



## Sustained mental health and functional responses to the COVID-19 pandemic in Black and White Veterans with psychosis or recent homelessness

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### ABSTRACT

The COVID-19 pandemic disproportionately impacted marginalized populations including Black Americans, people with serious mental illness, and individuals experiencing homelessness. Although the double disadvantage hypothesis would suggest that individuals with multiple minoritized statuses would experience worse psychosocial impacts from the pandemic, this may not be the case for vulnerable Black Veterans. The present study investigated the sustained mental health and functional responses to the pandemic in Black and White Veterans with psychosis or recent homelessness and in a control group of Veterans enrolled in the Department of Veterans Affairs healthcare services. Clinical interviews and questionnaires were administered remotely by telephone at five time points from May 2020 through July 2021, including a retrospective time point for March 2020 (i.e., before the pandemic started). Overall, there was a striking absence of systematic differences by race in the trajectories of psychiatric symptoms and functioning among Veterans during the study period. These findings are consistent with a report on initial responses to the pandemic that revealed only a few select differences by race among Veteran groups. The lack of racial disparities is inconsistent with the double disadvantage hypothesis. Although further investigation is needed, one possible interpretation is that the wrap-around services offered by the Veterans Health Administration may have mitigated expected differences by race among Veterans with psychosis or homelessness. Future research should continue to examine whether VA services mitigate disparities in mental health and psychosocial outcomes.

### 1. Introduction

The COVID-19 pandemic public health emergency had significant impacts on individuals' daily lives, with public health restrictions starting in March 2020 and continuing through different peaks of the SARS-CoV-2 virus spread through 2022. These restrictions, including stay-at-home orders and physical distancing recommendations, had dramatic effects on people's interactions with family and friends, employment (e.g., significant increase of remote work), and living

situations (i.e., housing). The mental health consequences of the COVID-19 pandemic included increased rates of depression, anxiety, loneliness, substance use and suicidal ideation among others (Daly and Robinson, 2021; Salari et al., 2020; Tsai et al., 2021). Although nearly everyone experienced some form of change or disruption in their lives, the impacts of the public health emergency were not equal. Marginalized communities including racial/ethnic minorities, individuals with serious mental illness, and those experiencing housing instability have experienced the brunt of the pandemic's consequences. Due to structural inequities,

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studies indicate Black Americans, individuals with serious mental illness, and people experiencing homelessness experienced higher infection and mortality rates from COVID-19 (Snowden and Graaf, 2020; Yancy, 2020). In addition, Black Americans suffered more economic fallout, including higher job loss and financial insecurity which could lead to increase mental health distress (Snowden and Graaf, 2020). These findings raise the possibility of a double disadvantage in which individuals with multiple disadvantaged or minoritized statuses experienced worse outcomes compared to individuals of a single disadvantaged status (Dowd and Bengtson, 1978).

In May 2020, at the beginning of the COVID-19 pandemic, our research group launched a longitudinal study examining the mental health and functioning of three Veteran groups: (1) Veterans with psychosis (PSY); (2) Veterans who were recently housed (RHV) through the Housing and Urban Development—Veterans Affairs Supportive Housing (HUD-VASH) program, which combines rental assistance with case management and clinical services for homeless Veterans; and (3) a control group of Veterans (CTL) who had no history of psychosis or homelessness (Wynn et al., 2021, 2022). In a previous publication of data collected early in the pandemic, we found selective differences between Black and White Veterans. Specifically, Black Veterans had better family integration and reported more contamination fears compared to White Veterans across groups (Novacek et al., 2022a, b). This finding was consistent with a pre-COVID study from our Center in which we found that Black homeless Veterans had better family integration compared to their White counterparts (Novacek et al., 2022a, b). Although our initial findings were inconsistent with the double disadvantage hypothesis, it remained an open question as to whether these patterns would continue over time as the pandemic unfolded.

Extending from the previous investigation, the current study examined a longer-term, sustained mental health and functional response to the pandemic in Black and White Veterans. We investigated whether there were racial differences in the trajectory of psychiatric symptoms and functioning among Veterans with psychosis, recently homeless Veterans, and Veterans without a history of psychosis or homelessness over four follow-up periods from May 2020 through July 2021. This study was primarily exploratory, however, we expected to continue to see family integration as a relative strength for Black Veterans across groups. Due to availability of wrap-around VA healthcare services, we did not anticipate many differences by race across groups.

