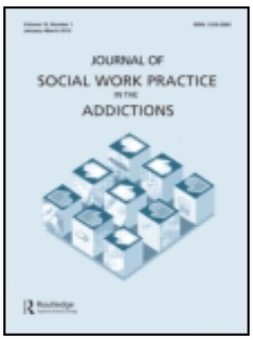

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Journal of Social Work Practice in the Addictions

ISSN: 1533-256X (Print) 1533-2578 (Online) Journal homepage: http://www.tandfonline.com/loi/wswp20

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To cite this article: Jessica J. Jeong MA, Debra J. Pepler MSc, PhD, Mary Motz PhD, Gina DeMarchi ECE & Stacey Espinet PhD (2015) Readiness for Treatment: Does It Matter for Women with Substance Use Problems Who Are Parenting?, Journal of Social Work Practice in the Addictions, 15:4, 394-417, DOI: 10.1080/1533256X.2015.1091002

To link to this article: http://dx.doi.org/10.1080/1533256X.2015.1091002

Published online: 26 Oct 2015.

Journal of Social Work Practice in the Addictions, 15:394–417, 2015

ISSN: 1533-256X print/1533-2578 online
DOI: 10.1080/1533256X.2015.1091002

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Readiness for Treatment: Does It Matter for Women with Substance Use Problems Who Are Parenting?

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This study examined changes in outcomes for women in an outpatient, integrated substance use and parenting program in Toronto, Canada, and tested whether their self-reported treatment readiness at intake predicted changes in substance use and parenting outcomes from intake to 12 months after intake. Although there were improvements in both substance use and parenting outcomes, self-reported treatment readiness only predicted changes in parenting attitudes. In response to the unexpected findings, treatment readiness with respect to substance use and parenting-related goals in the integrated programs was discussed. Rather than

Received February 23, 2015; revised August 10, 2015; accepted August 24, 2015.
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being a barrier to treatment, women's role as caregivers might be an important factor to treatment participation and outcomes. The importance of having a comprehensive focus in treatment for women with substance use problems who are parenting was also highlighted for future research and treatment implications.

KEYWORDS integrated programs, parenting, substance use, treatment readiness, women

Over the last few decades, empirical research on the treatment of substance use problems has focused on identifying key factors that are linked to heterogeneity in treatment effects (Battjes, Onken, & Delany, 1999; Morgenstern & McKay, 2007; Simpson, 2004). Treatment readiness, conceptualized as a person's motivation or readiness to comply with the treatment process and make necessary changes, has been considered a potential moderating factor that can help sustain early therapeutic engagement and influence heterogeneous outcomes of substance abuse treatment (Apodaca & Longabaugh, 2009; George, Joe, Simpson, & Broome, 1998; Melnick, Hawke, & De Leon, 2014; Small, Ounpraseuth, Curran, & Booth, 2012). Despite its clinical utility, the significance of treatment readiness is not well conceptualized for women with substance use problems who are also parenting young children. Yet, the successful outcomes of treatment have serious implications—not only for the women's own well-being, but also for that of their young children (Appleyard, Berlin, Rosanbalm, & Dodge, 2011; Staton-Tindall, Sprang, Clark, Walker, & Craig, 2013; Suchman, Mayes, Conti, Slade, & Rounsaville, 2004). The goal of this study was to assess treatment readiness in treatment-seeking women who self-identified as having significant problems with substance misuse and parenting, and to test whether their self-reported treatment readiness was a meaningful predictor of change in substance use severity and parenting outcomes.

THEORETICAL FRAMEWORK IN CONCEPTUALIZING TREATMENT READINESS

A theoretical framework widely used to conceptualize treatment readiness is the transtheoretical model (TTM) of behavioral changes, also known as the stages of change model (Prochaska, DiClemente, & Norcross, 1992). In the TTM model, a shift within the five stages of change (i.e., precontemplation, contemplation, preparation, action, and maintenance) is expected to reflect changes in the identified problem behavior—regardless of treatment orientation (Connors, DiClemente, Velasquez, & Donovan, 2013; DiClemente & Prochaska, 1998). That is, the shift between stages reflects the changes in a

person's current motivational states and attitudes, as well as their patterns of actively engaging in or resisting problematic behaviors. According to this model, sequences of experiential and behavioral processes of change occur, which facilitate the shift through the stages of change in treatment; however, progression through the stages of change is often not linear, and shifting back to earlier stages is considered the norm until the patterns of new behaviors become stabilized (DiClemente, Doyle, & Donovan, 2009; Miller, 2006).

In its most basic element, treatment readiness encapsulates people's commitment, intentions, and internal drives to make positive behavioral changes, which are behaviorally manifested as seeking and engaging in a set of new behaviors with explicit plans and goals (DiClemente, Schlundt, & Gemmell, 2004; Rapp et al., 2008). When applied to substance use problems, the model suggests that people initially approach treatment with varying degrees of treatment readiness toward their predetermined goals—some people more ready and intentional about the behavioral changes than others. If this is the case, then theoretically speaking, intervention strategies can be proactively tailored to the level of treatment readiness that the individuals present themselves with, thus increasing the likelihood of treatment completion and potentially positive outcomes.

