

# **Gender Differences in Hope and Its Relevance** to Depression Symptoms among Norwegian **Adolescents**

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Abstract

Introduction: Several studies indicate that the number of individuals experiencing depression symptoms is growing. There is a prevailing consensus in the literature that while depression is represented among both genders, it is consistently reported that females are more exposed to depression compared to males both in frequency and severity. Studies suggest that as many as 15 -20 percent of adolescents in Norway exhibit depression or depression like symptoms. Furthermore, several studies indicate that the number of individuals experiencing depression symptoms is growing. There is a prevailing consensus in the literature that while depression is represented among both genders, it is consistently reported that females are more exposed to depression compared to males both in frequency and severity. Methods: All data utilized in this study were extracted from the Norwegian Ungdata survey conducted in 2014 among adolescents in Norway. The sample consists of 46,374 observations. Conclusions: The finding of significant differences in prevalence of self-diagnosed depression symptoms among Norwegian adolescents, showed females are more exposed. Furthermore, as hypothesized, there is a strong and significant relation between hope and depression, where hope is proxied through expectations regarding the individuals' future education, happiness and wealth. Based on these findings, we apply hope as an instrument for addressing depression symptoms. Results from this analysis indicate that males are significantly less optimistic for the future.

# **Keywords**

Depression Symptoms, Norwegian Cross-National Ungdata, Adolescents, Hope, Future Expectations, Gender

# **1. Introduction**

Depression has been and continues to be a widespread issue of paramount importance. It is a mental disorder that has been estimated by WHO [1] to affect around 350 million individuals across all ages and genders on a global scale. Depression can have a devastating effect on the individuals' performance and productivity. The combined effect of both the direct and indirect costs, e.g. increased expenses to disability and the alternative costs of non-utilized human capital can be detrimental for the overall welfare of society.

In 2016, the Norwegian Institute of Public Health published evidence of significant prevalence of serious depressive symptoms among adolescents. Individual-level factors such as gender, family incomes and school grade were significantly associated with high levels of depressive symptom [2].

Studies suggest that as many as 15 - 20 percent of adolescents in Norway exhibit depression or depression like symptoms. Furthermore, several studies indicate that the number of individuals experiencing depression symptoms is growing [3] [4]. There is a prevailing consensus in the literature that while depression is represented among both genders, it is consistently reported that females are more exposed to depression compared to males both in frequency and severity [1]. Consequently, more effort and attention have been devoted to combat depression among female adolescents. However, there might be a problem in the methodology utilized to assert this gender difference. Frequently, information regarding the individuals' mental health is elicited through surveys, which requires the respondents to self-diagnose. Even in the case where there is no significant difference in the prevalence of depression, a gender-dependent ability to self-diagnose or willingness to report might erroneously cause a perceived difference. As such, the gender difference might be a machination of the methodology rather than a true discrepancy in the prevalence of depression.

We propose that rather than depending exclusively on self-diagnosed reported levels of depression symptoms, a more unbiased proxy should be utilized. Specifically, we use expectations for future wellbeing as a proxy for hope, which can be regarded as an instrument for measuring the level of depression. In the present study, we have used a definition by Snyder [5] to measure and quantify hope. He defined hope as the abilities to set clear goals, develop strategies to those goals and motivation to use these strategies. Following Snyder, we approximate hope as whether individuals exhibit positive or negative expectation regarding their future well-being for a set of particular aspects of life.

# **1.1. Aim**

The aim of this paper is two-fold. First, we attempt to relate the notion of hope regarding the future to individuals expressed level of depression symptoms among adolescents in Norway by utilizing an econometric approach. Second, we investigate the possibility of gender differences in hope.

#### 1.2. Structure of the Paper

The remainder of this paper is structured as follows. In the literature review sectionion literature relevant to depression and hope is presented. The utilized data and the utilized empirical methodology are presented in the method section. The obtained results from the study are presented followed by discussion, and further research. In the conclusion section topics of interest for future research is discussed.

