

表3 事業場における心の健康づくりの実施状況の評価のための32項目のチェックポイント

A. 心の健康づくりの方針と計画
A-1. 心の健康づくりの方針表明
1. 事業場における心の健康づくり(メンタルヘルス)の方針表明
2. 事業場としての心の健康づくりの重要性の認識
A-2. 心の健康づくりの組織
3. 心の健康づくりへの事業場全員での取り組み
4. 管理監督者、従業員、産業保健スタッフ等の役割の明確化
5. 事業場外資源の活用準備
A-3. 心の健康づくり計画
6. 健康づくりの目標と計画の設定
7. 衛生委員会等における心の健康づくり計画に関する検討
8. 産業医あるいは産業保健スタッフの心の健康づくり計画への関与
B. メンタルヘルス相談体制
B-1. メンタルヘルスの相談先
9. 事業場におけるメンタルヘルス相談の体制を決める
10. メンタルヘルス相談を利用するための教育・研修
11. 管理監督者による相談対応
12. メンタルヘルス相談におけるプライバシー保護の方針
13. 人事・労務担当者や産業保健スタッフが相談できる専門家の確保
B-2. 心の健康問題を持つ従業員の復職や職場適応の支援
14. 復職判定
15. 心の健康問題を持つ従業員への継続的支援
C. 職場環境等の改善
16. ストレスの原因となる職場環境等についての理解
17. 管理監督者による職場環境等の評価と改善
18. 産業保健スタッフや人事・労務担当者による職場環境等の評価
19. 産業保健スタッフや人事・労務担当者による職場環境等の改善
D. 教育・研修および情報提供
20. 管理監督者向けの心の健康についての教育・研修
21. 一般従業員向けの心の健康についての教育・研修
22. ストレス対処のための教育・研修
23. 産業保健スタッフや人事・労務担当者のメンタルヘルスに関する教育・研修
24. 心の健康に関する正しい知識の普及
25. 家族に対する情報提供 E. さまざまな機会を活用した心の健康づくり
26. 心の健康やストレスに関する問診の実施
27. ストレスに対する保健指導の実施
28. インターネットやイントラネットの活用
F. 緊急時の心のケア
29. 事故や災害発生後の従業員の心のケア
30. 自殺発生時の心のケア
G. 評価・改善
31. 心の健康づくりの実施状況の評価
32. 心の健康づくりの効果の評価

業保健スタッフによるうつ病および自殺リスクの評価の方法、ポストペンションの方法といった個別の対策についてのツールや具体的方法論については、この号において、三島、廣、高橋らが別途詳細に記述しているので、そちらを参考にされたい。

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自殺リスクの評価と対応に関する研究」(主任研究者 川上憲人)の成果に基づいて、事業場レベルでの自殺予防対策の推進方法、特に自殺予防対策の立案および評価方法について述べた。自殺予防教育の実施方法、産

PERSPECTIVES OF GENDER-ROLE IDENTITY IN MENTAL HEALTH: A REVIEW FOCUSING ON JAPANESE CULTURAL ASPECTS

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ABSTRACT

There is a vast amount of literature reporting that women are about twice as likely as men to experience psychological distress, depressive symptoms and major depression. This female predominance for depression is known to be a cross-culturally common phenomenon. Previous studies in this field have predominantly discussed the social and hormonal mechanisms that stimulate affiliative needs for females at puberty. The purpose of this paper is to review the gender differences in depression related to personal gender-role orientation. Furthermore, most of the preceding studies were conducted in western countries. Therefore, this paper focused on the Japanese culture and discussed aspects of cultural differences which may affect the gender differences in mental health and relative social behavior. According to Hofstede's dimension of national culture termed 'Masculinity-Femininity,' Japan is the most masculine society (male' and female' gender roles were clearly differentiated). It is proposed that future studies would benefit from considering personal and ecological (cultural) gender-role orientation to construct a gender education program as an intervention for depression in children and adolescents.

