

Assessment of Sexual Functioning, Mental Health, and Life Goals in Women with Vaginal Agenesis

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Abstract Vaginal agenesis is a congenital disorder defined by the incomplete formation of the vagina and other reproductive organs, often including the cervix, uterus, and fallopian tubes. For the patient, this frequently means infertility and an underdeveloped vagina with the subsequent difficulty to have vaginal intercourse. The patient with vaginal agenesis and her family then encounter a variety of psychological concerns that must be addressed during diagnosis, including weighing treatment options, managing interventions, and coping with long-term issues following diagnosis and treatment, such as partnership concerns and infertility. In this study, seven patients between the ages of 18 and 34 completed questionnaires assessing demographic information, sexual functioning, mental health, self-esteem, and life goals. Sexual functioning results were highly variable. Participants reported significant emotional reactions at diagnosis as well as anxiety about the disorder, specifically its role in relationships. However, overall, the group showed average levels of mental health and self-esteem. Participants also showed positive coping techniques through conceptualization of life goals.

Keywords Vaginal agenesis · Mayer-Rokitansky-Kuster-Hauser syndrome · Mental health · Sexual functioning · Life goals

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Introduction

Vaginal agenesis is a rare congenital disorder characterized by the incomplete formation of the vagina and other reproductive organs, often including the cervix, uterus, and fallopian tubes. It is estimated to occur in 0.01–0.025% of females in a clinical sample in the United States, while estimated rates range from 0.002 to 0.007% in non-clinical populations (Buttram, 1983). Women with this condition are genetically female and undergo normal secondary sexual development, but have a small depression or dimple or a partially developed vagina where the vaginal opening should be (Letterie, 1998). Also, although childbearing is impossible for the majority of patients with vaginal agenesis due to a non-functioning uterus, reproduction is not. Because ovaries are usually present, the patient's eggs may be used for in vitro fertilization in a surrogate mother. Young women with vaginal agenesis are generally not aware of the condition until late adolescence when they have yet to experience menarche and either are examined by a family doctor or, more often, attend their first gynecological examination (Edmonds, 2000; Letterie, 1998).

The general goal of medical treatment for vaginal agenesis is creating the possibility for penile-vaginal intercourse when that is desired. Overall, treatment is aimed at making physical structures and functioning as normal as possible and helping the patient with the difficult psychological adaptation to this diagnosis. The creation of a vagina may be done by non-surgical and surgical techniques, both of which require extensive follow-up care and patient participation in the formation and/or maintenance of the vaginal opening. The most common surgical techniques include the Abbe-McIndoe split thickness skin-graft vaginoplasty (McIndoe & Bamister, 1938), colon vaginoplasty (Mobus, Kortenhorn, Kreienberg, & Friedberg, 1996), and the Vecchiatti

procedure (Vecchietti, 1980). These various surgeries usually yield high anatomical success rates, measured by length and width of the vagina or ability to have intercourse or insert a large dilator (Mobus et al., 1996; Roberts, Haber, & Rock, 2001; Vecchietti, 1980). The Frank (1938) dilator technique, modified by Ingram (1981), is the most common non-surgical method. It involves the use of semi-rigid or rigid graduated dilators pressed into the space of the introital dimple for a suggested thirty minutes twice a day or twenty minutes three times a day. Structural results from the Ingram method have been documented at 75% successful (Letterie, 1998) and 92% successful, with most patients obtaining a normal sized vagina after six to 12 months of dilation (Jones, 2002).

Most research on vaginal agenesis documents medical treatment procedures and anatomical results; however, some research has expanded to include physiological sexual functioning (such as lubrication and orgasm) following medical treatment. Since the external genitalia of women with this condition are often innervated and intact (Letterie, 1998), women with vaginal agenesis can potentially experience lubrication and orgasm. One of the first studies examining physiological sexual functioning following medical treatment was by Masters and Johnson (1961). Using three case studies of women with vaginal agenesis, they determined that similar physiologic sexual arousal occurred in patients with vaginal agenesis as for those without the disorder. Further research evaluating physiological sexual functioning following surgery has also indicated generally satisfactory physiologic sexual arousal and excitement responses of women with vaginal agenesis (e.g., Freundt, Toolenaar, Huikeshoven, Jeekel, & Drogendijk, 1993; Frost-Arner, Aberg, & Jacobsson, 2004; Kim et al., 2002; Langer, Grunberger, & Ringler, 1990; Mobus et al., 1996). Additionally, men who have previously experienced intercourse with women without vaginal agenesis have reported no difference in feeling between their current partner who underwent surgery and past partners without the condition (Mobus et al., 1996; Poland & Evans, 1985).

Despite the availability of comprehensive *physiological* information on vaginal agenesis, much of this literature offers brief, if any, discussion of psychological issues (e.g., Edmonds, 2000; Edmonds & Muram, 2001; Letterie, 1998). Several review articles address the therapeutic or psychological needs of this population, but do not offer additional data (Croak, Beghart, Klingele, & Lee, 2003; Foley & Morley, 1992; Jensen & Reiter, 1999; Spence, Gervaise, & Jain, 2003). Searches of online databases identified only 12 published empirical studies that have emphasized the psychosocial or psychosexual aspects of diagnosis or treatment of vaginal agenesis. These studies are listed and summarized briefly in Table 1. While these studies offer useful information about this population, most include brief questionnaires and only four of the studies reported using any standardized

measures. Additionally, four of these studies are more than 20 years old; thus, some of the social concerns they address are outdated. Furthermore, many of these studies did not include comprehensive literature reviews nor systematically related their own results to those previously found in other studies of this population, which is especially important as most studies have a small number of participants and would benefit from such comparisons.

Results from the few studies that have specifically examined psychosexual functioning in patients with vaginal agenesis have identified several trends. Three studies indicated sexual dysfunction in some of the patients and their partners when assessed shortly after diagnosis or medical treatment, including anorgasmia, dyspareunia, and erectile problems in partners (Freundt et al., 1993; Mobus et al., 1996; Poland & Evans, 1985). However, studies have also determined that long-term sexual functioning in post-treatment patients is generally similar to that of young women without the disorder (Communal, Chevret-Measson, Golfier, & Raudrant, 2003; Freundt et al., 1993; Hecker & McGuire, 1977; Klingele et al., 2003; Langer et al., 1990; Poland & Evans, 1985; Raboch & Hořejší, 1982). Qualitative and case study research has generally revealed a mixture of both positive and negative attitudes towards sexuality and partnership issues among patients with vaginal agenesis (Coney, 1992; David, Toullalan, Besse, Potiron, & Delga, 1975; Holt & Slade, 2003; Kaplan, 1968; Langer et al., 1990; Poland & Evans, 1985). This research suggests that levels of sexual functioning are linked with the patient's coping abilities and psychological responses rather than the physiological success of the medical treatment (Hecker & McGuire, 1977; Langer et al., 1990), and that coping and functioning often improve with time.

