Is Employment Status Associated with Baseline Symptoms, Engagement, and Outcomes in Naturalistic Psychotherapy? Evaluation in a Large Community Mental Health Agency

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Abstract

Employment status, an essential socioeconomic factor, may be an important driver of disparities in mental health and access to treatment. However, prior research has been inconclusive and utilized broad employment categories. The present study investigated the associations between various types of employment status and baseline symptomology, psychotherapy engagement, and psychotherapy outcomes. We examined 27,258 patients (mean age = 32.54; 62.9% female; 75.8% White) who attended 115,936 psychotherapy sessions at a Canadian mental health agency between January 2014 and July 2022. Employment status was categorized into nine distinct groups (e.g., full-time, part-time, unemployed and looking for work, unemployed not looking for work, and retirement). Multilevel models examined the association between employment status and baseline symptoms, psychotherapy engagement (e.g., total sessions, early termination), and outcomes (e.g., symptom change). Patients who were unemployed (both looking for and not looking for work) reported higher baseline symptoms and increased odds of suicide concern compared to patients with full-time employment. Contrary to our preregistered hypotheses, patients who were unemployed attended more sessions and showed no significant differences in symptom change or trajectory of change compared to those employed full-time. Retirement was linked to lower baseline symptomology, and both retirement and full-time student status were associated with slower trajectories of change relative to full-time employment. Findings suggest that unemployment is associated with worse baseline mental health but does not hinder psychotherapy engagement and effectiveness. Ensuring accessibility of psychotherapy for unemployed individuals is crucial, given their heightened risk of psychological distress.

Keywords: psychotherapy outcome; psychotherapy engagement; dropout; employment status; trajectories of change

Public Significance Statement

Patients who are unemployed have heightened mental health concerns at baseline and participate in more total psychotherapy sessions as compared to full-time employed patients. However, we did not find significant differences in pre-post change or trajectories of change in psychotherapy as compared to patients who are full-time employed. This suggests that efforts should be made to ensure the accessibility of psychotherapy sessions for patients who are unemployed. Specific types of employment status, such as full-time students and patients who are retired, may warrant particular consideration due to their relatively unique relationship with psychotherapy engagement and outcomes.

Is Employment Status Associated with Baseline Symptoms, Engagement, and Outcomes in

Naturalistic Psychotherapy? Evaluation in a Large Community Mental Health Agency

The effectiveness of psychotherapy in improving mental health has been demonstrated through a large number of randomized controlled trials and effectiveness studies (Dragioti et al., 2017; Zhang et al., 2019). However, there is significant heterogeneity in the degree of engagement and symptom improvement over the course of psychotherapy. A comprehensive meta-analysis demonstrated that the overall dropout (defined as failure to complete the treatment protocol, attend a specified number of sessions, or continue participation; or based on therapist judgment) rate in psychotherapy for adults was 19.7%; however, rates were highly heterogeneous across studies, ranging from 0% to 74.23% (Swift & Greenberg, 2012). Similarly, the treatment effects of psychotherapy and the trajectories of change throughout psychotherapy show considerable variation across studies and patients (Kaiser et al., 2022; Owen et al., 2015). Psychological symptoms at the start of treatment also significantly vary by patients' sociodemographic characteristics (Coleman et al., 2016). Understanding the contextual factors influencing baseline psychological symptoms and psychotherapy engagement and outcomes could inform tailored strategies to enhance treatment engagement and effectiveness for patients with diverse characteristics, ultimately ensuring equitable access and optimal care.

Employment status may be one factor that influences a patient's baseline symptom severity and psychotherapy engagement and outcomes. Employment status, an important component of socioeconomic status, is oftentimes associated with one's economic situation (Thompson & Dahling, 2019). Employment status can be categorized into a variety of types (e.g., full-time employed, part-time employed, unemployed and looking for work, unemployed not looking for work, underemployed, retired, full-time students; Berzins et al., 2018). These

types of employment status can have a significant impact on individuals, families, and communities (Thompson & Dahling, 2019). For example, unemployment or economic marginalization has been linked to lower access to mental health care (Juntunen et al., 2022; Sharone, 2024; Thompson et al., 2018). The impact of employment status on mental health and well-being may also extend beyond that of income. According to Jahoda's (1981) latent deprivation model, employment offers individuals not only the manifest function of earning a living but also various latent functions essential for their well-being. These latent functions encompass the establishment of time structure, fostering social interactions, cultivating collective purpose, providing a sense of status and identity, and facilitating engagement in regular activities (Jahoda, 1981). The model suggests that reduced employment results in the deprivation of these latent functions, thus leading to psychological distress (Paul et al., 2023). In addition to Jahoda's latent deprivation model, Psychology of Working Theory provides a complementary framework for understanding how employment status may influence mental health (Duffy et al., 2016). This theory posits that decent work fulfills three core psychological needs: survival and power, social connection, and self-determination. The absence of decent work, such as in unemployment or unstable employment, may undermine these needs, negatively impacting mental health (Duffy et al., 2016). The latent deprivation model and Psychology of Working Theory may also offer insights into how employment status impacts individuals' engagement with therapeutic processes and psychotherapy outcomes. According to Self-Determination Theory, intrinsic motivation to engage in activities, including psychotherapy, is supported by the fulfillment of autonomy, competence, and relatedness (Deci & Ryan, 2012). Employment can enhance a sense of competence through successfully meeting work-related responsibilities and foster relatedness through regular social interactions (Deci & Ryan, 2012; Duffy et al., 2016; Jahoda, 1981). In

contrast, the absence of these work-derived resources in unemployment may undermine these psychological needs, potentially leading to reduced motivation and greater difficulty in maintaining regular psychotherapy attendance and benefiting from treatment (Deci & Ryan, 2012; Duffy et al., 2016; Jahoda, 1981).

Empirical evidence consistently shows a positive association between unemployment and heightened mental health concerns. A meta-analysis of 237 cross-sectional studies found that unemployment is associated with twice the likelihood of experiencing clinically significant psychological distress – 34% among individuals who were unemployed versus 16% among those employed (Paul & Moser, 2009). Furthermore, unemployment appears to exert a lasting "scarring" effect on mental health; a longitudinal study suggested that unemployment spells in young adulthood significantly heightened the future risk of anxiety and depression, with each unemployed year elevating the odds of major depressive disorder and generalized anxiety disorder diagnoses at age 39 by 33% and 19%, respectively (Lee et al., 2019). Beyond these concerns, unemployment has been linked to increased risks of suicidality (Milner et al., 2013) and alcohol-attributable mortality (Saul et al., 2022), further highlighting its potentially negative impact on various aspects of mental health.

However, evidence regarding the relationships between employment status and psychotherapy engagement and employment status and psychotherapy outcomes has yielded inconsistent results across various studies. A meta-analysis of 13 studies found that the proportion of patients who were employed (including those in full- or part-time positions) did not significantly predict the average dropout rates in psychotherapy studies (Swift & Greenberg, 2012). In contrast, in their investigation with 2,473 patients without psychosis, Fenger et al. (2011) identified a heightened risk of dropout from psychotherapy among patients who were

unemployed in Denmark, although the authors did not provide a clear operational definition of unemployment. Similarly, some studies conducted in the United Kingdom indicated a significant association between unemployment and poorer psychotherapy outcomes (e.g., Delgadillo et al., 2017; Firth et al., 2015, 2019), whereas other studies conducted in the United Kingdom and United States reported a non-significant relationship (Delgadillo et al., 2016; Fournier et al., 2009). These discrepancies may be shaped by differences in national contexts (e.g., the availability of social safety nets, access to affordable mental health care, and broader economic conditions), which may influence how unemployment affects treatment engagement and outcomes across countries.

One explanation for these mixed findings relates to the measurement and operationalization of employment status. Specifically, researchers have tended to collapse employment status into particular categories and failed to account for variations among individuals who are unemployed (e.g., distinguishing among those who are unemployed because they are full-time students or retired versus those who are unemployed and actively searching for work versus those who are unemployed and not searching for work). Moreover, they have employed varied methodologies to define and operationalize these categories, with some lacking any definition. For instance, Firth et al. (2019) classified unemployment to include individuals receiving welfare benefits, those unemployed, and retirees, whereas Firth et al. (2015) defined unemployment as encompassing both unemployed individuals and full-time homemakers and carers. Meanwhile, in other research (Delgadillo et al., 2016, 2017; Fournier et al., 2009), the criteria for unemployment were not clearly defined. These variations may account for the inconsistent results across the limited existing studies regarding the relationship between

employment status and psychotherapy engagement (Fenger et al., 2011; Swift & Greenberg, 2012) and psychotherapy outcomes (Delgadillo et al., 2016; Firth et al., 2019).