Keywords: Gender difference in depression, gender-role identity, sex hormones

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GENDER DIFFERENCES : IN DEPRESSION

That women are about twice as likely as men to experience psychological distress, depressive symptoms, and major depression has been much reported in the literature (Angst & Merikangas, 1997; Kessler, 2003; Kessler, McGonagle, Nelson, Hughes, Swartz, & Blazer, 1994; Kessler, Zhao, Blazer, & Swartz, 1997). This difference has been found throughout the world, although risk ratios are inconsistent (Kessler, et al., 1994; Kessler, McGonagle, Swartz, Blazer, & Nelson, 1993; Weissman & Klerman, 1977). For example, some studies have reported no gender difference during pre-puberty (Angold & Rutter, 1992; Kashani, McGee, Clarkson, et al., 1983) or that boys were more likely than girls to be depressed (Anderson, Williams, McGee, & Silva, 1987; Cohen & Brook, 1987). The majority of studies, however, show that the onset of gender differences in depression can occur sometime between the ages of 11 and 13 years, and depressive symptoms increase in girls (Angold, Costello, & Worthman, 1998; Angold & Rutter, 1992; Cohen, Cohen, Kasen, et al., 1993). By 15 years of age, girls are twice as likely as boys to have experienced depression (Cyronowski, Frank, Young, & Shear, 2000; Kessler, et al., 1993). The relative predominance of depression in women essentially does not change for the next 35 to 40 years (Kessler, et al., 1993). A review of many papers yields the following explanations for these gender differences in depression as (Cyronowski, et al., 2000; Kessler, 2000; Piccinelli & Wilkinson, 2000):

1. Artifact theories (measurement and response bias), e.g., recall bias; help-seeking and illness behavior; susceptibility to symptoms
2. Gender role socialization
3. Gonadal hormones
4. Psychological factors, e.g., life events; coping skills, social support, prior depression and anxiety
5. Familial environment

Help-seeking, illness behavior, and susceptibility to symptoms are more likely to be seen in women's behavioral patterns, although few gender differences have been detected (Gijsbers van Wijk, Huisman, & Kolk, 1999; Spinhoven & Kooiman, 1997). These behavioral patterns are supposed to be related to femininity. Gender (or biological sex) itself does not seem to predict the under-reporting of psychological symptoms (Cantwell, Lewinsohn, Rohde, & Seeley, 1997; Lyness, Cox, Curry, et al., 1995). Life events, prior depression, and anxiety may be predictable and causal factors for lifetime depressive episodes (Breslau, Schultz, & Peterson, 1995; Kendler & Prescott, 1999; Kessler, Nelson, McGonagle, et al., 1996). However, whether women or girls are more likely to experience life events is not clear. Factors related to the family environment include not only genetic influence but also parenting, divorce, and child abuse. Genetic studies have shown that environmental factors do not substantially influence major depression and do not contribute to observed gender differences (Kendler, Walters, Neale, et al., 1995; McGuffin, Katz, Watkins, et al., 1996). However, both boys and girls need close relationships with their parents, and parents' divorce and child abuse may be traumatic life events.

This paper focuses on hormonal factors and gender-role identity as related to gender differences in depression. The purpose of this paper is to review the gender differences in depression related to personal gender-role identity and relative cultural aspects.

SEX HORMONES AND MENTAL HEALTH

Gonadal hormones influence neurotransmitter functioning and circadian rhythms. Sex hormone changes may also affect depressive symptoms. For instance, some women's moods change with menstrual rhythms (Warner, Bancroft, Dixson, & Hampson, 1991). The menopause may also be related to depression (Ballinger, 1990; Hunter, Battersby, & Whitehead, 1986), whereas natural menopause may not be related to depression (Matthews, Wing, Kuller et al., 1990). To improve a depressive mood after menopause or gynecological surgery, external estrogen is sometimes prescribed (Zwerfel & O'Brien, 1997). Oral contraceptives as well as external estrogen can improve a depressive mood or cause depression (Cullberg, 1972; Montgomery, Brincat, Tapp, et al., 1987). Pregnancy may cause depressive symptoms called the "maternity blues" (Stockey & Lynch, 2000), and after parity, some mothers suffer from postpartum depression (Lane, Keville, Morris, Kinsella, Turner, & Barry, 1997; O'Hara & Swain, 1996). In premenstrual syndrome (PMS), severe mood changes are linked to menstrual cycle stages, and most women who suffer from PMS may experience affective disorders including depression and manic-depression (Hoyenga & Hoyenga, 1993). More women than men may experience depressive symptoms because of estradiol, the levels of which fluctuate greatly (the highest density change is 650% and over) (Blum, 1997). On the other hand, changes in testosterone range from about 100 to 150% (Blum, 1997). Men may have more of the feminine hormones than women do (after menopause), and women may have as much androgen in their plasma as men do. However, the consistent differences in sex hormones can affect neural anatomy, neural responses to sensory stimulation, and brain transmitter levels even though cultural factors may be of greater importance (Hoyenga & Hoyenga, 1993).