Studies exploring mental health have shown that women with vaginal agenesis employ both healthy and unhealthy psychological coping techniques. Of most significant concern, Hecker and McGuire (1977) found that five out of 23 women in their study reported suicidality at the time of diagnosis. Also, while Klingele et al. (2003) found improved quality of life and self-image following treatment, other researchers have found the potential for psychological issues such as depression, compromised sexual and gender identity, impaired self-esteem, and denial and repression (Coney, 1992; David, Carmil, Bar-David, & Serr 1975; Holt & Slade, 2003; Kaplan, 1968). Overall, psychological health of the patient is viewed to vary based on their personality, life situation, and the length of time after diagnosis or treatment as well as levels of support received from family, health providers or mental health professionals (Coney, 1992; Hecker & McGuire, 1977; Holt & Slade, 2003; Poland & Evans, 1985).

The central aim of the present study was to contribute to the small body of research examining the psychological and

Table 1 Summary of 12 studies assessing psychosocial or psychosexual functioning in women with vaginal agenesis

Author, year, location of study	Assessment method	Number of participants	Vaginal medical treatment	Outcomes measured
Communal et al. (2003); France	Questionnaire	16	Surgery (sigmoid colpopoiesis)	Sexual functioning (desire, arousal, orgasm, pain), lubrication, sexual quality of life
Coney (1992); United States	Case study	3	None ^a	Emotional reaction at diagnosis, self-esteem and perception of diagnosis, mental health
David et al. (1974); Israel	Interview	17	Surgery (McIndoe or Churchill-Counsellor)	Reaction to diagnosis (self and parent), response to treatment options, gender identity, influence on relationships
Freundt et al. (1993); The Netherlands	Questionnaire	14	Surgery (sigmoid skin graft)	Sexual adjustment and functioning (pain, orgasm), sexual satisfaction, gender identity, social adjustment, self-support
Hecker & McGuire (1977); Unites States	Questionnaire	23	Surgery and dilation	Sexual functioning (orgasm) and satisfaction, marital relationship, parental support and reaction
Holt & Slade (2003); United Kingdom	Interview	7	Not systematically reported	Four themes discussed: dealing with loss, disclosure of condition, negotiating medical services and role of time
Kaplan (1968); United States	Case study	8	Various (surgery, dilation, or no treatment)	Patient and parent reactions, relational functioning, gender identity and mental health
Klingeale et al. (2003); United States	Questionnaire	86	Surgery (McIndoe)	Quality of life, sexual functioning (orgasm, lubrication, pain), sexual experience and satisfaction, body image
Langer et al. (1990); Austria	Interview	11	Surgery (modified Vechietti)	Diagnosis circumstances, coping mechanisms, partnership status, sexual experience and satisfaction, personality test
Mobus et al. (1996); Germany	Questionnaire	41	Surgery (skin grafting)	Sexual functioning (desire, orgasm) and satisfaction, satisfaction with treatment, self-esteem, partner role and satisfaction
Poland & Evans (1985); United States	Interview & focus groups	54	Surgery (not specified)	Emotional reactions at diagnosis and treatment, parental responses, relationship status, orgasm, sexual satisfaction
Raboch & Hořejší (1982); Czechoslovakia	Questionnaire	12	Surgery (split skin graft)	Included control group; heterosexual experience, general sexual functioning, sexual arousability, neurotic symptomology
Strickland et al. (1993); United States	Questionnaire	10	Surgery (McIndoe)	Sexual and relational experience, emotional feelings towards surgery, sexual satisfaction, complication with treatment

Note. Number of participants refers to the number of participants with vaginal agenesis who provided additional data discussed in the study

^aStudy conducted prior to planned surgery

psychosexual experiences of women with vaginal agenesis. In this study, we included standardized measures to assess sexual functioning, mental health, and self-esteem in addition to other measures developed by the authors to assess issues specific to this population. Additionally, this study measured life goals, which was introduced in order to provide a more comprehensive and future-oriented evaluation of each patient's experiences.

Method

Participants

Participants were identified from electronic records at the University of Michigan Health Systems (UMHS) gynecology clinic between 1998 and 2003, after Institutional Review Board approval was obtained. Inclusion criteria for the study

included meeting diagnostic criteria for vaginal agenesis and being at least 18 years old. A total of 14 patients met criteria for the study. As much of the contact information in the electronic records was out of date, attempts at locating contact information for eligible participants included using all known past addresses and phone numbers, telephone directories, and internet searches. Despite these attempts, seven of the 14 eligible participants were not included in the study because current addresses or contact information could not be obtained. There were no significant demographic differences between the eligible patients who were contacted and those who were not. However, the contacted participants had, in general, been diagnosed or visited the clinic more recently than those who were not contacted.

The seven patients with contact information were phoned by the first author and asked to participate in a study to gather information about women's experiences with vaginal agenesis. All seven patients indicated interest in participating and were mailed an introductory letter explaining the purposes and voluntary nature of the study, consent forms, and questionnaire packets. Participants returned completed consent forms and questionnaires in separate envelopes. As all participants were patients of the second author, answers were given anonymously. Given that the survey was anonymous, it was not possible to identify participants who displayed signs of clinical mental health problems and would benefit from counseling. Therefore, all patients were provided a separate sheet with information about the Sexual Health Counseling Services at UMHS in the mailed questionnaire envelope, which offered itself or other clinics as a resource; participants were instructed to keep this information. Participants were not compensated.

Participants ranged in age from 18 to 35 and all racially identified as White or Caucasian. Demographic information for each participant is reported in Table 2. All were born and resided in the United States. The educational backgrounds of the participants were varied. The five participants currently partnered were in heterosexual relationships; six participants identified themselves as exclusively heterosexual and one identified as bisexual with mostly male partners.

