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## Interoceptive Awareness is Important for Relapse Prevention: Perceptions of Women who Received Mindful Body Awareness in Substance Use Disorder Treatment

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### Abstract

**Background**—It is postulated that interventions aimed at facilitating interoceptive awareness (i.e. awareness of inner body sensations) may facilitate regulation and improve substance use disorder (SUD) treatment outcomes.

**Objective**—To better understand the role of interoceptive training in substance use disorder treatment, an identified gap in the literature.

**Methods**—Based on a NIDA-funded pilot randomized clinical trial that used a two-group repeated measures design to examine Mindful Awareness in Body-oriented Therapy (MABT) for women in substance use disorder treatment. This study examined the experience of a subset of participants that received and completed MABT intervention in the larger original study. A qualitative study using a single Focus Group, participants were asked to respond to multiple questions regarding their current use of interoceptive awareness skills, perceived benefit, learning processes, and suggestions for program development. Interpretive analysis was used to describe the themes that emerged from the Focus Group responses.

**Results**—Participants consistently used interoceptive awareness self-care skills learned in MABT. Interoceptive awareness training and daily practice were perceived as critical for emotional awareness, regulation and relapse prevention. In addition, findings highlight the relevance of MABT educational strategies such as touch and individual delivery to teach interoceptive awareness and self-care skills for women in SUD treatment.

**Conclusion**—These findings suggest the positive role of interoceptive awareness in promoting relapse prevention among women in SUD treatment, important for guiding future research, and program development for this population that apply across health care disciplines.

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## Keywords

Women; Addiction; Substance Use Disorder Treatment; Mind-Body; Mindfulness

Theoretical models suggest the positive role of interoception for self-regulation in substance use disorders (Goldstein et al., 2010; Noel, Brevers, & Bechara, 2013; Paulus & Stewart, 2014; Paulus, Tapert, & Schulteis, 2009), as do recent cross-sectional imaging studies that show positive differences in areas of the brain associated with interoception between individuals who have relapsed vs. abstained from substance use post-treatment (Paulus & Stewart, 2014). Interoception involves receiving, processing and integrating body signals (Craig, 2002) and while important for homeostasis, is not often a conscious activity. Interoceptive awareness involves conscious attention to internal bodily sensations (Mehling et al., 2009) and is thought to be important for cognitive processes underlying emotion regulation (Mehling, Price, Daubenmier, Acree, & Stewart, 2012). It has been postulated that interventions aimed at facilitating interoceptive awareness may facilitate regulation and improve substance use disorder (SUD) treatment (Noel et al., 2013; Paulus & Stewart, 2014). As outlined in models that describe the role of mindfulness-based approaches to promote regulation for the treatment of substance use disorders (Garland, Froeliger, & Howard, 2014), the ability to gain sensory/emotional awareness is fundamental to processes underlying cognitive control and the promotion of positive behavior change. With the shift toward integrative care and behavioral health for the treatment of SUD outlined by the Substance Abuse and Mental Health Services Administration (SAMHSA) and the Office of National Drug Control Policy (ONDCP) (Dilonardo, 2011), and the Agency for Health Care Research and Quality (AHCRO) (Peek & National Integration Academy Council, 2013), this research has important interdisciplinary and clinical implications for program development and delivery that will affect health care professionals across disciplines including nursing, medicine, social work, psychology, complementary and integrative health, etc.

The need for more qualitative research to develop conceptual understanding of interoceptive awareness experience and learning processes for interdisciplinary research is a noted scientific gap in cognitive neuroscience (Christoff, Cosmelli, Legrand, & Thompson, 2011) and goal for future interdisciplinary research specific to interoceptive awareness (Farb et al., 2015). A randomized trial to examine the feasibility of Mindful Awareness in Body-oriented Therapy (MABT), an intervention designed to teach interoceptive awareness, provided an opportunity to examine the experiences and perceived benefits of learning interoceptive awareness skills among women in substance use disorder treatment (SUD). A mixed-method pilot study, the primary outcome was reduction of substance use and secondary outcomes were psychological symptoms and coping indicators. Participants were randomized to either MABT + Treatment as Usual (TAU) or to TAU only. Study assessments were administered at baseline, 3 months (post-MABT intervention), and at 6 and 9 month follow-up. Results showed a significant reduction in reported substance use post-intervention ( $\beta = 1.95$ ;  $p < .02$ ), and while not significant due to attrition in a small sample, a mean difference of 96 percent days abstinent for MABT compared to 73 percent days for TAU at 9-month follow-up ( $\beta = 1.43$ ). In addition, results showed significant reductions in depression ( $\beta = -1.1$ ;  $p < .02$ ), eating disorder symptoms ( $\beta = -.8$ ;  $p = .01$ ), perceived stress ( $\beta = -1.0$ ;  $p = .04$ ), physical