### **1.3. Literature Review**

One aspect of concern of depression and anxiety disorders is the greater prevalence of these disorders among adolescent and adult's females may simply be more likely than adolescent males to endorse all items on common measures of depression and anxiety because adolescent females are more willing to disclose personal information. Thus, similar rates of gender differences for all of the items would lead to a higher score but would not reflect a true higher prevalence.

Higher depressive symptoms amongst females compared to males in developed nations may have an important cultural component that cannot be generalised [6]. Gender differences across depressive sub-type conditions were examined. Women scored only marginally higher than men on the depression severity measures. Women in the bipolar depression group, did score higher than men on depression severity. The symptoms most commonly and consistently differentiating by gender were appetite and weight change and psychomotor disturbance. The researchers conclude that gender had minimal if any impact on depression severity estimates although gender differences in depressive symptoms and severity were more distinctive in bipolar depression patients [7].

Research has focused largely on the consequences of individual differences in hope. High levels of hope have been linked with a variety of positive social, emotional, and academic outcomes in adults and youth [8] [9]. For instance, higher levels of hope predict greater academic achievement, more positive physical health behaviours, and higher life satisfaction, as well as decreased internalizing and externalizing behaviours.

Depressed girls and boys had similar symptoms. However, depressed girls had more guilt, body image dissatisfaction, self-blame, self-disappointment, feelings of failure, concentration problems, difficulty working, sadness/depressed mood, sleep problems, fatigue, and health worries than depressed boys. In contrast, depressed boys had higher clinician ratings of depressed morning mood, and morning fatigue [10] [11]. Association between mental wellbeing and depressive symptoms in Australian adolescents was examined. Analyses demonstrated a negative association between earlier symptoms of depression and later positive mental wellbeing as well as the reverse. The researchers mean that focussing solely on the promotion of mental wellbeing, without intervening to reduce symptoms of depression, may limit the potential outcomes that might be achieved [12]. Data from a national survey of US adolescents aged 12 - 17 were analysed. The researchers examined sex differences in the incidence of depression. They found that sex difference in depression-related impairment is lower among female compared to male subjects, and that poor academic functioning is higher for both male and female subjects. The incidence of depression during adolescence was higher than suggested by prior studies based on retrospective recall. Also, contrary to prior studies, they found that the sex during childhood and grows in magnitude during adolescence [13]. Difference in depression originates Items in commonly used measures of anxiety and depression symptoms may not equally capture the true levels of these behavioural problems in adolescent males and females. The researchers suggest that further attention should focus on empirical studies to better understand these problems [14].

Hope is a phenomenon important to all people during the lifespan, and has been studied within various disciplines since at least the 1950s. Researchers have attempted to describe, explain, and predict the association between human functioning and this seemingly vital often abstract-construct. Future goal orientation is a necessary component of hope. Understanding the associations between hope and intentional self-regulation strategies may help young people achieve their goals and provide insight into the positive development of youth [5].

Counselling services are only likely to be effective if individuals are willing to seek help. The researchers found that help-seeking regarding knowledge, sources of help, willingness, concerns regarding confidentiality, levels of interpersonal openness and stigma tolerance differed based on age and gender [15].

