraction had a high specificity but a low sensitivity when asexual self-identification was used as a criterion.

Finally, combinations of two or three of the previous approaches can be constructed (Poston & Baumle, 2010). Poston and Baumle (2010) used a national representative sample of US males and females between the ages of 15 and 44 to study the prevalence rates of asexuality. They used each of the approaches separately and in combination, to fully understand the diversity of asexuality (Poston & Baumle, 2010). This theoretically interesting viewpoint led to the conclusion that based on a combination of the three definitions, only a small number of participants (0.75 %) could be described as asexual.

Nowadays a definition of asexuality based on lack of sexual behavior is not used by the academic nor the asexual community (Brotto et al., 2010; Chasin, 2011). This might be related to the fact that, despite their asexuality, some asexual individuals still engage in sexual activity (see paragraph 1.1.5.2 Sexual and relational experiences of asexual individuals). Thus, based on the presence of sexual behavior it would not be possible to differentiate between asexual and sexual people. Defining asexuality based on self-identification as asexual could also be problematic. Only when one is familiar with the terminology ‘asexual’, one can validly self-identify as asexual. This implies that using this criterion may lead to an underestimation of the ‘true’ prevalence of

asexuality. On the other hand, one can wonder whether every person who calls himself asexual, is in fact asexual. Further, Chasin (2011) indicated that self-identified and non-self-identified or potential asexual people could experience the same kinds of attraction and desire (or lack thereof), but give different meanings to these experiences. He thinks it is important to recognize that these groups possibly represent substantially different (sub)populations. Brotto and Yule (2009) also hypothesized that self-identified and non-self-identified asexual individuals may differ from each other, in that the former could be less emotionally distressed, confused and isolated than asexual individuals who are still struggling with their identity. It is yet uncertain whether this differentiation has any relevance. This leads Chasin (2011) to conclude that it is important to explore what self-identification with asexuality entails, both practically and conceptually. Currently, most research on asexuality uses a definition based on a lack of sexual attraction (Bogaert, 2004; Brotto et al., 2010; Brotto & Yule, 2011, Prause & Graham, 2007).

1.3 Prevalence of asexuality

Obviously, the prevalence rate of asexuality will differ according to the definition used. Bogaert (2004) defined asexuality based on sexual attraction and found a prevalence rate of 1.05% asexual individuals in the British adult population (*N* = 18,876). Recently, Aicken, Mercer and Cassell (2013), using data from a probability study of the British general adult population (*N* = 12,110), found that 0.4% indicated never having experienced sexual attraction. These figures, however, only reflected individuals who had *never* experienced any sexual attraction, thus excluding those who experienced sexual attraction rarely as well as those who no longer experienced sexual attraction (Chasin, 2011). Poston and Baumle (2010) reported a prevalence rate of 5.5% when asexuality was defined as absence of sexual behavior, 4% when asexuality was defined based on sexual attraction and 3.8% when asexuality was defined on self-identification as asexual. When combinations of definitions were used, they found lower prevalence rates: 2.65% for a combination of the behavioral and the self-identification dimensions, 2.05% for a combination of the self-identification and desire dimensions and 0.6% for a

combination of the behavioral and the desire dimension. A combination of the three definitions resulted in a prevalence rate of 0.75%.

1.4 Asexuality and deficiency in sexual desire: similarities and differences

As Bogaert (2004) noted, some authors argued that asexuality could be conceptualized as a deficiency in sexual desire. In DSM-IV-TR (APA, 2000), Hypoactive Sexual Desire Disorder (HSDD) was defined as a persistent or recurrent lack or absence of sexual fantasies and desire for sexual activity. This condition must also cause marked distress or interpersonal difficulties and may not better be accounted for by another mental disorder or another medical condition (APA, 2000). The DSM-IV-TR also differentiated between generalized and situational HSDD, and between life-long and acquired HSDD. Since most asexual individuals also report a lack or absence of sexual fantasies and desire for sexual activities (Brotto et al., 2010; Prause & Graham, 2007), it was questioned whether asexuality could be seen as a subcategory of (lifelong) HSDD. In an attempt to differentiate between HSDD and asexuality, Bogaert (2006) highlighted the role of sexual attraction and stated that if one has never experienced sexual desire, it is most likely that one has neither ever experienced sexual attraction. An important difference between lifelong HSDD and asexuality is that some asexual individuals do experience some sexual desire, sexual arousal and/or sexual activity and even can enjoy this (Bogaert, 2006). However, this desire, arousal or activity is not oriented towards another person. People with HSDD on the other hand can experience sexual attraction, but they do not feel the desire to act upon this (Bogaert, 2006). Another difference, postulated by Bogaert (2006), is that there are only few individuals with HSDD who report a lifelong lack of sexual desire. By pointing this out as a difference, Bogaert implicitly indicates that asexuality is a lifelong issue. As discussed earlier, it is still unclear whether a distinction needs to be made between lifelong and acquired asexuality. Qualitative research by Brotto and colleagues (2010) yielded that many asexual individuals did not agree with the hypothesis that asexuality is a subgroup of HSDD. According to them, the difference between the two can be situated in the lack of (any

form of) sexual attraction. They take on the view that in individuals with HSDD, sexual attraction is still present.

In DSM-IV-TR, no mention was made of asexuality as an exclusion criterion for HSDD. As a consequence, asexual individuals could be diagnosed as having a sexual dysfunction. In order to prevent asexual individuals from being considered as having a sexual dysfunction, efforts were made to mention asexuality as an exclusion criterion of HSDD in DSM-5. As a member of the Sex/GID DSM task force, Brotto (2010) argued that there is insufficient evidence to suggest that asexuality is a sexual dysfunction of low sexual desire. She further described that asexuality is often seen as a sexual identity (e.g., Bogaert, 2006), as opposed to a sexual dysfunction, since only a minority of asexual individuals experience (personal) distress, caused by their asexuality (Brotto et al., 2010). Based on these arguments, Brotto (2010) suggested to mention asexuality in the list of exclusion diagnoses. Also, the asexual community made great efforts to exclude asexuality from DSM. An AVEN DSM task force prepared an extensive document, including interviews with experts in human sexuality, concluding that DSM-5 should explicitly exclude asexual individuals from receiving a diagnosis of HSDD (Emens, 2014). DSM-5 (APA, 2013) merged in women the desire and arousal disorders in one new category, i.e., Female Sexual Interest/Arousal Disorder (FSIAD). In consequence, the diagnosis HSDD in women has been deleted, while for men, the diagnosis HSDD can still be used. As suggested by Brotto (2010), and after significant lobbying of the asexual community (Emens, 2014), asexuality has been included in the list of exclusion criteria for this new diagnostic category: “if a lifelong lack of sexual desire is better explained by one’s self-identification as “asexual”, then a diagnosis of Female Sexual Interest/Arousal Disorder would not be made” (DSM-5, p. 434). A similar statement is found in the section on male sexual dysfunctions: “If the man’s low desire is explained by self-identification as asexual, then a diagnosis of male hypoactive sexual desire disorder is not made” (APA, 2013, p. 443).

1.5 Characteristics of asexual individuals

1.5.1 Socio-demographical characteristics

More women than men appear to be asexual. The percentage of women in studies on asexual people varied between 63% and 71%, while percentage of asexual men varied from 17% to 37% (Bogaert, 2004; Brotto et al., 2010; Prause & Graham, 2007; Scherrer, 2008). Bogaert (2004) postulated a number of explanations for this gender difference. First, since it is shown that female sexuality is more flexible than male sexuality (e.g., Baumeister, 2000; Diamond, 2003), it could be that the former is more culturally determined. It is possible that some women have internalized the – more prudent – female gender roles and sexual strategies to an extreme degree (e.g., Mazur, 1986) and/or that women could more easily 'become' asexual when confronted with atypical life circumstances. A second explanation, not yet raised in the literature, may be that compared to men, women find it more easy to indicate that they are asexual and that the reported gender difference is in fact not a real difference. After all, men are more expected by society to behave sexually, compared to women (Gijs, Gianotten, Vanwesenbeeck, & Weijenborg, 2004). A third related explanation states that since women are less aware of their own genital arousal (Heiman, 1977; Laan, Everaerd, van Bellen, & Hanewald, 1994), it is less likely that women label other people as sexual objects and hence report no sexual attraction. Fourth, since women are less likely to have had conditioning experiences relevant to the development of sexual orientation, such as masturbation, this could increase the likelihood of becoming asexual (Bogaert, 2004). Unfortunately, there is no research yet in which these explanations are tested. As a consequence, it remains unknown why more women than men are asexual.

Bogaert (2004) reported a range of age distribution between 24 and 52 years. Asexual people did not appear to be younger than sexual people. Bogaert (2004) could thus not confirm the hypothesis that asexual individuals are 'pre-sexual' and too young to have experienced sexual attraction. In other asexuality research, ages between 18 and 66 years are reported (Brotto et al., 2010; Brotto & Yule, 2011; Prause & Graham, 2007; Scherrer, 2008) (Table 1). It can be concluded that asexuality can be present at

every age in adulthood and is not related to a certain age group. However, the available research is often characterized by very small sample sizes, which raises the question of the generalizability of these results. Equivalent to the hypothesis that asexual individuals are ‘pre-sexual’, it is possible that some (older) people because of various reasons give up on sexuality, and that asexual people are in fact sexual individuals that became ‘asexual’. So far, there has not been any research on asexuality in the elderly.

Table 1

Overview of studies in asexual individuals

Study	Definition of asexuality	*N*	Women (% or *n*)	Age range or mean age (in years)	Use of control group	Main findings
Bogaert (2004)[1]	sexual attraction	195	71%	M=38.4 (*SD*=14.3)	yes	• Asexual individuals had fewer sexual partners, a later onset of sexual activity and less frequent sexual activity with a partner • Asexual people were older, less often engaged in a long-term relationship, more religious, less well educated and more likely to come from lower socioeconomic conditions • Asexual people were more likely to have adverse health, were shorter and weighed less. Asexual women had a later onset of menarch
Prause & Graham (2007)						
Qualitative study	self-identification	4	(*n* = 3)	21-42	no	• Lower levels of sexual motivation and less sexual activity • Some indicated a willingness to engage in consensual but unwanted sexual activity • Fewer behaviors are interpreted as sexual • Some concerns that something might be wrong with them or that they might not be normal • No aversion to or fear of sex, instead uninterested by it

Quantitative study	self-identification	41	63.4%	18-59	yes	• Asexuals most clearly distinguished from non-asexual controls by lower scores on solitary and dyadic sexual desire, and sexual arousability. They also scored lower on sexual excitation and sexual inhibition due to threat of performance consequences • No greater interest in talking to a health professional about levels of sexual desire
Scherrer (2008)	self-identification	102	73%	18-66	no	• Wide variation in how participants defined asexuality, 44% defined asexuality as “not experiencing sexual attraction” • Defining boundaries between physical affection and sexual interactions is important to an asexual identity • Disconnection between sex and masturbation • Importance of AVEN • Naturalness of asexuality • Importance of romantic orientation for asexual identity
Brotto et al. (2010) Qualitative study	self-identification	15	73%	20-57	no	• Asexuality best conceptualized as lack of sexual attraction • Great variation in experience of sexual response and behavior • Having to “negotiate” sexual activity when in a relationship with a sexual partner • No higher rates of psychopathology, subset might fit criteria for schizoid personality disorder • Strong opposition to viewing asexuality as an extreme case of sexual desire disorder • Very motivated to liaise with sex researchers to further study asexuality

Quantitative study	self-identification	187	71%	men: M=30.1 (*SD*=11.9) women: M=28.2 (*SD*=12.1)	no, results are compared to normative data	• Sexual response lower than normative data, and not experienced as distressing • Masturbation frequencies in males similar to available data for sexual men • Social withdrawal most elevated personality subscale • Interpersonal functioning and social desirability within normal range • Alexithymia elevated in 12%
Poston & Baumle (2010)[1]	sexual behavior sexual attraction self-identification	663 95 466	49.9% 60% 62.7%	not specified for asexuals, age range for entire study sample: 15-44	yes	• 4.8% of females and 6.1% of males had never had sex • 0.8% of females and 0.7% of males were “not sure” about their sexual attraction • 3.8% of females and 3.9% of males self-identified as “something else” than heterosexual, homosexual or bisexual • The degree to which asexuals differ from sexuals on socioeconomic and physical variables, depended on the definition of asexuality that is used
Brotto & Yule (2011)	sexual attraction	7	(*n* = 7)	19-55	yes	• Asexual women did not differ on vaginal pulse amplitude and self-reported sexual arousal response to erotic film • Asexuals showed less positive affect, sensuality-sexual attraction and self-reported autonomic arousal; no group differences in negative affect or anxiety • Genital-subjective sexual arousal concordance was positive for asexual women

Carrigan (2011)	not specified	130	not specified	not specified	no	• Heterogeneity in reasons individuals have for defining as asexual • Some identified as “demisexual” • Important distinction between romance and sex, variation in romantic orientation • Variation in attitudes towards sex: sex-positive, sex-neutral or sex-averse/anti-sex • Typical trajectory in coming to an asexual identity: individual difference, self-questioning, assumed pathology, self-clarification and communal identity
Haefner (2011)	self-identification	64	81% (biological sex)/58% (gender)	18-55	no	• “Naming” is an important feature of negotiating romantic relationships for asexual individuals • Three areas of naming: naming the norm, naming asexuality in relationship and naming asexuality for self • Heteronormative paradigm affects asexuals at many levels, including experiencing themselves as different from the norm, engaging in or choosing not to engage in romantic relationships, and perceiving themselves as asexual beings

Aicken, Mercer & Cassell (2013)[1]	sexual attraction	79	67%	16-44	yes	• Prevalence of absence of sexual attraction in British probability survey = 0.4% • No significant variation by gender or age • 40.3% of asexual men and 33.9% of asexual women had had sex, 33.5% of asexual men and 20.9% of asexual women had children, 30.1% of asexual men and 19.2% of asexual women were married • Three quarters of asexual men and two thirds of asexual women considered their frequency of sex “about right” • 24.7% of asexual men and 19.4% of asexual women “always enjoyed having sex"
Yule, Brotto & Gorzalka (2013)	self-identification	256	89%	men M=27 (*SD*=10.9) women: M=24.6 (*SD*=6.9)	yes	• 24% of asexual men and 30% of asexual women indicated a mood disorder, 23% of asexual men and 23% of asexual women noted they had an anxiety disorder (both significantly higher than heterosexual controls) • Significant differences between asexual men and controls on somatisation, depression and psychoticism • Significant differences between asexual women and controls on hostility, phobic anxiety and psychoticism • Asexual individuals scored higher on suicidal feelings and thinking about death or dying than heterosexual controls • Asexual men scored higher than controls on coldness, social avoidance and non-assertiveness • Asexual women scored higher than controls on vindictiveness, coldness, social avoidance, non-assertiveness and being exploitable

Yule, Brotto & Gorzalka (2014)	self-identification	325	81%	men: M=26.9 (*SD*=10.5) women: M=24.3 (*SD*=6.7)	yes	• Asexual men and women were 2.4 and 2.5 times, respectively, more likely to be non-right handed than heterosexual controls • Asexual men were more likely to be later born than heterosexual men, asexual women were more likely to be earlier born than non-heterosexual women • No significant differences between sexual orientation groups on measurements of 2D:4D ratio

[1] data from national probability sample

Bogaert (2004) reported that 67% of the asexual individuals were not married or were not living together with a partner. In Prause and Graham's (2007) qualitative study, all participants were single and in their quantitative study 85.4% of the participants were currently single and/or never married. Brotto and colleagues (2010) reported that 85.9% of asexual men and women were single. They found more men (92%) than women (79.2%) to be single. Brotto et al. (2010) did not provide an explanation for this gender difference in relationship status.

1.5.2 Sexual and relational experiences of asexual individuals

Sexual experiences and behaviors of asexual individuals appear to show great variation. Bogaert (2004) reported that compared to a control group of sexual people, asexual individuals were older at first intercourse (16.8 vs. 14.8 years old), had fewer sexual partners throughout their life (0.9 vs. 2.6) and reported a lower frequency of sexual activity (0.2 times versus 1.2 times in the last 7 days). However, Prause and Graham (2007) did not find a difference between asexual and sexual people in the number of reported life-time sexual partners (10.2 versus 11.5). Brotto and colleagues (2010) reported that 73% of asexual men and women never had had sexual intercourse. In contrast, Brotto and Yule (2011) stated that four out of seven asexual women had been sexually active in the past four weeks. However, they did not differentiate between sexual activity with a partner and solo sexual activity.

Both Prause and Graham (2007) and Brotto and colleagues (2010) conducted in-depth interviews with asexual men and women. It was found that asexual men and women who were in a relationship regularly consented with sexual activities, because the partner wanted to have sex. In contrast to what sexual people often report, sex did not help the interviewed individuals to feel emotionally closer to their partner. Some asexual individuals indicated having to think about something else during sexual activity, to avoid focusing on the sexual act. By doing so, they only experienced the sexual stimulation, stripped of emotional intimacy (Brotto et al., 2010). It was also shown that asexual individuals consider fewer activities as sexual. This might be explained by the lack of pleasure these activities bring for asexual individuals. Prause and Graham (2007)

further reported that asexual people did not experience aversion to or anxiety for sexual activities, but were instead just not interested in it.

Little difference is reported between asexual and sexual individuals in masturbation. Prause and Graham (2007) reported no difference in desire to masturbate between asexual and sexual people. For some asexual individuals, masturbation did not seem to have a sexual connotation, a finding also reported by Scherrer (2008). Certain participants described it as a mere physical activity, void of any sexual meaning. Brotto and Yule (2011) indicated no difference in frequency of masturbation in asexual women, compared to sexual women. Research by Brotto and colleagues (2010) showed that 80% of asexual men and 77% of asexual women reported that they had ever engaged in masturbation. These numbers may seem remarkably high, since masturbation is conceptualized as a sexual behavior and asexual people are expected not to engage in sexual behaviors. Brotto et al. (2010) attempted to explain this finding by stating that there might be other motives to masturbate, for example relaxation or tension reduction, motivations that were confirmed by asexual individuals in in-depth interviews (Brotto et al, 2010). Further, Brotto and Smith (2013) suggested that desire for masturbation might be independent from desire for partnered sexual interaction, and they argued that asexuality may be more about a lack of attraction for partnered sexual interaction, rather than about a lack of attraction for all kinds of sex. Within the asexual community, it is questioned whether asexuality and masturbation can co-occur (www.asexuality.org). Admitting that one masturbates, could challenge the asexual identity. The fact that one third of asexual people interviewed by Brotto et al. (2010) felt uncomfortable discussing this topic seems congruent with this assumption.

In studies, the percentage of asexual individuals who were engaged in a relationship varied from 0% to 33% (Bogaert, 2004; Brotto et al., 2010; Brotto & Yule, 2011; Prause & Graham, 2007). Haefner (2011) reported that asexual people make a distinction between love and sex in their relationships, and that they are convinced that it is possible to love a partner without desiring sex. Indeed, within the asexual community, sexual attraction is seen as independent from romantic attraction (www.asexuality.org), a distinction also noted by Scherrer (2008). Carrigan (2011) described how an asexual person can be romantic (i.e., experiencing romantic

attraction) or aromantic (i.e., not experiencing romantic attraction). Some asexual individuals further describe themselves according to their romantic orientation, and self-identify as either hetero-romantic, homo-romantic, bi-romantic or poly-romantic. Based on a qualitative Internet survey of self-identified asexual individuals, Scherrer (2008) concluded that the romantic identity was an important theme for her participants. She found that 25 participants self-described as romantically oriented, whereas 11 participants described themselves as being aromantic. When asked about their ideal relationship, aromantic asexual individuals characterized it as primarily friendship-like, without any physical component, while romantic asexual individuals did indicate an interest in physical intimacy, including kissing and hugging (Scherrer, 2008). Haefner (2011) reported on the difficulties asexual people experience when wanting to engage in a partner relationship. Sex is a quintessential part of a relationship for most sexual people, and telling a prospective partner about their asexuality meant the end of the relationship for most of the participants in Haefner' s study. Some participants, however, did succeed in finding a sexual partner with whom sex is negotiable: they both made compromises to come to an agreed approach on the issue of sex (Haefner, 2011).

1.5.3 The asexual identity

Until now, few researchers have paid attention to the asexual identity. This research gap is especially remarkable, since most research on asexuality has recruited participants based on their self-identification as asexual. Scherrer (2008) reported that for many asexual people, the asexual community, and especially the AVEN-website, plays an important role in recognizing and acknowledging their asexual identity. After all, AVEN offers a language that enables discussing asexuality. Carrigan (2011) also noted that the discovery of an asexual community can have a profound effect on the self-understanding of an individual. He described a 'typical trajectory' among participants in coming to an asexual identity. At first, an individual experiences a sense of difference from a peer group, which provokes self-questioning: the individual tries to make sense of his or her apparent difference, by forming explanations of it. An individual then tries out different hypotheses, in search for one that 'fits'. One hypothesis that was named by

several of the participants in Carrigans study (2011), was a hypothesis in terms of pathology: there must be something wrong with me. Similarly, Haefner (2011) found how asexual individuals 'tried on' other sexual identities, only to realize that they did not fit their experience. Carrigan (2011) further reported that discovering the existence of an asexual community, opens the possibility to identify as asexual. Finally, the individual adopts an asexual identity, which can (potentially) lead to self-clarification and self-acceptance (Carrigan, 2011; Carrigan, Gupta, & Morrison, 2013). The validity of this conceptualization of the process(es) of coming to an asexual identity and the similarities and differences with the process(es) of coming to a homosexual identity, remain to be studied.

1.6 Correlates of asexuality

In this section, a number of biological, psychological, socio-demographical factors and aspects of sexual functioning that appear to correlate with asexuality, will be discussed. Before reviewing these correlates, it should be noted that correlational research does not imply any causal interpretation. As a consequence, it remains to be seen what the direction of the association between each of these correlates and asexuality is.

1.6.1 Biological correlates

Bogaert (2004) stated that, compared to sexual people, asexual people have a poorer health. They reported more often having a disability or a chronic illness and rated their own health worse. However, this association was only significant when it was corrected for education level and social status. This suggests that health and social class are related and that the increased health problems might be a consequence of poor socio-economic status. A similar association between sexual activity and health was found by Brody (2010), who reported that greater frequency of engaging in and responding orgasmically to sexual interactions is associated with a broad range of better physical health outcomes. In line with this observation, it may be that people reporting a low sexual frequency, such as asexual individuals, would show lower scores on physical health variables. Poston and Baumle (2010), who used multiple definitions of asexuality,

also reported a relationship between asexuality and poor health. However, this relationship was only found when asexuality was defined based on self-identification or based on absence of sexual desire or sexual attraction. These authors suggested that poor health may reduce sexual desire, thus establishing an asexual response. One might wonder whether such 'acquired' asexuality, as a consequence of poor health, should be differentiated from lifelong-asexuality in people with good health.

Bogaert (2004) reported that asexual women had a later onset of menarche compared to sexual women (mean age 13.5 versus 12.9 years). Also, both Bogaert (2004) and Poston and Baumle (2010) indicated that asexual individuals have a shorter stature than sexual people. Poston and Baumle (2010) could only establish this relationship when asexuality was defined based on absence of sexual behavior.

Using multivariate logistic regression, Bogaert (2004) demonstrated that many of the variables related to health and physical development, namely later onset of menarche in women, shorter stature and poorer health both in men and women, independently predicted asexuality. This suggests that physical developmental factors may have an influence both on growth and the development of mechanisms related to sexual orientation (e.g., via mediation of the anterior hypothalamus; LeVay, 1991).

In analogy to research on sexual orientation, Yule, Brotto and Gorzalka (2014) studied biological markers of asexuality, i.e., handedness, birth order and finger length ratios. Biological markers are studied based on the hypothesis that genetic factors and prenatal hormonal influences may impact the development of sexual orientation (e.g., Blanchard, 2008; Blanchard & Bogaert, 1996; Grimbos, Dawood, Buriss, Zucker, & Puts, 2010; Lalumière, Blanchard, & Zucker, 2000; Rosario & Schrimshaw, 2014). A number of theories attempt to explain how these measures might be related to sexual orientation development. Prenatal hormone theory, for example, stated that handedness as well as finger length ratios and sexual orientation are linked to prenatal androgen levels. Exposure to higher levels of androgens can lead to a more male-typical pattern of development, including an increased incidence of left-handedness and smaller 2D:4D ratios (Yule et al., 2014). The fraternal birth order effect regarding sexual orientation could be explained by the maternal immune hypothesis (Blanchard & Bogaert, 1996), stating that a mother develops an immune reaction by antibodies against male specific

H-Y antigens, which are important in male fetal development during pregnancy. This reaction is hypothesized to cause an alteration towards a less male-typical direction in (some) later born male's prenatal brain development. This immune effect becomes increasingly likely with each male gestation (Bogaert & Skorska, 2011). As asexuality is hypothesized to be a category of sexual orientation, Yule et al. (2014) have focused on the importance of these biological markers in the context of asexuality. They found that asexual men and women were respectively 2.4 and 2.5 times more likely to be left-handed than their heterosexual counterparts. Asexual men differed from heterosexual men in number of older brothers, but this difference was only statistically significant for right-handed men: right-handed asexual men had a higher number of older brothers than their right-handed heterosexual counterparts. Asexual women differed from non-heterosexual women in number of older brothers, but this difference was only statistically significant for left-handed women: left-handed asexual women had fewer older brothers than their non-heterosexual counterparts. Regarding finger length ratio, no differences were found between asexual people and heterosexual or non-heterosexual people. Yule et al. (2014) concluded that their study provided evidence for biological correlates of the lack of sexual attraction that is characteristic of asexuality, and that their findings are consistent with the demonstrated link between prenatal events and the development of a homosexual orientation.

It could further be suggested that asexuality may be related to certain hormonal variations. However, the association between asexuality and hormones has not yet been studied.

1.6.2 Psychological correlates

Nurius (1983) conducted research on the association between sexual orientation and mental health in a non-random sample of young adults. She compared four sexual orientation groups: homosexuality, heterosexuality, bisexuality and asexuality, in which the latter was defined as "those who largely prefer not to be involved in any sexual activities" (Nurius, 1983). Significant group differences were found on depression, self-esteem and sexual satisfaction. The highest prevalence of clinical psychopathology was

found in the asexual group. However, it must be noted that the mean scores on clinical psychopathology for each of the groups were rather low and that the absolute differences between the four groups were quite small. After controlling for demographic variables, the difference between the four sexual orientation groups was only significant for depression. Nurius noted that even though the relationship between depression and sexual orientation was statistically significant, the explained variance was low (R^2 = .0169). As a consequence, the clinical relevance of these findings seems rather limited.

Recently, Brotto and colleagues (2010) studied psychiatric symptoms and aspects of personality in asexual men and women, in comparison with a non-asexual control group. They concluded that twice as many asexual women (20.6%) as asexual men (9.3%) reported ever having been diagnosed with a psychiatric disorder. However, these results did not differ significantly from reference values for psychiatric disorders (Kessler et al., 2005; Spiers, Bebbington, McManus, Brugha, Jenkins, & Meltzer, 2011). Mean depression scores, measured with the Beck Depression Inventory were in the non-clinical range, both for women (M = 7.18, *SD* = 8.2) as for men (M = 6.64, *SD* = 7.54). Further, they found that asexual men and women had a higher score on the Toronto Alexithymia Scale compared to non-asexual men and women. While measuring a number of domains of general social functioning using the Personality Assessment Screener (PAS), 56.3% of asexual men and women had an increased score. Within this group, the most remarkable increased domain was 'social withdrawal': 80% of asexual men and women had a score within the clinical range. The authors further reported an increased score on the subscale 'social inhibition' of the Inventory of Interpersonal Problems – Circumplex Version (IIP-C). Asexual men also showed an increased score on the domain of 'cold and distant behavior' of the IIP-C. Based on the results of the PAS and the IIP-C, the authors suggested that asexuality might be an expression of a Cluster A Personality Disorder, namely schizoid personality disorder. This is characterized by emotional coldness, difficulty in expressing feelings and lack of desire for intimate relationships (American Psychiatric Association, 2000), all features that might be related to asexuality (see also paragraph 1.1.7.3 Psychopathological models).

It is suggested that asexuality should be seen as a byproduct of an atypical social functioning, rather than as its cause. Brotto and colleagues (2010) found support for this

hypothesis in the finding that one third of their participants never had a partner relationship. During in-depth interviews with asexual men and women, several participants further suggested a possible link between asexuality and Asperger' s syndrome (Brotto et al., 2010). Ingudomnukul, Baron-Cohen, Wheelwright, & Knickmeyer (2007) reported that 17% of women with an autism spectrum disorder (ASD) in their sample, indicated being asexual. This percentage was markedly higher than the percentage of women who indicated being lesbian (1.9%) or bisexual (13.2%). Marriage, Wolverton and Marriage (2009) reported that 33% of individuals with ASD in a community-based sample were asexual. The authors stated that it is unclear whether these women identify themselves as asexual because they are not interested in sex, or because they lack certain social skills, necessary for having sexual contact. This last hypothesis might be countered by the finding of Gilmour, Schalomon and Smith (2011) that no significant differences were found in breadth and strength of sexual behaviors between individuals with ASD and controls. However, since only few studies examined sexual behaviors in individuals with ASD, future research has to show whether this finding can be replicated.

1.6.3 Correlates regarding sexual functioning

It should not surprise that asexual people show low scores on dyadic sexual desire (Brotto & Yule, 2011; Prause & Graham, 2007) and on solitary sexual desire (Prause & Graham, 2007). Brotto and colleagues (2010) found a positive correlation between sexual desire and distress, where distress increased with higher desire scores. This suggests that experiencing desire is distressing for asexual individuals. It is possible that desire is interpreted negatively, because it is inconsistent with their intentions, wishes and identification as an asexual person.

Prause and Graham (2007) indicated that scores on sexual excitation, but not on sexual inhibition, differentiated between asexual and sexual individuals. As a conclusion, these authors firstly suggested that asexual people do not seem to be motivated by avoidance, as is the case with social phobias and sexual aversion disorder; rather they seem to experience a lack of sexual excitation. Secondly, these findings supported the

hypothesis that excitation and inhibition are relative independent factors that influence sexual arousal (Bancroft, 1999). Prause and Graham (2007) concluded that sexual excitation might be more relevant than sexual inhibition, in research on an individual's level of sexual desire.

While Brotto and colleagues (2010) found no differences between asexual and sexual individuals in terms of subjective sexual arousal, Brotto and Yule (2011) did find a decrease of sexual arousal in asexual women, compared to sexual women. However, the authors did not find a difference between asexual and sexual women in genital sexual arousal. Brotto and Yule further reported a concordance between genital arousal and subjective arousal (r = .79) in asexual women, where increase in genital arousal was associated with increase in subjective arousal. The association between genital and subjective arousal in sexual women was not significant. It appears that the asexual women in their study resemble men, who are shown to have a higher concordance between self-reported arousal and genital arousal (r = .66, compared to r = .26 for women; Chivers, Seto, Lalumière, Laan, & Grimbos, 2010). Brotto and Yule (2011) tried to explain this by formulating the hypothesis that absence of sexual activity in asexual women might make them more attentive for the seldom times they do experience genital arousal. If correct, this implies that a higher rate of interoceptive consciousness in asexual women has a direct impact on the extent to which they are cognitively aroused. However, given the small sample size of Brotto & Yule's study, the concordance between subjective and objective arousal in asexual women needs to be replicated in a larger sample of asexual people.

Brotto and colleagues (2010) did not find any difference in orgasm scores between asexual and sexual individuals, while Brotto and Yule (2011) described a slightly increased score in asexual women on orgasm scores. In other words, asexual women had less trouble reaching orgasm, reached orgasm more often during sex and were more satisfied with their ability to reach orgasm. Yet again, the small sample size raises questions on the validity of this finding.

Regarding sexual satisfaction, Brotto and colleagues (2010) did not find any difference in the scores of asexual individuals who had been sexually active in the past four weeks, compared to the scores of women with a Hypoactive Sexual Desire Disorder

(HSDD) diagnosis. Brotto and Yule (2011) found a slightly lower satisfaction score in asexual women. In other words, asexual women were less sexually satisfied than sexual women.

Brotto and colleagues (2010) did not find any difference in scores on sexual pain between asexual and sexual women. However, Brotto and Yule (2011) did find slightly increased pain scores in asexual women.