ASSESSING TREATMENT READINESS

A number of measures have been developed to assess treatment readiness (Carey, Purnine, Maisto, & Carey, 1999), and extensive research has been carried out to conceptualize the construct of readiness and its predictive validity in regard to treatment response and retention (Field, Adinoff, Harris, Ball, & Carroll, 2009; Hogue, Dauber, & Morgenstern, 2010; Ryan, Plant, & O'Malley, 1995). So far, researchers have not been able to reach a sure conclusion because research findings have been inconsistent, with some studies indicating treatment readiness as a significant predictor of treatment retention and outcomes and other studies with contrasting results (Claus, Kindleberger, & Dugan, 2002; Klag, Creed, & O'Callaghan, 2010; Pantalon & Swanson, 2003; Simpson, Joe, & Brown, 1997; Sutton, 1996; Sutton, 2001). For instance, among people recovering from alcohol dependence in a residential treatment setting, those who were categorized as precontemplators (i.e., least advanced treatment readiness) were least likely to successfully complete treatment (Edens, &Willoughby, 2000). Similarly, in an outpatient treatment program for alcohol dependence, five subgroups of people with distinct profiles of treatment readiness had differential outcomes in problematic drinking (DiClemente & Hughes, 1990). In a large-scale, multisite evaluation study of private residential programs for people with substance use and mental health problems, treatment retention was predicted by initial readiness for change among women (Morse, MacMaster, Choi, & Adams, 2015).

Most of the aforementioned studies, however, focused on samples with rather homogeneous presenting problems (e.g., people with single problematic substance use—such as cigarette smoking, as in Abrams, Herzog, Emmons, & Linnan, 2000) with relatively stable social functioning, and it is difficult to generalize these findings to other populations with more specialized or complex needs (Chang, McNamara, Wilkins-Haug, & Orav, 2007; Melnick et al., 2014; Willougby & Edens, 1996). Indeed, studies with more heterogeneous and complex substance use populations (e.g., presence of a concurrent disorder including an addictive behavior and a severe mental health problem; chronic polysubstance use; criminal justice system involvement and substance-abuse problems) demonstrate inconsistent findings (Pantalon & Swanson, 2003; Siegal, Li, Rapp, & Saha, 2001; Stotts, Schmitz, & Grabowski, 2003). For instance, among people who were seeking treatment for poly-substance use (i.e., alcohol and cocaine problems), treatment readiness did not predict the percentage of days abstinent from substances (Pantalon, Nich, Franckforter, & Carroll, 2002). Also, motivation for change when entering treatment did not predict reductions in substance use at short-term follow-up among women who were pregnant and receiving treatment (Ondersma, Winhusen, Erickson, Stine, & Wang, 2009). However, in a randomized clinical trial of a parenting intervention, readiness for change was associated with capacity to cope with life experiences and recovery from substance use for mothers on a methadone-maintenance program (David, McMahon, Luthar, & Suchman, 2012). Clearly, more research is needed to understand the significant role of treatment readiness in a diverse population of people dealing with chronic substance use problems and other complex needs.

TREATMENT FOR WOMEN WITH SUBSTANCE USE PROBLEMS

Empirical evidence suggest that women with chronic substance use problems differ from the general population of people with substance use disorders in terms of presenting risk factors and treatment utilization (Greenfield et al., 2007; Greenfield & Pirard, 2009). Being isolated and highly stigmatized, women with histories of chronic substance use experience significant challenges in accessing regular health care and social service systems. Many of them are socially marginalized (e.g., little to no social support) and have been disconnected in their relationships and from their communities (Motz, Leslie, Pepler, Moore, & Freeman, 2006). Gender-specific treatment environments can help address the unique needs of these women—especially if they had histories of trauma or experiences of violence in relationships with men—and might facilitate better treatment retention and outcomes (Copeland & Hall, 1992; Fowler & Faulkner, 2011; Grella, 1996; Lester & Twomey, 2008). Moving beyond gender-specific treatment settings, the treatment process for women

with substance use problems who are also parenting has been shifting away from a sole focus on presenting problems of addiction to a more inclusive and comprehensive focus on improving women's overall well-being and quality of life, including the quality of relationships they have with their children and other family members (Belt et al., 2012; Suchman, DeCoste, Leigh, & Borelli, 2010).

