

Empirical Test of an Integrative Model Explaining Higher Prevalence of Subclinical Depression in Women: A Normative Sex-Role Orientation Approach

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Women are twice as likely to be affected by unipolar depression as men. In a sample of 137 German college students it is shown that normative sex-role orientation (SRO) moderates gender differences in subclinical depression, using multivariate analysis of variance. Higher levels of depression in women exist only among those with traditional SRO, while women and men with liberal SRO do not differ in the amount of depressive symptoms. Furthermore, an integrative model to explain the higher amount of depression in women is tested empirically by path analysis. The model shows that gender does not have a direct effect on depression, but rather an indirect one through SRO, stressful life events and locus of control.

Women are about twice as likely to be affected by unipolar depression as men. This phenomenon has been repeatedly found cross-nationally in a considerable number of community epidemiological studies, using a variety of self-report questionnaires and clinical interview methods (see Bebbington, 1998; Culbertson, 1997; Kessler, McGonagle, & Zhao, 1994; Nolen-Hoeksema, 1990; and Wittchen & Jacobi, 2005). Over the past four decades, numerous factors have been considered to account for gender differences in depression, including stressful life events, locus of control beliefs, and gender roles (for reviews see Hankin & Abramson, 2001; Kuehner, 2003; Nolen-Hoeksema; and Piccinelli & Wilkinson, 2000).

Stressful Life Events

Stressful life events frequently precede depressive episodes and appear to be more important in the etiology of depression than in numerous other psychiatric disorders (Brown, Andrews, Harris, & Bridge, 1986; Hammen, 1991; Hammen,

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Mayol, DeMayo, & Marks, 1986). Furthermore, there is empirical evidence that women are more commonly affected by stressful life events than men. For example, Dalgard et al. (2006) found that women experienced more stressful life events than men in the previous 6 months in a community sample of 8,787 adult subjects from different European countries. Marcotte, Fortin, Potvin, and Papillon (2002) analyzed a sample of 547 Canadian adolescents and found that girls experienced more stressful life events than boys in the prior 12 months. Several authors have argued the reason that women experience more stressful life events than men might be their lower social status (see McGrath, Keita, Strickland, & Russo, 1990; Nolen-Hoeksema, 1990; and Nolen-Hoeksema, Larson, & Grayson, 1999). Beyond this, there are special kinds of severe negative life events from which women are more frequently affected than men, like childhood sexual abuse (Kaplan, Pelcovitz, & Labruna, 1999), violence in partnerships (Tjaden & Thoennes, 1998), and sexual harassment (Schell, 2003). These stressful life events might contribute to women's higher vulnerability to depression. In a meta-analysis, Cutler and Nolen-Hoeksema (1991) found that sexual abuse in childhood or adolescence accounts for 35% of the gender difference in depression prevalence. When controlling for rape and other forms of sexual trauma, Kessler (2000) reports that the female-to-male odds ratio for major depression dropped from 1.9 to 1.45 in the National Comorbidity Survey data. Furthermore, especially in adolescence when gender differences in depression first emerge, there is evidence that the connection between stressful life events and depression is much stronger for women than for men (Ge, Lorenz, Conger, Elder, & Simons, 1994; Rudolph & Hammen, 1999). While this, on the one hand, emphasizes the role of stressful life events in the emergence of women's higher vulnerability to depression, on the other hand, it points out that additional psychosocial vulnerability factors must be considered.

Locus of Control Beliefs

The generalized expectation to have no control over one's meaningful environment constitutes a central aspect in the depression theory of Seligman and colleagues (see Abramson, Seligman, & Teasdale, 1978; Seligman, 1975). There are several constructs that consider such a generalized expectation of subjectively perceived control including, for example, *locus of control* (Rotter, 1966), *control and competence beliefs* (Krampen, 1991), *learned helplessness* (Seligman, 1975), *self-efficacy* (Bandura, 1977), and *mastery* (Dweck, 1975). While links between such constructs and depression have been empirically supported in numerous studies (see, e.g. Bandura, 1986; Seligman, 1975), their role in the emergence of the higher prevalence of depression in women is less clear. In a sample of North American adults, Nolen-Hoeksema et al. (1999) found lower mastery scores in

women than in men and a cross-sectional correlation between mastery and depression. However, longitudinally, mastery only had an indirect influence on depression through its effect on rumination. Low mastery predicted significant variance in depressive symptoms after a year only when appearing together with high rumination. Krampen (1991) reports gender differences in control and competence beliefs in a representative sample of more than 2,000 German adults, and he verified a connection between control and competence beliefs and depression. However, the effect sizes of gender differences are too small to substantially account for gender differences in depression. Interestingly, gender role identity (masculinity, femininity, androgyny) and normative sex-role orientation (SRO) explain more variance in control and competence beliefs than gender (Krampen, 1991; Krampen, Effertz, Jostock, & Müller, 1990).