A developmental systems framework for elucidating the links between hope and adaptive developmental outcomes are presented. The research describes the relationship between hopeful future expectations and thriving in the adolescent period. [16] Variables that are related to depression are meaning in life and hope. Participants were students. The results showed that there is a significant negative correlation between depression with meaning life. Also, the statistically significant correlation exists between depression and adult hope. They found positive significant correlation between subscales of hope and meaning in life [17]. The origins of individual differences in hope in adolescents were associated with self-esteem, optimism and hope. Self-esteem and optimism suggest that both variables may operate as mediators of the association between social support and adolescents' hope. Optimism may mediate the association between social support and hope [18]. Classes of hope; "high hope", "average hope", and "low hope" was investigated. Compared to the average- and low-hope classes, the high-hope class reported significantly higher levels of life satisfaction, self-esteem and optimism and lower levels of depression [19]. Positive future expectations can facilitate optimal development and contribute to healthier outcomes. Internal resources and community-level factors may influence adolescent future expectations that facilitate optimal development and contribute to healthier outcomes for youth. Researchers suggest that internal resources and community-level factors may influence adolescent future expectations and predict higher levels of hope and purpose and predict more positive future expectations [20]. Hopeful expectations for the future play an important role in the positive development of youth, including youth contributions to society. Positive future expectations facilitate optimal development and contribute to healthier outcomes for youth. Internal resources and community-level factors may influence adolescent future expectations, and that contribution to community predicted higher levels of hope, and higher levels of hope predicted positive future expectations [21] [22]. Hope is an important predictor of well-being, especially in young people. Hopeful thoughts may be shaped by developmental processes that relate to broader culture-specific societal processes and orientations [23]. Social support from parents was examined in relation to adolescent hope, and social support from friends in relation to adolescent hope. The results indicated that social support from friends had a stronger effect than social support from parents [24]. Two meta-analyses were conducted The first examined social support from parents in relation to adolescent hope, and the second examined social support from friends in relation to adolescent hope [25]. Depression symptoms between European American and African American boys and girls was compared. The research point out the importance of differentiating groups by gender and race in conceptual models of depression [26]. People with low self-esteem are more likely to become unemployed than those with high self-esteem. The outcomes confirm the assumptions about low self-esteem being unemployed regardless of gender. However, for people in higher skills occupations this is true for women but not for men [27]. Sund et al. show that Prevalence of adolescents scoring was within the prevalence rates of depressive disorders found in Norway [28]. A relationship between self-compassion, hope and life satisfaction was found in a sample of Chinese adults [29].

## 2. Methods

# 2.1. Participants

All data utilized in this study was extracted from the Norwegian Ungdata survey conducted in 2014 among adolescents in Norway. The survey was developed by the research center NOVA at the university college in Oslo and Akershus, the competence center KoRus and Kommunesektorensorganisasjon (KS). Ungdata is conducted electronically during school hours and is financed by the national budget as of 2015. All relevant ethical considerations were complied with. For instance, adolescent participants in the survey were anonymized and their parents were offered the option to withdraw from the survey.

The sample consists of 46,374 observations where 66.79 percent attended junior high school ( $8^{th} - 10^{th}$  grade) and 33.21 percent attended high school ( $1^{st} - 3^{rd}$  grade). Response rate ranged from 60.60 to 100 percent with an average of 80.25 percent and with a standard deviation of 7.70 percent points. All 19 counties within Norway were represented. See **Table 1** for the dispersion of males and females across the different school levels in the dataset. Ungdata has been

		School level		
Gender	Junior high school	High school	Total	
Male	15,650	7740	23,390	
Male	(66.91)	(33.09)	(100)	
P	15,321	7663	22,984	
Female	(66.66)	(33.34)	(100)	

Table 1. Disaggregation of sample.

a youth surveys to all municipalities and county municipalities in Norway since 2010. Ungdata is supposed to give an overview of the local adolescents' life situation. It is free for municipalities to participate. Ungdata is a collaboration between the Institute of welfare NOVA at the College of Akershus and the seven regional competence centres within the field of substance abuse (KoRus) in Norway. KoRus is responsible for the practical implementation and dissemination of results to the welfare research Institute NOVA. It is the national secretariat at Nova that coordinates and manages the investigations. It is voluntary for the adolescents whether they would like to participate or not in the Ungdata survey. It may effects the representativeness of the data. Some adolescents did not choose to participate in the survey, and some were not present at the school when the survey was conducted. 82 percent of adolescents in the municipalities that have participated in the Ungdata were in the age group 13 - 15 years. For the same period the response rate in high school is 66 percent. It is about one percent of the answers that were held outside of the analysis, as these were not answered in a serious way.

