

The Impact of an Occupation-Based Program for Women  
with Intellectual and Developmental Disabilities Who are Incarcerated

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## Abstract

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OBJECTIVE. This study evaluated the impact of an occupation-based program on the occupational performance and participation of women with intellectual and developmental disabilities who are incarcerated.

METHOD. A stepped wedge randomized control design was used to compare program participants with a delayed intervention group in terms of adverse behavioral incidents. The design also included repeated measures of program participant's occupational performance and participation using Goal Attainment Scaling (GAS), the Volitional Questionnaire (VQ), Social Profile (SP), and a relative mastery scale.

RESULTS. Intervention participants had significantly fewer adverse behavioral incidents than the delayed intervention group ( $N=85$ ;  $p = .02$ ). Intervention participants demonstrated significant improvements in occupational performance and participation according to GAS ( $p < .001$ ), the VQ ( $p < .005$ ), and the SP ( $p < .005$ ).

CONCLUSION. The outcomes of this study have strong potential utility for enhancing the rehabilitation of incarcerated individuals with IDD and advocating for the consistent inclusion of occupational therapy within justice service provider teams. Limitations included a focused sample, short study time frame, and possible researcher bias. Future studies should allow for a post intervention follow-up and replication in other settings.

KEY WORDS: occupational therapy workshop; intellectual disabilities; prison

35           Individuals with intellectual and development disabilities (IDD) constitute a growing  
36 percentage of incarcerated persons within the justice system. Worldwide, individuals with IDD  
37 represent 7-10% of the prison population (Hellenbach, Karatzias, & Brown, 2017), an  
38 overrepresentation compared to the global prevalence of IDD of .05 to 1.55% (McKenzie,  
39 Milton, Smith, & Ouellette-Kuntz, 2016). The justice system within the United States (U.S.)  
40 includes a variety of settings that range from state and federal prisons to state and county jails,  
41 forensic psychiatric hospitals and community-based programs, parole, and probation. While  
42 occupational therapy practice in justice-based settings has been more commonly focused on  
43 individuals with mental illness, the specific application of occupational therapy to individuals  
44 with IDD involved with the justice system is slowly, although insufficiently, becoming more  
45 evident.

46           Individuals with IDD who are incarcerated are at a higher risk for occupational  
47 deprivation with few opportunities to address skills that would better prepare them for  
48 community re-entry (Falardeau, Morin, & Bellemare, 2015). Occupational deprivation is a  
49 concept associated with an occupational justice perspective and suggests that participation in  
50 meaningful and purposeful occupations is intrinsically linked to a person's health and wellbeing  
51 (Whiteford & Townsend, 2011). Women who are incarcerated also present with higher risks of  
52 occupational deprivation as most justice-based programs were initially designed for men and do  
53 not always address the unique needs of women (Latessa, Listwan, & Koetzle, 2014). The  
54 inherent limitations of the justice environment to provide health-promoting occupations for  
55 individuals with IDD can result in the deterioration of existing skills, which can significantly  
56 impact the person's ability to meet the performance demands of current and future environments.

57           Three reviews have covered the occupational therapy evidence foundation within justice-  
58 based practice over the past several decades: prior to 2003 (Duncan, Munro, & Nicol, 2003),  
59 prior to 2007 (O’Connell & Farnworth, 2007), and prior to 2013 (Hitch, Hii, & Davey, 2016).  
60 These reviews all support the need for developing and using specific outcome measures;  
61 improving the quantity and rigor of studies; creating structured, theory-based programs; and  
62 building a united, international response network. The creation of prosocial, productive  
63 environments and use of everyday activities aimed at community reintegration is identified as the  
64 distinct role of occupational therapy in this setting (O’Connell & Farnworth, 2007). Building on  
65 these literature reviews, it is acknowledged in recent surveys of justice-based practice in the U.S.  
66 and Canada that there are not enough occupational therapy practitioners working in this practice  
67 area to meet the need, and many practitioners do not identify the use of structured evaluation  
68 tools or systemized collection of outcomes (Chui, Wong, Maraj, Fry, Jecker, & Jung, 2016;  
69 Muñoz, Moreton, & Sitterly, 2016). Common occupational therapy interventions include group-  
70 based formats addressing vocational, activities of daily living, instrumental activities of daily  
71 living, social, problem solving, coping, and leisure engagement (O’Connell & Farnworth, 2007;  
72 Chui et al., 2016; Muñoz et al., 2016).