Gender Roles

Several authors have argued that gender differences in depression are primarily caused by society's construction of traditional gender roles. In the context of gender differences in depression, research mainly considered gender role identity, which is the extent to which people include personality traits in their self-concepts that are viewed as typical for men and women within a given cultural context. Nevertheless, studies taking gender role identity into account to explain gender differences in depression show inconsistent findings. For example, in a sample of North American graduate students, Elpern and Karp (1984) found that masculinity was negatively related to depression in both men and women while high femininity was positively related to depression in women, but only if they had low masculinity scores at the same time. Considering a sample of Northern Irish adolescents, Wilson and Cairns (1988) also report a negative correlation between masculinity and depression in both men and women, but they found no correlation between femininity and depression. Waelde, Silvern, and Hodges (1994) examined a sample of North American undergraduate students and found a negative relationship between masculinity and depression as well, but they furthermore report a *negative* relationship between femininity and depression in women. Contrary to this, in a sample of North American undergraduate students, Thornton and Leo (1992) found that feminine and undifferentiated women had higher levels of depression than masculine and androgynous women.

Normative SRO

Besides the effects that different populations and different measurement instruments might have had on the aforementioned findings, we suggest that

methodological problems of masculinity–femininity concepts account for a considerable part of these inconsistencies (see Constantinople, 1973). One disadvantage of questionnaire items measuring masculine and feminine personality traits is that they confound different gender variables. Therefore, we consider a conceptually clearer gender role construct to explain gender differences in depression, namely, normative SRO (Brogan & Kutner, 1976; Krampen, 1979, 1983). Unlike gender role identity, normative SRO is not confounded with gender stereotypes. Gender stereotypes refer to the perception of what characteristics are typical for men and women in general. Gender role identity is the amount to which persons include such gender typical characteristics in their personality. Normative SRO, on the other hand, refers to attitudes toward gender roles. It is defined as attitudes about what is “right” or “wrong” for men and women in society, including moral judgments about what kind of behavior is appropriate. For example, the statement “In general, men are better drivers than women” reflects a gender stereotype, while the statement “In groups that have both male and female members, it is appropriate that top leadership positions be held by males” is a judgment about how things *should* be in a moral way (Brogan & Kutner, 1976). Thus, normative SRO implicates normative attitudes toward the division of labor and rules for social interaction between men and women in society, instead of focusing on instrumental and expressive personality traits. Besides its relatedness with gender stereotypes, another disadvantage of gender role identity is that masculinity, defined as instrumentality, is conceptually confounded with depression. Specifically, a high amount of instrumental personality traits contradicts the construct depression by definition (Adams & Scherer, 1985), so that empirical findings showing a negative relation between instrumentality (masculinity) and depression are simply a consequence of their conceptual relatedness (see Smedslund, 2002). Despite the methodological advantages of normative SRO over gender role identity, the authors found no study that considered normative SRO in context of the issue that women are more frequently affected by depression than men.

Integrative Models

Some integrative models have been proposed that comprise different factors considered in empirical research to explain gender differences in depression (Cyranski, Frank, Young, & Shear, 2000; Hankin & Abramson, 2001; Nolen-Hoeksema & Girgus, 1994). They provide heuristic frameworks, but have the disadvantage of being too complex to be translated into empirically testable models. Only few empirically testable models have been suggested in the given context (e.g., Li, DiGiuseppe, & Froh, 2006; Nolen-Hoeksema et al., 1999). In this study, we propose an integrative model explaining higher levels of depression

in women, simultaneously considering connections between gender, normative SRO, stressful life events and locus of control. To test the integrative model, all constructs were measured in a sample of 137 German college students via standardized self-evaluation questionnaires.