Integrated substance use and parenting treatment programs—targeting both the challenges faced by the women and their children in the process of recovering from substance use—reduce many of the barriers to treatment through child care access, reduced stigma, holistic approaches, and parenting components. These programs have shown promising results with respect to treatment outcomes in recent years (Hines, 2013; Kumpfer & Fowler, 2007; Niccols et al., 2012; Pepler, Moore, Motz, & Leslie, 2002; Suchman, Pajulo, DeCoste, & Mayes, 2006). As such, there is an increasing need for integrated interventions to become readily available and to conduct more research on identifying key factors that might influence women's treatment behaviors in this relatively novel clinical context (Kerwin, Giorgio, Steinman, & Rosenwasser, 2014). To our knowledge, this study is among the first to test treatment readiness as a predictor of change in both substance use and parenting-related outcomes for a socially marginalized and very difficult-to-reach population of women with complex and chronic substance use problems.

The objective of the study was, therefore, to assess women's treatment readiness in an integrated outpatient program and to test whether self-reported treatment readiness would predict changes in substance use and parenting outcomes measured at 12 months after the intake phase. Despite the inconsistent findings in the available literature, based on the theoretical model, it was hypothesized that a higher treatment readiness at intake would be associated with more positive changes in substance use severity at follow-up. Similarly, it was hypothesized that higher treatment readiness at intake would be associated with more positive changes in parenting at follow-up.

METHODS

Setting

Participants were recruited from Breaking the Cycle (BTC), a community-based outpatient program in Toronto, Canada, that supports women with past and current histories of problematic substance use who are parenting young children under the age of 6. BTC is based on a single access model in which a variety of programs can be accessed at one community-based location. Mothers with identified substance use problems are either self-referred, referred by friends or family, or referred by external service agencies to BTC; however, their attendance and continued engagement in services are completely voluntary. Admission to the program requires mothers to be willing to

participate in both parenting and substance use services. BTC has collaborative and formal service partnerships with other community agencies, including two local child welfare and protection agencies, to reduce fragmentation of services and allow for ongoing communication between families and all service providers who are supporting them.

BTC is a unique integrated intervention program in that it provides direct support and services to both the mothers and their children. As an outpatient program, service is provided for the families until their treatment goals have been met (e.g., recovery from substance use and a sustained stability in parenting and home environments), or until there is a shift in needs of the families and alternative supports are required (e.g., if the child protection agency acknowledges a continued instability in the home environment and further determines that the child is to be permanently removed from the mother's care). Engagement in clinical services at BTC includes, but is not limited to the completion of the intake process, individual substance use and mental health counseling, relapse prevention groups, parent psychoeducational groups, mother–child intervention through home visiting and center-based programs, instrumental support (e.g., clothing, food), and regular developmental assessment for the children. The overall focus of intervention is on mothers' and their children's current relationships and relationship capacities to overcome the effects of complex and problematic substance use.

Participants

This study was part of a larger longitudinal study examining changes in maternal substance use and other associated outcomes through treatment in BTC. In this program, women have self-identified as having long-term problems of substance misuse (e.g., alcohol, cigarette, and other illicit substances) and wanting treatment related to substance misuse and parenting concerns. Although most of them would have met the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed. [DSM–5]; American Psychiatric Association, 2013) diagnostic criteria for substance use dependence (SUD), the program does not render or require an official diagnosis of SUD for service access. Therefore, the sample represents women who have self-identified as having significant problems with substance misuse and parenting. We have used the shorter descriptor of "women with substance use problems" for this sample.

We also use the term *high risk* in carefully describing our sample due to high rates of: histories of chronic polysubstance use, transiency and difficulties in financial and living conditions, exposure to relational violence, and histories of interpersonal trauma and mental health problems. Given the high-risk nature of the sample, many women were excluded from this study because they could not be reached after consent. When this study

was conducted, of 142 mothers who consented for research, 50 (35%) of them met the inclusion criteria and were included in the study. Inclusion criteria for the study were as follows: (a) the mothers consented to research for themselves and their young children; (b) after consenting to research, the mothers and their children participated in the research assessment at the intake phase and 1 year after intake when this study was conducted; and (c) the mothers and their children actively participated in the treatment program until termination of services.

Procedure

For this study, ethics approval was obtained from the Office of Research Ethics at York University as part of a larger Canadian Institute of Health Research program evaluation research grant, of which the second author is the principal investigator. Through the informed consent process, mothers were informed that their refusal to participate in research at any time would not jeopardize their access to intervention programs at BTC, and that participating in research was strictly voluntary and confidential. In appreciation of their time and effort, mothers were provided with food vouchers amounting to approximately $10 per research assessment participation hour. All mothers and their children at BTC were expected to participate in both parenting and substance use services on a weekly or biweekly basis to be considered a client. The duration of treatment can vary depending on the needs and the treatment goals of the mothers and their children. For this reason, we scheduled our follow-up interviews and research assessments to occur 12 months after the initial assessment at intake. The intake process began during the first appointment and typically lasted for 2 to 4 months to build engagement and trust while completing necessary paperwork for clinical services. The measures for this study were also completed during intake and at 12 months after the initial assessment.

