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**CHANGES IN DEPRESSION AND ECONOMIC DISADVANTAGE
DURING THE COVID-19 PANDEMIC¹**

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ABSTRACT

Existing research examining depression during the COVID-19 pandemic has mainly been cross-sectional in nature, and as a result cannot account for increases of depression because levels of depression may have already been high. Additionally, researchers have shown that the pandemic has had an adverse economic impact on many young adults, but researchers have neglected to examine the link between changes in economic circumstances during the pandemic, and subsequent changes in depression. This study draws on longitudinal data from the Toledo Adolescent Relationship Study to examine how changes in economic hardship and the receipt of public assistance during the pandemic predict changes in depressive symptoms. The results of fixed-effects models indicate that increased economic hardship is associated with increased depressive symptoms, and increased receipt of public assistance is associated with decreased depressive symptoms.

Keywords: Depression, Economic Hardship, Public Assistance, COVID-19

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INTRODUCTION

When examining trajectories of depression and anxiety symptoms across the life course, it is expected for these symptoms to be high in young adulthood before decreasing in mid-adulthood and then increasing again (Drentea 2000; Hargrove et al. 2020). This trend can be partially explained by increased economic hardship in young adulthood and the instability of this life stage where many are forming families, pursuing higher education, or entering the workforce (Mirowsky and Ross 1999). However, during the recent COVID-19 pandemic, adults have experienced high levels of depression (Pfefferbaum and North 2020; Hyland et al. 2021), which runs counter to the trajectory that prior studies have established for depressive symptoms. Depressive symptoms differ in severity based on structural factors, with women, young adults, students, and unemployed individuals reporting high levels of depression during the pandemic (Solomou and Constantinidou 2020). While during the pandemic, levels of depression may be high, much of the research examining depression during this period is cross-sectional, and as a result, cannot address questions about increases in depressive symptoms. This is because there are some individuals who may have experienced high levels of depression before the onset of the pandemic. Beyond the serious health implications of the ongoing pandemic, the financial consequences are also severe with high levels unemployment and decreased economic activity (Zhang, Hu, and Ji 2020). Given the established associations between economic disadvantage and higher levels of depression (Ross 2000; Reising et al. 2013), we expect that the financial impact of COVID-19 may be associated with changes in depression during the pandemic.

Depression and COVID-19

Most of the empirical research examining depression during the pandemic has been cross-sectional in nature and concludes that individuals are experiencing heightened mental health issues due to the pandemic, with previous mental health diagnoses (Bendau et al. 2021), gender (Chen et al. 2020), involuntary unemployment and household job uncertainty (Yao, Wu, and Mendenhall 2021) and news consumption and financial stress (Li et al. 2020) all being significant predictors of high levels of depression during the pandemic. The role of changes in the economy on depressive symptoms has been considered; for example, Ettman et al. (2020) relied on two cross-sectional studies and attributed low income and savings to increases in depressive symptoms. However, these studies are not able to assess change in depressive symptoms because they are limited in that they are often based on measurement during the pandemic with no accounting for levels of depression that were experienced prior to the pandemic.

Only a couple of studies using longitudinal data have evaluated within person changes in depressive symptoms pre-pandemic and during the pandemic (Manning, Longmore, Giordano, and Douthat 2021; Wanberg, Csillag, Douglass, Zhou, and Pollard 2020). Both of these studies document within person elevated levels of depressive symptoms over time. While the Manning et al. (2021) was limited to descriptive profile of health changes, the Wanberg et al. (2020) considered the role of socioeconomic resources. Higher education was associated with greater increases in depression, and a curvilinear relationship between income and depression was found, with the highest earning individuals experiencing the greatest decrease in life satisfaction, followed by low-income individuals, and middle-income individuals experiencing the smallest decline in life satisfaction (Wanberg et al. 2020). While these findings establish basic patterns,

they do not consider how changes in economic circumstances influence mental health. We move beyond this prior work and use longitudinal data to examine predictors of changes in depression to ensure that depression truly is increasing during the pandemic. We focus on how changes in economic circumstances are related to shifts in depression, rather than examining associations between covariates and levels of depression.