73           An extensive search of the literature to identify examples of occupational therapy practice  
74 with IDD populations in justice-based settings revealed four articles. All four articles originate in  
75 the United Kingdom, are qualitative or descriptive in their methodology, and illustrate the  
76 primary use of work-based interventions. Interventions included a graded, work-based learning  
77 program that demonstrated a progression of social, work, literacy, and numeracy skills (Smith,  
78 Petty, Oughton, & Alexander, 2010); a comprehensive, daytime routine of productive and  
79 meaningful group projects within a medium secure facility (Withers, Boulton, Morrison, &

80 Jones, 2012); an authentic work program in which participants completed a comprehensive,  
81 employment-related process including application and interviews (Cox, Simmons, Painter,  
82 Philipson, Hill, & Chester, 2014); and horticulture-related tasks to influence subjective health  
83 and wellbeing (Christie, Thomson, Miller, & Cole, 2016). All of these interventions occurred in  
84 secured settings designed specifically for individuals with mental health and intellectual  
85 disabilities versus a secured justice setting such as a prison that is not designed to meet the need  
86 of a specialized population. Considering the limited amount of literature available and the  
87 significance of the concern, additional research is needed to delineate occupational therapy's  
88 essential role and effectiveness in meeting the unique needs of individuals with IDD who are  
89 involved with justice-based settings.

90         The purpose of this study was to evaluate systematically the impact of an occupation-  
91 based program on the occupational performance and participation of women with IDD who are  
92 incarcerated. This study utilized an occupation-based program grounded in overarching  
93 principles of participatory occupational justice which recognizes the risks of occupational  
94 deprivation and the importance of participation in health enhancing occupations (Whiteford &  
95 Townsend, 2011). The specific therapeutic approaches used in the program were informed by  
96 principles of occupational adaptation theory. Consistent with occupational adaptation,  
97 occupational performance and participation is an outcome of the adaptive response and includes  
98 the quality and generalization of performance skill; level of engagement or self-initiated action;  
99 and perceived efficiency, effectiveness, and satisfaction (Schultz, 2013). The progress of  
100 program participants within these selected areas was ultimately anticipated to contribute to more  
101 successful community reintegration, as well as improved function and quality of life within the  
102 prison environment. The purpose of the research was to determine whether participation in

103 occupation-based programming resulted in the improved occupational performance and  
104 participation of women with IDD who were incarcerated. The specific research questions were as  
105 follows:

- 106 • How do program participants and a wait-list control group differ in terms of adverse  
107 behavioral incidents?
- 108 • What changes in occupational performance and participation do program participants  
109 demonstrate over time?

### 110 **Method**

111 This manuscript focuses on the quantitative outcomes utilizing two design strategies of a  
112 larger mixed methods study. The first research design strategy was a stepped wedge randomized  
113 control (RCT) design (Brown & Lilford, 2006) that compared participants who completed the  
114 intervention with a delayed intervention control in terms of frequency of adverse behavioral  
115 incidents documented within facility records. Participants who consented were randomly assigned  
116 to an immediate intervention group or to a delayed intervention group using a systematic sampling  
117 method. This random sampling method involved selecting the intervention group by a  
118 predetermined interval (e.g., every fifth individual) from a randomized list of eligible participants  
119 generated during the recruitment process. The assignment process was designated by a different  
120 individual than who enrolled participants to groups. Random assignment was concealed from the  
121 outcome assessor.

122 The second strategy examined repeated measures of program participants' occupational  
123 performance and participation using the Volitional Questionnaire (de las Heras, Geist, Kielhofner,  
124 & Li, 2007), Goal Attainment Scaling (Kiresuk, Smith, & Cardillo, 1994), the Social Profile  
125 (Donohue, 2013), and a relative mastery rating scale. The intervention phase for each participant

126 lasted twelve weeks and the outcomes of this study represent approximately six months of data  
127 collection.

## 128 **Outcome Measures**

129         Participant demographics were collected from prison institutional records according to  
130 procedures approved by the institutional review board and associated state justice authorities. The  
131 measure for comparison between the immediate and the delayed intervention groups was the  
132 number of incidences of documented adverse behaviors. These officially documented adverse  
133 behaviors involve a written sanction of progressive discipline given to a person who is incarcerated  
134 for actions that violate prison rules. Documented adverse behaviors were selected as the measure  
135 for between group comparison as they were anticipated to provide evidence as to the impact of the  
136 intervention on behaviors outside of the direct intervention context and they were part of the  
137 existing data collected by the institution.