During puberty, gender differences in depression and estradiol increases occurs at almost the same time, after Tanner Stage III (Angold, Costello, Brkanli, & Worthman, 1999). The hormonal change could explain why depressive symptoms for adolescent girls increase at this time. However, increases in estrogen and progesterone are observed at about 9 to 10 years of age, and gender differences in depression emerge about two years later (Bebbington, 1996; Nolen-Hoeksema & Girgus, 1994; Silberg, Pickles, Rutter, et al., 1999). Some researchers have suggested that estradiol itself does not cause depressive symptoms but it does change a women's body. If women do not like their body shape, they tend to become depressed (Siegel, Yancey, Aneshensel, & Scheuler, 1999). Recent neurobiological research has shown that oxytocin neurotransmission may be regulated by fluctuating levels of the female gonadal hormones estrogen and progesterone (Amico, Crowley, Insel, Thomas, & O'Keete, 1995; Insel, 1997; Thomas & Amico, 1996). Oxytocin is known to stimulate such mammalian functions as milk ejection as well as affiliative behaviors and sexual activity (Cyronowski, et al., 2000 for review). Oxytocin may be related to an individual's emotional responsiveness and relationship with others (Blum, 1997). Life events and other psychological factors also could cause depressive symptoms (Silberg, et al., 1999). Girls who are forced into feminine roles by their parents could become depressed (Nolen-Hoeksema & Girgus, 1994). Furthermore, Simmons and Blythe (1987) found that the gender differences in low-self esteem, which often accompanies depression, emerge at different ages depending on the timing of the transition from primary to secondary school and when girls start to feel the pressures associated with dating boys. Effects of sex hormones on gender differences in depression remain, however, environmental stresses related to gender roles should be also considered.

GENDER-ROLE IDENTITY AND MENTAL HEALTH

Gender-role socialization has been discussed as a risk factor for depressive symptoms in women who are forced into a stereotypical feminine role after marriage (Bebbington, 1996; Bebbington, 1998; Simon, 1995). If a married woman's lifestyle is restricted by her roles as wife and mother, then her self-esteem could be reduced. However, a recent survey revealed that marriage makes both men and women happy (De Vaus, 2002). Furthermore, the time when a girl's risk of depression increases does not overlap with the time when women are most likely to get married (Kessler, 2000; Piccinelli & Wilkinson, 2000).

Gender-role identity, masculinity and femininity, has been examined as a factor related to mental health. Marsh and Byrne (1991) summarized four theoretical models which interpret the main effects of masculinity and femininity and the interaction of these effects with sex. One of the theoretical models is the stereotypical gender-typed model, which demonstrates that a congruence of sex and gender is more socially desirable, especially during adolescence (e.g., Kohlberg, 1966; Lamke, 1982). Some previous studies also indicated that a congruence of sex and gender-role identity may be related to psychological well-being, especially during early childhood development (Kagan, 1964; Mussen, 1969). Recent studies have shown that an incongruence of sex and gender-role identity may cause higher psychological stress responses (Hirokawa, Yagi, & Miyata, 2004). Other studies in the masculine model demonstrate that masculinity might be more desirable in modern societies (e.g. Marsh, Antill & Cunningham, 1987; Whiteley, 1983). In the additive androgyny model, both masculinity and femininity are desirable (Bem, 1974; Spence, 1984). Some studies of the interactive androgyny model suggest that an androgynous gender type might show better adjustment in social interaction than other types (e.g. Kelly, O'Brien & Hosford, 1981; Wiggins & Holzmuller, 1981). Other studies have focused on psychological androgyny, which may be the most desirable personality (Asuncion, 1993; Zeldow, Clark, & Daugherty, 1985).

