PSYCHO-SOCIAL ASPECTS SUPPLEMENT

Lack of Leadership Confidence Relates to Problem Drinking in Women: Gender Identity, Heavy Episodic Drinking and Alcohol Use Disorders in Swedish Women

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Abstract — Aim: The aim of this study was to analyse in women the association between four dimensions of gender identity, heavy episodic drinking (HED) and alcohol use disorders (AUD), taking into account age, personality, psychiatric co-morbidity and level of education. Methods: An initial screening of alcohol consumption was followed by a structured psychiatric interview in a sample of women drawn from the Gothenburg population and women attending primary care, maternity and hospital services (n = 930). Gender identity was assessed using the Masculinity–Femininity Questionnaire (M/F-Q) (items grouped into four dimensions: leadership, caring, self-assertiveness and emotionality). The Karolinska Scale of Personality was administered. Clinical psychiatric diagnoses according to DSM were made in face-to-face interviews. HED was defined as consumption of at least 60 g of ethanol on a single day at least once a month. Results: Women who scored low on the leadership dimension were twice as likely to have AUD [age-adjusted odds1.98 (95% confidence interval 1.30–3.01)] compared to those with medium scores. These odds ratios were significant after adjustment for personality [2.21 (1.35–3.63)]; psychiatric disorders [2.09 (1.25–3.47)] and level of education [1.95 (1.17–3.26)]. Low scores on the leadership dimension were associated with HED [1.55 (0.98–2.44)] after adjustment for age, personality, psychiatric disorders and level of education. High scores on femininity were not significantly associated with AUD or HED after these adjustments. The odds ratios for those who scored low on caring were non-significant throughout the analyses of associations with both AUD and HED. A similar pattern was found for the self-assertiveness dimension. Low emotionality was associated with decreased odds for AUD [0.42 (0.25–0.70)] and HED [0.66 (0.44–0.99)], and increased odds for AUD [2.14 (1.38–3.31)] and HED [2.33 (1.58–3.44)], after adjusting for age. These associations became non-significant after adjustment for personality and remained so after psychiatric disorders and level of education were added to the models. Conclusion: Of the four gender identity dimensions, only low scores on leadership remained significantly associated with AUD and HED after adjustment for age and personality. Clinical work could focus on the development of leadership abilities in women scoring low on these items to improve the ability.

INTRODUCTION

Gender is intrinsically involved in alcohol use and the development of alcohol use and other psychiatric disorders (Room, 1996; Wilsnack and Wilsnack, 1997; Nolen Hoeksema, 2004). Understood as a combination of biology and social and cultural construction, gender is a structuring and constructing principle of society that contributes to separate women and men into different lifestyles, living conditions and social practices. Room (1996) and Wilsnack and Wilsnack (1997) have stressed that alcohol is involved in the process of constructing gendered identities, since alcohol is an important part of the social interactions between women and men in all age groups, particularly during adolescence and young adulthood. Cultural conceptions of gender influence when and how much men and women drink, their expectations on the effects of alcohol and how they behave during and after drinking (Room, 1996; Wilsnack and Wilsnack, 1997; Corcoran and Siegrist, 1998).

Sorell et al. (1993) concluded in a review that the results on the relationship between alcoholism and sex-role orientation (terminology varies; sex role and sex-role orientation were common in earlier studies, but contemporary researchers usually use the terms gender role or gender identity) were contradictory. The reviewed studies had found that women with alcoholism were either ultra-feminine, overly masculine, confused about sex-role identity or had a masculine approach to life. In a study using Bem’s Sex Role Inventory (BSRI), Beckman (1978) found that women with alcoholism were undifferentiated, meaning that they were low on both the masculinity and the femininity scales. Wilsnack et al. (1985) found that androgynous sex-role orientation [scoring high on both femininity and masculinity scales of the Personal Attribute Questionnaire (PAQ)] was associated with lower levels of alcohol consumption and drinking-related problems in women. Alcohol consumption and drug impairment were associated with femininity in both sexes in a study of medical students (Zeldow et al., 1987).