As responses to the questionnaire were anonymous, medical reports of vaginal status at the time of the study were not identifiable because questionnaire responses could not be linked to the participants' names and medical records. At the time of the study, four of the seven participants had undergone medical treatment, two had extended the length of their vagina through intercourse, and one had not yet begun any form of treatment. Participant 2, who had not yet begun treatment, indicated that she did not have a need for sexual activity until marriage and thus did not yet have a need to begin treatment. Of the two participants who relied on intercourse to lengthen their vagina (Participant 1 and Participant 6), both began having intercourse within a year of finding out about their condition and were in steady relationships at the time of the study. Neither of these two participants indicated complications.

Of the four participants who had undergone medical treatment, two had completed it and the other two were still undergoing treatment. Of the two who had completed treatment, Participant 3 underwent surgical reconstruction 15 years before at age 19 and a second reconstruction six years prior to the study. She reported lack of lubrication, inadequate length, and disfigurement at the donor skin graft site as complications from treatment. She reported currently using intercourse two to three times a month to maintain the length of her vagina. Participant 7 had also completed treatment. She used dilation to extend the length of her vagina and began this process at 19 years old. She reported currently using dilation three to five times weekly to maintain the length of her vagina. She reported an inadequate length of her vagina and occasional urinary tract problems as complications from treatment. Participant 4 began dilation at 18 years old and had not completed treatment at the time of the study. She reported experiencing complications from treatment but did not specify what they were. Participant 5 began dilation at 28 years old and used both dilation and intercourse three to five times a week to extend the length of her vagina. She also reported experiencing complications from treatment but did not specify what they were.

Table 2 Demographic, diagnosis, and treatment information

Participant	Age	Diagnosis age	Relationship	Religion	Religiosity	Education	Vaginal treatment	Intercourse
1	18	15	Steady Partner	Christian	Somewhat	Some High School	Intercourse	Yes
2	19	18	Not Dating	Christian	Very	Some College	None	No
3	34	17	Married	Christian	Somewhat	Graduate Degree	Surgery	Yes
4	20	17	Dating	Christian	Very	Some College	Dilation	No
5	32	5	Dating	None	None	Some High School	Dilation	Yes
6	21	16	Steady Partner	None	None	High School Graduate	Intercourse	Yes
7	23	19	Steady Partner	Christian	Moderately	College Graduate	Dilation	Yes

Measures

Sexual functioning

Sexual functioning was measured with the female questionnaire version of the Derogatis Interview for Sexual Functioning-Self Report (DISF-SR) (Derogatis, 1997). The DISF-SR measures gender-keyed constructs underlying effective sexual functioning. The 25-item questionnaire is organized into five domains: frequency of sexual cognition and fantasy, frequency of sexual arousal, frequency of sexual behavior and experience, satisfaction with orgasm, and frequency of and satisfaction with sexual drive and relationship. The normed scores used in this study were derived from a non-clinical sample of 277 adults. The DISF-SR has demonstrated good reliability, with Cronbach's alpha ranging from .74 to .80 in individual domains and an overall test-retest reliability of .86 for the total score (Derogatis, 1997).

The second measure of sexual functioning was a compilation of items from questionnaires used with similar populations (Green et al., 2000; Hunt & Hampson, 1980) and three items from the Sexual Anxiety Inventory (Janda & O'Grady, 1980) resulting in the female sexual health measure provided in Appendix A. Questions from the measure were assessed individually; questions addressed sexual satisfaction, anxiety towards sex, and pain with intercourse. Response options were on either a 5- or 6-point Likert-type scale and included a "not applicable" option. For participants who had had sexual intercourse, the measure also assessed age at first sexual intercourse experience, and for participants who had not had sexual intercourse, the measure asked about reasons for not having intercourse. Participants were also asked to add any information or clarify their above responses or provide additional comments in a final open-ended question.

Mental health

Mental health was assessed using the Brief Symptom Inventory (BSI) (Derogatis, 1993), which is a shortened version of the SCL-90-R. The BSI is a 54-item self-report symptom inventory designed to reflect the psychological symptom patterns of psychiatric and medical patients as well as non-patient individuals. For each item, participants report on a 5-point Likert-type scale how much each problem has affected them in the two weeks prior to completing the survey (0 = not at all to 4 = extremely). The BSI is scored and profiled in terms of nine primary symptom dimensions (somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism) and a global severity index designed to measure overall psychological distress. The normed scores from the BSI used in this study were derived from a non-clinical adult population ($N = 974$); the BSI had demonstrated favor-

able profiles of reliability with this population, ranging from .71 to .85 (Derogatis, 1993).

Global self-esteem was assessed using the Rosenberg (1965) self-esteem scale, which consists of 10 items scored on a four-point Likert-type agreement scale (e.g., "I feel that I have a number of good qualities").

To clarify the psychological experience directly following diagnosis, emotional responses to diagnosis were assessed with a measure developed by the researchers, which drew from response options used in a previous study of women with vaginal agenesis (Coney, 1992). Options included a list of emotional reactions: confusion, shock, disbelief, hysteria, anxiety, excitement, anger, shame, relief, depression, guilt, and fear. Participants were asked to retrospectively check all emotions that they experienced directly following diagnosis as well as to indicate the most intense initial emotion they experienced at diagnosis.

Life goals

Life goals were assessed with a series of questions specific to this population, developed by the researchers; items in the life goals measure are provided in Appendix B. Questions were assessed individually and included future plans for marriage and/or romantic relationships, raising children, pursuing a professional career, and education. Questions also assessed attitudes towards adoption and in vitro fertilization. In addition, participants were asked to select six of the following eight options and rank them according to importance: education, focus on career/work, travel/leisure, financial matters, staying connected to family, marriage/partnership commitment, physical/psychological health, and raising children. The final question was open-ended and asked, "Has being diagnosed with vaginal agenesis influenced the way you see the course of your life? If yes, please explain."

The following section includes cumulative reports of sexual functioning, mental health, and life goals results and concludes with two case studies. These two participants were chosen because they both fell towards the middle of group on psychological and psychosexual health and represented the two different age groups present in this study (under 25 and over 30).