A meta-analytic study and a prospective study concluded that only masculinity is related to well-being (Barrett & Raskin, 2002; Kooper, & Epperson, 1996; Whiteley, 1983). On the other hand, masculinity has been shown to be positively correlated with the type A behavior pattern (Battis, & Small, 1982; Dohi, Yamada, & Asada, 2001). Among traits found in the type A behavior pattern, striving for achievement was positively associated with better performance or was not associated with physical illness, whereas impatience-irritability, anger, and competitiveness were associated with depression or physical illness (Northam & Bluen, 1994; Spence, Helmreich, & Pred, 1987). Femininity shows weak or no relation to psychological well-being (Whiteley, 1983). Some studies have found that the relationship between gender-role identity and depression is different for men and women. For women, femininity is a significant risk factor (Martin, 2002; Ying, 1992). Femininity greatly emphasizes relationships with others as "masochistic self-subjugation," (Buss, 1990) which may be why people with high femininity are more likely to be depressed (Helgeson, 1994).

Gender-role identity is acquired around puberty, at almost the same time that gender differences in depression emerge. During child development process, femininity is emphasized for girls. Highly feminine girls have a strong desire for weight loss and may succumb to eating disorders (Behar, de la Barrera, & Michelotti, 2002; Murnen & Smolak, 1997). If girls are forced by their parents to be submissive and are not expected to be intelligent, they tend to become depressed (Nolen-Hoeksema & Girgus, 1994). On the other hand, both boys and girls who are high in masculinity during puberty may have fewer depressive symptoms during adolescence (Barrett & Raskin, 2002).

Many previous studies have revealed relationships between gender-role identity and psychological well-being and mental health. However, the results are inconsistent and may be

influenced by measurement errors (or biases) for gender-role identity, which defines the concept of masculinity and femininity.

WHAT IS GENDER-ROLE IDENTITY?

The definition of masculinity and femininity by Bem (1974), Spence (1984), and other researchers is that masculinity (e.g., assertiveness, toughness, and self-confidence) is the more desirable trait for males and femininity (e.g., tenderness, sensitivity, and submissiveness) is more desirable for females. Bem (1974), Spence (1984), and other researchers have suggested that masculinity and femininity are possibly independent and that one can be both masculine and feminine. The existence of both traits in the same person has been labeled psychological androgyny.

Two broad personality traits of the basic dimensions of human existence, agency and communion, were proposed by Bakan (1966). Agency refers to concerns about self-affirmation and individualization and leads to a focus on self-protection and self-assertion by emphasizing separation. Communion refers to a focus on cooperation, nurturance, empathy, and attachment by emphasizing the creation of unions. Parsons and Bales' (1955) distinction between instrumental and expressive roles can be conceptualized using the constructs of agency and communion. A number of scales have been developed to assess masculine-agency and feminine-communion, the best known being the Bem Sex Role Inventory (BSRI; Bem, 1974) and the Personal Attributes Questionnaire (PAQ; Spence, Helmreich, & Stapp, 1974).

In view of the socio-cultural model, gender-role identity regarding masculinity and femininity is a culturally labile product and is acquired through socialization. The distinction between homemaking and employment outside the home is a central theme in this differentiation (Hoffman, & Hurst, 1990). Sociological, anthropological, and psychological theories differ slightly in the construction of gender-role identity (Bem, 1993). That is, theories of sociologists and anthropologists emphasize effects of culture and constraints of social construction on individual socialization, and theories of psychologists emphasize on problems which stem from the individual mentality (Connell, 1987). Sociologists and anthropologists focus on social construction, which views distinct gender role differentiation as employment and also forces boys and girls to acquire a stereotypically male or female gender role. According to their theory, if women were politically and economically equal, their gender-role identity would not need to be changed. On the other hand, psychologists focus on gender socialization through interaction with others in a society. For instance, because adults have preconceived ideas about gender, their relationships with boys and girls may be different. Thus, self-assertive is reinforced in boys, and submissiveness is reinforced in girls. People may change and apply their gender-role identity depending on the environmental situation.