symptom frequency ( $\beta = -.7; p < .03$ ), dissociation ( $\beta = -.95; p < .01$ ), bodily dissociation ( $\beta = -.70; p < .02$ ), and marginally significant improvements in emotion regulation difficulties of impulse control ( $\beta = -.45; p = .08$ ) and regulation strategies ( $\beta = -.63; p = .1$ ) among those that received MABT compared to TAU (Price, Donovan, Wells, & Rue, 2012). The qualitative post intervention (at 3 months) results showed that participants learned to identify their emotions and perceived MABT to protect against relapse by providing them with tools for emotion regulation (Price, Wells, Donovan, & Brooks, 2012). In addition, MABT participants reported maintained, almost daily use, of MABT interoceptive awareness self-care skills at 4–6/week at 9 month follow-up. These combined findings suggested that integration of MABT practice into daily life was a key factor in the positive and maintained health outcomes at 9 month follow-up and worthy of further exploration. To do so, we designed the current study to learn more about the maintained use and perceived benefit of interoceptive awareness skills, the components of MABT that were perceived as critical for learning and integrating interoceptive awareness skills in daily life, and suggestions for future program development during the post-treatment period.

## Mindful Awareness in Body-oriented Therapy

MABT is a manualized intervention that is delivered individually and involves touch to facilitate interoceptive awareness (IA) skills. IA skills are taught incrementally over the course of eight 90-minute sessions offered once a week. The training begins with the development of body literacy (the ability to identify and describe sensory awareness). Next, training involves a series of body awareness exercises designed to teach various ways to access and attend to sensory awareness of internal sensations. Finally, a mindful body awareness practice is taught with the aim of building the capacity to sustain present-moment awareness in the body. Throughout the training process, the focus is on attending to internal sensory/emotional awareness through observation and with self-compassion. At the end of every session, participants identify a daily take-home practice that is based on their experience in the session. The goal of the take-home practice is to integrate interoceptive self-care skills into daily life. Further details of this intervention are described in Price 2012 publications.

The processes of MABT overlap with many other mind-body, body-psychotherapy, and mindfulness-based approaches. What is distinct about MABT is the explicit and fine-tuned approach to teaching interoceptive awareness and interoceptive awareness skills for self-care, the individual delivery of the intervention, and the use of touch to teach these skills.

## Methods

### Research Design

This study explored the experience of a subset of participants that received and completed the MABT intervention during their participation in the prior, larger study. A focus group method was used. The study procedures and consent forms were reviewed and approved by the Institutional Review Board (IRB) of the University of Washington. The focus group was facilitated by a qualitative researcher familiar with focus group methods and who had not

been involved in the larger MABT study. Participants were remunerated for their participation.

### **Recruitment and Enrollment**

Eighteen of the thirty one participants that were randomized to receive the MABT intervention completed the MABT sessions and were recruited for focus group participation. MABT completion was defined as receipt of a minimum of 6 (or 75%) of the intervention sessions. Recruitment was accomplished through phone calls to participants that met inclusion criteria, using an IRB-approved recruitment script. Of the 18 participants contacted, 9 responded positively to recruitment calls and 6 indicated that they could attend the scheduled focus group date. A consent form specific to focus group participation was administered immediately prior to the session; five women attended the actual focus group session.

### **Participants**

The five participants were Caucasian women with ages ranging from 24 to 55. They had all completed three weeks of inpatient and subsequent intensive outpatient program (IOP) for substance use treatment at a women's only treatment facility. The primary substances for which they were in treatment were alcohol (n= 4) and heroin (n= 1). With one exception, they all had multiple prior SUD treatment experiences. These five participants were representative of the larger MABT study group at baseline in age, education, employment and income (see Table 1 and Price, et. al., 2012). Three of the five participants reported a childhood trauma history; all scored above the screening cutoff for PTSD at baseline. In addition, two reported ongoing depression and all five were taking antidepressant medication at the onset of the prior larger study. Commensurate with other study participants in the MABT group, their substance use declined significantly over the study period, as did their symptoms of psychological and physical distress (see Table 1 for substance use information). The time since completion of the MABT intervention was approximately 1.5 years with a range from 16–21 months. There were four study therapists that provided the MABT intervention; among this group of five participants they had, between them, worked with 3 of the study therapists.