Psychological masculinity (using the PAQ) was the most important factor in differentiating women with alcoholism from those without, according to Sorell et al. (1993). In a study of women using the BSRI, Lara-Cantu et al. (1990) found that drinking (as compared to not drinking) was associated with aggressive masculinity, while number of drinks consumed per month was negatively associated with affective femininity. An Australian study of female university students found that undesirable masculine characteristics were linked to problem drinking and alcohol problems (Ricciardelli et al., 1998). Van Gundy et al. (2005) found in a comparative study between Moscow and Toronto that masculinity was associated with low alcohol consumption in Russian men and heavy alcohol consumption in Russian women. However, in Toronto gender role orientation was unrelated to alcohol use in men, while femininity was associated with heavy alcohol consumption in women.

Möller-Leimkuhler et al. (2002) found a predominance of the undifferentiated self-concept (scoring low on both femininity and masculinity) among women and men with alcohol diagnoses compared to general population-based controls. The authors conclude that their study does not lend support to the hypothesis that alcoholism in women is due to a conflict...
between traditional and contemporary gender roles. Rather the study supports the hypothesis that the traditional feminine role is associated with a general vulnerability that might increase the risk for developing alcohol problems and mental illness. This is also supported by a longitudinal study from adolescence until 25 years of age, where heavy drinking and increasing rates of masculinity were associated with low levels of depression and good mental health in both women and men (Barrett and White, 2002). Similar results were found in a Swedish general population-based study of women based on the Masculinity–Femininity Questionnaire (M/F-Q), which is an adaptation of BSRI to the Swedish cultural context (Hensing et al., 2003). Low scores on leadership and on self-assertiveness were associated with increased odds for alcohol use disorders (AUD). High scores on emotionality were associated with increased odds for AUD, heavy episodic drinking (HED; defined as consumption of at least 60 g of ethanol on a single day at least once a month) and heavy alcohol consumption (HAC; defined as consumption of at least >600 g of ethanol per month during the last 12 months). Low scores on emotionality were associated with decreased odds for AUD.

In summary, findings regarding the association between gender identity and alcohol consumption and problems are inconsistent. Furthermore, existing studies have either been performed on youth or young adults, or have not taken age into account (Van Gundy et al., 2005), and none of the studies referred to above analysed psychiatric co-morbidity, which is common in women with AUD (Berglund and Öjehagen, 1998). Affective disorders often co-exist with AUD in women (Hesselbrook and Hesselbrook, 1997), as do eating disorders (especially in women) and antisocial personality disorders (especially in men). Another limitation of previous research is that the role of personality has been comparatively ignored. Personality is involved in the development of alcohol problems, and this has been particularly clear for sensation-seeking (especially in women) and antisocial personality disorders (especially in men). Moreover, conduct disorder and Attention Deficit Hyperactivity Disorder (ADHD) are more common in women with AUD (Berglund and Öjehagen, 1998).

METHODS

This study is part of the project ‘Women and Alcohol in Göteborg’ (WAG), a longitudinal, multi-purpose study based on general population samples and on a clinical sample (Spak and Hällström, 1996). The initial study population of WAG consisted of all women (n = 3130) born in 1925, 1935, 1945, 1955 and 1965, and registered for census purposes in the District West of Göteborg as on 31 December 1985, and all women (n = 2910) born in 1970 and 1975 and registered for census purposes in District West or the Central District of Göteborg (Gothenburg) as on 1 January 1995 (Table 1). The included districts are suburban and urban areas with 93,157 inhabitants and 105,683 inhabitants (1995), respectively. A clinical sample comprised consecutive visitors (n = 2295) to all three maternity units and all seven GP units in the uptake area, the acute wards of Surgery and Internal Medicine at the Sahlgrenska Hospital, the Departments of Gynaecology and Obstetrics at Sahlgrenska and Ostra Hospitals. Psychiatric inpatient clinics of Göteborg and the psychiatric outpatient clinics in the uptake area were also included (Table 1). Most of the women in these clinical settings came from GP units and from maternity care. The visitors to clinical settings were included to increase statistical power. The mean age of the clinical sample was higher than the mean age of the general population samples. Otherwise no differences of importance for this study were noted between the general population and clinical samples (Östlund et al., 2007).