We first wanted to show the importance of socially constructed gender roles in the emergence of gender differences in depression, by specifically considering normative SRO. Our hypothesis is that women generally have a higher amount of depressive symptoms, but that normative SRO moderates those gender differences. We predicted that both men and women with a liberal normative SRO do not differ in the amount of depressive symptoms, while women with traditional normative SROs are more depressed than men with traditional SROs. Thus, we used multivariate analysis of variance (MANOVA) to test the interaction between gender and normative SRO on depression.

Second, we wanted to test an integrative model to explain the higher prevalence of depression in women by path analysis. Our model postulates that gender differences in depression can be explained by normative SRO, stressful life events, locus of control, and their reciprocal influences on each other. Particularly, we assume that women are more vulnerable to depression than men because they are more likely to develop the expectation of not having control over important aspects of their meaningful environments and because they are more frequently affected by stressful life events than men. The reason that women tend to develop the expectation of not having control over their meaningful environments can be found in aspects of the traditional female gender role and in the fact that women experience more stressful life events than men. We assume that women with a traditional normative SRO perceive and legitimize that women are generally in less influential social positions than men. This is supposedly associated with women's expectations of not having control over diverse aspects of society, which affects different areas of their lives and, likewise, might be generalized to additional ones. As mentioned earlier, we also expect that women experience more stressful life events than men do and that this experience contributes to underlining their expectation of not having control over their own meaningful environments.

Accordingly, the following empirically testable predictions are made:

1. Main Effects of Gender

Women have higher mean depression scores than men and, when screening for clinical depression, women are significantly more frequently affected by depression than men. Above that, women experience more stressful life events and have a less internal (i.e., a more external) locus of control than men.

2. Moderator Hypothesis of Gender and Normative SRO on Depression

Women generally have a higher amount of depressive symptoms, but normative SRO moderates these gender differences. We assume that both men and women with a liberal normative SRO do not differ in depressive symptoms, while women with a traditional normative SRO show a higher amount of depressive symptoms than men with a traditional SRO.

3. A Model Explaining Gender Differences in Depression

The higher amount of depressive symptoms in women can be explained by normative SRO, stressful life events, locus of control and their reciprocal connections:

1. Traditional normative SRO leads to a low internal locus of control in women. For men we assume the opposite effect or no effect at all.
2. Stressful life events have a negative influence on internal locus of control, with women more frequently experiencing stressful life events than men.
3. Stressful life events contribute to depression.
4. An internal locus of control is negatively linked to depression, with women having a lower internal locus of control than men.
5. Gender does not have a direct effect on depression, but rather an indirect effect through normative SRO, stressful life events, locus of control, and their reciprocal influences on each other.

Method

Participants

A sample of 137 students of the University of Trier (Germany) enrolled in the colleges of business, law, and sociology participated in the study. Participation was optional and without financial compensation. In lectures, 300 questionnaires were distributed. The overall response rate was 46%. The sample comprised 76 women and 61 men. Age of the participants ranged from 19 to 30 with a mean of 22.3 years ($SD = 2.32$).

Measures

Normative SRO. Normative SRO was measured with the 11-item short form of the German adaptation of the SRO scale (Brogan & Kutner, 1976; Krampen, 1983). Using a 6-point Likert-scale (ranging from *strongly disagree* to *strongly agree*), participants were asked to evaluate to what extent they agreed with

statements about appropriate behavior for men and women concerning the division of labor and rules for social interaction (e.g., "The old saying that 'a woman's place is in the home' is still basically true and should remain true.") Scale values were formed by adding item values (ranging from one to six), leading to a possible range from 11 (very liberal) to 66 (very traditional). In this study, internal consistency (Cronbach's alpha) of the short form of the SRO scale was .85.