Results

Sexual functioning

Global and individual domain scores for the DISF-SR are presented for each participant in Table 3. As indicated by the global scores, four participants had very good sexual functioning (83rd, 84th, 85th, and 95th percentiles) and three participants showed poor sexual functioning (below the 2nd

Table 3 Global and domain scores from the derogatis inventory of sexual functioning, short form (DISF-SR)

Participant	DISF-SR global (%)	Experience (%)	Fantasy (%)	Orgasm (%)	Drive (%)	Arousal (%)	Satisfaction
1	83	51	80	69	51	84	5
2	<2	<2	7	<2	<2	<2	3
3	<2	30	16	<2	<2	<2	1
4	<2	8	30	<2	<2	<2	3
5	85	50	95	7	51	93	2
6	95	92	85	17	84	93	4
7	84	15	97	30	50	95	3

Note. Presented numbers represent the percentile rank of the participants, responses compared to normed scores on an adult population. “DISF-SR Global” indicates the total score on the DISF-SR; higher score is equivalent to higher sexual functioning. “Experience” represents Sexual Behavior/Experience domain, “Fantasy” represents the Sexual Cognition/Fantasy domain, “Drive” represents the “Sexual Drive/Relationship” domain. “Satisfaction” refers to the rating the participant marked as their satisfaction with their overall sexuality measured on a five-point Likert-type scale (1 = very dissatisfied, 3 = equally satisfied and dissatisfied, 5 = very satisfied)

percentile). It is important to note that the DISF-SR assumes sexual intercourse experience. Thus, the low DISF-SR global scores for Participants 2 and 4 were likely influenced by their lack of sexual experience and belief that sexual intercourse was best suited for marriage only. On the DISF-SR, the highest scores for each participant were within the domains of sexual cognition/fantasy and sexual behavior/experience. Satisfaction with orgasm scores were generally the lowest, with all but one falling under the 30th percentile. Of the five participants who had engaged in sexual intercourse, four indicated that they usually had normal lubrication throughout sexual relations, while Participant 3 indicated never having had normal lubrication.

On our on the female sexual health measure, participants’ self-reported satisfaction with their overall sex life was variable. Overall satisfaction also corresponded with either enjoyment of sexual activity, including masturbation, or comfort with the appearance of one’s body. It did not correspond directly to the global DISF-SR score. Two participants reported being neither satisfied nor dissatisfied with their overall sex life, but had a DISF-SR score below the second percentile. Additionally, one other participant reported being moderately dissatisfied with her sex life, yet had a DISF-SR global score in the 93rd percentile.

Overall satisfaction was closely associated with anxiety towards sex: participants who indicated less satisfaction with their overall sex life also indicated more anxiety towards sex or the prospect of sex. Anxiety towards intercourse was present in six of the seven participants, suggesting that even for those currently participating in intercourse, it was a potentially negative activity. Satisfaction and anxiety were also associated with partnership status, such that of the four participants with steady partners, three (Participants 1, 6, and 7) had high overall scores on the DISF-SR, indicated moderate to high satisfaction, and indicated low anxiety towards sexual activity.

The female sexual health measure also assessed pain with intercourse and pelvic exams. Five of the seven participants

felt as though the size of their vagina made intercourse painful or impossible; these participants also reported anxiety towards sex and lower overall satisfaction. Of the five participants who had had sexual intercourse, all experienced some amount of pain, bleeding, or vaginismus with intercourse.

Concerns about romantic partner’s reactions to having vaginal agenesis were raised in the female sexual health measure: two participants indicated partnership concerns in the open-ended question. For example, Participant 7 expressed her concern for both the integrity of her vagina and potential partnership issues through her comment, “Sometimes I worry, because I was only using the ‘new’ vagina for less than a year before I had problems. Is this thing going to last for the rest of my life? Is it going to work? Sometime I feel guilty and sorry for my boyfriend that he has to deal with this.” Participant 4 also expressed concerns about revealing her condition with infertility and potential inability to have sexual intercourse to her partner in the open-ended questions.

Mental health

Five of the seven participants had never had any counseling or been on psychiatric medication. One participant had counseling for a year with no medication and one had counseling for a year and took medication for anxiety. As Table 4 shows, the global severity index scores on the BSI indicated that four of the seven participants had overall good mental health compared to normed scores of non-patient female adults. Global severity index scores for four participants were within the normal range (30th–50th percentile). None of these participants had scores outside the normal range on any of the individual subscales. Three participants’ global severity index scores indicated the presence of current symptoms of poor psychological functioning higher than those typically found in non-clinical adult samples.

Table 4 Individual scores from the brief symptom inventory and global self-esteem scale and life goals

Participant	BSI global (%)	Self-Esteem	Acceptance of adoption	Acceptance of fertilization	Importance of children	Life impact
1	50	39	Yes	No	Moderately	No
2	83	36	Yes	Yes	Extremely	Yes
3	50	33	Yes	Yes	Extremely	No
4	83	31	Yes	No	Extremely	No
5	93	21	Yes	Yes	Moderately	Yes
6	50	35	Yes	No	Moderately	No
7	30	39	No	Yes	Extremely	Yes

Note. “BSI Global” indicates the overall normed percentage score on the BSI; a higher percentage is equivalent to more mental health symptoms. “Self-Esteem” represents global scores from the Rosenberg Self-Esteem Scale; theoretical range is 10–40. “Acceptance of Adoption” and “Acceptance of Fertilization” refer to the participants’ acceptance of adoption and in vitro fertilization as good alternative methods of childbearing. “Life Impact” is the participant’s response to the question, “Has being diagnosed with vaginal agenesis influenced the way you see the course of your life?”

Self-esteem results suggested that participants generally showed average levels of self-esteem, with one score indicating potential concern.

Emotional reactions at diagnosis also contributed to psychological functioning information. The four most frequently marked initial emotional responses to diagnosis were confusion, depression, shame, and shock. Other emotional reactions participants marked included disbelief, fear, anger, anxiety, and relief. When asked to mark their most intense emotional reaction to diagnosis, two participants marked depression, two marked confusion, and one indicated shame while the remaining two did not answer. No participants indicated excitement, hysteria or guilt as reactions to the diagnosis or provided additional emotional reactions.

Life goals

All participants indicated an interest in both getting married and having children and four also indicated that an alternative method to childbearing was acceptable (see Table 4). Participant 3 had already adopted two children. When rating the importance of various elements in their lives, participants collectively rated marriage or partnership commitment the highest, with staying connected to family and raising children the second most important. Physical and psychological health was third, followed by career, financial matters, education, and travel and leisure, respectively. Five participants also indicated that they were planning on pursuing a professional career involving a four-year college degree in one and a graduate degree in four. The other two aspired to complete high school and a two-year college program, respectively.