Collapsing categories of employment status may miss important distinctions within these groups and lead to inconsistent findings across studies. For example, although both unemployment and retirement involve not working, their impacts on mental health may diverge significantly. Unemployment may detrimentally affect mental health due to the loss of work's latent functions and the economic burden of joblessness (Jahoda, 1981; Sharone, 2024). In contrast, retirement may be related to improved mental health, if it reflects a voluntarily chosen and financially stable phase that enables individuals to pursue interests and engage in leisure activities. This can in turn contribute to their well-being without work-related stress (Gorry et al., 2018). Additionally, failing to clearly define employment status categories can complicate the replication of study findings and contribute to inconsistent results across different studies.

Another limitation of the previous studies was that they did not investigate the relationship between employment status and *trajectories of changes* in outcomes in psychotherapy. Compared to pre-post changes, trajectories of change allow for detecting whether patients with specific types of employment status are lagging behind even early in treatment. This can inform timely interventions to reduce potential disparities in psychotherapy outcomes related to employment status.

Aims and Hypotheses of the Current Study

We examined three pre-registered hypotheses on the role of employment status in psychotherapy (Jiwani et al., 2024) to address the aforementioned limitations of previous studies. We used naturalistic data from an outpatient psychotherapy clinic in Canada. As a context, in Canada, hospital-based mental health services are publicly funded across provinces and typically

require a physician referral. Funding for community-based outpatient mental health programs varies by province, but many programs are supported by the federal Increasing Access to Psychotherapy program that offer low-cost or free services. Individuals seeking care from private practitioners generally pay market rates and often depend on employment-based private insurance to cover these costs. Notably, the current study took place at a sliding scale community clinic that adjusts psychotherapy fees based on patients' income. This setting may increase accessibility for economically marginalized individuals, including unemployed and full-time student populations, which may impact patterns of engagement and outcomes. We differentiated unemployment (both unemployed and looking for work and unemployed and not looking for work) from other types of employment status without collapsing them into broader categories. Given the observational design of this study, the associations examined were correlational in nature and did not permit causal conclusions; rather, the goal was to explore how employment status was linked to psychotherapy engagement and outcomes.

Hypothesis H1: Relative to full-time employment, patients who were unemployed (both looking for and not looking for work) would experience worse baseline psychological symptoms and have a higher likelihood of reporting substance use and suicide concerns. Previous studies have consistently supported this hypothesis in the general population (Lee et al., 2019; Milner et al., 2013; Paul & Moser, 2009; Saul et al., 2022). We aimed to replicate and extend previous studies by testing this hypothesis in psychotherapy patients. This exploration would result in more direct implications for psychotherapy practice. H2: Relative to patients who were employed full-time, patients who were unemployed (both looking for and not looking for work) would be more likely to terminate treatment early (i.e., completing only one session) and tend to participate in fewer total sessions. H3: Relative to patients who were employed full-time

employment, patients who were unemployed (both looking for and not looking for work) would have smaller pre-post outcome improvements and a slower trajectory of change. H2 and H3 were proposed based on Jahoda's (1981) latent deprivation model. As discussed earlier, unemployment may disrupt sense of time structure and deprive internal and external resources that can be gained from work (Jahoda, 1981; Paul et al., 2023). These factors may make it more challenging to consistently engage in and benefit from psychotherapy.

Moreover, to capture the nuances surrounding the various employment types, we investigated the relationships between distinct employment types (e.g., retired, full-time students), baseline mental health, and psychotherapy engagement and outcomes. Given that no prior studies have examined employment status in relation to patient baseline mental health and psychotherapy engagement and outcomes with this level of specificity, the analyses on specific employment types beyond unemployment looking for work and unemployment not looking for work were exploratory.

Method

Participants

Study data were derived from a large outpatient mental health agency based in a Canadian metropolitan city. The agency staff includes licensed providers in a range of fields including psychology, marriage and family therapy, social work, and pastoral counseling. Supervised student trainees in these fields also provided psychotherapy services. Patient fees at the clinic were determined based on income. We examined data for 27,258 patients who completed 115,936 sessions with 528 therapists between January 2014 and July 2022. Patients attended an average of 4.25 sessions (SD = 4.18, range = 1-64) and therapists worked with an average of 51.7 patients. Sessions were typically 50-mins long, could be held online or in person,

and were held on average 17.4 days apart[1]. To arrive at our sample, we included adult patients

who engaged in individual psychotherapy and limited our analysis to the first treatment episode.

We considered an episode to have concluded if the gap between sessions exceeded 90 days. We

excluded patients who were mandated to attend therapy by court order (n = 1,329; 4.0%) as these

patients may be less motivated to change (Hachtel et al., 2019) and may not have an incentive to

be fully transparent (Klag et al., 2005). We also excluded individuals for whom employment

status was not available (n = 4,649; 14.4%). Ethics approval for the review of deidentified patient

data were granted by the University of Wisconsin-Madison.

Measures

Outcome Measures

        Outcome Questionnaire-45.2. The primary measure for assessing symptoms and

outcomes utilized was a self-report 45-item Outcome Questionnaire-45.2 (OQ-45; Lambert et al.,

2004). The OQ-45 queries a range of psychological symptoms (e.g., "I feel no interest in things).

Items are scored from 0-4, with higher scores indicating greater symptom severity. Prior research

has established that the OQ-45 has adequate test-retest reliability (.78-.84; Snell et al., 2001).

Factor analytic work supports the utilization of total score for outcome and change assessment

(Bludworth et al., 2010). The OQ-45 had high internal consistency in the sample for the total

score (α = .94).

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[1] Upon reviewer request, we also assessed if employment status varied by session frequency. A significant association was found between employment status and average days between sessions such that full-time employed patients (M = 18.80 days) attended sessions less frequently than all other employment categories. Notably, patients who were not employed and looking for work had the shortest intervals between sessions (M = 15.35 days), followed by those not employed and not looking for work (M = 15.93 days).

Substance Use and Suicide Concerns. Substance use and suicide concerns were self-reported and collected before the first psychotherapy session. To inquire about substance use concerns, patients are asked if "there is a concern about alcohol, drug abuse or overuse of non-prescribed drugs?" Patient responses were coded with either a "yes" or "no" response. However, the specific nature of substance use concerns (e.g., alcohol, drugs, etc.) was not noted. Similarly, to inquire about suicide concerns, patients are asked if "there is a concern about suicide?" Responses were coded as "yes" or "no."

Session Information. Session-level information, including session number, session date, and total sessions, was maintained by the mental health agency. Session information was used as an outcome variable to assess the second hypothesis and was also used as a covariate in testing the third hypothesis (see Analytic Strategy below).

Main Predictor Variable

Employment. Employment status was collected with the question, "What is your current employment status?" Response options included: *full-time*, *part-time*, *casual*, *retired*, *on disability leave*, *full-time student*, *not employed and looking for work*, *not employed and not looking for work,* and *other*. In the Canadian context, casual employment is defined as employment that does not exceed more than 90 days in a year (Government of Canada, 2022). While this measure does not capture subjective experiences or latent dimensions of employment, it aligns with measurement strategies used in large-scale research (e.g., General Social Survey; Davern et al., 2024), where single-item indicators are commonly employed to assess broad demographic constructs such as employment or relationship status. This approach is appropriate for naturalistic clinical settings, where brief and standardized data collection methods are needed to ensure feasibility and minimize patient burden. Of note, employment status was assessed only

on one occasion (i.e., before the start of psychotherapy) and was not tracked throughout the course of treatment; therefore, any changes in participants' employment status over time were not captured.

Covariates

Income. We took several steps to calculate adjusted household income. Household gross income was provided by patients in Canadian dollars. First, we adjusted income for inflation in 2014 by multiplying the income by the base year consumer price index (CPI) and dividing it by the current CPI using government-provided CPI data (Statistics Canada, 2022). Next, we adjusted income for household size. Household size was collected categorically with options including "one," "two," "three," "four," "five or more," and "prefer not to say." We coded "five or more" as "five" is the likely mode for the "five or more" category. Additionally, in instances where household size was missing and income was available ($n = 613$, 2.2%), we imputed the mean household size for the city of Calgary (2.6; Ahmed, 2025; City of Calgary, 2022; Little & Rubin, 2019). Finally, in order to calculate adjusted individual income, we divided income by the square root of the household size. This approach has been widely used in economics and assumes some income sharing within a household (Atkinson et al., 1994).

Other Demographic Information. Additional demographic information was collected from patients prior to the start of psychotherapy, and we included these variables as covariates. Participant demographics were collected and reported along dimensions of sex, ethnicity, education, and marital status. (See Table 1 for specific demographic categories). We also included a binary variable to indicate if participant psychotherapy start date was prior to or following COVID-19 to account for significant changes in employment status for large proportion of the population during the height of the COVID-19 pandemic. We report patient age

but did not covary age in our models due to the confounding between age and two employment categories: retired and full-time students. The issues with including covariates that produce conceptually problematic estimates (e.g., the effect of being retired if age is held constant) have been discussed extensively in the methodological literature (see Miller & Chapman, 2001). Essentially, one cannot meaningfully equate retired and full-time students on age without distorting the inherent meaning of those groups. With some exceptions, age is fundamental to being retired or a full-time student. Thus, the removal of variance associated with age in our outcomes of interest would artifactually remove variance associated with employment status. Although the mean age in our overall sample was 32.54 ($SD = 11.54$), mean ages for retired individuals ($M = 65.96$, $SD = 8.24$, Cohen's $d = -3.29$) and full-time students ($M = 24.36$, $SD = 5.86$, Cohen's $d = 0.78$) differed considerably from the overall sample.