### Data collection

WAG was conducted in two phases with an initial screening questionnaire followed by a face-to-face interview of a stratified sample.

### Phase 1: Questionnaire

The screening instrument, ‘Screening—Women and Alcohol in Göteborg’ (SWAG), was mailed to the home addresses of the population-based sample and handed out to consecutive arrivals in the clinical sample. SWAG has 13 items and is based on Short-MAST, ML-MAST and CAGE (Spak and Hällström, 1996). We wanted to include a reasonably high number of women with alcohol problems, and since this is a low prevalence phenomenon in women in the general population, a stratification procedure was used. The stratification scores were achieved by summing positive answers to the screening questions. Of women screened in 1986, all who scored ≥4 points, one in four of those who scored 1–3 points, and one in fifteen of those who had 0 points were included. To avoid over-inclusion of young women with heavy alcohol consumption, but with a low risk of alcohol problems, the cut-off level was increased to ≥5 points in 1995. To increase the size of the study sample and, even more importantly, to

### Table 1. Study design and participation rate

<table>
<thead>
<tr>
<th>Cohorts included</th>
<th>Year of screening</th>
<th>Invited to screening N (%a)</th>
<th>Stratified selection invited to interview n (year of interview)</th>
<th>Interviewed n (%a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical sample</td>
<td>1986</td>
<td>2295 (87.8)</td>
<td>331 (1989/1990)</td>
<td>231 (69.8)</td>
</tr>
</tbody>
</table>

*aParticipation rate.*
enhance the possibility of generalizing the findings, a randomly selected quarter of the non-responders from the screening phase was included in the interviews. These participants had a somewhat higher proportion of women with alcohol diagnoses, but the difference was not statistically significant.

Phase 2: Interview. The interviews were conducted after participants gave informed consent. The study was approved by the Research Ethics Committee of the Medical Faculty at Gothenburg University, Gothenburg, Sweden (Dnr: 320-85, 158-94). Seven clinicians (six women and one man), all with several years of clinical experience, performed the interviews. The interviews focused on socio-demographic characteristics, childhood conditions, family relations, work situation, physical and mental health, alcohol consumption and adverse consequences, and personality factors (Wilsnack, 1991; Spak and Hällström, 1996). At the end of the interview two pen-and-pencil instruments, measuring gender identity and personality, respectively, were handed out to be filled in by the women. Some women completed the M/F-Q at home, and sent them in, because the interviews were time-consuming.

The final study sample

In total, 1252 women were interviewed and of these, complete information regarding all variables of interest in this study was available from 930 women (Table 1). No imputation procedures were used. Women in the clinical sample born earlier than 1925 were excluded.

Measures

The M/F-Q (Bergman et al., 1988) used in this study to measure gender identity includes 31 statements with four response alternatives: ‘disagree completely’, ‘partly disagree’, ‘partly agree’ and ‘agree completely’, which score 1, 2, 3 and 4 points, respectively (Table 2). A factor analysis in an earlier study supported a four-factor solution and the factors were labelled ‘leadership’, ‘caring’, ‘self-assertiveness’ and ‘emotionality’, representing different dimensions of gender identity. Based on the items included in each of the four dimensions, indexes were created for the subsequent analyses. These indexes were scored by summing the ratings (1–4) of all items included in each dimension and for each person. The mean score for the leadership index in 1989/1990 was 41.6 (range 20–58) and 40.8 (range 18–58) in 1995. Corresponding figures for caring, self-assertiveness and emotionality were 18.6 (11–24) and 18.3 (10–24), 13.8 (5–20) and 13.6 (6–20), and finally 12.8 (5–20) and 13.1 (6–20), respectively. Participants were then categorized into three groups. These consisted of the 20% who scored lowest in the dimension under study, the 60% who were in the middle and the 20% who scored highest in the dimension. The medium group was used as the reference group throughout all analyses.