## 2. Methods

### 2.1. Sample

Data collection occurred from May 2020 through July 2021. Participants were U.S. military Veterans enrolled in VA healthcare services through the Greater Los Angeles VA Healthcare System. Participants were recruited through two main sources: (1) VA administrative databases from the VA Informatics and Computing Infrastructure (VINCI) platform; and (2) Veterans who had participated in prior studies in our lab and agreed to be contacted for future studies. Selection criteria for the groups were intentionally broad and relied on chart diagnoses from VA medical records. For PSY, participants required a psychotic disorder diagnosis other than substance induced psychosis which was verified in the VA Computerized Patient Record Systems (CPRS). For RHV, participants required a history of homelessness and attainment of housing with a HUD-VASH voucher within the 12 months prior to study enrollment. CPRS and VINCI were used to determine if the RHV participants had a current housing voucher. For the control group, participants required no history of a psychotic disorder or evidence of homelessness based on codes in VINCI and review of medical records. Only participants who self-identified as Black/African American or White were included in the present analyses. Previous publications have examined other aspects of this dataset (McCleery et al., 2023; Wynn et al., 2022), but have not examined whether there were differences by race in the

trajectories of mental health and functioning across vulnerable Veteran groups.

### 2.2. Procedures

Lab research assistants contacted eligible participants by phone. Research assistants provided brief descriptions of the project and then obtained verbal informed consent from participants who agreed to participate. Participants' contact information was provided to clinically trained interviewers who contacted participants to administer clinical interviews and questionnaires via phone. A weekly clinical consensus meeting was held among the interviewers and principal investigators to enhance consistency in clinical ratings.

All data were collected remotely via telephone interviews. Data were collected longitudinally over five assessment periods during the pandemic: a baseline period ("baseline") and four separate follow-ups ("Follow-Up 1", "Follow-Up 2", etc.). Each assessment period lasted approximately two-months. The baseline period occurred between May–July 2020; Follow-Up 1 between August–October 2020; Follow-Up 2 between October–November 2020; Follow-Up 3 between January–February 2021; and Follow-Up 4 between April–July 2021. In addition to these assessments, at the baseline visit participants were asked to provide ratings on several measures in reference to how they were in January 2020 (i.e., prior to the pandemic, which we refer to as "pre-COVID"). These procedures were approved by the local VA Institutional Review Board.

### 2.3. Measures

**Psychosocial Functioning.** The Role Functioning Scale (RFS) (Goodman et al., 1993) provided ratings for four domains of functioning including social connections with friends (social integration), family interactions (family integration), working productivity, independent living/self-care. Ratings were based on a semi-structured interview with standardized probe questions. Each domain is rated on a 1–7 scale, with higher scores indicating better functioning and integration.

**Psychiatric Symptoms.** The Patient Health Questionnaire (PHQ-9) (Kroenke et al., 2001), a 9-item self-report measure, was used to assess depressive symptoms. Participants were asked to indicate whether they experienced any of the queried symptoms within the past month at each interview period or in January 2020 for the pre-COVID estimate. Higher scores indicated the presence of more depressive symptoms. The Generalized Anxiety Disorder 7-item scale (Spitzer et al., 2006) was also administered to assess for generalized anxiety and worry in the past month. Higher scores indicated greater levels of anxiety. For both the PHQ-9 and the GAD-7, participants rated their responses on a scale from "not at all" to "nearly every day" in the past month. In addition, participants completed the five-item "germs and contamination" section of the Dimensional Obsessive-Compulsive Scale (DOCS) to assess for intrusive thoughts, compulsions, avoidance, and functional impairment related to fears of contamination and germs (Abramowitz et al., 2010). Each item had five response options. A greater severity of contamination fears was indicated by higher scores on the DOCS. The UCLA Loneliness Scale was used to assess subjective feelings of loneliness and social isolation (Russell et al., 1980). Participants rated the degree to which they experienced each of the described statements in the past month ranging from "never" to "often". Higher scores indicated higher subjective feelings of loneliness.

### 2.4. Data analysis

Varying coefficient models (VCM), implemented using the generalized additive models (GAM) structure via the mgcv package version 1.8–34 in R version 4.0.5, were used to examine changes over time in the four psychiatric symptoms and the four measures of psychosocial functioning (Wood, 2011). Our analytic approach did not assume a rigid

parametric form due to trends over time being unpredictable across the duration of the pandemic. Thus, we used a time varying coefficient model to examine potential differential trajectories between Black and White Veterans in psychiatric and functional outcomes. With VCM, flexible, smoothed functions are fit to the shape of the trajectories, modeling both the linear and non-linear aspects of the data over time without requiring a priori specification of expected patterns (e.g., linear, quadratic, etc.) (Park et al., 2015).