Three of the seven participants indicated that illnesses or medical issues have influenced the way they see the course of their life. All three explained that having vaginal agenesis has created sexual or romantic partnership issues, such that they questioned their ability to sexually satisfy a partner and worried about potential life partner’s reactions to their inability to carry children. For example, Participant 7 com-

mented, “I worry about having kids through surrogate and losing my boyfriend because I can’t have kids and because of the tension that will be caused in the effort of having a family.” Participant 2 also expressed partnership concerns, but added that her religious faith helps her cope with these concerns: “This issue, I don’t know whether I will ever get married or not. I know God is in control of my life, though.”

Case examples

Participant 1 (age 18)

Participant 1 identified herself as Christian and somewhat religious. She was currently employed and had completed some high school. She identified as heterosexual, had been in a steady relationship for three and a half years, and was engaged to be married. Her condition of vaginal agenesis was discovered by her pediatrician when she was 15 years old. She did not undergo any formal treatment for her vaginal agenesis but was coitally active. She had no other chronic or major medical conditions and no past surgeries. She had no history of mental health treatment.

Her responses to the Rosenberg self-esteem scale indicated high self-esteem. Her score on the BSI was in the 50th percentile; she reported symptoms of depression and anxiety having affected her “a little bit” in the past two weeks. Her most intense initial emotional reactions to the diagnosis was confusion, followed by disbelief and shame.

As indicated by her scores on the DISF-SR, her sexual functioning was in the 83rd percentile. She scored within the normal range in sexual behavior/experience, sexual drive/relationship and above average in orgasm, sexual arousal, and sexual cognition/fantasy. On the female sexual health measure, she reported being overall very satisfied with her sex life and that she enjoyed sexual activity. She indicated that she and her partner find each other attractive. She rarely had pain and bleeding with sexual intercourse and experienced vaginismus (tightening of the pelvic muscles) only

sometimes during pelvic exams. She reported that her vagina did not feel too small to have sex. She did not have anxiety about sexual intercourse and had a positive attitude towards sex in general. She first engaged in sexual intercourse at age 15.

Her future goals included being married and raising children. She indicated that adoption was a good alternative to having her own children, but that in vitro fertilization was not a good alternative. It was moderately important for her to have children. She indicated that she was interested in pursuing a professional career, hoping to finish high school and a Bachelor's degree. She ranked marriage as most important in her life, with staying connected to family, focusing on career and finances, staying physically and mentally healthy and education as her second through sixth most important elements respectively. She reported that no illnesses or medical issues influenced the way she sees the course of her life.

Participant 3 (age 34)

Participant 3 identified herself as Christian and somewhat religious. She was not currently employed and had completed a Master's degree. She identified as heterosexual and had been married for 13 years. She had adopted two children. Her condition of vaginal agenesis was discovered by her gynecologist when she was 17 years old. She has had two separate treatments; both were vaginal reconstructive surgeries. One was 15 years prior to the study, the second was six years prior to the study. She reported using intercourse two to three times monthly to maintain the reconstruction. Complications she experienced from surgery included lack of lubrication, inadequate length of her vagina, and disfigurement at the donor skin graft site. The post-surgery treatment process was painful and her satisfaction with the treatment and size of her new vagina was low. She reported minor chronic medical conditions and no past surgeries other than her vaginal reconstruction. She has no history of mental health treatment.

Her responses to the Rosenberg self-esteem scale indicated moderately high self-esteem. Her score on the BSI was at the 50th percentile. She indicated several symptoms; she reported anxiety and psychosomatic symptoms having affected her "a little bit" in the past two weeks. The emotions she felt in her initial reaction to the diagnosis included shock, disbelief, shame, anger, and anxiety.

As indicated by her scores on the DISF-SR, her sexual functioning was below the 2nd percentile. She scored close to average in sexual behavior/experience, below average in the sexual cognition/fantasy domain, and significantly below average in sexual drive/relationship, orgasm, and sexual arousal. On the female sexual health measure, she reported being overall very dissatisfied with her sex life and found little enjoyment in sexual activity. She indicated that she

and her partner find each other attractive. She sometimes had pain with sexual intercourse, but rarely after intercourse. She sometimes experienced vaginismus during pelvic exams. She reported that her vagina usually felt too small to have sex and that sex was usually painful. She reported being worried that sex will hurt and sometimes had anxiety about sexual intercourse. She felt that sex can cause as much anxiety as pleasure. She first engaged in sexual intercourse at age 20.

She was already married at the time of the study and had adopted two children. She felt that adoption was a good alternative to having her own children, and that in vitro fertilization was also a good alternative, though it was not available when she was diagnosed. She indicated that it was extremely important for her to have children. She was interested in pursuing a professional career as a business teacher, satisfied with her current educational degree. She ranked marriage as most important in her life, with raising children, staying connected to family, financial matters, staying physically and mentally healthy and travel and leisure as her second through sixth most important elements, respectively. She reported that no illnesses or medical issues have influenced the way she sees the course of her life.

Discussion

The results from this study support previous finding that women diagnosed with vaginal agenesis have a variety of psychological and sexual experiences, both positive and negative, and implicate the need for health care that is sensitive to the individual psychological and psychosexual experiences of these women. More importantly, the results suggest that the experience of vaginal agenesis is not necessarily psychologically and sexually debilitating, nor are the psychological and sexual lives of women with vaginal agenesis necessarily negatively affected. In fact, the women in this study had many encouraging personal outcomes following diagnosis and treatment in addition to the difficulties they may have encountered during diagnosis or following treatment. It is important for health professionals to inform patients of the high success rates for psychological and sexual functioning as well as to actively evaluate and refer patients who indicate sexual or coping problems.

Responses to the sexual functioning and health measures revealed complex sexual portraits, with both high and low sexual functioning. Results from the individual domains of the DISF-SR, which provide applicable results for some participants, suggested that the participants from this study were less satisfied with their orgasmic experiences than non-clinical adult populations. This result was slightly different from previous research, which has generally indicated that women report high rates of orgasm through vaginal inter-

course following various forms of treatment (Alessandrescu, Peltecu, Behimschi, & Buhimschi, 1996; Freundt et al., 1993; Mobus et al., 1996; Raboch & Horejsi, 1982). However, it is again worthwhile to note that two of the four participants with the lowest scores on the orgasm domain have little sexual experience. Results from this study also indicated generally satisfactory lubrication with sexual relations, which coincides with several past studies (Alessandrescu et al., 1996; Raboch & Horejsi, 1982), though other studies have found more problems with lubrication than in this sample (Borruto, Chasen, Chervenak, & Fedele, 1999; Klingele et al., 2003; Masters & Johnson, 1961; Strickland, Cameron, & Krantz, 1993).