A recent study by Lueptow, Garovich, and Lueptow (1995) revealed that women's gender-role identity has sifted toward the feminine role despite the feminist movement of the 1970's. They suggested that their results are more consistent with sociobiological research showing that gender differences reflect innate differences between the sexes as a result of different reproductive strategies. On the other hand, reports of intra-individual variations in gender-role identity indicated that gender types may sift towards psychological androgyny in a person's later years (Fitzgerald, 1978; Ryff & Baletts, 1976; Shimonaka, Nakazato, Kawaai, & Sato, 1997; Sinnot, 1982). The researchers attributed this change to psychological socialization because elderly people might have to adjust to retirement, living with younger family members, or living alone. Whether gender role socialization is an innate element has not been clarified. As discussed below, several problems confront gender role researchers.

GENDER SCALES

To assess individuals' gender-role identity, most researchers use an inventory. The study of masculinity and femininity began with Terman and Miles's (1936) classic book, *Sex and Personality: Studies in Masculinity and Femininity*. Terman and Miles developed the first masculinity and femininity test, with masculinity and femininity as bipolar opposites. This scale was not intended to measure homosexuality; however, the use of the test helped to center attention on the developmental aspects of the abnormality.

Views of masculinity and femininity changed with the modern women's movement in the late 1960's and early 1970's. Various means of assessing masculinity and femininity, such as the BSRI and PAQ, were used to identify individuals' gender-stereotypic personality traits by measuring masculinity and femininity as two separate dimensions. Spence and Helmreich (1980; Spence & Buckner, 1995) argued that their masculinity and femininity scales are really instrumentality and expressiveness scales and are not strongly related to gender-related behaviors, gender-role flexibility, and gender ideologies. Spence (1993) revealed that the masculinity and femininity scales of the BSRI are also instrumentality and expressiveness scales and confirm a multifactorial approach, as opposed to Bem's (1981) gender schema theory. According to Bem's (1981) gender schema theory, which is a theoretical cognitive structure of sex typing, gender-schematic people apply the category of gender to everything. Gender-aschematic people (including androgynous males and females), on the other hand, the BSRI measures instrumentality and expressiveness, not masculinity or femininity. The validity of sex-typing scale is problematic (Carrigan, Connell, & Lee, 1985) even though much research have been conducted regarding these scales.

Whether masculinity and femininity scales are independent is often argued. High or moderate correlations between masculinity and femininity scores have been observed (PAQ: $r = .14$ to $.47$; BSRI: $r = -.14$ to $.11$) (Ito, 1986). An intercorrelation between masculinity and femininity may be explained by the fact that these two scales measure only socially desirable aspects of gender. Therefore, the test includes not only personality traits but also preferences and motives. Recent research interests have focused on negative masculinity and femininity (Helgeson, 1994; Spence, Helmreich, Holahan, & 1979). Negative masculinity, characterized by arrogance and aggressiveness, may be related to the type A behavior pattern (the personality prone to heart diseases), which includes hostility, impatience, and striving for achievement. Negative femininity, characterized by dependence and lack of self-assurance, may be related to the type C behavior pattern (the cancer-prone personality), which includes rational thinking and emotional repression (Helgeson, 1994).

Masculinity and femininity scales are not independent of the Big Five dimensions of extraversion, agreeableness, conscientiousness, neuroticism, and openness (Lippa, 1991; 1995), which are known to represent a reasonably comprehensive account of human personality (Wiggins, 1996). Masculinity (dominance, instrumentality, and agency) overlaps with extraversion, neuroticism, and openness. Femininity (nurturance, expressiveness, and communion) overlaps with agreeableness, conscientiousness, and neuroticism (Lippa, 2001). Negative masculinity and femininity are also associated with the Big Five (Lippa, 2001). On the other hand, recent research has shown that gender-related interests are significantly and independently related to mortality after adjusting for the Big Five scores (Lippa, Martin, & Friedman, 2000). The results suggest that men and women with male-typical occupation interests showed higher all cause mortality than those with female-typical occupation interests. Although the validity and reliability of the gender scales are in question, gender stereotypes do exist and can be measured if researchers reconstruct gender scales based on precise

concepts of gender stereotypes for gender-related attitudes, behaviors, expectancies, or interests.

According to a meta-analysis by Feingold (1994) to examine gender differences in personality, men are more assertive and women are more nurturing. This finding was constant across ages, years of data collection, educational levels, and nations. Assertiveness and nurturance are elements of interpersonal communication. These dimensions may be key constructs for future research on intra-sex gender-related individual differences.