Distress in asexual individuals has been included in only one study. Brotto and colleagues (2010) reported that the distress scores of both asexual men and asexual women were below the clinical cut-off. Only 10% of asexual participants indicated experiencing distress. Within this group, equal numbers of asexual men and women were found. According to Brotto and colleagues (2010), the fact that an asexual orientation does not appear to cause marked distress suggests that, when distress is present, it may be more related to interpersonal consequences of their asexuality, rather than to personal consequences for the asexual people. Future research should attempt to distinguish between personal and interpersonal distress. Brotto et al. (2010) further reported that in both asexual men and women, distress appeared to be negatively correlated with sexual satisfaction, indicating that distress decreased as sexual satisfaction improved.

1.6.4 Socio-demographical correlates

Regarding educational level, contradictory findings are reported. Bogaert (2004) postulated that asexual individuals had significantly lower educational levels than sexual people. Poston and Baumle (2010), using multiple definitions of asexuality, also reported that asexual individuals were less educated when asexuality was defined based on lack of sexual behavior or based on self-identification. However, Prause and Graham (2007) reported that asexual people were more likely to have completed college, compared to sexual people. Brotto and Yule (2011) did not find any difference in highest level of education achieved, between asexual women and sexual women. However, since the sample size of their study was quite small, this finding should be handled with precaution.

Poston and Baumle (2010) indicated that asexual individuals less often had a fulltime job, compared to sexual individuals. Bogaert (2004) reported that asexual individuals had a lower socio-economic status than sexual individuals.

The differences in educational level and social class between asexual and sexual individuals led Bogaert (2004) to suggest that education and home environment may play a fundamental role in sexual development and that alterations in these circumstances may have a profound impact on the basic processes of the development of sexual attraction. However, the contradictory findings on the association between educational level and asexuality question this hypothesis. Also, no absolute differences in years of education are provided, which makes it difficult to assess the value of these findings.

To explore whether asexual people distance themselves of sexuality out of religious motives, religiosity has sometimes been measured. Bogaert (2004) described a relationship between asexuality and religiosity, where asexual individuals stated to attend religious services more often than sexual people. Bogaert (2004) postulated three possible explanations for this finding. Firstly, it is possible that asexual individuals consider religion a refuge, since it supports their lifestyle. A second explanation states that extreme religiosity contributes more directly to asexuality, by considering the tendency to give in to sexual desire as negative or by putting restrictions on certain activities that stimulate the typical processes of sexual attraction, such as dating, masturbation, sexual fantasies or watching pornography. Finally, Bogaert (2004) stated that the association between asexuality and religiosity may be explained by a third, still unknown variable. In contrast, qualitative research by Brotto and colleagues (2010) found a disproportionate high number of atheists in the sample.

1.7 Theoretical models on asexuality

Brotto et al. (2010) have suggested and explored a number of theoretical models, which might shed light on the etiology of asexuality. However, none of these have been empirically tested. The theoretical models suggested by Brotto et al. (2010) can be ordered in three categories: developmental, motivational, and psychopathological

models. We would like to propose an additional model, conceptualizing asexuality as a fourth type of sexual orientation.

1.7.1 Developmental models

Developmental models regarding asexuality focus on potential associations with attachment development, the development of sexual attraction or neurohormonal development. All three models situate the "origin" of asexuality in childhood. Brotto and colleagues (2010) refer to Bowlby's attachment theory (1969) in an attempt to explain the finding that one third of the participants in their study has never been in a partner relationship. They speculate that asexual individuals might have had an avoidant temperament as a child, leading to an insecure attachment style. The distrust in others and awkwardness in the presence of others, typical for insecure attachment, might perpetuate in later social relationships. As a consequence, one might avoid engaging in (romantic and sexual) relationships as an adult. According to this vision, asexuality could be a byproduct of a broader atypical social functioning (Brotto et al., 2010). This theory, however, does not explain why some asexual individuals do desire a romantic relationship, in which they seek the same characteristics as sexual people do (Brotto et al., 2010; Fletcher, Simpson, Thomas, & Giles, 1999). Dewitte (2012), however, suggested that in avoidantly attached individuals, love and sex seem to be independent constructs. If asexuality would be associated with an avoidant attachment style, this could explain why asexual individuals do not desire sex, but some of them do desire a (romantic) relationship.

A second hypothesis, raised by Brotto and colleagues, refers to the development of sexual attraction. For example, Bem's 'exotic becomes erotic' developmental theory (1996) might also be applicable to asexuality. According to this theory, physiological arousal generated by feeling different from opposite-sex peers during childhood, becomes transformed into erotic attraction in later years. One of the mechanisms through which this transformation can be achieved, is the extrinsic arousal effect, in which physiological arousal is combined with a cognitive causal attribution (e.g., my arousal is elicited by a potential sex partner). The experience of erotic desire, then,

results from the conjunction of physiological arousal and the cognitive causal attribution that the arousal is elicited by a potential sex partner (Bem, 2000; Walster, 1971). It is possible that asexual people lack this causal attribution, and as a consequence, their physical arousal is not directed towards a certain target (Brotto et al., 2010). This could explain why the physical sexual arousal in asexual individuals is intact (Brotto et al., 2010; Brotto & Yule, 2011), but the desire to translate this in sexual activity with a partner, is missing.

A final developmental model, proposed by Brotto and colleagues (2010) suggests that asexuality could be related to a disruption in the maturation of the adrenals. In this model, sexual attraction is linked to the adrenarche (McClintock & Herdt, 1996). According to this view, asexual individuals would not experience the same increase in androgen production during puberty as sexual people do, which might influence the development of their proneness to sexual attraction (Brotto et al., 2010). However, since the androgen production in men is mainly situated in the testes, this theory would only apply to women. Arlt and colleagues (1999) deliver potential support for this theory by reporting an increase in sexual interest in women with adrenal insufficiency, after hormonal substitution therapy with dehydroepiandrosterone (DHEA). A few decades earlier, Storms (1981) suggested that the development of sexual orientation is influenced by the development of "sex drive" – as indicated by the appearance of sexual arousal, sexual fantasizing and masturbation - which is in turn strongly influenced by biological changes during puberty. According to Storms (1981), disturbances in these biological changes have consequences for the development of sexual orientation.

1.7.2 Motivational models

Motivational models focus on asexual individuals' lack of sexual motivation. Brotto and Yule (2011) suggested that Everaerd and Laan's incentive motivation model of sexual desire (1995) may explain why asexual people show a normal sexual arousal response to erotic stimuli (Brotto & Yule, 2011), but are nonetheless not motivated to direct this arousal to another person. This model, based on work by Singer and Toates (1987), states that each individual has a sexual response system that can be activated by

adequate sexual stimuli. Individuals have a disposition to respond to these stimuli with some form of sexual activity, which in turn elicits sexual desire. This disposition is likely influenced by central and peripheral neurotransmitters-hormone interactions (Laan & Both, 2008). This model conceptualizes sexual desire as an effect of the activation of the sexual system. In other words: sexual desire is the consequence of (engaging in) sexual activity, and not the other way around. In asexual people, the experience of sexual arousal is not translated into sexual activity with a partner. According to this theory, the absence of sexual desire would then be the consequence of a lack of satisfying sexual activity or of the fact that the conditions necessary to activate the sexual system (i.e., adequate sexual stimuli), are insufficiently present (Everaerd, Laan, Both, & Spiering, 2001). When applying this model to asexuality, this would imply that asexual people lack sexual attraction towards others because they do not engage in sexual activity with other people. Even though this model may be applicable to asexual individuals who are not sexually active, it does not explain why some asexual individuals are sexually active, while still identifying as asexual. The motivational aspect of sex in these people could be found in other factors, such as partner satisfaction, which could also activate the sexual response system.

Brotto et al. (2010) also suggested Diamond's (2003) bio-behavioral model of love and desire to clarify why some asexual individuals do engage in relationships, even when a sexual component is lacking (see also Prause & Graham, 2007; Scherrer, 2008). On evolutionary grounds, Diamond's model states that the underlying processes of love and desire, i.e., the attachment system and the sexual mating system respectively, are functionally independent. Under certain circumstances, namely a high degree of closeness and physical contact during a certain period, people can engage in a romantic bond without the motivation to mate. Being together in an intensive manner for a longer time, and in addition having a high level of physical contact, can form a substitute for sexual desire. This facilitates the development of romantic love, without a motivation to mate. As a consequence, one might experience sexual desire without love, and one can fall in love without experiencing sexual desire. This theory may explain why some asexual individuals do desire a (romantic) relationship, without desiring a sexual component in this relationship. However, some asexual individuals indicate not

experiencing romantic attraction, and as a consequence not desiring a romantic relationship. For this subgroup of asexual people, the bio-behavioral model does not apply.

1.7.3 Psychopathological models

As noted earlier, Brotto and colleagues (2010) suggested that asexuality could be related to a schizoid personality disorder, characterized in DSM-5 (2013) by "a pattern of detachment from social relationships and a restricted range of emotional expression" (p. 645). The third diagnostic criterion, out of seven, states: "Has little, if any, interest in having sexual experiences with another person" (APA, 2013, p. 653), a criterion asexual people live up to. However, to be diagnosed with schizoid personality disorder according to DSM-5, one needs to fulfill at least four criteria out of a list of seven, which include "takes pleasure in few, if any, activities", "lacks close friends or confidants other than first-degree relatives" and "appears indifferent to the praise or criticism of others" (APA, 2013, p. 653).

Recently, a potential correlation has been suggested between asexuality and autism spectrum disorders (Brotto et al., 2010; Ingudomnukul et al., 2007). Research on individuals with an autism spectrum disorder has shown that a relatively high percentage (ranging from 17% to 33%) described himself or herself as asexual (Ingudomnukul et al., 2007; Marriage, Wolverton, & Marriage, 2009). It is, however, difficult to explore why these people self-describe as asexual: because they truly feel asexual (i.e., lack sexual attraction), or because they lack the social skills, necessary to engage in sexual encounters? To clarify this, future research on the association between asexuality and autism spectrum disorders should also ask about lack of sexual attraction, and the desire to engage in sexual activities with another person.

1.7.4 Asexuality as a fourth type of sexual orientation

While there is a consensus that sexual orientation exists along a continuum (e.g., Kinsey et al., 1948; Savin-Williams & Vrangalova, 2013), most researchers place individuals in

one of three sexual orientation categories: heterosexual, bisexual or homosexual. Sexual orientation was described by Laumann, Gagnon, Michael and Michaels (1994) as a multidimensional concept, comprising sexual behavior, sexual desire and self-identification. Since the same three indicators of sexual orientation – sexual attraction, self-identification and sexual behavior - have been used to describe asexuality, it is suggested that asexuality should be conceptualized as a fourth category of sexual orientation (Brotto et al., 2010; Storms, 1979).

Bogaert (2006) discussed whether asexuality should be seen as a unique category of sexual orientation, whereby he defined sexual orientation as "the subjective sexual attraction to the sex of others" (Bogaert, 2006, p. 244). An argument in favor of asexuality as a unique orientation, concerns the finding that there appears to be a group of people who describe themselves as asexual, thus using a term that is not part of the traditional discourse on sexual orientation. However, an objection against a conceptualization of asexuality as a unique orientation, mentioned by Bogaert (2006), concerns the validity of self-report: one may report a lack of sexual attraction, but may in fact have demonstrable physical sexual arousal towards others of a particular gender. This argument states that the genital sexual arousal a person experiences, despite their subjective feelings, defines his or her sexual orientation. Diamond (2013), however, argued that "genital and neurobiological measures do not necessarily provide truer measures of sexual orientation than do individuals' own subjective feelings" (Diamond, 2013, p. 7). Bogaert (2006) too stated that it must be taken into account that sexual attraction not only consists of a physical component (i.e., genital sexual arousal), but also of a subjective or perceived facet, which he described as "a perceived eroticism/fantasy directed towards others" (Bogaert, 2006, p. 244). Bogaert concluded that even when physical attraction/arousal is present in asexual people, as long as there is no subjective, psychological attraction towards others, a unique category of sexual orientation is needed for these individuals.

Another objection concerns the potential overlap between asexuality and Hypoactive Sexual Desire Disorder (HSDD), as how it was defined by the DSM-IV-TR: "persistently or recurrently deficient (or absent) sexual fantasies and desire for sexual activity, causing marked distress or interpersonal difficulty" (APA, 2000, p. 541). As

described earlier, in the DSM-5, sexual desire and sexual arousal problems in women have been combined in a new diagnostic category (i.e., Female Sexual Interest/Arousal Disorder (FSIAD)), while for men, the diagnosis HSDD can still be used. Even though the content overlap between asexuality and FSIAD/MHSDD is large, DSM-5 specifies that "if a lifelong lack of sexual desire is better explained by one's self-identification as "asexual", then a diagnosis of FSIAD would not be made" (APA, 2013, p. 434; see also p. 443 for a very similar text in DSM-5 on differentiating male hypoactive sexual desire disorder and asexuality).

Bogaert (2004) also described how asexuality could be seen as the *absence* of one of the traditional sexual orientations, since asexual people are neither attracted to men, nor to women. The lack of interest in sex, reported by asexual individuals, is hard to combine with the categorization of these individuals as having a s*exual* orientation. As described earlier, given that some asexual people can experience romantic attraction, it might be relevant to introduce a new concept: romantic orientation. This concept, however, has not yet been included in asexuality research.

2. Research objectives

2.1 General aims

The literature review above shows that empirical research findings on asexuality are scarce. Little is known on the defining characteristics, prevalence, associated factors and possible existing gender differences in asexuality. Further, it is not yet clear how asexuality should best be defined or conceptualized: i.e., as a lack of sexual attraction, a lack of sexual behavior, based on self-identification or a combination of two or more of these criteria? This dissertation aimed to provide a better understand of how asexuality can be conceptualized and to explore characteristics of asexual individuals, using a multi-methods approach. More and more, the benefits of combining quantitative and qualitative methods are demonstrated in sexuality research (e.g., Brotto et al., 2010; Mustanski, Lyons, & Garcia, 2011; Olmstead, Billen, Conrad, Pasley, & Fincham, 2013; Prause & Graham, 2007), "as this reflects the optimal mode of exploring a construct that lacks conceptual and empirical clarity" (Brotto et al., 2010, p. 600).

2.2 Qualitative study

2.2.1 Aims

1. To gain more insight in the development an asexual identity.

   How did this process develop? How did they experience their 'feeling different' and 'coming out'? What is the impact of having an asexual identity?

2. To explore how asexual individuals experience intimacy and sexuality.

   Have they engaged in intimate physical and sexual behaviors (yet), and how did they experience these activities?

3. To study asexual individuals' subjective experience of love and partner relationships.

   Can asexuality and having or wanting a romantic partner relationship co-occur? How do asexual people experience being in a partner relationship? How do they differentiate between romantic attraction and sexual attraction? What role does sexuality play in these relationships?

2.2.2 Study population

Participants were recruited between February and August 2011, through advertisements on the AVEN-website, via posts on several health- and lifestyle related websites in Flanders and The Netherlands and via social media. The post stated that we were looking for "asexual men and women", "in order to gain more insight in how they experience being asexual". Asexuality itself was described as "not experiencing sexual attraction". In total, 18 individuals responded to our messages, of which 11 were actually interviewed. Individuals who responded but were not interviewed either did not fully recognize themselves in the description of asexuality as a lack of sexual attraction (n = 3), did not want to be interviewed face-to-face (n = 1) or could not participate due to practical reasons (e.g., they were not free at the time of the interview, or they lived too far away and/or were not able to come to the venue of the interview) (n = 3). Since only two men volunteered to be interviewed, we decided to only present the analyses of the female participants.

Finally, nine self-identified asexual women were interviewed, five were Flemish and four were Dutch. Participants' ages ranged from 20 to 42 years. All but one had received higher education. Regarding life philosophy or religious affiliation, four women indicated believing 'in something', three stated being an atheist, one woman was Catholic and one woman was Jewish. At the moment of the interview, two women were in a relationship: one woman had been in a relationship with an asexual man for six months, another woman had been in a relationship with a sexual man for 15 years. The remaining seven women were single.

2.2.3 General methods

To explore participants' subjective experiences, we used semi-structured interviews. These are designed to capture a rich and detailed description of participant's experiences and what these experiences mean to them, which perfectly suits the interpretative phenomenological approach we followed to analyze the data (Smith, Flowers, & Larkin, 2009). An in-depth study of available studies on asexuality and its research gaps, formed the inspiration for the interview questions. Questions included: What was your experience like of realizing you were asexual?; How did your coming out go?; How do you experience (sexual) relationships?; and 'What role does sex play in a relationship for you?' (for the complete interview protocol: see appendix of Chapter 2). All interviews were conducted face-to-face by the same interviewer and lasted between 30-90 minutes. Interviews were audio-taped and later transcribed verbatim for analysis.

Interviews were analyzed using Interpretative Phenomenological Analysis (IPA; Smith et al., 2009). IPA is a qualitative research method that combines phenomenology with hermeneutics. It is mainly developed and used to examine how people make sense of their life experiences and is concerned with the individual's personal perceptions of an event or an experience. The meanings people attach to their experiences are explored by the researcher engaging in a process of interpretation (Smith & Osborn, 2003). For this reason, Smith (2012) stated that IPA is engaged in a double hermeneutic, where the researcher is trying to make sense of the participant trying to make sense of what is happening to them. Because IPA is an idiosyncratic approach, concerned with understanding particular phenomena in particular contexts, IPA studies are conducted on small sample sizes (Smith et al., 2009). In order to enhance the trustworthiness of the research process, it is necessary that the researchers try to set aside their own beliefs, thoughts and preconceived notions about the phenomenon under investigation, a process called "bracketing" (Smith, 2008). The analytical process started during the verbatim transcriptions and was continued during reading and rereading of all individual transcripts several times. In first instance, the analysis of each transcript was descriptive and denoted an attempt to summarize the participant's feelings and concerns. The data were then further analyzed in an interpretative manner, which implies taking some

distance from the data, positioning the initial descriptions in a broader context and thinking about and interpreting what it meant for the participants to have said what they had said (Larkin, Watts, & Clifton, 2006). In this, it is important that the interpretation is inspired by and arises from, attending to the participants' words, rather than it being imported from outside (Smith et al., 2009). Emergent themes were identified from each participant's transcript and independently double checked by team members. Smith and colleagues (2009) defined themes as "phrases which speak to the psychological essence of the piece and contain enough particularity to be grounded and enough abstraction to be conceptual" (Smith et al., 2009, p. 92). In a fourth step, connections across emergent themes were identified that were further discussed with two independent auditors, in order to increase the validity of the findings. In case of disagreement between the auditors, I made the final decision. These four steps were repeated for every transcribed interview, which resulted in a list of themes for each interview. Finally, we looked for patterns across interviews: themes that emerged in at least half of the interviews were considered group themes. This in-depth way of analyzing the data resulted in a master table of themes, showing how themes are nested within super-ordinate themes.

2.3 Quantitative study

2.3.1 Aims

1. To explore the multidimensionality of asexuality (Study 1).

   How many participants can be identified as asexual based on the above mentioned criteria (lack of sexual attraction, lack of sexual behavior and self-identification) and/or combinations of these criteria? Whether and to what extent do these categorizations overlap: are participants, categorized as asexual on one of the criteria also identified as asexual on the other two criteria and/or combinations of criteria?

2. To compare asexual participants who indicated not experiencing sexual attraction towards others, with asexual participants who indicated that they do experience sexual attraction towards others (Study 2).

   Do the two groups differ in terms of socio-demographic characteristics, sexual experience, masturbation frequency, physical and mental health, attachment style, self-esteem, body appreciation, genital self-image, solitary and dyadic sexual desire and history of sexual abuse?

3. To compare asexual men and women who indicated not experiencing sexual attraction towards others (Study 3).

   Are there gender differences in terms of socio-demographic characteristics, sexual experience, masturbation frequency, physical and mental health, attachment style, self-esteem, body appreciation, genital self-image, solitary and dyadic sexual desire and history of sexual abuse?

2.3.2 Study population

Participants were recruited between September 2012 and March 2013 through the Dutch, English and Spanish forums of AVEN, through posts on several health- and lifestyle related websites in Europe, the United States and South-America, as well as through posts on social media. These posts contained a link based on which potential participants were redirected to the introductory page of the study. On this introductory page of the study, a broad description of asexuality was presented, and participants who recognized themselves in this description were invited to complete the survey. In total, 1033 responses were obtained. To explore the multidimensionality of asexuality (Study 1), participants who did not complete the questions regarding the different criteria of asexuality were excluded from the analyses (n = 400). Also, we decided not to include participants under the age of 18 years (n = 67). This resulted in a number of 566 participants, of which 61.3% was English speaking, 20% was Dutch speaking, and 18.7% was Spanish speaking. More women (68.9%) than men (24%) completed the survey. Seven percent of participants described themselves as other than man or woman. Since

this group was rather small (*n* = 40) to allow for valid gender comparisons, we omitted participants identifying as 'other than male or female'. The final sample on which the analyses were done thus consisted of 526 participants. Mean age of participants was 28.25 years (*SD* = 10.73, range 18-72 years). Most participants were either currently in full daytime education (43.1%) or had already achieved a higher education (46.5%). Around 80% of participants were single. Regarding religious affiliation or life philosophy, the majority of participants indicated being atheist (19.2%) or liberalist (19%).

To explore differences between participants who do not experience sexual attraction and participants who do, we used the same database as for Study 1, but only included participants who completed the entire survey. This resulted in a final number of 460 participants (272 English speaking, 97 Dutch speaking, 91 Spanish speaking). Of these, 25.9% were male and 74.1% were female. Mean age of participants was 28.06 years (*SD* = 10.40, range 18-67 years). Most participants were either currently in full daytime education (42.8%) or had already achieved a higher education (46.7%). Around 78% of participants were single. Regarding religious affiliation or life philosophy, the majority of participants indicated being liberalist (24%) or atheist (24.5%).

To explore gender differences for participants not experiencing sexual attraction towards others, we used the same database as for Studies 1 and 2, but only included participants who indicated that they do not experience sexual attraction towards others. This resulted in a final number of 324 participants (216 English speaking, 57 Dutch speaking, 51 Spanish speaking), of which 21.6% were male and 78.4% were female. Mean age of participants was 26.95 years old (*SD* = 9.93, range 18-67 years). Most participants were either currently in full daytime education (49.4%) or had already achieved a higher education (40.6%). Around 81% of participants were single. Regarding religious affiliation or life philosophy, the majority of participants indicated being liberalist (25.4%) or atheist (23.9%).

2.3.3 General methods

The online survey was created using LimeSurvey®, a user-friendly web survey tool, and was open for participants from September 2012 until March 2013. The first page of the

survey presented an informed consent. Only participants who signed this informed consent could start the survey which took approximately 50 minutes to complete. Analogous to research on sexual orientation, where sexual orientation is measured by sexual attraction, self-identification and sexual behavior (Dewaele, Caen, & Buysse, in press; Laumann et al., 1994), the same criteria were used to measure an asexual orientation. Participants could thus be categorized as asexual based on lack of sexual attraction, based on self-identification as asexual or based on lack of sexual behavior.

Participants were questioned about masturbation experiences and frequency, experience with, frequency and subjective experience of and motives for engaging in sex, intercourse and intimate behaviors, experience with and subjective experience of partner relationships, and history of sexual abuse. Sexual functioning was measured using the Sexual Desire Inventory (SDI; Spector, Carey, & Steinberg, 1996), an elaborated version of the Short Sexual Functioning Scale (SSFS; Enzlin et al., 2012) and an adapted version of the Female Sexual Distress Scale (FSDS; Derogatis, Rosen, Leiblum, Burnett, & Heiman, 2002). Relational functioning was measured using the Maudsley Marital Questionnaire (MMQ; Crowe, 1978), the Experiences in Close Relationships-Revised (ECR-R; Fraley, Waller, & Brennan, 2000) and the Dyadic Sexual Communication Scale (Catania, 1998). Physical and mental wellbeing were measured using the Short Form Health Survey (SF-12; Ware, Kosinski, & Keller, 1996). Finally, body appreciation, genital self-image and self-esteem were measured using the Body Appreciation Scale (BAS; Avalos, Tylka, & Wood-Barcalow, 2005), an adapted version of the Female Genital Self-Image Scale (Herbenick & Reece, 2010) and the Rosenberg Self Esteem Scale (RSES; Rosenberg, 1965).

Chapter 2 : Stories about asexuality

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ABSTRACT

This study aimed to explore how asexual women experience their asexual identity, sexuality and relationships. Participants were recruited through the website of the Asexuality Visibility and Education Network and posts on several health– and lifestyle related websites. Interviewees were 9 women between 20 and 42 years old. Data were collected via semi-structured interviews and analyzed using Interpretative Phenomenological Analysis (IPA). Three main themes that arose from the data, will be discussed: coming to an (a)sexual identity, experiencing physical intimacy and sexuality, and experiencing love and relationships. Participants described how they have always felt different and how they experienced their process of coming out. A great variation in the experience of sex and physical intimacy, and of love and relationships was found. Engaging in sexual behavior was mainly based on a willingness to comply with partner wishes. While some were longing for a relationship, aromantic asexual women did not. Some participants separated love from sex. Theoretical and clinical implications of these findings are discussed.

INTRODUCTION

Asexuality is not a well-defined term or phenomenon. While usually described as a lack of sexual attraction (Bogaert, 2004; Brotto, Knudson, Inskip, Rhodes, & Erskine, 2010; Yule, Brotto, & Gorzalka, 2014), definitions based on absence of sexual experience or self-identification as asexual, have also been proposed (Van Houdenhove, Gijs, T'Sjoen & Enzlin, 2014; Yule, Brotto, & Gorzalka, under review). Over the past decade, scientific interest in asexuality increased (for a review: Van Houdenhove et al., 2014). Hitherto, researchers already tried to characterize asexuality in terms of physical characteristics including physical health, height, age of menarche (Bogaert, 2004; Poston & Baumle, 2010); biological markers including handedness, birth order and finger length ratio (Yule et al., 2014); psychological correlates including alexithymia, interpersonal functioning (Brotto et al., 2010) and depression (Nurius, 1983); aspects of sexual functioning including frequency of sexual activity (Bogaert, 2004), dyadic sexual desire (Prause & Graham, 2007; Brotto & Yule, 2011), solitary sexual desire (Prause & Graham, 2007), sexual excitation (Prause & Graham, 2007); and socio-demographic characteristics such as educational level and religiosity (Bogaert, 2004). There are, nevertheless, still many important topics left unstudied.

For example, very little is known about the development of an asexual identity (Scherrer, 2008). Scherrer (2008) argued that the development of an asexual identity may be promoted by the privacy of the Internet and specialized websites such as the Asexuality Visibility and Educational Network (AVEN; www.asexuality.org). These websites provide a safe space where asexual individuals can share their narratives of asexuality, offering them a language to describe how and what they feel. This also helps in creating a community of equal-minded individuals who support each other, and enables them to develop a shared communal identity (Scherrer, 2008). Carrigan (2011) described a 'typical trajectory' of how members of the asexuality community came to an asexual identity. At first, an individual experiences an exclusion from a peer group, which provokes self-questioning: the individual tries to make sense of his or her apparent difference, by forming hypothetical explanations of it. An individual then tries out different hypotheses, in search for one that 'fits'. One hypothesis that was named by

several of the participants in Carrigan's study (2011), was referring to pathology: "something must be wrong with me". Similarly, Haefner (2011), found how asexual individuals 'tried' other sexual identities, only to realize that they did not fit their experience. Carrigan (2011) further reported that discovering the existence of an asexual community opened the possibility to identify as asexual. Finally, the individual accepts and adopts an asexual identity, which can (potentially) lead to self-clarification and self-acceptance (Carrigan, 2011; Carrigan, Gupta, & Morrison, 2013).

Furthermore, little is known about the perceptions of and experiences with sexual behaviors in asexual individuals (Van Houdenhove et al., 2014). Available research findings on sexual experiences and sexual behaviors of asexual persons yielded that asexual men and women are not necessarily sexually inactive. Two studies described that the percentage of asexual individuals that has ever engaged in sexual activity with a partner varied between 27% and 43% (Aicken, Mercer, & Cassell, 2013; Brotto et al., 2010). Prause and Graham (2007) and Brotto et al. (2010) conducted in-depth interviews and found that the reason for asexual individuals to consent to sexual activities was often to please their partners. Asexual individuals also indicated engaging in masturbation (Brotto et al., 2010; Brotto & Yule, 2011; Prause & Graham, 2007). Brotto and colleagues (2010) hypothesized that they may have other than sexual motives to masturbate, such as relaxation or tension reduction, motivations that were confirmed by asexual individuals during in-depth interviews (Brotto et al., 2010). Whether masturbation is something asexual individuals enjoy to do, is not yet known. For some, masturbation did not seem to have a sexual connotation, a finding also reported by Scherrer (2008). With regard to asexual individuals' attitudes toward sex, Carrigan (2011) distinguished three groups: sex-positive asexual individuals, who endorse sex as positive and healthy without experiencing sexual desire or seeking to engage in sexual activity themselves; sex-neutral asexual individuals, who are simply uninterested in sex; and sex-averse or anti-sex asexual individuals for whom the idea of sex and the idea of engaging in it, is deeply problematic. Carrigan (2011) further hypothesized that for those who are anti-sex, these feelings are a negative response to sex in general, while for those who are sex-averse, the negative feelings about sex relate to themselves but not to others.

Another aspect left unstudied in asexuality research is asexual individuals' experiences with and perceptions of partner relationships. In the available studies on asexuality, the percentage of asexual individuals who were engaged in a relationship varied from 0% to 33% (Bogaert, 2004; Brotto et al., 2010; Brotto & Yule, 2011; Prause & Graham, 2007). Haefner (2011) reported that asexual individuals were clear that in their relationships, love and sex are different, and that it is possible to love a partner without desiring sex. Indeed, within the asexual community (www.asexuality.org), sexual attraction and romantic attraction are seen to be independent from each other. Carrigan (2011) described how an asexual individual can be romantic (i.e., experiencing romantic attraction) or aromantic (i.e., not experiencing romantic attraction). Within the group of romantic asexual individuals, (romantic) orientation varied: individuals self-identified as hetero-romantic, homo-romantic, bi-romantic or poly-romantic. When Scherrer (2008) asked asexual individuals to describe their ideal relationship, aromantic asexual persons characterized it as friendship-like, without any physical component, while romantic asexual individuals did indicate an interest in physical intimacy, including kissing and hugging. Haefner (2011) reported on the difficulties asexual individuals experience when wanting to engage in a partner relationship. For most of the participants in Haefner' s study, disclosing their asexuality meant the end of the (budding) relationship. Some participants, however, were able to make a compromise with their partner about an approach of the issue of sexuality (Haefner, 2011).

The present study intended to shed light on these three un(der)explored themes in asexuality research: the asexual identity, the subjective experience of sex and sexuality, and the subjective experience of love and partner relationships. As a result, the aim of the present study was threefold. First, we seek more insight in how asexual individuals come to an asexual identity: how does this process develop? How do they experience 'feeling different' and their 'coming out'? What is the impact of having an asexual identity? Second, we wanted to explore how asexual individuals experience physical intimacy (i.e., kissing, hugging, being physically close to one another) and sexuality: did they ever engage in physically intimate and/or sexual behaviors, and if so, how did they experience these activities? Third, we were interested in how asexual individuals would describe their experience with love and partner relationships: can

asexuality and wanting or having a partner relationship co-occur? How do asexual individuals experience being in a partner relationship? How do they differentiate between romantic attraction and sexual attraction? What role does sexuality play in these relationships?

METHOD

Participants

Participants were recruited between February and August 2011, through the AVEN-website and via posts on several health- and lifestyle related websites in Flanders (the northern, Dutch speaking part of Belgium). The posts stipulated that we were looking for "asexual men and women"; asexuality itself was described as "not experiencing sexual attraction". In total, 18 individuals responded to our messages of which 11 were actually interviewed. Individuals who responded but were not interviewed either did not fully recognize themselves in the description of asexuality as a lack of sexual attraction (n = 3), did not want to be interviewed face-to-face (n = 1) or could not participate due to practical reasons (e.g., they were not available at the time of the interview, or they lived too far away and/or were not able to come to the location of the interview, n = 3). Since only two men volunteered to be interviewed, we decided to only present the analyses of the female participants in this paper. This resulted in a sample of nine Dutch-speaking participants, five were Flemish and four were Dutch. All interviews were conducted in Dutch by the same interviewer (the first author) and took place either at the office of the first author (for the Flemish participants) or at a quiet space in the lobby of a hotel (for the Dutch participants). Table 1 shows the demographic characteristics of the study participants. Their ages ranged from 20 to 42 years. All but one had received higher education. Regarding life philosophy or religious affiliation, four women indicated believing 'in something', three stated being atheist, one woman was Catholic and one woman was Jewish. At the moment of the interview, two women were in a relationship: one woman had been in a relationship with an asexual man for six months, another

woman had been in a relationship with a non-asexual man for 15 years. The remaining seven participants were single.