Differences between studies regarding orgasm and lubrication could be due to methodological reasons, such as instruments using differing definitions or measures of orgasm. Differences in results were also likely due to factors such as the length of time following medical treatment, the form of medical treatment, the status of the vagina at the time of assessment, and the participants' relationship status. For example, while current age, age at diagnosis, or treatment method seemed to impact DISF-SR score, three of the four participants who had a score indicating overall "very good" sexual functioning on the DISF-SR were currently in steady relationships and two of the participants with very low scores were not sexually active.

The female sexual health measure identified several additional sexual functioning issues not identified by the DISF-SR. First, participants indicated both high dissatisfaction and high satisfaction regarding overall satisfaction with sexual functioning. This is similar to Langer et al.'s (1990) findings of mixed sexual satisfaction, but different from several other studies where 90% or more of sexually active participants reported satisfaction with sexual relationships (Hecker & McGuire, 1977; Klingele et al., 2003; Strickland et al., 1993). Second, this measure revealed anxieties towards sexual intercourse, which prior studies have not examined. The indication of anxiety towards sex from participants who were currently sexually active and particularly by the two participants who were not yet sexually active suggests that addressing these potential anxieties during treatment may be worthwhile. Third, all of the participants who had engaged in sexual intercourse indicated some pain or discomfort with intercourse, which was similar to the seven out of nine participants who reported pain in the study by Freundt et al. (1993), but dissimilar to two other previous studies that examined pain with intercourse, in which a smaller percentage of participants indicated sexual pain (Communal et al., 2003; Klingele et al., 2003).

Results also indicated concerns related to romantic and sexual partnership, which has been supported in past research on vaginal agenesis. For example, David et al. (1975) described how a women diagnosed with vaginal agenesis re-

ported that knowing that her vagina was "irregular" became an obstacle in establishing relationships with men. Partnership issues identified in past research, and indicated by participants in this study through the open-ended question on the measurement of life goals, included whether or not to tell a sexual partner, when to tell him/her, and how to tell him/her (Hecker & McGuire, 1977; Holt & Slade, 2003; Langer et al., 1990).

Additionally, it is important to note the discrepancy between participants' global score on the DISF-SR and the responses given in the female sexual health measure. This discrepancy suggests that perhaps the DISF-SR scale was not the best way to assess sexual functioning for women with vaginal agenesis. Moreover, the DISF-SR may not be a measurement of sexual functioning that is applicable outside of heterosexual adult women who are in relationships and participating in sexual intercourse. This was indicated particularly by the two participants whose scores were very low on the DISF-SR, which seemed to be due their religious beliefs surrounding sexuality.

Results suggested that the diagnosis of vaginal agenesis is not necessarily followed by mental health problems. Past studies have generally shown similar results, with select patients having indicated serious psychological reactions while others showed healthy psychosocial adaptations to diagnosis (Coney, 1992; David et al., 1975; Hecker & McGuire, 1977; Poland & Evans, 1985). Additionally, as no baseline data were gathered prior to diagnosis, there is no way of knowing if the potential mental health concerns of the three participants with high global BSI scores were related to being diagnoses with vaginal agenesis. Also, it is also worthwhile to note that psychological functioning did not seem to be associated with sexual functioning, age, relationship status, or having begun formal treatment, as the scores between the three participants who had not yet undergone medical treatment were not systematically different from the four participants who had begun medical treatment. Furthermore, the consistently high global self esteem scores suggest that self-esteem was not negatively affected by diagnosis in general. These results also coincide with past studies, which suggest relatively normal interpersonal relationships and positive self concept, particularly as time passes following diagnosis and medical treatment (Holt & Slade, 2003; Jensen & Reiter, 1999; Klingele et al., 2003).

The most common emotional responses at diagnosis indicated in this study (confusion, depression, shame, and shock) follow similar patterns of emotions reported in other studies (Coney, 1992; David et al., 1975; Kaplan, 1968; Poland & Evans, 1985). It should be noted, however, that one of the participants in this study was retrospectively reporting emotions at diagnosis from 30 years ago, and another from 15 years earlier. Current normative scores on the BSI in four of the seven participants from this study reinforces previous

research that indicates that initial severe emotional reactions often subside with time (Hecker & McGuire, 1977; Langer et al., 1990; Poland & Evans, 1985). Thus, this study and past studies suggest that diagnosis is a time of emotional disturbance for most, if not all, individuals. Though the psychological disruption is generally resolved over time (Holt & Slade, 2003), some individuals may have lasting psychological problems related to diagnosis or other ongoing concerns of having vaginal agenesis, such as partnership issues or infertility.

Several participants indicated that their diagnosis with vaginal agenesis has impacted the way they see the course of their life. More participants may have actually altered their life goals due to their diagnosis but did not answer that they had because it was not obvious to them or they did not want to believe that it had affected them. Several sets of responses did seem to indicate a potential change in goals related to finding out that childbearing was not possible. For example, all participants indicated that either in vitro fertilization or adoption was an option, suggesting an increased acceptance for alternative methods for childbearing. Although all participants indicated that it was moderately to very important that they have children, most of them also had plans to pursue a professional career and graduate school, and rated marriage or partnership commitment as the most important element in their lives, with raising children as second (or further down in some cases). Thus, pressure and desire for women to have children (e.g., Woollett & Marshall, 2001) may have been lessened as a result of diagnosis, while partnership, professional, and educational aspirations may have increased. Among women and couples facing infertility, reprioritization of life goals is an indication of healthy coping and resolution (Leiblum, 1997). However, the indication of reprioritization is speculative as this study did not offer longitudinal data that could assess a change in goals from before and after diagnosis.