### **Data Collection**

The focus group was scheduled for 2-hours on a weekday evening. The focus group was conducted at the substance use treatment center that the participants had attended for SUD treatment, and where they received the MABT sessions. Utilizing a semi-structured set of questions, the focus group was designed to explore the participants' ongoing use of interoceptive awareness skills, their perspective on the various elements of the intervention, and thoughts on how MABT might be best delivered in future programs or research. Specifically participants were asked about their perceptions on the following:

#### **Current Interoceptive Awareness Practice and Perceived Benefit**

- 1) What interoceptive awareness skills learned in MABT do you practice in your daily life?

- 2) What interferes with practicing interoceptive awareness skills learned in MABT?
- 3) Does MABT contribute to your ongoing SUD recovery and if so, how?
- 4) If yes, what motivates your continued practice of MABT skills?

### **Learning Interoceptive Awareness: MABT Components and Delivery that Contribute to Successfully Learning and Integrating Interoceptive Awareness into Daily Life**

- 5) Was MABT similar or different from other therapeutic strategies you've been exposed to and if so how?
- 6) What components of MABT were most helpful for learning interoceptive awareness?

### **MABT Program Delivery and Development in SUD Treatment**

- 7) What is the best time to deliver MABT during SUD treatment?
- 8) Are additional MABT services needed to support MABT skills later in treatment?

## **Analysis**

Interpretive analysis, along with analytic tools from discourse analysis, was used to describe the focus group responses to semi-structured interview questions. The focus group session was digitally recorded and transcribed verbatim. The focus group transcript was reviewed for accuracy by the research team members, one of whom conducted the session and one who took notes. Team members individually coded the transcript for overall themes across participant responses to each focus group question or set of questions. Using a team-based approach (Guest & MacQueen, 2008) they worked together thereafter to verify the coded themes (Bernard & Ryan, 2010) following the strategy of Lincoln and Guba (Lincoln & Guba, 1985). The second step involved attention to the use of specific words and meaning in the narrative response. To verify interpretation of meaning, word use and phrasing in response to questions was examined.

## **Results**

The results below are based on the themes that emerged in response to the Focus Group questions. The section subtitles identify each of the themes, followed by a description of the findings with supporting examples based on participant quotes.

### **Current Interoceptive Awareness Practice and Perceived Benefit**

**Current Practice: Interoceptive awareness skills for self-care were integrated into daily life**—All said that they had incorporated mindful body awareness as a regular practice that was integral to their lives. They each incorporated different strategies for attending to inner body awareness that were specific to their individual needs and personality, context of their environment, and the nature of the stressful events in their lives.

In addition, they modified what they'd learned from MABT to use self-care skills when most needed or most convenient (i.e. during certain times of day, e.g., upon awakening, before sleep, or as part of an exercise routine).

- “At the beginning I'd have to remember (to do the mindful exercises) when I was having an anxiety attack (which I still get occasionally). After 6 or 8 months, it was completely automatic. If something is bothering me and I don't know what it is, I can pretty much take care of it immediately so it's really good for me.”
- “When I wake up in the morning I do a body-check almost every morning and it's just part of my regular, who I am now.”

**Barriers to Practice: Stressful events and lack of a regular practice interfere with integrated daily use**—Women reported that distractions, stressful events, and feeling overwhelmed were barriers to practicing interoceptive awareness skills. In addition, without the habit of a daily practice, they were more likely to revert to old ways of coping.

- “When it was really stressful for me everything goes out the window. And it's funny because it's the time when I can use it the most and it's the time when I lose track of all things and my tools in my toolbox, and they're all gone. I'm like freaking out and it's not until you're able to just kind of take a deep breath, take a step back...”

**Benefit of MABT in SUD Treatment: Emotional awareness is key factor for relapse prevention**—All women spoke of the importance of exploring uncomfortable feelings as vital to staying healthy and preventing relapse to substance use, and the key role that MABT played in their ability to do so. They ascribed their past substance use to escalated emotions and an inability to attend to/process their feelings.