Our goal is to employ robust measures of economic circumstances to capture the level of hardship an individual is enduring due to their financial situation. Further, measures capturing the relief efforts that have been employed are important, such as expanded unemployment insurance, to determine if those efforts have attenuated the relationship between economic hardship and depression. Additionally, while low income has been shown to associate with depressive symptoms during the pandemic, capturing change in household economic hardship during the pandemic would more accurately reflect the association between economic circumstances and depressive symptoms.

Attention to the life course stage is important in assessments of depressive symptoms and empirical evidence demonstrates an age-graded pattern to depressive symptoms. Our study draws on a sample of respondents who were born in the early 1980s and are in their mid-thirties during their prime childbearing years. Based on prior work comprised of similar-aged samples, it appears that depressive symptoms start to climb during their late 30s (Hargrove et al. 2020; Emerson et al. 2018). Focusing on a single cohort during the pandemic is especially informative, as research studying other historical events, such as the Great Depression, the Great Recession, and World War II, has shown that historical events can impact individuals in different ways based on their position in the life course (Elder 1974; Pruncho, Heid, and Wilson-Genderson 2017; Elder 1994). The life course perspective posits sources of strain can be linked to one's

stage in the life course (Pearlin and Skaff 1996), and that historical events can alter life trajectories and create shared experiences for cohorts due to the nature of linked lives (Elder 1998). Based on prior work we would traditionally expect a leveling out of depressive symptoms for men and women during their early thirties.

Economic Impact of COVID-19

Not all individuals have experienced the pandemic in the same way and socioeconomic status serves as a strong predictor for many outcomes related to the COVID-19 pandemic. The levels of unemployment skyrocketed (Gallea and Abdalla 2020) and many faced severe constraints as they were asked to work in potentially unsafe environments and uncertain employment prospects (Gaitens, Condon, Fernandes, and McDiarmid 2021). Researchers have found that low-socioeconomic status individuals are more susceptible to contracting, and dying from, COVID-19 due to higher mobility and inequities in access to quality healthcare (Han, Li, Lam, Bai, and Fok 2020). Additionally, COVID-19 tests have not been dispersed proportional to need, and low-socioeconomic status individuals are significantly less likely to have access to testing (Lieberman-Cribbin, Tuminello, Flores, and Taioli 2021). Finally, researchers have indicated economic stress has increased during the pandemic (Islam, Bodrud-Doza, Khan, Haque, and Mamun 2020) with potential negative implications for physical health. While associations between economic hardship because of COVID-19 and physical health outcomes are clear, it is paramount to understand how economic hardship may associate with mental health outcomes during the pandemic.

One response to the economic constraints of the pandemic is the use of public assistance. Public assistance relates to the impact of both economic and mental well-being during the pandemic, as it can alleviate the financial burden of the pandemic for many adults that lost their

jobs (Acs and Kaprman 2020). Further, the receipt of government assistance is also associated with decreases in depressive symptoms over time (Rodriguez, Frongillo, and Chandra 2001). Additionally, examinations of depression during the pandemic have indicated that increases in depression can be attributed to having low income (Ettman et al. 2020). Therefore, increases in reliance on public assistance because of the pandemic may attenuate the relationship between economic hardship and depression, and decrease depressive symptoms.

CURRENT STUDY

The current study relies on population-based longitudinal data (Toledo Adolescent Relationships Study) to examine how changes in economic circumstances during the pandemic influence changes in depressive symptoms. This sample constitutes an important group for study as they are in their prime childbearing years (mean age 34 ranging from ages 31 to 38). Examining change in depression, rather than levels, will improve the understanding of predictors of depression during the pandemic by accounting for levels of depression and economic circumstances both before and during the pandemic. We focus on two indicators of economic circumstances: change in levels of economic hardship and change in receipt of public assistance. Drawing on indicators measured prior to the pandemic and during the pandemic provides new insights into the toll of the pandemic on psychological well-being. We hypothesized that (1) increased economic hardship will be associated with increased depression, and (2) receipt of public assistance will be associated with decreased depression. Given evidence about gender disparities in depressive symptoms, with gender differences being the most pronounced in adolescence but remaining significant and stable in adulthood (Salk, Hyde, and Abramson 2017), we conduct supplemental analyses to test for gender distinctions.