The initial psychometric analyses of the BSRI from which the M/F-Q is translated showed high internal consistency that the masculinity and femininity scales were independent and high test–retest reliability (Bem, 1975). More recent analyses have shown that the items in the BSRI that differentiated most between the sexes also differentiated most within the sexes (Lippa, 1995). In a previous study (Hensing et al., 2003), we found that the proportion of identical answers to the M/F-Q at follow-up after 5 years varied between 49% and 68% and the median was 60%. The proportion of women who changed their response category more than one step was low and on average 3%. The correlation (r) of M/F-Q scales at the individual level between 1989/1990 and 1995 were 0.76 (95% confidence interval 0.73–0.79) for leadership, 0.67 (0.62–0.71) for caring, 0.69 (0.65–0.73) for self-assertiveness and 0.63 (0.58–0.67) for emotionality. These analyses show that the M/F-Q has considerable stability over time and adequate test–retest reliability.

We compared the items used in the M/F-Q with those used in a recent Dutch study on contemporary notions on masculinity and femininity (Visser, 1996). The content of the items reflecting masculinity and femininity was identical or very similar in the two studies. These similarities suggest a reasonably good content validity of the M/F-Q.

Assessment of personality was made with the Karolinska Scale of Personality (KSP), comprising 135 items with four response categories from ‘does not apply at all’ to ‘applies completely’. Items were grouped into 15 scales: psychic anxiety (10 items), somatic anxiety (10 items), muscular tension (10 items), psychasthenia (lack of energy) (10 items), inhibition of aggression (lack of assertiveness) (10 items), detachment (distance) (10 items), impulsiveness (10 items), monotony avoidance (sensation-seeking) (10 items), socialization (20 items), social desirability (10 items), verbal aggression (5 items), indirect aggression (5 items), irritability (5 items), suspicion (5 items) and guilt (5 items). The KSP was originally developed for research purposes to assess stable personality traits and has been extensively used in Sweden. We needed a more condensed presentation of KSP in this study. We chose to use a four-factor solution suggested by Ortet et al. (2002) to render our analyses more comprehensible and to make comparisons with other personality instruments easier. The four-factor solution was reached after a series of factor analyses and structural equations and was considered to be useful in comparisons of personality instruments (see Table 3 in Ortet et al., 2002). The four factors are negative emotionality, aggressive non-conformity, impulsive unsocialized sensation-seeking and social withdrawal.

Clinical psychiatric diagnoses were made according to DSM-III-R (axes I, IV and V) (American Psychiatric Association, 1994). CIDI-SAM (Robins et al., 1986, revised 1987) was included in the protocol for identification of alcohol-use disorders (AUD: dependence and abuse). In cases where the interview diagnoses and CIDI-SAM diagnoses differed, we took the
Emotionality
Self-assertiveness
Leadership

Table 3. Odds ratios for alcohol use disorders in relation to dimensions of gender identity, multivariate logistic regression controlling for age, personality (Karolinska Scale of Personality), other psychiatric disorders (DSM-III-R) and level of education