- “You're not hiding from things inside you anymore... I think that had pretty much a lot to do with my use. I was trying to cover up feelings, trying to cover up emotions – it was how I coped with life. It {MABT} gives me the ability focus on things in a different way, you know? It's a very unique way to think about things that are within me and connect my body to my mind and my spiritual duality and being {able} to connect everything into one person.”
- “It never occurred to me that there was a way to figure out or think about where the stress and anxiety were coming from. Never occurred to me. I just felt it, felt uncomfortable, hated that, and then I would drink. And it was only when all of a sudden I noticed I couldn't drink anymore to do this. And then I was doing this {MABT} at the same time that I realized that that was possible {to do something else}. It {MABT practice} became a new solution because the old solution wasn't working for me anymore.”

**What Motivates Practice: Emotional awareness and self-acceptance**—All women agreed that the ability to identify and experience emotions, and the ability to address and work through unresolved emotions, was the most positive outcome of MABT and what motivated maintained practice of interoceptive awareness skills. The women indicated that

overall they gained a much more secure sense of self which they attributed to receiving MABT during treatment.

- “Before the study, I didn’t really know myself or didn’t really care to. I kind of lived in this dream world where I would always be distracted from reality. It (MABT) helped me to identify what I feel, what I think and actually care enough to do so and feel like okay this is now, I get to live in the now, I get to be okay with that.”
- “I am much more aware of who I am and accepting of who I am physically and emotionally because of being a participant in this study. You know, as I said before this, the therapy was really healing for me and it really sent me away with a much more confident feeling of “I’m okay the way I am”.

### **Learning Interoceptive Awareness: MABT Components and Delivery that Contribute to Successfully Learning Interoceptive Awareness and Integrating Skills into Daily Life**

**How MABT is Different: Learned to meditate and connect to bodily self**—In response to the question of how the MABT approach was similar or different from other therapeutic processes, there was overall agreement that MABT helped the women to be mindful of inner experience and the connection between emotions and the body, and that they hadn’t achieved this type of awareness with other therapies they had previously received. In addition, they reported the inability to meditate prior to MABT because they could not stay focused. With MABT, the therapist assisted them in learning how to access interoceptive awareness. The women appreciated that the learning process was individualized to meet their needs (e.g. educational strategies, and areas of bodily focus).

- I tried meditating over the years and I was never able to concentrate. I was able to slow my mind down and then follow what she (the therapist) was saying, concentrating on a body part, and what I was feeling and afterwards talking about that. Eventually, I learned to do that by myself. This is why I thought this was amazing-because it taught me meditate. Now I meditate every night. The difference is having someone lead me into learning how to do it first.
- It actually helped me focus on how an emotion can physically manifest itself. It’s just this mindful awareness of what’s going on in my body and what’s connected behind that. I didn’t even realize that before and actually, I felt so disconnected from myself before the study and now I’m able to actually connect my inner-being with my physical-being and I find that very helpful.

**MABT Components that Facilitate Learning Interoceptive Awareness: Education, Individual Attention, Touch and Take Home Practice**—When asked about the specific components of MABT, there was an overall appreciation for all of the MABT components. However, the critical elements were education, individual attention, touch and the take-home practice (homework).

**Education:** MABT has a conceptual and experiential psychoeducational framework that was important for learning interoceptive awareness skills, for conceptually linking the

connection between mind and body, and for the development of a more comprehensive or multi-faceted understanding of self. All agreed that the educational strategies were integral to their successful integration of interoceptive awareness skills.

- The education piece was really, really important to me and really profound because it gave me the ‘okay’ to be still. I’m a pretty high-energized kind of person and always wanting to get things done, do things and be busy and that’s the way that my family was. This really allowed me to focus on me and that it was okay to be focused on me and even better for me to allow myself to really relax, and breathe, and be still and be calm. And you know, I’m hoping I can use that for every day for the rest of my life.

**Individual Attention:** Two aspects of therapist attention in MABT were considered critical for learning interoceptive awareness skills. One involved talking/sharing with the therapist throughout the session and the other was the individualized, one-on-one approach that allowed for the undivided attention of the therapist (in contrast to most other, group-oriented aspects of the SUD treatment program). All women described the safety that the individual approach provided, allowing them to explore emotional experiences and focus on what was going on for them within the context of their individual lives.

- In a group setting I would probably just not share or hurry-along my emotions because I didn’t want to take anybody else’s time and that kind of thing. So this was one-on-one time. It was special; it was all about me and the therapist made me feel that way. I listened to her and she listened to me and I listened to what she was trying to teach me because I knew it was something that I would carry with me in my recovery and she seemed to really understand that I would need these tools to be healthy and I felt like I was with someone that was helping me to heal and she was so genuine. And it was wonderful, yeah, it was great.