Regional Unemployment Rate. To account for the potential impact of economic wellbeing on employment status, we also included average annual unemployment rates across time for the Canadian metropolitan city where the outpatient mental health agency was situated (Statistics Canada, 2024). Regional unemployment has been found as a good proxy for regional economic wellbeing relative to gross domestic product or other economic variables (Stewart, 2005).

Analytic Strategy

The analyses for the present study were preregistered and the preregistration, R code and output are available here (Jiwani et al., 2024). The one deviation we made from our preregistration was around sample size. We originally projected a sample size of 31,867, but due to aspects of the data structure that were discovered following our preregistration, our final sample size was 27,258. We utilized multilevel models (Snijders & Bosker, 2012) to examine the

association between our various outcomes of interests and employment. Our analyses were all performed using R Statistical Software (R Core Team, 2023). The Tidyverse ecosystem of packages (Wickham, 2023) was used for general calculations as well as data cleaning and organizing. All models were estimated using the 'lme4' package (Bates et al., 2022) using the 'lmer' function for continuous outcomes and 'glmer' for categorical outcomes. We used maximum likelihood (ML) over restricted maximum likelihood (REML) as prior research (Vasdekis & Vlachonikolis, 2005) has suggested that there is little difference between the two approaches and ML provides computationally efficient analysis for larger samples relative to REML. We found that OQ-45 data for 4.7% of the sessions ($n = 5,474$) were missing, and missingness was associated with employment status, with all groups except those in casual employment showing higher rates of missing data compared to full-time employed participants. We handled missingness using maximum likelihood. Procedures outlined in Brauer and Curtin (2018) were used in case of model convergence issues. We used the default primary optimizer for each of these packages. If the default optimizer did not converge, we considered other options (e.g., "bobyqa", "nlminbwrap"). In all instances, we confirmed that all conclusions were consistent across at least two optimizers. Descriptive statistics (means and standard deviations for continuous measures; counts and percentages for categorical measures) are reported for baseline characteristics.

Categorical variables were dummy coded and reference groups were utilized for comparative analysis. The following reference groups were employed across different categorical variables: employment status (full-time employment), ethnicity (White/European), sex (male), marital status (single), and education (some high school). Using session date data, we also included a binary variable to indicate if the participant started treatment prior to or following

COVID-19, with the post-COVID start date serving as the reference group. All covariates were included at the patient level. For effect size interpretation, we used odds ratios (OR) and incidence rate ratios (IRR) for binary and count outcomes, respectively. ORs represent the odds of an outcome occurring in one group compared to the reference group, such that an OR of 1.50 means 50% higher odds of the outcome (Szumilas, 2010). IRRs indicate the relative rate of the outcome between groups, such that an IRR of 1.50 means 50% higher rates of the outcome in the group of interest compared to the reference group (Coxe et al., 2009). We standardized the outcome variable for interpretation in the multilevel models using the Gaussian distribution (i.e., continuous variables) and provide the effect size for illustrative purposes. Effect sizes were interpreted using Cohen's (1988) and Chen et al.'s (2010) guidelines.

Hypothesis 1: The first hypothesis examined whether employment status was associated with three distinct outcome variables at baseline: baseline symptoms, suicide concerns, and substance use concerns. Three separate models were evaluated for each outcome variable. The first model is as follows:

$$Y_{jk} = \beta_{00} + \beta_{10\text{-}80} \text{ (Employment Status)} + [U_{0k} + e_{jk}],$$

where baseline score on the OQ-45 (Y_{jk}) is the outcome for a given patient (j) working with a particular provider (k). The predictors include a fixed intercept (β_{00}) and employment status ($\beta_{10\text{-}80}$) which includes all employment status categories, expect the reference group (i.e., full-time employment). Additionally, the random effects part of the model (in brackets) includes a random intercept unique to each therapist (U_{0k}) as well as a residual term (e_{jk}).

As a sensitivity analysis, we added patient demographic variables, start of psychotherapy pre/post-COVID-19, and annual regional unemployment to the model to assess if the significance of associations remained the same. The second and third models followed the same

structure as the first, except we used substance use concerns and suicide concerns as outcome

variables, respectively with the 'glmer' function as they are both binary outcomes.

Hypothesis 2: The second hypothesis examined whether employment status was

associated with two outcome variables: total sessions attended and early termination. Separate

models were evaluated for each outcome variable. Given the positive skew for the total sessions

variable (skewness = 3.07, kurtosis = 20.67), we used a Poisson distribution for this model. Early

termination was defined as participants who completed only one session. Prior research suggests

that early attrition in psychotherapy may indicate premature termination of psychotherapy

(Hatchett & Park, 2003; Swift & Greenberg, 2012). We coded early termination as a binary

variable whereby all individuals who completed only one session were categorized as 1 and all

others categorized as 0. All other procedures mirrored the models for the first hypothesis.

Hypothesis 3: The third hypothesis examined whether employment status was associated

with two distinct outcome variables: pre-post change in symptoms and trajectories of change.

Two separate models were evaluated for each outcome variable. Pre-post change in symptoms

was calculated by subtracting the OQ-45 score for the first session from the last session, with

higher positive scores indicating more improvement. Some participants ($n = 1996$; 6.3%) did not

have OQ-45 data for their final session and were excluded from this analysis. All other

procedures for the pre-post change in symptoms model mirrored the first hypothesis.

For the session-level outcome model, we assessed if the trajectory of change varied by

employment status. To calculate the trajectory of change, we excluded all patients who had fewer

than three as prior statistical guidance has suggested that at least three sessions are required to

model trajectories of change (Singer & Willet, 2003). Following prior research examining

change overtime in psychotherapy (Owen et al., 2015; Stulz et al., 2013), we log2 transformed

session number and total sessions as it matches our theoretical understanding of change in psychotherapy (i.e., loglinear decrease in symptoms over sessions, with greater decreases observed early and an asymptote in change with many sessions; Howard et al., 1986). We also grand-mean centered both session number and total sessions to aid in interpretation. We included an interaction between session number and total sessions to account for the potential that the trajectory of change may vary by the total sessions, as has been found previously (Baldwin et al., 2009; Barkham et al., 2006; Bone et al., 2021). Our main model was as follows:

$Y_{ijk} = \beta_{000} + \beta_{100}$ *(Log Session Number)*$_{ijk} + \beta_{10}$ *(Total Sessions)*$_{jk}$

$+ \beta_{20\text{-}90}$ *(Employment Status)*$_{jk} +$

β_{11} *(Log Session Number)*$_{ijk}$ * *(Total Sessions)*$_{jk} +$

$\beta_{12\text{-}19}$ *(Log Session Number)*$_{ijk}$ * *(Employment Status)*$_{jk} +$

$[U_{00jk} + U_{10j}$ *(Log Session Number)*$_{ijk} + V_{00k} + e_{ijk}]$,

where the outcome was OQ-45 (Y_{ijk}) at a given session number (i) for a given patient (j) seeing a particular therapist (k). The predictor variables included the overall intercept (β_{000}), the log-linear rate of change across sessions (β_{100}), total sessions attended by the patient (β_{10}), and employment status (β_{30}). We included interactions between session number and total sessions (β_{11}) as well as between session number and employment status ($\beta_{12\text{-}19}$). Random effects are accounted for around the patient intercept (U_{00j}), the log-linear rate of change (U_{10j}), and therapist intercept variability (V_{00k}). If trajectories of change are moderated by employment status, we would expect that there will be a significant interaction between session number and employment status variables. As a sensitivity analysis, we estimated the model again with demographic and clinical covariates.

Results

Descriptive Data

Complete descriptive data are presented in Table 1. A majority of the patients were

female (n = 16,989, 62.9%), of European descent (n = 20,589, 75.8%), and single (n = 15,184,

58.7%). On average, patients received 4.25 sessions of psychotherapy (SD = 4.18), and 25.3% (n

= 6,894) terminated psychotherapy after a single session. With regards to employment, a

plurality of patients reported having full-time employment (n = 11,774, 43.2%) followed by part-

time employment (n = 4,266, 15.7%), those not employed and looking for work (n = 3,921,

14.4%), full-time students (n = 2,082, 7.6%), those not employed and not looking for work (n =

1,485, 5.4%), casual employment (n = 1,125, 4.1%), other employment (n = 1,061, 3.9%), those

on disability leave (n = 946, 3.5%), and retired individuals (n = 598, 2.2%).

