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## ORIGINAL ARTICLE

# Race/ethnicity and socioeconomic status as predictors of outcome following family therapy in youth at clinical high risk for psychosis

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## Abstract

**Aim:** There is limited research on the effects of sociodemographic and socioeconomic factors on treatment outcomes in youth at clinical high risk for psychosis (CHRp). This study examined sociodemographic factors that may affect functional outcomes within this population. Specifically, we investigated the influence of race/ethnicity (dichotomized as non-Hispanic whites [NHW] vs. people of colour [POC]), socioeconomic status (SES; operationalized as parental years of education), and their interaction on change in psychosocial functioning and symptoms over 6 months in a randomized trial of family-focused therapy.

**Methods:** CHRp youth ( $N = 128$ ) participated in a randomized trial of family therapy (18 sessions of family therapy vs. 3 sessions of family psychoeducation). Sixty-four participants who self-identified as POC and 64 self-identified NHW participants completed baseline and 6-month follow-up measures of positive and negative symptoms

[ClinicalTrials.gov](https://clinicaltrials.gov) Identifier: NCT01907282.

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and psychosocial (global, role, and social) functioning. Multiple regression models were conducted to test the main effect of race/ethnicity on changes in positive and negative symptoms and functioning, and whether this effect was moderated by parental education.

**Results:** There was a significant interaction between race/ethnicity and parental education, such that higher parental education was associated with greater improvement in global functioning in NHW participants, but there was no relationship between parental education and global functioning in POC. Additionally, higher parental education was associated with a decrease in negative symptoms in NHW participants but not in POC. There were no significant effects of race/ethnicity or parental education on positive symptoms, nor on social or role functioning.

**Conclusions:** Clinicians may consider tailoring psychosocial treatments according to the needs of diverse families who vary in sociodemographic factors such as educational attainment and race/ethnicity.

#### KEYWORDS

clinical high risk, family therapy, parental education, psychosis, race/ethnicity

## 1 | INTRODUCTION

The clinical high risk for psychosis (CHRp) paradigm has been used to identify individuals (typically between 12 and 25 years of age) who present with subthreshold psychosis symptoms, with the aim of delaying or preventing the onset of a psychotic disorder and identifying potential markers of developing a psychotic disorder (Fusar-Poli et al., 2013; Yung et al., 1996). Whereas the majority of CHRp youth do not go on to develop a full psychotic disorder, many experience persistent functional impairment and distressing symptoms (Addington et al., 2011). Thus, early intervention to delay or, if possible, prevent the onset of full-threshold psychosis and diminish functional consequences is critical (van der Gaag et al., 2013). Best practice guidelines recommend comprehensive psychodiagnostic assessment, psychosocial interventions including cognitive behavioural therapy (CBT) and family-based interventions, followed by best practices for other presenting problems (e.g., anxiety or depression), and interventions targeting functional deficits/decline (e.g., educational or vocational coaching [Addington et al., 2017]). Psychopharmacological intervention is recommended for adults with CHRp who do not respond to psychological interventions or experience worsening symptoms. Whereas there have been significant developments in care for CHRp youth, research on the effectiveness of psychosocial interventions remains relatively limited (Thompson et al., 2015; Worthington & Cannon, 2021).

Miklowitz et al. (2014) conducted the first randomized trial of family-focused therapy (FFT) for CHRp youth. Participants received either 18 sessions of FFT, which involves psychoeducation, communication enhancement, and problem-solving training, or three sessions of psychoeducation only (termed enhanced care [EC; Miklowitz

et al., 2014]). CHR individuals who received FFT showed greater improvements in attenuated positive symptoms over 6 months compared to those who received EC. However, the effects of the two interventions on psychosocial functioning at 6 months were moderated by age of the CHR person (Miklowitz et al., 2014). It is possible that other demographic factors such as race/ethnicity and socioeconomic status (SES) may also be relevant to patterns of functional change over time in CHRp individuals.