We analyzed data in reference to the pre-COVID assessment to examine changes in outcomes over time. Individual participants' pre-COVID measures were subtracted from each assessment period to form change scores. Each of our five assessment waves occurred over a period of two to three months, and each subject provided data once within each wave. Hence, the spacing of assessments was irregular across subjects. To take advantage of the differences in timing we modeled the data using actual interview dates rather than the number of the follow-up assessment. Thus, we calculated how many days passed from the day of a participant's interview for each assessment relative to the pre-COVID assessment period (we set this date to March 1, 2020, which was prior to the stay-at-home order in California). For each outcome variable, we then calculated the difference between each follow-up assessment and the baseline score in order to model change relative to the start of the pandemic.

We fit a series of VCMs with each of the clinical or functional factors as the outcome. We started with a large model which included all three participant groups as well as main and time-varying effects of race and group. However, due to a number of time-varying effects detected in the higher order interactions between race and group, we opted to interpret main and time-varying effects of race in models fitted separately for each group (i.e., PSY, RHV, and CTL). Using the group-specific models, we aimed to assess whether the main and time-varying effects differed by race. All models included a subject-specific time-varying random effect to account for correlations among multiple observations per subject over time. Our previous findings that Black Veterans had better family integration compared to White Veterans and other studies indicating that social support from family may be protective against psychological distress (Compton et al., 2005; Lincoln et al., 2003, 2005; Lincoln and Chae, 2012) raised the possibility that family integration might obscure racial differences in clinical outcomes. Therefore, we included family integration as a covariate in the VCM analyses.

For the statistical results of these analyses, we present the F- and p-values for the smooth terms for each within-race effect, along with the F- and p-values for the between-race effects (i.e., by race). We also present smoothed curves for each group separated by race as a function of time for each of the four clinical and functional outcomes.

### 3. Results

#### 3.1. Sample characteristics

Participants enrolled in the study included 103 Black (35 RHV, 40 PSY, 28 CTL) and 98 White Veterans (31 RHV, 29 PSY, 38 CTL) at baseline. 72 Black Veterans (23 RHV, 30 PSY, 19 CTL) and 64 White Veterans (19 RHV, 20 PSY, 25 CTL) completed the final follow-up assessment. As previously reported (Novacek et al., 2022a, b), there were no significant differences between the Black and White samples for age ( $p = 0.290$ ), sex ( $p = 0.109$ ), participant education ( $p = 0.481$ ) or parental education ( $p = 0.562$ ). However, there was a significant group by race interaction for participant education ( $p = 0.037$ ), in that Black RHV and CTL had more years of education than their White counterparts. However, in PSY, White Veterans had slightly higher education.

Due to the number of participants lost between the baseline and final follow-up period, we examined baseline differences between participants who completed the baseline and final follow-up ("completers") versus those who did not make it through the fourth follow-up period ("non-completers") to see if there was anything different about the

participants who dropped out. Independent samples t-tests revealed no significant differences between completers and non-completers in any of the psychiatric symptoms or psychosocial functioning domains.

#### 3.2. Psychiatric symptoms

**Depression.** For depressive symptoms, there was no significant main effect of race ( $t = 0.87, p = 0.38$ ) or time-varying effect of race ( $F = 0.11, p < 0.90$ ) in PSY. For RHV, there was also no significant main effect of race ( $t = 1.77, p = 0.08$ ) or time-varying effect of race ( $F = 0.85, p = 0.43$ ). There was also no significant main effect of race ( $t = -0.82, p = 0.41$ ) or time-varying effect of race ( $F = 1.69, p = 0.14$ ) for CTL.

**Anxiety.** In PSY, there was no significant main effect of race ( $t = 1.09, p = 0.28$ ) or time-varying effect of race ( $F = 0.38, p < 0.69$ ). For RHV, there was also no significant main ( $t = 0.69, p = 0.14$ ) or time-varying effect of race ( $F = 0.50, p = 0.61$ ) on anxiety symptoms. There was also no significant main effect of race ( $t = 0.17, p = 0.87$ ) or time-varying effect of race ( $F = 0.76, p = 0.46$ ) for CTL.