Hypothesis 1

The first model assessed if baseline symptoms differed across various employment status

categories relative to full-time employment (see Table 2). Confirming our hypothesis, we

observed that patients who reported their employment status as not employed and looking for

work (b = 7.10, p < .001, β = .30) and not employed and not looking for work (b = 9.11, p

< .001, β = .39) were associated with higher symptomology at the start of psychotherapy relative

to patients with full-time employment, with moderate effect size (Cohen, 1988). Additionally,

patients who reported their employment status as casual (b = 2.35, p = .001, β = .10), full-time

student (b = 4.26, p < .001, β = .18), on disability leave (b = 14.40, p < .001, β = .61), and part-

time (b = 3.31, p < .001, β = .14) were associated with higher symptomology relative to patients

with full-time employment. Being retired, on the contrary, was associated with lower symptoms

relative to full-time employment (b = -5.84, p < .001, β = - .25). The results were consistent in

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our sensitivity analysis where we added demographic variables, the start of psychotherapy post

COVID-19 and annual regional unemployment, to the model (see Supplemental Table 1).

The second model assessed if substance use concerns differed across various employment

status categories relative to full-time employment (Table 2). Confirming our hypothesis, we

found that there were higher odds of substance use concerns in patients who were not employed

and looking for work (*odds ratio* [*OR*] = 1.37, *p* < .001) and not employed and not looking for

work (*OR* = 1.29, *p* < .001), relative to patients with full-time employment, representing small

effects (Chen et al., 2010). Additionally, we observed that there were lower odds of substance

use concerns for full-time students (*OR* = 0.68, *p* < .001) and being retired (*OR* = .76, *p* = .024)

relative to full-time employment. No other employment status differed significantly from full-

time employment with respect to substance use concerns. The results were consistent with the

inclusion of covariates in our sensitivity analysis, except the odds ratio of individuals who were

not employed and not looking for work having substance use concerns, though the coefficient

was in the same direction (*OR* = 1.10, *p* = .188; Supplemental Table 1).

The third model assessed if suicide concerns differed across various employment status

categories relative to full-time employment (Table 2). Confirming our hypothesis, we observed

that patients who reported their employment status as not employed and looking for work (*OR* =

1.53, *p* < .001) and not employed and not looking for work (*OR* = 1.80, *p* < .001) had higher

odds of suicide concerns relative to full-time employment, representing small effects. We also

observed that there were higher odds of suicide concerns in patients who reported their

employment status as casual (*OR* = 1.25, *p* = .004), full-time students (*OR* = 1.32, *p* < .001), on

disability leave (*OR* = 1.69, *p* < .001), and part-time employed (*OR* = 1.30, *p* < .001) relative to

full-time employment. No other employment status differed significantly from full-time

employment with respect to suicide concerns. The results were consistent in our sensitivity

analysis with one exception (Supplemental Table 1). The increase in odds of suicide concerns for

casual employment relative to full-time employment, though still in the same direction, was no

longer significant (*OR* = 1.14, *p* = .107).

Hypothesis 2

The first model in the second hypothesis assessed if total sessions attended differed

across various employment status categories relative to full-time employment (Table 3).

Contrary to our hypothesis, we observed that patients who reported their employment status as

not employed and looking for work (*incidence rate ratio* [*IRR*] = 1.09, *p* < .001) and not

employed and not looking for work (*IRR* = 1.12, *p* < .001) were associated with higher rates of

session attendance relative to individuals with full-time employment with small magnitude

effects. Additionally, we observed that the rates of total sessions attendance were higher for

patients who reported their employment status as casual (*IRR* = 1.03, *p* = .033), full-time students

(*IRR* = 1.11, *p* < .001), on disability leave (*IRR* = 1.22, *p* < .001), and part-time employed (*IRR* =

1.08, *p* < .001) relative to full-time employment. No other employment status differed

significantly from full-time employment with respect to total sessions attended. Our sensitivity

analysis revealed two changes from our primary model: patients who were retired (*IRR* = 1.05, *p*

= .046) showed significantly higher rates of attending more sessions compared to those with full-

time employment and the difference between casual employment and full-time employment was

no longer significant (*IRR* = 1.01, *p* = .411). In both cases, the direction of the relationships

remained consistent across analyses (see Supplemental Table 2).

The second model assessed if the likelihood of early termination (i.e., ending

psychotherapy after one session) differed across various employment status categories relative to

full-time employment (Table 3). Contrary to our hypothesis, we observed that patients who

reported their employment status as not employed and looking for work ($OR = 0.89$, $p = .008$)

had lower odds of early termination relative to full-time employment, representing a small effect.

We observed no significant association between early termination and patients who reported

their employment status as not employed and not looking for work relative to patients employed

full-time. Additionally, we observed that patients who reported their employment status as full-

time students ($OR = 0.74$, $p < .001$) had a significantly lower odds of early termination relative to

full-time employment. No other employment status differed significantly from full-time

employed with respect to the odds of early termination. The results were consistent in our

sensitivity analysis, except that those who were not employed and not looking for work ($OR =$

0.86, $p = .022$) and part-time employed ($OR = 0.91$, $p = .031$) now displayed significantly lower

odds of early termination relative to those who were full-time employed. The direction of the

aforementioned relationships remained consistent across both the primary and sensitivity

analyses (see Supplemental Table 2).

Hypothesis 3

The first model in the third hypothesis assessed if pre-post change in symptoms differed

across various employment status categories relative to full-time employment with higher pre-

post change indicating greater reduction in symptoms from baseline to end of psychotherapy (see

Table 4). Contrary to our hypothesis, we observed no significant association between pre-post

change in symptoms and either patients who reported their employment status as not employed

and looking for work or as not employed and not looking for work relative to patients employed

full-time. Additionally, we observed significantly lower pre-post change for patients who were

retired ($b = -1.71$, $p = .036$, $\beta = -.09$) relative to full-time employed. No other employment status

differed significantly from full-time employment with respect to pre-post change. The results

were consistent in our sensitivity analysis with one exception. Though still in the same direction,

retirement no longer differed significantly from full-time employment with respect to pre-post

change (b = -1.37, p = .116; see Supplemental Table 3).

The second model assessed if trajectories of change differed across various employment

status categories relative to full-time employment (see Table 5). Contrary to our hypothesis, we

observed no significant association between the trajectories of change and either patients who

reported their employment status as not employed and looking for work or as not employed and

not looking for work relative to patients who were employed full-time. Additionally, we

observed a significant positive interaction between log-linear rate of change and identifying

employment status as a full-time student (b = .60, p = .015, β = 0.03), disability leave (b = .73, p

= .039, β = 0.03), part-time employment (b = .38, p = .046, β = 0.02), and retired (b = 1.06, p

= .022, β = 0.05), which suggests that identifying as any of the aforementioned employment

status was associated with a slower rate of change relative to full-time employment albeit with

very small effect sizes. No other interactions between log-linear rate of change and employment

status were significant. The sensitivity analysis was consistent with one exception (see

Supplemental Table 4). The positive interaction between log-linear rate of change and

identifying employment status as disability leave (b = .65, p = .092) and part-time employment

(b = .27, p = .177) were no longer significant, though still in the same direction. In response to

reviewer feedback, we conducted two additional sensitivity analyses. First, we controlled for the

average days between sessions in addition to the demographic variables. Second, we recomputed

our main model with all patients included (i.e., we did not exclude patients who attended fewer

than three sessions). The results for both of these additional sensitivity analyses were consistent

with our preregistered sensitivity analysis such that full-time students and retired individuals continued to demonstrate significantly slower rates of change compared to full-time employed patients (see Supplemental Tables 5 & 6).

Discussion

The current study examined the relationship between employment status with baseline psychological symptoms and psychotherapy engagement and outcomes. We used naturalistic data from an outpatient psychotherapy clinic in Canada to test three pre-registered hypotheses. We explored how distinct types of employment status were associated with baseline symptoms, as well as psychotherapy engagement and outcomes.

Psychotherapy patients who were unemployed (both looking and not looking for work) reported worse psychological symptoms (with moderate effect sizes) and had higher likelihood of reporting substance use and suicidal concerns (with small effect sizes) at the start of psychotherapy as compared to individuals who were employed full-time, supporting the first hypothesis. These findings persisted after controlling for demographic and contextual factors, except the relationship between not employed and not looking for work and having substance use concerns became non-significant. These findings are consistent with prior results that have demonstrated support for this pattern of relationships (Milner et al., 2013; Paul & Moser, 2009; Paul et al., 2023; Saul et al., 2022), though this is the first study (to our knowledge) to demonstrate these relationships within a naturalistic psychotherapy patient sample and across a wider range of employment status categories. In combination, the results align with both the latent deprivation model (Jahoda, 1981) and Psychology of Working Theory (Duffy et al., 2016), which posit that the absence of decent work can undermine psychological well-being by depriving individuals of critical psychosocial resources such as time structure, social connection,

purpose, status and identity, engagement in regular activities, and self-determination. We also found that on disability leave, and part-time employment were associated with higher baseline symptomology and higher odds of suicide concerns; Being retired, in contrast, was associated with lower baseline symptoms and lower odds of reporting substance use concerns relative to full-time employment. Moreover, higher baseline symptoms, higher odds of suicide concerns, and lower odds of substance use concerns were observed for full-time students compared to full-time employment. Practically, these findings underscore the significance of addressing the connection between employment status and patients' baseline symptoms in psychotherapy, particularly for those currently unemployed or underemployed.