DATA

The Toledo Adolescent Relationships Study is a population-based sample composed of 1,321 adolescents between the ages 12-16 who were first interviewed in 2001 and further interviewed seven times. The sample includes adult women and men who represent a broad range of socioeconomic circumstances, and while the sample was initially based on school rosters, school attendance was not required for inclusion. The interview wave that immediately preceded the pandemic occurred between April 2018 and March 2020 (wave 6) and included 990 respondents. The pandemic TARS sample included 815 respondents interviewed between June 15 and November 6, 2020 who were between the ages of 31 and 38. The respondents were all invited to participate in the on-line interview. The analytic sample is based on respondents who reported valid responses to depression at both interviews ($n=790$). The sample is further limited to those who were not missing data on receipt of public assistance or economic hardship questions resulting in an analytic sample of 763 respondents, 300 men and 463 women.

MEASURES

The dependent variable is change in depressive symptoms. Depressive symptoms are measured using an eight-item version of the CES-D scale (Radloff 1977). The respondents were asked at both waves how often was each following statement true over the past week: (1) You felt you just couldn't get going; (2) You felt that you could not shake off the blues; (3) You had trouble keeping your mind on what you were doing; (4) You felt lonely; (5) You felt sad; (6) You had trouble getting to sleep or staying asleep; (7) You felt that everything was an effort; and (8) You felt depressed. Higher scores indicate more frequent reports of depressive symptoms and range from 1 (never) to 8 (everyday). Responses are mean scales ($\alpha = .92$ at wave 6, $\alpha = .92$ at wave 7) (range = 1 to 8).

Economic hardship is measured using a 6-item summed scale that asks respondents in the

past two years, was there ever a time when you or someone in your household (1) didn't pay the full amount of rent or mortgage because you didn't have enough money?, (2) were evicted from your house or apartment for not paying the rent or mortgage, (3) ran out of money to buy food or make a meal, (4) needed to see a doctor or go to the hospital but didn't because you didn't have enough money?, (5) were unable to pay the full gas, electric, or other utility bill because there wasn't enough money?, and (6) were unable to make the minimum payment on your credit card because there wasn't enough money? Items include a response range from (0) no to (1) yes. The pandemic survey modifies this question and asks "Since the COVID-19, has there been a time where you or someone in your household:".

Receipt of public assistance is measured using a 5-item summed scale that asks respondents if they or a member of their household receive (1) supplementary security income (SSI), (2) temporary assistance for needy families (TANF), (3) food stamps (or Supplemental Nutrition Assistance Program – SNAP) or WIC benefits, (4) unemployment or worker's compensation, and (5) a housing subsidy or public housing. Items include a response range from (0) no to (1) yes. The pandemic survey modifies this question and asks, "Since the COVID-19, has there been a time when you or a member of your household received:" (range = 0 to 5).

To test the hypotheses, we draw on fixed-effects modeling. Fixed-effects models are statistical models in which model parameters are treated as fixed, non-random quantities (Rabe-Hesketh and Skrondal 2008). The dependent and independent variables are measured on an interval scale across two-or-more points in time, and as a result, fixed-effects models can be employed to control for time-invariant, unobservable parameters. This allows for depression, economic hardship, and public assistance to be measured linearly while accounting for potential spurious relationships that could occur due to unobserved variables.