In this study, data analyses were conducted in two phases. First, a series of paired *t* tests were used to compare the mean changes for outcomes related to maternal substance use severity and parenting from intake (i.e., Time 1) to 12 months after intake (i.e., Time 2). Second, in the main analyses, hierarchical regression analyses were conducted to predict changes in outcomes for maternal substance use severity and parenting at Time 2 with treatment readiness at Time 1 as a predictor.

Measures

Treatment readiness

The participants completed the 32-item University of Rhode Island Change Assessment scale (URICA; DiClemente & Hughes, 1990; McConnaughy,

Prochaska, & Velicer, 1983), which consists of four subscales corresponding to four of the hypothesized stages of change: precontemplation, contemplation, action, and maintenance. The participants were asked to indicate their degree of agreement or disagreement with each statement on a scale of ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Each subscale of the URICA consists of eight items. An overall motivational treatment readiness score (range = 2–14) is calculated by combining the means of contemplation, action, and maintenance stage scores and then subtracting the mean of the precontemplation stage score from the sum to get the overall readiness score (Amodei & Lamb, 2004). A higher overall motivational treatment readiness score indicates greater motivation to make changes in problematic substance abuse behaviors. The URICA has been previously used to evaluate readiness to change in a range of samples, including mothers with substance use problems in a clinical intervention (David et al., 2012).

Substance use severity

The Addiction Severity Index (ASI) is a structured interview form that is typically used in research and clinical contexts (McLellan et al., 1985). The ASI is used to assess the severity of alcohol, drug, and related problems in adults on seven domains: general information, medical status, psychoactive substance use, employment, family-social relationships, legal status, and psychiatric/psychological status. Each domain is scored separately. A composite score, which is the average score of the items from each domain of the ASI, can range from 0 to 1. In this study, the assessment using the ASI was conducted in an interview format for the psychoactive substance use domain of the ASI only. A higher ASI composite score for the psychoactive substance use domain (i.e., closer to 1) indicates a more severe substance use problem.

Parenting attitudes

The Adolescent–Adult Parenting Inventory–2 (AAPI–2) is a 40-item questionnaire designed to assess the parenting-related attitudes of adolescent and adult parents (Bavolek & Keene, 2001). The participants were asked to indicate their degree of agreement or disagreement with each statement on a scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). The subscales of the AAPI–2 included in this study were (a) inappropriate parental expectations of their children, (b) parental lack of empathy toward their children's needs, and (c) role-reversal in parent–child relationships. Scores on each subscale are compared to norms provided by the scale developers, generating for each subscale the standardized (i.e., "sten") scores ranging from 1 to 10. Higher AAPI sten scores (i.e., close to 10) indicate sensitive and nurturing parenting attitudes; in comparison, lower AAPI

sten scores (i.e., close to 1) indicate a risk for negative and potentially abusive parenting attitudes. The AAPI–2 has been widely used in both low- and high-risk samples, often as a parenting risk assessment for child maltreatment (Conners, Whiteside-Mansell, Deere, Ledet, & Edwards, 2006).

Parenting behaviors

In addition to assessing parenting-related attitudes, frequencies of daily parent–child interactions were also assessed using the National Longitudinal Survey of Children and Youth (NLSCY; Statistics Canada and Human Resources Development Canada, 1995). The sets of items from the Child Questionnaire of the NLSCY, on the literacy and learning activities domain, were used to rate the frequencies of interactions between mothers and their children in our study. For children between ages 0 and 2, the mothers were asked to rate the frequencies of developmentally appropriate and play-based interactions with their children on (a) looking at picture books; (b) singing songs; (c) reading and reciting rhymes; (d) other activities related to songs, stories, and rhymes; and (e) doing activities outside of the home (e.g., going to the park). For children between ages 3 and 6, the mothers were asked to rate the frequencies of developmentally appropriate and play-based interactions with their children on (a) telling stories; (b) reading story books; (c) looking at picture books; (d) singing songs; (e) singing songs together; (f) playing rhyming games; (g) other activities related to songs, stories, and rhymes; and (h) doing activities outside of the home (e.g., riding a tricycle). The ratings on each domain ranged from 0 (*never*) to 7 (*a few times a day*). For the purpose of this study, the mean of the ratings from all the items was calculated for each mother–child dyad—with a higher average score (i.e., closer to 7) indicating more frequent interactions of developmentally appropriate play between a mother and her child.