**Loneliness.** There was no significant fixed effect of race ( $t = 0.97, p = 0.33$ ) or time-varying effect of race ( $F = 0.13, p < 0.88$ ) on loneliness in PSY. However, for RHV (see Fig. 1), there was a significant main effect of race ( $t = 2.30, p = 0.02$ ) but not a significant time-varying effect of race ( $F = 2.90, p = 0.06$ ) on loneliness (See Fig. 1) indicating that overall, loneliness improved more in Black Veterans across the time periods. For CTL, there was no significant main effect of race ( $t = -1.63, p = 0.10$ ) or time-varying effect of race ( $F = 0.81, p = 0.44$ ).

**Contamination fears.** For PSY, there was no significant main ( $t = -1.70, p = 0.09$ ) or time-varying effect of race ( $F = 0.17, p < 0.84$ ) on contamination fears. There was also no significant main effect of race ( $t = 0.23, p = 0.82$ ) or time-varying effect of race ( $F = 1.12, p = 0.32$ ) in RHV. For CTL, there was no significant main effect of race ( $t = -0.47, p = 0.60$ ) or time-varying effect of race ( $F = 1.51, p = 0.26$ ) on contamination fears. See Table 1 for psychiatric symptom results.

#### 3.3. Psychosocial functioning

**Family integration.** In PSY (see Fig. 2), there was a significant main effect of race ( $t = -2.20, p = 0.02$ ) on family integration but there was not a time-varying effect of race ( $F = 1.68, p = 0.14$ ). In RHV, there was no significant main effect ( $t = -0.11, p = 0.91$ ) or time-varying effect ( $F = 0.11, p = 0.88$ ) of race on family integration. In CTL (see Fig. 3), there was a significant main effect of race ( $t = 2.01, p = 0.04$ ) on family integration but there was not a time-varying effect of race ( $F = 0.79, p = 0.45$ ). Interpretation of the significant main effect of race for CTL is tempered by the observation that Black Veterans in this group scored

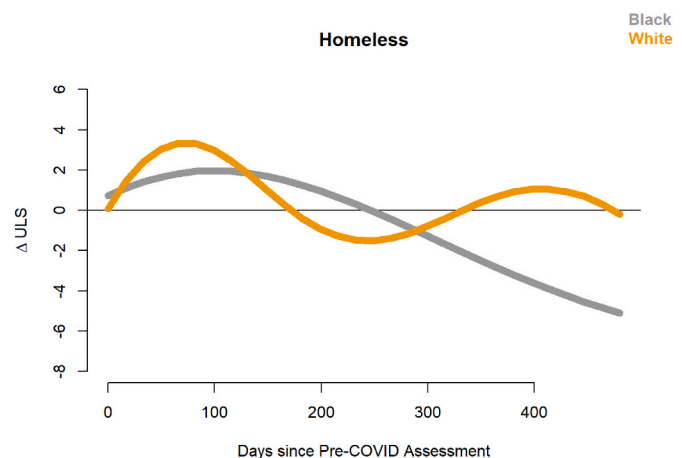


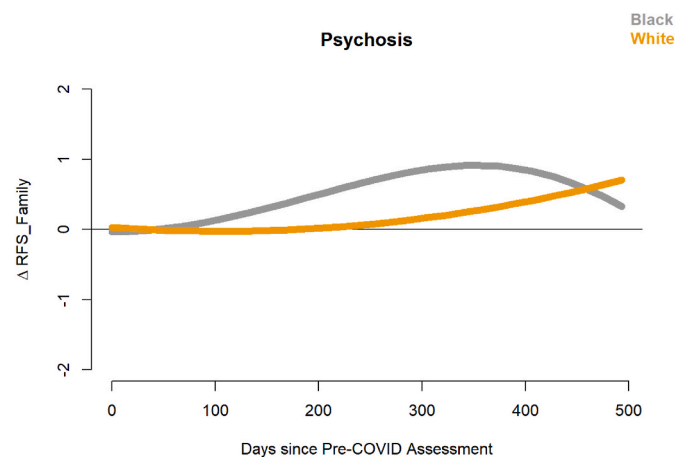
Fig. 1. Results for the VCM analyses of loneliness. The smoothed curves represent the change over time for Black (grey) and White (orange) recently homeless Veterans (RHV).