There is a body of research that has examined the effect of race/ethnicity on outcomes in individuals with psychotic disorder. Anglin et al. (2021) showed that racial discrimination and social disadvantage lead to factors (e.g., neighbourhood factors, trauma and stress, prenatal and perinatal complications) that may worsen risk for psychosis among racial/ethnic minorities, in particular for Black and Latinx individuals in the United States. Additionally, two secondary data analyses of the Recovery After an Initial Schizophrenia Episode Early Treatment Program (RAISE-ETP [Kane et al., 2015]) examined racial/ethnic disparities in treatment outcomes in participants who experienced a first episode of psychosis (FEP). The RAISE-ETP study compared usual community care (defined as 'routine treatment') and an enhanced treatment program (NAVIGATE) that consisted of individualized medication management, family education, individual resiliency training, and supported education and employment (Kane et al., 2015). Oluwoye et al. (2018) found that within participants who received usual community care, non-Hispanic Black participants had significantly higher positive symptoms, disorganized symptoms, and uncontrolled hostility than non-Hispanic Whites (NHW) throughout the treatment period; however there were no differences between the groups in the NAVIGATE condition, suggesting that racial/ethnic minorities may experience worse outcomes than NHW in usual care (Oluwoye

et al., 2018). In a second study, Nagendra et al. (2023) explored the effects of stigma; while they also found no significant differences in clinical outcomes between NHW and Black participants in the enhanced treatment condition (NAVIGATE), Black participants reported experiencing worse stigma than White participants, and had a lower rate of improvement of positive symptoms in usual care. They found that Black participants in the NAVIGATE condition reported decreases in stigma over time, whereas those in community care experienced an increase in stigma (Nagendra et al., 2023). Taken together with the findings of the Oluwoye et al. (2018) study, the authors suggest that Black FEP patients experience greater benefit from coordinated specialty care, possibly due to the resiliency training components of NAVIGATE, in which participants challenge stigma. These findings also provide initial evidence for the effects of race/ethnicity on treatment outcomes in FEP.

To our knowledge, only two studies of CHRp individuals have examined outcomes between racial/ethnic groups. Rouhakhtar et al. (2021) found that race (Black vs. White) had a moderating effect on the relationship between positive symptoms and social functioning, such that more severe positive symptoms were associated with lower social functioning only in White participants. In a small exploratory study, Tsai et al. (2015) explored the impact of parental expressed emotion (operationalized as criticism and perceived warmth) on positive and negative symptom expression in NHW and Latinx participants. They found that race/ethnicity moderated the relationship between criticism/warmth and clinical symptoms, such that higher levels of perceived paternal warmth were associated with lower positive symptoms for NHWs but higher levels of paternal warmth were associated with more severe positive symptoms in Latinx youth. Tsai et al. (2015) highlight that these findings demonstrate how potential protective factors may have unique (and perhaps non-intuitive) functions in different racial/ethnic groups, potentially due to cultural differences. This initial evidence points to potential influences of race/ethnicity on treatment outcomes for CHRp youth.

In a meta-analysis that included various psychiatric conditions (substance use disorders, attention-deficit hyperactivity disorder, post-traumatic stress disorder, depression, obsessive-compulsive disorder, generalized anxiety disorder, personality disorders, and seasonal affective disorder), Cogle and Grubaugh (2022), found no differences in psychotherapy outcomes between POC and NHW; however, no studies addressing outcome in patients with psychosis or CHRp were included. The authors suggest that one significant limitation in the existing literature is that researchers tends to report on race as an independent construct without considering intersectionality of other social determinants (e.g., perceived discrimination, SES) (Cogle & Grubaugh, 2022). Moreover, in efforts to address equity in CHRp services, scholars have called for research to integrate an intersectional approach to identify issues of equity in treatment of CHRp youth (DeLuca et al., 2022). DeLuca et al. (2022) argue that, given evidence that marginalized groups are underserved by CHRp services, it is necessary for research to consider how having multiple oppressed identities (e.g., racial/ethnic identify, socioeconomic status, sexuality,

and ability status) can interact and compound to increase inequity and stress.