RESULTS

Demographic and relevant background information for the mothers and children were taken from the intake forms completed as part of the clinical services at BTC. The demographic data on mothers who were included in the study are presented in Table 1. The mean age for women was 29 years old (SD = 5.49), with a range from 20 to 40 years old. On average, they had two children in their lifetime (SD = 1.21), with a range from one to five children; at the time of intake for treatment, on average, women had one child living in the home. The average age of the children in the sample was 15 months (SD = 15.55). Half of the mothers did not complete high school, and only 4% of the mothers were employed part-time at the time of intake for treatment. Overall, the data indicate that these mothers had experienced

TABLE 1 Participants' Characteristics

	Value
Mother age (in years)	
M (*SD*)	29.50 (5.49)
Median (Range)	29 (20–40)
Child age (in months)	
M (*SD*)	15.66 (15.55)
Median (Range)	12 (1–60)
Mother's level of education (%)	
Did not complete high school	50.0%
Mother's employment (%; *n* = 49)	
Currently unemployed	96.0%
Mother's monthly income (in Canadian $; *n* = 43)	
M (*SD*)	$1,062.06 ($844.98)
Median (Range)	$970.00 ($0–$4,167.00)
Parity (No. of children)	
M (*SD*)	1.96 (1.21)
Median (Range)	2.00 (1–5)
Mother's psychiatric symptoms at intake* (*n* = 49)	
CES–D score	
M (*SD*)	20.00 (11.88)
Median (Range)	20.00 (2–43)
In clinical range (score ≥16), %	58.0%
BAI score	
M (*SD*)	12.75 (10.15)
Median (Range)	11.00 (0–38)
In severe range (score ≥26), %	14.0%
Mother's primarily identified substance use, %	
Crack/cocaine	48.0%
Alcohol	26.0%
Opiates (e.g., heroin, oxycodone)	10.0%
Amphetamines/methamphetamines	6.0%
Ecstasy	6.0%
Cannabis/cannabinoids	4.0%
Mother's polysubstance use, %	64.0%
Mother's histories of abuse experienced, %	
Physical abuse (*n* = 44)	89.0%
Emotional abuse (*n* = 46)	87.0%
Sexual abuse (*n* = 42)	67.0%

Note: For all variables, *n* = 50 unless specified otherwise. CES–D = Center for Epidemiologic Studies Depression Scale (CES–D; Weissman, Sholomskas, Pottenger, Prusoff, & Locke, 1977); BAI = Beck Anxiety Inventory (Beck & Steer, 1993).

a constellation of challenges. The mothers were experiencing a broad range of mental health problems: Over half of them (58%) reported symptoms in the clinical range for depression and about one sixth (14%) of the mothers reported clinically severe levels of anxiety-related symptoms. Substance use was a ubiquitous problem, which was expected given the population being sampled: Close to two-thirds of the mothers were polysubstance users, with about half of the women (48%) reporting the use of crack or cocaine as the primarily identified substance used. In answering the questions about their

past experiences of abuse, many of the mothers reported extensive histories of maltreatment: 89% reported physical abuse, 87% reported emotional abuse, and 67% reported sexual abuse.

Preliminary analyses were run to compare mothers who were included in this study and those who were excluded. When only incomplete data existed, all available data were used. The results indicated that there were no significant group differences in terms of the demographic variables (e.g., participant's age, level of education, monthly income; all $p > .05$) or the mothers' treatment readiness at intake, $t(124) = .66$, $p > .05$. However, children of mothers who were included in this study were relatively younger when entering treatment than children of mothers who were not included, $t(117) = 2.44$, $p < .05$. None of the demographic variables was significantly correlated with our key variables of interest (i.e., substance use severity; parenting attitudes and behaviors), all $p > .05$.

For mothers with more than one child receiving services at BTC ($n = 10$), we chose the child with the most complete data for the study; when the children had similarly complete data, we randomly assigned the mothers into two groups and chose the younger or the youngest child for one group and the older or the oldest child for the other group to maintain independence in the data. Finally, demographic factors were not included as control variables in the regression models because our preliminary analyses indicated that in this sample, treatment readiness was not significantly correlated with the key demographic variables (i.e., age of mothers, referral sources, education level, and total gross monthly income).

Changes in Scores of Substance Use Severity, Parenting Attitudes, and Parenting Behaviors from Intake (Time 1) to 12 Months After the Intake Phase (Time 2)

The mean score for women's treatment readiness was 10.16 ($SD = 1.55$), with a range from 6.86 to 13.55, indicating that women came into treatment with varying degrees of treatment readiness. Although norms for the scale were unavailable, the scores were comparable to a sample of women who were on a methadone maintenance program and participated in a parenting intervention (David et al., 2012). The changes in substance use severity and parenting outcomes from Time 1 to Time 2 are shown in Table 2. The results indicated that the mothers had made positive gains through treatment in substance use severity and parenting attitudes over the 12-month period; however, mothers' parenting behaviors, inferred by the frequencies of mother–child interactions, did not improve significantly.