Although this study assessed multiple psychosocial and psychosexual issues with which patients with vaginal agenesis are confronted, findings from this study and past research need to be expanded. This study has limitations in that the sample was small and self-selected. It also includes patients who were at very different stages of diagnosis and treatment, potentially contributing to the varying levels of functioning. Additionally, while this study provided much more comprehensive and systematic information than most past studies, it did lack specific information that would help clarify results, such as the status of the vagina at the time of the study and details about current sexual practices. Future research should continue to assess the sexual functioning, mental health, and other psychosocial issues that patients with vaginal agenesis experience, as well as predictors of psychological and psychosexual problems. More specifically, future research could address relationship issues for patients, such as how to

speak with a potential partner about the disorder, as well as evaluating optimal methods of support for the issue of infertility. Additionally, broader definitions of sexual functioning beyond physical ability for intercourse and orgasm may help clarify discrepancies in reports on sexual functioning from past research by providing a more complete picture of the women's sexual experiences.

Results from this study indicate the possibility of a variety of psychological and psychosexual responses following the diagnosis and experience of vaginal agenesis, suggesting the potential benefit of psychological and psychosexual assessment and treatment at the time of diagnosis and beyond. Similar to most past studies, results indicated that women with vaginal agenesis do not necessarily have greater psychosexual or psychological disorders than other females; however, most studies suggest the need for counseling, support, and information from the family, medical staff, or a professional therapist to be a standard element involved in both diagnosis and treatment plans (e.g., Holt & Slade, 2003). It has been suggested that a psychologist or social worker knowledgeable of the psychological and medical issues associated with vaginal agenesis should be available to speak with the patient and her family at the clinic so that the patient does not have to seek outside counseling (Foley & Morely, 1992). Patient support groups, either at the clinic or information about online support groups, could also be helpful. At most, all participants indicated emotional distress at the time of diagnosis, and psychosocial support at this time could be very helpful to stave off future psychological issues. We also suggest that patients should be monitored for continued psychological distress and have the option to receive help with psychosexual issues such as anorgasmia, partnership issues, or dealing with infertility.

Appendix A. Individual items in the female sexual health measure

1. How satisfied have you been with your overall sex life?
2. How enjoyable do you find sexual activity without sexual intercourse?
3. How enjoyable do you find sexual intercourse?
4. How would you rate your frequency of sexual intercourse?
5. How sexually attractive does your partner find you?
6. How sexually attracted are you to your sexual partner?
7. Do you have pain with intercourse?
8. Do you have pain after intercourse?
9. Do you have bleeding with intercourse?
10. Do you feel unable to have sex due to the size of your vagina?
11. Does sex cause you pain because your vagina is too small?

12. Do the muscles in your vagina contract so much as not to allow penetration or make penetration difficult?
13. Do the muscles in your vagina contract so much as to make pelvic exams at the doctor's office painful?
14. Are you worried that sex may hurt?
15. Do you feel anxious about having sex?
16. Have you had sexual intercourse? (yes/no response)
17. How old were you when you first had sexual intercourse?
18. If you have not had intercourse, when are you interested in having intercourse (check all that apply)

Options: have had intercourse, not interested in having intercourse, as soon as I can, when I am in a committed relationships, when I am married

Note. Questions have a 5- or 6-point Likert response option unless otherwise noted; all questions included a “not applicable” option. The measure included the following prompt: Below is a list of questions that ask about sexual issues in your life. Please read each one carefully and check the box below that best corresponds to your sexual experiences.

Appendix B. Individual items in the life goals measure

1. Do your future goals include being married?
2. Are you interested in raising children?
3. Do you feel that adoption is a good alternative to having your own children?
4. Do you feel that in vitro fertilization with a surrogate (using your eggs and your partner's sperm to create a baby that would grow in another woman's uterus) is a good alternative to having your own children?
5. How important is it to you to have children (1 = not at all; 5 = extremely)
6. Are you planning on pursuing a professional career?
7. What would you like to do for work/career? (open-ended response)
8. What are your education aspirations? (open-ended response)
9. Please rate the importance of these elements in your life from 1 to 6.
Options: education, staying connected to family (parents, siblings), focus on career/work, marriage/partnership commitment, travel/leisure, physical health/mental health, financial matters, raising children.
10. Have any illnesses/medical issues influenced the way you see the course of your life? If yes, please explain.

Note. Questions have yes/no response options unless otherwise noted. The measure included the following prompt: Please read the questions carefully and circle the answer, check the answer, or fill in the answer that best describes

your current expectations, desires, and goals for the next 10 years.

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References

- Alessandrescu, D., Peltecu, G. C., Buhimschi, C. S., & Buhimschi, I. A. (1996). Neocolpopoiesis with split-thickness skin graft as a surgical treatment of vaginal agenesis: Retrospective review of 201 cases. *American Journal of Obstetrics and Gynecology*, *175*, 131–138.
- Borruto, F., Chasen, S. T., Chervenak, F. A., & Fedele, L. (1999). The Vecchiatti procedure for surgical treatment of vaginal agenesis: Comparison of laparoscopy and laparotomy. *International Journal of Gynecology & Obstetrics*, *64*, 153–158.
- Buttram, V. C. (1983). Mullerian anomalies and their management. *Fertilization Sterilization*, *40*, 159–163.
- Coney, P. (1992). Effect of vaginal agenesis on the adolescent: Prognosis for normal sexual and psychological adjustment. *Adolescent Pediatric Gynecology*, *5*, 8–12.
- Communal, P., Chevret-Measson, M., Golfier, F., & Raudrant, D. (2003). Sexuality after sigmoid colpopoiesis in patients with Mayer-Rokitansky-Kuster-Hauser Syndrome. *Fertility and Sterility*, *80*, 600–606.
- Croak, A. J., Beghart, J. B., Klingele, C. J., & Lee, R. A. (2003). Therapeutic strategies for vaginal mullerian agenesis. *Journal of Reproductive Medicine*, *48*, 395–401.
- David, A., Carmil, D., Bar-David, E., & Serr, D. M. (1975). Congenital absence of the vagina: Clinical and psychologic aspects. *Obstetrics and Gynecology*, *46*, 407–409.
- Derogatis, L. R. (1993). *Brief symptom inventory (BSI). Administration, scoring, and procedures manual*. Minneapolis: National Computer Systems.
- Derogatis, L. R. (1997). The Derogatis Interview for Sexual Functioning (DISF/DISF-SR): An introductory report. *Journal of Sex & Marital Therapy*, *23*, 291–304.
- Edmonds, D. K. (2000). Congenital malformation of the genital tract. *Obstetrics and Gynecology Clinics of North America*, *27*, 49–62.
- Edmonds, D. K., & Muram, D. (2001). Sexual developmental anomalies and their reconstruction: Upper and lower tracts. In J. Sanfillippo, D. Muram, J. Dewhurst, & P. Lee (Eds.), *Pediatric and adolescent gynecology* (pp. 553–583). Philadelphia: W. B. Saunders Company.
- Foley, S., & Morley, G. W. (1992). Care and counseling of the patient with vaginal agenesis. *The Female Patient*, *17*, 73–80.
- Frank, R. T. (1938). The formation of an artificial vagina. *American Journal of Obstetrics and Gynecology*, *35*, 1053–1055.
- Freundt, I., Toolenaar, T., Huikeshoven, F. J. M., Jeekel, H., & Drogendijk, A. C. (1993). Long term psychosexual and psychosocial performance of patients with a sigmoid neovagina. *American Journal of Obstetrics and Gynecology*, *169*, 1210–1214.
- Frost-Arner, L., Aberg, M., & Jacobsson, S. (2004). Split skin graft reconstruction in vaginal agenesis: A long-term follow-up. *Scandinavian Journal of Plastic and Reconstructive Surgery and Hand Surgery*, *38*, 151–154.