**Touch:** There was overall agreement that touch played an important role in learning interoceptive awareness. Touch provided a physical focus for internal attention, and was important for translating the skills from the session (in which therapist facilitates the learning) to self-care practice. Importantly, touch facilitated trust through increased relaxation, an accompanying presence, and communication of safety.

- It {touch} helped me focus my attention. It was also very soothing, relaxing, it made me open up and feel comfortable with her. That was one of the important things because I just didn’t feel comfortable with just anybody, especially at that time. It also helped me learn how to do it myself.
- It was really healing and a permission to know that touch is, touch is good, touch can be slow, touch can have heat to it, touch can have lightness to it and it really made me gather the connection between your thoughts and parts of your body and to be able to focus on that and it was very calming too.

**Take-Home Practice:** There was general agreement that learning MABT skills required much guidance by the therapist, and the homework derived from sessions helped make the practice of these skills integral to daily, personal life. In addition, they were intrigued by



their internal experience which seemed to motivate them to practice. For example “it was so amazing to me that I could actually relax, that I had some control over the way {i.e. whether or not} I stuck down those emotions...” There was variation among the group regarding the ease and openness to homework during the intervention: three said it provided structure, one said she did the homework as required but found it difficult to *want* to do it and gave up quickly, and one said it was necessary for learning but difficult. Nonetheless, all thought the homework was helpful to the learning process.

- “I remember, every time I got in the car, if somebody like turned in front of me or something, I would “okay, how does this feel? Where does this hurt? How does this bother you?” I’m also one of those people that repetition for me was really helpful and learning stuff. Made a habit of it.”
- “With the homework you know, it would, it kind of gave me that direction on how to do it, you know on my own because I probably wouldn’t {otherwise} practice.”

### **MABT Program Delivery and Development in SUD Treatment**

**MABT Delivery: Optimal time is in early in treatment**—All agreed that the ideal time to deliver MABT was toward the beginning of treatment but only after they were stable and had been in treatment for a few weeks. In the case of the participants in this study, they began study participation and MABT sessions in their first week of intensive outpatient treatment (IOP) subsequent to 3 weeks of inpatient treatment. They thought that receiving MABT during inpatient would have been too soon but that it was good timing to begin MABT at the beginning of intensive outpatient program (IOP).

- “I think that it was perfect timing..... Like I went the day I started outpatient. I think it was a nice blend too, you know, how to use these techniques outside of inpatient. When you’re in there {in inpatient}, you’ve got the safety net of the people that are all around you, you know? And then when you get out into the world, it’s like “Okay, what do I do with all these emotions?”

**MABT Program Development: Long-term Support Needed**—Finally, participants were asked to whether additional MABT intervention support was needed later in treatment or post-treatment. Options discussed included “booster sessions” in the form of web-based videos, written materials and group (rather than individual) sessions. All agreed that web-based videos would not work; the main reason cited was the potential distraction of Facebook or email. Also of concern was the lack of human touch with this method. Among the participants there was not much enthusiasm for written materials; as one participant commented – written materials would likely get misplaced, lost or piled up with other things.

There was more interest in group education or practice sessions, but with hesitation due to concerns about the lack of trust that could be present if there were unfamiliar people in a group. The women stated they would be uncomfortable expressing emotions with people they didn’t know. There was overall agreement that group sessions would work only if the members all knew and trusted each other. One woman described the positive aspects of sharing MABT experience with another study participant: “It was great being able to talk to

her about how her body scan went and what she took from it when it was happening, you know? And, I could say, “Oh, really? Was that the way you did it? This was the way I did it...” After hearing this comment, the other Focus Group participants concurred that a group with people all of whom had or were engaged in individual MABT sessions could be useful.

One woman suggested an instructional CD as a possible mechanism for delivering post-MABT support that would include primary MABT elements such as a body scan, body awareness exercises, and mindful body awareness practice. Other participants agreed this could be an effective medium for support and one woman commented “I think that this might work for me more than a group because you’ll actually be able to sit with yourself and find that peaceful place.” All reiterated that the best method would be continued work with an individual therapist. One suggestion to repeat MABT after one year of sobriety and that doing so would allow participants to go to a deeper therapeutic level because of the combined effect of one year of sobriety with one year of MABT practice and skill development.

