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## Picture Perfect During a Pandemic? Body Image Concerns and Depressive Symptoms in U.S. Adolescent Girls During the COVID-19 Lockdown

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### Abstract

The stay-at-home orders of the COVID-19 pandemic disrupted U.S. adolescents' lives in numerous ways during the spring of 2020, including substantial changes to in-person routines and increased reliance on digital media. For adolescent girls, stay-at-home practices may have implications for body image concerns. In this research brief, we examine adolescent girls' pandemic-related body image concerns and longitudinal associations with depressive symptoms. The sample included 93 U.S. adolescent girls ( $M_{age} = 15.01$ ; 68.8% White), with approximately 2/3 at temperamental risk for depression. Participants self-reported their depressive symptoms and pandemic-related body image concerns via online surveys at three assessments: Time 1 occurred in April/May 2020, approximately one month into stay-at-home orders, followed by two-week and seven-month follow-up assessments. Two pandemic-related body image concerns were assessed: (1) concerns about disrupted appearance-management routines and (2) evaluating one's appearance on video-chat. Both forms of pandemic-related body image concerns predicted depressive symptoms two weeks later, and concerns about disrupted routines also predicted depressive symptoms seven months later. In an era of social distancing, frequent technology-based interactions, and disrupted routines, future work should continue to investigate adolescents' body image concerns and the implications for longer-term mental health outcomes.

### Keywords

Adolescence; body image; depression; social media; COVID-19

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People of all ages were impacted by the COVID-19 stay-at-home orders in the spring of 2020, but the pandemic may have uniquely affected adolescents' wellbeing. Adolescence is a developmental period characterized by identity exploration, increased self-consciousness, and heightened importance of peer relationships (Dahl et al., 2018). One key dimension

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of identity and self-esteem for adolescent girls involves *body image*—how individuals feel about their physical appearance, including facial and body-related attractiveness. Although many boys also struggle with body image, the increase in body image concerns during the transition from childhood to adolescence is especially marked among girls, due to a complex set of biological, interpersonal, and sociocultural influences (Markey, 2010). Longitudinal research has demonstrated that body image concerns predict subsequent depressive symptoms among adolescent girls (Murray et al., 2018). Among the many disruptions to daily life in the spring of 2020, two key ways that COVID-19 stay-at-home orders may have affected girls' body image concerns were through disruptions to appearance-management routines (e.g., gym and salon closures), and through increased use of video-chat digital technologies. The goal of this research brief was to examine U.S. adolescent girls' pandemic-related body image concerns surrounding video-chat use and disrupted routines, and their implications for depressive symptoms two weeks and seven months later.

## Objectification Theory and Adolescent Girls' Body Image Concerns

The effects of sociocultural appearance ideals on adolescents' body image and subsequent depressive symptoms were well-documented prior to the pandemic. One leading sociocultural theory of women's and girls' body image concerns is *objectification theory*, which proposed that in a culture that sexualizes women's bodies (i.e., U.S.), women and girls learn to over-value their physical appearance and to monitor their bodies for adherence to cultural beauty standards (Fredrickson & Roberts, 1997). This theory also proposed that these *self-objectification* experiences increase the risk for mental health concerns, including depression. In the two decades since this theory was proposed, many empirical studies have now linked adolescent girls' self-objectification to heightened depressive symptoms (see Daniels et al., 2020).

Related to objectification theory, many girls learn to think of their bodies as “projects,” engaging in beauty or weight control behaviors (e.g., hair and makeup; workouts), with the goal of achieving societal beauty ideals (Valois et al., 2003). The importance adolescent girls place on their appearance predicts heightened depressive symptoms (Murray et al., 2018). Stay-at-home orders likely disrupted girls' appearance-management routines, as recently noted in a call for research (Rodgers et al., 2020), and supported by empirical work with adults (Pikoos et al., 2020). However, empirical investigations have not yet explored this possibility among adolescents or examined its implications for depressive symptoms. Additionally, objectification theory and related theories emphasize girls' and women's tendency to engage in surveillance (monitoring and checking) of their faces and bodies, and to have an objectified consciousness of their physical appearance (Fredrickson & Roberts, 1997; McKinley & Hyde, 1996), which may have been magnified during the rapid rise in video-chat use when stay-at-home orders took effect (Lorenz et al., 2020). Given evidence that young women experience increased body image and mood concerns after exposure to their own facial appearance in mirrors (Veale et al., 2016), video-chat may increase adolescent girls' body image concerns and subsequent depressive symptoms in ways that are not yet understood.