GENDER-ROLE IDENTITY AND SEX HORMONES

Few studies have examined associations between gender-role identity and sex hormones. The study by Baucom, Besch, and Callahan (1985) showed that higher testosterone levels were correlated with high scores on masculine items and lower testosterone levels were correlated with high scores on feminine items. Several studies on homosexuality have suggested that butch lesbians have higher testosterone concentrations (Singh, Vidaurri, Zambarano, & Dabbs, 1999). Hassler and Nieschlag (1989) examined musicians' testosterone levels and relative masculinity-femininity and spatial abilities. Their results indicated that male composers had lower mean testosterone levels than others, whereas female composers had higher testosterone levels than others. The spatial abilities of the musicians were above average. According to Hassler and Nieschlag (1989), because the gender type of the musicians was androgynous, testosterone in the saliva was the psychological marker for androgyny.

The above-mentioned studies reveal relations between gender-role identity and sex hormones. However, these correlational studies are problematic because most measured saliva testosterone concentrations. Although saliva, plasma, and serum steroid hormones are highly correlated, salivary measures show lower concentrations than plasma and serum samples and may vary considerably from those samples (Krischbaum & Hellhammer, 1989). For pre-menopausal women, the menstrual cycle should be considered when sex hormonal levels are measured. Data on homosexuals have not always provided consistent results (Baucom et al., 1985). The testosterone levels in the plasma of male homosexuals have been measured in a number of studies. Several such studies have suggested that the testosterone levels of male homosexuals are lower than those of male heterosexuals (cf. Stahl, Dorner, Ahrens, & Graudenz, 1976), but other studies have found no difference between the two groups (cf. James, Carter, & Orwin, 1977) or have actually found homosexuals to have higher testosterone levels than heterosexuals (cf. Doerr, Pirke, Kockott, & Dittmar, 1976). There are few studies on the relationships between personality characteristics and hormonal levels. These relationships need to be clarified.

NATURE AND NURTURE INTERACTION

Whether biological predispositions interact with socialization has been an important topic in the social sciences. Udry (2000) conducted a longitudinal study and found that prenatal androgen exposure interacts with the mother's gender socialization practices and is a predictor of the daughter's gender-related behavior in adulthood. Daughters with high prenatal exposure were behaviorally masculine regardless of socialization, whereas those with low exposure were more responsive to their mothers' gender socialization practices. When these mothers encouraged femininity, their daughters tended to act in a feminine manner, but when the mothers encouraged masculinity, their daughters tended to act in a masculine manner.

Another study by Harrington, Udry, and Kim (2001) looked at the contributions of environmental and genetic influences to the sex-typed behaviors of sibling pairs. They suggested that only 25% of the variance for males and 38% of the variance for females were accounted for by genetic influences. These studies suggest that an interaction of biology and socialization may produce adult gender-role identity.

Another example is the association between men's suicide risk and economic status. The suicide rate of men changes with social and economic status (Horikawa, 2001). Unemployment may cause serious work-related stress (Waldron, 1976). A man's identity is strongly related to employment, so a man might feel depressed if he is fired. If a husband is the sole wage earner, his responsibility to his family may become a burden. The attempted suicide rate is higher for women than for men, but men are more likely to use a method that will not allow them to survive the attempt (Kessler & McRae, 1983). To explain why men are so vulnerable to suicide, some researchers have focused on the traditional male gender-role identity (Angst, Degonda, & Ernst, 1992; Moller-Leimkuhler, 2003). Masculinity may promote maladaptive coping strategies such as emotional unexpressiveness, reluctance to seek help, or alcohol abuse (Moller-Leimkuhler, 2003).

JAPANESE CULTURAL ASPECTS

As previously stated, gender differences in depression have been found throughout the world (Kessler, et al., 1994; Kessler, et al., 1993; Weissman & Klerman, 1977). In Japanese data, a gender difference was found in depressive symptoms for junior high school students (12-15 years) (Takakura & Sakihara, 2000). A recent study found a gender difference in the risk of major depression among young people under 19 years of age (Kawakami, Mineyama, Kitagawa, et al., 2003). These results are generally consistent with those of previous studies conducted in Western countries, although the age of 19 is a bit older than that found in Western countries.