## Discussion

These study results highlight the importance of interoceptive awareness for the ability to access, process and regulate emotions and the critical role of integrated practice of interoceptive awareness for relapse prevention. These findings thus helped to elucidate what motivated the long-term and integrated use of MABT interoceptive awareness skills a year and a half after completion of the MABT intervention in the larger initial study. In addition, the findings indicate that MABT program components of education, individual attention, touch and take-home practice (i.e. homework) were particularly helpful for learning interoceptive awareness and integrating related self-care skills in daily life. Last, the results suggest the importance of incorporating MABT early in SUD treatment and the potential utility of providing ongoing MABT therapeutic services to support sobriety post-treatment. With the current emphasis on integrative care for SUD treatment, these findings have potential implications for future research as well as for SUD treatment program development that will likely apply across health care disciplines.

There are a number of limitations to this study. Most importantly, the sample for this study was very small and thus the ability to extend the implications of these findings to a larger population is limited. While there was some diversity in age, education and income among this sample, all participants were non-Hispanic and Caucasian. Also, the responses to the focus group questions were generally positive and similar across all participants and thus there were few alternative perspectives provided. Future MABT research with a larger and more diverse sample will help clarify the generalizability of interoceptive awareness skills for relapse prevention and identify for whom MABT may be most beneficial.

None the less, the results of this study suggest some important implications for clinical care and dissemination of interoceptive training among women in SUD recovery. There are two primary implications – the first is the importance of individualizing the learning process. MABT delivery was individualized to meet the participant’s needs (i.e., exercises, teaching strategies, and take-home practices were tailored to the participant). For example, a

participant with musculoskeletal tension or pain might practice self-massage with attention to internal sensations in early sessions. Later in the intervention, once the participant has developed interoceptive awareness, the take-home practice for this same participant might be mindful body awareness in specific areas in her body where she is experiencing discomfort to facilitate acceptance and self-care. In contrast, a different participant might focus her take-home practice on calming and processing her emotions by attending to her breath and related internal body sensations because of her personal affinity with the breathing body awareness exercise. The results of this study highlight the participants' use of various MABT skills, specific to their daily stressors, environment, and personal style. Thus, these findings point to the importance of individualizing the interoceptive awareness training; doing so may have facilitated the long-term and consistent use of MABT interoceptive awareness skills among this study sample.

The second is the importance of individual (i.e. one-on-one) delivery of MABT. Individual delivery of MABT was perceived to be critical for learning interoceptive awareness skills. This was likely due, at least in part, to the high prevalence of interpersonal trauma among this population. Learning interoceptive awareness is typically challenging (Price, Wells, et al., 2012), especially for individuals with trauma histories who may have little emotional awareness skills, comfort with body, and may dissociate from body due to anxiety and automatic coping patterns developed in response to their trauma experiences (Price, 2007; Timms & Connors, 1992). Thus to successfully learn and increase interoceptive awareness capacity, a high level of personalized education and individualized strategies may be necessary, as these study findings suggest. Additionally, the individual relationship with the therapist appeared to facilitate a strong sense of safety, providing participants with the trust needed to explore their sensory awareness – a particularly vulnerable process for trauma survivors. Last, individual delivery likely allowed for the use of touch as a teaching tool, which was reported as important for learning interoceptive awareness. While touch generally facilitates the teaching/learning processes involved in developing interoceptive awareness, touch is particularly helpful to counteract the avoidance and dissociative patterns among women with a history of interpersonal trauma by providing a 'concrete' or physical location to focus their attention (Timms & Connors, 1992).

## Conclusion

In summary, the study findings suggest that interoceptive awareness skills are important for emotional health and are perceived to be critical for relapse prevention. These findings, along with results from the original study, support the current cognitive neuroscience models that highlight the potential role of interoception for emotion regulation in addiction treatment. Results also highlight the relationships between interoceptive awareness, emotional awareness, and emotion regulation for relapse prevention post-treatment, important for future research and program development aimed at improving women's SUD treatment outcomes.

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**Table 1**

Demographics, Baseline Characteristics, Treatment Completion and SUD Outcomes

Age (range)		24–55
Racial Identity	Caucasian	5
Prior SUD Treatment		5
Primary Substance	Alcohol	4
	Heroin	1
Education	High School	3
	BA	2
Employed	No	3
	Yes	2
Yearly Earned Household Income	< \$10,000	2
	\$10,000 – \$50,000	2
	>\$100,000	1
PTSD	> Screening Cutoff	5
Treatment Adherence	Completed IOP*	5
	Completed CC**	5
Substance Use Data	Relapse	0

Note: IOP = Intensive Outpatient Treatment; CC = Outpatient Continuing Care