Table 1.

Demographic characteristics of the study participants (N = 9)

Characteristic	Frequency
Age (in years)	
• 20-30	4
• 31-40	3
• 41-50	2
Relationship status	
• Single	7
• In a relationship	2
Highest education achieved	
• Primary education	0
• Secondary education	1
• Higher education	8
Country of origin	
• Belgium (Flanders)	5
• The Netherlands	4
Religious affiliation	
• Atheist	3
• Believe in something	4
• Catholic	1
• Jewish	1
Sexual experience	
• Yes	5
• No	4

Procedure

To explore participants' subjective experiences about the above mentioned topics, we used semi-structured interviews. These were designed to capture a rich and detailed description of participant's experiences and what these experiences meant to them, which perfectly suits the interpretative phenomenological analysis approach we followed to analyze the data (Smith, Flowers & Larkin, 2009). A systematic and in-depth analysis of all available studies on asexuality – including the research gaps in this field (Carrigan, 2011; Scherrer, 2008; Van Houdenhove et al., 2014) – became the basis for the interview questions. Questions included: What was your experience like of realizing you were asexual?; How did your coming out go?; How do you experience (sexual) relationships?; and 'What role does sex play in a relationship for you?'. The complete interview protocol is added in appendix. All interviews were conducted face-to-face by the same interviewer and lasted between 30-90 minutes. Interviews were audio-taped and later transcribed verbatim for analysis.

Data analysis

Interviews were analyzed using Interpretative Phenomenological Analysis (IPA; Smith et al., 2009). IPA is a qualitative research method that is mainly used to examine how people make sense of their life experiences. As IPA is concerned with an individual's personal perception of an event or an experience, IPA studies are typically conducted on small sample sizes (Smith et al., 2009). The analysis was performed by the first author, a female clinical psychologist and sexologist, and PhD-student on the topic of asexuality. The process of analysis started during the verbatim transcriptions and was continued during reading and rereading of all individual transcripts several times. In first instance, the analysis of each transcript was descriptive and attempted to summarize the participant's feelings and concerns. The data were then further analyzed in an interpretative manner, which implies distancing from the data, positioning the initial descriptions in a broader context and thinking about and interpreting what it meant for the participants to have said what they had said (Larkin, Watts & Clifton, 2006). Emergent themes, or core experiential topics, were identified from each participant's

transcript and independently double checked by the second author. Any differences in identified themes were extensively discussed until a consensus was reached. In a fourth step, connections across emergent themes that were identified were further discussed with two independent auditors, in order to increase the validity of the findings. In case of disagreement between the auditors regarding connections between themes, the first author made the final decision. These four steps were repeated for every transcribed interview, which resulted in a list of themes for each interview. Finally, we looked for patterns across interviews: themes that emerged in at least half of the interviews were considered group themes. These group themes were then organized in categories, which resulted in 10 main categories of themes (Table 2, themes presented in random order). Since the current study aimed to explore the asexual identity and the subjective experience of sex and of relationships, the focus in this manuscript is only on the first three main themes.

Table 2.

Master table of main themes and sub-themes

Coming to an asexual identity
Feeling confused about one's own identity
Acceptance of one's own asexual identity
Coming out
AVEN and the asexual community
Impact of being asexual
Experiencing sexuality and physical intimacy
Experiences with sexuality
Motives for having sex
Aversion to sex versus disinterest
Physical intimacy
Sexual arousal
Masturbation

- Experiencing love and relationships
  - Desire for a partner relationship
  - Ideal relationship
  - Romantic relationship versus being aromantic
  - Role of sex in a relationship
  - Being single
- Describing asexuality
  - Romantic attraction
  - Esthetic attraction
  - Sexual attraction
  - Asexuality as a sexual orientation
  - Sexual desire and fantasy
  - Variation and heterogeneity
- Causal factors
  - Physical/biological factors
  - Psychological factors
  - Vision on causal factors
  - Looking for a cause of asexuality
- Society and sexuality
  - Dealing with the role sex plays in society
  - Societal expectations and norms regarding sex and sexuality
  - Normal versus abnormal
- Wish to have children
- Sexual communication
  - Communicating with a partner
  - Communicating with others
- Personal characteristics
  - Self-image
  - Feeling immature
  - Feeling inhibited
- Professional help
  - Experiences with professional help
  - Attitudes towards mental health professionals

RESULTS

As mentioned above, the description of the results will be limited to three topics: i.e., coming to an asexual identity, experiencing physical intimacy and sexuality, and experiencing love and relationships. These themes will consecutively be described, reviewed and illustrated with quotes from the participants.

Theme 1: Coming to an asexual identity

Feeling confused about one's own identity. Six participants indicated that they have felt 'different' for a long time: some reported to have other opinions on love, sex and relationships and other priorities in life than their peers, others felt different but could never explain how or why they felt different. Four participants reported to have felt different already since early adolescence, long before they found out they were asexual. They did not know how to describe themselves, and they experienced this searching period as very confusing. In searching for an explanation on how they felt, three women wondered for a while whether they could be lesbian, but at the same time felt that this 'label' did not really fit them.

> I asked myself: What am I actually? Am I now… yeah, well, heterosexual, lesbian, yeah, I don't know whom I take to. You're either straight, gay or bi, yeah, none of these fit me.
> (Elisabeth, 42 years old, single)

Since they did not have a name or label to describe how they felt, four women thought there must be something wrong with them. Emily, 20 years old and in a relationship with an asexual man, for example, described how she experienced a lot of issues during previous relationships that made her wonder whether she was normal:

> I have been in relationships before and after a while I felt… forced, as in… Back then, I didn't know, I thought… it must be normal, so I'll just go along with it,

> but… the more I was forced to take part, the more I began to distance myself from certain people and I realized: I don't want this. And that was hard because I was not able to label it, so I thought: there must be something wrong with me.
> (Emily, 20 years old, in a relationship with an asexual man)

Eight participants described how they started looking on the Internet for something that would describe how they felt, and eventually found out about the existence of asexuality. For these women, the discovery of information about asexuality was a true eye-opener as a lot of their feelings and experiences suddenly made sense.

> I started looking for who I really was. And by accident, I read something about asexuality, and all of a sudden, all the pieces fell into place!
> (Anna, 42 years old, single)

Acceptance of one's own asexual identity. All participants had accepted their asexuality and came to terms with their own (a)sexual identity. As Mia, 31 years old and single, for example, described:

> I feel like: This is who I am and I am not going to change anything about it anymore, all my life I've tried, but it didn't work.
> (Mia, 31 years old, single)

Two participants, however, described some of the difficulties they experienced during the process of accepting their newfound identity. Anna, for example, indicated that she needed some time to come to terms with it:

> In the beginning, it was really difficult to accept it. Uhm, I in fact gradually accepted it […] Now I feel good about it, I think I'm now uhm, because there are stages in the process of acceptance, I think I'm now in the last stage, actually.
> (Anna, 42 years old, single)

Sara, 31 years old and in a relationship with a sexual man, described how her partner had more difficulties in accepting her asexuality than she had herself:

> It was a bigger shock for him than for me, like: well, now all hope for things to get better is gone. It was eventually better than expected, you know, the idea that you found it, just finally the peace I think, well… yeah, first you have to go through a rough patch for a while, but then things just got better and better.
> (Sara, 31 years old, in a relationship)

Coming out. With the exception of two women, all participants have come out to others, at least partially: they have told other people that they are asexual. Jessica, 30 years old and single, described how she felt forced to come out so she could have a normal relationship with her mother.

> I had to come out, because now uhm… now I can have a normal conversation with my mother, until that time our conversation only regarded relationships, and then I got angry, and then she got angry and we were both angry. Eventually, all we did was fighting, and that's why I have decided to come out.
> (Jessica, 30 years old, single)

Other women did not feel this pressure, but decided to tell people about their asexuality because they had accepted their own identity and wanted to share that with others, since it is a part of who they are.

> It was nice to talk to people about it and to hear: maybe that's just how it is. Yeah, someone agreeing with me on that, that was really nice.
> (Mia, 31 years old, single)

When telling people about their asexuality, the participants in our study received mixed reactions. Five women received negative reactions ranging from not understanding, not

believing in the existence of asexuality, to unwanted advice about the necessity to 'change' their asexuality. Emily illustrated these negative reactions prototypically:

> Disbelief, like: it's just a phase, it will change one day, you just haven't met the right person yet, you just haven't been truly in love yet. Things like that.
> (Emily, 20 years old, in a relationship)

Sara was relieved to find out people reacted rather normal to her coming out. She believes that this was due to the fact that she is in a relationship:

> I think people react quite well, actually, if you explain it a little and… yeah, they're actually open to the idea. It makes of course a difference that I'm in a relationship, I think that makes it less weird for people.
> (Sara, 31 years old, in a relationship)

AVEN and the asexual community. With the exception of two, all women were familiar with the online asexual community, and more specifically with AVEN. Seven participants were relieved to find out that there are more people who feel the same way. Or in the words of Sara:

> It is a huge relief, to finally know what's going on, and that you're not the only one who has it. It feels a bit like coming home […] On the forum, actually everything you read there, sounds familiar, and that is just a really special feeling.
> (Sara, 31 years old, in a relationship)

Moreover, five women found out about asexuality through the AVEN-website. Being able to talk about what they feel and how they experience things, was important for all of these women. Mia stated that it was important for her to talk to people who understood her and her asexuality, and talking about it helped her to see things more clearly:

> By talking to someone who is also interested in it, it becomes more clear to me. Because most people don't understand it, yeah.
> (Mia, 31 years old, single)

Impact of being asexual. While five women stated that being asexual did not have a major impact on their currently daily life, four participants, nevertheless, indicated changes since they realized they are asexual. Twenty six year old and single Chloe, for example, described how it has changed her social life:

> I've noticed that I less often feel like going out with friends, for instance because then you're in that situation again and I don't want that. […] While before, I used to love it, going out dancing, but then it didn' t have that connotation yet. […] Now, when I go out and I meet men, I try to stay as neutral as possible.
> (Chloe, 26 years old, single)

Sara also indicated how her asexuality had a negative impact on her relationship, especially when it comes to the frequency in which they had sex:

> At times, I do feel the impact of it, like once a month or so, at a certain moment or so, there is a conflict, because he says that it's been way too long, and I have the feeling that we just did it.
> (Sara, 31 years old, in a relationship)

Two participants also talked about how they worried that their asexuality may prevent them from having a relationship one day. They were well aware of the fact that it will not be easy to find a partner who either feels the same way or who is willing to make (sexual) compromises to make the relationship work:

> In a relationship, you feel huge pressure, because it has ended badly twice before and for the future… And finding out like: oh, I have less desire for this than the average person, I'm going to be very careful with that in the future. Because

> when I'll meet someone who has a normal need for that, I don't think that relationship will continue.
> (Marcy, 35 years old, single)

Theme 2: Experiencing physical intimacy and sexuality

Experiences with sexuality. Of all participants, five had experienced sex with a partner. Of these five, two had experienced only touching or stimulating genitals (manual sex) or oral sex, three had sexual intercourse. These women indicated that they just wanted to try it, wanted to know what it was everyone is talking about. Apparently, curiosity was the main motive for their first sexual experience.

> Kissing, and yeah… foreplay and yeah… sex, penetration. I've tried, but I've not really done it. As in: if I were to say I'm a virgin, probably not, but it's not like I uhm, really did the act, but I've tried, twice, just to see if it didn't… how it was with a person.
> (Emily, 20 years old, in a relationship with an asexual man)

Four women stated that having sex was weird for them and void of feelings for them. For three women, it was very clear afterwards that they rather would not repeat that experience:

> Completely void of feelings, not even a sensation, no romantic feelings whatsoever, just… I don't know. Never again. (laughs)
> (Emily, 20 years old, in a relationship with an asexual man)

Two women stated that their first sexual experience was very painful:

> We did it like two times or so, but it hurt so much that, we tried a third time, but I said: stop, stop, because this is really not…[pause]
> (Grace, 24 years old, single)

Three participants did not have any intimate or sexual experience whatsoever, not even with kissing. Mia indicated how she is afraid of kissing someone:

> I have never kissed someone […] You know you exchange like 250 bacteria when kissing, right? (laughs). No, that uhm… a couple of guys have tried, but I don't dare to, I don't know why. To me, it seems there's nothing to it.
> (Mia, 31 years old, single)

Motives for having sex. Of the five participants who had ever been sexually active, only two had repeated this experience on other occasions as well. These women admitted they did this particularly for a partner. When they had sex, it was usually initiated by the partner. Also, the fact that it is considered 'normal' to have sex when being in a partner relationship, played a role for two women. After all, they explained, a relationship without sex is not a 'real' relationship. Sara also indicated that having sex with her partner is a way of showing her love for him. She regarded having sex with her partner as a sacrifice she was willing to make for her partner and her relationship:

> Oh well, mostly for him. Because I uhm… know he needs it. And… well, as such it's kind of fun to do… So that's part of it too, but mostly because I know: OK, he… actually I think it's kind of nice, it's also a way of showing your love that way.
> (Sara, 31 years old, in a relationship with a sexual man)

Aversion to sex versus disinterest. Here too, the opinions of the asexual women varied. Three participants reported being disgusted by sex and/or by other persons' genitals. Single and 24 year old Grace, for example, described how she feels averse to male genitalia:

> I just don't want to touch it, don't want to see it, I want… I just don't think it's attractive, at all, so…
> (Grace, 24 years old, single)

Elisabeth clearly differentiated between asexuality and sexual aversion: she referenced not having an aversion to sex, but just not being interested in it:

> It's not that I have an aversion to sex, that's not the case, or I don't think it's gross or… for me it just doesn't exist, I think it's nothing, you know (laughs). Just… it's not there.
> (Elisabeth, 42 years old, single)

Physical intimacy. Six participants had experience with physical intimacy, such as French kissing, cuddling and caressing and they indicated that they can enjoy these activities. For them, physical intimacy was sufficient when in a relationship.

> I don't know… the kissing and the being close to each other and maybe caressing the body, that's OK. But that's all that needs to happen.
> (Grace, 24 years old, single)

Sexual arousal. Three participants stated that their ability to get aroused, or as they called it 'libido', was perfectly normal: in other words, they could get physically aroused (i.e., become lubricated) and reach orgasm. Their genital arousal is not associated with feelings of desire or emotional/subjective arousal. As such, the participants in our sample clearly differentiated genital arousal from subjective arousal.

> For example, I can, I can come perfectly, while sexual people who don't have a libido, have exact the opposite: they do have sexual feelings towards other people, but their libido doesn't function. I don't have sexual feelings towards other people, but my body functions just fine.
> (Jessica, 30 years old, single)

Two women indicated that their physical arousal sometimes bothered them, but they regarded it as the way their body works:

> Sometimes it's like: gosh no, not again. But I'm not bothered by it, I mean: that's just my body.
> (Grace, 24 years old, single)

Masturbation. Five women indicated to have experience with masturbation. For them, it was a way to relax, to release tension or stress. Even though they are sexually aroused during masturbation, for four women, masturbation is not a sexual act, since there are no sexual thoughts or emotions involved.

> Well, sometimes after a long and busy day, just… just relaxing. Yeah, it may sound stupid but it's just, yes, sometimes when the occasion is there, or when I'm alone, that kind of thing. Hmm, it doesn't really start with a thought, it just starts: oh well, let's just do it again.
> (Jessica, 30 years old, single)

They argued that masturbation was not associated with sexual fantasies. For three women, it was merely giving in to a physical urge, experienced by them as a physical tension that needed to be relieved. Two women regarded masturbation as a way of exploring their own body. Four women stated that they had never engaged in masturbation, either because they did not feel the need or desire to do so, or because they did not know how to masturbate.

Theme 3: Experiencing love and relationships

Desire for a partner relationship. Of the seven participants who were single, five confirmed they would like to have a partner (again) some day. They especially longed for the closeness and intimacy of a relationship. Chloe indicated that she would like to experience being in love, but she does not think it is an option for her:

> Sometimes, I think it would be nice when I see people in love, it seems nice to experience that. I see them together all sweet uhm… yeah, couples in love, I

> think it's nice to watch. Well, to a certain extent. But uhm, yes, it seems nice to experience, I think it can make you really happy, but yeah… that's something that's uhm not there for me, actually, yes.
> (Chloe, 26 years old, single)

Ideal relationship. Four women described how their ideal relationship would look like. This would preferably be a relationship without a sexual component, or even a relationship with another asexual person. One participant stated that an open relationship would be an option for her: she would allow her partner to have sex with other women, so she would not have to engage in sexual behaviors. Two women were still in doubt about how they would conceptualize a relationship without sex, as Chloe described: she did not know how a relationship without a sexual component would differ from a friendship:

> I could uhm… have a relationship with a person who just wants to cuddle and kiss, but who also has a low desire for that. I don't know how that would look like, and how you would come to a relationship: is it more like a friendship, or do you have a relationship? Yes, that's uhm…, that's still something I have to figure out I think, yeah.
> (Chloe, 26 years old, single)

Romantic relationship versus being aromantic. While one woman was still in doubt how a relationship without a sexual component would differ from a friendship, seven other women clearly distinguished the two. These women used the term 'romantic relationship', as opposed to a 'sexual relationship', to describe relationships without a sexual component. When asked how they would define such a romantic relationship, they argued that - in their opinion - a romantic relationship is exactly the same as a sexual relationship, but without the sexual part of it:

> A romantic relationship is just like a sexual relationship, but without the sex. So you share the good and the bad, you spend time together more often than with a

> friend, […] It goes a lot deeper. Maybe cuddle from time to time, that kind of thing. It's just a sexual relation in every way, but without the sex.
> (Jessica, 30 years old, single)

Anna described herself as an aromantic asexual because she is neither interested in sex, nor in a relationship:

> As an aromantic asexual, I'm actually also not interested in a relationship. And I also experience very little romantic attraction. But it's there, well, for me it's like: I'm actually not interested in a relationship, that's a part of it as well […] The desire to have a relationship isn't there, I haven't been out looking for a relationship up to now. Not like other people who uhm… well, go out on dates and so. That reflex just isn't there for me.
> (Anna, 42 years old, single)

Role of sex in a relationship. Three women indicated that, in their opinion, the key characteristic of a relationship is the emotional bond between partners. These women did not see sex as a logical consequence of love. On the contrary, having sex diminished their feelings for a partner:

> The feeling of being in love […], I don't experience that when I engage in sexual behaviors. It makes it meaningless to me, and it changes my whole idea of love for that person.
> (Emily, 20 years old, in a relationship with an asexual man)

It appears that these women have an ideal image of pure love, because of the fact that there is no sex involved. For two women, the type of relationship that they have or would like to have, is more meaningful than the sexual relationships most people have. They believe that in most (sexual) relationships, sex is a key characteristic, while romantic relationships imply centrality of the emotional bond with the partner.

> I think that my image of love and relationships is different than in sexual persons. I don't know, not all of them, but for most people it does not seem to mean a whole lot. When I see how often they end a relationship or divorce. […] For us, well, for my boyfriend and me, it's more about talking, searching solutions and communicating. […] Maybe it's because I'm asexual, for me love is the most important part, sex has always come last in my list of priorities. But I would make a lot of effort and give a lot of meaning to the love I had in my life.
> (Emily, 20 years old, in a relationship with an asexual man)

Being single. The seven women in our sample who were single, were not bothered by their single status. They indicated being open for a healthy and balanced relationship, but, as Grace indicated: if that would not happen, that is fine too:

> I'm used to it now, it's been five years, but I'm not miserable or anything because of it, I have friends, I travel, I study. Pff, I have… I don't know, I uhm, I'm getting to know myself better […] If it happens, it happens; if it doesn't, it doesn't.
> (Grace, 24 years old, single)

Being or staying single might be a safer alternative than engaging in a relationship where compromises regarding sexuality might have to be made. Alternatively, two women chose deliberately to stay single.

> I asked myself: is this really what you want? Is a relationship something you really uhm… and the answer to that is actually: no.
> (Anna, 42 years old, single)

DISCUSSION

In this qualitative study, using interpretative phenomenological analysis of the stories of nine self-identified asexual women, three major themes related to subjective experiences of being asexual, were discussed: coming to an asexual identity, experiencing physical intimacy and sexuality, and experiencing love and relationships.

The present study revealed some insights in important steps in the development of an asexual identity. All participants described how they felt 'different' when compared to their peers; some described having these feelings since childhood. As these feelings continued, they started to look for explanations in an attempt to understand them, for which some considered the option that they might be lesbian. Eventually, they found information – most often on the Internet – about the existence of asexuality, and finally found an identity that fitted them. Therefore, our findings corroborate the 'typical trajectory' to come to an asexual identity, described by Carrigan (2011). As already indicated by Scherrer (2008) and Carrigan (2011), for the asexual women in our sample too, the Internet and more specifically AVEN seemed to have had an important role in the discovery and acceptance of their (a)sexual identity. The support of an online community might especially be important since recent evidence showed that asexual individuals may be viewed more negatively than other sexual minorities (MacInnis & Hodson, 2012). This was also somewhat reflected in the negative and dismissive reactions some of our participants experienced when they came out. Both Scherrer (2008) and Bogaert (2012) noted that the process of identity development in asexual persons shows similarities with the processes of developing a gay, lesbian or bisexual identity. The possible parallels in sexual identity development between LGBs and asexual individuals could be informative for clinicians when asexual individuals would consult them. After all, this would imply that asexual persons experience similar struggles and (minority) stress as LGB's and that when asexual persons would seek clinical counseling, attention should also be paid to these topics, apart from working towards acceptance of the asexual identity.

In the current sample, we found much heterogeneity in terms of sexual behavior, just as described by Prause & Graham (2007), Brotto et al. (2010) and Aicken et al.

(2013). When asked about their motives to engage in sex for the first time, participants named curiosity as the most important motive. In this respect, they do not differ from individuals in general, since it has been found that curiosity and wanting to know how it feels, are the most frequently reported motives to have sex for the first time (Skinner, Smith, Fenwick, Fyfe, & Hendriks, 2008). Moreover, some participants also described partner driven motives for their first sexual experience, which was also mentioned by a number of participants in our study. For none of the participants in our sample, the first sexual experience was pleasurable. Again in this respect, they do not differ from individuals in general, since it has been found that the first sexual experience is for a significant amount of persons a negative experience (e.g., Symons, Van Houtte, & Vermeersch, 2013). Thus, a non-pleasurable first sexual experience probably does not 'cause' asexuality, but it could function as a confirmation for asexual persons that sex is not appealing for them. In terms of sexual behavior, most of our participants had experience with masturbation. Consistent with findings by Scherrer (2008), some women clearly stated that for them masturbation is not a sexual act, whereas others were still in doubt on how to interpret masturbation. The fact that some women in our sample considered themselves to be asexual, even though they were still sexually active or engaged in masturbation, raises the question whether (absence or presence of) sexual activity should be taken into account as a key criterion in the definition of asexuality (see also Chasin, 2011; Van Houdenhove, Gijs, T'Sjoen & Enzlin, in press).

The majority of participants stated to have an intact ability to get sexually aroused. This finding supports Brotto and Yule's (2011) hypothesis that asexuality cannot be regarded as grounded in a *genital* sexual arousal problem. However, our data do suggest that asexual women may have difficulties experiencing *subjective or mental* sexual arousal. In other words, it seems that their bodies can become aroused during sex, but their minds and feelings are not.

While some participants in the current study expressed an aversion towards sex, most indicated just not being interested in sex. When applying Carrigan's (2011) categorization of attitudes towards sex in our findings, we can conclude that the participants in our sample were either sex-neutral or sex-averse, i.e., they were either indifferent towards sex, or expressed an aversion towards sex. In future research, it

would be interesting to see whether and to what extent Carrigan's (2011) proposed differentiation between sex-positive, sex-neutral and sex-averse asexual persons could be helpful in better understanding and/or characterizing asexuality. Further, it could be explored whether the three groups differ to the extend in which they avoid sexual activities. Some women in our study reported to avoid not only sex, but any kind of intimate physical behavior, including kissing and cuddling. It is unclear, however, whether they do so because they label these activities as 'sexual' for which they want to avoid these behaviors, or whether they avoid engaging in these behaviors because they fear it might lead to (the expectation of) further sexual interaction.

In the present study, when asked about their relational experience, most participants stated they can experience romantic attraction towards other people, while some described themselves to be aromantic and expressed not to desire a (romantic) relationship. This distinction between romantic and aromantic asexual individuals has already been proposed by the asexual community and was earlier described by Scherrer (2008) and Carrigan (2011, 2013). Romantic and aromantic asexual individuals might be two distinct groups with specific characteristics and different needs and difficulties. For romantic asexual individuals, it may be difficult to find a partner who can accept their asexuality. Consistent with Haefner's (2011) findings, the participants in our study were very realistic with regard to the difficulties their asexuality would cause in finding a partner. When they do find a non-asexual partner, they would have to negotiate on how they will deal with sexuality, due to the social expectation that sex is an essential part of a healthy or typical relationship. It would be interesting to explore which factors inhibit and facilitate enjoyable sexual activities for asexual individuals, and to investigate whether these differ from inhibiting and facilitating factors for enjoyable sex in sexual individuals. These findings could contribute to the development of effective treatment strategies for mixed asexual-sexual couples that seek counseling.

In this regard, exploring the role of physical intimacy in mixed sexual-asexual relationships and its impact on relationship satisfaction, is also an interesting venue for future research. After all, it has been shown (Scherrer, 2008) that romantic asexual individuals indicate an interest in physical, non-sexual intimacy. The findings from our study, however, are less unequivocal. Most of the romantic asexual women in our

sample described their ideal relationship exactly like a sexual relationship, but without the sexual component. For other women, however, physical intimacy, including kissing and cuddling also has a sexual connotation, leading them to avoid this.

While the participants in Haefner's study (2011) reported that they separated love from sex, and described how they can love a partner without desiring sex, some of the participants in our study went even further. They indicated that for them, love and sex are incompatible: having sex while in a relationship diminished their feelings for their partner. One possible interpretation can be found in the old concept of the Madonna-whore complex, coined by Freud (1912). He used this term to indicate the inability of some men to experience sexual arousal within a loving relationship. For these men, the woman they love cannot be desired, and the woman they desire cannot be loved (Freud, 1912). It seems that for some of the participants in our sample the first part of this statement is applicable and might be an alternative hypothesis about the development and nature of asexuality. It may be relevant for future asexuality research to explore how frequently this incompatibility of love and sex is found in the asexual population.

Limitations and implications

Although the present qualitative study yielded interesting information on the experience of asexual women, this study has a number of limitations. First, although for IPA a group of nine women is more than sufficient (Smith et al., 2009), the small number of participants in this study clearly limits the generalizability of our findings. The current outcome and proposed interpretations and hypotheses need to be verified and validated with future studies, using a more elaborated sample of asexual participants. Second, we only included women in the current study, which implies that it is not clear whether and to what extent our findings also apply to asexual men. Third, since the interviews with the Dutch participants took place in a public space, this may have influenced response tendencies. However, none of the participants objected to this and attention was paid to ensure a quiet and intimate atmosphere, so that participants would feel at ease. Fourth, characteristic for qualitative research is the close

engagement of the researcher with the research process and participants, which makes it impossible to completely avoid personal bias (Tong, Sainsbury & Craig, 2007). We attempted, however, to minimize this personal bias as much as possible by critically discussing the first author's interpretations with other team members. Finally, the majority of the women who participated were recruited via AVEN, and these may not be representative for the asexual population (see e.g., Brotto & Yule, 2009; Hinderliter, 2009).

What are the implications of our findings? First, our data seem to suggest that the process of coming to an asexual identity shows some similarities with the process of coming to a LGB-identity. This might provide support for the vision that asexuality can be considered a sexual identity (Bogaert, 2006; Brotto et al., 2010). Secondly, our research findings add to the observations that the asexual community is a quite heterogeneous group: some women have sexual and/or relational experience while others have not, some women engage in masturbation while others do not, some women desire to be in a relationship while others find themselves to be aromantic. This implies that 'the asexual woman' does not exist. On the contrary, it could be hypothesized that the asexual population shows just as much variation as the sexual population does. In future research on asexuality, this variation should be taken into account and scholars should focus more on this variability. For example, asexual individuals who are in a relationship should receive more attention in studies, and research should be focused on questions such as: What problems do they encounter? How and to what extent does their asexuality impact their relationship? As Brotto and colleagues (2010) implicitly suggested, problems with asexuality would mainly arise when an asexual individual engages in a relationship with a sexual individual. When couples would seek counseling because one of the partners is asexual, it is important for clinicians to know and understand the variation in and the nuances of asexuality. After all, asexual individuals with a sex-positive or sex-neutral attitude ask for a different approach than asexual individuals for whom sex is not negotiable. Finally, our data provided additional support for the distinction asexual individuals make between sexual attraction and romantic attraction. This distinction has similarities with the difference that most people make between love and sexual or passionate love (Fehr, 2013). The

application of current social psychological paradigms to study love (for a review: Fehr, 2013) could inform the study of love experiences in asexual people. And vice versa, the love experiences of asexual people can enrich current conceptualizations of love. Further, the meaning and validity of the concepts ‘romantic asexual’ and ‘aromantic asexual’, often used on the AVEN-website, need to be studied. Given the major influence of AVEN on the asexual community, it is not clear whether these concepts are truly reflective of asexual individuals’ experience and to what extent asexual individuals unfamiliar with AVEN would also recognize themselves in these concepts. For sure, it is clear that asexuality is guaranteeing a new research journey in the field of sexuality, a journey that may challenge current cultural conceptions such as the fundamental need for and importance of sex in and for relationships.

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attraction: The Asexuality Identification Scale.

APPENDIX

Interview protocol

1. Sexual identity
    - How would you describe yourself? Why do you use this description?
    - Can you describe how you felt when you first realized you were asexual?
    - Do people around you know that you are asexual?
    - Why did you choose (not) to tell?
        - How did your coming out go? How did people react?
        - How did your coming-in in the asexual community go? (if applicable)
2. Asexuality
    - How would you describe asexuality?
        - Do you see it as a sexual orientation?
        - Do you feel you were born this way, or did you 'become' asexual?
        - Do you think your asexuality is related to certain things you have experiences throughout your life?
        - Do you feel that your asexuality is abnormal?
    - Why do you call yourself asexual?
    - How do you feel by the fact that you are asexual?
    - Have you ever contacted a professional regarding your asexuality? How did you experience that? (if applicable)
3. Romantic versus sexual attraction
    - Have you ever felt romantic attraction towards another person? How did that feel? (if applicable)
    - How would you describe the difference between romantic attraction and sexual attraction?
    - How would you describe the difference between a romantic relationship and a close friendship?

4. Sexual desire
    - Have you ever felt sexual desire? How did that feel for you?
5. Social life
    - In what way does your asexuality affect your life and your relationships with others?
    - How do other people cope with your asexuality, and how does that affect you?
    - How do you react when people around you talk about sex? How does that make you feel?
6. Relationships
    a. Currently in a relationship:
        - Is your partner asexual too?
        - When did you tell your partner that you are asexual? How did he/she react?
        - How does your partner cope with your asexuality?
        - Do you feel that your asexuality has an impact on your relationship?
    b. Ever in a relationship?
        - Was your partner asexual too?
        - When did you tell your partner that you are asexual? How did he/she react?
        - How did your partner cope with your asexuality?
        - Do you feel that your asexuality had an impact on your relationship?
    c. Never in a relationship
        - Do you choose not to be in a relationship? Why is that so?
7. Sexual experiences
    a. Sexual experience ever
        - How did you experience the first time you had sex?
    b. Currently sexually active
        - How do you experience having sex?
            - Who takes the initiative?

    - Under which circumstances, if any, can you enjoy sexual activity?
    - How do you feel after you had sex?
    - What are for you motives to have sex?
  - How do you experience other intimate behaviors such as kissing, cuddling?
    - Who takes the initiative for these activities?
    - Under which circumstances, if any, can you enjoy these activities?
    - How important are these activities to you?

c. Currently not sexually active:
  - How do you experience the fact that you do not have sex?

d. Masturbation:
  - Do you have experience with masturbation?
  - What are motives for you to masturbate?
  - Do you feel that masturbating and being asexual can co-occur? Why/why not?

8. Reproductive wish
  - Would you like to have children one day?
  - Do you feel that your asexuality could be problematic in this?
9. Future research
  - Which themes should definitely be included in the study of asexuality according to you?
    - Do you feel that certain biological, psychological or socio-demographic factors could be associated with asexuality?
    - How do you feel about the suggested association between asexuality and autism spectrum disorders?
  - Do you feel that certain themes should not be included in asexuality research?