RESULTS

Table 1a provides the descriptive statistics of the sample and t-tests examining change in depression, economic hardship, and public assistance between waves. The descriptive statistics indicate that individuals mean level of depression was 2.18 before the pandemic, and 2.64 during the pandemic. This represents a significant increase in depressive symptoms during the pandemic, with a mean difference of 0.46 ($p = .000$). Further analyses located in table 1b indicate that three-fifths (60.03%) of the sample experienced an increase in depressive symptoms. Supplemental analyses indicate that women have higher levels of depressive symptoms than men, but the average increase is statistically significant for men and women and the increase is similar for men (0.001) and women (0.000).

The second panel presents the change in economic indicators. Economic hardship had a mean of 0.93 before the pandemic, and a mean of 0.64 during the pandemic, and significantly decreased during the pandemic ($p=0.000$). Consistent with these findings 13.37% of the sample experienced an increase in economic hardship, three-fifths (59.90%) no change, and one-quarter (26.74%) a decrease in level of economic hardship. In contrast, public assistance had a mean value of 0.46 before the pandemic, and a value of 0.60 during the pandemic, and significantly increased during the pandemic ($p = 0.000$). One-quarter (25.95%) of the sample experienced an increase in receipt of public assistance, three-fifths (61.99%) no change and 12.06% a decrease. Additionally, supplemental analyses examined changes in the receipt of unemployment insurance, which is a single item in the public assistance scale. 10% of the sample received unemployment insurance pre-pandemic, and 30% of the sample received unemployment insurance during the pandemic. One-quarter (25.03%) of the sample experienced an increase in unemployment insurance, 70.25% stayed the same, and only 4.72% of the sample experienced a

decrease in receipt of unemployment insurance. Overall, the receipt of unemployment insurance significantly increased during the pandemic ($p = 0.000$). These findings may indicate that increased receipt in public assistance may be associated with decreased economic hardship during the pandemic.

Table 2 presents the fixed-effects results of change in economic factors and change in depressive symptoms. The results of model 1 indicate that increased economic hardship is significantly positively associated with increased depression ($p = 0.038$). The effect of economic hardship on increases in depressive symptoms is consistent with our hypothesis. Next, the effect of increased receipt of public assistance is marginally negatively associated with change in depression ($p = 0.065$). Thus, public assistance has a protective effect on changes in depression. Model 2 presents analyses examining the association of unemployment insurance with change in depression, which was also negatively associated with change in depression ($p = 0.034$). In other words, depression increases as economic hardship increases, and decreases as the receipt of public assistance increases. Supplemental analyses indicate there were no significant gender differences in the effects of economic hardship and the receipt of public assistance on depression.

DISCUSSION

The findings of this study provide strong implications of the relationship between depression and economic circumstances during the pandemic by accounting for levels of depression both before and during the pandemic. The financial impact of the pandemic can partially explain the reported high levels of depression as seen during the pandemic.

Additionally, the increase of public assistance that has occurred during the pandemic through increased unemployment benefits is negatively associated with depression, and this finding may

have been even stronger if a specific question capturing the receipt of a stimulus payment were to be included. The economic relief provided by public assistance is providing not only financial benefits but mental health benefits.

While this study provides important insights into the effects of economic shifts on depressive symptoms, there are a few shortcomings. The data are regional in nature, which limits generalizability to the entire United States population. Second, the data focus on one birth cohort and the ramifications of the pandemic may be distinct for young adults and older adults. Third, the economic indicators do not measure shifts in income or wages. The focus on hardship and public assistance may only capture specific forms of economic struggles that could be better measured with more nuanced economic indicators. Finally, the inclusion of additional economic relief efforts that occurred during the pandemic, such as stimulus payments, would have improved the public assistance measure.

These findings may also indicate potential long-term ripple effects in mental health trajectories for this cohort. Depressive symptoms are increasing earlier in the life course for this cohort than they have for other cohorts, and therefore the mental health trajectories of this cohort may greatly differ from previous cohorts because of the COVID-19 pandemic. Future research should examine the impact of stimulus payments on mental health, and other mental health outcomes such as anxiety and stress should also be examined to determine how they correlate with changes in economic circumstances. Finally, these findings provide insight for policy makers to understand how economic relief could be employed to reduce the negative impact of COVID-19 on mental health.