## Body Image Concerns and Digital Technology Use During COVID-19

Adolescents' use of digital technologies, including video-chat, increased once stay-at-home orders began (Common Sense Media, 2020). According to the *transformation framework* of adolescent social media use, image- and video-based social technologies are characterized by several key features that distinguish them from in-person interactions, including their visual nature and “24/7” availability (Nesi et al., 2018). These features may lead girls to be conscious of the digital audience and concerned about feeling “camera-ready,” which has been linked to body image concerns and depressive symptoms (Choukas-Bradley et al., 2020).

Video-chat (i.e., “video calls”/ “videoconferencing”) is a specific type of digital technology in which individuals can see and hear one another in a dyadic or group context. Whereas photo-based social media (e.g., Instagram) may lead girls to imagine a hypothetical audience of peers (Choukas-Bradley et al., 2020), during video-chat, adolescents are constantly exposed to their audience. Unlike in face-to-face in-person interactions, video-chat platforms have a default setting in which the individual is exposed to a video of their own face throughout the interaction. The increase in video-chat use during the pandemic may have heightened adolescents' exposure to their own self-image. In setting a COVID-19 research agenda, Rodgers and colleagues (2020) highlighted the need to understand the “effects of ‘looking in the mirror’ repeatedly while talking to others” (p. 1168) through video-chat.

It is also possible that stay-at-home orders affected some girls' body image concerns more directly, if they could not engage in their typical appearance-management routines, such as going to the gym or hair salon. In a society that socializes teen girls to prioritize their physical appearance (Fredrickson & Roberts, 1997), it may be distressing to experience disruptions in appearance-management routines. One study of predominantly women in Australia found that some participants were distressed by the closure of beauty services during the pandemic, with implications for appearance-related behaviors, and many adults identified a new appearance concern while on video-chat, primarily on their faces (Pikoos et al., 2021). Furthermore, research with U.S. women found that self-objectification moderated the association between time spent video-chatting and both facial and appearance satisfaction (Pfund et al., 2020). However, we are unaware of prior work examining links between adolescents' pandemic-related body image concerns and depressive symptoms.

### The Current Study

We assessed pandemic-related body image concerns and depressive symptoms in a sample of adolescent girls oversampled for depression risk, at three time points: 1) April/May 2020, approximately one month after stay-at-home orders began; 2) two weeks later, providing a unique perspective on the early impacts of the pandemic before adolescents could have habituated to the implemented health guidelines; and 3) seven months after Time 1, between November 2020 and January 2021. We examined two key pandemic-related body image concerns that may have affected mental health: (1) concerns about appearance changes related to disrupted routines; (2) evaluating one's appearance during video-chat. The following hypotheses guided our analyses:

**Hypothesis 1:**

Pandemic-related body image concerns, specifically **(H1a)** concerns about disrupted appearance management routines and **(H1b)** evaluating one's appearance on video chat, would be associated with adolescent girls' concurrent depressive symptoms at the beginning of the pandemic.

**Hypothesis 2:**

Pandemic-related body image concerns, specifically **(H2a)** concerns about disrupted appearance management routines and **(H2b)** evaluating one's appearance on video chat, would longitudinally predict adolescent girls' depressive symptoms at two-week and seven-month follow-up assessments.

**Method****Participants and Procedures**

Participants were 93 girls aged 12–17 ( $M_{age}=15.01$ ,  $SD=1.21$ ) recruited from a longitudinal study on the development of depression (Hamilton et al., 2021). Participants were 68.8% White (non-Hispanic), 17.2% Black (non-Hispanic), 2.2% Asian, 8.6% Biracial, and 3.2% other race/ethnicity. Average total family income was \$107,859.15 ( $SD=\$60,554.41$ ). We oversampled girls with shy/fearful temperament (a risk factor for adolescent depression; Karevold et al., 2009), to capture greater variability in depressive symptoms. Approximately two-thirds of the sample (63%) were identified as at-risk for depression based on shy/fearful temperament. Eligibility requirements included no previous diagnosis of depressive, psychotic, neurodevelopmental, or anxiety disorders (except specific phobia) at the time of recruitment for the larger study.