TABLE 2 Contrasting Scores of Substance Use Severity, and Parenting Attitudes and Behaviors at Time 1 and Time 2

	Time 1		Time 2				
Variables	*M*	*SD*	*M*	*SD*	*t* (42 ~ 45)	*p*	Effect size *d*
ASI: Substance use severity[a]	.23	.14	.11	.12	144.50	.0001	—
AAPI: Parenting attitude, in inappropriate expectations	5.48	1.64	6.14	1.89	−2.25	.029	0.34
AAPI: Parenting attitudes, in empathy toward child's need	4.75	1.77	5.84	2.36	−3.69	.001	0.56
AAPI: Parenting attitudes, in role reversals in relationship	5.53	1.76	6.30	1.79	−3.67	.001	0.55
NLSCY: Parenting behaviors	5.90	.83	6.00	.77	−.48	.64	0.07

Note: ASI = Addiction Severity Index; AAPI = Adolescent–Adult Parenting Inventory; NLSCY = National Longitudinal Survey of Children and Youth.
[a]Conducted the related-samples Wilcoxon Signed Rank Test, due to nonnormality of data.

Treatment Readiness as a Predictor of Substance Use Severity Outcomes

Controlling for the substance use severity at Time 1, treatment readiness score at Time 1 was not a significant predictor of substance use severity at Time 2 (Table 3). The set of predictors in the regression model, the control variable and treatment readiness at Time 1, did not explain a significant proportion of variance in substance use severity at Time 2, adjusted $R^2 = .03$, $F(2, 41) = 1.60$, $p = .21$.

Treatment Readiness as a Predictor of Parenting Outcomes

Controlling for the parenting attitude score at Time 1, treatment readiness score at Time 1 was a significant predictor of change in attitudes regarding

TABLE 3 Summary of Regression Analysis of Treatment Readiness Predicting Substance Use Severity at Time 2

	Substance use severity			
Predictor	*B*	*SE B*	*β*	*p*
Step 1				
Control variable[a]	.26	.17	.24*	.13
Step 2				
Control variable[a]	.22	.17	.20*	.21
Treatment readiness at Time 1	.02	.02	.15*	.36

Note: $\Delta R^2 = .06$ for Step 1 ($p = .13$); $\Delta R^2 = .08$ for Step 2 ($p = .21$).
[a]Control variable included parenting behavior score at pretreatment (Time 1).
*$p > .05$.

inappropriate parental expectations of their children as well as role-reversal in parent–child relationships at Time 2 (Table 4). The set of predictors, the control variable and treatment readiness at Time 1, explained a significant proportion of variance in parenting attitudes regarding inappropriate parental expectations at Time 2, adjusted R^2 = .38, $F(2, 41)$ = 14.39, p = .0001, and in parenting attitudes regarding role-reversal between parents and children at Time 2, adjusted R^2 = .51, $F(2, 41)$ = 23.27, p = .0001. Treatment readiness at Time 1 did not predict change in attitudes related to empathy toward children's needs at Time 2 (Table 4). Only the control variable explained a significant proportion of variance in parenting attitudes related to empathy at Time 2, adjusted R^2 = .31, $F(2, 41)$ = 10.63, p = .0001.

Controlling for the parenting behavior score at Time 1, treatment readiness score at Time 1 was not a significant predictor of parenting behaviors at Time 2 (Table 5). The set of predictors, the control variable and treatment readiness at Time 1, did not explain a significant proportion of variance in parenting behaviors at Time 2, adjusted R^2 = –.03, $F(2, 39)$ = .32, p = .73.

DISCUSSION

The purpose of this study was to assess treatment readiness for women in an integrated substance use and parenting program and to test whether their self-reported treatment readiness predicted changes in substance use severity and parenting outcomes measured at 12 months after the intake phase. The results indicated that after a year of enrollment in treatment, there was a significant reduction in substance use severity and an improvement in mothers' attitudes related to parenting. Although the results should be considered preliminary, given that a single group, pre- and posttest design was used, these findings add to the emerging literature that integrating parenting interventions with substance-use treatment for women can be effective in producing desired outcomes in both substance use and parenting domains (Suchman et al., 2006).

Integrated substance use and parenting programs, such as BTC, not only enable women to address their substance use problems, but also to improve their parenting practices, with the developmental needs of the children explicitly vocalized and addressed by parents and clinicians in the intervention context (Greenfield & Pirard, 2009; Grella, 2009). In a qualitative study evaluating the outreach program for pregnant women with substance use problems, women identified that the nonjudgmental and supportive treatment environment enabled them to feel empowered to make changes (Racine, Motz, Leslie, & Pepler, 2009). It is possible that an emphasis on children's well-being can serve as a catalyst for women to strive to make changes with regard to their substance use and their parenting, particularly in the context of a treatment environment that adopts a relational framework (Finkelstein, 1996;

TABLE 4 Summary of Regression Analysis of Treatment Readiness Predicting Parenting Attitudes at Time 2