Questions put forward to the participants were about living conditions such as good or less good economy, how they perceive attending school, schoolwork, disputes with parents and alcohol consumptions.

#### 2.2. Study Design

This study utilizes an econometric approach based on univariate and multivariate logit regressions with heteroscedasticity robust standard errors. First, an attempt is made to verify the postulated connection between depression and gender. To accomplish this, a univariate logit regression model is applied with a dichotomous variable for self-reported depression symptoms as the dependent variable and a dichotomous variable for gender as the independent. Second, the hypothesized relation between depression and hope for the future is investigated with a multivariate logit regression model with the former as the dependent and the latter as the independent variables. Finally, the effect of gender on future expectations is tested by a set of multivariate logit regression models with the various proxies for future expectations as the dependent variable and gender and a set of socioeconomic control variables as the independent variables.

## 3. Result

Depression among adolescents is commonly regarded as prevailing phenomenon in today's society. Furthermore, previous research indicates that there might be gender-based differences in the likelihood of experiencing depression symptoms. Based on data from the Norwegian Ungdata survey for 2014 we are able to assert the validity of these claims for the considered sample. As revealed by **Table 2**, a considerable proportion of the sample reports having experienced depression symptoms. For instance, 8.56 and 4.24 percent of the male's reports having "somewhat" and "to a great extent" experienced unhappiness, sadness and/or depression. Comparably, females' reports 13.53 and 8.44 percent. Subsequently, it appears that that depression symptom is not only common, but also seemingly more prevalent among females.

Depression symptoms among female adolsents; no depression 35.53%, some depression 33.40%, rather and very much depression 31.07%.

Depression symptomd among male adolscents; no depression 60,36%, some depression 27.09%, rather and very much depression 12.55.

To consolidate the hypothesized gender difference, we utilize a more rigorous methodology by applying a univariate logit model with depression symptoms as the dependent and gender as the independent variable. The independent variable is a dichotomous variable equal to one for females and zero otherwise, likewise, the dependent variable takes on the value of one for responses coinciding with "somewhat" and "to a great extent". The obtained result indicates that the odds ratio associated with the dummy variable for female is 2.15 with a p-value of 0.00. Thus, based on the regression analysis the odds for females experiencing depression symptoms above the stated threshold is 115 percent higher compared to males.

To further asses the gender differences in prevalence of depression among adolescent, we investigate various variables related to the respondents' expectations

Prevalence and extent of depression symptoms among adolescents in Norway measured through the Likert scale. Respondents were inquired to answer the following question: "Have you during

Gender	Not at all	Very little	Somewhat	To a great extent	Total
Male	13,383	6013	1905	942	22,243
	(60.17)	(27.03)	(8.56)	(4.24)	(100)
Female	7806	7441	4104	2805	22,156
	(35.23)	(33.58)	(18.52)	(12.66)	(100)
Total	21,189	13,454	6009	3747	44,399
	(47.72)	(30.30)	(13.53)	(8.44)	(100)

 Table 2. Prevalence of depression symptoms among adolescents.

and beliefs regarding their future, i.e. hope. Specifically, the respondents' expectations regarding future happiness, plans for education, future possibility of employment and future wealth is evaluated. See **Table 3** for the particular questions utilized to elicit the required information from the respondents.