Recruitment for the current study occurred in April/May 2020 in Pittsburgh, Pennsylvania (United States), roughly one month after stay-at-home orders were implemented, including state-ordered closure of all schools. Interested families provided parent consent and adolescent assent online. Participants who had moved outside of the study's metropolitan region ( $n=2$ ) were required to be under similar stay-at-home orders in order to participate. Participants completed measures online at three timepoints. Time 2 and Time 3 occurred approximately two weeks ( $M_{days}=12.27$ ,  $SD=3.17$ ) and seven months ( $M_{days}=210.56$ ,  $SD=15.35$ ) after Time 1, respectively. Adolescents were reconsented at Time 3 if they had turned 18.

No participants, nor their parents nor siblings, tested positive for COVID-19 at Times 1 or 2. At Time 3, three participants reported having tested positive and four participants reported that a parent and/or sibling tested positive. No participant's parent or sibling died from COVID-19 during the study. All procedures were approved by the University's Human Research Protection Office.

**Measures**

**Pandemic-related body image concerns.**—Participants were instructed to report on their experiences "...related to the Coronavirus or COVID-19 outbreak DURING

THE PAST 2 WEEKS.” Two items were developed for the study (no pre-existing items were available). The first item assessed *concerns about disrupted appearance-management routines*: “How concerned are you about changes to your physical appearance related to stay-at-home orders/guidelines (for example, concerns about not going to the gym, changes in eating habits, or not being able to go to salons)?” (four-point response scale: 1=*not at all concerned* to 4=*very concerned*). A second item assessed *evaluating appearance during video-chat*: “How much do you find yourself evaluating or judging your appearance when looking at your face on the screen during videoconferencing or video chat (i.e. Zoom, Skype, Google Meet, Facetime, Houseparty, etc.)?” (1=*not at all* to 4=*very much*).

**Depressive Symptoms.**—Participants completed the Mood and Feelings Questionnaire-Child Version (MFQ-C, 33 items; Angold et al., 1987), which has adequate validity for use with clinical and non-clinical adolescent samples (Daviss et al., 2006). For each item, participants indicated how often they felt this way over the past two weeks on a three-point scale (0=*almost never*, 1=*sometimes*, 2=*often*). All MFQ-C items were summed to create a total score. Internal consistency in this sample was excellent ( $\alpha=.90-92$  for Assessments 1–3).

**Covariates.**—Participants reported on their *social distancing compliance* at Time 1: “In the past 2 weeks, how often have you complied (followed the recommended rules) with the social distancing or shelter-in-place restrictions put in place in your community?”; 1=*Never* to 5=*Always*. Participants reported on their *COVID-related financial disruptions* at each assessment: “What changes in employment or income have occurred in your household due to COVID-19? Check all that apply”; a dichotomized item was created to indicate 0=*no disruptions* or 1=*1 or more disruptions* (e.g., job loss by caregiver, difficulty paying bills).

## Results

There were no missing data for any primary variables at Times 1 or 2. Five participants did not complete Time 3. There were no significant differences in depressive symptoms, pandemic-related body image concerns, age, or race/ethnicity between those who completed all assessments and those who did not. For models with Time 3 data, only participants with complete data were included ( $n = 88$ ).

Descriptive statistics and bivariate correlations for primary variables appear in Table 1. At each assessment, 24%, 17%, and 22% of the sample, respectively, endorsed depressive symptoms indicating the possible presence of a mood disorder (score  $\geq 20$  on MFQ-C; Daviss et al., 2006).

To test Hypothesis 1, we conducted multiple linear regressions to examine concurrent associations between each body image concern and depressive symptoms at Time 1, controlling for age, financial disruptions, and social distancing (see Table 2). Consistent with H1a, concerns about disrupted appearance-management routines were significantly, positively associated with depressive symptoms, with a small effect size. Consistent with H1b, evaluating appearance during video-chat was also significantly, positively associated with depressive symptoms, with a large effect size.