<table>
<thead>
<tr>
<th>Dimensions of gender identity</th>
<th>Model 1b OR (95% CI)</th>
<th>Model 2c OR (95% CI)</th>
<th>Model 3d OR (95% CI)</th>
<th>Model 4e OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
<td></td>
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<tr>
<td>Low (the 20% with lowest scores)</td>
<td>1.98 (1.30–3.01)</td>
<td>2.21 (1.35–3.63)</td>
<td>2.09 (1.25–3.47)</td>
<td>1.95 (1.17–3.26)</td>
</tr>
<tr>
<td>High (the 20% with highest scores)</td>
<td>1.27 (0.78–2.06)</td>
<td>0.93 (0.53–1.63)</td>
<td>0.98 (0.56–1.72)</td>
<td>0.96 (0.54–1.70)</td>
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<tr>
<td>Caring</td>
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<td></td>
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<tr>
<td>Low (the 20% with lowest scores)</td>
<td>1.03 (0.67–1.59)</td>
<td>0.62 (0.38–1.01)</td>
<td>0.61 (0.37–1.00)</td>
<td>0.66 (0.40–1.10)</td>
</tr>
<tr>
<td>High (the 20% with highest scores)</td>
<td>0.75 (0.47–1.20)</td>
<td>0.88 (0.52–1.50)</td>
<td>0.86 (0.50–1.47)</td>
<td>0.78 (0.45–1.35)</td>
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<tr>
<td>Self-assertiveness</td>
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<tr>
<td>Low (the 20% with lowest scores)</td>
<td>1.54 (1.01–2.36)</td>
<td>0.96 (0.56–1.64)</td>
<td>0.92 (0.53–1.59)</td>
<td>0.91 (0.53–1.58)</td>
</tr>
<tr>
<td>High (the 20% with highest scores)</td>
<td>0.90 (0.55–1.47)</td>
<td>0.85 (0.48–1.50)</td>
<td>0.82 (0.46–1.45)</td>
<td>0.78 (0.44–1.39)</td>
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<tr>
<td>Emotionality</td>
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</tr>
<tr>
<td>Low (the 20% with lowest scores)</td>
<td>0.42 (0.25–0.70)</td>
<td>0.86 (0.49–1.51)</td>
<td>0.84 (0.47–1.50)</td>
<td>0.86 (0.48–1.53)</td>
</tr>
<tr>
<td>High (the 20% with highest scores)</td>
<td>2.14 (1.38–3.31)</td>
<td>1.08 (0.65–1.79)</td>
<td>1.10 (0.66–1.84)</td>
<td>1.07 (0.64–1.79)</td>
</tr>
</tbody>
</table>

a The levels were based on lowest 20%, medium 60% and highest 20% of scores and the medium was used as the reference group in all analyses.
bModel 1: adjusted for age only.
cModel 2: adjusted for age and Karolinska Scale of Personality.
dModel 3: adjusted for age, Karolinska Scale of Personality and psychiatric disorders.
eModel 4: adjusted for age, Karolinska Scale of Personality, psychiatric disorders and level of education.

Alcohol consumption and alcohol diagnoses
The outcome variables in this study were alcohol use disorders (AUD: dependence and abuse) and heavy episodic drinking (HED). The diagnostic procedures used to identify AUD have been described above. HED was included as it measures a broader scope of alcohol-related problems than the more narrowly defined diagnostic entities and because it is often used as a variable indicative of future alcohol-related problems (Dawson et al., 2008). The cut-off limit for HED was defined in accordance with the international literature (Knibbe, 1997). HED was defined as consumption of at least 60 g of ethanol on a single day at least once a month. Of the 930 women included, 152 met criteria for any of the alcohol diagnoses included in the DSM-III-R, and 233 reached the cut-off limit for HED. The study population was based on a stratified sample so these figures cannot be used to estimate general population prevalence without applying weighting procedures. There is overlap between the two different measures, and thus we controlled for AUD in the analyses of HED.

Statistical analysis
Logistic regression explored the associations between M/F-Q dimensions and the alcohol outcomes, adjusting for age, psychiatric co-morbidity and personality. We also included an individual’s education as an indicator of the socioeconomic position, which might be a confounder for any found association between gender identity and AUD and HED. The rationale for the sequence of inclusion of each of these variables into the logistic regression was guided by time of likely occurrence. Odds ratios and 95% confidence intervals were estimated.

Non-response
Four types of non-response were noted: those selected for screening that declined participation or did not answer the screening questionnaire and those selected for interview that declined further participation or were impossible to reach. Not all women had complete data across measures. Some were interviewed by telephone and, in these short interviews, the M/F-Q was not used. Others did not fill in the M/F-Q even if they otherwise participated in the interview. The older cohorts (between 1925 and 1965) were also interviewed in 1995/1996. In order to maximize the sample size for these cohorts, the 1995/1996 M/F-Q measures (5% of the total sample) were used if missing in 1989/1990.

Earlier studies on non-response do not show a significantly higher proportion of women with AUD in the non-response group (Midnik, 1982; Hasin et al., 1990; Spak and Hallström, 1995). Further, telephone interviews conducted with women who were reluctant to participate indicated they had low alcohol consumption and did not see themselves as the target group for the study. Shortage of time was commonly reported as a reason for not participating. These findings suggest that the non-responders did not differ substantially from the sample that filled in the M/F-Q. A medical-record study of the women born in 1925, 1935, 1945, 1955 and 1965 did not show a higher proportion of AUD in the non-response group (Spak, 1996). Thus, we consider our sample to be representative for an analysis of the association between gender identity, operationalized through the M/F-Q, and AUD and HED. No analyses were performed to test for differences in gender-identity profiles between the study and non-responders; however, we do not assume that gender identity influenced participation in this study.