138         The Volitional Questionnaire (VQ) was administered every two weeks using a four-point  
139 rating on 14 items related to the participant's observed level of engagement or participation in  
140 session activities. This tool was designed for individuals with reduced verbal and cognitive abilities  
141 within a wide range of contexts. The VQ has been found to have acceptable construct validity,  
142 content validity, and inter-rater reliability (Li & Kielhofner, 2004).

143         Goal Attainment Scaling (GAS) was used to document the participant's baseline  
144 performance at a rating of -1 and the expected performance improvement standard at 0. A +1  
145 represented a little better than expected, +2 much better than expected, and -2 a decline from  
146 baseline performance. The occupational therapist selected one goal for each participant from a  
147 bank of possible goals developed by the principal investigator using an occupational adaptation  
148 framework. The goal was individually selected for each participant based on initial evaluation

149 results. The occupational therapist evaluated each participant's progress toward her individual  
150 performance goal using the GAS rating at the completion of the intervention period. Literature has  
151 demonstrated the usefulness of GAS as a person-centered outcome measure and the utility of  
152 framing GAS goals using a theory-driven perspective (Doig, Fleming, Kiupers, & Cornwell, 2010;  
153 Hurn, Kneebone, & Cropley, 2006).

154         The Social Profile (SP) was used to rate the baseline, midpoint, and ending level of social  
155 dynamics occurring between participants. This instrument produced an average summary score  
156 with a range of one to five based on the therapist's observations of group interactions. The SP has  
157 demonstrated reliability and validity for assessing group-level functioning during activities for  
158 adult mental health groups from the perspective that being able to cooperate around a task  
159 promotes verbal exchanges that are less formal and prepare the individual for re-entering  
160 community, work, and family groups (Donohue, 2007; Donohue, 2013).

161         A relative mastery rating scale, developed by the principal investigator and vetted by  
162 experts in occupational adaptation theory, was collected weekly throughout the intervention phase.  
163 Each participant provided a three-point baseline relative mastery rating of one to three for low,  
164 moderate, and high representing her perception of efficiency, effectiveness, and satisfaction related  
165 to her own performance (Schultz, 2013). To simplify the concept for individuals with IDD, the  
166 rating was developed utilizing pictures and simplified verbiage.

### 167 **Participant Selection**

168         The study occurred at a single state prison facility within the southwest region of the U.S.  
169 This facility has a maximal census of 100 persons and is the only one within this state that  
170 specifically houses women with IDD. All of the participants in this study were women, aged 18  
171 years or older, and diagnosed with a condition affecting intellectual and/or cognitive functioning.

172 Reasons for exclusion included: (1) an inability or unwillingness to consent to participation and  
173 (2) a lack of eligibility to attend occupational therapy services due to scheduling conflicts or a  
174 security or medical status that restricted them from leaving their cell/dorm. This type of  
175 restriction is typically related to a high level of aggression, elopement risk, acute illness, or self-  
176 harm behavior. Informed consent was obtained from participants using approved procedures  
177 from the institutional review board and associated state justice authorities.

### 178 **Intervention**

179 The intervention, identified as the OT Workshop, was implemented by an occupational  
180 therapist and an occupational therapy assistant utilizing a program manual developed by the  
181 principal investigator (Stelter & Whisner, 2007). The OT Workshop is a theory-driven,  
182 occupation-based approach designed to facilitate the meaningful and prosocial occupational roles  
183 assumed to develop a person's adaptive responses and prepare them for community  
184 reintegration. The OT Workshop provides a therapeutic, supported work environment to awaken  
185 capabilities and motivation through opportunities to actively participate and produce goods that  
186 contribute to the social fabric of the institutional and local community. The essential and key  
187 therapeutic ingredients are outlined in Table 1.

188 The OT Workshop was designed to capitalize on the participants' personal interests and  
189 motivations by including them in a therapeutic work crew identified by its activity of focus. The  
190 study focused on four types of work crews: (1) the horticulture crew, (2) the craft crew, (3) the  
191 technology crew, and (4) the cooking crew. These crews were selected due to their appeal to most  
192 participants, the feasibility of their implementation, and their ability to provide a wide range of  
193 opportunities for building relevant adaptive skills.