Socioeconomic status (SES) is measured as a combination of education, income, and/or occupation (Baker, 2014). Limited research has been conducted on SES and therapy outcomes in those at risk for psychosis. In a study assessing the effects of Coordinated Specialty Care (CSC) across SES in individuals with psychosis, Bennett and Rosenheck (2021) found that CSC was associated with significantly improved treatment outcomes for patients in the high SES group but had a statistically insignificant effect for all other participants. Due to the small sample sizes in existing studies and the lack of a consistent definition of SES, the relationship between SES and psychotherapy outcomes remain inconclusive (Finegan et al., 2018; Little et al., 2022).

To our knowledge, no study to date has examined the influence of SES (or proxies of SES) on psychotherapy outcomes in CHRp populations. Moreover, we were motivated to examine the effects of parental education and race/ethnicity, due to the increasing acknowledgment that belonging to a marginalized group may negatively impact outcomes (DeLuca et al., 2022). Using data from the earlier trial of FFT, we examined the influence of race/ethnicity (operationalized as non-Hispanic White [NHW] vs. people of colour [POC], parental education [as a proxy of SES]), and their interaction on change in psychosocial functioning following 6-months of family therapy or enhanced care. We predicted that there would be an interaction of race/ethnicity and parental education on the degree of clinical improvement in young people with CHRp, independently of their assigned treatment condition.

## 2 | METHOD

### 2.1 | Participants

Detailed information about the study protocol and subject ascertainment, including complete sample demographics, assessments, and a description of the active treatment and control conditions are provided in Miklowitz et al. (2014) and Schlosser et al. (2012). Briefly, data for the present study were drawn from a 6-month pilot trial examining the efficacy of FFT compared to treatment-as-usual on psychosis-risk symptoms and psychosocial functioning (ClinicalTrials.gov Identifier: NCT01907282). Participants ( $N = 128$ ) were included if they were (1) between 12 and 35 years of age, (2) fluent in English, (3) had at least one family member available to participate in treatment, and (4) met criteria for one of three psychosis-risk syndromes as assessed by the Structured Interview for Psychosis-risk Syndromes (SIPS; Miller et al., 2003). Participants were excluded if they had: (1) a diagnosis of psychotic disorder, (2) a history of a pervasive developmental disorder, (3) current substance or alcohol use disorder, or (4) a neurological disorder. Participants were recruited from eight sites, including the University of California, Los Angeles School of Medicine, University of California, San Diego, Yale University,

Emory University, Harvard University/Beth Israel Deaconess Medical Center, Zucker Hillside Hospital, University of North Carolina, and the University of Calgary. This study was approved by the Institutional Review Boards of all sites.

## 2.2 | Intervention

The intervention and details of the randomized clinical trial were previously described in Schlosser et al. (2012). Briefly, participants were randomized to family focused therapy (FFT-CHR) or a control condition (enhanced care; EC). FFT-CHR consisted of 18 one-hour family sessions. The focus of the sessions included psychoeducation, communication enhancement training, and problem-solving (the clinician's manual can be accessed at <https://www.semel.ucla.edu/champ/downloads-clinicians>). The EC condition consisted of 3 one-hour weekly family psychoeducation sessions. Twenty-four clinicians from the North American Prodrome Longitudinal Study (NAPLS-2) consortium sites were trained in FFT-CHR and EC. Clinicians were provided with supervision by expert clinicians at least once every 2 weeks.

## 2.3 | Study assessments

Study participants were assessed at baseline and 6-month follow-up, directly after treatment completion. Positive and negative symptoms were measured using the Structured Interview for Psychosis-Risk Syndromes (SIPS) and the associated Scale of Prodromal Symptoms (SOPS) (McGlashan et al., 2010). Global functioning was measured over the past month on the Global Assessment of Functioning (Hall, 1995). Current (past month) role and social functioning were assessed via the Global Functioning-Role and Global Functioning-Social scales (GF-Role/GF-Social [Cornblatt et al., 2007]).