**Table 1**

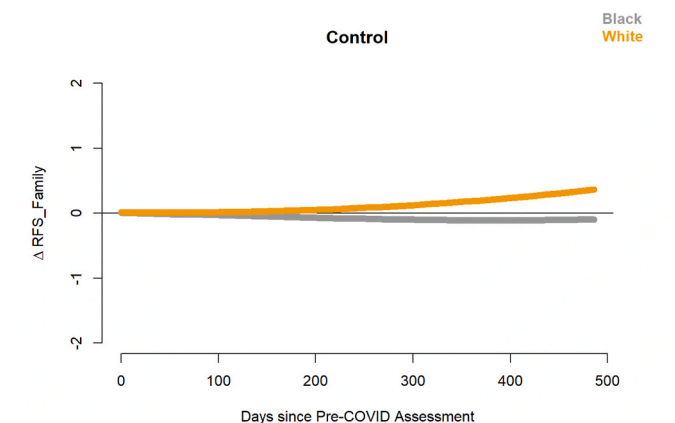
Tests of significance and p-values derived from varying coefficient models (VCM) analyses testing for racial differences in main effects and trajectories over time (i.e., time-varying effects) for mental health outcomes.

		Control	Recently Homeless	Psychosis
<b>Depression</b>	<b>Main</b>	$t = -0.82, p = 0.41$	$t = 1.77, p = 0.08$	$t = 0.87, p = 0.38$
	<b>Time-Varying</b>	$F = 1.69, p = 0.14$	$F = 0.85, p = 0.43$	$F = 0.11, p < 0.90$
<b>Anxiety</b>	<b>Main</b>	$t = 0.17, p = 0.87$	$t = 0.69, p = 0.14$	$t = 1.09, p = 0.28$
	<b>Time-Varying</b>	$F = 0.76, p = 0.46$	$F = 0.50, p = 0.61$	$F = 0.38, p < 0.69$
<b>Loneliness</b>	<b>Main</b>	$t = -1.63, p = 0.10$	$t = 2.30, p = 0.02^*$	$t = 0.97, p = 0.33$
	<b>Time-Varying</b>	$F = 0.81, p = 0.44$	$F = 2.90, p = 0.06$	$F = 0.13, p < 0.88$
<b>Contamination Fears</b>	<b>Main</b>	$t = -0.47, p = 0.60$	$t = 0.23, p = 0.82$	$t = -1.70, p = 0.09$
	<b>Time-Varying</b>	$F = 1.51, p = 0.26$	$F = 0.11, p = 0.88$	$F = 0.17, p < 0.84$

Note. Bolded font with asterisk indicates significant effect.



**Fig. 2.** Results for the VCM analyses of family integration. The smoothed curves represent the change over time for Black (grey) and White (orange) Veterans with psychosis (PSY).



**Fig. 3.** Results for the VCM analyses of family integration. The smoothed curves represent the change over time for Black (grey) and White (orange) control Veterans (CTL).

very high and close to ceiling at baseline (6.4 out of 7); hence, they had very little room to improve. For PSY, we did not see ceiling effects and Black Veterans demonstrated significantly more improvement than White Veterans in family integration.

**Social integration.** In PSY, there was no significant main effect of race ( $t = -0.21, p = 0.83$ ) or time-varying effect of race ( $F = 0.69, p = 0.43$ ) on social integration. For RHV, there was also no significant main effect ( $t = -1.15, p = 0.25$ ) or time-varying effect of race ( $F = 0.28, p = 0.75$ ). There was also no significant main effect of race ( $t = 0.30, p = 0.76$ ) or time-varying effect of race ( $F = 0.05, p = 0.94$ ) on social integration for CTL.

**Work productivity.** There was no significant main effect of race ( $t = -1.32, p = 0.19$ ) or time-varying effect of race ( $F = 1.18, p = 0.31$ ) on work productivity in PSY. For RHV, however, there was a significant main effect of race ( $t = 2.19, p = 0.03$ ) on work productivity but no time-varying effect of race ( $F = 1.04, p = 0.36$ ) indicating that work productivity improved more in White Veterans compared to Black Veterans. There was no significant fixed effect of race ( $t = 1.64, p = 0.10$ ) or time-varying effect of race ( $F = 1.67, p = 0.19$ ) on work productivity for CTL.