REFERENCES

Acs, G., and M. Karpman. 2020. *Employment, Income, and Unemployment Insurance during the Covid-19 Pandemic*. Urban Institute.

(<https://www.urban.org/research/publication/employment-income-and-unemployment-insurance-during-covid-19-pandemic>)

Arenas-Arroyo, Esther, Daniel Fernandez-Kranz, and Natalia Nollenberger. 2021. “Intimate Partner Violence under Forced Cohabitation and Economic Stress: Evidence from the COVID-19 Pandemic.” *Journal of Public Economics* 194(104350):104350. doi: 10.1016/j.jpubeco.2020.104350

Bendau, Antonia, Moritz Bruno Petzold, Lena Pyrkosch, Lea Mascarell Maricic, Felix Betzler, Janina Rogoll, Julia Große, Andreas Ströhle, and Jens Plag. 2021. “Associations between COVID-19 Related Media Consumption and Symptoms of Anxiety, Depression and COVID-19 Related Fear in the General Population in Germany.” *European Archives of Psychiatry and Clinical Neuroscience* 271(2):283–91. doi: 10.1007/s00406-020-01171-6

Chen, F., D. Zheng, J. Liu, Y. Gong, Z. Guan, and D. Lou. 2020. “Depression and Anxiety among Adolescents during COVID-19: A Cross-Sectional Study.” *Brain, Behavior, and Immunity*, 88. doi: 10.1016/j.bbi.2020.05.061

Drentea, P. 2000. “Age, Debt and Anxiety.” *Journal of Health and Social Behavior* 41(4):437–50. doi: 10.2307/2676296

Elder, Glen H., Jr. 1974. *Children of the Great Depression: Study in Social Structure and Personality*. Chicago, IL: University of Chicago Press.

Elder, Glen H., Jr. 1998. “The Life Course as Developmental Theory.” *Child Development* 69(1):1–12. doi: 10.1111/j.1467-8624.1998.tb06128.x

- Elder, Glen H., Jr. 1994. "Time, Human Agency, and Social Change: Perspectives on the Life Course." *Social Psychology Quarterly* 57(1):4. doi: 10.2307/2786971
- Emerson, Natacha D., Gary W. Small, David A. Merrill, Stephen T. Chen, Fernando Torres-Gil, and Prabha Siddarth. 2018. "Behavioral Risk Factors for Self-Reported Depression across the Lifespan." *Mental Health & Prevention* 12:36-41 doi: 10.1016/j.mhp.2018.09.002
- Ettman, Catherine K., Salma M. Abdalla, Gregory H. Cohen, Laura Sampson, Patrick M. Vivier, and Sandro Galea. 2020. "Prevalence of Depression Symptoms in US Adults before and during the COVID-19 Pandemic." *JAMA Network Open* 3(9): doi: 10.1001/jamanetworkopen.2020.19686
- Gaitens, Joanna, Marian Condon, Eseosa Fernandes, and Melissa McDiarmid. 2021. "COVID-19 and Essential Workers: A Narrative Review of Health Outcomes and Moral Injury." *International Journal of Environmental Research and Public Health* 18(4):1446. doi: 10.3390/ijerph18041446
- Galea, S., & Abdalla, S. M. (2020). COVID-19 pandemic, unemployment, and civil unrest: underlying deep racial and socioeconomic divides. *Jama*, 324(3), 227-228. doi: 10.1001/jama.2020.11132
- Han, Yang, Victor O. K. Li, Jacqueline C. K. Lam, Peiyang Guo, Ruiqiao Bai, and Wilton W. T. Fok. 2020. "Who Is More Susceptible to Covid-19 Infection and Mortality in the States?" *BioRxiv*. doi: 10.1101/2020.05.01.20087403
- Hargrove, T. W., C. T. Halpern, L. Gaydos, J. M. Hussey, E. A. Whitsel, N. Dole, R. A. Hummer, and K. M. Harris. 2020. "Race/Ethnicity, Gender, and Trajectories of Depressive Symptoms across Early-and Mid-Life among the Add Health