The dependent variables were change in functioning and symptoms, operationalized as the difference between post-intervention and pre-intervention scores (i.e., 6-month–baseline). For psychosocial functioning measures, greater difference scores indicated greater functional improvement, whereas for the SOPS measures, a larger negative difference score indicates greater improvement in symptoms. Self-reported race/ethnicity information was collected at baseline via a multiple-choice questionnaire. Race/ethnicity categories were based on the National Institute of Health (NIH) guidelines, and included American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, and White. Participants self-identified according to two categories for ethnicity: 'Hispanic or Latino' or 'not Hispanic or Latino'. Only participants who self-identified as white and not Hispanic were placed in the non-Hispanic white (NHW) group. All other participants, such as those who identified as Hispanic and White, were included in the people of colour (POC) group. Data on years of parental education (measured continuously), used as a proxy for SES, were collected via self-report, rated from no schooling (0) to completed graduate/professional school (20). In the

cases where parental education was collected from two parents or caregivers, the mean was calculated.

## 2.4 | Data analysis

### 2.4.1 | Bivariate

Chi-square tests were used to compare categorical variables and *t*-tests were used to compare continuous variables between the NHW and POC participants (see Table 1).

### 2.4.2 | Multivariate regression

Using linear regression, analyses were conducted on the 6-month–baseline change in five outcomes: GAF, GF-S, GF-R, positive symptoms, and negative symptoms. Treatment condition was included in all analyses to control for its possible effect. The main effects of race/ethnicity and parental education, as well as their interactions, were tested in the model. Restricted cubic splines were used to determine whether the relationship between the outcomes and parental education was linear. All *p*-values were two-tailed. One participant was excluded due to being an extreme multivariate outlier on measures of functioning (Cook's distance >1.5 and Mahalanobis' distance >11).

## 3 | RESULTS

### 3.1 | Bivariate models

Of the participants included in this analysis ( $N = 128$ ), 64 self-identified as POC and 64 self-identified as NHW. The POC group consisted of individuals self-identified as African American (28.1%,  $N = 18$ ), Asian (10.9%,  $N = 7$ ), Hispanic/Latinx (35.9%,  $N = 23$ ), Middle Eastern (1.6%,  $N = 1$ ), Multiracial (17.2%,  $N = 11$ ), Native American (4.7%,  $N = 3$ ), and Other (1.6%,  $N = 1$ ). There were no significant differences between NHW and POC in age, sex, or number of sessions completed (see Table 1). Additionally, there were no significant baseline differences between NHW and POC in positive or negative symptoms, baseline and/or post-treatment psychosocial functioning (global, social, or role functioning; see Table 1). Mean parental education was significantly higher in NHW versus POC.

### 3.2 | Multivariate regression models

Comparison of the linear model to restricted cubic splines indicated that the relationship between parental years of education and 6-month change in functioning (GAF; GF-S; GF-R) was linear ( $\chi^2 = 9.91$ ,  $df = 3$ ,  $p = .13$ ;  $\chi^2 = -1.16$ ,  $df = 3$ ,  $p = 1$ ;  $\chi^2 = 1.63$ ,  $df = 3$ ,  $p = .65$ ), as was the case for changes in positive ( $\chi^2 = 1.01$ ,  $df = 3$ ,  $p = .79$ ) and negative symptoms ( $\chi^2 = 0.99$ ,  $df = 3$ ,  $p = .80$ ).

**TABLE 1** Sociodemographic and descriptive characteristics.

	NHW	POC <sup>a</sup>	<i>p</i> value
<i>N</i>	64	64	
Age, <i>M</i> (SD)	17.05 (3.84)	17.63 (4.27)	.42
Sex (% female)	54.7%	59.4%	.60
Mean parental years of education, <i>M</i> (SD) <sup>b</sup>	15.09 (2.61)	12.96 (3.74)	<.01*
Baseline positive symptoms	11.54 (3.19)	11.61 (3.59)	.91
Change in positive symptoms	−3.85 (5.36)	−4 (4.05)	.89
Baseline negative symptoms	11.92 (5.93)	12.87 (5.70)	.37
Change in negative symptoms	−3.74 (6.74)	−3.84 (5.75)	.94
Global assessment of functioning (GAF)	46.21 (9.13)	47.66 (8.64)	.36
Change in GAF	8.34 (13.01)	6.04 (11.36)	.37
Global functioning-social (GF-S)	5.83 (1.51)	5.83 (1.35)	1.00
Change in GF-S	0.72 (1.30)	0.34 (1.29)	.17
Global functioning-role (GF-R)	5.53 (2.09)	5.76 (2.11)	.56
Change in GF-R	0.13 (2.14)	0.21 (1.77)	.86
Percent of total sessions completed			
FFT <sup>c</sup> (% completed)	62.2%	57.1%	.62
EC <sup>d</sup> (% completed)	86.3%	70%	.10

<sup>a</sup>African American 28.1%, Asian 10.9%, Hispanic/Latinx 35.9%, Middle Eastern 1.6%, Multiracial 17.2%, Native American 4.7%, and Other 1.6%.