Patients who were unemployed not looking for work were found to participate in *more* total sessions as compared to patients who were full-time employed with a small effect size. The trend to participate in more total psychotherapy sessions was also observed among patients on disability leave, full-time students, and those employed part-time. Patients who were unemployed and looking for work and full-time students were both inclined to attend more psychotherapy sessions and less likely terminate early as compared to patients who were full-time employed. This finding persisted when controlling for other contextual factors (e.g., education level). Although this pattern of findings was contrary to H2, when coupled with results from H1, there are several potential explanations. For example, as the latent functions of work are compromised, patients facing unemployment, part-time employment, or disability leave may experience heightened distress and a heightened need for and/or motivation to engage in psychotherapy to navigate the challenges associated with unemployment or underemployment (Staiger et al., 2017). In addition, patients who are unemployed or underemployed may have more time to participate in more psychotherapy sessions particularly if they are available at low

or no cost. On a practical level, this finding highlights the value of psychotherapy among individuals who are unemployed or underemployed and the importance of increasing the accessibility of psychotherapy for them (Juntunen et al., 2022).

Finally, patients who were unemployed (both look for work and not looking for work) did not differ from patients who were employed full-time in pre-post symptom change or trajectory of change throughout psychotherapy. Though inconsistent with H3, these findings are consistent with some previous studies suggesting a non-significant relationship between unemployment and psychotherapy outcomes (Delgadillo et al., 2016; Fournier et al., 2009). As discussed above, patients who are unemployed may have higher motivation and more time to engage in psychotherapy. These factors may allow them to gain equally from psychotherapy even with the potential lack of resources connected to their unemployment experience. Overall, our findings indicate that psychotherapy may be equally effective for individuals who are unemployed and employed. Unemployment or economic marginalization is oftentimes associated with more barriers to accessing and engaging in psychotherapy due to various psychosocial and practical factors (e.g., costs for treatment and lack of insurance coverage, belief that psychotherapy will not be helpful, social isolation, lack of childcare and transportation; Juntunen et al., 2022). These findings underscore the importance of taking measures to ensure individuals who are unemployed have access to psychotherapy.

Our study also demonstrated that full-time students and patients who were retired exhibited slower trajectories of change with very small effect sizes compared to patients employed full-time. This result was observed when demographic and contextual factors (e.g., income) were controlled for. There are multiple potential explanations for this finding. For full-time students, navigating identity development may still be an ongoing process, which can slow

treatment progress as they work through this broader developmental challenge (Jones & Abes, 2013). Additionally, academic stress is often chronic and cyclical (e.g., semester-based), potentially making it harder for students to accelerate symptom improvement. For individuals who are retired, self-development priorities may be influenced by the reduced scope for professional growth and skill development typically provided in work-related environments (Grünwald et al., 2022). This shift in priorities may shape retired patients' opportunities to learn new coping skills, thus slowing their trajectories of change during psychotherapy. Moreover, retirement is a significant life transition that can impact psychological well-being, as individuals adjust to changes in social roles, financial stability, and daily routines. Depending on factors such as gender and socio-economic status, this transition can exacerbate stress and potentially contribute to slower trajectories of change in psychotherapy as retired patients adapt to their new circumstances (Kubicek et al., 2011). Retirement is also often accompanied by aging. As individuals age, they may experience various physical, cognitive, and social challenges and reduced receptiveness to change (Brawley et al., 2003; Cudjoe et al., 2020; Deary et al., 2009; Edgcumbe, 2022). This may limit the opportunities to implement skills learned from psychotherapy in their daily lives, ultimately resulting in slower changes in psychotherapy outcomes. Of note, the concept of "change" in psychotherapy may differ for retired and older patients, as their therapeutic needs might not align with traditional goals like symptom reduction. Physical, cognitive, and social challenges often associated with aging may require therapy adaptations to better address life adjustments beyond typical psychotherapy outcomes, which could explain the slower trajectories of change observed. Additionally, the OQ-45 may not fully capture changes in older populations, as its measurement invariance across age groups has not been well tested. This could mean that the results from the OQ-45 may not accurately reflect the

mental health status or progress of older patients in the same way it does for other age groups. Future research could explore whether alternative or adapted tools would more accurately reflect progress in psychotherapy for retired and older patients. Our finding suggests the importance of investigating factors (e.g., identity development, value of self-development, aging-related challenges) linking full-time student status and retirement to psychotherapy outcomes. Research in this direction may inform the development of targeted treatment strategies to accelerate changes in psychotherapy outcomes for full-time students and patients who are retired. On the practical level, our finding underscores the potential need to incorporate discussions of full-time student status and retirement into psychotherapy sessions to address its potential impact on patients' changes in psychotherapy.

Strengths of the Current Study

Several strengths of the current study are worth noting. First, we examined a wide range of employment status categories in a large naturalistic sample of psychotherapy patients drawn from a community mental health agency. This approach diverges from the common practice in previous studies of collapsing employment status into broad categories (Firth et al., 2015, 2019; Swift & Greenberg, 2012). This approach allowed us to examine how specific types of employment status (e.g., full-time students, being retired) are associated with baseline symptoms and psychotherapy engagement and outcomes.

Another significant strength of our study is that we accounted for contextual factors (i.e., regional unemployment rate, income, sex, ethnicity, education, marital status, and whether the treatment started prior to or following COVID-19) while examining the role of employment status. Prior research suggested that sociodemographic variables such as income and education might be associated with psychological symptoms and psychotherapy outcomes (e.g., Pirkis et

al., 2011; Thomson et al., 2022). By controlling for these contextual factors, we were able to isolate the unique effect of employment status.

Limitations of the Current Study

Several important limitations need to be considered while interpreting the findings of the current study. First, although our study used a longitudinal design, it is essentially correlational in nature, which precludes us from establishing a causal effect of employment status on baseline symptoms and psychotherapy engagement and outcomes. For example, prior research suggests that unemployment might serve as both a risk factor for, and a consequence of, heightened mental health symptoms (Olesen et al., 2013). Second, patients' employment status was only collected in one instance (i.e., prior to the start of psychotherapy) and may have changed over time. Because employment status was not assessed at multiple time points, we were unable to determine how many participants experienced such changes during treatment. Thus, the conclusions derived from the current study may not extend to subsequent time points during which patients are actively engaged in psychotherapy. Given the often-fluid nature of employment in today's labor market, future research will ideally assess employment status at multiple timepoints (i.e., throughout psychotherapy) to examine how changes in employment status (e.g., from unemployment to employment or employment to unemployment) predict psychotherapy engagement and outcomes.

Third, we collected data for employment status without any associated experiences related to employment status. For example, individuals can hold varied attitudes or feelings toward the same employment status. Some may perceive unemployment as a negative experience associated with financial instability or loss of latent functions, but others may view it as an opportunity for reflections on meaning and values and new understandings of achievement and

contributions (Arena et al., 2022). In addition, individuals who are long-term unemployed and searching for work face considerable stigma and potentially pernicious scarring effects connected to re-employment (Sharone, 2024). Finally, in today's rapidly changing economy, some individuals who are unemployed may face bleaker job prospects if their expertise and skills lie in professions that have been disrupted by external forces such as artificial intelligence and other technological innovations (Thompson & Dahling, 2019). Future studies, therefore, are needed to investigate how patients' subjective experiences of their employment status, duration of their unemployment event, and alignment of expertise and prior work experience with job sector supply and demand are associated with baseline symptoms and psychotherapy engagement and outcomes. Importantly, while we drew on Jahoda's (1981) latent deprivation model to contextualize potential psychosocial mechanisms linking employment status to mental health and treatment engagement, we did not directly measure these latent functions. As such, it is difficult to determine whether the observed associations in our study reflect the influence of these latent factors or other variables. Future research should incorporate direct assessments of individuals' subjective work-related experiences, perceived financial security, and latent psychological resources to more precisely examine how employment affects psychotherapy engagement and outcomes.