10. Extra

- Are there certain topics that have not been discussed yet, on which you would like to comment?
- How did the questions I posed make you feel?
- Should I have another question later on, can I contact you about this?

Chapter 3 : A multidimensional approach on asexuality

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ABSTRACT

While lack of sexual attraction, lack of sexual behavior and self-identification as asexual have been used as criteria to define asexuality, it is not known how much they overlap in describing the same group of people. This study aimed to assess how many individuals could be identified as asexual based on each of these criteria and on combinations of these criteria. Participants were recruited through the Asexuality Visibility and Education Network, social media, and posts on several health- and lifestyle-related websites. In total, 566 participants between 18 and 72 years old (*M* = 27.86, *SD* = 10.53) completed an online survey (24% male, 68.9% female, 7.1% "other"). Based on self-identification or lack of sexual attraction, 71.3% and 69.2%, respectively, of participants were categorized as asexual, while based on lack of sexual behavior only 48.5% were categorized as asexual. Gender differences were found only for those participants who indicated that they did not experience sexual attraction, with more women (72.8%) than men (58.8%) indicating a lack of sexual attraction. Given that self-identification as asexual implies familiarity with the term "asexual," we argue for the use of lack of sexual attraction as the primary criterion to define asexuality.

INTRODUCTION

In the last decade, there has been increasing scientific attention to asexuality (e.g., Bogaert, 2012). Asexuality is usually defined as a lack of sexual attraction (Bogaert, 2004), which is in line with the definition proposed by the asexual community stating that "an asexual person is a person who does not experience sexual attraction" (www.asexuality.org). Nevertheless, other ways to define asexuality, based on (a lack of) sexual behavior or self-identification as asexual, have also been proposed (Van Houdenhove, Gijs, T'Sjoen & Enzlin, 2014; Yule, Brotto & Gorzalka, under review). Scherrer (2008), for example, described how asexuality could be defined as "an absence of sexual behavior" (Scherrer, 2008, p. 622). This definition of asexuality is, however, problematic given that some asexual persons have been, or still are, sexually active (Brotto, Knudson, Inskip, Rhodes & Erskine, 2010; Prause & Graham, 2007). Further, there might be many other reasons – unrelated to asexuality – accounting for why a person is not sexually active, such as not having a partner or experiencing health problems.

Prause and Graham (2007) proposed defining asexuality based on self-identification: an asexual person is a person who describes himself or herself as asexual. Hinderliter (2009) highlighted that in studies on asexuality, self-identification has been operationalized in three different ways: requiring participants to indicate they are asexual before they can participate in a study (Brotto et al., 2010); a forced-choice question on sexual orientation (Prause & Graham, 2007); and an open question regarding sexual orientation (Prause & Graham, 2007). It has been shown that the way self-identification is conceptualized and operationalized has an impact on the prevalence rates found in studies on asexuality. Prause and Graham (2007), for example, reported that only 53.7% of the participants who identified themselves as asexual on a forced-choice question also described themselves as asexual in response to an open-ended question regarding sexual orientation. Brotto and colleagues (2010) found that only 75% of asexual participants chose "asexual" as a response on a multiple choice question on sexual orientation, while 11% chose "other" as a response (Brotto et al., 2010; Brotto & Yule, 2011). According to Hinderliter (2009), there are three possible explanations for

these results: (1) participants experiencing romantic attraction could have interpreted this question on sexual orientation as asking about romantic orientation instead of sexual orientation; (2) participants could have experienced sexual attraction in the past and might have responded to the question based on those experiences; or (3) participants might have still been uncertain about their (a)sexual orientation and chose - apart from asexuality - the response to which they felt closest. Prause and Graham (2007) studied the mutual exclusivity of the (lack of) sexual attraction and self-identification criteria and found that only 41.5% of self-identified asexual individuals also indicated not experiencing sexual attraction to other persons. Conversely, of those who reported not experiencing sexual attraction, 89.5% self-identified as asexual.

Asexuality is regularly conceptualized as a fourth category of sexual orientation (Brotto et al., 2010). While there is a consensus that sexual orientation exists along a continuum, i.e., from exclusively heterosexual to exclusively homosexual (e.g., Kinsey, Pomeroy, & Martin, 1948; Savin-Williams & Vrangalova, 2013), in most studies, participants' choice is restricted to one out of three sexual orientation categories: heterosexual, bisexual or homosexual (Savin-Williams, in press). Laumann, Gagnon, Michael and Michaels (1994) described sexual orientation as a multidimensional concept comprising sexual behavior, sexual desire, and self-identification, each of which is measured according to the above-mentioned continuum. Although these indicators of sexual orientation are usually highly correlated (e.g., Rieger & Savin-Williams, 2012a, 2012b, Savin-Williams, in press), there is abundant evidence of discrepancies across indicators for many individuals: i.e., an individual can self-identify as exclusively heterosexual, but nonetheless indicate same-sex attraction and same-sex sexual behavior (e.g., Diamond, 2003; Savin-Williams, 2009). While sexual self-identification or sexual identity is the most widely used method to assess sexual orientation, Savin-Williams and Vrangalova (2013) argued that it is not necessarily the best indicator. Indeed, the label individuals use to describe their sexual orientation may be influenced by non-sexual factors, such as social network, stigma or religion, resulting in a discrepancy between sexual identity and other indicators of sexual orientation (Diamond, 2003; Savin-Williams, 2005). As a consequence, some authors (e.g., Bailey, Dunne & Martin, 2000; Bogaert, 2003; Diamond, 2003) have put a strong emphasis on

sexual attraction - rather than on self-identification or overt sexual behavior - in their conceptualization of sexual orientation, based on the conviction that sexual attraction is the psychological core of sexual orientation (e.g., Bogaert, 2003). Indeed, as described by Savin-Williams (in press), sexual attraction has been a common and reliable method for determining sexual orientation and, as a single measure of sexual orientation, sexual attraction remains superior to others.

In order to assess the prevalence of homosexuality, Laumann and colleagues (1994) used all three indicators – behavior, sexual desire (comprising appeal and attraction) and self-identification – separately and in combination. They found that 59% of women and 44% of men who were categorized as homosexual on at least one criterion only gave the "homosexual response" on the question regarding sexual desire. Furthermore, 15% of women and 24% of men reported a homosexual response on all three criteria.

Poston and Baumle (2010) assessed asexuality in a representative sample, using a similar multidimensional approach as Laumann et al. (1994), and found that 5.5% of participants reported never having had sex, 0.7% were unsure about their sexual attraction, and 3.8% self-identified as "something else" than heterosexual, homosexual, or bisexual. In total, 9.2% of the female participants and 11.9% of the male participants were identified as "asexual" based on at least one of the definitions. Poston and Baumle (2010) further explored the intersections of the three definitions. Only 0.6% of the female participants and 0.9% of the male participants were identified as "asexual" based on all three criteria. Slightly more than half of the participants (51.3% of the female participants and 56.6% of the male participants), classified as "asexual" based on at least one of the criteria, were only identified as "asexual" based on the question referring to sexual behavior. However, an important methodological shortcoming of Poston and Baumle's (2010) study is that it is not certain whether the participants, who were classified as asexual based on the questions regarding identity and attraction, were in fact asexual. Indeed, the response on the question regarding sexual identity was not referring to "asexual" but to "something else" besides homosexual, heterosexual, or bisexual. Similarly, the response on the question regarding sexual attraction was not referring to "not attracted to anyone" but to "not sure to whom I am attracted." Thus, it

might be that participants who were not asexual did provide the "asexual" response to these questions, perhaps because they were confused about their own sexual orientation.

Bogaert (2006) discussed the questions of whether asexuality should be seen as a unique category of sexual orientation, starting from the definition of sexual orientation as "the subjective sexual attraction to the sex of others" (Bogaert, 2006, p. 244). An argument in favor of asexuality as a unique orientation concerns the finding that there appears to be a group of individuals who describe themselves as asexual, using a term that is not part of the traditional discourse on sexual orientation. However, one objection against a conceptualization of asexuality as a unique orientation, mentioned by Bogaert (2006), concerns the validity of self-report: one may report a lack of sexual attraction, but may in fact have demonstrable physical sexual arousal towards others of the same or a different gender. Following this argument, the experience of genital sexual arousal in an individual, regardless of his or her subjective feelings, is a measure of his or her sexual orientation. Diamond (2013), however, disagreed and stated that "genital and neurobiological measures do not necessarily provide truer measures of sexual orientation than do individuals' own subjective feelings" (p. 7). Bogaert (2006) also stated that it must be taken into account that sexual attraction not only consists of a physical component (i.e., genital sexual arousal), but also involves a subjective or perceived component, which he described as "a perceived eroticism/fantasy directed towards others" (p. 244). Bogaert concluded that even when asexual persons would – based on the experience of genital arousal – report physical attraction, as long as there is no subjective, psychological attraction towards others, a unique category of sexual orientation is still needed for these individuals. In line with this, Bogaert (2006) described a subgroup of asexual individuals that report sexual desire and sexual behavior (e.g., masturbation), but do not direct this sexual desire or sexual behavior towards other persons. Thus, even though these individuals experience a type of sexual desire and behave sexually, they do not have any sexual inclination towards others and, as a consequence, do not have a traditional sexual orientation (Bogaert, 2006).

A second argument against a conceptualization of asexuality as a unique sexual orientation found in the literature (e.g., Bogaert, 2006) concerns the potential overlap

between asexuality and Hypoactive Sexual Desire Disorder (HSDD), as defined in the Diagnostic and Statistical Manual of Mental Disorders (DSM) – Text Revision (American Psychiatric Association, 2000): "persistently or recurrently deficient (or absent) sexual fantasies and desire for sexual activity (p. 541)." Further, it is stated that "the disturbance causes marked distress or interpersonal difficulty (p. 541)." In the DSM-5, sexual desire and sexual arousal problems in women have been combined in a new diagnostic category (i.e., Female Sexual Interest/Arousal Disorder [FSIAD]), while for men, the diagnosis HSDD can still be used. Even though the overlap between asexuality and FSIAD/HSDD in terms of content is large, DSM-5 (APA, 2013) specifies that "If a lifelong lack of sexual desire is better explained by one's self-identification as "asexual," then a diagnosis of female sexual interest/arousal disorder would not be made" (APA, 2013, p. 434). A similar statement is found in the section on male sexual dysfunctions: "If the man's low desire is explained by self-identification as asexual, then a diagnosis of male hypoactive sexual desire disorder is not made" (APA, 2013, p. 443). Thus, while in DSM-5 a distinction between asexuality and HSDD is made, no further explanation or specification can be found in this classification system on how exactly the differentiation between the two conditions should be made.

Little is known about gender differences in the asexual population. However, it has been suggested that more women than men are asexual; this is also reflected in studies on asexuality in which the percentage of asexual men varied from 17% to 37%, and that of asexual women varied from 63% to 71% (Bogaert, 2004; Brotto et al., 2010; Prause & Graham, 2007; Scherrer, 2008). Both Prause and Graham (2007) and Brotto et al. (2010) found no statistically significant gender differences in self-reported (a)sexual orientation. Poston and Baumle (2010) also reported similar percentages of men and women classified as asexual based on self-identification, sexual attraction, and sexual behavior. Further, Brotto et al. (2010) reported that 12.6% of their participants did not provide information about their gender, and Gazzola and Morrison (2011) found that 18% of participants chose to self-identify as "neither man nor woman." Chasin (2011) described how this may be related to the fact that gender presentations and behaviors are governed by sexual attractiveness standards, and that in the absence of sexual

attraction towards others, asexual persons may have more freedom to explore their gender.

Taken together, there is still a lack of clarity about what asexuality is, about how it is best defined, and about its prevalence. Therefore, the aim of the present study was threefold. First, we wanted to assess how many participants could be categorized as asexual when using one of the three criteria (i.e., self-identification as asexual, lack or absence of sexual attraction, lack of sexual behavior) and when using different combinations of these criteria. Second, we wanted to explore whether and if so, to what extent, these different categorizations overlap and thus result in detecting the same "asexual" group. In other words, are participants, categorized as asexual on one of the three criteria, also categorized as asexual when using each of the other two criteria? Finally, since very little asexuality research has included gender comparisons, we aimed to investigate gender differences in the percentage of participants categorized as asexual based on the different criteria and combinations of criteria.

METHOD

Participants

Participants were recruited between September 2012 and March 2013 through the Dutch, English and Spanish forums of the Asexuality Visibility and Education Network (AVEN; www.asexuality.org), posts on several health- and lifestyle-related websites in Europe, the United States, and South America, as well as posts on social media. These posts contained a link which directed potential participants to the introductory page of the study. On this introductory page, a broad description of asexuality was presented: "*Asexuality is commonly described as a lack of experiencing sexual attraction. Asexual people don't feel sexually attracted to other people - neither men nor women. Most asexual people indicate never having experienced sexual attraction. Yet, there can be quite some variation within the asexual population: some have or wish to have a relationship, others don't; some are (or have been) sexually active, others are not*." Participants who recognized themselves in this description were invited to complete the

survey. In total, 1,033 responses were obtained. Participants who did not complete the questions regarding the different criteria of asexuality (*n* = 400) were excluded from the analyses. When comparing the excluded participants with those who did complete the questions regarding the criteria of asexuality in terms of gender (χ^2 (2, *N* = 878) = 23.32, *p* < .001, Cramer's V = .16), it was found that the former group included significantly more men and significantly less women than the latter group. Both groups, however, did not differ in terms of age (χ^2 (4, *N* = 900) = 4.60, *p* = .33, Cramer's V = .07). Further, we decided not to include participants under the age of 18 years (*n* = 67), it could be hypothesized that these individuals may be "pre-sexual" instead of truly asexual.

This resulted in a sample of 566 participants, of which 347 were English speaking, 113 were Dutch speaking, and 106 Spanish speaking. More women (69%) than men (24%) completed the survey. Seven percent of participants described themselves as "other" than man or woman. Since this group was rather small (*n* = 40), to allow for valid gender comparisons, we omitted all participants identifying as "other" from the analyses. The final analytic sample consisted of 526 participants.

Measures

Demographic characteristics. Participants were asked to complete demographic information on gender, age, country of residence, education, relationship status and length, and religious affiliation. Apart from the items on age and relationship length, which were in a free-response format, forced-choice response options were used for all other demographic variables.

Criteria of asexuality. Analogous to research on sexual orientation, in which sexual orientation is measured by sexual attraction, self-identification and sexual behavior (Dewaele, Caen, & Buysse, in press; Laumann et al., 1994), the same criteria were used to classify people with an asexual orientation. Sexual attraction was assessed with the question: *"Towards whom do you feel sexually attracted?"* Participants could answer on a 5-point Likert scale (from *1* = only towards women to *5* = only towards men); they could also answer with *"I do not feel sexual attraction towards anyone."* Self-

identification was measured by the question: *"How would you define yourself as a person?."* Participants could indicate that they self-identified as asexual, heterosexual, more heterosexual than homosexual/lesbian, bisexual, more homosexual/lesbian than heterosexual, or homosexual/lesbian. Finally, sexual behavior was measured by the question: "*Have you ever had sex? By sex, we are referring to the different ways of making love, during which there is genital contact, so when touching the sexual organs of someone else."* By doing this, we wanted to include all sorts of sexual behaviors, and not limit sex a priori to sexual intercourse. Using the answers on these three questions, three dichotomous variables were created (sexual attraction, self-identification and sexual behavior), based on which participants were categorized as asexual (not experiencing sexual attraction, self-identifying as asexual, not having sexual experience) or non-asexual (experiencing sexual attraction, not self-identifying as asexual and having sexual experience). Apart from this categorical approach, we also used combinations of two or three criteria to determine how many participants could be classified as asexual. In this approach, participants were categorized as asexual if they provided the asexual response on two of the three criteria (i.e., self-identification/no sexual attraction and self-identification/no sexual behavior and no sexual attraction/no sexual behavior), or on all three criteria. Further, romantic orientation was also assessed by the question: *"Apart from sexual attraction, romantic attraction is being described, which refers to falling in love, the longing and need for a relationship. We would like to know whether you sometimes feel romantically, non-sexually attracted towards others. Do you feel romantically attracted towards girls/women, boys/men or both?"* Participants could answer on a 5-point Likert scale (from *1* = only towards women to *5* = only towards men); they could also answer this question with *"I do not feel any romantic attraction."*

In order to explore asexual persons' opinions about the definition of asexuality, participants were asked to indicate to what degree they felt a number of phenomena were important to describe asexuality. These included: "*Not experiencing any sexual attraction towards others," "Calling oneself asexual," "Being sexually inactive,"* and "*Always having felt like this."* All items were scored on a 5-point Likert scale ranging from *Very unimportant* to *Very important.*

Procedure

The online survey was created using LimeSurvey®, a web-based open source survey application (www.limesurvey.org), and was open for participants from September 2012 until March 2013. The first page of the survey presented an informed consent statement and only participants who accepted this statement could start the survey which included, apart from the measures mentioned above, measures regarding sexual identity development, partner relationships, biological and psychological correlates of asexuality, sexual dysfunctions and history of sexual abuse. The survey in total took approximately 50 minutes to complete. This study was approved by the ethics boards of the Ghent University Hospital and the University Hospitals Leuven.

Statistical analysis

Statistical analyses were performed using SPSS (version 19.0; Chicago, IL). Chi-square and Cramer's V-tests were performed to explore associations and, if statistically significant, followed by z-tests with Bonferroni-correction. Cell-size violations were not problematic for any of the chi-square analyses.

RESULTS

Demographic characteristics

Table 1 shows the demographic characteristics of the participants. The majority of participants (84.4%) were younger than 40 years old. The mean age for the male participants was 27.37 years (*SD* = 9.45) and the mean age for the female participants was 28.55 years (*SD* = 11.14). No statistically significant gender associations were found in age distribution ($\chi^2(4, N = 526) = 4.47$, $p = .35$, Cramer's V = .09). A large majority of participants indicated to live in Europe (41.8%) or in North America (37.3%) (see also Table 1). No associations were found between gender and the continent participants lived in ($\chi^2(5, N = 526) = 4.11$, $p = .53$, Cramer's V = .09). Regarding educational level,

around 36.1% of participants was currently following a full-time education. Of the 251 participants who were currently not in full-time education, a large majority (81.7%) had undertaken higher education (college or university degree). Educational level did not differ between men and women (χ^2 (3, N = 441) = 6.29, p = .10, Cramer's V = .12). Almost 80% of participants were single at the time of the survey. Statistically significant differences in current relationship status were found between men and women (χ^2 (1, N = 526) = 11.64, p < .001, Cramer's V = .15), with more men than women being single. Regarding life philosophy and religious affiliation, the majority of participants indicated being atheist (19.2%) or liberal (i.e., not bound by authoritarianism, orthodoxy or tradition) (19%). The difference in religious affiliation between men and women was statistically significant (χ^2 (8, N = 414) = 16.95, p < .05, Cramer's V = .20), with more men than women selecting "liberalist." Finally, 79.1% of participants indicated experiencing romantic, non-sexual attraction towards others. Statistically significant gender differences were found in the percentage of participants indicating romantic attraction (χ^2 (1, N = 526) = 4.39, p < .05, Cramer's V = .09), with more women than men experiencing romantic attraction.

Table 1

Demographic characteristics of the study participants (total: N = 526, men: n = 136, women: n = 390), and associations between demographic characteristics and gender, using χ^2-tests.

	Total		Men		Women	
	n	%	*n*	%	*n*	%
Age (in years)						
18-29	365	69.4%	96	70.6%	269	69%
30-39	79	15%	21	15.4%	58	14.9%
40-49	45	8.6%	14	10.3%	31	7.9%
50-59	30	5.7%	5	3.7%	25	6.4%
>60	7	1.3%	0	0%	7	1.8%
Continent of residence						
Europe	220	41.8%	49	36%	171	43.8%
North America	196	37.3%	53	39%	143	36.7%
Middle/South America	80	15.2%	25	18.4%	55	14.1%
Australia/ New Zealand	25	4.8%	8	5.9%	17	4.4%
Africa	3	0.6%	1	0.7%	2	0.5%
Asia	2	0.4%	0	0%	2	0.5%
Education						
Currently in full daytime education	190	43.1%	53	46.5%	137	41.9%
Primary education	4	0.9%	3	2.6%	1	0.3%
Secondary education	42	9.5%	9	7.9%	33	10.1%
Higher education	205	46.5%	49	43%	156	47.7%
Relationship status***						
Single	409	77.8%	120	88.2%	289	74.1%
In a relationship	117	22.2%	16	11.8%	101	25.9%

	Total		Men		Women	
	n	%	*n*	%	*n*	%
Life philosophy/religious affiliation*						
Atheist	101	19.2%	21	15.4%	80	20.5%
Liberalist	100	19%	37	27.2%	63	16.2%
Christian	83	15.8%	21	15.5%	62	15.9%
Believe in something	81	15.4%	17	12.5%	64	16.4%
Indifferent about belief	36	6.8%	12	8.8%	24	6.2%
Jewish	5	1%	1	0.7%	4	1%
Buddhist	5	1%	0	0%	5	1.3%
Islam	3	0.6%	0	0%	3	0.8%
Romantic attraction*						
Yes	416	79.1%	99	72.8%	317	81.3%
No	110	20.9%	37	27.2%	73	18.7%

* $p<.05$, *** $p<.001$

Criteria of asexuality

We explored how many participants could be categorized as asexual based on self-identification, lack of sexual attraction or lack of sexual behavior, and to what extent the use of these parameters resulted in classifying the same group of asexual participants (Figure 1). The highest percentages of asexual individuals were obtained when using the criteria of self-identification (71.3%), lack of sexual attraction (69.2%), and the combination of the two (57.6%). When using a lack of sexual behavior as a criterion, almost half of the participants (48.5%) were categorized as asexual. The combinations of self-identification and lack of sexual behavior (39.7%), and that of lack of sexual attraction and lack of sexual behavior (38.2%), resulted in lower percentages of participants being categorized as asexual. Finally, 33.5% of participants were categorized as asexual taking into account all three criteria: they lacked sexual attraction, self-identified as asexual and had no sexual experience. When we categorized participants as

asexual based on at least one of the three criteria, 86.9% of participants were categorized as asexual.

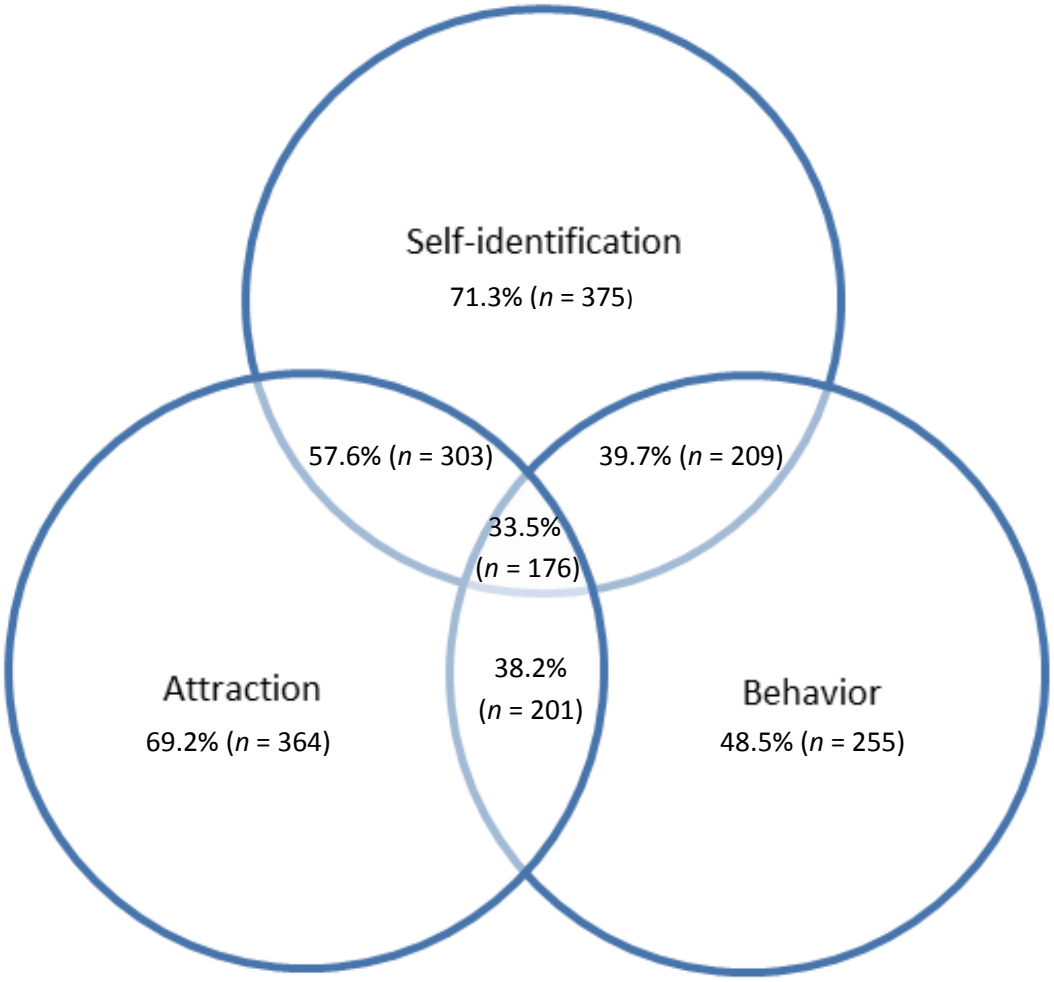

Figure 1. Overlap in criteria to define asexuality (N = 526).

Using Chi-square tests, we found statistically significant associations between gender and the sexual attraction criterion ($\chi^2(1, N = 521) = 8.85$, $p < .01$, Cramer's V = .13) and between gender and the combination of the sexual attraction criterion and the self-identification criterion ($\chi^2(1, N = 519) = 6.65$, $p < .05$, Cramer's V = .13): women were more likely than men to be categorized as asexual based on lack of sexual attraction or based on the combination of lack of sexual attraction and self-identification. For the

other criteria and combinations of criteria, no statistically significant associations with gender were found.

Table 2

Comparing gender differences in percentage of participants categorized as asexual based on each of the three criteria and combinations of criteria, using χ^2- tests.

		Men		Women	
	χ^2(df)	*n*	%	*n*	%
Self-identification	0.16 (1)	95	69.9%	280	71.8%
Sexual attraction**	8.85(21)	80	58.8%	284	72.8%
Sexual behavior	0.04 (1)	67	49.3%	188	48.2%
Self-identification and attraction*	6.65 (1)	65	47.8%	238	61%
Self-identification and behavior	0.16 (1)	52	38.2%	157	40.3%
Attraction and behavior	0.93 (1)	47	34.6%	154	39.5%
Self-identification and attraction and behavior	2.27 (1)	38	27.9%	138	35.4%
Self-identification or attraction or behavior	0.41 (1)	116	85.3%	341	87.4%

* $p<.05$, ** $p<.01$

Asexual persons' opinions about describing asexuality

A large majority of participants (81.4%) indicated that "not experiencing any sexual attraction towards others" was (very) important for defining asexuality. Approximately 65% stated that "not experiencing sexual desire" was important. Less than half of participants (43.3% and 45.4%, respectively) found "calling oneself asexual" or "always having felt like this" important when defining asexuality. "Not behaving sexually with a partner" and "not masturbating" were rated as important by 33.8% and 13.9%, respectively, of participants. Finally, one out of four participants was of the opinion that "not having had negative sexual experiences in the past" was important for describing asexuality. Gender differences in participants' opinions were only found regarding the importance of masturbating for describing asexuality: more women than men stated

that “not masturbating” is important when describing asexuality ($\chi^2(2, N = 526) = 12.22$, $p < .01$, Cramer’s V = .15).

DISCUSSION

In this large-scale study on asexuality, we assessed how many individuals, who recognized themselves in a broad description of asexuality, could be categorized as asexual based on the criteria of lack of sexual attraction, self-identification as asexual, and lack of sexual behavior, and on combinations of these criteria. Further, we explored to what extent categorizations based on the different criteria and combinations of criteria overlapped, and thus identified the same persons as asexual.

Of the 526 participants included in the analyses, 71.3% were categorized as asexual based on self-identification, 69.2% were categorized as asexual based on lack of sexual attraction, and 48.5% were categorized as asexual based on lack of sexual behavior. Exploring overlap in the percentage of participants categorized as asexual according to the three criteria, we found that 57.6% of participants reported a lack of sexual attraction and self-identified as asexual, 39.7% self-identified as asexual and reported a lack of sexual behavior, 38.2% reported a lack of sexual attraction and a lack of sexual behavior, and 33.5% were categorized as asexual based on all three criteria. Studies on the prevalence of homosexuality, using these three criteria, reported similar findings and have consistently reported higher percentages of homosexuality when using sexual attraction as a criterion, than when using sexual behavior or self-identification as a criterion (e.g., Dunne, Bailey, Kirk & Martin, 2000; Elaut, Caen, Dewaele & Van Houdenhove, 2013; Eskin, Kaynak-Demir, & Demir, 2005; Laumann et al. 1994; Savin-Williams, 2005). Further, we found that 41% of women and 34% of men who gave an “asexual response” on at least one of the three criteria, were categorized as asexual on all three criteria. When comparing this finding with other studies in which a combination of criteria was used, it is striking that the percentage we found for men was of a similar order to that reported by Laumann et al. (1994). Indeed, they found that 24% of men who gave a homosexual response on at least one of the three criteria could

be classified as homosexual based on all three criteria. The percentage we found in men was lower than the percentage reported by Elaut et al. (2013), who found that 12.1% of men who gave a homosexual response on at least one of the criteria were classified as homosexual on all three criteria. In our sample, the percentage of women who were categorized as asexual on all three criteria was markedly higher than the percentages reported by both Laumann et al. (1994) and Elaut et al. (2013), who found that 15% and 6.1%, respectively, of the women in their sample who gave a "lesbian" response on at least one of the three criteria, could be classified as lesbian on all three criteria.

It is remarkable that, although asexuality is usually defined as a lack of sexual attraction, almost one in three participants - who all recognized themselves in the broad description of asexuality - did not indicate a lack of sexual attraction. There are several possible explanations for this finding. First, it could be that participants interpreted the question as asking about attraction in general, instead of sexual attraction in particular. Hinderliter (2009) suggested that participants may not realize that the attraction they feel is in fact not sexual attraction. Participants who indicated a romantic orientation may have been especially confused by this question. We also asked about romantic attraction, but this question was presented after the questions regarding sexual attraction. As a consequence, participants experiencing romantic but not sexual attraction could have answered the question regarding sexual attraction based on the romantic attraction they experienced. Alternatively, it could be hypothesized that asexuality is a sexual drive issue, rather than a sexual attraction issue. Perhaps some asexual persons do experience sexual attraction towards others, but lack the drive to act upon this attraction. Research by Prause and Graham (2007) showed that, compared to non-asexual individuals, asexual individuals showed a lower propensity for sexual excitation and lower sexual arousability. Clearly, more research is needed to clarify the importance of sexual drive in defining asexuality. Another explanation for why one out of three participants did indicate experiencing sexual attraction could be that some participants might have experienced sexual attraction in the past and answered the question based on their previous experience (Hinderlitter, 2009). Also, some participants may have experienced sexual attraction occasionally and responded to the question based on these infrequent experiences, but still considered themselves to be asexual.

The question regarding sexual attraction did not allow participants to make a statement about how much sexual attraction they felt: participants were only asked to indicate being attracted either to men (only or predominantly), to women (only or predominantly), to both, to someone or something else, or to indicate not experiencing sexual attraction to others. This still leaves open the question of whether sexual attraction should be considered a categorical ("all or nothing") or a dimensional phenomenon in the context of asexuality. Further, congruent with Brotto et al. (2010), who reported that 25% of participants self-identified as other than asexual (i.e., as heterosexual, homosexual, bisexual or "other"), we also found that 28.7% of participants did not self-identify as asexual. This percentage included: participants who indicated being unsure about how they would describe themselves; participants who used their romantic orientation to self-identify (e.g., "bi-romantic asexual", "hetero-romantic", "homo-romantic asexual"); and participants who used the term "demi-sexual" to describe themselves. The term "demi-sexual" is typically used in the asexual community to describe persons who only experience sexual attraction when they have a strong emotional connection with someone (www.asexuality.org). This is reminiscent of one of the standards for premarital sexual behavior reported by Reiss (1960): permissiveness with affection, or relational sex, referring to the acceptability of (premarital) sex under conditions of affection. Demi-sexual is often proposed within the community as an orientation halfway between asexual and sexual. Even though the validity of this term has not been studied, its existence and use in the community clearly supports a dimensional view on asexuality, allowing individuals to vary in the degree to which they are asexual. Perhaps some of the participants in our study, indicating that they did experience sexual attraction, chose this option because they self-identified as demi-sexual and thus were able to experience sexual attraction under certain circumstances. Brotto et al. (2010) also reported that a number of participants used terms such as "homoasexual" or "biromantic asexual" to describe themselves. This suggests that in order to fully acknowledge the diversity within the asexual population, it is important that researchers distinguish between romantic and sexual orientation when asking about self-identification.