RESULTS
The 20% of women who scored lowest on the leadership dimension had increased odds [1.98 (95% confidence interval...
Emotionality, Self-assertiveness, Caring, Leadership

Dimensions of gender identity (95% CI) (95% CI) (95% CI) (95% CI)

We found no other significant associations between low or high scores on psychiatric disorders and the level of education to the model. After adjustment for personality and remained so after adding age-adjusted odds ratio was 1.54 (1.01–2.36) (Table 3). This association became non-significant (1.00–2.49), respectively. Adding the level of education to the model resulted in an odds ratio of 1.55 (0.98–2.44). The association between low scores on the leadership dimension had increased odds for AUD [1.27 (0.78–2.06)] compared to those with medium scores, but this risk was not statistically significant. When adjusting for personality, psychiatric co-morbidity and level of education, the point estimate became lower than 1, but remained not significant.

The association between low scores on the leadership dimension and HED (defined as at least 60 g of ethanol on a single day at least once a month) was not significant [1.37 (0.91–2.05)] (Table 4). After adjustments for personality and psychiatric co-morbidity, the odds ratios were 1.57 (1.00–2.47) and 1.58 (1.00–2.49), respectively. Adding the level of education to the model resulted in an odds ratio of 1.55 (0.98–2.44). The association between high scores on the leadership dimension and HED was just above significance in the first model which only adjusted for age. After adjustments for personality, psychiatric co-morbidity and level of education, the odds ratios were not significant.

The odds ratios for those who scored low on caring were not significant throughout the analyses of associations with both AUD and HED (Tables 3 and 4). Those who scored high on caring had odds ratios below 1 for both AUD and HED in all analyses, suggesting a protective effect, but the estimates were not significant. Low scores on self-assertiveness were associated with AUD. The age-adjusted odds ratio was 1.54 (1.01–2.36) (Table 3). This association became non-significant after adjustment for personality and remained so after adding psychiatric disorders and the level of education to the model. No other significant associations between low or high scores on self-assertiveness were found (Tables 3 and 4).

Finally, we analysed the association between low scores on emotionality and AUD and HED (Tables 3 and 4). We found that those who scored low on emotionality had decreased odds for AUD [0.42 (0.25–0.70)]. The odds ratio was not significant after adjustment for personality [0.86 (0.49–1.51)], psychiatric co-morbidity [0.84 (0.47–1.50)] and level of education [0.86 (0.48–1.53)]. For those who scored high on emotionality, the odds ratio for having AUD was 2.14 (1.38–3.31). Adjustment for personality, psychiatric co-morbidity and level of education resulted in the odds ratio becoming not significant.

A similar pattern was found for HED (Table 4). The initial odds ratios were significantly below 1 for those who scored low on emotionality [0.66 (0.44–0.99)] and above 1 for those who scored high on emotionality [2.33 (1.58–3.44)]. After adjustment for personality, psychiatric co-morbidity and level of education, odds ratios became non-significant.

**DISCUSSION**

The overall objective of this study was to contribute to knowledge on how gender identity, or sex-role orientation, was associated with alcohol-use disorders or risky drinking patterns. Results from earlier studies have been contradictory and have not taken into account age, personality, psychiatric co-morbidity and level of education as possible confounders.