- Cohort.” *Journal of Racial and Ethnic Health Disparities* 7(4):619–629. doi: 10.1007/s40615-019-00692-8
- Hyland, Philip, Mark Shevlin, Jamie Murphy, Orla McBride, Robert Fox, Kristina Bondjers, Thanos Karatzias, Richard P. Bentall, Anton Martinez, and Frédérique Vallières. 2021. “A Longitudinal Assessment of Depression and Anxiety in the Republic of Ireland before and during the COVID-19 Pandemic.” *Psychiatry Research* 300(113905):113905. doi: 10.1016/j.psychres.2021.113905
- Islam, S. M. Didar-Ul, Md Bodrud-Doza, Rafid Mahmud Khan, Md Abidul Haque, and Mohammed A. Mamun. 2020. “Exploring COVID-19 Stress and Its Factors in Bangladesh: A Perception-Based Study.” *Heliyon* 6(7). doi: 10.1016/j.heliyon.2020.e04399
- Li, Junfeng, Zhiyun Yang, Hui Qiu, Yu Wang, Lingyu Jian, Junjun Ji, and Kefeng Li. 2020. “Anxiety and Depression among General Population in China at the Peak of the COVID-19 Epidemic.” *World Psychiatry: Official Journal of the World Psychiatric Association (WPA)* 19(2):249–50. doi: 10.1002/wps.20758
- Lieberman-Cribbin, Wil, Stephanie Tuminello, Raja M. Flores, and Emanuela Taioli. 2020. “Disparities in COVID-19 Testing and Positivity in New York City.” *American Journal of Preventive Medicine* 59(3):326–32. doi: 10.1016/j.amepre.2020.06.005
- Manning, Wendy, Monica Longmore, Peggy Giordano, and Cameron Douthat. Forthcoming. “Health Starting-Points: Continuity and Change in Physical and Mental Health Before and During the Pandemic.”

- Mirowsky, John, and Catherine E. Ross. 1999. "Economic Hardship across the Life Course." *American Sociological Review* 64(4):548. doi: 10.2307/2657255
- Pearlin, L. I., and M. M. Skaff. 1996. "Stress and the Life Course: A Paradigmatic Alliance." *The Gerontologist* 36(2):239–47. doi: 10.1093/geront/36.2.239
- Pfefferbaum, Betty, and Carol S. North. 2020. "Mental Health and the Covid-19 Pandemic." *The New England Journal of Medicine* 383(6):510–12. doi: 10.1056/NEJMp2008017
- Pruchno, Rachel, Allison R. Heid, and Maureen Wilson-Genderson. 2017. "The Great Recession, Life Events, and Mental Health of Older Adults." *International Journal of Aging & Human Development* 84(3):294–312. doi: 10.1177/0091415016671722
- Rabe-Hesketh, S., and A. Skrondal. 2008. "Multilevel and Longitudinal Modeling Using Stata."
- Radloff, L. S. 1977. "The CES-D Scale: A Self-Report Depression Scale for Research in the General Population." *Applied Psychological Measurement* 1(3):385–401. doi: 10.1177/014662167700100306
- Reising, Michelle M., Kelly H. Watson, Emily J. Hardcastle, Mary Jane Merchant, Lorinda Roberts, Rex Forehand, and Bruce E. Compas. 2013. "Parental Depression and Economic Disadvantage: The Role of Parenting in Associations with Internalizing and Externalizing Symptoms in Children and Adolescents." *Journal of Child and Family Studies* 22(3):335–43. doi: 10.1007/s10826-012-9582-4
- Rodriguez, E., E. A. Frongillo, and P. Chandra. 2001. "Do Social Programmes Contribute to Mental Well-Being? The Long-Term Impact of Unemployment on Depression in the