194           Once each participant crossed over from the delayed to the intervention group, they were  
195 involved in an initial evaluation. Figure 1 provides a visual for how the assignment and  
196 intervention crossover processes occurred over the six-month study. The initial phase of  
197 evaluation involved the participant in a single group session lasting approximately one hour. The  
198 focus of this session was to gain information relevant for assigning the participant to the specific  
199 type of crew that best fit her interests. Once beginning her assigned crew, the first two weeks were  
200 considered a continuation of the evaluation phase to gather further observations for the sake of  
201 establishing a relevant, individualized performance goal using the GAS method. The occupational  
202 therapy staff administered the key therapeutic ingredients and session procedures consistently  
203 across each of the individual work crews. Ideal group size for a crew was 6 – 12 participants. The  
204 frequency and duration of each crew was two sessions per week for 12 weeks with each session  
205 lasting 1.5 - 2 hours.

#### 206 **Data Collection**

207           The principal investigator trained the occupational therapy staff three intensive days on  
208 the implementation and documentation of the intervention. The program manual included a  
209 systemized method for gathering and inputting the data. The occupational therapy staff  
210 documented the participants' response to the intervention along defined elements within a database  
211 on a weekly basis. The elements within the database included information such as the crew type;  
212 number of sessions attended; reasons for missing sessions; primary tasks performed; relative  
213 mastery rating; VQ rating; SP rating; and GAS goal. The principal investigator conducted onsite  
214 monitoring quarterly and weekly email or phone contact with the occupational therapy staff to  
215 evaluate and facilitate fidelity to the intervention and data collection processes.

216

## 217 **Data Analysis**

218           After data was de-identified, analyses were performed using SPSS version 25.0 (IBM  
219 Corp, 2017). First, demographic and program data was analyzed using descriptive statistics, and  
220 the frequency of documented adverse behaviors of the delayed and intervention group were  
221 compared using a paired *t*-test. Second, repeated measure analysis of variance (ANOVA) was  
222 used to compare within-intervention group measures of occupational performance and  
223 participation (i.e., VQ, relative mastery rating, and SP) over the time of the intervention phase. A  
224 Wilcoxon signed-rank test was administered to compare the GAS measures from baseline to the  
225 end of the intervention phase. Intention-to-treat analysis was adopted for this study.

## 226 **Results**

227           All eligible individuals at the facility consented to participate ( $N = 85$ ). During the six-  
228 month data collection period of this study, 64 participants were randomly assigned to crossover  
229 from the delayed intervention group to the immediate intervention group. Participant  
230 characteristics for the immediate and delayed intervention groups did not significantly differ;  
231 therefore, participant characteristics are presented for the combined participants (see Table 2).

232           The participants were fairly evenly represented across the range of ages (22 – 66 years)  
233 with a mean age (42.4) slightly higher than the mean age of incarcerated females within the  
234 target state. Participants' race was predominately black ( $n = 43, 50.6\%$ ) followed by white ( $n =$   
235  $25, 29.4\%$ ) which was inverse to the general population of incarcerated females in the target  
236 state. IQ scores indicated that most participants fell into the mild intellectual disability range  
237 (participants with  $IQ\ 55 - 70 = 55.3\%$ ), followed by borderline intellectual functioning  
238 (participants with  $IQ\ 71 - 84 = 31.8\%$ ). Most participants had at least one other prison stay in  
239 addition to the current stay ( $M = 1.4$  stays). The majority of participants ( $n = 53, 62.4\%$ ) were

240 incarcerated for a violent offense (e.g., assault, homicide, sexual offenses) which is consistent  
241 with state incarceration rates for violent offenses.

### 242 **Descriptive Program Outcomes**

243         The first crews implemented were a horticulture crew and two craft crews. Each of these  
244 crews enrolled eight participants ( $n = 24$ ) with good completion rates ( $n = 22, 91.7\%$ ) and  
245 attendance rates for those who completed the crew (80.8% - 92.9%). A second phase of six  
246 crews were initiated following the completion of the first and involved a horticulture crew, two  
247 craft crews, a cooking crew, and two technology crews. Each of these crews enrolled  
248 approximately 10 participants, had a range of completion rates from 60.0% to 80.0% ( $n = 45$ ),  
249 and attendance rates from 73.4% to 92.4%. No workshop crews required discontinuance or  
250 reorganization of members before completion. The nine crews completed during the study  
251 included a mean of 22.0 (range of 18 – 24) sessions. Most absences were attributed to temporary  
252 behavioral restrictions ( $n = 146, 30.5\%$ ) and release/transfer from the facility ( $n = 128, 26.7\%$ ).  
253 Very few absences due to refusal were indicated ( $n = 14, 2.9\%$ ).