Regarding the sex hormone explanation, some studies have shown that estrogen density is likely to be higher for Caucasian women than Asian women (Shimizu, Ross, Bernstein, Pike, & Henderson, 1990). However, in others studies, no such difference has been found (Falk, Fears, Hoover, et al., 2002). The mean age of menarche for Caucasian women is 12 years or earlier, whereas it is over 15 years for Asian women (reviewed by Wu, 2002). One of the explanations for early menarche is thought to be high estrogen density, and a high body mass index is a factor for high estrogen density. Asian women tend to have a lower estrogen density, possibly because Asian people consume more soy products, which contain isoflavones. Isoflavones have been the focus of recent studies because they can replace estrogen and may reduce the risk of menopausal symptoms, including hot flashes (Nagata, Takatsuka, Kawakami, & Shimizu, 2001), and breast cancer (e.g., Hirose, Tajima, Hamajima, et al., 1995). Soy intake is one of the cultural and environmental factors.

In Japanese data, soy consumption is associated with the personality characteristic of rationality and anti-emotionality (Hirokawa, Nagata, Takatuska, Shimizu, & Shimizu, 2002). The results of Western societies show that an individual's ability to think rationally and repress emotion is strongly predictive of risk of cancer, ischemic heart disease, and stroke mortality (Grossarth-Maticke et al., 1985). However, the Japanese data show a different tendency: a higher level of rational thinking and repression of emotions may be associated with higher soy consumption (Hirokawa et al., 2002) and a rather reduced risk of mortality

and chronic disease (Hirokawa, Nagata, Takatsuka, & Shimizu 2004; Terada, Kawakami, Inaba, Takatsuka, & Shimizu, 2000). Many Japanese tend to repress emotions. In comparison to Westerners, the Japanese have more negative connotations associated with the expression of emotion. Japanese women scored significantly higher than Japanese men in thinking rationally and repressing emotion. In Japanese society, these personality characteristics are supposedly more expected in women than in men. Negative feminine gender-role identity may overlap with these personality characteristics (Helgeson, 1994; Liste, 1999). The meaning and function of personality characteristics may be different between cultures due to social desirability in a living environment.

According to the well-known study by Hofstede (2001), Japan is the most masculine society among 53 countries and areas. That is, the Japanese culture is highly oriented toward stereotypical gender differentiations. Men go to work, and women stay at home to care for their children and aged parents. After marrying or the birth of the first child, many Japanese women leave their jobs. Around 35 years of age, when they gain a little freedom from childrearing, a great percentage of these women return to work. The so-called M-shape, showing two peaks of age-specific workforce participation of women, has been indicated for Japanese women. The workforce participation of Japanese women aged 30 to 34 years was 60.3%, whereas that of women aged 25 to 29 years was 71.8%, and that of women aged 40 to 44 years was 70.5%, according to statistic data compiled by the Ministry of Health, Labour, and Welfare (2002). Socioeconomic factors such as education, income, or employment status for women may be associated with their symptoms of depression (Astbury, Brown, Lumley, & Small, 1994; Olson & DiBrigida, 1994; Parry, 1986). Japanese data also show that, for Japanese mothers of toddlers, working outside the home and having a higher educational level may be protective against child-related strain. Working outside the home may also increase assistance from the husband (Hirokawa, Asano, Masuno, Usui, Yoshida, & Shimizu, in submission).

There is a well-known association between agoraphobia and being a homemaker (Dijkman-Cacs, de Vries, Kraan, & Volovics, 1993). Fodor (1974) advanced theoretical speculations to explain the higher frequencies in adulthood of phobic conditions in females: when the real stresses of adult life and marriage become overwhelming, stereotypically emotional, passive, helpless women become anxious, wish to flee, dream of becoming more independent or of rescue or escape, and ultimately develop a phobia. Arrindell, Eisemann, Richter et al. (2003) investigated an association between cultural values indicated by Hofstede (2001) and the agoraphobic fear scores of people in 11 countries. Sweden, a highly feminine society, had the lowest score, whereas the most masculine society, Japan, had the highest national agoraphobic fear score.