<sup>b</sup>Mean parental years of education was calculated based on the average years of education of the two primary caregivers. For five participants data were available from only one caregiver.

<sup>c</sup>Total sessions in FFT = 18.

<sup>d</sup>Total sessions in EC = 3.

\**p* < .01.

### 3.2.1 | Association between race/ethnicity, parental education, and their interaction on change in global functioning

The main effect of race/ethnicity on global functioning was significant, such that being NHW was associated with greater improvement in GAF scores (see Table 2). Global functioning (GAF) increased ( $B = 1.53$ ,  $SE = .49$ ,  $p < .01$ ) as years of education increased in NHW. In contrast, GAF decreased slightly ( $B = -.18$ ,  $SE = .12$ ,  $p = .14$ ) as years of education increased in POC. Therefore, there was a significant interaction between race/ethnicity and years of parental education ( $B = 1.71$ ,  $SE = 2.12$ ,  $p < .01$ ; Figure 1).

### 3.2.2 | Association between race/ethnicity, parental education, and their interaction on change on social and role functioning

Despite the observed differences between racial/ethnic groups and changes in GAF scores, there was no significant main effect of race/ethnicity or parental education on changes in the domain-specific measures of social (GF-S) or role functioning (GF-R). Furthermore, there was no significant interaction between race/ethnicity and parental education on social or role functioning (see Table 2).

### 3.2.3 | Association between race/ethnicity, parental education, and their interaction on change in positive and negative symptoms

Main effects for race/ethnicity or parental education were not significant for positive symptoms. Furthermore, there was no significant interaction between race/ethnicity and parental years of education on positive symptoms (see Table 3). However, there was a significant interaction between race/ethnicity and parental education for negative symptoms ( $B = -1.25$ ,  $SE = .55$ ,  $p < .05$ ; Figure 2). Specifically, in POC negative symptoms slightly increased as parental education increased ( $B = .23$ ,  $SE = .14$ ,  $p = .09$ ), whereas the NHW group showed the opposite pattern ( $B = -1.02$ ,  $SE = .64$ ,  $p = .12$ ). Lastly, there was a significant main effect of race/ethnicity on negative symptoms ( $B = 1.19$ ,  $SE = .54$ ,  $p < .05$ ), such that POC experienced a greater decrease in negative symptoms compared to NHWs.

## 4 | DISCUSSION

This study provides evidence that the effect of parental education (a proxy for SES) on treatment-associated improvement in global functioning and negative symptoms over 6 months is moderated by race/ethnicity in CHRp youth. Specifically, in NHW CHRp participants,

**TABLE 2** Multiple regression for the prediction of functioning measures by race/ethnicity, parental education, and their interaction (N = 128).

	Δ GAF			Δ GF: Role						Δ GF: Social												
	R <sup>2</sup>	F	(β)	SE(β)	B	t	p	R <sup>2</sup>	F	(β)	SE(β)	B	t	p	R <sup>2</sup>	F	(β)	SE(β)	B	t	p	
Overall model	.13	3.34*						.03	0.66						.04	0.67						
Treatment condition			2.11	2.46	.08	0.86	.39			.51	.44	.09	1.15	.25			.09	.29	.04	0.31	.76	
Race/ethnicity (NHW vs. POC)			-36.89	11.66	-1.52	-3.16	.01**			-2.25	2.16	-1.52	-1.04	.30			-.77	1.44	-.29	-0.53	.59	
Parental education			-.67	.46	-.18	-1.47	.14			-.00	.08	-.18	-0.08	.94			-.03	.05	-.08	-0.59	.55	
Race/ethnicity × parental education			2.71	.79	1.71	0.79	.01**			.15	.15	1.71	1.02	.31			.08	.09	.49	0.84	.41	