Fourth, our data were drawn from an outpatient mental health agency in a large metropolitan area in Canada. The findings may not be generalizable to other clinical settings, cities, or countries. Indeed, the mental health agency in the current study adjusts therapy session fees based on patients' income. The impact of income may differ in other clinical settings with different billing practices, such as those offering free psychotherapy. Moreover, individuals' access to healthcare coverage, unemployment benefits, and other social support structures are

likely to significantly impact the potential impacts of unemployment. Individuals' employment status and their experiences can be impacted by a range of economic, social, and political factors (Boone & Heylen, 2019; Paul & Moser, 2009). Additionally, while we note variability in session frequency, we were unable to distinguish whether the differences reflected client preference, therapist availability, or scheduling constraints that might impact treatment engagement, as we only had data on actual session attendance dates rather than appointment scheduling practices. Replicating these findings within other regions globally is needed. Fifth, we excluded patients mandated to attend therapy by court order as they may be less motivated to change (Hachtel et al., 2019), less transparent (Klag et al., 2005) and typically receive additional professional support beyond counseling (e.g., from social work), making them meaningfully different from voluntary patients. However, mandated patients represent an important and potentially economically marginalized population warranting future investigation of employment status effects. Sixth, some measures used in the study were not validated measures (e.g., suicidality and substance use), which increases risks of bias due to reliability and validity. Future research will ideally use validated measures of suicidality and substance use when replicating these findings. Finally, we found that OQ-45 data missingness were associated with employment status, with all groups except those in casual employment showing higher rates of missing data compared to full-time employed participants. This non-random missingness pattern may potentially bias our findings, though our use of maximum likelihood estimation in mixed models helps mitigate this concern to some extent (Graham, 2009).

Conclusions

In summary, our study suggests that patients who were unemployed (both those searching for work and not searching for work) had heightened mental health concerns at baseline and

participated in more total psychotherapy sessions as compared to patients who were full-time employed. However, unemployment did not predict total symptom changes or trajectories of change throughout psychotherapy even when controlling for other contextual factors. These findings suggest that patients who are unemployed may benefit equally from psychotherapy as compared to patients who are full-time employed and that efforts should be made to ensure the accessibility of psychotherapy sessions for individuals who are unemployed, particularly given their increased risk for psychological symptoms. Our study is one of the first to examine a variety of types of employment status, and results demonstrated that specific types of employment status, such as full-time students and retirement, may warrant particular consideration due to their relatively unique relationship with psychotherapy engagement and outcomes.

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EMPLOYMENT AND PSYCHOTHERAPY

Table 1

Characteristics of therapy patients included in the sample

Variables	Missing (%)	Mean	SD	n	%	Min	Max	Skew	Kurtosis
OQ-45	2.6	79.75	23.64			0	180	-0.07	3.1
Total Session Number	0	4.25	4.18			1	64	3.07	20.67
Pre-Post Change in OQ-45	7.9	11.63	18.31			-136	151	0.96	5.35
Age	0	32.54	11.54			18	97	1.3	4.43
Adjusted Household Income	2.3	28,785.2	36,037.01			0.37	2,254,656.82	19.82	1,032.69
Substance Use Concerns	0			5,118	18.8				
Suicide Concerns	0			5,764	21.1				
Early Termination	0			6,894	25.3				
Pre-COVID Start Date	0			20,764	76.2				
Employment	0								
Full-Time				11,774	43.2				
Casual				1,125	4.1				
Full-Time Student				2,082	7.6				
Not Employed - Looking for work				3,921	14.4				
Not Employed - not looking for work				1,485	5.4				
On Disability Leave				946	3.5				
Other				1,061	3.9				
Part-Time				4,266	15.7				
Retired				598	2.2				
Sex	0.9								
Male				9,705	35.9				
Female				16,989	62.9				

Not specified		306	1.1
Education	0.8		
Some high school or less		1,897	7
High school grad		4,088	15.1
Some college or technical school		3,850	14.2
College or technical school grad		4,966	18.4
Some university		3,260	12.1
University undergraduate degree		6,753	25
Post-graduate degree or Masters or PhD		1,972	7.3
Prefer not to say		246	0.9
Marital Status	5.1		
Single		15,184	58.7
Divorced Separated or Widowed		2,789	10.8
Married or Partnered		7,883	30.5
Ethnicity	0.4		
European		20,589	75.8
Other		1,178	4.3
Aboriginal		824	3
African		711	2.6
Asian		2,627	9.7
Latin American		692	2.5
Middle Eastern		533	2

Note. OQ-45 = Outcome Questionnaire 45; Pre-Post Change in OQ-45 was calculated by subtracting the first session from the last session; Early termination was calculated as all individuals who completed only one session.

Table 2

Model Parameters for Hypothesis 1 Outcome Variables

Variable	Baseline Symptoms			Substance Use Concerns			Suicide Concerns		
	Estimate	SE	*p*	OR	SE	*p*	OR	SE	*p*
					Fixed Effects				
Intercept	77.68	0.30	<.001	0.22	0.03	<.001	0.22	0.03	<.001
Employment: Casual	2.35	0.73	.001	1.02	0.08	.777	1.25	0.08	.004
Employment: Full-Time Student	4.26	0.57	<.001	0.68	0.07	<.001	1.32	0.06	<.001
Employment: Not Employed - Looking for work	7.10	0.44	<.001	1.37	0.05	<.001	1.53	0.05	<.001
Employment: Not Employed - not looking for work	9.11	0.66	<.001	1.29	0.07	<.001	1.8	0.06	<.001
Employment: On Disability Leave	14.41	0.80	<.001	1.11	0.09	.211	1.69	0.08	<.001
Employment: Other	3.16	0.76	<.001	0.98	0.08	.829	0.93	0.09	.373
Employment: Part-Time	3.31	0.43	<.001	0.96	0.05	.414	1.3	0.04	<.001
Employment: Retired	-5.84	1.00	<.001	0.76	0.12	.024	1.17	0.1	.112
					Random Effects				
Between Therapist Intercept	3.44			1.18			1.20		
Residual	23.00								

Note. OQ-45 = Outcome Questionnaire 45; SE = Standard Error; OR = Odds Ratio; Odds ratios were calculated by exponentiating the estimate; Full-time

employment served as the reference category.

Table 3

Model Parameters for Hypothesis 2 Outcome Variables

Variable	Total Sessions			Early Termination		
	IRR	SE	*p*	OR	SE	*p*
	Fixed Effects					
Intercept	4.04	0.01	<.001	0.33	0.03	<.001
Employment: Casual	1.03	0.02	.033	0.98	0.07	.822
Employment: Full-Time Student	1.11	0.01	<.001	0.74	0.06	<.001
Employment: Not Employed - Looking for work	1.09	0.01	<.001	0.89	0.04	.008
Employment: Not Employed - not looking for work	1.12	0.01	<.001	0.96	0.06	.489
Employment: On Disability Leave	1.22	0.02	<.001	0.94	0.08	.467
Employment: Other	1.01	0.02	.742	0.97	0.07	.673
Employment: Part-Time	1.08	0.01	<.001	0.94	0.04	.117
Employment: Retired	1.02	0.02	.407	0.98	0.1	.861
	Random Effects					
Between Therapist Intercept	1.28			1.42		

Note. OQ-45 = Outcome Questionnaire 45; SE = Standard Error; IRR = Incidence Rate Ratio; OR = Odds Ratio; Odds ratios were calculated by exponentiating the estimate; Full-time employment served as the reference category; Early termination was calculated as all individuals who completed only one session.

EMPLOYMENT AND PSYCHOTHERAPY

Table 4

Model Parameters for Pre-Post Change in Symptoms

Variable	Pre-Post Change		
	Estimate	SE	*p*
	Fixed Effects		
Intercept	11.82	0.23	<.001
Employment: Casual	-0.59	0.59	.319
Employment: Full-Time Student	0.41	0.46	.376
Employment: Not Employed - Looking for work	0.46	0.36	.204
Employment: Not Employed - not looking for work	-0.18	0.54	.737
Employment: On Disability Leave	-0.24	0.65	.712
Employment: Other	-1.18	0.62	.059
Employment: Part-Time	0.27	0.35	.433
Employment: Retired	-1.71	0.82	.036
	Random Effects		
Between Therapist Intercept	2.30		
Residual	18.16		

Note. OQ-45 = Outcome Questionnaire 45; SE = standard error; Pre-Post Change was calculated by subtracting the OQ-45 score for the first session from the last session; Full-time employment served as the reference category.

EMPLOYMENT AND PSYCHOTHERAPY

Table 5

Multilevel Model Growth Curve Model Predicting Change in OQ-45 during Treatment.