Locus of Control Beliefs. The *Fragebogen zu Kompetenz und Kontrollüberzeugungen* (Krampen, 1991; a questionnaire assessing control and competence beliefs) was used to assess an individual's generalized expectations about control over one's meaningful environment. Participants had to evaluate to which extent they agreed with statements about control over diverse aspects of life (e.g., "My life is determined by my own actions"). The measure consists of 32 items and four scales, with responses recorded on 6-point Likert-scales ranging from *strongly disagree* to *strongly agree*. The four scales assess internal control orientation, powerful others control orientation, chance control orientation, and self-concept of ability. In particular, (1) *internal control orientation* is subjectively perceived control over one's own life and events in the person-specific environment; (2) *powerful others control orientation* is defined as generalized expectation that important life events depend on other people's influence; (3) *chance control orientation* denotes the generalized expectation that life events are dependent on fate, fortune, bad luck, and coincidence; and (4) the *self-concept of ability* is the generalized expectation that in life situations, there are options for action. Scale values were formed by adding item values (ranging from one to six), leading to a possible range from 8 to 48 for each scale. Furthermore, aggregations to secondary scales (*generalized self-efficacy*, *generalized externality*) and to a tertiary scale (*internal vs. external locus of control*) are possible. The generalized self-efficacy scale is formed by adding the internal control orientation scale values and the self-concept of ability scale values, leading to possible range from 16 to 96. The generalized externality scale is formed by adding the powerful others control orientation scale values and the chance control orientation scale values, also leading to possible range from 16 to 96. In our study, only the tertiary scale, which is a measure of locus of control, was considered. It is formed by subtracting the generalized externality scale from the generalized self-efficacy scale, leading to a possible range from -80 (external locus of control) to +80 (internal locus of control). Internal consistency (Cronbach's alpha) was .88 for the tertiary scale (internal vs. external locus of control) in this study.

Stressful Life Events. Using a list from the *Leipziger Ereignis und Belastungsinventar* (Richter & Guthke, 1996; a questionnaire assessing stressful life

events and their subjective consequences), participants were asked to evaluate if they experienced certain listed stressful life events during the past 2 years. The 56 listed events range from those that probably require only modest ways of adjustment for most people (e.g., having switched to a different college or professional school at the same level) to those events that demand high adaptive efforts for almost everyone (e.g., death of spouse or life companion). The possible range of the number of stressful life events was 0–56.

Depression. Depression was measured with the German version of the latest edition of the Beck Depression Inventory (BDI II; Beck, Steer, & Brown, 2006). For 21 symptoms, participants had to estimate which of four given statements is most likely applicable to them during the past 2 weeks. The possible scale range of the BDI is 0–63. The BDI can be used as a screening instrument for depression. There are different cut-off scores to screen for depression, whereby sensitivity and specificity have to be balanced against each other. Internal consistency (Cronbach's alpha) of the BDI II was .89 in the present sample.

Statistical Tests

To test main effects of gender and interactions between gender (factor 1) and normative SRO (factor 2), a MANOVA with all other measures as dependent variables was conducted. Thus, normative SRO was dichotomized at its mean ($M = 18.1$), with participants scoring 18 or less being categorized as subjects with liberal normative SRO and participants scoring more than 18 being categorized as subjects with traditional normative SRO.

The model to explain the higher prevalence of depression in women, simultaneously considering gender, normative SRO, stressful life events, locus of control, and their reciprocal connections, was tested by path analysis.

Results

Main Effects of Gender

We predicted that women have higher mean depression scores than men. As the results from the MANOVA in Table 1 show, this hypothesis was verified. Furthermore, we predicted that more women than men are classified as depressed after completing the screening instrument. This hypothesis was also supported in our study. When using a BDI II cut-off score of 13, 24 females (32%) and 9 males (15%) were classified as depressed ($\chi^2 = 5.24, p < .05$) using the BDI II screening instrument. Thus, the commonly reported finding that women are about twice as likely to be depressed as men was replicated in this data. Moreover, we predicted that women report more stressful life events and have a lower internal locus of

Table 1

Main Effects of Gender (N = 137)

	Gender ^a	<i>M</i>	<i>SD</i>	<i>F</i> (1, 133)	η^{2b}
BDI Depression	Female	10.9	8.24	7.02**	.050
	Male	7.9	7.26		
Number of stressful life events	Female	7.0	3.87	10.50**	.073
	Male	5.2	6.15		
Locus of control	Female	8.9	15.16	9.69**	.068
	Male	16.8	18.00		

Notes: Possible ranges of the scales are 0–63 (BDI Depression), 0–56 (Number of stressful life events; LEBI) (–80) – (+80) (Locus of control; FKK; high positive values mean internal locus of control).

^aFemale: $n = 76$; Male: $n = 61$.

^bPartial eta².

** $p < .01$.

control than men. As can be seen in the results of the MANOVA reported in Table 1, all gender differences were found as predicted.