**Independent living.** In PSY, there was no significant main effect of race ( $t = -0.90, p = 0.37$ ) or time-varying effect of race ( $F = 0.31, p = 0.73$ ) on independent living. For RHV, there was also no significant main effect of race ( $t = 0.82, p = 0.41$ ) or time-varying effect of race ( $F = 0.11, p = 0.96$ ) on independent living. Similarly, there was not a significant main effect of race ( $t = -0.15, p = 0.88$ ) or time-varying effect of race ( $F = 0.01, p = 0.99$ ) on independent living for CTL. See Table 2 for psychosocial functioning results.

**4. Discussion**

The present study examined whether there were significant differences by race in the sustained mental health and functional responses to the COVID-19 pandemic in three Veteran groups: PSY, RHV, CTL. It also investigated whether patterns in these associations differed across time during a 15-month period of the pandemic from May 2020 through July 2021. Overall, there were no systematic differences by race in psychosocial outcomes among the three Veteran groups across time. There were significant differences for loneliness, family integration, and work productivity which we interpret with caution due to the exploratory nature of the study. In RHV, loneliness improved more in Black Veterans compared to White Veterans. For family integration, we found opposite patterns for the PSY and CTL groups. Specifically, in PSY, Black Veterans demonstrated greater improvement with family integration whereas in CTL White Veterans had more improvement in family integration. For

**Table 2**

Tests of significance and p-values derived from varying coefficient models (VCM) analyses testing for racial differences in main effects and trajectories over time (i.e., time-varying effects) for functional outcomes.

		Control	Recently Homeless	Psychosis
<b>Family Integration</b>	<b>Main</b>	$t = 2.01, p = 0.04^*$	$t = -0.11, p = 0.91$	$t = -2.20, p = 0.02^*$
	<b>Time-Varying</b>	$F = 0.79, p = 0.45$	$F = 0.11, p = 0.88$	$F = 1.68, p = 0.14$
<b>Social Integration</b>	<b>Main</b>	$t = 0.30, p = 0.76$	$t = -1.15, p = 0.25$	$t = -0.21, p = 0.83$
	<b>Time-Varying</b>	$F = 0.05, p = 0.94$	$F = 0.28, p = 0.75$	$F = 0.69, p = 0.43$
<b>Work/Productivity</b>	<b>Main</b>	$t = 1.64, p = 0.10$	$t = 2.19, p = 0.03^*$	$t = -1.32, p = 0.19$
	<b>Time-Varying</b>	$F = 1.67, p = 0.19$	$F = 1.04, p = 0.36$	$F = 1.18, p = 0.31$
<b>Independent Living</b>	<b>Main</b>	$t = -0.15, p = 0.88$	$t = 0.82, p = 0.41$	$t = -0.90, p = 0.37$
	<b>Time-Varying</b>	$F = 0.01, p = 0.99$	$F = 0.11, p = 0.96$	$F = 0.31, p = 0.73$

Note. Bolded font with asterisk indicates significant effect.

work productivity, RHV White Veterans showed greater improvement in work productivity compared to Black Veterans. There were no differences in the trajectories of depression, anxiety, contamination concerns, social integration, or independent living between Black and White Veterans across groups.

**Family Integration in Black Veterans.** Overall, the present results extend our findings of the initial psychosocial response to the pandemic in which few differences emerged between Black and White Veterans across groups (Novacek et al., 2022a, b). We interpret the significant differences with caution, however, as the significant findings would likely not survive a correction for multiple comparisons. During the initial response to the pandemic, Black Veterans demonstrated better family integration compared to White Veterans. While the present study examined changes in response to the pandemic in key outcomes as opposed to mean differences in outcomes by race, Black Veterans continued to demonstrate family integration as a strength. Notably, Black PSY showed greater improvement in family integration as the pandemic continued compared to White PSY. These findings also align with a pre-pandemic investigation into psychosocial functioning of homeless Veterans with psychosis, in which Black Veterans also showed better family integration compared to White Veterans (Novacek et al., 2022a, b). While it is difficult to interpret the contradicting result in CTL, in which White Veterans showed greater improvement in family integration compared to Black Veterans, one could speculate that it might be due to a ceiling effect. It is possible that the measure of family integration did not capture changes in family integration for Black CTL due to their high rating of family integration at the retrospective pre-COVID time point. Given that family integration appears to be a relative strength for vulnerable Black Veterans, it is recommended that VA providers look for ways to integrate family members into Black Veterans' mental health treatment.