Note: Treatment conditions = FFT versus EC; NHW = non-Hispanic white; POC = people of colour; parental education = mean years of education of both parents. β = original units; B = standardized units. \*p < .05; \*\*p < .01.

higher levels of parental education were associated with greater improvement in global functioning, but this effect was not observed for CHRp youth who identify as persons of colour. Negative symptoms showed a similar pattern, with NHW experiencing a decrease in negative symptoms in participants with higher parental education, but this relationship was not seen in POC. We found no significant effects of race/ethnicity or parental education on changes in specific measures of social or role functioning (GF-S and GF-R), nor of positive symptoms.

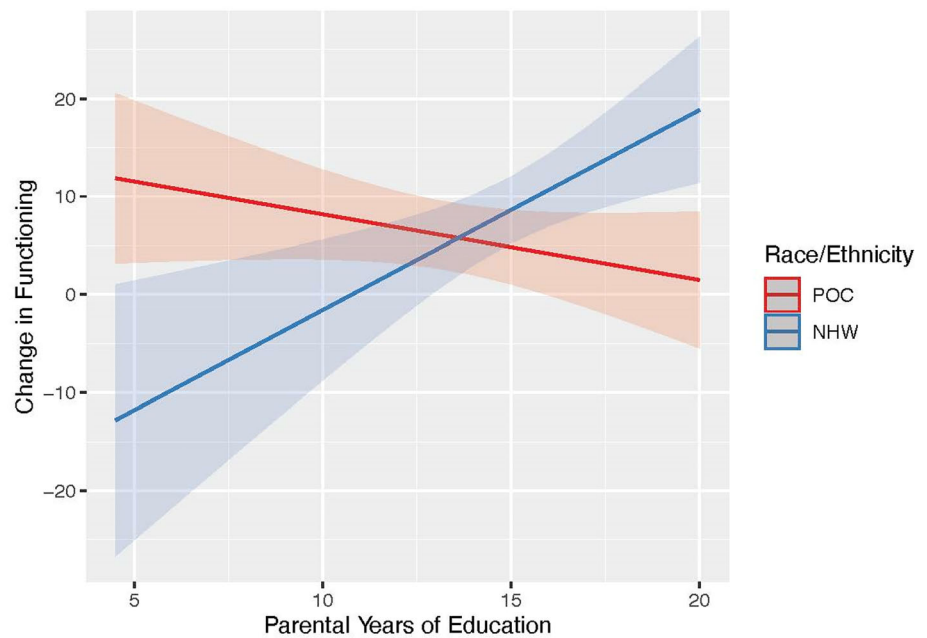
Although the interactions findings are important for future hypothesis testing in CHR cohorts, they should be interpreted with caution given that we did not correct for multiple comparisons. It is also noteworthy that interaction effects were only significant for negative symptoms and global functioning (GAF scores). GAF scores incorporate clinical symptom severity as well as functioning and may be more heavily influenced by negative than positive symptoms. Indeed, in this sample the GAF and the SIPS negative symptom scales was moderately inversely correlated ( $r_s(126) = -.53, p < .01$ ), whereas GAF scores and SIPS positive symptom scores were not correlated ( $r_s(126) = -.01, p = .91$ ). Moreover, the GAF may be more sensitive to change over time than the GF-S or GF-R scales. Moreover, the GAF may capture more change over time than the GF-S or GF-R.

One potential explanation for the observed interactions may be that NHW children of parents with higher educational attainment experience more socioeconomic benefits. Despite increasing rates of POC earning higher education degrees, POC still experience economic inequity compared to NHWs with an equal level of education (Lu & Li, 2021). For example, one study found that among those with Master's degrees, Black women saw a lower return on their education than their NHW counterparts (Budig et al., 2021). Moreover, POC who attend higher education may disproportionately come from economically disadvantaged backgrounds, and are therefore less likely to have disposable income than their NHW counterparts (Espinosa et al., 2019). In addition, POC may experience intangible barriers in higher education. For example when in predominantly white spaces of higher education, POC can experience a 'culture shock in a sea of Whiteness' and can have difficulties navigating these systems due to lack of knowledge/familial experience in these spaces (McCoy, 2014). As a result, NHW families with higher parental education may have more resources to access therapeutic and other supportive services compared to their POC counterparts.