	Parental expectations				Parent empathy				Role reversals			
Predictor	*B*	*SE B*	*β*	*p*	*B*	*SE B*	*β*	*p*	*B*	*SE B*	*β*	*p*
Step 1												
Control variable[a]	.46	.16	.40*	.007	.78	.17	.58*	.0001	.70	.11	.69*	.0001
Step 2												
Control variable[a]	.30	.14	.26*	.042	.75	.18	.56*	.0001	.65	.11	.64*	.0001
Treatment readiness at Time 1	.67	.16	.52*	.0001	.11	.22	.07	.62	.29	.13	.24*	.033

Note: For parental expectations, $\Delta R^2 = .16$ for Step 1 ($p = .007$); $\Delta R^2 = .25$ for Step 2 ($p = .0001$). For parent empathy, $\Delta R^2 = .34$ for Step 1 ($p = .0001$); $\Delta R^2 = .004$ for Step 2 ($p = .0001$). For role reversals, $\Delta R^2 = .48$ for Step 1 ($p = .0001$); $\Delta R^2 = .06$ for Step 2 ($p = .033$).

[a]Control variable included parenting attitudes scores at pretreatment (Time 1).

*$p < .05$.

TABLE 5 Summary of Regression Analysis of Treatment Readiness Predicting Parenting Behaviors at Time 2

	Substance use severity			
Predictor	*B*	*SE B*	*B*	*p*
Step 1				
Control variable[a]	.12	.14	.13*	.43
Step 2				
Control variable[a]	.12	.15	.13*	.43
Treatment readiness at Time 1	−.008	.08	−.02*	.92

Note: ΔR^2 = .02 for Step 1 (p = .43); ΔR^2 = .0001 for Step 2 (p = .92).
[a]Control variable included parenting behavior score at pretreatment (Time 1).
*$p > .05$.

Pepler et al., 2014). There was no significant change in mothers' reports of their parenting behaviors, however, mainly due to the ceiling effect whereby the self-reported frequency of play-based mother–child interactions measured by the NLSCY was already elevated at intake for the majority of dyads in the sample. Although mothers reported a high frequency of interactions with their children at baseline, the quality of these interactions was not measured in this study. Quality, along with quantity, will be a useful measure of parenting behaviors in future research.

There were significant improvements in both substance use severity and parenting attitudes; however, treatment readiness at intake only predicted changes in two domains of parenting attitudes. In the case of substance use severity, treatment readiness at intake was not a significant predictor. Women in the integrated substance use and parenting program have demonstrated changes in their substance use severity, regardless of whether they entered the program with high or low treatment readiness. This finding is somewhat inconsistent with previous studies on substance use treatment (DiClemente et al., 2004; Morse et al., 2015). Perhaps when the sole focus of treatment is on dealing with substance use severity, treatment readiness is highly relevant to the degree to which people can make changes. When treating people with complex substance use problems, however, there is growing evidence that treatment readiness alone might not be sufficient in predicting treatment behavior and outcomes (Pantalon & Swanson, 2003; Perreault et al., 2015).

In contrast to substance use severity, the level of women's treatment readiness was significantly related to improvements in their inappropriate expectations of children and their attitude toward role reversals in parent–child relationships, both maternal childrearing beliefs that are often associated with risks for child maltreatment (Conners et al., 2006). In other words, higher treatment readiness at intake predicted greater improvements in women's

appropriate attributions of children's behaviors after 1 year in treatment. It is possible that those women who entered the program with higher treatment readiness might have benefited from the services that were geared toward improving their understanding of parenting roles and healthy child development. For those women who entered the program with lower treatment readiness, however, it appears that the improvements in parenting attitudes were less salient. Perhaps women with lower treatment readiness at intake might not have been able to engage in treatment sufficiently to benefit from parenting programming. The demands of parenting interventions might also have limited their capacity to fully engage and, therefore, to benefit from the parenting-focused programs.

Taken together, in integrated substance use and parenting programs, treatment readiness among women could be related to both parenting goals and substance use goals in the first 12 months of the treatment because these two dimensions are interconnected. A conceptual model hypothesized in this study is to consider women's changes in both substance use severity and parenting as dependent variables related to treatment readiness as a predictor; however, for treatment-seeking women with substance use problems who are parenting young children, these two dependent variables might mutually influence each other. Once women establish treatment readiness and address the problems related to their substance use, they could increase the likelihood of being able to parent their own children. In this sample, almost all women had involvement with children's protective services; therefore, a change in substance use severity could be essential for these women to have a continuing role in raising their children. Conversely, once the women establish treatment readiness and gain clarity and confidence in their role as a parent, they might develop the commitment to meet the challenges in addressing their substance use problems. Although it was beyond the scope of this study to test the hypothesized conceptual model, future research might be able to clarify the temporal and directional effects in these associations through the treatment process, as well as any key mediating or moderating factors.