Variable	Estimate	SE	*p*
	Fixed Effects		
Intercept	68.5	0.36	<.001
Session Number	-7.01	0.11	<.001
Total Sessions	6.24	0.24	<.001
Employment: Casual	4.23	0.94	<.001
Employment: Full-Time Student	5.04	0.7	<.001
Employment: Not Employed - Looking for work	6.14	0.57	<.001
Employment: Not Employed - not looking for work	9.35	0.84	<.001
Employment: On Disability Leave	14.66	1.01	<.001
Employment: Other	3.64	0.98	<.001
Employment: Part-Time	3.06	0.55	<.001
Employment: Retired	-0.88	1.28	.490
Session Number x Total Sessions	1.1	0.08	<.001
Session Number x Casual	0.6	0.34	.076
Session Number x Full-Time Student	0.6	0.24	.015
Session Number x Not Employed - Looking for work	-0.01	0.2	.952

Session Number x Not Employed - not looking for work	0.42	0.29	.153
Session Number x On Disability Leave	0.73	0.36	.039
Session Number x Other	0.54	0.36	.128
Session Number x Part-Time	0.38	0.19	.046
Session Number x Retired	1.06	0.46	.022

Random Effects

Between Patients	
Intercept (U_{00jk})	21.62
Session (U_{10j})	5.75
Between Therapist	
Intercept (V_{00k})	2.89
Residual (e_{jk})	10.53

Note. OQ-45 = Outcome Questionnaire 45; SE = standard error; Session Number and Total Sessions were log2 scaled and centered; Full-time employment

served as the reference category.

Supplemental Table 1

Model Parameters for Hypothesis 1 Outcome Variables with Covariates

Variable	Baseline Symptoms			Substance Use Concerns			Suicide Concerns		
	Estimate	SE	*p*	OR	SE	*p*	OR	SE	*p*
	Fixed Effects								
Intercept	81.07	0.74	<.001	0.46	0.07	<.001	0.32	0.07	<.001
Employment: Casual	1.64	0.75	.029	1.07	0.09	.426	1.14	0.08	.107
Employment: Full-Time Student	2.46	0.61	<.001	0.76	0.08	<.001	1.17	0.07	.020
Employment: Not Employed - Looking for work	6.02	0.46	<.001	1.33	0.05	<.001	1.27	0.05	<.001
Employment: Not Employed - not looking for work	7.1	0.7	<.001	1.1	0.08	.188	1.47	0.07	<.001
Employment: On Disability Leave	13.41	0.84	<.001	1.04	0.09	.646	1.51	0.08	<.001
Employment: Other	2.57	0.77	<.001	0.98	0.09	.824	0.86	0.09	.093
Employment: Part-Time	2.08	0.44	<.001	1.04	0.05	.443	1.15	0.05	.003
Employment: Retired	-4.89	1.06	<.001	0.76	0.13	.030	1.22	0.11	.081
Sex: Female	2.31	0.31	<.001	0.65	0.03	<.001	0.75	0.03	<.001
Sex: Not specified	11.32	1.37	<.001	0.91	0.15	.533	1.95	0.12	<.001
Ethnicity: Other	1.24	0.74	.096	0.95	0.08	.571	1.19	0.08	.024
Ethnicity: Aboriginal	1.08	0.89	.225	1.7	0.08	<.001	1.07	0.09	.454
Ethnicity: African	-0.54	0.93	.562	0.81	0.11	.057	0.93	0.1	.470
Ethnicity: Asian	2.29	0.5	<.001	0.51	0.07	<.001	1.2	0.05	<.001
Ethnicity: Latin American	0.8	0.92	.380	0.72	0.11	.004	0.97	0.1	.764

Ethnicity: Middle Eastern	2.42	1.06	.022	0.36	0.17	<.001	0.69	0.13	.004
Adjusted Household Income	-1.17	0.16	<.001	0.98	0.02	.381	0.76	0.03	<.001
Marital Status: Divorced, Separated or Widowed	-3.14	0.5	<.001	1.02	0.06	.716	0.78	0.06	<.001
Marital Status: Married or Partnered	-3.8	0.34	<.001	0.97	0.04	.387	0.97	0.04	.412
Education: High school grad	-2.26	0.68	<.001	0.76	0.07	<.001	1.01	0.07	.867
Education: Some college or technical school	-2.92	0.69	<.001	0.77	0.07	<.001	0.94	0.07	.328
Education: College or technical school grad	-4.93	0.67	<.001	0.65	0.07	<.001	0.8	0.07	<.001
Education: Some university	-3.74	0.72	<.001	0.64	0.08	<.001	0.81	0.07	.004
Education: University undergraduate degree	-8.11	0.65	<.001	0.55	0.07	<.001	0.64	0.07	<.001
Education: Post-graduate degree or Masters or PhD	-10.2	0.8	<.001	0.4	0.09	<.001	0.53	0.09	<.001
Education: Prefer not to say	-4.21	1.65	.011	0.68	0.18	.029	0.72	0.18	.060
Regional Unemployment Rate	0.72	0.19	<.001	0.97	0.02	.115	0.98	0.02	.247
Start Date Prior to COVID-19	1.58	0.46	<.001	1.03	0.05	.550	1.12	0.04	.010

				Random Effects					
Between Therapist Intercept	2.27			1.06			1.08		
Residual	22.54								

Note. OQ-45 = Outcome Questionnaire 45; SE = standard error; OR = Odds Ratio; Odds ratios were calculated by exponentiating the estimate; Full-time

employment (employment), White/European (ethnicity), male (sex), single (marital status) and some high school (education) served as reference categories.

Supplemental Table 2

Model Parameters for Hypothesis 2 Outcome Variables with Covariates

Variable	Total Sessions			Early Termination		
	IRR	SE	*p*	OR	SE	*p*
			Fixed Effects			
Intercept	3.64	0.02	<.001	0.3	0.08	<.001
Employment: Casual	1.01	0.02	.411	0.97	0.08	.653
Employment: Full-Time Student	1.07	0.01	<.001	0.74	0.07	<.001
Employment: Not Employed - Looking for work	1.09	0.01	<.001	0.88	0.05	.008
Employment: Not Employed - not looking for work	1.13	0.01	<.001	0.86	0.07	.028
Employment: On Disability Leave	1.18	0.02	<.001	0.89	0.09	.179
Employment: Other	1.02	0.02	.188	0.9	0.08	.199
Employment: Part-Time	1.07	0.01	<.001	0.91	0.05	.031
Employment: Retired	1.05	0.02	.046	0.93	0.1	.513
Sex: Female	0.95	0.01	<.001	1.18	0.03	<.001
Sex: Not specified	1.08	0.03	.007	1.00	0.15	.994
Ethnicity: Other	1.03	0.02	.090	1.04	0.08	.631
Ethnicity: Aboriginal	0.93	0.02	<.001	1.17	0.09	.068
Ethnicity: African	0.86	0.02	<.001	1.5	0.09	<.001
Ethnicity: Asian	0.95	0.01	<.001	1.16	0.05	.004
Ethnicity: Latin American	1.00	0.02	.918	1	0.1	.978

Ethnicity: Middle Eastern	0.92	0.02	<.001	1.45	0.1	<.001
Adjusted Household Income	0.96	0.00	<.001	1.02	0.02	.238
Marital Status: Divorced, Separated or Widowed	0.93	0.01	<.001	1.18	0.05	.001
Marital Status: Married or Partnered	0.91	0.01	<.001	1.15	0.03	<.001
Education: High school grad	1.13	0.02	<.001	0.84	0.07	.007
Education: Some college or technical school	1.13	0.02	<.001	0.82	0.07	.004
Education: College or technical school grad	1.16	0.01	<.001	0.73	0.07	<.001
Education: Some university	1.20	0.02	<.001	0.72	0.07	<.001
Education: University undergraduate degree	1.25	0.01	<.001	0.63	0.06	<.001
Education: Post-graduate degree or Masters or PhD	1.23	0.02	<.001	0.74	0.08	<.001
Education: Prefer not to say	1.03	0.04	.357	1.11	0.15	.493
Regional Unemployment Rate	1.03	0.01	<.001	1.02	0.02	.271
Start Date Prior to COVID-19	1.02	0.01	.201	1.32	0.05	<.001
Random Effects						
Between Therapist Intercept	1.28			1.39		

Note. OQ-45 = Outcome Questionnaire 45; SE = standard error; OR = Odds Ratio; Odds ratios were calculated by exponentiating the estimate; Full-time employment (employment), White/European (ethnicity), male (sex), single (marital status) and some high school (education) served as reference categories.; Early termination was calculated as all individuals who completed only one session.