- Green, M. S., Naumann, R. W., Elliot, M., Hall, J. B., Higgins, R. V., & Grigsby, J. H. (2000). Sexual dysfunction following vulvectomy. *Gynecologic Oncology*, *77*, 73–77.
- Hecker, B. R., & McGuire, L. S. (1977). Psychosocial function in women treated for vaginal agenesis. *American Journal of Obstetrics and Gynecology*, *129*, 543–547.
- Holt, E., & Slade, P. (2003). Living with and incomplete vagina and womb: An interpretative phenomenological analysis and the experience of vaginal agenesis. *Psychology, Health and Medicine*, *8*, 19–33.
- Hunt, D. D., & Hampson, J. L. (1980). Transsexualism: A standardized psychosocial rating format for the evaluation of results of sex reassignment surgery. *Archives of Sexual Behavior*, *8*, 255–263.
- Ingram, J. (1981). The bicycle seat stool in the treatment of vaginal agenesis and stenosis: A preliminary report. *American Journal of Obstetrics and Gynecology*, *140*, 867–872.
- Janda, L. H., & O'Grady, K. E. (1980). Development of a sex anxiety inventory. *Journal of Consulting and Clinical Psychology*, *48*, 169–175.
- Jensen, V. K., & Reiter, S. L. (1999). Psychosocial aspects of congenital female tract anomalies. In G. Gidwani & T. Falcone (Eds.), *Congenital malformations of the female genital tract: Diagnosis and management* (pp. 223–233). Philadelphia: Lippincott Williams & Wilkins.
- Jones, H. W. (2002). Vaginal creation for mullerian agenesis. *Obstetrical and Gynecological Survey*, *57*, 212–213.
- Kaplan, E. H. (1968). Congenital absence of vagina. *New York State Journal of Medicine*, *68*, 1937–1941.
- Kim, S. K., Park, J. H., Lee, K. C., Park, J. M., Kim, J. T., & Kim, M. C. (2003). Long-term results in patients after rectosigmoid vaginoplasty. *Plastic and Reconstructive Surgery*, *112*, 143–151.
- Klinge, C. J., Beghart, J. B., Corak, A. J., DiMarco, C. S., Lesnick, T. G., & Lee, R. A. (2003). McIndoe procedure for vaginal agenesis: Long-term outcome and effect on quality of life. *American Journal of Obstetrics and Gynecology*, *189*, 1569–1573.
- Langer, M., Grunberger, W., & Ringler, M. (1990). Vaginal agenesis and congenital adrenal hyperplasia: Psychosocial sequelae of diagnosis and neovagina formation. *Acta Obstetrics and Gynecology Scandinavia*, *69*, 343–349.
- Leiblum, S. R. (1997). *Infertility: Psychological issues and counseling strategies*. New York: Wiley.
- Letterie, G. S. (1998). *Structural abnormalities and reproductive failure*. Malden, MA: Blackwell Science.
- Masters, W. H., & Johnson, V. E. (1961). The artificial vagina: Anatomic, physiologic, psychosexual function. *Western Journal of Surgery, Obstetrics and Gynecology*, *69*, 192–212.
- McIndoe, A. H., & Bamister, J. B. (1938). Operation for the cure of congenital absence of the vagina. *British Journal of Obstetrics and Gynecology*, *45*, 490.
- Mobus, V. J., Kortenborn, K., Kreienberg, R., & Friedberg, V. (1996). Long-term results after operative correction of vaginal aplasia. *American Journal of Obstetrics and Gynecology*, *175*, 617–624.
- Poland, M. L., & Evans, T. N. (1985). Psychologic aspects of vaginal agenesis. *Journal of Reproductive Medicine*, *30*, 340–344.
- Raboch, J., & Hořejší, J. (1982). Sexual life of women with the Küstner-Rokitansky syndrome. *Archives of Sexual Behavior*, *11*, 215–220.
- Roberts, C. P., Haber, M. J., & Rock, J. A. (2001). Vaginal creation for mullerian agenesis. *Obstetrical & Gynecological Survey*, *57*, 212–213.
- Rock, J. A., Reeves, L. A., Retto, H., Baramki, T. A., Zacur, H. A., & Jones, H. W. (1983). Success following vaginal creation for Mullerian agenesis. *Fertilization Sterilization*, *39*, 809–813.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Spence, J., Gervaise, P., & Jain, S. (2003). Uterovaginal anomalies: Diagnosis and current management in teens. *Current Women's Health Reports*, *3*, 445–450.
- Strickland, J. L., Cameron, W. J., & Krantz, K. E. (1993). Long-term satisfaction of adults undergoing McIndoe vaginoplasty as adolescents. *Adolescent and Pediatric Gynecology*, *6*, 135–137.
- Vecchietti, G. (1980). Neovagina in Rokitansky-Küster-Hauser syndrome. *Gynakologe*, *13*, 112–115.
- Woollett, A., & Marshall, H. (2001). Motherhood and mothering. In R. K. Unger (Ed.), *Handbook of the psychology of women and gender* (pp. 170–182). New York: Wiley.