**Loneliness in Recently Housed Veterans.** In RHV, analyses also revealed that loneliness improved more in Black compared to White Veterans throughout the pandemic. It is possible that Black RHV leaned into their social networks for support more as the pandemic evolved or adjusted better over time to social distancing and other changes in interpersonal relationships. Although studies haven't found any differences in loneliness among Black and White adults (Holaday et al., 2022; Sol et al., 2022), previous findings have shown that Black homeless Veterans have more social contacts compared to White homeless Veterans (Leda and Rosenheck, 1995). Having more social contacts may have helped Black RHV manage feelings of loneliness as the pandemic unfolded. Loneliness should continue to be a high-priority treatment target while RHV adjust to permanent supportive housing, as increased loneliness is associated with greater severity of depression, poor physical health, and early mortality in both Black and White adults (Holt-Lunstad et al., 2015; Sol et al., 2022; Taylor and Nguyen, 2020).

The finding that work productivity improved more throughout the pandemic in White compared to Black RHV suggests that, as the pandemic ends, Black RHV may benefit from vocational rehabilitation services offered by the VA to help overcome barriers to securing or maintaining employment. Individual placement and support (IPS) is one evidence-based intervention that could be more widely implemented across the VA to help RHV in this capacity (LePage et al., 2021). Black Americans continue to experience systemic barriers to advancement in education and employment that warrant not only individualized interventions but also structural changes (e.g., equitable policies) to combat further oppression.

In line with our findings from the initial response to the pandemic, these results do not support the double jeopardy hypothesis, in which we would expect to see worse psychosocial outcomes for Black RHV and PSY groups. One possible interpretation of the absence of racial disparities in sustained psychosocial outcomes is that it is a result of the wrap-around services offered by the VA which include physical healthcare, mental healthcare, and social services (e.g., supported employment and education, supportive housing, etc.). Although there is

evidence that Black Americans utilize mental health services less often compared to White Americans in the general population (Diala et al., 2000), we did not find any significant differences in the number of VA mental health visits between Black and White Veterans in our sample. This aligns with a prior VA study (Tsai et al., 2014). Moreover, the VA was able to make a rapid transition to providing mental health services via telehealth so that services did not lapse for vulnerable Veteran groups, including those with higher disability and lower income (Ferguson et al., 2020). Together, these findings suggest that, when there is equitable access to mental health services, expected racial disparities can be mitigated.

**Limitations.** The present investigation had limitations. The pre-COVID time point was a retrospective assessment collected at baseline which is not ideal for a prospective study. In addition, we had very few women Veteran participants which limits the generalizability of our findings to understand the experiences of women Veterans during the pandemic. Due to the small sample sizes, we could not examine other racially minoritized groups including Hispanic/Latino and Indigenous Veterans. It is also important to recognize that Veterans overall are a unique group who have been trained by the U.S. military to engage in challenging situations. Moreover, there is evidence of attenuated racial disparities in mental health outcomes among Veterans compared to other adults (Goldberg et al., 2020). Thus, the findings may not generalize to the general U.S. population.

**Conclusion.** The current study did not reveal many systematic differences in the mental health and functional responses to the pandemic between Black and White Veterans with psychosis or recent homelessness. The selective differences that were found should be interpreted with caution due to the exploratory nature of the investigation. The overall lack of racial disparities in this sample may be attributable to the wrap-around services provided by the VA. Future research should continue to examine how VA services might mitigate racial disparities in psychosocial outcomes among Veterans who have experienced homelessness and those with serious mental illness. Furthermore, it is recommended that this work include comparison groups of Veterans who do not receive VA services as well as non-Veterans to truly understand the impact of VA's wrap-around services in promoting health equity. In addition, recovery-oriented interventions should consider utilizing family relationships to augment services focused on improving psychosocial outcomes in vulnerable Black Veterans.

#### Author note

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#### CRedit authorship contribution statement

**Derek M. Novacek:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Data curation, Conceptualization. **Jonathan K. Wynn:** Writing – review & editing, Visualization, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Amanda McCleery:** Writing – review & editing, Supervision, Project administration, Methodology, Investigation. **Eric A. Reavis:** Writing – review & editing, Project administration, Methodology, Investigation. **Damla Senturk:** Writing – review & editing, Methodology, Formal analysis, Data curation. **Catherine A. Sugar:** Writing – review & editing, Methodology, Formal analysis, Data curation. **Jack Tsai:** Writing – review & editing,

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#### Declaration of competing interest

None.

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