Prior systematic reviews have identified a number of studies in which SES was associated with differential functional outcomes among youth who participated in psychotherapy for anxiety and depression: youth of lower SES background received less benefit from psychotherapy than youth in the higher SES group (Little et al., 2022). Our findings that demonstrated an interaction of race/ethnicity and parental years of education on negative symptoms and global functioning also suggest POC individuals may derive less benefit from family therapy, despite no differences between NHW and POC in treatment engagement.

Relatedly, the present findings point to how an individuals' intersectional identity may have an effect on treatment outcomes.

**FIGURE 1** Significant interaction of race/ethnicity with parental education for global psychosocial functioning outcomes. NHW, non-Hispanic white; POC, people of colour.



**TABLE 3** Multiple regression for the prediction of positive and negative symptoms by race/ethnicity, parental education, and their interaction ( $N = 128$ ).

	$\Delta$ Positive symptoms							$\Delta$ Negative symptoms						
	$R^2$	$F$	$(\beta)$	$SE(\beta)$	$B$	$t$	$p$	$R^2$	$F$	$(\beta)$	$SE(\beta)$	$B$	$t$	$p$
Overall model	.02	0.31						.07	1.36					
Treatment condition			-.63	1.07	-.07	-0.59	.60			-.15	1.37	-.01	-0.11	.91
Race/ethnicity (NHW vs. POC)			3.73	4.96	0.39	0.75	.45			14.65	6.59	1.19	2.22	.03*
Parental education			.17	.2	.12	0.86	.39			.43	.25	.23	1.71	.09
Race/ethnicity $\times$ parental education			-.25	.34	-.41	-0.75	.45			-1.02	.45	-1.25	-2.27	.03*

Note: Treatment conditions = FFT versus EC, NHW = non-Hispanic white, POC = people of colour, parental education = mean years of education of parents.  $\beta$  = original units;  $B$  = standardized units.

\* $p < .05$ .

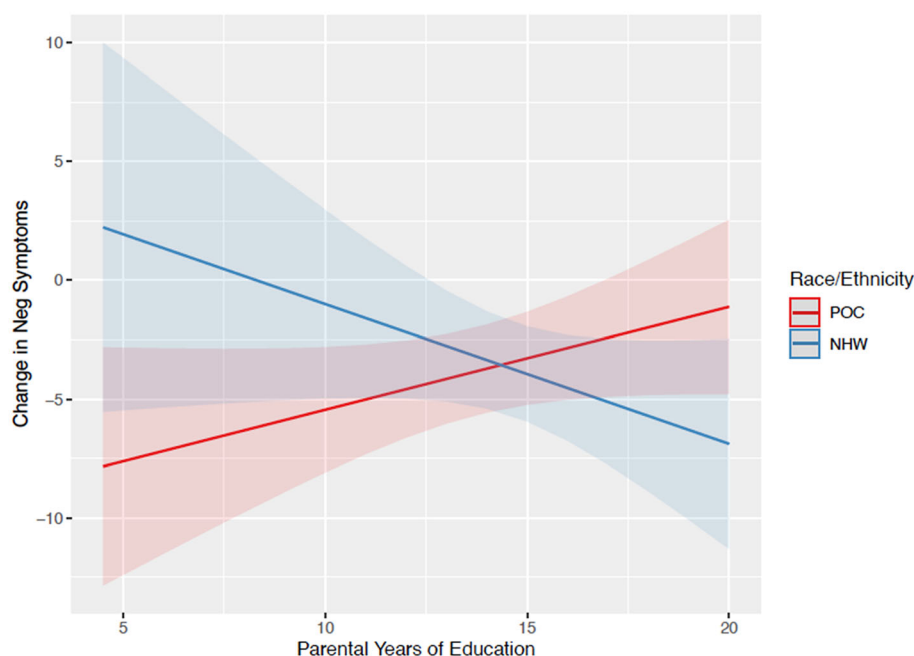
Consistent with intersectional models (Crenshaw, 2013), our findings showed that the interaction of CHRy youth's race/ethnicity and social status (parental education) influence their experience (i.e., functional and negative outcomes following treatment). Our results follow others' call to action for the importance of accounting for intersectional identities to examine outcomes in CHRy youth (DeLuca et al., 2022). As DeLuca et al. (2022) point out, understanding and addressing stressors that affect marginalized groups is crucial in efforts to increase equity in CHRy services.