Supplemental Table 3

Model Parameters for Pre-Post Change in Symptoms with Covariates

Variable	Pre-Post Change		
	Estimate	SE	*p*
	Fixed Effects		
Intercept	11.78	0.62	<.001
Employment: Casual	-0.4	0.62	.521
Employment: Full-Time Student	0.23	0.5	.652
Employment: Not Employed - Looking for work	0.54	0.38	.162
Employment: Not Employed - not looking for work	0.35	0.58	.546
Employment: On Disability Leave	-0.04	0.7	.955
Employment: Other	-0.77	0.64	.233
Employment: Part-Time	0.53	0.36	.145
Employment: Retired	-1.37	0.87	.116
Sex: Female	-1.52	0.26	<.001
Sex: Not specified	0.26	1.16	.826
Ethnicity: Other	-1.26	0.62	.041
Ethnicity: Aboriginal	0.02	0.74	.982
Ethnicity: African	-2.26	0.78	.004
Ethnicity: Asian	0.38	0.41	.364
Ethnicity: Latin American	1.74	0.76	.022
Ethnicity: Middle Eastern	-1.3	0.89	.143

Adjusted Household Income	-0.21	0.13	.112
Marital Status: Divorced, Separated or Widowed	-1.01	0.41	.015
Marital Status: Married or Partnered	-1.18	0.28	<.001
Education: High school grad	1.94	0.57	<.001
Education: Some college or technical school	1.72	0.57	.003
Education: College or technical school grad	2.35	0.55	<.001
Education: Some university	2.59	0.6	<.001
Education: University undergraduate degree	2.22	0.54	<.001
Education: Post-graduate degree or Masters or PhD	1.03	0.66	.120
Education: Prefer not to say	1.47	1.38	.290
Regional Unemployment Rate	-0.15	0.16	.362
Start Date Prior to COVID-19	-0.67	0.4	.089
Random Effects			
Between Therapist Intercept	2.21		
Residual	18.10		

Note. OQ-45 = Outcome Questionnaire 45; SE = standard error; OR = Odds Ratio; Pre-Post Change was calculated by subtracting the OQ-45 score for the first session from the last session; Full-time employment (employment), White/European (ethnicity), male (sex), single (marital status) and some high school (education) served as reference categories.

Supplemental Table 4

Multilevel Model Growth Curve Model Predicting Change in OQ-45 during Treatment with Covariates.

Variable	Pre-Post Change		
	Estimate	SE	p
	Fixed Effects		
Intercept	69.76	1.53	<.001
Session Number	-7.03	0.11	<.001
Total Sessions	6.22	0.26	<.001
Employment: Casual	3.22	0.98	<.001
Employment: Full-Time Student	2.91	0.75	<.001
Employment: Not Employed - Looking for work	5.35	0.6	<.001
Employment: Not Employed - not looking for work	7.25	0.9	<.001
Employment: On Disability Leave	13.77	1.08	<.001
Employment: Other	2.75	1	.006
Employment: Part-Time	1.62	0.57	.004
Employment: Retired	-0.95	1.36	.486
Sex: Female	2.45	0.38	<.001
Sex: Not specified	9.12	1.57	<.001
Ethnicity: Other	1.53	0.9	.091
Ethnicity: Aboriginal	-0.63	1.13	.578
Ethnicity: African	-0.82	1.27	.518

Ethnicity: Asian	1.66	0.61	.006
Ethnicity: Latin American	0.5	1.13	.659
Ethnicity: Middle Eastern	1.11	1.42	.436
Adjusted Household Income	0.00	0.00	<.001
Marital Status: Divorced, Separated or Widowed	-2.24	0.63	<.001
Marital Status: Married or Partnered	-2.46	0.42	<.001
Education: High school grad	-2.39	0.87	.006
Education: Some college or technical school	-2.55	0.88	.004
Education: College or technical school grad	-4.26	0.86	<.001
Education: Some university	-3.14	0.91	<.001
Education: University undergraduate degree	-7.56	0.83	<.001
Education: Post-graduate degree or Masters or PhD	-9.08	1.01	<.001
Education: Prefer not to say	-6.47	2.18	.003
Regional Unemployment Rate	0.29	0.12	.021
Start Date Prior to COVID-19	1.45	0.54	.008
Session Number x Total Sessions	1.1	0.09	<.001
Session Number x Casual	0.44	0.35	.209
Session Number x Full-Time Student	0.54	0.25	.034
Session Number x Not Employed - Looking for work	0.00	0.21	.992
Session Number x Not Employed - not looking for work	0.23	0.31	.465
Session Number x On Disability Leave	0.65	0.38	.092

Session Number x Other	0.66	0.37	.072
Session Number x Part-Time	0.27	0.2	.177
Session Number x Retired	1.38	0.5	.005

<div align="center">Random Effects</div>

Between Patients	
Intercept (U_{00jk})	21.36
Session (U_{10j})	5.76
Between Therapist	
Intercept (V_{00k})	2.49
Residual (e_{jk})	10.49

Note. OQ-45 = Outcome Questionnaire 45; SE = standard error; Session Number and Total Sessions were log2 scaled and centered; Full-time employment (employment), White/European (ethnicity), male (sex), single (marital status) and some high school (education) served as reference categories.

Supplemental Table 5

Multilevel Model Growth Curve Model Predicting Change in OQ-45 during Treatment with Covariates and Session Frequency.

Variable	Pre-Post Change		
	Estimate	SE	*p*
	Fixed Effects		
Intercept	69.83	1.53	<.001
Session Number	-6.99	0.12	<.001
Total Sessions	6.19	0.26	<.001
Employment: Casual	3.22	0.98	.001
Employment: Full-Time Student	2.90	0.75	<.001
Employment: Not Employed - Looking for work	5.34	0.6	<.001
Employment: Not Employed - not looking for work	7.23	0.9	<.001
Employment: On Disability Leave	13.76	1.08	<.001
Employment: Other	2.74	1.00	.006
Employment: Part-Time	1.62	0.57	.005
Employment: Retired	-0.96	1.36	.482
Sex: Female	2.45	0.38	<.001
Sex: Not specified	9.12	1.57	<.001
Ethnicity: Other	1.52	0.90	.091
Ethnicity: Aboriginal	-0.63	1.13	.578
Ethnicity: African	-0.82	1.27	.518

Ethnicity: Asian	1.66	0.61	.006
Ethnicity: Latin American	0.5	1.13	.660
Ethnicity: Middle Eastern	1.1	1.42	.437
Adjusted Household Income	0.00	0.00	<.001
Marital Status: Divorced, Separated or Widowed	-2.24	0.63	<.001
Marital Status: Married or Partnered	-2.45	0.42	<.001
Education: High school grad	-2.39	0.87	.006
Education: Some college or technical school	-2.55	0.88	.004
Education: College or technical school grad	-4.26	0.85	<.001
Education: Some university	-3.14	0.91	<.001
Education: University undergraduate degree	-7.56	0.83	<.001
Education: Post-graduate degree or Masters or PhD	-9.07	1.01	<.001
Education: Prefer not to say	-6.47	2.18	.003
Regional Unemployment Rate	0.29	0.12	.021
Start Date Prior to COVID-19	1.45	0.54	.008
Days Between Sessions	0.00	0.00	.297
Session Number x Total Sessions	1.08	0.09	<.001
Session Number x Casual	0.44	0.35	.214
Session Number x Full-Time Student	0.53	0.25	.036
Session Number x Not Employed - Looking for work	-0.01	0.21	.965
Session Number x Not Employed - not looking for work	0.22	0.31	.481

Session Number x On Disability Leave	0.64	0.38	.095
Session Number x Other	0.65	0.37	.075
Session Number x Part-Time	0.26	0.20	.185
Session Number x Retired	1.38	0.50	.005

<u>Random Effects</u>

Between Patients	
Intercept (U_{00jk})	21.36
Session (U_{10j})	5.76
Between Therapist	
Intercept (V_{00k})	2.49
Residual (e_{jk})	10.49

Note. OQ-45 = Outcome Questionnaire 45; SE = standard error; Session Number and Total Sessions were log2 scaled and centered; Full-time employment

(employment), White/European (ethnicity), male (sex), single (marital status) and some high school (education) served as reference categories.

Supplemental Table 6

Multilevel Model Growth Curve Model Predicting Change in OQ-45 during Treatment with All Patients.

Variable	Estimate	SE	p
		Fixed Effects	
Intercept	68.34	0.31	<.001
Session Number	-7.28	0.10	<.001
Total Sessions	4.12	0.15	<.001
Employment: Casual	3.21	0.77	<.001
Employment: Full-Time Student	4.83	0.58	<.001
Employment: Not Employed - Looking for work	6.92	0.46	<.001
Employment: Not Employed - not looking for work	9.52	0.68	<.001
Employment: On Disability Leave	15.69	0.83	<.001
Employment: Other	4.17	0.80	<.001
Employment: Part-Time	3.51	0.44	<.001
Employment: Retired	-3.21	1.05	.002
Session Number x Total Sessions	1.09	0.07	<.001
Session Number x Casual	0.60	0.32	.060
Session Number x Full-Time Student	0.50	0.23	.032
Session Number x Not Employed - Looking for work	-0.11	0.19	.547
Session Number x Not Employed - not looking for work	0.38	0.28	.174

Session Number x On Disability Leave	0.54	0.34	.106
Session Number x Other	0.44	0.34	.192
Session Number x Part-Time	0.22	0.18	.213
Session Number x Retired	1.32	0.44	.003

<u>Random Effects</u>

Between Patients

    Intercept (U_{00jk})   21.45

    Session (U_{10j})   5.71

Between Therapist

    Intercept (V_{00k})   3.03

Residual (e_{jk})   10.50

Note. OQ-45 = Outcome Questionnaire 45; SE = standard error; Session Number and Total Sessions were log2 scaled and centered; Full-time employment served as the reference category.