### 254 **Stepped Wedge RCT Comparison of Adverse Behaviors**

255         A paired-samples *t*-test revealed a significant difference in the number of documented  
256 adverse behaviors within the three month period prior to intervention ( $M = .14, SD = .39$ ) and the  
257 number of these documented behaviors during the three month intervention ( $M = .02, SD = .13$ ),  
258  $t(63) = 2.39, p = .02$ . The most common types of adverse behaviors documented on participants  
259 over a 12-month time period were refusal to obey orders (includes refusal to attend scheduled  
260 work) and being out-of-place (i.e., not in the designated area); however, these types of  
261 documented behaviors were non-existent post-implementation (see Figure 2).

262

## 263 **Within-Intervention Group Results**

264 **Changes in occupational performance.** A Wilcoxon signed-rank test indicated that  
265 participant Goal Attainment Scaling (GAS) scores at the end of the intervention phase were  
266 significantly higher than at the baseline of intervention,  $Z = 5.72, p < .001$ . Table 3 depicts the  
267 utilization of performance goals and those in which the participants demonstrated significant  
268 progress. The most common area of progress was in the area of performance behavior ( $n = 23,$   
269  $27.1\%$ ) with the most commonly utilized goal being improved independence in task performance  
270 ( $n = 21, 24.7\%$ ). The most common levels of independence achieved included complete  
271 independence, followed by indirect cueing or modeling. An example of this type of change is a  
272 participant who previously required direct cueing for each step of a moderately complex work  
273 task progressed to requiring no prompting for completion of the same task. Analysis of variance  
274 indicated no significant difference between the final GAS ratings of each intervention crew,  
275 supporting that each type of crew had comparable impact on participant outcomes,  $F(8,69) = .51,$   
276  $p = .06$ .

277 **Changes in occupational participation.** A within-participants repeated measures  
278 ANOVA with a Greenhouse-Geisser correction exhibited a significant difference in occupational  
279 participation utilizing Volitional Questionnaire (VQ) scores,  $F(3.63, 181.68) = 87.36, p < .005$ .  
280 The effect size value, using partial eta squared, ( $\eta_p^2 = .64$ ) suggested a large change in VQ scores  
281 over time. Post hoc analyses revealed that occupational participation utilizing the VQ score  
282 improved significantly across the six intervention measurement time points (every 2 weeks) with  
283 the exception of the final two measurement times (see Figure 3). With a range of scores on the  
284 VQ of 14 to 56, the study outcomes indicate participant progress in occupational participation  
285 from exploratory to more consistent competency characteristics. Exploration involves basic

286 curiosity and interest in the environment; however, competency encompasses the person's  
287 attempts to actively engage and influence the environment. Analysis of variance indicated no  
288 significant difference between the final VQ ratings of each intervention crew, supporting that  
289 each type of crew had comparable impact on participant outcomes,  $F(8, 57) = 1.14, p = .36$ .

290 **Changes in relative mastery.** A within-participants repeated measures ANOVA with a  
291 Greenhouse-Geisser correction revealed no significant difference in relative mastery ratings over  
292 time,  $F(4.73, 80.32) = 1.25, p = .30$ . Despite this finding, relative mastery ratings, with a scale of  
293 three to nine, were consistently high over time (see Figure 4). For example, participants routinely  
294 documented in their journals that they were efficient, effective, and satisfied with their work  
295 within the group session. Analysis of variance indicated no significant difference between final  
296 relative mastery ratings of each intervention crew,  $F(8, 47) = 1.33, p = .25$ .