To test Hypothesis 2, we conducted linear regressions to examine longitudinal associations between each Time 1 pandemic-related body image concern and depressive symptoms at Times 2 and 3, respectively (see Table 2). Analyses controlled for Time 1 depressive symptoms, age, financial disruptions, and social distancing. Consistent with H2a, concerns about disrupted appearance-management routines predicted higher depressive symptoms both two weeks later (small effect size) and seven months later (small-to-medium effect size). Providing partial support for H2b, evaluating one's appearance during video-chat predicted higher depressive symptoms two weeks later (small effect size), but not seven months later.

Sensitivity analyses were conducted to probe the robustness of these findings. Three sets of models were run, each including one of the following dichotomous covariates: (1) depression risk status (at-risk/not-at-risk, based on shy/fearful temperament); (2) parent/sibling tested positive for COVID-19 (yes/no); (3) participant tested positive (yes/no). The same pattern of results emerged in all models with these additional covariates. Furthermore, the pattern of results remained the same when controlling for race/ethnicity. For parsimony, we only included age, financial disruptions, and social distancing compliance in our final models.

## Discussion

This preliminary investigation examined adolescent girls' pandemic-related body image concerns surrounding their digital media use and disrupted appearance routines at the beginning of stay-at-home orders, and the implications of these concerns for depressive symptoms concurrently and over time. Our findings are consistent with pre-pandemic research documenting links between body image concerns and depressive symptoms (e.g., Murray et al., 2018) and between appearance-focused social media cognitions and depressive symptoms (e.g., Choukas-Bradley et al., 2020). Specifically, we found that pandemic-related body image concerns were associated with higher levels of adolescent girls' depressive symptoms both concurrently and two weeks later. Furthermore, concerns about disrupted appearance-management routines were associated with higher depressive symptoms seven months later. This is the first study to our knowledge to examine adolescents' body image concerns specifically related to a pandemic.

Consistent with processes proposed by Rodgers and colleagues (2020), results indicate that some adolescents may have devoted cognitive resources toward their digital appearance, perhaps in an effort to navigate the "new normal." Individual differences in self-presentational concerns may help explain for whom pandemic-related experiences impacted mental health. Recent research with U.S. adults suggests that higher levels of self-objectification may exacerbate the association between time spent video-chatting and facial and body appearance dissatisfaction, and that women who spend more time looking at their own faces during video-chat may also engage in higher appearance comparisons (Pfund et al., 2020). While preliminary, our findings highlight the importance of further investigations of adolescents' use of video-chat. For example, future work could use eye-tracking technology to examine whether self-focused attention during video-chat is associated with mental health.



Our findings also indicate that stay-at-home orders may affect some adolescents' body image more directly, due to the inability to engage in typical appearance-management strategies such as going to the gym or hair salon. A study of reactions to the COVID-driven closure of beauty services among Australian adults underscored the importance of considering individual differences (Pikoos et al., 2020). In a sample of predominantly women, participants who were high in body dysmorphic concerns reported greater distress over the closure of beauty services during the COVID-19 lockdown and also reported that their engagement in appearance-focused behaviors (e.g., grooming, mirror checking) remained high, whereas those low in body dysmorphic concerns reported *decreases* in appearance-focused behaviors during this period (Pikoos et al., 2020).

While the current study provides evidence that adolescent girls' pandemic-related body image concerns were associated with increases in depressive symptoms within the first few months of the pandemic, the effects on mental health may have become exacerbated as the pandemic continued. For example, COVID-19 impacted individuals' access to resources for treating eating disorders (Weissman et al., 2020). As adolescent body image concerns can have long-term effects (Wang et al., 2019), preventing the development of pandemic-related body image concerns should be a priority.

Furthermore, implications may extend beyond body image and mental health. For example, if adolescents are distracted by monitoring their appearance during video-chat, this might affect their educational outcomes in an era of online learning. On the other hand, because we only found short-term longitudinal associations between evaluating one's appearance on video-chat and depressive symptoms over a brief two-week period, it is possible that adolescents acclimated to video-chat interactions. Interestingly, an evidence-based therapeutic technique for improving body image is "mirror exposure," in which individuals systematically observe themselves in a nonjudgmental manner, leading to acclimation and decreased body image concerns (Delinsky & Wilson, 2006).