The finding that only half of the participants could be identified as asexual based on a lack of sexual behavior suggests that this may not be a core criterion for individuals who describe themselves as asexual. This was also shown by the finding that only one out of three participants rated "not behaving sexually with a partner" as important when describing asexuality. Even fewer participants stated that not masturbating was an important criterion in a description of asexuality. For some individuals, however, the behavioral aspect of asexuality is important when they describe asexuality, perhaps because they perceive sexual activity, whether it is with a partner or by themselves, as a threat to their asexual identity.

Even though for most (combinations of) criteria, we did not find any gender differences in the percentage of participants categorized as asexual, more female than male participants were categorized as asexual based on lack of sexual attraction or based on a combination of lack of sexual attraction and self-identification as asexual. However, the absolute differences in percentages of men and women categorized as asexual based on the different criteria were rather small. In line with previous research (Brotto et al. 2010; Gazzola & Morrison, 2011), we found that seven percent of the participants in our sample self-identified as "other than male or female." Since this subgroup was too small to allow for valid comparisons, we omitted these participants from analyses. It would be interesting, however, to explore characteristics and experiences of asexual persons identifying as "other." Yule and colleagues (under review) suggested that asexual persons may not define their gender in terms of a traditional gender dichotomy, and use other terms such as "pan-asexual" or "a-gendered." Together with findings from the present study, this provides preliminary evidence that this category might be a subgroup within the asexual community.

Limitations and implications

Although this study has yielded interesting results on asexuality as a multidimensional phenomenon, there are a number of limitations that should be noted. First, even though we attempted to recruit participants using a broad description of asexuality, we relied mainly on AVEN and other (online) asexual communities for the recruitment of

participants, which clearly limits the generalizability of our findings. Since we did not ask participants how they found out about the survey, it was not possible to report how many participants were directly recruited via these specific online asexual communities. Hinderliter (2009) pointed out that recruiting from AVEN can create a selection bias. Participants familiar with AVEN and the way AVEN conceptualizes asexuality, may be biased in their responses. Terms often used on the AVEN forums, such as "demi-sexual," "homoasexual," and "aromantic asexual," may not be meaningful to asexual persons who are not affiliated with the asexual community. It is not clear to what extent recruitment via AVEN influenced or biased our findings. Future asexuality research should make major efforts not to rely solely or mainly on AVEN and related websites for recruitment, and explore the validity of the AVEN terminology in a sample of asexual persons not acquainted with the organization. Second, participants were recruited using a broad description of asexuality. It is conceivable that our participants would be more inclined to self-identify as asexual, consequently creating a selection bias. It would be interesting for further research to recruit participants in a broader manner. This could be achieved by describing studies as regarding sexual attraction or lack thereof, instead of using the term "asexual" to describe the topic of the study. Third, a large number of participants (n = 400) who started the survey did not complete it. It is unclear whether these participants may have noticed that they did not belong to the target group of the study after all, or whether they were bothered by technical difficulties they experienced or by the long duration of the survey. Fourth, we aimed for a cross-cultural study, and translated the survey from Dutch into English and Spanish, but the large majority of participants appeared to be originating from Europe and North America, i.e., the United States and Canada. Asexuality research should also recruit participants from non-Western societies, and explore whether the prevalence of asexuality, according to the different criteria, varies in different cultures. Finally, with a mean age of 28 years, this study involved a young sample. It would be interesting to explore whether and to what extent this had an impact on findings, by recruiting a more heterogeneous sample in terms of age.

Finally, we would like to discuss some implications of our findings and some guidelines for future research on asexuality. First, our findings show that using different

criteria results in different groups being categorized as asexual, leaving the question unanswered: what is the best criterion to define asexual people? Given the heterogeneity in the asexual population, reflected here in the different percentages of participants categorized as asexual when using different criteria, this is not an easy question to answer. The criteria of self-identification and a lack of sexual attraction resulted in the highest percentages of participants categorized as asexual. The overlap between the two was large, but not complete: around 18.1% of participants who self-identified as asexual did indicate experiencing sexual attraction, while 16.2% of participants who reported not experiencing sexual attraction, did not self-identify as asexual. In line with conceptualizations of sexual orientation (e.g., Bailey et al., 2000; Bogaert, 2003; Diamond, 2003) and previous asexuality research (Bogaert, 2004; Brotto et al., 2010), and congruent with the description used by the asexual community, we argue that the psychological core element for asexuality is the subjective experience of a lack of sexual attraction. Support for this suggestion is provided by the finding that when participants in our study were asked to what degree the criteria "not experiencing sexual attraction" and "self-identifying as asexual" are important to describe asexuality, more participants rated "not experiencing sexual attraction" as important (81.4%) than calling oneself asexual (43.2%).

DSM-5 (APA, 2013) states that a diagnosis of FSIAD or male HSDD cannot be made when the condition is "better explained by one's self-identification as an asexual" (APA, p. 434, p. 443). It is striking that in this formulation the criterion used to differ between both conditions is "self-identification as asexual," and not a difference in terms of sexual desire or sexual attraction. Based on our results, and in line with Bogaert (2006), we argue that lack of sexual attraction is the psychological core or being asexual, rather than self-identification as asexual. After all, the term "asexual" is not yet widely known, and in order to self-identify as asexual, one needs to be familiar with this terminology. Chasin (2011) suggested that self-identified and non-self-identified asexual persons may represent substantively different populations: they may experience the same lack of sexual attraction, but they may make sense of it in a different manner.

Further, as already noted by Haefner (2011) and Bogaert (2004, 2006, 2012), our findings provide evidence for the need to differentiate between sexual attraction and

romantic attraction in asexual persons. Of those indicating not experiencing sexual attraction, approximately three out of four participants reported experiencing romantic attraction. This implies that romantic attraction and sexual attraction were experienced as independent constructs by the participants in our study. Carrigan (2011) theorized that, similarly to sexual attraction, persons can be romantically attracted towards men, women or both. This may be the case for asexual persons as well as for sexual persons. After all, the distinction between romantic attraction and sexual attraction has also been found valid in psychological research and theories on sexuality and love (e.g., Fehr, 2013). We would recommend that asexuality researchers assess romantic attraction and explore whether asexual persons with and without romantic attraction differ in their experiences and characteristics. In order to better understand the dimensionality of sexual attraction and romantic attraction, we believe it is important to not only ask asexual persons *whether* they experience sexual attraction and/or romantic attraction, but also *to what extent* or *how much* they experience either one or both kinds of attraction. Finally, congruent with Chasin (2011) and as discussed earlier, we argue for a dimensional approach to asexuality, in which "asexual" is an alternative to "sexual", rather than an alternative to heterosexual, homosexual/lesbian or bisexual. According to Poston and Baumle (2010), this means taking a social-constructionist perspective on asexuality, in that it argues against binary categories ("all or nothing") and instead recommends a continuum with varying degrees of asexuality. An alternative view could be, however, a conceptualization of asexuality as a psychological trait (e.g., McCrae & Costa, 2008). While lack or absence of sexual attraction is crucial for asexuality, it could be argued that the asexual population shows as much variation as the sexual population does, and that asexual persons can thus vary in the extent to which they do (not) experience sexual attraction, the extent to which they do (not) experience romantic attraction, the way they self-identify, and the extent to which they engage in sexual behaviors. More empirical research is needed to explore this variation, to assess how to differentiate between asexuality and sexuality, and to validate the hypothesis that asexuality is a multi-faceted construct, analogous to sexuality (Chasin, 2011).

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Chapter 4 : Unraveling the complex association between asexuality and lack of sexual attraction

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Paper under review

ABSTRACT

Little is known about differences between asexual people who experience sexual attraction, and those who do not. In a group of individuals who recognized themselves in a broad description of asexuality, we aimed to assess differences between these two groups in terms of socio-demographic characteristics, sexual functioning, solitary and dyadic sexual desire, history of sexual abuse, physical and mental health, self-esteem, body image, genital self-image and attachment style. Participants were recruited through social media, posts on diverse general health- and lifestyle related websites and the Asexuality Visibility and Education Network. In total, 460 participants between 18 and 67 years old, who recognized themselves in a broad description of asexuality, completed an online survey (25.9% male, 74.1% female). Findings showed that participants not experiencing sexual attraction were more often female, younger, currently in full daytime education and single, and had less often sexual experience and experience with masturbation. Participants without sexual attraction indicated a history of sexual abuse before age 18 less often than participants with sexual attraction. Further, participants not experiencing sexual attraction scored lower on solitary sexual desire, dyadic sexual desire and attachment anxiety, and higher on physical health, than participants who did experience sexual attraction. These findings are illustrative of the variability within the asexual population, and emphasize the need to take into account this heterogeneity in future asexuality research.

INTRODUCTION

A recent large-scale study on asexuality by Van Houdenhove, Gijs, T'Sjoen, and Enzlin (in press) explored how many individuals could be classified as asexual, using the three main criteria that have been used thus far to define asexuality, i.e., a lack or absence of sexual attraction (Bogaert, 2004), self-identification as asexual (Prause & Graham, 2007), and a lack or absence of sexual behavior (Scherrer, 2008). Even though equal percentages of participants were classified as asexual based on the criterion of self-identification (71.3%) as based on the sexual attraction criterion (69.2%), the authors advocated that asexuality should mainly be defined by sexual attraction. They argue that since self-identification as asexual implies familiarity with the term 'asexual', the likelihood of false negatives in research, i.e., individuals who wrongly do not identify as asexual because they do not know the term, is significantly increasing. Less than half of participants who recognized themselves in a broad description of asexuality were classified as asexual based on an absence of sexual behavior (Van Houdenhove, et al., in press). They conclude that the asexual population is seemingly very heterogeneous, as asexual people vary in the extent to which they (a) experience sexual attraction, (b) experience romantic attraction, (c) engage in sexual behaviors, and (d) self-identify as asexual.

Since asexuality is mostly defined as a lack or absence of sexual attraction, it may be surprising that some people indicate experiencing sexual attraction, while still considering themselves asexual. This brings up the question how much sexual attraction a person may experience while still being classified as asexual, a point also denoted by Hinderliter (2009). Is it required that a person does not experience any sexual attraction towards others at all, or how much variability in the experience of sexual attraction over time is allowed? In this regard, it remains to be seen whether these two groups, i.e., asexual individuals who do not experience sexual attraction and asexual individuals who do, represent distinct subpopulations within the asexual population.

It is striking that until now asexuality research has treated asexual individuals as one uniform group, which is compared to a non-asexual control group on a number of characteristics. Research on biological and psychological correlates of asexuality has,

until now, been limited to physical health, mental health, sexual desire, and biological markers of asexuality (for reviews: Van Houdenhove, et al., 2014; Emens, 2014). In these studies, asexual and sexual people were compared on a number of correlates. Both Bogaert (2004) and Poston and Baumle (2010) reported an association between asexuality and physical health, with asexual individuals showing poorer physical health than sexual people. Poston and Baumle (2010) suggested that poor health may reduce sexual desire, thus establishing an asexual response. However, Bogaert (2004) described how this association was only significant when it was corrected for education level and social status. This suggests that health and social class are related, and that increased health problems might be a consequence of poor socio-economic status.

Regarding mental health, Nurius (1983) found that asexual people showed a higher prevalence of clinical psychopathology, i.e., more depression, lower self-esteem, and more sexual discord, in comparison with heterosexual, homosexual and bisexual people. However, the prevalence of psychopathology in all groups, found in this study, was rather low. Moreover, the absolute differences between the four groups were quite small. Brotto, Knudson, Inskip, Rhodes, and Erskine (2010) found that 20.6% of asexual women and 9.3% of asexual men were ever diagnosed with a psychiatric disorder. These results are in line with findings about prevalence rates of psychiatric disorders in the general population (e.g., Kessler et al., 2005; Spiers, Bebbington, McManus, Brugha, Jenkins, & Meltzer, 2011). Also, mean depression scores of both asexual women and asexual men were found to be in the non-clinical range. Recently, and in line with previous research indicating high levels of mental health problems in individuals with a non-heterosexual identity (e.g., Busseri, Willoughby, Chalmers, & Bogaert, 2008; D'Augelli, Hershberger, & Pilkington, 2001; Sandfort, de Graaf, Bijl, & Schnabel, 2001), Yule, Brotto and Gorzalka (2013) found an increased prevalence of mental health and interpersonal problems, i.e., anxiety, psychoticism, depression, and suicidality, in asexual individuals. According to these authors, this could be explained by the discrimination asexual individuals experience due to their non-heterosexual orientation. Alternatively, the high prevalence of mental health problems may be a consequence of lacking sexual attraction within a society in which sex is an important theme (Yule et al., 2013).

With regard to sexual desire, Prause and Graham (2007) reported that both low solitary and dyadic sexual desire were significant predictors of an asexual orientation. Brotto and Yule (2011) confirmed that, compared to a sexual control group, asexual individuals scored low on dyadic sexual desire. Scores on solitary sexual desire, however, were similar to those of a control group. Further, Brotto and colleagues (2010) reported that asexual women's sexual desire scores were lower, compared to those of women with Hypoactive Sexual Desire Disorder (HSDD). Until now, sexual desire scores of asexual men were not yet compared to those of men with HSDD.

Recently, Yule, Brotto and Gorzalka (2014) studied the association between asexuality and early neurodevelopmental markers that have also been studied in the context of sexual orientation. They found that asexual men and women were respectively 2.4 and 2.5 times more likely to be left-handed when compared to heterosexual men and women. Asexual men differed from heterosexual men in number of older brothers, but this difference was only statistically significant for right-handed men. Asexual women differed from non-heterosexual women in number of older brothers, but this difference was only statistically significant for left-handed women. No significant differences in finger length ratio were found between asexual and heterosexual or non-heterosexual participants. Yule et al. (2014) concluded that their study provided evidence for biological correlates of the lack of sexual attraction that is characteristic of asexuality, and that their findings are consistent with the demonstrated link between prenatal events (e.g., prenatal androgen levels) and the development of a homosexual orientation.

Based on the finding that one in three participants in their sample had never been in a relationship, Brotto et al. (2010) hypothesized that asexuality might be related to a specific attachment style. They speculated that asexual people may have developed an avoidant attachment style as a child, leading to an insecure attachment and viewing relationships as awkward and uncomfortable as adults. However, Haefner (2011) found that asexual people experience difficulties when wanting to engage in a partner relationship. For most sexual individuals, sex is a quintessential part of a relationship, and informing a prospective partner about their asexuality was for most of the participants in Haefner' s study a deal breaker. Therefore, the finding that only a

minority of asexual people has ever engaged in a partner relationship, may be due to the inability to engage in a relationship, rather than avoiding to engage in a relationship.

Another hypothetical association, often debated within the asexual community but not yet included in asexuality research, is that between asexuality and a history of sexual abuse. However, within the asexual community, there is a debate ongoing on whether people with a potential trigger or attributed cause in their history, such as an experience of sexual abuse, can be considered 'truly' asexual. In this regard, the distinction between primary or lifelong asexuality, and secondary or acquired asexuality, i.e., after sexual victimization, has yet to be studied (Van Houdenhove et al., 2014).

Moreover, until now, the association between asexuality and body image, self-esteem and genital self-image had not received any attention in research. Findings from the general (sexual) population, however, have shown that negative body image can be associated with sexual avoidance (La Rocque & Cioe, 2010), with higher levels of sexual aversion (Reissing, Laliberté, & Davis, 2005), with more negative attitudes toward sex (Goldenberg, McCoy, Pyszczynski, Greenberg, & Solomon, 2000) and with lower levels of sexual desire (Seal, Bradford, & Meston, 2009). Further, Hartmann, Heiser, Ruffer-Hesse and Kloth (2002) reported how low self-esteem in women was associated with low sexual desire. Regarding genital self-image, research has shown associations between negative genital perceptions, and lower engagement in, and enjoyment of, sexual activities (Reinholtz & Muehlenhard, 1995) and less sexual desire (Berman, Berman, Miles, Pollets, & Powell, 2003; Herbenick, Schick, Reece, Sanders, & Fortenberry, 2011). While none of these studies focused on asexuality per se, they all reported on characteristics that may well apply to asexual people. In this regard, it would be interesting to explore body image, self-esteem and genital self-image in asexual individuals.

Based on the observed heterogeneity in asexual individuals – e.g., in terms of experiencing sexual attraction - it is remarkable that until now asexual persons have been treated as one uniform group in research and that attempts to characterize asexual persons empirically are based on a comparison of asexual and non-asexual persons (e.g., Brotto et al., 2010; Prause & Graham, 2007). As this approach might not do full justice to potential significant differences that might be found *within* the asexual

population, the aim of the current study was to explore socio-demographic characteristics, sexual experience and masturbation frequency, physical and mental health, solitary and dyadic sexual desire, attachment style, history of sexual abuse, self-esteem, body appreciation, and genital self-image in two subgroups within the asexual population, i.e., those experiencing sexual attraction towards others and those who do not.

METHOD

Participants

Participants were recruited through the Dutch, English and Spanish forums of the Asexuality Visibility and Education Network (AVEN; www.asexuality.org), posts on several health- and lifestyle related websites in Europe, the United States and South-America, and posts on social media. The introductory web page for the study presented a broad description of asexuality: "*Asexuality is commonly described as a lack of experiencing sexual attraction. Asexual people don't feel sexually attracted to other people - neither men nor women. Most asexual people indicate never having experienced sexual attraction. Yet, there can be quite some variation within the asexual population: some have or wish to have a relationship, others don't, some are (or have been) sexually active, others are not*". Participants who recognized themselves in this description, were invited to complete the survey. In total, 1033 responses were obtained. Participants who did not complete the entire survey (n = 478) and participants younger than 18 (n = 61) were removed from analyses, resulting in a number of 494 participants, of which 24.2% were male, 69% were female and 6.9% identified as 'other'. Since only a small number of participants identified as 'other' (n = 34), this group was omitted from further analyses. The final sample, based on which the analyses were done, thus consisted of 460 participants[1].

[1] This study was based on the same sample as the study described in Chapter 3. However, only participants who completed the entire survey were included in the current analyses (N = 460), while for

Measures

Demographic characteristics, sexual experience and prevalence of sexual abuse. Participants were asked to complete information on gender, age, education, relationship status, religious affiliation/life philosophy and masturbation frequency. Apart from age, which was in a free-response format, we used forced-choice response options. Sexual experience was measured by the question: "*Have you ever had sex? With sex, we are referring to the different ways of making love, during which there is genital contact, so when touching the sexual organs of someone else".* Participants were further asked whether they had been victim of sexual abuse before and after the age of 18. Since sexual abuse can entail various facets, the following questions were posed: *"Did someone before you were 18 years old/Did someone after you were 18 years old: (1) force you to masturbate when you did not want to?, (2) force you to give oral sex?, (3) force you to receive oral sex?, (4) try to rape you (sexual intercourse via vagina or anus)?, (5) rape you (sexual intercourse via vagina or anus*)?". For each item, respondents could indicate whether or not they had ever experienced this. The responses to these five questions were combined into two dichotomous items, history of sexual abuse before age 18 and history of sexual abuse after age 18, with 1 signifying 'having been victim of at least one of the sexual abuse-items before/after age 18' and 0 signifying 'not having been victim of any of the sexual abuse-items before/after age 18'.

Sexual attraction and romantic attraction. We asked for sexual attraction with the question: *"Towards whom do you feel sexually attracted?"* Respondents could answer on a 5-point Likert scale (from *1*= only towards women to *5*= only towards men); they could also answer these questions with: *"I do not feel sexual attraction towards anyone"*. Based on this question, a dichotomous variable was created, categorizing participants as experiencing sexual attraction or not experiencing sexual attraction. Romantic attraction was measured by the question: *"Apart from sexual attraction,*

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the study described in Chapter 3, it was only required that participants completed the items regarding the dimensions of asexuality (*N* = 566).

romantic attraction is being described, which refers to falling in love, the longing and need for a serious relationship. We would like to know whether you sometimes feel romantically, non-sexually attracted towards others. Do you feel romantically attracted towards girls/women, boys/men or both?" Respondents could answer on a 5-point Likert scale (from *1*= only towards women to *5*= only towards men); they could also answer these questions with *"I do not feel any romantic attraction"*.

Correlates of asexuality. In order to measure sexual desire, the Sexual Desire Inventory (SDI; Spector, Carey, & Steinberg, 1996) was used. The SDI is a 14-item self-report scale, comprising two subscales: solitary sexual desire, including eight items (e.g., "How strong is your desire to engage in sexual behavior by yourself?"), and dyadic sexual desire, including three items (e.g., "When you first see an attractive person, how strong is your sexual desire?"). Three items concerning the frequency of sexual desire are scored on an 8-item response scale, from *Not at all* to *More than once a day*; the remaining questions are scored on an 9-point Likert-type scale, with higher scores indicating more desire. An overall solitary sexual desire-score and an overall dyadic sexual desire score were obtained by summing the responses to the corresponding items. Solitary sexual desire scores ranged from 0 to 23, dyadic sexual desire scores ranged from 0 to 62. Internal consistency for both subscales was very good in the current study (α = .89 for both subscales).

In order to measure health status, the Short Form Health Survey (SF-12; Ware, Kosinski, & Keller, 1996) was used. The SF-12 is a 12-item self-report measure containing items assessing general health, physical functioning, role limitations as a consequence of physical health problems, pain, vitality, social functioning and role limitations resulting from emotional problems and mental health. Two subscales are distinguished: Physical Component Summary Measures (PCS) and Mental Component Summary Measures (MCS), each containing six items. The PCS-subscale includes items such as: "In general, would you say your health is excellent, very good, good, fair or poor?". The MCS-subscale includes items such as "How much of the time during the past four weeks did you feel calm and peaceful?". Six items were reverse coded prior to analysis. Both PCS and MCS-subscale scores range from 0 to 100, with higher scores indicating better

physical and mental well-being. Internal consistency for both subscales was good in the current study (α = .74 for PCS, α = .81 for MCS).

In order to measure global self-esteem, the Rosenberg Self-esteem Scale (RSE; Rosenberg, 1965) was used. The RSE is a ten-item self-report scale including items such as: “On the whole, I am satisfied with myself” and “I certainly feel useless at times”. All items are scored on a 4-point Likert-type scale from *Strongly agree* to *Strongly disagree*. Five items were reverse coded prior to analysis. An overall RSE-score was computed by summing the responses to all items. Scores on the RSE range from 0 to 30, with higher scores indicating higher self-esteem. Internal consistency of the RSE was very good (α = .89).

In order to measure body-image, the Body Appreciation Scale (BAS; Avalos, Tylka & Wood-Barcalow, 2005) was used. The BAS is a 13-item self-report scale that measures four aspects of positive body image: (a) favorable opinions of one's own body; (b) acceptance of the body in spite of imperfections; (c) respect for the body, particularly in relation to its needs; and (d) protection of the body, including rejection of unrealistic ideals. The scale includes items such as: “I respect my body” and “I engage in healthy behaviors to take care of my body”. Item 12 of the scale, which refers to the impact of media images, is sex-specific (Tylka, personal communication, 2007; refers to unrealistically thin images for women and unrealistically muscular images for men), and so two versions of the scale were created and presented to women and men, respectively. All items are scored on a 5-point Likert-type scale from *Never* to *Always*, with higher scores reflecting a more positive body image. An overall BAS-score was obtained by averaging the responses to all items, ranging from 1 to 5. Internal consistency of the BAS was excellent in the current sample (α = .94).

In order to measure genital self-image, the Female Genital Self-Image Scale (FGSIS; Herbenick & Reece, 2010) was used. The FGIS is a 7-item self-report scale that was originally designed for women, but since none of the items were sex-specific and since no other instrument was available when the study was started, we used the instrument for women as well as for men. This scale includes items such as: “I feel positively about my genitals” and “I think my genitals smell fine.” Each item is rated on a 4-point Likert-type scale ranging from *Strongly disagree* to *Strongly agree*, with higher

scores indicating a more positive genital self-image. The outcome of FGSIS is a total sum score ranging from 7 to 28. Internal consistency of the FGSIS was good in the current study (α=.83).

In order to measure attachment style, the Experiences in Close Relationships-Revised (ECR-R; Fraley, Waller & Brennan, 2000) was used. The ECR-R is a multidimensional self-report scale of which we used an abbreviated, 12 item version (Wei, Russell, Mallinckrodt, & Vogel, 2007). The scale includes two subscales, Anxiety and Avoidance, each containing six items. Participants who were engaged in a relationship and single participants answered the same questions, but received different instructions: participants who were engaged in a partner relationship were instructed to answer the questions with regard to their partner, while single participants were instructed to answer the questions with regard to "the other", the person they are most attached to. The Anxiety-subscale includes items such as: "I need a lot of reassurance that I am loved by my partner/the other". The Avoidance-subscale comprises items such as: "I want to get close to my partner/the other, but I keep pulling back". All items are assessed on a 5-point Likert-type scale from *Totally disagree* to *Totally agree*, with higher scores reflecting more anxiety or more avoidance. Four items were reverse coded prior to analysis. Sum scores on the Anxiety-subscale and on the Avoidance-subscale were averaged. For both the Anxiety-subscale and the Avoidance subscale, scores range from 1 to 7. Both subscales were found to have a good internal consistency in the current study (α = .78 for the Anxiety-subscale, α = .76 for the Avoidance-subscale).

Procedure

The survey was created using LimeSurvey®, a web-based open source survey application (www.limesurvey.org), and was open for recruitment from September 2012 until March 2013. Participants were invited to complete an online questionnaire from a link to the survey placed on the English, Dutch and Spanish AVEN-websites, lifestyle- and health-related websites and social media. The first webpage of the survey offered a brief description of the study, followed by a consent form. Only participants who agreed with this consent form could start the survey which took approximately 50 minutes to

complete. This study was approved by the ethical boards of Ghent University Hospital and the University Hospital Leuven.

Statistical analysis

Statistical analyses were performed using SPSS (version 20.0; Chicago, IL). A visual inspection of histograms, normal Q-Q plots and box plots showed that the scores on self-esteem, body appreciation, genital self-image, attachment avoidance and attachment anxiety were approximately normally distributed. The scores on solitary and dyadic sexual desire were positively skewed, and the scores on physical health and mental health were negatively skewed. Even though not all variables were normally distributed, we did chose to perform a multivariate analysis of variance (MANOVA) and separate univariate analyses of variance (ANOVAs) to calculate differences between groups. MANOVA is robust to violations of normality, especially when using large study samples (e.g., Olson, 1974). Effect sizes were estimated with eta squared (η^2). Bivariate correlations (r) and chi-square tests (χ^2) with Cramer's V-tests were used to measure associations between variables. The level of significance was set at $p < .05$.

RESULTS

Demographic variables, sexual experience and prevalence of sexual abuse

Table 1 shows the demographic characteristics of the respondents, the percentage of participants with sexual experience and the percentage of participants that has been victim of sexual abuse before age 18 and after age 18. Of the 460 participants, 70.4% indicated not experiencing sexual attraction. Participants who did not experience sexual attraction were more likely to be female ($\chi^2(1, N = 460) = 10.39$, $p < .01$, Cramer's V = .15) compared to participants who did experience sexual attraction. The majority of participants (69.8%) were younger than 30, single (78%) and indicated experiencing romantic attraction (78.5%). Participants indicating to not experience sexual attraction were younger ($\chi^2(4, N = 460) = 14.20$, $p < .05$, Cramer's V = .18), were more often single

($\chi^2(1, N = 460) = 5.09$, $p < .05$, Cramer's V=.10) and were less often experiencing romantic attraction ($\chi^2(1, N = 460) = 6.52$, $p < .05$, Cramer's V=.12). Regarding educational level, 42.8% of participants were following a full daytime education. Of the participants who were currently not in full daytime education, a large majority (81.7%) had followed higher education. Participants indicating not experiencing sexual attraction were more likely to be currently following a full daytime education and were less likely to have received higher education ($\chi^2(3, N = 439) = 19.32$, $p < .001$, Cramer's V = .21). The most frequently indicated religious affiliation/life philosophy were atheist (24.5%), liberalist (24%), or Christian (19.2%). No differences between the two groups were found in religious affiliation/life philosophy ($\chi^2(8, N = 412) = 14.70$, $p = .06$, Cramer's V = .19). Approximately half of participants (51.1%) had ever had sex, with participants not experiencing sexual attraction being less likely to ever having had sex ($\chi^2(1, N = 460) = 25.12$, $p < .001$, Cramer's V = .23). The majority of participants (83.5%) reported experience with masturbation, with participants not experiencing sexual attraction being more likely to indicate they have never masturbated ($\chi^2(7, N = 460) = 20.29$, $p < .01$, Cramer's V = .21). Around 11% of participants had a history of sexual abuse before age 18, while 12.4% has been a victim of sexual abuse after age 18. Participants not experiencing sexual attraction indicated a history of sexual abuse before age 18 less often than participants who did experience sexual attraction ($\chi^2(1, N = 460) = 9.15$, $p < .01$, Cramer's V = .14). No differences between the groups were found in history of sexual abuse after age 18 ($\chi^2(1, N = 460) = 2.55$, $p = .11$, Cramer's V = .07).

Table 1

Demographic characteristics of the study participants (total: N = 460, not experiencing sexual attraction: n = 324, experiencing sexual attraction: n = 136), using χ^2-test to compare between groups

	Total		Not experiencing sexual attraction		Experiencing sexual attraction	
	n	%	*n*	%	*n*	%
Gender**						
Man	119	25.9%	70	21.6%	49	36%
Woman	341	74.1%	254	78.4%	87	64.1%
Age (in years)*						
18-29	321	69.8%	242	74.7%	79	58.1%
30-39	69	15%	40	12.3%	29	21.3%
40-49	39	8.5%	25	7.7%	14	10.3%
50-59	27	5.9%	14	4.3%	13	9.6%
>60	4	0.9%	3	0.9%	1	0.7%
Education***						
Primary education	4	0.9%	2	0.6%	2	1.5%
Secondary education	42	9.6%	29	9.4%	13	9.9%
Higher education	205	46.7%	125	40.6%	80	61.1%
Currently in full daytime education	188	42.8%	152	49.4%	36	27.5%
Relationship status*						
Single	359	78%	262	80.9%	97	71.3%
In a relationship	101	22%	62	19.1%	39	28.7%
Romantic attraction*						
Yes	361	78.5%	244	75.3%	117	86%
No	99	21.5%	80	24.7%	19	14%

	Total		Not experiencing sexual attraction		Experiencing sexual attraction	
	n	%	*n*	%	*n*	%
Religious affiliation/Life philosophy						
Liberalist	99	24%	72	25.4%	27	21.1%
Atheist	101	24.5%	68	23.9%	33	25.8%
Christian	83	19.2%	60	21.1%	23	18%
Believe in something	80	19.4%	48	16.9%	32	25%
Indifferent about belief	36	8.7%	30	10.6%	6	4.7%
Jewish	5	1.2%	3	1.1%	2	1.6%
Islam	3	0.7%	2	0.7%	1	0.8%
Buddhist	5	1.2%	1	0.4%	4	3.1%
Sexual experience***						
Yes	235	51.1%	141	43.5%	94	69.1%
No	225	48.9%	183	56.5%	42	30.9%
Masturbation frequency**						
Never	76	16.5%	66	20.4%	10	7.4%
Not in the last month	85	18.5%	63	19.4%	22	16.2%
One single time	41	8.9%	28	8.6%	13	9.6%
More or less once a month	62	13.5%	42	13%	20	14.7%
Several times a month	61	13.3%	38	11.7%	23	16.9%
More or less once a week	52	11.3%	37	11.4%	15	11%
Several times a week	70	15.2%	45	13.9%	25	18.4%
Every day	13	2.8%	5	1.5%	8	5.9%
Sexual abuse						
Before age 18**	50	10.9%	26	8%	24	17.6%
After age 18	57	12.4%	35	10.8%	22	16.2%

* $p<.05$, ** $p<.01$, *** $p<.001$

Correlates of asexuality

To explore the associations between the correlates and experiencing sexual attraction, a multivariate analysis of variance (MANOVA) was performed, with solitary sexual desire, dyadic sexual desire, physical health, mental health, self-esteem, body appreciation, genital self-image, attachment anxiety and attachment avoidance as dependent variables, and experiencing sexual attraction (yes/no) as independent variable. Results showed a significant group main effect of the correlates between participants with and without sexual attraction ($F(9, 404) = 19.00$, $p < .001$, $\eta^2 = .30$). Separate univariate analyses revealed that significant differences were found for solitary sexual desire ($F(1, 412) = 19.04$, $p < .001$, $\eta^2 = .04$), dyadic sexual desire ($F(1, 412) = 165.69$, $p < .001$, $\eta^2 = .29$), physical health ($F(1, 412) = 4.40$, $p < .05$, $\eta^2 = .01$), and attachment anxiety ($F(1, 412) = 6.80$, $p < .05$, $\eta^2 = .02$), i.e., participants who reported not experiencing sexual attraction scored lower on solitary sexual desire, dyadic sexual desire and attachment anxiety, and higher on physical health, compared to participants who did experience sexual attraction. No significant differences between the groups were found on mental health ($F(1, 412) = 1.19$, $p = .28$, $\eta^2 = .00$), self-esteem ($F(1, 412) = .79$, $p = .38$, $\eta^2 = .00$), body appreciation ($F(1, 412) = .36$, $p = .55$, $\eta^2 = .00$), genital self-image ($F(1, 412) = .34$, $p = .56$, $\eta^2 = .00$) or attachment avoidance ($F(1, 412) = 3.32$, $p = .07$, $\eta^2 = .01$).