297 **Changes in group dynamics.** A within-participants repeated measures ANOVA with a  
298 Greenhouse-Geisser correction exhibited a significant difference in group dynamics utilizing  
299 Social Profile (SP) scores,  $F(1.23, 77.63) = 609.04, p < .005$ . The effect size value, using partial  
300 eta squared, ( $\eta_p^2 = .91$ ) suggested a large change in SP scores. Post hoc analyses revealed that  
301 group dynamics or the interactions among crew members improved significantly across the three  
302 intervention measurement time points: baseline, six-week, and 12-week points,  $M = 1.5, SD$   
303  $= .49; M = 2.4, SD = .35; M = 2.9, SD = .33$ . Descriptive analysis of SP ratings by individual  
304 crews revealed that each crew demonstrated progress over time (see Figure 5). Most of the crews  
305 improved from a parallel level of social group participation at baseline, where group members  
306 work side by side but do not interact, to either an associative or a basic cooperative level by the  
307 end of the intervention phase. The group members begin to briefly interact during the associative

308 level, and at a basic cooperative level, the members begin to collaborate on a mutually  
309 interesting goal or project.

### 310 **Discussion**

311 The results of this study indicate a significant impact on the occupational performance  
312 and participation of women with IDD who are incarcerated and who are involved in brief  
313 occupational therapy interventions. The descriptive data was consistent with initial assumptions  
314 that the target population exhibited or experienced complexities related to cognitive impairment,  
315 diversity of ages, racial imbalance, range of criminal and social histories, record of recidivism,  
316 limited education, and occupational deprivation. Complexity of the characteristics and  
317 circumstances of people involved with the justice system, including occupational deprivation, is  
318 found in occupational therapy, justice-based literature (Falardeau et al., 2015; Farnworth &  
319 Muñoz, 2009).

320 The descriptive results of the occupational therapy intervention indicate it is an efficient  
321 process for providing valued services to eligible individuals who are incarcerated. With the  
322 variety of uncontrollable and restrictive factors found in the prison setting (Crabtree, Ohm, Wall,  
323 & Ray, 2016), the possibility of needing to dissolve or reorganize groups is realistic; however, all  
324 therapeutic crews were implemented to completion. Overall participant completion and  
325 attendance rates were respectably high, implying the value held for the program. This finding is  
326 consistent with other justice-based occupational therapy programs found to generally incentivize  
327 participation and support the value of occupation-based interventions (Eggers, Muñoz, Sciulli, &  
328 Crist, 2006; Fitzgerald, 2011; Vollm, Panesar, & Carley, 2014).

### 329 **Generalization of Performance Skills**

330           The study's findings of a significant difference in documented adverse behaviors pre-  
331 versus post-program enrollment suggest that the occupational therapy intervention improved  
332 participants' behaviors within a relatively short amount of time. Program participants were  
333 virtually without any documented adverse behavioral incidents once beginning the program. The  
334 ability and willingness to maintain this level of behavioral self-regulation supports an impact on  
335 participants' generalization of performance skills. The generalization of an adaptive response  
336 across contexts (e.g., from the occupational therapy session to the dorm, recreation yard, or job  
337 site) is an imperative achievement for enduring behavioral change (Schultz, 2013). It appears  
338 that the opportunity to pursue meaningful and purposeful occupations can have a tempering  
339 effect on undesirable behaviors.

#### 340   **The Adaptive Response**

341           The significant improvements found using three of four measurement tools support the  
342 intervention's impact on participants' occupational performance and participation, indicating an  
343 adaptive response. Group-based interventions can present challenges related to individualizing  
344 outcomes; however, the use of GAS captured the interventions' capacity for promoting  
345 individual progress in areas of prosocial adaptive response behaviors, relative mastery, and  
346 desire for mastery. While occupational participation and collaborative behaviors substantially  
347 improved among participants, VQ and SP scores still revealed limitations in self-initiation and  
348 social dynamics. These continuing limitations are consistent with literature that describes the  
349 ongoing need for supports for individuals with IDD even with improvements in independent  
350 functioning (Channon, 2014). An ongoing therapeutic balance exists when working with this  
351 population of providing opportunities for independence along with necessary supports for  
352 engagement (Mahoney, Roberts, Bryze, & Parker Kent, 2016). Tipping too heavily on one or the

353 other side of the balance between independence and support for persons with IDD can result in  
354 unintended marginalization or neglect.

355         Although the relative mastery results were not significant, the ability to provide a  
356 complex population in a difficult environment with a demanding intervention that resulted in  
357 consistently high satisfaction ratings is a testament to the value attributed to the intervention. All  
358 of the therapeutic crews involved in this study had a statistically similar impact despite the  
359 varying nature of their central activities. This finding may imply that the mechanism of change  
360 was not specific to the crew's activity of focus (i.e., crafts, horticulture, technology, cooking),  
361 but the key therapeutic ingredients that were consistent across the crews (see Table 1).