Moderator Hypothesis of Gender and Normative SRO on Depression

We predicted that normative SRO moderates the relationship between gender and depression. As Figures 1 and 2 illustrate, there is, as predicted, a significant interaction between gender and normative SRO on depression, $F_{1,133} = 5.67$, $p < .05$. While in the group of subjects with liberal normative SRO both women and men do not differ in levels of depression ($M = 9.8$, $SD = 7.73$ and $M = 9.4$, $SD = 8.52$, respectively), in the traditional normative SRO group, women show significantly higher levels of depression than men ($M = 13.4$, $SD = 8.91$ and $M = 6.5$, $SD = 5.58$, respectively).

Testing the Model

The model considers connections between gender, normative SRO, and stressful life events as exogenous variables, internal locus of control as intervening endogenous variable, and depression as dependent endogenous variable (as well as the error terms as unobserved exogenous variables) in the full sample. Paths and correlations that are significant at $\alpha = .05$ are illustrated by solid lines,

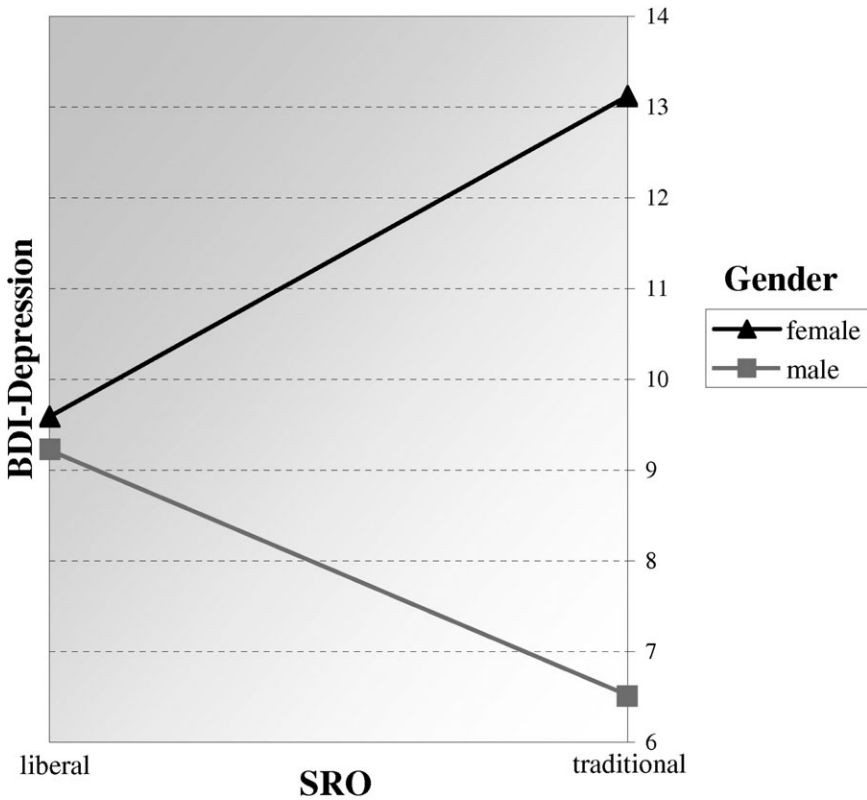


Figure 1. Interaction between gender and normative sex-role orientation (SRO) concerning BDI Depression (a).

while non-significant paths and correlations are visualized as dotted lines. As Figure 3 shows, the path analysis supports Hypotheses 3.2–3.5 (while the test of Hypothesis 3.1 requires additional analyses considering the female and male subsamples separately). Stressful life events have a negative influence on internal locus of control, while women are more frequently affected by stressful life events than men (Hypothesis 3.2). Stressful life events contribute to depression scores (Hypothesis 3.3). An internal locus of control is negatively linked to depression, while women have a lower internal locus of control than men (Hypothesis 3.4). Gender does not have a direct effect on depression, but rather an indirect one through normative SRO, stressful life events, locus of control, and their reciprocal influences on each other (Hypothesis 3.5). Hypothesis 3.1 was that traditional normative SRO leads to a low internal locus of control in women, while for men, we assumed the opposite effect or no effect at all. In the overall sample, the path