Table 2

Means and SDs of outcome scores for participants not experiencing sexual attraction (n = 324) and participants experiencing sexual attraction (n = 136), and results of univariate analyses of variance

	Not experiencing sexual attraction M (*SD*)	Experiencing sexual attraction M (*SD*)
SDI-Solitary sexual desire (0-23)***	4.89 (5.53)	7.61 (6.41)
SDI-Dyadic sexual desire (0-62)***	2.25 (3.86)	11.54 (10.78)
SF-12 PCS (0-100)*	84.23 (15.37)	80.50 (19.24)
SF-12 MCS (0-100)	64.09 (20.12)	61.66 (22.39)
RSE (0-30)	15.04 (5.32)	14.51 (6.03)
BAS (1-5)	3.74 (.73)	3.69 (.76)
FGSIS (7-28)	18.86 (3.97)	19.11 (4.16)
ECR-R-Anxiety (1-7)*	3.29 (1.19)	3.62 (1.18)
ECR-R-Avoidance (1-7)	3.41 (1.16)	3.64 (1.18)

SDI Sexual Desire Inventory, *PCS* Physical Component Summary Measures-SF12, *MCS* Mental Component Summary Measures-SF-12, *RSE* Rosenberg Self-Esteem Scale, *BAS* Body Appreciation Scale, *FGSIS* Female Genital Self-Image Scale, *ECR-R* Experiences in Close Relationships-Revised

* $p<.05$, *** $p<.001$

Since participants with and without sexual attraction also differed in terms of gender, age category, educational level, relationship status, romantic attraction, masturbatory frequency and sexual experience, it is possible that the associations between experiencing sexual attraction and the outcome variables are mediated by these demographic characteristics. To test the mediation effect of these variables, seven separate MANOVA' s were conducted with solitary sexual desire, dyadic sexual desire, self-esteem, body appreciation, genital self-image, physical health, mental health, attachment anxiety and attachment avoidance as dependent variables, and gender/ age category/ education/ relationship status/ romantic attraction/ sexual experience/

masturbation frequency as independent variable. The group main effect on the correlates of gender ($F(9, 404) = 11.02$, $p < .001$, $\eta^2 = .20$), age category ($F(36, 1616) = 2.19$, $p < .001$, $\eta^2 = .05$), relationship status ($F(9, 404) = 6.63$, $p < .001$, $\eta^2 = .13$), romantic attraction ($F(9, 404) = 3.60$, $p < .001$, $\eta^2 = .07$), sexual experience ($F(9, 404) = 6.35$, $p < .001$, $\eta^2 = .12$) and masturbation frequency ($F(63, 2828) = 5.83$, $p < .001$, $\eta^2 = .12$), were all significant. The group main effect of education ($F(27, 1170) = 1.27$, $p = .16$, $\eta^2 = .03$) was not significant. Next, it was tested whether the effect of experiencing sexual attraction on the correlates remained significant when gender, age category, relationship status, romantic attraction, sexual experience and masturbation frequency were included in the model. While the group main effects of gender ($F(9, 389) = 4.22$, $p < .001$, $\eta^2 = .09$), age category ($F(36, 1568) = 2.40$, $p < .001$, $\eta^2 = .05$), relationship status ($F(9, 389) = 4.54$, $p < .001$, $\eta^2 = .09$), romantic attraction ($F(9, 389) = 3.10$, $p < .01$, $\eta^2 = .07$), sexual experience ($F(9, 389) = 2.85$, $p < .01$, $\eta^2 = .06$) and masturbation frequency ($F(63, 2765) = 5.26$, $p < .001$, $\eta^2 = .11$), on the correlates were all significant, the group main effect of experiencing sexual attraction on the correlates remained significant as well ($F(9, 389) = 13.59$, $p < .001$, $\eta^2 = .24$). This shows that the associations we found between experiencing sexual attraction and the outcome variables were not mediated by differences between the groups in socio-demographic characteristics.

DISCUSSION

The current study was inspired by the observation that asexual people are a heterogeneous group, and aimed to compare asexual individuals who indicated not experiencing sexual attraction towards others with asexual individuals who indicated they do experience sexual attraction. Both groups were compared on a number of socio-demographic characteristics, sexual experience, prevalence of sexual abuse, and on their scores on physical and mental health, attachment style, self-esteem, body appreciation, genital self-image, and solitary and dyadic sexual desire.

It was found that asexual individuals not experiencing sexual attraction were younger, more often female, more often following a full daytime education, less often engaged in a partner relationship, and less often indicated experiencing romantic

attraction, compared to asexual individuals who did experience sexual attraction. The difference between the two groups in relationship status may be explained by the (relatively small) difference in romantic attraction, but could also suggest that experiencing some level of sexual attraction facilitates one's possibility of engaging in a partner relationship. However, Brotto and Smith (2014) stated that "although sexual desire is a strong motivator for pair bonding, it facilitates, but is not required for, romantic attachment" (p. 212). More research is needed into facilitating factors for pair bonding in asexual individuals. With regard to religious affiliation, no difference was found between the two groups. Further, since only one out of five participants reported a traditional religious affiliation, our findings do not support the hypothesis that asexual people distance themselves of sexuality out of religious motives (Bogaert, 2004).

Previous research has shown that asexual people are not sexually inactive *per se*, i.e., some asexual individuals have been, or still are, sexually active (Brotto et al., 2010; Prause & Graham, 2007). The current study revealed that less asexual individuals without sexual attraction reported to have had sex when compared to asexual individuals who did experience sexual attraction. This could be interpreted as that engaging in sex with a partner is less negotiable for asexual people without sexual attraction. Alternatively, and as hinted on earlier, it is possible that asexual individuals who are not experiencing sexual attraction have greater difficulties to engage in a partner relationship (e.g., Haefner, 2011). Given that asexual people appear to mainly report partner related motives to engage in sexual behaviors, and, as a consequence, only or mainly engage in sexual activity when in a partner relationship, it seems that having a partner relationship makes it more likely for asexual persons to report sexual experience. In the current study, it was found that most participants had experience with masturbation. While around one out of five asexual individuals without sexual attraction indicated having never masturbated, only 7.4% of asexual individuals who experienced sexual attraction did so. One possible explanation, further to be tested empirically, is that this could be related to the differences in gender and age category we found between asexual persons with and without sexual attraction. Indeed, women reported lower masturbation frequencies than men, and younger individuals may have had less time to gain experience with masturbation. Alternatively, experiencing (some

level of) sexual attraction could make one more attentive to and aware of one's own physical sexual arousal, which in turn would make it more likely for a person to engage in masturbation in response to experienced physical arousal. The fact that masturbation levels in asexual people are rather high, inspired Brotto and Smith (2013) – and we concur - to suggest that desire for masturbation, i.e., solitary sex, might be independent from desire for sexual interaction with a partner. They also hypothesized that asexuality is more about lack of attraction for partnered sex, than it would be a about lack of attraction for all forms of sex. The difference in masturbation frequency we found between asexual individuals who do and do not experience sexual attraction, could thus imply that the former group would be more inclinded to only lack attraction for partnered sex, while the latter group lacks an attraction to all forms of sex.

Regarding prevalence of a history of sexual abuse, our findings showed that compared to asexual individuals who did experience sexual attraction, less asexual individuals who did not experience sexual attraction had been victim of sexual abuse before age 18. This difference may be relevant in distinguishing between acquired and lifelong asexuality: some people may 'become' asexual, for example after a traumatic event, while others may have always felt this way. It could be hypothesized that asexual people not experiencing sexual attraction are more likely to have always felt like this, while asexual people who do experience (some degree of) sexual attraction could be more likely to have acquired their asexuality. In order to confirm this hypothesis, however, extensive longitudinal research is needed on the characteristics and processes that underlie and influence the development of lifelong versus acquired asexuality. In this regard, it is important to note that the association between asexuality and sexual abuse is a sensitive topic within the asexual community (www.asexuality.org). Indeed, there is an ongoing debate on whether asexual persons who report a history of sexual abuse, can be considered as 'truly' asexual (www.asexuality.org). More research is needed to fully understand this debated association between lacking sexual attraction and a history of sexual abuse.

In the current study, no differences between the two subgroups of asexual people were found in terms of mental health, body appreciation, self-esteem or genital self-image. We did find that asexual individuals without sexual attraction reported lower

levels of solitary and dyadic sexual desire, a higher level of physical health, and fewer of them reported an anxious attachment style when compared to participants who did indicate experiencing sexual attraction. The difference between the two groups in solitary and dyadic sexual desire is in line with the findings that participants lacking sexual attraction showed a lower masturbation frequency – a behavioral outcome of solitary sexual desire – and had less experience with sex with a partner – a behavioral outcome of dyadic sexual desire. Overall, the finding that desire scores for both groups were low, corroborates earlier findings in asexual people by Prause and Graham (2007). The levels of solitary and dyadic sexual desire scores they found were similar to those we found for asexual individuals who did experience sexual attraction, but were remarkably higher than those of asexual individuals in our study who did not experience sexual attraction. Perhaps this is due to the fact that Prause and Graham (2007) used self-identification as asexual as the criterion for asexuality (i.e., participants were categorized as asexual based on their response to a question regarding sexual orientation), instead of a question regarding sexual attraction. It is possible that their sample of asexual people included (mainly) individuals who do experience some degree of sexual attraction, and that people experiencing (some degree of) sexual attraction, even though they consider themselves asexual, are more likely to experience higher levels of solitary and dyadic sexual desire. The difference between the two groups in sexual desire scores, suggests a fascinating and complex relationship between sexual attraction and sexual desire that needs to be clarified in future research. Asexual individuals with varying degrees of (lacking) sexual attraction, could form an interesting population to further explore this association.

Even though the absolute difference in scores between groups was quite small, findings showed that participants who do not experience sexual attraction scored higher on physical health than participants who do experience sexual attraction. This is remarkable, since both Bogaert (2004) and Poston and Baumle (2010) reported associations between sexual attraction and physical health, showing that individuals who lack sexual attraction scored lower on physical health. It should be noted, however, that both groups in the current study showed high scores on physical health compared to what has been reported in the general population. In a population-based study in

Flanders, for example, mean score on physical and mental health was 78.85 (*SD* = 20.59) and 74.88 (*SD* = 15.95), respectively, for participants between 18 and 67 years old (Buysse et al., 2013). Perhaps this difference could be explained by the young mean age of the asexual participants in the current study, since younger people are more likely to report a better physical health status (e.g., Fleischman & Lawrence, 2003; Mols, Pelle, & Kupper, 2009).

Further, based on Brotto et al.'s (2010) statement that asexuality might be related to different attachment styles, we explored how lacking sexual attraction was related to an insecure (i.e., anxious or avoidant) attachment style. Our findings point at an association between lacking sexual attraction and anxious attachment, while the association with avoidant attachment was non-significant. In line with the suggested relevance of sexual abuse for differentiating between lifelong and acquired asexuality, it could be hypothesized that attachment styles are similarly important for differentiating between lifelong and acquired asexuality. One could argue that for some asexual individuals, perhaps those indicating they do experience sexual attraction, their asexuality is related to an insecure attachment style, leading them to avoid closeness and intimacy with other people, and as a consequence, to avoid engaging in a (romantic or sexual) partner relationship and in sexual encounters with a partner. In the general population, attachment avoidance has indeed been found to be related with less sexual intimacy (Birnbaum, 2007), less emotional closeness (Davis, Shaver, & Vernon, 2004), and lower sexual frequency (Bogaert & Sadava, 2002; Brassard, Shaver, & Lussier, 2007). Little, McNulty and Russell (2010), however, did not find an association between insecure attachment and sexual frequency. It would be interesting for future research to further explore this fascinating and seemingly complex association between attachment style and asexuality.

Limitations and implications

Although this study has yielded interesting results, some limitations are noteworthy. First, although we did include a number of outcome variables, i.e., physical and mental health, attachment style, self-esteem, body appreciation, genital self-image and solitary

and dyadic sexual desire, when comparing asexual people with and without sexual attraction, this list is obviously not exhaustive. Possibly, including other variables may result in other differences between asexual individuals who do and do not experience sexual attraction. Also, we approached asexuality from an empirical point of view. It would be interesting, however, to develop a theoretical perspective on asexuality to enable a more focused exploration of this topic. Conceptualizing asexuality as a sexual orientation, might be helpful in this regard (e.g., Van Houdenhove et al., in press; Yule et al., 2014). Second, this study did not include a non-asexual control group. Exploring differences between asexual people and sexual people is important to survey the vulnerabilities of the former (e.g., impaired mental health, attachment difficulties), which in turn could be important for a tailored scientific and informed (affirmative) clinical approach of asexual persons. While asexuality is not considered a pathology or dysfunction (e.g., DSM-5, APA, 2013), some asexual individuals may need counseling with regard to their asexuality. Coming to an asexual identity, being asexual in a sexual society and engaging in a relationship with a sexual partner are all situations that may be very difficult for asexual people to handle and for which they may wish to consult a (sex)therapist. Third, even though we attempted to broadly recruit participants, most participants were redirected to the online survey via AVEN and other (online) communities of asexual people. Hinderliter (2009) described how recruiting from AVEN poses serious problems for quantitative research. After all, participants familiar with AVEN and the way AVEN conceptualizes asexuality, may be biased in their responses. It is not clear to what extent this selection bias may have influenced our findings. Finally, with a mean age of 28 years, this study is characterized by a young population. Since other studies also have included a relatively young sample of asexual participants (e.g., Brotto et al., 2010; Yule et al. 2013, 2014), it is important to consider the potential consequences of this finding. Does this mean that the asexual population is in fact a young population? Or could it be that research until now, including the current study, has not succeeded in reaching older asexual individuals? If the latter would be the case, this would clearly limit the generalizability of our and previous research findings. For sure, it would be interesting for future research to explore whether young age is a characteristic of the asexual population, and if not, to investigate to what extent the age

bias in asexuality research has an impact on findings. Perhaps it would be helpful to use different recruitment strategies in order to obtain a more heterogeneous sample in terms of age.

Lastly, we would like to formulate some implications of our findings and a number of guidelines for future research on asexuality. Our findings suggest that asexual persons who do not experience sexual attraction, and asexual persons who (sometimes) do, represent substantially different subpopulations within the asexual population. The differences in socio-demographic characteristics and psycho-sexual correlates between asexual persons with and without sexual attraction testify to the variability within the asexual population (Van Houdenhove et al., 2014), and emphasize the necessity to include this heterogeneity in asexuality research. The current study approached sexual attraction from a categorical perspective, i.e., participants either experienced sexual attraction, or they did not. However, it would be informative for future research to study sexual attraction from a continuous perspective. In other words, researchers should not only ask participants *if* or *whether* they experience sexual attraction to someone or something, but if so, also *to what extent* they experience sexual attraction. After all, while lack of sexual attraction seems the core criterion of asexuality, asexual people vary in the degree to which they do not experience sexual attraction: some individuals have never experienced any sexual attraction towards another person, some have experienced sexual attraction in the past but no longer do, others can still experience some degree of sexual attraction, but only under certain circumstances (e.g., when in an intimate partner relationship). By adopting a continuous perspective on (lack of) sexual attraction, we could explore characteristics of asexual people at different points of the sexual attraction continuum, i.e., with varying degrees of sexual attraction, and not only compare asexual individuals with and without sexual attraction.

While not yet included in asexuality research, it would be relevant to include a measure of lifelong versus acquired asexuality in future studies on asexuality. For some people, their asexuality may be something that is felt as innate to them, while for others, it may have been 'triggered' by a certain event or personality characteristic. Lifelong and acquired asexuality may be associated with different socio-demographic characteristics and psycho-sexual correlates, and as a consequence, asexual individuals

with lifelong versus acquired asexuality may be distinct subpopulations. The role of (not) experiencing sexual attraction, and the relevance of having experienced sexual abuse and of attachment style in making this differentiation, remains to be seen. Also, other biological and psychological variables, such as hormonal values and genetic factors, and measures of personality characteristics and psychopathology (e.g., autism spectrum disorders (Brotto et al., 2010)), should be included in a comparison of people at different points of the sexual attraction continuum.

In conclusion, we advocate that studying asexuality from a continuous perspective does justice to the variability within the asexual population and is, as a consequence, quintessential to fully grasp the complexity of asexuality. Conceptualizing asexuality as category of sexual orientation may inspire a more theoretically based and better focused approach when studying asexuality.

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Chapter 5 : Exploring gender differences in associated factors of asexuality

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ABSTRACT

Few studies have explored gender differences in asexual individuals. This study aimed to assess differences between asexual men and asexual women in relationship status, sexual experience and masturbation, solitary and dyadic sexual desire, history of sexual abuse, physical and mental health, self-esteem, body image, genital self-image and attachment style. Participants were recruited through social media, posts on diverse general health- and lifestyle related websites and the Asexuality Visibility and Education Network. From a larger sample of asexual people, a subgroup indicating not to experience sexual attraction (*N* = 324), were selected. Participants (21.6% male, 78.4% female, mean age = 26.95 years, *SD* = 9.93) completed an online survey. Findings showed that more asexual women than asexual men experience romantic attraction, more asexual women than asexual men were currently engaged in a partner relationship, and that asexual men showed higher masturbation frequencies than asexual women. Further, asexual men scored higher on solitary sexual desire, mental health, self-esteem and genital self-image than asexual women. While these gender differences are also found in the general population, asexual men and women did not differ on a number of characteristics that non-asexual men and women differ on. Comparative research between asexual men and women, and non-asexual men and women is needed to fully comprehend these differences.

INTRODUCTION

Asexuality has been described as a lack or absence of sexual attraction (Bogaert, 2004), as a self-identification as asexual (Prause & Graham, 2007) or as a lack or absence of sexual behavior (Scherrer, 2008). Based on a large-scale study on asexuality, Van Houdenhove and colleagues (in press) advocated that asexuality should primarily be defined by a lack of sexual attraction, because self-identification as asexual implies familiarity with the term "asexual", which increases the likelihood of false negatives in research: people who are wrongly not identified as asexual because they are unknown with the term. It is often stated that asexuality can be seen as a fourth category of sexual orientation (Brotto, Knudson, Inskip, Rhodes, & Erskine, 2010; Van Houdenhove et al., in press; Yule, Brotto, & Gorzalka, 2014). Recently, Yule et al. (2014) explored handedness, birth order and finger length ratios as biological markers of asexuality and concluded that asexuality should indeed best be conceptualized as a sexual orientation.

Little is known about if, and to what extent, there are differences between asexual men and women in socio-demographic characteristics or in associated factors of asexuality. Research among individuals who self-identify as asexual has shown that more women than men appear to be asexual, reflected in studies in which the percentage of asexual men varied from 17% to 37%, and that of asexual women varied from 63% to 71% (Bogaert, 2004; Brotto et al., 2010; Prause & Graham, 2007; Scherrer, 2008). Most studies report their findings for asexual men and asexual women separately, but only few have included comparisons between men and women, perhaps due to the low percentage of asexual men included in these studies. Brotto and colleagues (2010) reported that asexual women were more likely to be in a relationship than asexual men (20.8% versus 7.4%). Aicken, Mercer and Cassell (2013), however, found equal percentages of single asexual men (69.9%) and single asexual women (71.2%). They further found that a slightly smaller proportion of men (59.7%) compared to women (66.1%) reported never having had a sexual partner. However, due to the small number of asexual men (n = 15) and asexual women (n = 35) who never had sex, Aicken et al. (2013) could not explore whether this difference was statistically significant. Brotto et al. (2010) found that a majority of participants (73%) had never engaged in sexual

intercourse, but the authors did not provide percentages for men and women separately. They did find significant differences between asexual men and asexual women in masturbation frequency: 48.8% of asexual men indicated masturbating two to seven times a week, compared to 6.8% of women indicating this frequency. The masturbation frequency in asexual males, reported by Brotto et al. (2010) was similar to available data for sexual men.

A number of studies have explored associations between asexuality and physical health, mental health and sexual desire. Some of these (Bogaert, 2004; Brotto et al., 2010; Poston & Baumle, 2010; Yule et al., 2013b) report their findings for asexual men and asexual women separately, but do not include a comparison between the two groups. Bogaert (2004) explored predictors of asexuality for men and women separately and found that in women, age, social class, ethnicity, education, menarche, height and religiosity all accounted for unique variation in the prediction of asexuality, while in men only social class, education and religiosity were significant predictors. Physical health appeared to be a significant predictor of asexuality in both men and women, but only after eliminating social class and education from analyses, indicating that health and social class are related. When defining asexuality based on sexual attraction, Poston and Baumle (2010) found self-reported health condition to be a significant predictor of asexuality in women, but not in men. The authors, however, did not specify whether "health condition" refers to physical health or mental health or a combination of both. Van Houdenhove, T'Sjoen, Enzlin, and Gijs (under review) found that asexual individuals who do not experience sexual attraction scored higher on physical health than asexual individuals who do experience sexual attraction. Regarding mental health, Brotto et al. (2010) reported that twice as many asexual women (20.6%) as asexual men (9.3%) reported ever having been diagnosed with a psychiatric disorder. However, these results did not differ significantly from national reference values for psychiatric disorders both in the United States and in the United Kingdom (Kessler et al., 2005; Spiers, Bebbington, McManus, Brugha, Jenkins, & Meltzer, 2011). Brotto and colleagues (2010) further reported that mean depression scores, measured with the Beck Depression Inventory, were in the non-clinical range, both for women and for men. Recently, Yule, Brotto and Gorzalka (2013b) found that 24% of asexual men and 30% of asexual women reported a

current mood disorder, while 23% of asexual men and 23% of asexual reported a current anxiety disorder. Van Houdenhove et al. (under review) did not find any differences in mental health between asexual individuals who do experience sexual attraction and asexual individuals who do not. With regard to sexual desire, Brotto et al. (2010) reported that asexual women scored lower (i.e., more impaired) than a comparison group of women with hypoactive sexual desire disorder (HSDD). The desire-scores of asexual men were not compared with those of a control group of men with HSDD. Comparing asexual individuals with and without sexual attraction, Van Houdenhove et al. (under review) indicated that not experiencing sexual attraction was associated with lower scores on both solitary and dyadic sexual desire.

Apart from physical and mental health, little is known on associated factors of asexuality. Brotto et al. (2010) have suggested a potential association between asexuality and an avoidant attachment style. Van Houdenhove et al. (under review) reported that asexual individuals who do not experience sexual attraction were more likely to show an anxious attachment style than asexual individuals who do experience sexual attraction, while no differences were found regarding an avoidant attachment style. While in the general population men and women do not appear to differ in their attachment style (van Ijzendoorn & Bakermans-Kranenburg, 2010) it is unclear whether the same result would be found for asexual people specifically. Based on studies regarding the sexual population (e.g., Berman, Berman, Miles, Pollets, & Powell, 2003; Goldenberg, McCoy, Pyszczynski, Greenberg, Solomon, 2000; Hartmann, Heiser, Ruffer-Hesse, & Kloth, 2002; Herbenick, Schick, Reece, Sanders, & Fortenberry, 2011; La Rocque & Cioe, 2010; Reinholtz & Muehlenhard, 1995; Reissing, Laliberté, & Davis, 2005; Seal, Bradford, & Meston, 2009), associations could further be suggested between asexuality, and body image, self-esteem and genital self-image. Comparing asexual individuals who do experience sexual attraction with asexual individuals who do not, Van Houdenhove et al. (under review) did not find any differences in self-esteem, body image and genital self-image. Research in the general population has repeatedly demonstrated gender differences in self-esteem, body image and genital self-image, with men showing a better self-esteem and a more positive attitude towards their body and genitals, than women (Davison & McCabe, 2005; Feingold & Mazzella, 1998; Herbenick & Reece, 2010;

Kling, Hyde, Showers, & Buswell, 1999; McMullin & Cairney, 2004; Morisson, Bearden, Ellis, & Harriman, 2005). Since no research has addressed gender differences in associations between asexuality and body image, self-esteem and genital self-image, it remains to be seen whether these gender differences can also be found in the asexual population. A final variable that has been argued to be associated with asexuality is having been victim of sexual abuse (e.g., Prause & Graham, 2007; Van Houdenhove et al., in preparation). Van Houdenhove et al. (under review) found that compared to asexual individuals who do not experience sexual attraction, asexual individuals who do experience sexual attraction were more likely to have a history of sexual abuse before age 18, while no differences were found between the two groups in prevalence of sexual abuse after age 18. Research in the general population has shown that more women than men report a history of sexual abuse (e.g., Bajos & Bozon, 2008; Bakker, de Graaf, de Haas, Kedde, Kruijer, & Wijsen, 2009; Hellemans & Buysse, 2013). It is unclear whether the same result would be found in the asexual population.

In this study, we compared asexual men and women in terms of their physical and mental health, attachment style, self-esteem, body appreciation, genital self-image, solitary and dyadic sexual desire and history of sexual abuse. We explored whether differences between asexual men and women would be in the same line as the differences that have been found between sexual men and women.

Method

Participants

Participants were recruited between September 2012 and March 2013, through the Dutch, English and Spanish forums of the Asexuality Visibility and Education Network (AVEN; www.asexuality.org), posts on several health- and lifestyle-related websites in Europe, the United States and South-America, and social media. The introductory web page for the study presented a broad description of asexuality: *"Asexuality is commonly described as a lack of experiencing sexual attraction. Asexual people don't feel sexually attracted to other people - neither men nor women. Most asexual people indicate never*

having experienced sexual attraction. Yet, there can be quite some variation within the asexual population: some have or wish to have a relationship, others don't, some are (or have been) sexually active, others are not". Individuals who recognized themselves in this description were invited to complete the survey. Initially, 1033 responses were obtained. Participants who did not complete the entire survey (*n* = 481), participants younger than 18 (*n* = 61), participants not self-identifying as either male or female (*n* = 31) and participants who indicated to experience sexual attraction (*n* = 136) were not included in the analyses, resulting in a final number of 324 participants, of which 21.6% was male and 78.4% was female.

Measures

Demographic characteristics, sexual experience, frequency of masturbation and history of sexual abuse. Participants completed demographic information on sex, age, education, relationship status, religious affiliation/life philosophy and masturbation frequency. Apart from age, which was in a free-response format, we used forced-choice response options. Sexual experience was measured by the question: "*Have you ever had sex? With sex, we are referring to the different ways of making love, during which there is genital contact, so when touching the sexual organs of someone else".* Participants were asked whether they had been victim of sexual abuse before and after the age of 18. Because sexual abuse can entail various aspects, the following questions were posed: *"Did someone before you were 18 years old/Did someone after you were 18 years old (1) force you to masturbate when you didn't want to?, (2) force you to give oral sex?, (3) force you to receive oral sex?, (4) try to rape you (sexual intercourse via vagina or anus without consent)?, (5) rape you (sexual intercourse via vagina or anus without consent*)?". For all items, participants could indicate whether or not they had ever been victim of this.

Measures of asexuality. We asked for sexual attraction with the question *"Towards whom do you feel sexually attracted?"*. Participants could answer on a 5-point Likert scale (from *1* = only towards women to *5* = only towards men); they could also answer

these questions with *"I do not feel sexual attraction towards anyone"*. Only participants indicating that they do not feel sexual attraction towards others were categorized as asexual and thus included in the analyses.

Correlates of asexuality. In order to measure sexual desire, the Sexual Desire Inventory (SDI; Spector, Carey, & Steinberg, 1996) was used. The SDI is a 14-item self-report scale, comprising two subscales: solitary sexual desire, including eight items, and dyadic sexual desire, including three items. The solitary sexual desire-subscale includes items such as: "How strong is your desire to engage in sexual behavior by yourself?". The dyadic sexual desire-subscale includes items such as: "When you first see an attractive person, how strong is your sexual desire?". Three items concerning the frequency of sexual desire are scored on an 8-item response scale, from *Not at all* to *More than once a day*; the remaining questions are scored on an 9-point Likert-type scale, with higher scores indicating more desire. An overall solitary sexual desire-score and dyadic sexual desire score was obtained by summing the responses to the corresponding items. Solitary sexual desire scores range from 0 to 23, dyadic sexual desire scores range from 0 to 62. Internal consistency for the solitary sexual desire-subscale was excellent (α = .90), internal consistency for the dyadic sexual desire-subscale was good (α = .76).

In order to measure health status, the Short Form Health Survey (SF-12; Ware, Kosinski, & Keller, 1996) was used. The SF-12 is a 12-item self-report measure of health status and contains items assessing general health, physical functioning, role limitations as a consequence of physical health problems, pain, vitality, social functioning and role limitations resulting from emotional problems and mental health. Two subscales are distinguished: Physical Component Summary Measures (PCS) and Mental Component Summary Measures (MCS), each containing six items. The PCS-subscale includes items such as: "In general, would you say your health is…", the MCS-subscale includes items such as "How much of the time during the past four weeks did you feel calm and peaceful?". Six items were reverse coded prior to analysis. Both PSC- and MCS-scores range from 0 to 100, with higher scores indicating higher physical and mental well-being. Internal consistency for both subscales was good (α = .71 for PCS, α = .80 for MCS).

In order to measure global self-esteem, the Rosenberg Self-esteem Scale (RSE; Rosenberg, 1965) was used. The RSE is a ten-item self-report scale, and includes items such as: “On the whole, I am satisfied with myself” and “I certainly feel useless at times”. All items are scored on a 4-point Likert-type scale from *Strongly agree* to *Strongly disagree,* with higher scores indicating higher self-esteem. Five items were reverse coded prior to analysis. An overall RSE-score was computed by summing the responses to all items. RSE-scores range from 0 to 30. Internal consistency of the RSE was very good (α = .89).

In order to measure body image, the Body Appreciation Scale (BAS; Avalos, Tylka, & Wood-Barcalow, 2005) was used. The BAS is a 13-item self-report scale, designed to measure (four aspects of) positive body-image: a) favorable opinions of one's own body; (b) acceptance of the body in spite of imperfections; (c) respect for the body, particularly in relation to its needs; and (d) protection of the body, including rejection of unrealistic ideals. The scale includes items such as: “I respect my body” and “I engage in healthy behaviors to take care of my body”. Item 12 of the scale, which refers to the impact of media images, is sex-specific (Tylka, personal communication, 2007; and refers to unrealistically thin images for women and unrealistically muscular images for men), and so two versions of the scale were created and presented to women and men, respectively. All items are scored on a 5-point Likert-type scale from *Never* to *Always*, with higher scores reflecting a more positive body image. An overall BAS-score was obtained by averaging the responses to all items, ranging from 1 to 5. Internal consistency of the BAS was excellent (α = .93).

In order to measure genital self-image, the Female Genital Self-Image Scale (FGSIS; Herbenick & Reece, 2010) was used. The FGSIS is a 7-item self-report scale, originally designed for women, but since none of the items were sex-specific and since no other instrument was available when the study was started, we used the instrument for women as well as for men. This scale includes items such as: “I feel positively about my genitals” and “I think my genitals smell fine.” Each item was rated on a 4-point Likert-type scale ranging from *Strongly disagree* to *Strongly agree*, with higher scores indicating a more positive genital self-image. The outcome of FGSIS is a total sum score ranging from 7 to 28. Internal consistency of the FGSIS was good (α = .83).