The findings seem to add to the growing literature that rather than being a barrier to treatment, women's role as caregivers could be an important factor to treatment participation and outcomes, particularly when women are supported nonjudgmentally and holistically (e.g., wraparound services; Oser, Knudsen, Staton-Tindall, & Leukefeld, 2009). The link between treatment readiness and improved parenting attitudes strengthens the argument for a more comprehensive focus on women's psychological vulnerabilities beyond substance use problems—including their capacities for parenting and other interpersonal relationships—in fostering engagement and positive outcomes in treatment (Luthar & Suchman, 2000; Suchman, McMahon, & Luthar, 2004).

Limitations

A number of limitations must be considered when interpreting the findings of this study. First, only 35% of the larger sample met the inclusion criteria for the study. We were unable to make a meaningful comparison between women who were included in the study and those who were not, due to incomplete data. As such, the results of the study were reflective of a selected sample of treatment-seeking women who were part of an outpatient treatment program in which the client participation was voluntary. Women in this study had also remained committed to participating in the research process from the first assessment to a year after, all of which might have biased the selection of the sample to women with a more intensive level of treatment readiness. Although the sample size of this study is comparable to other intervention studies with difficult-to-reach populations, more research with a bigger sample size is essential to replicate and generalize the findings with a representative sample of the population. A planned effort to minimize missing data should also be considered. For future research, conducting an intent-to-treat analysis, or an inclusion of comparison groups (e.g., waitlist control, treatment-as-usual, another treatment model) is strongly recommended. Second, the findings of this study were mostly based on the self-report. Women in this study might fear that accurately reporting their reality can compromise their involvement with service providers and negatively affect their parenting status (Haller, Miles, & Dawson, 2003). Future studies should include a more divergent, multimethod approach to measuring treatment readiness and the outcomes —for example, by including clinician ratings and behavioral observations to self-reports—thereby adding objectivity to the data. Third, this study was only focused on the link between treatment readiness and mothers' treatment outcomes. Future studies should examine whether mothers' treatment readiness is linked to changes in outcomes for their children, such as the children's development trajectories or the quality of parent–child relationships. Fourth, specifica to the measurement of treatment readiness, the TTM model that was originally developed for people with isolated problematic use of alcohol or nicotine use might not take into consideration external confounding factors that are unique and more likely to affect women with complex substance-use histories (Girvin, 2004; Greenfield & Pirard, 2009). The generalizability and the use of the URICA scale in more specialized or diverse populations with complex substance use problems need to be further explored (Blanchard, Morgenstern, Morgan, Labouvie, & Bux, 2003; Claus et al., 2002; Pantalon & Swanson, 2003; Siegal, Li, Rapp, & Saha, 2001). It is also possible that treatment readiness is a complex and multifaceted construct, and that only certain aspects of treatment readiness might be assessed using self-report. In this study, only the treatment readiness at intake was examined in relation to the changes in outcomes. More research is needed for theoretically supported and psychometrically validated assessment tools for understanding treatment

readiness that are suitable for diverse populations and also at multiple time points throughout the duration of the treatment. Developing such tools for clinicians will help them accurately identify the levels of readiness that people with substance use problems demonstrate during the treatment process and thereby help them effectively support people's treatment engagement. Other studies have also demonstrated that women with substance use problems and histories of severe interpersonal traumas might lack the capacity and trust to develop a therapeutic alliance in treatment (Hien, Cohen, Caldeira, Flom, & Wasserman, 2010; Mayes & Truman, 2002; Suchman, DeCoste, McMahon, Rounsaville, & Mayes, 2011). The significant role of building and maintaining therapeutic alliance is continuously highlighted in the literature to enhance treatment readiness in substance use interventions (Meier, Barrowclough, & Donmall, 2005; Wolfe, Kay-Lambkin, Bowman, & Childs, 2013). In future research, the potential role of therapeutic alliance as a mediator of treatment outcomes for women in integrated substance use and parenting programs should be explored.

CONCLUSION

There are significant implications associated with treatment completion and outcomes for the women—not only for the women's own well-being, but also for their young children's and for the society as a whole with respect to the costs involved in supporting women who are not in the process of recovery and their young children. In this study, women's substance use severity decreased regardless of their initial treatment readiness; however, women who came to the program with lower treatment readiness were less likely to improve on parenting outcomes through the services than women who came in with higher treatment readiness. Changes in parenting attitudes, such as inappropriate expectations or role reversals, through the intervention program are critical in reducing the risk for child abuse and neglect (Conners et al., 2006). The findings of this study add to the importance of having a comprehensive focus in substance use treatment for women, by which, if supported in a holistic and nonjudgmental manner, women's role as caregivers can serve as a catalyst in treatment outcomes for women and their children, rather than a barrier to treatment. In future research, understanding and assessing situational or systemic barriers (e.g., poverty, unstable housing, limited medical care, violence in relationships) associated with treatment readiness will inform practices for promoting women's commitment and sustained engagement (Grella, 2009; Tracy et al., 2012).

FUNDING

Funding support for this project was provided by the Government of Canada, Canadian Institutes of Health Research, Institute of Gender and Health.

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