**Leadership, AUD and HED**

Scoring low on leadership was associated with increased odds for AUD and HED (defined as at least 60 g of ethanol on a single day at least once a month). Women who scored low on leadership had approximately twice the odds as those who scored medium of having a lifetime diagnosis of AUD, and 55% higher odds for HED in the fully adjusted model. This is in line with an earlier study of ours (Hensing *et al.*, 2003), but the new and important finding of the current paper is that the association also remained after adjustment for personality, psychiatric co-morbidity and level of education. Items included in the leadership dimension are having leadership abilities, being forceful, active, competitive, dominant, strong-willed, assertive,
independent, technical, willing to take risks, athletic, acting as a leader, not being particularly enterprising, making decisions easily and being concerned with one’s own appearance. Traditionally most of these items have been given a masculine connotation and our findings could be compared to earlier studies of Beckman (1978) and Möller-Leimkuhler et al. (2002), who found that scoring low on masculinity was associated with alcoholism in women. A possible pathway is that women scoring low on leadership are more vulnerable to peer pressures and less likely to be firm when it comes to negotiations on alcohol consumption or other behaviours of importance for healthy living between peers or in adult relationships. For example, women cut down their alcohol consumption after divorce from men with high consumption levels, which could imply that they had difficulties in maintaining their own interests within the relationship (Holmila et al., 1990).

We did not find a protective effect of scoring high on leadership either for AUD or HED. This finding contrasts Wilsnack et al. (1985) who found that women with high masculinity (and femininity) scores had lower levels of alcohol-related problems. Our study also contrasts studies of Sorell et al. (1993), Lara-Cantu et al. (1990) and van Gundy et al. (2005), who found that psychological masculinity, aggressive masculinity and masculinity (in general; authors remark), respectively, were associated with alcohol problems or high alcohol consumption. Cultural differences might explain contrasting findings across studies. For instance, gender equity is comparatively high in Sweden, and the general population might have a less negative interpretation of women exhibiting masculine traits in general and alcohol consumption in particular. There are also considerable differences between countries in the proportion of women who consume alcohol: below 70% in the United States and above 90% in Sweden (Dawson et al., 2008; Federation of Alcohol and Drug Awareness, 2008).

Caring, self-assertiveness, AUD and HED

In our study, we found no significant associations between low or high scores on the caring dimension and AUD or HED. The caring dimension represents behaviour that is often associated with a traditional female gender role. Beckman (1978) and Möller-Leimkuhler et al. (2002) found that low femininity was associated with alcohol problems, while Zeldow et al. (1987) found that femininity was associated with alcohol consumption and drug impairment. On the other hand, Lara-Cantu et al. (1990) found that femininity seemed to be protective and associated with consuming fewer drinks per month. These studies did not specify the dimension of femininity addressed which makes comparisons difficult. Caring might be also influenced by having children at home. In this study, we did not control for the number of children at home or parental status, but it is known from other studies that women with caring responsibilities drink less alcohol than those without (Thundal et al., 2000; Holmila and Raitasalo, 2005; Kerr-Correa et al., 2007).

We did not find any large differences in the odds for having AUD or HED in relation to how women scored on self-assertiveness. After adjustment for personality, we found that women who scored high on self-assertiveness had decreased odds (of borderline significance) for HED [0.67 (0.43–1.05)]. Self-assertiveness has in other studies been shown to be associated with psychological well-being, and in an earlier study of ours has also been associated with low risk for alcohol problems (Hensing et al., 2003). The less clear association in this study might be related to the self-assertiveness dimension being composed of items having less homogeneity compared to the other three gender-identity dimensions.

Emotionality, AUD and HED

In an earlier study, we found that scoring high on emotionality was associated with increased odds for AUD, while scoring low was associated with decreased odds for AUD (Hensing et al., 2003). In the current study, we found an initial association of the same kind; women who scored low had odds ratios significantly below 1 for AUD and HED, and women who scored high had more than twice the odds as those scoring at the medium level. However, when we adjusted for personality, the associations became insignificant and remained so in the two regression models adjusting for psychiatric morbidity and level of education. These findings were similar for both AUD and HED. No single factor of the four factors used in this study of the KSP explained this reduction in odds ratios. As mentioned in the introduction, earlier studies on gender identity (or sex role identity) have been inconsistent, and such inconsistencies are of course challenging. However, we suggest that personality and/or psychiatric co-morbidity should be taken into account as possible confounders or mediators in future studies investigating gender identity or sex-role orientation in relation to alcohol problems and/or alcohol consumption. Apart from sensation-seeking and monotony avoidance, no specific personality profile seems to predict alcohol problems, but rather personality traits, together with other risk factors, constitute important determinants. A simplified explanation of our findings might be that the emotionality items in M/F-Q (such as being governed by feelings, being active) were not distinct enough to separate these dimensions from similar personality traits. Furthermore, we argue that gender identity probably should be defined as a concept developed in relation to social network, rather than an individual trait. Thus, there is a conceptual difference between gender identity and personality that has not so far been addressed, as far as we know. If so, this is a critique against the instrument rather than against the concept of gender identity as such. This supports a reformulation of the M/F-Q or even a more conceptual discussion on what specific aspects of emotionality, if any, should be included in an instrument measuring gender identity.