Curiously, the significant moderating effect of parental education on global psychosocial functioning was not observed for changes in social and role functioning. This may be attributed to the fact that the global functioning scale (GAF) is a broader measure of functioning and incorporates symptoms in the rating, whereas social and role functioning measures do not, and thus may show less change over the follow-up period. We observed a similar pattern for negative symptoms, suggesting that perhaps the interaction effect captured in the

analyses of change in global functioning may also partially reflect negative symptom change. It may also be that the GAF captures factors not assessed in the GF-S/GF-R that respond differentially to treatment between NHW and POC.

It is notable that improvements in negative symptoms were seen in both the FFT and EC conditions, as few intervention approaches successfully target these symptoms. As Miklowitz et al. (2014) postulated, these effects may have been due to the inclusion of behavioural activation elements in both FFT and EC conditions. Intervention studies in adults with serious mental illness have shown effectiveness for improving negative symptoms in Recovery Oriented-Cognitive Therapy (CT-R; Beck et al., 2020). Overlapping elements of these two approaches that may explain some of the effects on negative symptoms include focus on goal-directed activities and collaborative treatment planning. Future studies focused on identifying which components are key in effectively targeting negative symptoms in CHRy youth (e.g., behavioural activation, goal setting) are needed.





**FIGURE 2** Significant interaction of race/ethnicity with parental education for negative symptom outcomes. NHW, non-Hispanic white; POC, people of colour.

There are limitations in the present study that are worth noting. First, these analyses were conducted as secondary analyses of a randomized clinical trial for CHRp youth (Miklowitz et al., 2014). As differences between race/ethnicity groups on treatment outcome was not the focus of the parent study, recruitment did not prioritize the sociodemographic composition of the sample. Thus, for some racial/ethnic categories, the total number of participants was quite small. This meant racial/ethnic minority groups had to be combined, only allowing for comparison between NHW and POC. Relatedly, we acknowledge our own study divides participants based on established racial/ethnic categories. We do not endorse using such categories to explain disparities; rather, disparities based on racial divides reflect larger social divides in access to care, resources, and lived experiences (Helms et al., 2005).

Parental education was used as a proxy for SES. While parental education or parental employment are commonly used proxies for SES (Baker, 2014), more robust methods for capturing SES would rely on multiple measures, including the Hollingshead Index, postal codes, social position, Index of Multiple Deprivation, or neighbourhood factors. Additionally, we note that this first study in this area was underpowered to detect small effects. Lastly, we note that given the exploratory aims of this study, we did not correct for multiple comparisons. We believe that this initial study adds to the small body of literature on the effects of these fundamental sociodemographic factors and lays a foundation for larger and better controlled future studies. With these limitations in mind, the present study offers new insights into factors that may influence psychotherapy outcomes for CHRp youth.

The present study highlights the potential importance of optimizing treatment approaches that are individualized and modified to fit the client and family and supports the need to account for intersectional identities in efforts to provide equitable care for CHRp youth.

Our findings suggest that, within the scope of evidence-based care, treatment should be personalized to meet the unique needs of each family and aim to mitigate barriers to their engagement. Research on treatment response in CHRp youth could benefit from including measures of common factors (Wampold, 2015) to identify the elements of psychotherapy most associated with effectiveness in CHRp youth. It supports the notion that there is no 'one size fits all' approach when providing mental health treatment. Broadly, treatment studies in CHRp youth should make efforts to include more diverse sample populations, and to examine the potential moderating effects of race/ethnicity and other marginalized identities on treatment outcomes.

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## DATA AVAILABILITY STATEMENT

De-identified data are available from the authors upon reasonable request.

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