### Limitations and Future Directions

Although this study provides a unique snapshot of adolescent girls' body image concerns at the beginning of the COVID-19 pandemic, future studies will need to address its limitations. First, this study relied on a small U.S. sample of predominantly White cisgender girls participating in a larger study of the development of internalizing disorders. Relatedly, the present sample was of relatively high socioeconomic status and may not represent adolescents whose families experienced significant pandemic-related financial stress. Further work will need to assess pandemic-related body image concerns among larger samples of adolescents from a broader range of nations, racial/ethnic and socioeconomic backgrounds, and diverse gender identities. Given the disproportionate impact of COVID-19 on people of color (Webb Hooper et al., 2020), research on differential mental health impacts is critical.

Limitations related to variables and assessments also must be considered. We developed a brief set of two items to assess pandemic-related body image concerns. However, future research should include items that assess a broader range of pandemic-related body image concerns, which should be tested alongside validated body image and media use

measures. Because we did not include validated body image measures in our study, we were unable to compare general and pandemic-specific body image concerns. We argue that the period of spring 2020 stay-at-home orders represented a unique period when beauty-related routines were especially disrupted, but pandemic-related alterations to schedules and social interactions may continue to affect body image. Important areas for future inquiry include understanding whether pandemic-related appearance concerns predict girls' body dissatisfaction and disordered eating over longer periods of time, disentangling whether pandemic-specific or more general processes explain our findings, and understanding the pandemic's effects on the body image of adolescent boys.

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## Biographical Notes

**Sophia Choukas-Bradley, Ph.D.**, is an Assistant Professor of Psychology at the University of Delaware. She will return to the University of Pittsburgh in 2022. Her research focuses on sociocultural influences on adolescent mental health, with an emphasis on gender and sexuality. She is especially passionate about understanding social media and gender influences on adolescents' body image. She was recently recognized as a Rising Star by the Association for Psychological Science.

**Anne J. Maheux, M.S.**, is a doctoral student in Development and Social Psychology in the Department of Psychological and Brain Sciences at the University of Delaware. Anne received her B.A. in Psychology from the University of Vermont in 2015 and her M.S. in Psychology from the University of Pittsburgh in 2020. Her research examines sociocultural influences on adolescent development with a focus on gender, sexuality, mental health, and academic disparities.

**Savannah R. Roberts, B.S., B.A.**, is a Ph.D. student in Clinical Science at the University of Delaware. Previously, she graduated magna cum laude with a B.S. in Psychology and B.A. in Spanish Language and Literature from Western Washington University, where she researched the effect of gender on perceptions of anorexia nervosa. Savannah is interested in studying the sociocultural factors that contribute to disordered eating in adolescence, particularly as they affect LGBTQ+ youth.

**Emily A. Hutchinson, B.S.**, is a doctoral student in the joint Clinical-Developmental Psychology Ph.D. program at the University of Pittsburgh. She holds a B.S. degree in Psychology from the University of Pittsburgh. Her research focuses on interpersonal and neurobiological factors that contribute to the development of adolescent suicidal thoughts



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**Celine Lu, B.A.**, is a post-baccalaureate research coordinator in the Department of Psychology at the University of Pittsburgh. Her research interests focus on the dissemination and implementation of evidence-based treatments and practices with underserved youth in community mental health settings. She is particularly interested in understanding evidence-based strategies to support community providers in serving diverse clients' needs. She plans to pursue a Clinical Psychology Ph.D. to further her research career.

**Cecile D. Ladouceur, Ph.D.**, is Professor of Psychiatry and Psychology at the University of Pittsburgh. Her research program focuses on the development of neural networks implicated in emotion processing and regulation with a focus on pubertal maturation as a way to understand neurodevelopmental pathways of anxiety or mood disorders. Dr. Ladouceur was named a Fellow of the Association for Psychological Science.

**Jennifer S. Silk, Ph.D.**, is Professor of Psychology and Psychiatry at the University of Pittsburgh. Her research focuses on the development and treatment of anxiety and depression in adolescence, with a focus on neurobiological and social-contextual influences on emotional reactivity and regulation. Dr. Silk was named a Fellow of the Association for Psychological Science and was recognized at the White House as a winner of the National Behavioral Health Patient Empowerment Challenge.

### Data availability statement:

The data that support the findings of this study are available from the corresponding author upon reasonable request, following completion of a data sharing agreement.

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### Impact Summary

**Prior State of Knowledge:**

The spring 2020 COVID-19 lockdown substantially disrupted U.S. adolescents' lives. Prior research indicated that disruptions related to stay-at-home orders may have increased some adults' body image concerns. Additionally, research pre-pandemic linked body image concerns with adolescent girls' depressive symptoms.