Before investigating the possibility of gender differences within the expectations variable, we first affirm their connection to depression symptoms. A multivariate model is utilized with depression symptoms as the dependent variable and expectations for happiness, unemployment, higher education, certificate of apprenticeship and owning apartment as independent variables. As revealed by Table 4, all five expectation variables are significant. As indicated by the obtained odds ratio, respondents who expect to be happy in the future have a 80 percent lower odds of experiencing depression symptoms above the defined threshold. Further, respondents expecting to be unemployed in the future have a 35 percent higher odd of experiencing depression symptoms. Respondents that either expect to undertake higher education or obtain a certificate of apprenticeship have a 5 percent lower odds. Finally, respondents expecting to own their own apartment have a 25 percent lower odd. Thus, the sign of odds ratios appears to conform with ex ante expectations. However, while the achieved regression results are indicative of a relationship between depression symptoms and expectations, caution is advised when attempting infer causality. A compelling argument could be made that there is case of reverse or simultaneous causality. In a cross-sectional setting, it would be necessary to apply an instrumental variable regression to further examine the nature of the relation between hope and depression. Be that as it may, the existence of a relationship is of pivotal interest and not necessarily the exact nature in this context.

With an established connection between depression symptoms and expectation

Questions utilized to assert a respondent's expectations regarding their own future.				
Question	Variable name			
Do you think that you will own your own Apartment?	E_Own Apartment			
Do you think you're going to get a good and happy life?	E_Happy			
Do you think that you will have a certificate of apprenticeship?	E_CoA			
Do you think that will ever be unemployed?	E_Unemployed			
Do you think you're going to pursue higher education?	E_Higher Education			

 Table 3. Expectation regarding the future.

Table 4. Relation between depression symptoms and expectations.

Result from regressing symptoms of depression on the various expectation variables. One asterisk (\*) denote that the variable is significant at 10 percent, two (\*\*) 5 percent, and three (\*\*\*) 1 percent.

	E_Happy	E_Unemployed	E_HigherEducation	E_OwnAppartment	E_CoA
Depr_Depressed	0.20***	1.35***	0.95**	0.75***	0.95*

regarding the future, the topic of gender differences within the expectations variables can be investigated. The expectations variables utilized within the logit regression is derived from the survey questions presented in **Table 3**. Each of the survey questions has predefined answer options and allow for the following alternatives: "Yes", "No", and "Do not know". The answer alternatives are transformed into a dichotomous variable equal to one if the respondent answer "Yes" and zero otherwise.

**Table 5** shows the results for regressing the expectations variables on the dichotomous gender variable and a set of socioeconomic control variables. To control for the possibility of omitted variable bias, several control variables are added based on theoretical consideration. There is a high extent of correlation between some of the control variables. As such, variables that are significant in a univariate setting might be insignificant in the multivariate regression models due to multicollinearity. However, this is a neglectable problem as we are primarily conserved with the dichotomous gender variable.

As shown, males compared to females are significantly less optimistic about their future when considering future wealth, education and happiness. The gender dummy is significant at one percent level across all five regressions. For

#### Table 5. Gender differences in expectations.

Result from a set of multivariate logit regressions between the various variable for expectations about the future as the dependent variables and a dummy variable for gender and various control variables as independent variables. The dummy variable is equal to one for males and zero otherwise. The standard errors are robust to heteroscedasticity. One asterisk (\*) denote that the variable is

E	_Unemployed	E_Higher Education I	E_Own Apartme	nt E_CoA	E_Happy
Gender	1.58***	0.48***	0.67***	1.30***	0.74***
		Control variables			
Fam_Economy	1.17***	0.46***	0.41***	0.90***	0.49***
ParentSup_Location	1.14***	0.44***	0.43***	1.04	0.50***
Parent- Sup_Quarrel1	1.37***	0.83***	0.82***	0.94**	0.68***
Bullying_Receiv	1.24***	0.85***	0.85***	1.11***	0.77***
BullyingInt_Receiv	1.21***	0.87***	0.95	1.16***	0.82***
Use_Hasj	1.25***	1.31***	1.52***	1.04	1.01
Depr_Worried	1.06*	0.82***	0.46***	0.65***	0.34***
Satis_Parents	0.82***	1.07**	1.05	0.91***	1.10***
Satis_Friends	0.81***	1.01	1.44***	0.98	1.19***
Satis_School	0.91**	1.17***	0.88***	0.89***	1.08***
Satis_Apperence	0.85***	0.98	0.75***	0.91***	1.65***
Training	0.75***	1.00	0.80***	0.97	0.98
Homework	0.95	1.13***	0.84***	0.90***	0.91***

significant at 10 percent, two (\*\*) 5 percent, and three (\*\*\*) 1 percent.

instance, the odds for males to expect to be unemployed is 58 percent higher compared to females. Males have a 52 percent lower odd of expecting to acquire higher education, a 33 percent lower odds of expecting to own their own apartment and a 26 percent lower odd of expecting to be happy in the future. Finally, males have a 30 percent higher odds compared to females in expecting to acquire a certificate of apprenticeship.