In order to measure attachment style, the Experiences in Close Relationships-Revised (ECR-R; Fraley, Waller, & Brennan, 2000) was used. The ECR-R is a multidimensional self-report scale that measures attachment to a partner. We used an abbreviated, 12 item version of the original ECR-R (Wei, Russell, Mallinckrodt, & Vogel, 2007). The scale includes two subscales, Anxiety and Avoidance, each containing six items. Participants who were engaged in a relationship and single participants answered the same questions, but received different instructions: participants who were engaged in a partner relationship were instructed to answer the questions with regard to their partner, while single participants were instructed to answer the questions with regard to "the other", the person they are most attached to. The Anxiety-subscale includes items such as: "I need a lot of reassurance that I am loved by my partner/the other", the Avoidance-subscale includes items such as: "I want to get close to my partner/the other, but I keep pulling back". All items are assessed on a 5-point Likert-type scale from *Totally disagree* to *Totally agree*, with higher scores reflecting more anxiety or more avoidance. Four items were reverse coded prior to analysis. Sum scores on the Anxiety-subscale and on the Avoidance-subscale were averaged. For both subscales, scores range from 1 to 7. Both subscales were found to have a good internal consistency (α = .78 for the Anxiety-subscale, α = .77 for the Avoidance-subscale).

Procedure

The survey was created using the program LimeSurvey®, and was open to recruitment from September 2012 - March 2013. Participants were invited to complete an online questionnaire from a link to the survey placed on the English, Dutch and Spanish AVEN-websites, lifestyle- and health-related websites and social media. The first webpage of the survey offered a brief description of the study, followed by a consent form. Only participants who agreed to this consent form could start the survey that took approximately 50 minutes to complete. This study was approved by the ethical boards of Ghent University Hospital and the University Hospital Leuven.

Statistical analysis

Statistical analyses were performed using SPSS (version 20.0; Chicago, IL). A visual inspection of histograms, normal Q-Q plots and box plots showed that the scores on self-esteem, body appreciation, genital self-image, attachment avoidance and attachment anxiety were approximately normally distributed. The scores on solitary and dyadic sexual desire were positively skewed, and the scores on physical health and mental health were negatively skewed. Even though not all variables were normally distributed, we did chose to perform a multivariate analysis of variance (MANOVA) and separate univariate analyses of variance (ANOVAs) to calculate differences between groups. MANOVA is robust to violations of normality, especially when using large study samples (e.g., Olson, 1974). Effect sizes were estimated with eta squared (η^2). Bivariate correlations (r) and chi-square tests (χ^2) with Cramer's V-tests were used to measure associations between variables. The level of significance was set at $p < .05$.

RESULTS

Demographic variables, frequency of masturbation, sexual experience and history of sexual abuse.

Table 1 shows the demographic characteristics of the participants and the percentage of participants that have sexual experience and a history of sexual abuse before or after age 18. The majority of participants (87%) were younger than 40 years old. No significant gender differences in age category were found ($\chi^2(4, N = 324) = 1.00$, $p = .91$, Cramer's V = .05). Regarding educational level, around 49.4% of participants was currently following a full daytime education. Of the 156 participants who were currently not in full daytime education, a large majority (80.1%) had received higher education. No significant differences in education level were found between men and women ($\chi^2(3, N = 308) = 6.89$, $p = .08$, Cramer's V = .15). The majority of participants (75.3%) experienced romantic attraction, with more women than men stating that they experience romantic attraction ($\chi^2(1, N = 324) = 4.42$, $p < .05$, Cramer's V = .12). More than 80% of

participants were single at the time of responding to our survey. Significant differences in current relationship status were found between men and women ($\chi^2(1, N = 324) = 8.30$, $p < .01$, Cramer's V = .16), with more single men than single women. Regarding life philosophy or religious affiliation, the majority of participants indicated being liberalist (25.4%), atheist (23.9%) or Christian (21.1%). The difference in religious affiliation between men and women was not significant ($\chi^2(8, N = 284) = 13.44$, $p = .10$, Cramer's V = .22). Regarding sexual experience, 43.5% of participants reported ever having had sex. No significant differences in sexual experience were found between men and women ($\chi^2(1, N = 324) = .89$, $p = .35$, Cramer's V = .05). One out of five participants had never masturbated, around one out of four participants masturbated at least once a week. Significant differences in masturbation frequency were found ($\chi^2(7, N = 324) = 61.64$, $p < .001$, Cramer's V = .44), with more women than men indicating that they had never engaged in masturbation. Also, more men than women indicated having masturbated multiple times a week or every day in the last month, while more women than men indicated having masturbated one single time or more or less once a month, in the last month. Around 8% of participants had a history of sexual abuse before age 18, while approximately 11% has experienced sexual abuse after age 18. No significant gender difference was found for sexual abuse before age 18 ($\chi^2(1, N = 324) = 1.69$, $p = .19$, Cramer's V = .07), or after age 18 ($\chi^2(1, N = 324) = .46$, $p = .50$, Cramer's V = .04).

Table 1

Demographic characteristics, experience with sex, masturbation frequency and history of sexual abuse before and after age 18 of the study participants (total: N = 324, men: n = 70, women: n = 254), using χ^2-test to compare between groups

	Total		Men		Women	
	n	%	*n*	%	*n*	%
Age (in years)						
18-29	242	74.7%	54	77.1%	188	74%
30-39	40	12.3%	8	11.4%	32	12.6%
40-49	25	7.7%	5	7.1%	20	7.9%
50-59	14	4.3%	3	4.3%	11	4.3%
>60	3	0.9%	0	1.2%	3	1.2%
Education						
Primary education	2	0.6%	1	1.5%	1	0.4%
Secondary education	29	9.4%	3	4.6%	26	10.7%
College education	125	40.6%	21	32.3%	104	42.8%
Currently in full daytime education	152	49.4%	40	61.5%	112	46.1%
Relationship status**						
Single	262	80.9%	65	92.9%	197	77.6%
In a relationship	62	19.1%	5	7.1%	57	22.4%
Romantic attraction*						
Yes	244	75.3%	46	65.7%	198	78%
No	80	24.7%	24	34.3%	56	22%

	Total		Men		Women	
	n	%	*n*	%	*n*	%
Religious affiliation/life philosophy						
Liberalist	72	25.4%	23	36.5%	49	22.2%
Atheist	68	23.9%	10	15.9%	58	26.2%
Christian	60	21.1%	14	22.2%	46	20.8%
Believe in something	48	16.9%	7	11.1%	41	18.6%
Indifferent about belief	30	10.6%	9	14.3%	21	9.5%
Jewish	3	1.1%	0	0%	3	1.4%
Islam	2	0.7%	0	0%	2	0.9%
Buddhist	1	0.4%	0	0%	1	0.5%
Sexual experience						
Yes	141	43.5%	27	38.6%	114	44.9%
No	183	56.5%	43	61.4%	140	55.1%
Masturbation frequency***						
Never	66	20.4%	3	4.3%	63	24.8%
Not in the last month	63	19.4%	12	17.1%	51	20.1%
One single time	28	8.6%	1	1.4%	27	10.6%
More or less once a month	42	13%	4	5.7%	38	15%
Several times a month	38	11.7%	10	14.3%	28	11%
More or less once a week	37	11.4%	11	15.7%	26	10.2%
Several times a week	45	13.9%	26	37.1%	19	7.5%
Every day	5	1.5%	3	4.3%	2	0.8%
Sexual abuse						
Before age 18	26	8%	3	4.3%	23	9.1%
After age 18	35	10.8%	6	8.6%	29	11.4%

* $p<.05$, ** $p<.01$, *** $p<.001$

Correlates of asexuality

To explore the associations between the correlates and sex of participants, a multivariate analysis of variance (MANOVA) was performed, with solitary sexual desire, dyadic sexual desire, physical health, mental health, self-esteem, body appreciation, genital self-image, attachment anxiety and attachment avoidance as dependent variables, and gender as independent variable. Results showed a significant group main effect on the correlates between men and women ($F(9, 279) = 3.81$, $p < .001$, $\eta^2 = .11$). Separate univariate analyses revealed that significant differences were found for mental health ($F(1, 287) = 6.28$, $p < .05$, $\eta^2 = .02$), solitary sexual desire ($F(1, 287) = 9.93$, $p < .01$, $\eta^2 = .03$), self-esteem ($F(1, 287) = 4.91$, $p < .05$, $\eta^2 = .02$) and genital self-image ($F(1, 287) = 6.72$, $p < .05$, $\eta^2 = .02$): men scored higher on mental health, solitary sexual desire and self-esteem, and showed a more positive genital self-image than women. No significant differences between men and women were found regarding dyadic sexual desire ($F(1, 287) = 2.87$, $p = .09$, $\eta^2 = .01$), physical health ($F(1, 287) = 3.02$, $p = .08$, $\eta^2 = .01$), body appreciation ($F(1, 287) = .01$, $p = .91$, $\eta^2 = .00$), attachment anxiety ($F(1, 287) = 1.17$, $p = .28$, $\eta^2 = .00$) or attachment avoidance ($F(1, 287) = 1.13$, $p = .29$, $\eta^2 = .00$).

Table 2

Means and SDs of outcome scores for men (n = 70) and women (n = 254), and results of univariate analyses of variance

	Men M(*SD*)	Women M(*SD*)
SDI-Solitary sexual desire (0-23)**	6.87 (6.12)	4.37 (5.26)
SDI-Dyadic sexual desire (0-62)	3.00 (4.81)	2.05 (3.56)
PCS (0-100)	87.29 (15.18)	83.43 (15.35)
MCS (0-100)*	69.83 (17.77)	62.59 (20.46)
RSE (0-30)*	16.38 (5.20)	14.68 (5.30)
BAS (1-5)	3.73 (.75)	3.74 (.72)
FGSIS (7-28)*	20.03 (3.88)	18.55 (3.95)
ECR-R-Anxiety (1-7)	3.44 (1.40)	3.25 (1.13)
ECR-R-Avoidance (1-7)	3.55 (1.02)	3.37 (1.19)

SDI Sexual Desire Inventory, *PCS* Physical Component Summary Measures-SF12, *MCS* Mental Component Summary Measures-SF-12, *RSE* Rosenberg Self-Esteem Scale, *BAS* Body Appreciation Scale, *FGSIS* Female Genital Self-Image Scale, *ECR-R* Experiences in Close Relationships-Revised

* $p<.05$, ** $p<.01$

Since the asexual men and women in our study differed in their relationship status and masturbation frequency, we explored whether the associations between sex of the participants and the correlates were mediated by these two variables. To test the mediation effect of masturbation frequency and relationship status, two separate MANOVA' s were conducted with solitary sexual desire, dyadic sexual desire, self-esteem, body appreciation, genital self-image, physical health, mental health, attachment anxiety and attachment avoidance as dependent variables, and masturbation frequency/ relationship status as independent variable. The group main effect of masturbation frequency on the outcome variables was significant ($F(63, 1953) = 4.17$, $p < .001$, $\eta^2 = .12$), the group main effect of relationship status was also significant ($F(9, 279) = 2.46$, $p < .05$, $\eta^2 = .07$). Next, we tested whether the effect of gender on the

correlates remained significant when masturbation frequency and relationship status were included in the model. Even though the main effects of relationship status ($F(9, 271) = 2.07$, $p < .05$, $\eta^2 = .06$) and of masturbation frequency ($F(63, 1939) = 4.12$, $p < .001$, $\eta^2 = .12$) on the correlates were significant, this was also true for the main effect of sex of participants ($F(9, 271) = 3.64$, $p < .001$, $\eta^2 = .11$). This shows that the effect of sex of participants on the correlates was not mediated by relationship status or by masturbation frequency.

DISCUSSION

This article explored differences between asexual men and women indicating that they do not experience sexual attraction, in socio-demographic characteristics, sexual experience and masturbation, solitary and dyadic sexual desire, history of sexual abuse, physical and mental health, self-esteem, body image, genital self-image and attachment style.

In line with findings by Brotto et al. (2010), we found that asexual men and women differed in relationship status, with more women (22.4%) than men (7.1%) indicating to be engaged in a partner relationship. This gender difference could partially be explained by the fact that more women than men indicated experiencing romantic attraction (78% versus 65.7%). Alternatively, it could be hypothesized that the societal pressure to have sex when in a relationship is greater for men than for women, and that asexual men who are not willing to have sex, would avoid engaging in a partner relationship to escape this pressure, causing a gender difference in relationship status. In line with Aicken et al. (2013), we found similar percentages of asexual men and asexual women who had ever engaged in sexual activity with a partner. Further, the asexual men in our study indicated higher masturbation frequencies than the asexual women. This is comparable with findings on gender differences in masturbation frequency in sexual people (e.g., Petersen & Hyde, 2010; Elaut et al., 2013), and was also reported by Brotto et al. (2010) in their study on asexuality. However, the percentage of asexual women indicating to have never masturbated, was almost two times higher in

Brotto et al.'s (2010) study as in the current study (42.7% versus 25.2%), while the percentages of asexual men without masturbation experience in the two studies were similar (7% versus 4.6% in the current study). Since we used the same criterion to define asexuality (i.e., lack of sexual attraction) as Brotto and colleagues (2010), and taking into account that the study participants in both studies did not differ in terms of mean age, education level or relationship status, it is unclear how this remarkable finding can be explained.

With regard to history of sexual abuse, we did not find any differences between asexual men and asexual women. This is inconsistent with findings from national probability surveys, showing that more women than men report a history sexual abuse (e.g., Bajos & Bozon, 2008, Bakker et al., 2009; Hellemans & Buysse, 2013). Comparing the prevalence rates reported in these national probability surveys with the ones we found in the current study, shows that for asexual women the prevalence rates of sexual abuse before and after age 18 were in the same line as the ones found in the general population. For example, Hellemans and Buysse (2013), using the same definition of sexual abuse as we did, reported that 10.3% of Flemish women between 14 and 80 years have experienced sexual abuse before age 18, while 7.6% reported sexual abuse after age 18. The current study found a slightly lower prevalence (9.1%) of sexual abuse before age 18 in asexual women, while the prevalence of sexual abuse after age 18 was higher in asexual women (11.4%). For asexual men, the prevalence rate of sexual abuse before age 18 (4.3%) was also in the same line as the one reported by Hellemans and Buysse (2013), who found that 3.3% of Flemish men between 14 and 80 years have experienced sexual abuse before age 18. However, Hellemans and Buysse (2013) found a prevalence rate of 0.6% for sexual abuse after age 18 in Flemish men, while the current study showed that 8.6% of asexual men has experienced sexual abuse after age 18. As a consequence, the lack of gender difference in our study could be attributed to the relatively high percentage of asexual men reporting having experienced sexual abuse, especially after age 18. However, it should be noted that the absolute number of asexual men having experienced sexual abuse was very small (n = 9), which clearly limits the generalizability of this finding. Comparative research on the prevalence of sexual abuse in a large group of asexual and sexual men and women is needed to understand

and replicate this remarkable finding. This would enable us to further explore whether asexuality is associated with having experienced sexual abuse, and to study the direction of the association between asexuality and history of sexual abuse: could asexuality be caused by having experienced sexual abuse, or could being asexual make one vulnerable for experiencing sexual abuse? It could be suggested that sexual abuse may be an important factor in differentiating between lifelong and acquired asexuality, i.e., some individuals may 'become' asexual after having experienced sexual abuse. Future research should include a measurement of lifelong versus acquired asexuality, and could explore associations with having experienced sexual abuse, to test the hypothesis that asexual men (and women), indicating to have experienced sexual abuse, are less likely to indicate a lifelong asexuality.

The frequently found gender difference in physical and mental health, with men evaluating their physical and mental health more positively than women (e.g., Burdine, Felix, Abel, Wiltraut, & Musselman, 2000; Fleishman & Lawrence, 2003; Ware, Kosinski, & Keller, 1998), was only partially found in the current study, as we found that asexual men scored higher on mental health, but no significant gender differences were found regarding physical health. Previous research has shown that gender differences in physical health could be explained by sociodemographic and socioeconomic differences between men and women (e.g., Cherepanov, Palta, Fryback, Robert, Hayes, & Kaplan, 2011). Perhaps the lack of gender difference regarding physical health in the current study could be partially explained by the fact that asexual men and women did not differ in education level. More research using more extensive measurements of SES is needed, however, to test this hypothesis. It is remarkable that, compared to findings from a population-based study in Flanders (Buysse et al., 2013), the scores of asexual men and women on physical health are high, while the scores on mental health are low. In line with findings by Yule et al. (2013), this could imply that attention is needed for mental health issues in asexual persons. Further, in line with findings by van Ijzendoorn and Bakermans-Kranenburg (2010), we did not find any gender differences in attachment style. In this regard, gender differences in asexual people, or lack thereof, are very similar to what has been reported in the general population (van Ijzendoorn & Bakermans-Kranenburg, 2010).

With regard to sexual desire, we found that asexual men showed higher levels of solitary sexual desire than asexual women, while the gender difference in dyadic sexual desire was non-significant. In previous asexuality research by Prause and Graham (2007), no gender difference in solitary or dyadic sexual desire was found. Perhaps this could be explained by the small sample size of their study (N = 41). Findings from the sexual population, however, have repeatedly shown that men report higher levels of sexual desire than women (e.g., Baumeister, Catanese, & Vohs, 2001; Petersen & Hyde, 2010). In other words, at least with regard to solitary sexual desire, the gender difference in asexual people appears to be similar to the difference found between men and women in the general population. Moreover, the gender difference we found in solitary sexual desire, is consistent with the difference we found regarding masturbation frequency. Similarly, the fact that asexual men and asexual women did not differ in their level of dyadic sexual desire, is consistent with the finding that gender differences in sexual experience were not significant. The lack of gender difference in dyadic sexual desire may be related to the fact that both asexual men and asexual women show remarkably low scores on dyadic sexual desire, compared to what has been reported in the general population (e.g., Prause & Graham, 2007).

Further, we found a gender difference in self-esteem, with asexual men indicating higher self-esteem than asexual women. It appears that differences in self-esteem between asexual men and women are similar to differences found in the general (sexual) population. Conducting a meta-analysis on gender differences in self-esteem, Kling et al. (1999) reported that men indicated higher self-esteem than women, but the difference was small. Here too, the difference in mean scores on self-esteem of men and women was quite limited. Also, in line with previous research by Morisson et al. (2005), we found that asexual men showed a more positive genital self-image than asexual women. Comparing asexual women's mean scores on the FGSIS (Herbenick & Reece, 2010) with mean scores on the FGSIS found in a national probability study (Herbenick et al., 2011), shows that the asexual women in our study showed a more negative self-image (M = 18.04, SD = 4.33 versus M = 21.31, SD = 4.31). This could imply an association between asexuality and low genital self-image in women. One could wonder what the direction of this association would be: do these women have a negative genital self-

image because of their asexuality, or does their negative genital self-image cause them to lose sexual attraction towards others and thus "become" asexual? As described earlier, including measurements of lifelong versus acquired asexuality and exploring associations with genital self-image, is necessary to test this hypothesis. Finally, it is surprising that asexual men and women did not differ in their body appreciation. After all, studies have consistently shown that women are more likely to experience body dissatisfaction than men (e.g., Feingold & Mazzella, 1998; Frederick, Forbes, Grigorian, & Jarcho, 2007; Tylka, 2013). The effect size of this gender difference, however, is relatively modest in most of these studies.

Limitations and implications

While this study has yielded interesting results, a number of limitations should be noted. Firstly, we only included participants who indicated that they do not experience sexual attraction. The question on sexual attraction was a categorical one, allowing participants to indicate *if* they experience sexual attraction, not *to what extent* they experience sexual attraction. This approach may have excluded a number of asexual individuals whose experience of sexual attraction is conditional (e.g., they only experience sexual attraction when they have a strong emotional connection with someone). Secondly, we found that approximately nine percent of the participants in our sample self-identified as "other than male or female". Since this subgroup was too small to allow for valid comparisons, we omitted these participants from analyses. It would be interesting, however, to explore characteristics of asexual individuals identifying as "other than male or female" in future research and compare these with characteristics of asexual individuals who identity as male or female. Thirdly, even though we attempted to broadly recruit participants, most participants were redirected to the online survey via AVEN and other (online) asexual communities. The problem with this approach for quantitative research was described by Hinderliter (2009). After all, participants familiar with AVEN and the way AVEN conceptualizes asexuality, may be biased in their responses. It is not clear to which extent this may have influenced our findings. Fourthly, a significant decline in further participation was observed, as 481 participants who

started the survey did not fully complete it. It is unclear whether these participants may have noticed that they did not belong to the target group of the study after all, or whether they were bothered by technical difficulties they experienced, or by the long duration of the survey. Fifthly, we aimed for a cross-cultural study, and translated the survey to Dutch, English and Spanish. The large majority of participants, however, originated from Europe and North America, i.e., the United States and Canada. So, it remains to be seen whether our results can be replicated cross-culturally. Finally, with a mean age of 26.95 years old (*SD* = 9.93), this study is characterized by a young population. For future research, it would be interesting to explore whether and to what extent this has an impact on the findings, by recruiting a more heterogeneous sample in terms of age.

To the extent of our knowledge, this is the first study to compare asexual men and asexual women on a range of psycho-sexual correlates. We hypothesized that differences between asexual men and asexual women would be similar to (lack of) gender differences found in the general (sexual) population. This was the case for most characteristics and correlates, namely for experience with sex, masturbation frequency, solitary sexual desire, physical and mental health, self-esteem, genital self-image and attachment style. However, we did not find any gender difference with regard to dyadic sexual desire and body appreciation, while in the general population it has been shown repeatedly that men score higher than women on dyadic sexual desire and on body appreciation. Understanding differences between asexual men and women is important for tailoring the scientific and clinical approach of asexuality. We would like to argue for more comparative research between asexual men and sexual men, and between asexual women and sexual women, to fully comprehend these differences. Suchlike research can only improve our understanding of this complex, but fascinating research topic.

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Chapter 6 : General discussion

1. Main findings

A review of the available literature (Chapter 1) showed that different definitions of asexuality are used, namely, definitions either based on (absence of) sexual behavior, (absence of) sexual attraction or self-identification as asexual. In this dissertation, we defined asexuality as an absence of sexual attraction. The concepts "sexual attraction", "sexual desire", "sexual interest" and "sex drive" are often used interchangeably in the asexuality literature, making it difficult to offer a clear conceptual description of what "sexual attraction" exactly refers to. In our study, we subscribe Bogaert's (2012) definition of sexual attraction as the "lust lure for others" (p. 11), emphasizing its dyadic nature, i.e., sexual attraction is experienced *towards* another person.

This dissertation aimed to better understand how asexuality should be conceptualized and how asexual individuals can be characterized. To achieve this, a multi-methods approach was used, comprising a qualitative study on nine asexual women and a quantitative, online study on asexual men and women. With the qualitative study we wanted:

1) to gain more insight into the development of an asexual identity

2) to explore how asexual individuals experience intimacy and sexuality

3) to study asexual individuals' subjective experience of love and partner relationships

The aims of the quantitative study were also threefold:

1) to explore the multidimensionality of asexuality (Study 1, *N* = 526)

2) to compare asexual participants who indicated not experiencing sexual attraction towards others, with asexual participants who indicated that they do experience sexual attraction on socio-demographic characteristics, sexual experience, masturbation frequency and a number of psycho-sexual correlates (Study 2, *N* = 460)

3) to compare asexual men and women who indicated not experiencing sexual attraction on socio-demographic characteristics, sexual experience, masturbation frequency and a number of psycho-sexual correlates (Study 3, *N* = 324)

1.1 Qualitative study

Based on in-depth interviews with nine asexual women, we identified the typical trajectory of coming to an asexual identity, which resembled the one described by Carrigan (2011). The participants described feeling 'different' when compared to their peers; some had experienced these feelings since childhood. As this 'feeling different' continued, they started looking for explanations, whereby some considered the option of being lesbian. Eventually, they found information – most often on the Internet – about the existence of asexuality, and finally found an identity that fitted them. When coming out, the participants received mixed reactions: some reactions were positive and accepting, others were negative and dismissive. These findings regarding the development of an asexual identity corroborate the suggestion raised by both Scherrer (2008) and Bogaert (2012), that the process of sexual identity development in asexual people shows similarities with the processes of developing a gay, lesbian, bisexual or transgender identity. Indeed, when looking at models on sexual identity development (e.g., Cass, 1979; Ponse, 1978), similar stages in coming to an LGBT-identity (i.e., feeling different, identity confusion and looking for explanations, identity acceptance) can be recognized in the process of coming to an asexual identity. This supports the vision that asexuality can be considered a sexual orientation (Bogaert, 2006; Brotto et al., 2010). Also, the possible parallels in sexual identity development between LGBTs and asexual individuals could be informative for clinicians when asexual individuals would consult them. After all, this would imply that asexual people experience similar struggles (e.g., accepting the asexual identity, consequences of coming out for social and partner relationships) and (minority) stress (e.g., discrimination, prejudice) as LGBT's, for which some may need counseling.

Even though the participants in our study did not experience any kind of sexual attraction to anyone or anything, we found - in line with findings by Brotto & Yule (2011)

- that most reported being able to become physically sexually aroused. The ability to become physically (i.e., genitally) aroused was intact in the asexual women in our sample. Our data thus provide support for Brotto and Yule's (2011) hypothesis that asexuality cannot be regarded as a *genital* sexual arousal problem or dysfunction. However, it could be suggested that asexual women do not experience *subjective* or *mental* sexual arousal. In other words, it seems that their bodies can become aroused during sex, but their minds and feelings are not. Some participants expressed an aversion for sex, but most indicated just not being interested in sexual activity. A great variation in sexual experiences and experience with physical intimacy was found: some women had never kissed another person while others regularly engaged in sexual behavior with a partner. Engaging in sexual behavior was mainly based on a willingness to comply with partner wishes, a motive also often reported by sexual people (e.g., Hill & Preston, 1996; Meston & Buss, 2007). Most participants had experience with masturbation. While some were clear that this is not a sexual act, others were still in doubt on how they should conceptualize masturbation. The absence of differences in masturbation frequency between asexual and sexual people, led Brotto and Smith (2013) to suggest that desire for masturbation might be independent from desire for partnered sexual interaction. As a consesequence, it could be hypothesized that asexuality is more about a lack of attraction for sex with a partner, than it is about a lack of attraction for all forms of sex. The finding that some women in our sample considered themselves to be asexual, even though they were still sexually active and/or engaged in masturbation, also raises the question whether (absence or presence of) sexual activity should be taken into account as a key criterion in the definition of asexuality (see also Chasin, 2011).

When asked about their relational experience, most participants stated that they can experience romantic attraction towards other people, while others described themselves as aromantic, meaning that they do not desire a (romantic) relationship. The romantic asexual women were very realistic with regard to the difficulties their asexuality would cause in finding a partner. When they do find a non-asexual partner, they will have to negotiate on how they will deal with sexuality. This raises the question to what extent asexual individuals (should) consent to sexual activity that they do not

desire themselves, and what the consequences are of these consensual, yet unwanted sexual activities. Przybylo (2013) argued that unwanted sex, even when consensual, remains unwanted and could potentially be harmful for asexual people "because it pressures women into feeling that they are obliged to present their partners with sex" (p. 238). Diamond (2013) alternatively stated that "perhaps most interesting, individuals often report that the positive outcomes of consenting to unwanted sex (such as increased intimacy and avoiding tension and conflict) outweigh the negative outcomes (such as emotional discomfort and feelings of disappointment)" (p. 598). These are important considerations when mixed sexual-asexual couples would seek clinical counseling. It is highly unlikely that there will be one solution that will fit all mixed sexual-asexual couples. For some, it may be possible to engage in sexual activity on a regular basis, when certain facilitating factors are present. For others, having sex is out of the question, leaving the couple with three options: ending the relationship, accepting that the relationship will be non-sexual, or allowing the sexual partner to meet his or her sexual needs elsewhere. There could be an important role for (sex) therapists in helping couples in making this decision and dealing with its consequences. The efficacy and effectiveness of this suggested clinical approach, however, remains to be empirically tested.

Most of the romantic asexual women described their ideal relationship in much the same way as a sexual relationship, but without the sexual component. Some women stated that love and sex are incompatible: having sex while in a relationship diminishes the worth of their feelings they have towards their partner. This implies that for these women, working towards a compromise regarding sex in the relationship, would negatively impact their relationship quality, and that for them, a romantic non-sexual relationship is the only option.

1.2 Quantitative study

In Study 1, we found that the highest percentages of individuals that could be classified as asexual were obtained when using the criteria of self-identification (71.3%), lack of sexual attraction (69.2%) and the combination of the two (57.6%). When using lack of

sexual behavior as a criterion, only half of the participants (48.5%) were categorized as asexual. The combination of self-identification and lack of sexual behavior (39.7%) and of lack of sexual attraction and lack of sexual behavior (38.2%) resulted in lower percentages of participants that were categorized as asexual. Finally, 33.5% of participants were categorized as asexual taking into account all three criteria: they lacked sexual attraction, self-identified as asexual and had no sexual experience. Studies on the prevalence of homosexuality, using these three criteria, reported similar findings and have consistently reported lower percentages of homosexuality when using sexual behavior as a criterion (e.g., Dunne, Bailey, Kirk & Martin, 2000; Elaut, Caen, Dewaele & Van Houdenhove, 2013; Eskin, Kaynak-Demir, & Demir, 2005; Laumann et al. 1994; Savin-Williams, 2005). This supports the vision that absence of sexual behavior should not be considered a core criterion to define asexuality. Our findings show that the use of different criteria results in different groups being categorized as asexual. One can wonder, then: what is the best criterion to define asexual people? This is a difficult question to answer, given the heterogeneity in the asexual population, reflected here in the different percentages of participants categorized as asexual when using different criteria. The criteria of self-identification and lack of sexual attraction resulted in the highest percentages of participants categorized as asexual. The overlap between the two was large, but not complete: around 18.1% of participants who self-identified as asexual did indicate experiencing sexual attraction, while 16.2% of participants who reported not experiencing sexual attraction, did not self-identify as asexual. In line with conceptualizations of sexual orientation (e.g., Bailey et al., 2000; Bogaert, 2003; Diamond, 2003) and previous asexuality research (Bogaert, 2004; Brotto et al., 2010), and congruent with the description used by the asexual community, we argue that the psychological core element of asexuality is the subjective experience of a lack of sexual attraction. We prefer a conceptualization of asexuality based on sexual attraction rather than on self-identification, since the term “asexual” is not yet widely known, and in order to self-identify as asexual, one needs to be familiar with this terminology.

Further, the majority of participants (79.1%) indicated that they do experience romantic attraction. This implies that the concept of ‘romantic attraction’ is an important one for asexual people. As a consequence, future research on asexuality

needs to include the distinction between 'sexual attraction' and 'romantic attraction', which has also been found valid in psychological research and theories on sexuality and love in sexual individuals (e.g., Fehr, 2013).

Gender differences were found for the percentage of participants who indicated not to experience sexual attraction, with more women (72.8%) than men (58.8%) indicating a lack of sexual attraction. Furthermore, more women than men reported experiencing romantic attraction (81% versus 73%). While in women equal percentages of participants were categorized as asexual based on self-identification as on lack of sexual attraction, this was not the case for men. Our findings showed that more men were categorized as asexual based on self-identification, than based on lack of sexual attraction. This suggests that asexuality in men and women may require a different conceptualization, and that lacking sexual attraction may be more relevant for asexuality in women than for asexuality in men. While we consider lack of sexual attraction to be the core criterion of asexuality, it is important to further explore the association between lacking sexual attraction and self-identification as asexual in men, as well as to study the relative importance of these two dimensions for defining asexuality in men.

In this regard, it should be noted that when asking participants what they find important for defining asexuality, both asexual men and asexual women more often reported "not experiencing sexual attraction" as important than "calling oneself asexual" (81.4% versus 43.3%), and that no gender differences were found in the importance rating of these items. This provides further support for our suggestion to conceptualize asexuality based on a lack of sexual attraction, rather than based on self-identification as asexual. "Not behaving sexually with a partner" and "not masturbating" was rated as important by respectively 33.8% and 13.9% of participants, which supports our vision that sexual behavior, with a partner or with oneself, should not be considered a core criterion in defining asexuality. Finally, one out of four participants stated that "not having had negative sexual experiences in the past" is important when describing asexuality. This could mean that some asexual people make a distinction between "pure" asexuality and asexuality that is caused by a traumatic event in the past and that may consecutively not be viewed as "genuine" asexuality.