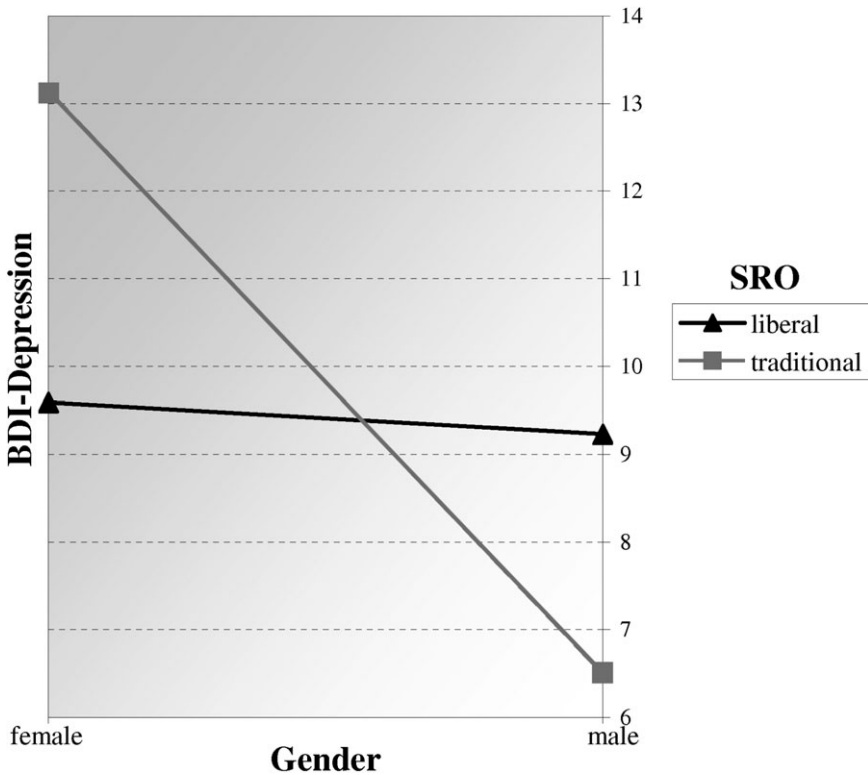


Figure 2. Interaction between gender and normative sex-role orientation (SRO) concerning BDI Depression (b).

from normative SRO to internal locus of control is not significant. However, when testing the same model on the female subsample only, the path from normative SRO to internal locus of control is significant ($\beta = -.25; p < .05$), while it is not in the male subsample ($\beta = -.08; p > .05$). Thus, Hypothesis 3.2.1 was also supported when testing Model 2 by path analysis. In sum, all of the model's predictions were verified. Beyond that, the model has a very good fit to the data (CMIN = .02, $df = 1, p = .88$; RMSEA < .001; GFI = 1; CFI = 1).

Discussion

A model to explain higher rates of depression in women was tested empirically on a sample of German college students. The model postulates that women are more depressed than men because they have a lower internal locus of control and

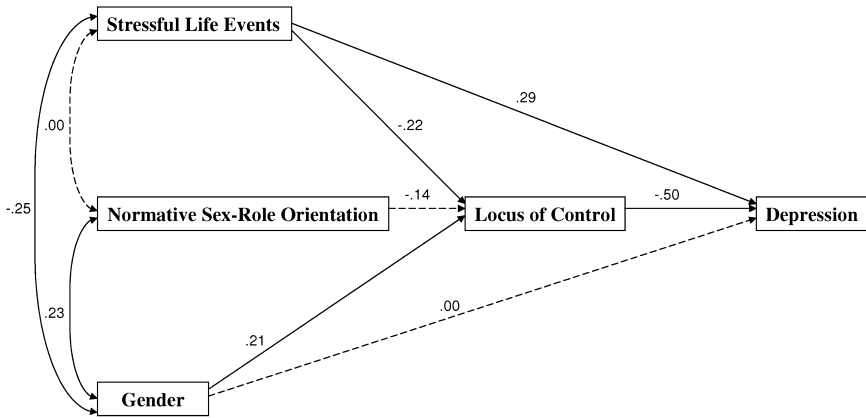


Figure 3. Path analysis of the Model ($n = 137$); Gender: 0 = Female, 1 = Male; solid lines illustrate significant paths and correlations at $\alpha = .05$, dotted lines visualize non-significant paths and correlations; Model fit: CMIN = .02, $df = 1$, $p = .88$; RMSEA < .001; GFI = 1; CFI = 1.

because they are affected by stressful life events more frequently than men. In women, low internal locus of control is assumed to result from traditional female gender role socialization and was thus expected to be strongly linked to traditional normative SRO, a construct that comprises attitudes about morally appropriate behavior for men and women concerning the division of labor and rules for social interaction. Above that, we expected that women’s lower internal locus of control is additionally amplified through the fact that they are faced with stressful life events more frequently than men. In accordance with Nolen-Hoeksema et al. (1999), we argued that the fact that women are affected by stressful life events more often than men might be their lower social status, a hypothesis that, however, could not be tested empirically within the framework of our study.