The KSP, used to measure aspects of personality in this study, was developed for research purposes, to identify individuals with biological vulnerability for psychological problems of different kinds. It might be that personality traits are more important than gender identity in the development of alcohol problems, and there might also be differences across the life span in the importance of personality traits and gender identity respectively for the development of alcohol problems. Gender identity might, for example, be more important during adolescence than in childhood and adulthood, e.g., for drinking patterns.

Gender identity, HED and AUD

As far as we know, this is the first gender identity study taking personality into account. It was not the purpose of this study to elucidate in detail how gender identity and its different
dimensions are related to different personality traits. However, there is clearly a need for theoretical and empirical development in this field. Of particular interest is the possible conceptual and empirical overlap between M/F-Q and KSP. At the factor or dimension level, it is not obvious if there is any overlap or not, and if there is, to what extent this might have influenced the results of the present study. An analysis of empirical overlap would need to be extensive and is beyond the purpose of this study. If several dimensions and factors did overlap, the importance of gender identity for the development of AUD or HED would have been underestimated.

As pointed out in the introduction, research on gender identity has been diverse in the approach to and in findings on the association with alcohol problems (Beckman, 1978; Zeldow et al., 1987; Ricciardelli et al., 1998). In an earlier study, we developed new gender identity concepts based on the factor analysis (Hensing et al., 2003). These concepts provide us with more information regarding the content of gender identity compared to measuring only masculinity and femininity on a one-dimensional scale. Indeed, the analyses in the present study showed that the associations are more complex. There is a need for the development of instruments measuring gender identity to better capture this complexity, and future studies on both women and men in different cultures are needed. Gender identity is of course just one of several factors that may be of importance in the development of AUD and it might not be the most important. However, when understood as a culturally variable concept, gender identity is also dynamic and changeable, presenting opportunities for preventive interventions (Sorell et al., 1993; Connell, 2003).

Using a mixed-study sample

There was an over-sampling of women with alcohol problems in all three samples. The clinical sample might particularly be expected to over-represent women with alcohol-related somatic illnesses and other reasons for attending a treatment setting. The effect of this over-sampling is somewhat minimized as the largest proportion of the clinical group was recruited at GP units and maternity units; both of these groups contained comparatively few persons with alcohol dependence or abuse. Furthermore, women’s responses to the M/F-Q were used from either the baseline interview or at the follow-up interview 5 years later, depending on when they were first available. For the majority of women, the M/F-Q was obtained at the first interview; however, for some women this measure was not available until the second interview. It is possible that the answers to the M/F-Q change with age, but this hypothesis was not supported by our reliability test. All other variables used in this study were measured at the same occasion as the M/F-Q was measured. Thus, it appears plausible to include subjects from various stages of the study, particularly as we aimed for a broad inclusion of women with possible alcohol problems.

CONCLUSION

Of the four dimensions of gender identity, only low scores on leadership remained significant after adjustment for age, personality, psychiatric disorders and level of education. The associations of emotionality with AUD and HED were not significant after adjustment for personality. After further adjusting for psychiatric disorders and level of education, no changes of importance were found regarding the direction, strength or statistical significance of the odds ratios. Clinical work could focus on the development of leadership abilities in women scoring low on these items to improve self-efficacy and the ability to negotiate and communicate their standpoints, e.g., regarding alcohol consumption. Both theoretical and methodological developments are needed to increase our understanding on gendered identities particularly in relation to health outcomes.

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