**Novel Contributions:**

We found that two pandemic-related body image concerns—evaluating one's appearance on video-chat, and concerns about changes to appearance through disruptions in routines (e.g., gym and salon closures)—were associated with higher depressive symptoms among U.S. adolescent girls.

**Practical Implications:**

Parents and practitioners should assess whether adolescent girls are experiencing distress related to disrupted routines and increased video-chat use. Policymakers should continue to consider the best strategies for mitigating negative social media effects on girls' body image and depressive symptoms.

**Table 1.**

Descriptive Statistics, Bivariate Correlations, and Comparisons for Primary Study Variables Across Times 1, 2, and 3

Items/Scale	<i>M (SD)</i>			
Pandemic-related body image concerns				
Concerns about disrupted appearance-management routines	1.95 (.84)			
Evaluating appearance during video-chat	2.09 (.93)			
Depressive Symptoms				
Depressive Symptoms: Time 1	12.53 (9.05)			
Depressive Symptoms: Time 2	10.56 (8.71)			
Depressive Symptoms: Time 3	12.21 (11.78)			
<b>Bivariate Correlations</b>	1	2	3	4
1 Concerns about disrupted appearance-management routines: Time 1	-			
2 Evaluating appearance during video-chat: Time 1	.22*	-		
3 Depressive symptoms: Time 1	.26*	.40***	-	
4 Depressive symptoms: Time 2	.35***	.42***	.69***	-
5 Depressive symptoms: Time 3	.45***	.35***	.67***	.58***

<sup>†</sup> p < .10

\* p < .05

\*\* p < .01

\*\*\* p < .001.

**Table 2.**

## Associations Between Pandemic-related Body Image Concerns and Depressive Symptoms

	Depressive symptoms: Baseline (Time 1)			Depressive symptoms: 2-week follow-up (Time 2)			Depressive symptoms: 7-month follow-up (Time 3)		
	$\beta$ (SE)	<i>p</i>	<i>f</i> <sup>2</sup>	$\beta$ (SE)	<i>p</i>	<i>f</i> <sup>2</sup>	$\beta$ (SE)	<i>p</i>	<i>f</i> <sup>2</sup>
Model 1									
Concerns about appearance-management routines at Time 1	.27 (1.12)	.012	.07	.19 (.81)	.017	.07	.25 (1.21)	.003	.13
Social Distancing	-.001 (1.09)	.992	--	.04 (.72)	.590	--	-.07 (1.24)	.357	--
Financial Disruptions	-1.01 (2.12)	.636	--	1.09 (1.38)	.432	--	-.56 (2.03)	.783	--
Age	.12 (1.16)	.269	--	.02 (.18)	.838	--	-.12 (1.22)	.137	--
Depressive Symptoms at Time 1	--	--	--	.64 (.08)	< .001	--	.60 (.11)	< .001	--
Model 2									
Evaluating appearance during video-chat at Time 1	.41 (.95)	< .001	.20	.17 (.78)	.045	.05	.08 (1.15)	.388	.01
Social Distancing	-.06 (1.02)	.574	--	.02 (.72)	.818	--	.04 (1.10)	.653	--
Financial Disruptions	-1.37 (2.00)	.497	--	.84 (1.40)	.549	--	.04 (2.12)	.985	--
Age	.11 (1.10)	.282	--	.02 (.82)	.780	--	-.11 (1.25)	.185	--
Depressive Symptoms at Time 1	--	--	--	.62 (.08)	< .001	--	.65 (.12)	< .001	--

*Note.* All coefficients are standardized except for Financial Disruptions (0 = no pandemic-related financial disruptions, 1 = one or more; 26.9% of the sample reported one or more pandemic-related financial disruptions at Time 1, 32.3% at Time 2, 30.7% at Time 3). Social Distancing and Financial Disruptions for each model were measured at time-point of outcome (e.g., for the analysis examining Time 2 depressive symptoms as the outcome, Time 2 Social Distancing and Financial Disruptions were the independent variables). According to Cohen's conventions, effect sizes (*f*<sup>2</sup>) greater than .15 are considered "medium"; those greater than .35 are considered "large."