Considering lack of sexual attraction as the core criterion of asexuality, is a vision we share with other asexuality researchers (e.g., Bogaert, 2004; Brotto et al., 2010), and with the asexual community. However, we did notice that a substantial amount of participants in our study – of which a large part were male - did indicate experiencing sexual attraction, even though they recognized themselves in the broad description of asexuality that we presented. In line with Hinderliter (2009), we see several explanations for why these individuals participated in a study on asexuality, while indicating they do experience sexual attraction. First, they may experience romantic attraction and could have interpreted the question on sexual attraction as asking for attraction towards others in general. Second, individuals may have experienced sexual attraction in the past and thus answered the question based on previous experiences. Our findings showed that around one in five participants who currently do not experience sexual attraction, reported that they had experienced sexual attraction in the past. This raises the question whether asexuality should be considered a state or a trait, a question that will be discussed in more detail later on. Third, some individuals may experience sexual attraction occasionally and responded to the question based on these experiences. This may imply that sexual attraction should not be considered a categorical ("all or nothing") phenomenon but instead a dimensional phenomenon in the context of asexuality. A dimensional view on (lacking) sexual attraction, however, raises the question on how much sexual attraction a person may experience to still be considered asexual. Should a person not experience any sexual attraction towards others at all, or is some variability in the experience of sexual attraction over time allowed? In this regard, it remains to be seen whether these two groups, i.e., asexual people who do and who do not experience sexual attraction represent distinct subpopulations within the asexual population, and how gender can be related to this differentiation.

In Study 2, we compared these two groups and found differences on a number of socio-demographic characteristics (gender, age, relationship status, educational level) and psycho-sexual correlates (sexual experience, masturbation frequency, solitary and dyadic sexual desire, physical health, attachment anxiety, history of sexual abuse before age 18). This implies that asexual people experiencing sexual attraction and asexual individuals not experiencing sexual attraction, have different profiles and may, as a

consequence, represent distinct subpopulations within the asexual community. Our findings thus point out the need to include this variation in future asexuality research.

The difference between the two groups in relationship status may be explained by the difference in romantic attraction, but could also imply that experiencing some level of sexual attraction facilitates one's possibility of engaging in a partner relationship. Also, asexual individuals not experiencing sexual attraction indicated less often to have sexual experience. It is possible that engaging in sex with a partner is less negotiable for asexual people who do not experience sexual attraction. Alternatively, and as described by Haefner (2011), it is possible that asexual people who do not experience sexual attraction have greater difficulties engaging in a partner relationship. Since asexual individuals mainly report partner related motives for engaging in sexual behaviors, it could be suggested that not having a partner relationship impacts the possibility of having sexual experience. The difference between the two groups in masturbation experience could imply that, perhaps, experiencing (some level of) sexual attraction makes an individual more attentive to and aware of one's own physical arousal. As a consequence, it would be more likely for a person to engage in masturbation in response to the experienced physical arousal.

In line with differences in sexual experience and experience with masturbation, we also found differences in solitary and dyadic sexual desire, with asexual people experiencing sexual attraction, showing higher scores on both sexual desire subscales. However, desire scores for both groups were low, corroborating earlier findings by Prause and Graham (2007) implying that asexual people have only little sexual desire, irrespective of their experience of sexual attraction. The fact that asexual people report low levels of sexual desire is a complicating factor in differentiating between asexuality and FSIAD/MHSDD, as defined by DSM 5 (APA, 2013), a topic that will be discussed in more detail later on.

While the absolute difference in mean scores was relatively small, asexual individuals without sexual attraction scored higher on physical health than asexual individuals with sexual attraction, and the mean scores of both groups were high compared to what has been reported in the general population (e.g., Buysse et al., 2013). This is in contrast with findings by both Bogaert (2010) and Poston and Baumle

(2010), reporting lower physical health scores in asexual individuals than in controls. Perhaps this difference could be explained by the young mean age of the asexual participants in the current study, since younger people are more likely to report a better physical health status (e.g., Fleischman & Lawrence, 2003; Mols, Pelle, & Kupper, 2009).

The differences we found between the two groups regarding history of sexual abuse before age 18 and attachment anxiety, may be relevant in making a distinction between lifelong asexuality and acquired asexuality: for some individuals, their asexuality may be innate, while for others it may be possible to identify a certain event or characteristic that could be related to their asexuality. For example, an individual may experience a sexual trauma in childhood and, as a consequence, become asexual. Or, an individual may have an insecure attachment style as a child, leading them to avoid closeness and intimacy with other people as an adult, and as a consequence, to avoid engaging in a (romantic or sexual) partner relationship and in sexual encounters with a partner. In this regard, it could be suggested that asexual individuals who indicate not experiencing sexual attraction are more likely to have a lifelong asexuality, while those indicating they do experience sexual attraction, are more likely to have acquired their asexuality.

Given our focus on sexual attraction in defining asexuality, we aimed to explore gender differences in asexual individuals indicating that they do not experience sexual attraction (Study 3). Overall, the gender differences we found were highly similar to (lack of) gender differences found in the general (sexual) population (e.g., Burdine, Felix, Abel, Wiltraut, & Musselman, 2000; Elaut et al., 2013; Fleishman & Lawrence, 2003; Kling, Hyde, Showers, & Buswell, 1999; Morisson, Bearden, Ellis, & Harriman, 2005; Petersen & Hyde, 2010; van Ijzendoorn & Bakermans-Kranenburg, 2010; Ware, Kosinski, & Keller, 1998). Asexual men were more often single than asexual women and less often indicated experiencing romantic attraction. The gender difference in relationship status could be explained by the gender difference in romantic attraction. Alternatively, it could be hypothesized that the societal pressure to have sex when in a relationship is greater for men than for women, and that asexual men who are not willing to have sex, would avoid engaging in a partner relationship to escape this pressure.

Asexual women indicated more often to have never masturbated as compared to asexual men. This is comparable with findings on gender differences in masturbation frequency in the general population (e.g., Petersen & Hyde, 2010; Elaut et al., 2013), and was also reported by Brotto et al. (2010) in their study on asexuality. As discussed earlier, the finding that masturbation frequency in asexual individuals seems to be very similar to masturbation frequencies in the general population, could suggest that the desire for masturbation might be independent from the desire for partnered sexual interaction, and that asexuality is more about a lack of attraction for partnered sexual interaction, rather that about a lack of attraction for all kinds of sex (Brotto & Smith, 2013). In line with Aicken et al.'s (2013) study on asexual people, we did not find any gender differences in sexual experience.

Inconsistent with findings from national probability surveys (e.g., Bajos & Bozon, 2008; Bakker et al., 2009; Hellemans & Buysse, 2013), we did not find any differences in prevalence rates of sexual abuse. This lack of gender differences in our study could be attributed to the relatively high percentage of asexual men reporting sexual abuse, especially after the age of 18. It could thus be suggested that asexuality in men may be associated with having experienced a sexual trauma. Comparative research on the prevalence of sexual abuse in a large group of asexual and sexual men and women is needed to study the direction of the association between asexuality and history of sexual abuse: could asexuality be caused by having experienced sexual abuse, or could being asexual make one vulnerable for experiencing sexual abuse? As stated earlier, history of sexual abuse may be an important factor in differentiating between lifelong and acquired (male) asexuality.

Regarding psycho-sexual correlates, our findings showed that the majority of gender differences were in the same line as the ones reported in research in the general (sexual) population. For example, the frequently reported gender difference in mental health, with men evaluating their mental health more positively than women (e.g., Burdine et al., 2000; Fleishman & Lawrence, 2003; Ware et al., 1998), was also found in the current study. In this regard, it is important to note that in the current study mental health scores were rather low (for both men and women) as compared to what has been reported in the general population (e.g., Buysse et al., 2013). This could imply that both

in research and in clinical care, attention should be paid to mental health issues in asexual individuals. In line with findings by van Ijzendoorn and Bakermans-Kranenburg (2010), we did not find any gender differences in attachment style. Consistent with previous research by Morisson et al. (2005), we found that asexual men showed a more positive genital self-image than asexual women. The fact that asexual women's scores on genital self-image were low in comparison to what has been reported in a national probability survey (Herbenick, Schick, Reece, Sanders, Dodge, & Fortenberry, 2011), could imply an association between asexuality and low genital self-image in women. One could wonder what the direction of this association would be: do these women have a negative genital self-image because of their asexuality, or does their negative genital self-image cause them to lose sexual attraction towards others and thus "become" asexual? As a consequence, genital self-image may be an important factor in differentiating between lifelong and acquired asexuality, at least in women. Regarding sexual desire, we found gender differences for solitary sexual desire but not for dyadic sexual desire. These findings are consistent with the fact that asexual men and women differed in terms of masturbation frequency but not in terms of sexual experience. With regard to solitary sexual desire, our findings are consistent with gender differences reported in the general population, showing higher scores in men than in women (e.g., Baumeister, Catanese, & Vohs, 2001; Petersen & Hyde, 2010). Further, we found a gender difference in self-esteem but not in the expected direction. After all, since men are expected by society to behave more sexually than women (Gijs et al., 2004), it could be suggested that being asexual would be more difficult for men than for women, which could in turn impact asexual men's self-esteem. However, we found the opposite result, with asexual men indicating higher self-esteem than asexual women. It appears that differences in self-esteem between asexual men and women are similar to differences found in the general population (e.g., Kling et al., 1999). Surprisingly, asexual men and women did not differ in their body appreciation, while studies in the general population have consistently shown that women are more likely to experience body dissatisfaction than men (e.g., Feingold & Mazzella, 1998; Frederick, Forbes, Grigorian, & Jarcho, 2007; Tylka, 2013). The effect size of this gender difference, however, is relatively modest in most of these studies. Similarly, no differences were found between asexual men and

women regarding their physical health, while in previous studies men have been found to show higher physical health scores than women (e.g., Burdine et al., 2000; Fleishman & Lawrence, 2003; Ware et al., 1998). Previous research has attempted to explain gender differences in physical health by pointing at sociodemographic and socioeconomic differences between men and women (e.g., Cherepanov, Palta, Fryback, Robert, Hayes, & Kaplan, 2011). Taking into account that in the current study asexual men and asexual women did not differ in education level, this could partially explain the lack of gender difference regarding physical health. Further research using more extensive measurements of SES is needed to test this hypothesis.

2. Strengths and limitations

Our research findings add to a slowly growing body of literature on the topic of asexuality (for a review: Van Houdenhove, Gijs, T'Sjoen, & Enzlin, 2014). The major strength of this dissertation is its multi-methods approach. As Brotto (2010) stated, this approach "reflects the optimal mode of exploring a construct that lacks conceptual and empirical clarity" (p. 600). An important strength of the qualitative study is that it is the first to provide qualitative data from non-Anglo-American asexual people. The number of participants, although small, allowed for a detailed and in-depth analysis of the asexual women's subjective experiences. Finally, the qualitative study provided data on how asexual women come to an asexual identity and how they experience coming-out as an asexual, topics that have not yet received much research attention (see for exceptions: Carrigan, 2011; Scherrer, 2008). A major strength of our quantitative study was the large number of participants: more than 500 participants completed the entire survey. Until now, no other study on asexuality has included such a large group of asexual individuals. This large number of participants further allowed us to include gender comparisons, which previous studies on asexuality, with the exception of Brotto et al.'s (2010) study, could not or did not do. Also, this study included participants from Europe, North-, Middle and South America, and Australia/New Zealand, while previous studies were mainly based on Anglo-American participants.

Although both studies have their strengths and yielded interesting results, a number of limitations need to be discussed. A first limitation of the qualitative study was the small number of participants. Nevertheless, for IPA a number of 9 participants is more than sufficient (Smith et al., 2009, p. 51-52), and qualitative research is also not intended to provide generalizable findings but instead to describe the variation in a phenomenon. Second, we only included women in the qualitative study, which implies that it is not clear whether and to what extent our findings also apply to asexual men. Based on the findings from Study 3, showing gender differences in relationship experience and romantic attraction, we suggest that the subjective experience of relationships may differ in asexual women and men. Third, even though we attempted to recruit participants for both the qualitative and the quantitative study as broadly as possible, the majority of participants were recruited via AVEN. These people, however, may not be representative for the full range of the asexual population. It is not clear to what extent our findings would be similar when the study participants would not have been familiar with this online community. For example, participants who are familiar with the online asexual community, might be more likely to self-identify as asexual. If this would be the case, the percentage of participants in our study who self-identify as asexual, would be an overestimate of the 'true' percentage of asexual individuals who self-identify as asexual. Similarly, given that AVEN defines asexuality as a lack or absence of sexual attraction, recruiting via AVEN may have led to a higher rate of participants being categorized as asexual based on the sexual attraction dimension. Fourth, both the qualitative and the quantitative study-sample were characterized by a young population, with most participants being younger than 40 years old. It is not clear whether this is characteristic of the asexual population, or an artifact of our study (design). After all, it has been shown that online studies often induce an age-bias and thus result in a younger study population (e.g., Koch & Emrey, 2001). Future research on asexuality should make efforts to also include older participants, perhaps by using a non-web-based survey. In this regard, it would also be relevant to include measures of asexuality in population-based studies on sexuality and sexual health, to ensure a representative sample of asexual people. However, one can wonder whether asexual people would be motivated and willing to participate in a study on sexuality, since they often report a lack

of interest in this topic. Finally, the quantitative study did not include a non-asexual control group. As a consequence, it is unclear whether the participants in our study differ from the general population on the correlates that we included.

3. Implications of our findings

One of the main goals of this dissertation was to better understand how asexuality should best be conceptualized. Most authors agree that asexuality should be defined as a lack (or absence) of sexual attraction (Bogaert, 2004; Brotto et al., 2010, Brotto & Yule 2011; Prause & Graham, 2007; Scherrer, 2008). This is also the definition that is taken on by the asexual community (www.asexuality.org). Our findings are in line with the vision that a lack of sexual attraction should be seen as the core criterion of asexuality, given that around 70% of the participants could be categorized as asexual based on this criterion, and that a lack of sexual attraction was named as important for defining asexuality by more than 80% of the participants.

Even though equal percentages of participants were categorized as asexual based on the criteria "lack of sexual attraction" and "self-identification as asexual", we do not recommend defining asexuality (solely) based on self-identification. As described earlier, only individuals who are familiar with the term "asexual" can self-identify as asexual. Integrating "lack of sexual behavior" in the definition of asexuality is also problematic, since almost half of the participants in our study have been sexually active. For some participants, however, sexual inactivity may be an important part of their asexuality. Since the criteria sexual attraction, sexual behavior and self-identification have also been used to describe a homosexual orientation, and taking into account that the development of an asexual identity seems to show similarities with the development of an LGBT-identity, we conceptualize asexuality as a sexual orientation. This is also in line with previous asexuality studies (e.g., Bogaert, 2006; Yule et al., 2014).

In this regard, it is also important to highlight the differentiation between asexuality and sexual desire problems. As noted earlier, asexuality is referred to in the exclusion criteria of Female Sexual Interest/Arousal Disorder of DSM-5 (APA, 2013): "If a lifelong lack of sexual desire is better explained by one's self-identification as "asexual",

then a diagnosis of female sexual interest/arousal disorder would not be made" (p. 434, a similar statement is made in the description of male hypoactive sexual desire disorder on p. 443). This implies that, according to DSM-5, asexuality should not be considered a sexual dysfunction. However, DSM-5 does not describe *how* this differentiation should be made. After all, the diagnostic criteria of FSIAD/MHSDD may well apply to a number of asexual people. Our findings showed that asexual individuals report low sexual desire and indicate not experiencing subjective sexual arousal. If these individuals experience distress caused by these difficulties and do not self-identify as asexual, a diagnosis of FSIAD/MHSDD could consecutively be made. It is important for clinicians to be aware of this conceptual and diagnostic confusion. When a patient presents with sexual desire and/or arousal problems, we recommend to also explore the experience of sexual attraction during the life course. If that patient's story would point at asexuality (i.e., if the patient indicates not or only rarely experiencing sexual attraction towards others), rather than at FSIAD/MHSDD, the therapeutic approach needs to be tailored.

The clinical needs of asexual people, if any, are still unknown. Based on our findings, we identify two situations in which an asexual person may need counseling. First, given that our findings seem to suggest that the process of coming to an asexual identity shows some similarities with the process of coming to an LGBT-identity, this would imply that asexual people experience similar (minority)stress and struggles as LGBT's do, for which some may need counseling. A second situation in which counseling may be needed, is the one where an asexual person engages in a relationship with a sexual partner, and the couple needs help to come to an agreed approach regarding the issue of sex. As described earlier, counseling should look into both partners' attitudes towards sex, in order to explore whether a compromise could be reached. However, if sex is out of the question for the asexual person, or if sex is quintessential for the sexual person, a compromise may be difficult or impossible to reach. In this case as well, there may be an important role for (sex)therapists, to guide and assist couples in making a decision regarding the future of their relationship. As indicated earlier, the efficacy and effectiveness of (sex) therapy in this regard needs to be empirically tested.

Another implication of our study concerns the need to differentiate between sexual attraction and romantic attraction. Our findings showed that a large majority of

asexual people reported experiencing romantic attraction towards others, and that they often describe themselves using terms such as “romantic asexual” and “aromantic asexual”. The fact that asexual individuals can be romantically attracted to a person that they are not sexually attracted to, could be explained by Diamond’s (2003) bio-behavioral model of love an desire, stating that the underlying processes of love and desire, i.e., the attachment system and the sexual mating system, are functionally independent. As a consequence, one can experience desire without love, and one can fall in love without experiencing sexual desire. The distinction between sexual attraction and romantic attraction shows similarities with the difference that most lay people make between love and sexual or passionate love (Fehr, 2013). This implies that current social psychological paradigms to study love (for a review: see Fehr, 2013) could inform the study of love experiences in asexual people, and vice versa, the love experiences of asexual people can enrich current conceptualizations of love (Bogaert, 2012).

4. Theoretical perspectives on asexuality

To what extent do our findings provide empirical support for the theoretical models of asexuality that have been described in Chapter 1? Regarding developmental models, we did not find evidence for the association between asexuality and an avoidant attachment style. However, the difference we found in attachment anxiety between asexual individuals not experiencing sexual attraction and asexual individuals who did indicate experiencing sexual attraction, could provide support for an association between lacking sexual attraction and an insecure attachment style. As indicated earlier, attachment style may be especially important with regard to the differentiation between lifelong and acquired asexuality. Analogous with findings by Brotto et al. (2010) and Brotto and Yule (2011), support for the relevance of Bem’s exotic becomes erotic theory (1996) in understanding asexuality was provided by the finding that the asexual women in our qualitative study indicated that their ability to become physically, sexually aroused is intact, but that the desire to direct this arousal towards another person, is lacking. Why this arousal is not translated in sexual activity with a partner remains to be studied. Because we did not include hormonal measurements and did not perform a

longitudinal study in asexual people, no support could be provided for the hypothesis that asexuality would be related to a disruption in the adrenal maturation.

Regarding motivational models, no evidence nor counterevidence was provided for the relevance of Everaerd and Laan's (1995) incentive motivation model of sexual desire in understanding asexuality. According to this model, sexual activity that leads to sexually rewarding outcomes (e.g., sexual arousal, orgasm), can give rise to sexual motivation, which is lacking in asexual people. The current study showed that approximately half of the asexual individuals have engaged in sexual activity with a partner. However, our results did not provide any information on whether and to what extent this sexual activity was rewarding or satisfactory for asexual men and women. The qualitative study did show that first sexual encounters were negatively evaluated by most women, and were even painful for some women. In order to provide support for the relevance of the incentive motivation theory of sexual desire in understanding asexuality, more research is needed on how asexual individuals experience sexual activity with a partner, and whether and under which circumstances sex with a partner can be rewarding. As described earlier, our findings do provide support for the relevance of Diamond's (2003) biobehavioral model of love and desire, in understanding why the majority of asexual people does not experience sexual attraction, but can experience romantic attraction towards others. However, this model only applies to romantic asexual people, and cannot explain why some asexual individuals also lack romantic attraction towards others.

This doctoral dissertation did not include personality measures nor a measure on autism spectrum disorders. As a consequence, our study does not provide evidence or counterevidence for the psychopathological models of asexuality, described by Brotto et al. (2010). However, given that we conceptualize asexuality as a variation of normality and given the heterogeneity in the asexual population, also illustrated by our findings, we hypothesize that a subsample of the asexual population might fulfill the criteria of a personality disorder or an autism spectrum disorder, but that the association between asexuality and schizoid personality disorder, and the association between asexuality and autism spectrum disorders, can surely not be generalized to the entire asexual population.

Finally, as indicated earlier, taking into account that the same three criteria used to describe a homosexual orientation seem to be important when defining asexuality, and given the finding from our qualitative study that coming to an asexual identity shows similarities with the process of coming to a gay, lesbian or bisexual identity, our study supports the conceptualization of asexuality as a fourth category of sexual orientation (e.g., Bogaert, 2006; Yule et al., 2014).

Until now, asexuality has mainly been characterized by what it is not : asexuality is *not* an extreme form of sexual aversion, it is *not* a sexual dysfunction (i.e., FSIAD/MHSDD), it is *not* sexual abstinence or celibacy, and it is (probably) *not* a byproduct or co-morbid problem of psychopathology. What is currently lacking in asexuality research, however, is a positive conceptualization. Characterizing asexuality as a sexual orientation could be helpful in this regard. However, this implies that we look at asexuality from a sexual point of view, which may not be the optimal way to understand this complex topic. After all, can we conceptualize asexuality as a *sexual* orientation, when asexual individuals are *not sexually* oriented towards other people? This too would imply a negative characterization of asexuality, i.e., a definition based on something asexual individuals lack. We therefore strongly encourage asexuality researchers to develop a positive theoretical framework for understanding asexuality. In this regard, it is important to keep in mind that asexual individuals may interpret concepts such as sexual desire, sexual arousal, masturbation, love and relationships differently than sexual people do. For example, from a sexual point of view, sex is often thought to be an essential and defining part of a partner relationship. This premise, however, is called into question by asexual individuals' romantic experiences. Indeed, some asexual people manage to engage in a romantic partner relationship without a sexual component.

5. Recommendations for future research

Even though our study has contributed to a better understanding of asexuality and of how asexual people can be characterized, a lot of uncertainties still remain. As a consequence, a number of topics need consideration in further research. Thus far, all

research on asexuality has been cross-sectional and it would be interesting to conduct longitudinal research as well. For example, pre-adolescent children could be included in a follow-up study to explore how sexual attraction towards others develops through adolescence and young adulthood, and to study how these individuals experience this (lack of) sexual attraction. Such research would certainly improve our understanding of (the development of) asexuality and the struggles asexual people may encounter. Because our findings suggest that the process of coming to an asexual identity shows similarities with the process of coming to an LGBT-identity, we argue for more research on (a)sexual identity development. Research should focus on questions such as: "At what age do asexual people become aware of the fact that they are different from their peers, and how old are they when they accept their asexual identity?"; "Which factors facilitate the process of acceptance?"; "What role does the asexual community play in the process of coming to an asexual identity?".

In our studies, we did not include any biological correlates of asexuality, apart from self-perceived physical health. It would be interesting for further research to explore the role of genes, neurotransmitters, neuroanatomy, neurophysiology and hormones in asexuality. Within the asexual community, however, there is some resistance to a hormonal explanation for asexuality (www.asexuality.org). When, for example, an association between asexuality and (low) testosterone levels would be found, they fear that this would open the way for a medicalization and a 'treatment' of asexuality. Nevertheless, hormonal research on asexual people might be helpful to find out whether asexuality is associated with reduced testosterone levels. On their turn, brain-imaging studies may provide interesting new perspectives on the neuroanatomical associations of asexuality. Even though research on neurobiological correlates of asexuality could contribute to a better understanding of asexuality, it is important to be aware of the (ethical) consequences the results of these studies may have. What if research would show that a large majority of asexual people would have a hormonal deficit? What if brain-imaging studies would point at anomalies in certain brain structures? Could then still be argued that asexuality is a (sexual) orientation? Or should we then conceptualize asexuality as a (medical) condition or disorder in need of treatment?

Moreover, it would be interesting to approach asexuality from an evolutionary perspective. Since asexuality is considered a non-reproductive tendency, one would expect strong selection pressures against asexuality and thus low prevalence rates of asexuality (Bogaert, 2004). However, under certain circumstances, for example, over-population or food shortage, it might also be adaptive for humans to not reproduce and to be or become asexual. This hypothesis also raises the question whether asexual people want children and to what extent this influences their sexual behavior, a research question that has not yet received any attention in studies on asexuality.

Regarding psychological correlates of asexuality, we would recommend for future research to also explore associations between asexuality and Cluster A Personality Disorders, and between asexuality and autism spectrum disorders, in particular Asperger's Syndrome, as suggested by Brotto et al. (2010). In these accounts, asexuality is seen as a byproduct of an atypical social functioning. Within the asexual community, there is strong objection against the vision of asexuality as a symptom of another disorder or a co-morbid problem. However, if a correlation between asexuality and personality disorders and/or autism spectrum disorders would be found, this would not necessarily imply a causal relationship. Also, and as indicated earlier, since available research suggests that the asexual population is a heterogeneous group, we hypothesize that associations between asexuality and personality disorders, and between asexuality and autism spectrum disorders would only be found for a subgroup of asexual people.

While asexuality is defined as a lack or absence of sexual attraction *towards other persons*, it is important for future research to also explore sexual attraction towards oneself and sexual attraction towards non-human objects in asexual persons, in order to better conceptualize asexuality. It could be argued that masturbation is a behavioral outcome of sexual attraction to oneself, however, since asexual individuals seem to mainly give non-sexual motives for masturbation, this does not provide evidence for the presence of sexual attraction to oneself in asexual persons. Asking individuals who lack sexual attraction towards others whether they do experience sexual attraction towards themselves, is nonetheless an interesting venue for future research. Regarding sexual attraction towards non-human objects in asexual persons, there is little evidence until now of an association between asexuality and paraphilia. However, future research on

asexuality should explicitly ask for attraction towards non-human objects, in order to make a differential diagnosis between asexuality and paraphilia.

When doing further research on asexuality, a number of recommendations can be made. First, since asexual people make a differentiation between sexual attraction and romantic attraction, future research on asexuality should include a measure of romantic attraction. Asexual individuals experiencing romantic attraction ("romantic asexual") and asexual individuals not experiencing romantic attraction ("aromantic asexual") may represent distinct subgroups within the asexual populations with specific characteristics and needs. We therefore recommend to not only ask individuals about their sexual orientation, but also about their romantic orientation. In this regard, we also argue to not only ask asexual people *whether* they experience sexual attraction and/or romantic attraction but also *to what extent* or *how much* they experience either one or both kinds of attraction. After all, some individuals consider themselves asexual, even though they sometimes do experience sexual attraction. It is important for future asexuality research to keep this variability in mind, and to not only compare asexual individuals not experiencing sexual attraction with asexual individuals who do indicate experiencing sexual attraction, but to also include a comparison between asexual individuals experiencing varying degrees of sexual attraction. In this regard, it is equally important to ask asexual individuals who indicate not experiencing sexual attraction, whether and to what extent they have ever experienced sexual attraction towards others. Exploring these previous experiences with sexual attraction could also be helpful in understanding the differentiation between lifelong and acquired asexuality. A suchlike research approach is necessary to fully grasp the complexity of asexuality.

Second, in order to thoroughly explore associated biological, psychological and sexual factors of asexuality, further research should also include a control group of sexual people. In this regard, it could be interesting to use a validated instrument to identify asexual individuals. Until now, most studies on asexuality, including our own, have relied on recruiting participants via online web-based asexual communities. However, since asexuality research is still in its infancy, it is important to recruit participants as broad as possible to ensure representativeness in the sample. Also,

recruitment should not be constrained by whether or not individuals belong to a closely affiliated online community (Yule et al., under review). The development of an objective measure of asexuality would facilitate attaining representative samples and would not be limited to either pre-existing self-identification or membership to any community. In this regard, the Asexual Identification Scale (AIS), an instrument developed by Yule et al. (under review) to differentiate between asexual and sexual individuals, may be promising.

Third, we argue for more research attention regarding gender differences in asexuality. Given that more women than men were categorized as asexual when using "lack of sexual attraction" as a criterion, it is possible that the "core" of asexuality is different for women than for men. Future research should explore this hypothesis and survey whether and to what extent asexual men and women have a different way of dealing with their asexuality, and whether gender socialization has an impact on these processes. Also, more attention is needed for asexual people who self-identify as "other than male or female". Yule and colleagues (under review) suggested that asexual individuals may not define their gender in terms of a traditional gender dichotomy, and use other terms such as "gender queer" or "a-gendered." Together with findings from our study, this provides preliminary evidence that this category might be a distinct subgroup within the asexual community. It would be interesting for future research to explore characteristics of these asexual people identifying as "other" and to survey differences and similarities with female and male asexual individuals.

Fourth, the distinction between lifelong and acquired asexuality should receive (more) research attention. Could it be that for some asexual individuals their asexuality is a 'trait', something that is innate to who they are, while other asexual individuals may have acquired their asexuality, implying that their asexuality is a 'state'? It would be interesting to explore whether these two groups differ in how they conceptualize and experience their asexuality. Also, as indicated earlier, the role of history of sexual abuse, genital self-image and attachment style in making this differentiation needs to be explored. In this regard, it is important not to view lifelong asexuality as the only "true" form of asexuality. Since our findings clearly illustrate the variation within the asexual

community, we believe that asexuality can have many faces which should be considered equally genuine forms of asexuality.

6. Final conclusion

Asexuality is a fascinating research topic we are only beginning to understand. This dissertation used an explorative approach to study asexuality, which generated a number of hypotheses that should be tested in further research. Coming back to the title of this dissertation, "What's sex got to do with it?", the answer is as simple as it is complex: everything and nothing. Everything, since asexual individuals live in a highly sexualized society in which they often feel like outsiders, because we try to understand asexuality from our sexual point of view, and describe asexual individuals based on a sexual characteristic they lack, namely sexual attraction towards others. At the same time, sex has nothing to do with it, given that asexuality cannot be equated to lack of sexual behavior and asexual individuals are not interested in other people in a sexual way.

By using a multi-method approach, we gained more insight in how asexual women perceive and experience sexuality, intimacy, and relationships, and clarified the process of coming to an asexual identity. We contributed to a better understanding of the multidimensionality of asexuality, the associated psycho-sexual factors of lacking sexual attraction, and gender differences in this regard. We hope that this research may contribute to the unraveling of one of the last sexual taboos (Przybylo, 2011), i.e., the absence of sexual attraction in a highly sexualized Western society.

Chapter 7 : Reference list

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About the author

Ellen Van Houdenhove was born on the 27th of October 1984, in Oudenaarde, Belgium. After her high school education at the Sint-Fransiscusinstituut in Brakel, she started her Psychology studies in 2002 at Ghent University, and obtained her Master degree in Clinical Psychology in 2007 (cum laude). She then started her Sexology studies at KU Leuven, and obtained her Master degree in Sexology in 2009 (cum laude). In 2010, she started her joined PhD between Ghent University (Department of Endocrinology) and KU Leuven (Interfaculty Institute for Family and Sexuality Studies). Between 2010 and 2014, she worked as a junior researcher on the Sexpert-project. Under the supervision of prof. dr. Guy T'Sjoen and prof. dr. Paul Enzlin, she did research on the conceptualization and associated factors of human asexuality.

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Van Houdenhove, E., Gijs, L., T'Sjoen, G., Enzlin, P. (2014). Stories about asexuality: a qualitative study in women. *Journal of Sex and Marital Therapy.* DOI: 10.1080/0092623X.2014.889053.

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Oral presentations

September 2011 – Terugkomdag Seksuologie-opleiding RINO-groep (Utrecht): "Aseksualiteit: een onbekend thema in onderzoek en kliniek". Van Houdenhove, E., Gijs, L., T'Sjoen, G., Enzlin, P.

April 2012 – Terugkomdag Vlaamse Vereniging voor Seksuologie (Leuven): "Aseksualiteit: literatuuroverzicht en resultaten van een kwalitatief onderzoek". Van Houdenhove, E., Gijs, L., T'Sjoen, G., Enzlin, P.

July 2012 – Oral presentation at the 38th annual meeting of the International Academy of Sex Research (IASR) in Estoril, Portugal. "Asexuality: a qualitative study." Van Houdenhove, E., Gijs, L., T'Sjoen, G., Enzlin, P.

Poster presentations

"Gender differences in bio-psychological correlates of reduced sexual desire without associated distress in a representative Flemish sample". Van Houdenhove, E., Enzlin, P., Gijs, L., T'Sjoen, G. Poster presentation at the 39th annual meeting of IASR in Chicago, US, in August 2013.

"Asexuality: A multidimensional approach". Van Houdenhove, E., Gijs, L., T'Sjoen, G., Enzlin, P. Poster presentation at the 39th annual meeting of IASR in Chicago, US, in August 2013.

"Asexuality and lack of sexual attraction: Unraveling a complex association". Van Houdenhove, E., T'Sjoen, G., Enzlin, P., Gijs, L. Poster presentation at the 40th annual meeting of IASR in Dubrovnik, Croatia, in June 2014.