### 4. Discussion

Based on an econometric approach, we can reaffirm the finding of significant differences in prevalence of self-diagnosed depression symptoms among Norwegian adolescents, where females are more exposed. Furthermore, as hypothesized, there is a strong and significant relation between hope and depression, where hope is proxied through expectations regarding the individuals' future education, happiness and wealth. Based on these findings, we apply hope as an instrument for addressing depression symptoms. Results from this analysis indicate that males are significantly less optimistic for the future.

When basing analysis on the regression model using self-diagnosed depression symptoms, a tempting conclusion to the findings is that the prevalence of depression among females is higher compared to males, and consequently more attention and effort should be dedicated to combat depression among the latter. However, there are potential pitfalls related to the utilized methodology. First, there is an extensive possibility of omitted variable bias, that is, unobserved aspects are erroneously picked up the dichotomous gender variable. Second, the depression symptoms are self-reported. Arguably, assessing prevalence of depression based on reported self-diagnosing can potentially be misleading, as there might be imperfect correlation between what the respondent explicitly communicates and their actual diagnosis. Limited ability to self-diagnose or a lack of willingness to divulge relevant information can both contribute to an imperfect correlation. If there are any significant gender differences within either of the above-mentioned aspects, then relaying on reported self-diagnosing becomes unwise. For instance, if a particular gender tends to overestimate their level depression then prevalence of depression with that particular gender might be overestimated. Also, it could be speculated that males underreports their prevalence of depression when asked directly. As a direct consequence, an unduly amount of effort and attention might be distributed erroneously.

Given the value of the outlined line of thought, an argument can be made that results with a higher accuracy could be obtained by employing explorative questioning rather than inquiring the respondent to make a direct assessment. That is, rather than employing the simplistic approach of inquiring whether the respondent is depressed, it might be more prudent to verify whether the respondent exhibits behavior commonly associated with depression. There is a prevailing consensus in the literature that females are more exposed to depression compared to males, both in frequency and severity. More effort and attention has been devoted to combat depression among female adolescents'.

# **5.** Conclusion

We have studied the possibility of gender differences in prevalence of depression symptoms among Norwegian adolescents. Our results indicate that males, to a greater extent, tend to have a negative outlook in the future compared to females. These results are robust to controlling for various omitted variables. Hence, to the extent that expectations and beliefs about the future are relevant to depression symptoms, males appear to exhibit behavior associated with depression but paradoxically underreport their prevalence of depression when asked directly. Based on these findings, it does indeed seem plausible that a one-sided focus on depression among adolescent females at the expanse of males is not optimal. That is, statistics based exclusively on reported self-diagnosis might be misleading as males might be less likely to admit to or understate their depression while being more prone to lack a positive expectation for the future.

# 6. Further Research

To the limit of our knowledge, this is the first study to consider gender differences in hope based on the adolescents from the Norwegian cross-national Ungdata study. However, further research on this topic required. Further research on gender differences in ability and willingness to self-diagnose and report is necessary to determine the validity of the observed difference in depression symptoms across the genders. In literature, it is reported that in order to build hope for adolescents, it is important to have a secure social base. Hopeful development begins in early childhood through caregivers. When parents are not available, a teacher or other grown-up persons could fill a mentor role who is coaching in social skills and interpersonal connections.

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## **Conflict of Interest**

No conflict of interest.

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