Rudmin, Ferrada-Noli, and Skolbekken (2003) examined associations between cultural values defined by Hofstede (2001) and suicide incidence rates for 33 nations, including Japan. They found that power-distance, uncertainty avoidance, and masculine values were negative correlates of reported suicide and individualism was a strong positive correlate. Even though national suicide rates are much higher for men, suicide by women was more predictable by these cultural values. The suicide incidence for girls and young women showed negative correlations with individualism. According to Gilligan (1982), women are more social and contextual in their moral reasoning. According to the hypothesis of Rudmin et al. (2003), suicide is less impulsive and involves more judgments and social considerations for women

than for men, which could mean that, for women, suicide is more associated with cultural values than it is for men.

Neither general nor individual cultural values should not be ignored. Hirokawa, Dohi, Vannieuwenhuyse, and Miyata (2001) compared the masculine cultural values of Japanese individuals to those of French individuals. They found a significant gender difference in work-related items for masculine cultural values only for the Japanese. Furthermore, the Japanese men scored higher than the French men, and the Japanese women scored lower than the French women. Consistent with this result, in a Japanese workplace a stereotypical feminine gender-role identity was not required for men, and a stereotypically masculine gender-role identity was not required for women (Mori, 2001). A high feminine gender-role identity for Japanese working men and high masculine gender-role identity for Japanese working women predicted poor mental health (Mori, Nakashima, Yamazaki, & Kurita, 2002).

TOPICS FOR FUTURE RESEARCH

It is necessary to examine relationships between feminine gender role socialization and hormonal changes at puberty to reveal a possible mechanism for gender differences in depression. Based on the Cyromowski model (2000), feminine women with low instrumental coping strategies, that is, negative feminine persons, are hypothesized to be depressed. In Japanese society, which has the most masculine cultural values (i.e., orientation towards stereotypical gender differentiations), studies of gender differences in depression may have great significance and may produce meaningful suggestions for preventing depression.

Individual levels of masculinity, characterized by dominance, agency, or instrument, and femininity, characterized by nurturance, communion, or expressiveness, are not meaningless but are elemental factors in interpersonal communication. Many studies have reported that gender-role identity is related to desirable communicative behaviors (LaFrance & Carmen, 1980; Zuckerman, DeFrank, Spiegel, & Larrance, 1982). In fact, self-concepts assessed using a gender scale were highly correlated with masculinity and femininity scores judged by others who viewed videotapes of targets based on their appearance, movements, and speech (Hirokawa, Yagi, & Miyata, 2000). Persons high in self-assessed masculinity and low in self-assessed femininity were judged higher in masculinity and lower in femininity, persons high in self-assessed femininity and low in self-assessed masculinity were judged higher in femininity and lower in masculinity, and persons high in both self-assessed masculinity and femininity were judged higher in both. The study by Frisch and McCord (1987) showed that individuals identified as having higher masculinity and higher femininity displayed similar levels of behavioral ratings of communication skills, which were defined as initiating and carrying on a smooth, appropriate, and friendly conversation. Hirokawa, Dohi, Yamada, and Miyata (2000) found that an individual communicating with an androgynous partner may have had less anxiety and uneasiness during the encounter.

Masculinity and femininity may be changed intra-individually. Terman and Miles observed that masculinity and femininity are age-related, with individuals—particularly

men—having the highest masculine scores in their late teens and early 20's (Lippa, 2001). The same fact was found by Hirokawa (2003), who repeatedly assessed the masculinity and femininity of 61 Japanese undergraduate students (29 men and 32 women) for 2 years in addition to administering the Social Skills Inventory (Riggio, 1986). Intercorrelations of time1 and time2 were high, especially for masculinity ($r = .62$) but also for other scores, including femininity ($r = .13$ to $.50$). However, only masculinity significantly increased. It is unclear whether this result is an effect of campus life and education or age-related development. However, if environmental factors change an individual's gender-role identity, intervention strategies such as assertiveness training and listening training may have an effect on it. If a cognitive structure for gender determines peoples' aggressive or submissive behavior, their behavior may cause trouble in interpersonal adjustment and may be related to depressive symptoms. Training in social skills, focusing on assertiveness and listening, is possibly preventive for depressive symptoms and psychological distress. In addition to these methods, a new gender education program may be effective for preventing depression.

In the future, longitudinal prospective studies should be conducted in order to reveal the mechanism of gender differences in depression. Based on the results, a gender education program which includes stress management and intervention of depression for children and adolescents could be constructed by considering personal and ecological (cultural) gender-role identity.

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