- United States.” *International Journal of Epidemiology* 30(1):163–70. doi: 10.1093/ije/30.1.163
- Ross, Catherine E. 2000. “Neighborhood Disadvantage and Adult Depression.” *Journal of Health and Social Behavior* 41(2):177. doi: 10.2307/2676304
- Salk, Rachel H., Janet S. Hyde, and Lyn Y. Abramson. 2017. “Gender Differences in Depression in Representative National Samples: Meta-Analyses of Diagnoses and Symptoms.” *Psychological Bulletin* 143(8):783–822. doi: 10.1037/bul0000102
- Solomou, Ioulia, and Fofi Constantinidou. 2020. “Prevalence and Predictors of Anxiety and Depression Symptoms during the COVID-19 Pandemic and Compliance with Precautionary Measures: Age and Sex Matter.” *International Journal of Environmental Research and Public Health* 17(14):4924. doi: 10.3390/ijerph17144924
- Wanberg, Connie R., Borbala Csillag, Richard P. Douglass, Le Zhou, and Michael S. Pollard. 2020. “Socioeconomic Status and Well-Being during COVID-19: A Resource-Based Examination.” *The Journal of Applied Psychology* 105(12):1382-96 doi: 10.1037/apl0000831
- Yao, Rui, W. Wu, and C. Mendenhall. 2021. “Mental Disorders Associated with COVID-19 Related Unemployment.” (<https://hdl.handle.net/10355/82661>)
- Zhang, Dayong, Min Hu, and Qiang Ji. 2020. “Financial Markets under the Global Pandemic of COVID-19.” *Finance Research Letters* 36(101528):101528. doi: 10.1016/j.frl.2020.101528

TABLES

Table 1a: Means/ Percentages and Standard Deviations for Depression, Economic Hardship, and the Receipt of Public Assistance (N = 763)

<i>Dependent Variable</i>	<i>Full Sample</i>		Min	Max	<i>T-Test</i>	
	Mean/%	(SD)			Diff	
Pre-Pandemic Depression	2.18	(1.48)	1.00	8.00		
Pandemic Depression	2.64	(1.67)	1.00	8.00		
Mean Difference					0.46	***
<i>Independent Variables</i>						
Pre-Pandemic Economic Hardship	0.93	(1.45)	0.00	6.00		
Pandemic Economic Hardship	0.64	(1.20)	0.00	6.00		
Mean Difference					-0.30	***
Pre-Pandemic Public Assistance	0.46	(0.83)	0.00	5.00		
Pandemic Public Assistance	0.60	(0.80)	0.00	5.00		
Mean Difference					0.13	***
Pre-Pandemic UI	10.00%	(0.30)	0.00	1.00		
Pandemic UI	30.00%	(0.46)	0.00	1.00		
Mean Difference					0.20	***

*Levels of significance: *** p<.001, ** p<.01 * p<.05 ^ p<.10*

Source: Toledo Adolescent Relationship Study

Note: UI = Unemployment Insurance

Table 1b: Continuity and Change in Key Variables

	Decrease	Same	Increase	Total
Depression	29.10%	10.88%	60.03%	100.00%
Economic Hardship	26.74%	59.90%	13.37%	100.00%
Receipt of Public Assistance	12.06%	61.99%	25.95%	100.00%
Unemployment Insurance	4.72%	70.25%	25.03%	100.00%

Source: Toledo Adolescent Relationship Study

Table 2: Fixed-Effects Models Regressing Depression on Economic Hardship and the Receipt of Public Assistance (N=763)

	<i>Model 1</i>			<i>Model 2</i>		
	B	SE		B	SE	
Economic Hardship	0.08	(0.04)	*	0.07	(0.04)	*
Receipt of Public Assistance	-0.12	(0.07)	^			
Unemployment Insurance				-0.21	(0.10)	*
Time	0.54	(0.05)	***	0.53	(0.06)	***
Intercept	2.16	(0.06)	***	2.13	(0.05)	***

*Levels of significance: *** $p < .001$, ** $p < .01$, * $p < .05$, ^ $p < .10$*

Source: Toledo Adolescent Relationship Study