Replicating findings from numerous epidemiological studies, we found that women are indeed more depressed than men (see Bebbington, 1998; Culbertson, 1997; Kessler et al., 1994; Nolen-Hoeksema, 1990; Wittchen & Jacobi, 2005). However, gender differences in depression were moderated by normative SRO and, within the given set of predictors, gender did not have a direct effect on depression, but rather an indirect one through normative SRO, stressful life events, and locus of control. While in the group of persons with traditional normative SROs women were significantly more depressed than men, no gender differences in the amount of depressive symptoms were found in persons with liberal normative SROs. Furthermore, all of the model’s predictions were verified empirically using path analysis. In accordance with other studies, stressful life events are positively linked to depression (e.g. Brown et al., 1986; Hammen, 1991;

Hammen et al., 1986) and negatively linked to internal locus of control, while women are more frequently affected by negative life events than men (see also Dalgard et al., 2006; Marcotte et al., 2002; McIntosh, Keywell, Reifman, & Ellsworth, 1994). Internal locus of control is negatively connected to depression (in accordance with Bandura, 1986; Krampen, 1991 and Seligman, 1975), and women have lower internal loci of control than men (see also Krampen, 1991; Krampen et al., 1990 and Nolen-Hoeksema et al., 1999). Above that, traditional normative SRO has a negative impact on internal locus of control in women but not in men.

Several limitations of our study have to be taken into account. First of all, this is a study with a German college student sample. We cannot simply assume that the results can be generalized to other cultural contexts and different populations. Moreover, depression was assessed using merely a screening questionnaire. Further studies should diagnose depression by structured clinical interviews. We cannot readily assume that our findings are relevant for clinical depressive disorders. However, empirical evidence suggests that depression is to be conceptualized as a dimensional construct (Hankin, Fraley, Lahey, & Waldman, 2005; Prisciandaro & Roberts, 2005), indicating strong causal connectedness between depressive symptoms and clinical depression. Nevertheless, the acquisition of depression by a self-evaluation instrument might lead to the objection that discovered gender differences are mainly caused by gender-typical response tendencies. Whereas this response bias hypothesis (see Sigmon et al., 2005) cannot be tested empirically in this study, response bias is not assumed to substantially account for the presented findings. As Amenson and Lewinsohn (1981) have shown, both women and men with the same extent of self-evaluated symptoms of depression are equally as likely to be diagnosed as depressed in a clinical interview. Hence, a self-evaluation instrument is expected to assess valid and gender-unbiased depression measures (see also Santor, Ramsay, & Zuroff, 1994).

The model presented here postulates causal connections between applied constructs. Although path analysis is a method to investigate "causal" connections between different measures, due to the cross-sectional design of the study, conclusions from the connections of the measures have to be drawn cautiously. As the emergence of gender differences in depression is an interactive process of different factors over time, further studies should test the postulated causal connections longitudinally.

Altogether, it is concluded that if maladaptive cognitions and/or behavior, like low internal loci of control arise from traditional normative SROs and lead to symptoms of depression in women, it could be indicated to explicate gender issues within the scope of a clinical-psychological intervention strategy. Following cognitive approaches of psychotherapy, connections between culturally suggested concepts of female roles in society and maladaptive cognitions and behaviors arising from those could be worked out in the therapeutic process. It

might be investigated where implied normative SROs stem from, for example, by considering aspects of gender role socialization in clients' biographies. Psycho-educational techniques could help to point out that gender roles are culturally based and thus sensitive for change. However, in line with other authors (e.g. Nolen-Hoeksema et al., 1999), we argue that women's lower expectations of control might partially result from their objectively lower power in society, which may also explain why women appear to be faced with more stressful life events than men. Thus, although it is still necessary that gender awareness becomes a more prevalent issue in everyday psychological research and practice, we believe that social changes are, at least, equally important.

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