### 362                                   **Implications of Occupational Therapy Practice**

363         This research provides a successful template for designing, implementing, and evaluating  
364 theory-driven, occupation-based occupational therapy services for individuals with IDD in a  
365 secure justice-based setting. This study is one of the very few known studies in occupational  
366 therapy that specifically address the needs of people with IDD who are incarcerated (Christie et  
367 al., 2016; Cox et al., 2014; Smith et al., 2010; Withers et al., 2012), that is specific to women  
368 (Baker & McKay, 2001), and is based in the U.S. This study was unique in its use of a rigorous  
369 research method in comparison with many of the published studies of occupational therapy and  
370 non-occupational therapy program outcomes in justice-based settings (O'Connell & Farnworth,  
371 2007). These findings encourage justice stakeholders to consider regular inclusion of  
372 occupational therapists as a regarded constituent of the clinical provider team and an option to  
373 address the deficit in provider resources.

374

375

376 **Limitations**

377 This study has several limitations. First, the participants were recruited from a single  
378 facility within one state; therefore, the findings most directly represent those with similar  
379 demographics and context. Second, in relation to the stepped wedge method, only one measure  
380 was utilized. With such statistically significant results, the need to consider the influence of  
381 confounding variables is indicated. The addition of another behavioral outcome measure could  
382 assist in validating the source of such significant positive behavioral change. Without such  
383 measures, the influence of potentially confounding variables cannot be ruled out. Third, the  
384 evaluation of true post-intervention follow-up measures, such as recidivism rates several months  
385 or years post-release, were inhibited by the study's short time frame. This researcher's potential  
386 bias, as the program designer and evaluator, is also recognized despite the inclusion of several  
387 valid and reliable trustworthiness techniques. A final research limitation relates to the use of  
388 several research measures that were not specifically validated for this unique population and  
389 context; however, the VQ, GAS, and SP demonstrated valuable utility as outcome measures in  
390 this study.

391 **Future Research**

392 Future research should focus on the occupational therapy program's outcomes after a  
393 lengthier period of operation in order to capture the longer-term impact. For example, a follow-  
394 up study several years from now could provide program impact information related to recidivism  
395 rates and capacity to generate and bridge supports from the prison to the community upon re-  
396 entry. The limitations of research measures suggest the need for researchers to develop  
397 ecologically valid, occupation-based measures for various justice-involved populations and

398 settings in order to facilitate their utility for practitioners developing and implementing  
399 programs.

#### 400 **Conclusion**

401 This study's findings suggest that the 12-week occupational therapy program, grounded  
402 in occupational adaptation and participatory occupational justice theories, was successful at  
403 promoting the occupational performance and participation of individuals with IDD through the  
404 provision of meaningful work roles. Performance behaviors were improved in quality and  
405 generalized beyond the intervention setting; self-initiated action increased; and relative mastery  
406 was remarkable. This study responds to the call for evaluating manualized, theory-driven  
407 occupational therapy services within the U.S. justice system for a complex population that is  
408 occupationally deprived across multiple characteristics (e.g., incarcerated, female, IDD).  
409 Occupational therapy, when included in a professional care team, has a substantial role in  
410 addressing the participation and community re-integration needs of incarcerated individuals with  
411 IDD.

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Table 1

*Key Therapeutic Ingredients of the OT Workshop*

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Intentional opportunities to:
<ul style="list-style-type: none"><li>• Select, plan, execute, and evaluate task performance</li><li>• Produce tangible products contributing to the immediate or community environment</li><li>• Engage in graded, just-right occupational challenges</li><li>• Receive direct or indirect verbal or physical assistance only to the point necessary</li><li>• Receive objective, non-judgmental feedback</li><li>• Participate in novel tasks or contexts</li><li>• Be involved in a positive social environment through co-occupation</li><li>• Experience self in a prosocial role that is personally satisfying and contributes to the physical or social environment (i.e., the role-shifting experience)</li></ul>
Session Protocol
<ol style="list-style-type: none"><li>1. Practice hygiene and grooming (e.g., wash hands, brush teeth, groom hair)</li><li>2. Review progress made during the previous session and establish the task priorities for the current session</li><li>3. Access and organize needed supplies and space</li><li>4. Begin and maintain the activity while the occupational therapy staff monitors and intervenes where necessary</li><li>5. Participate in hydration and music break as needed</li><li>6. Receive 15-minute warning that the session is ending</li><li>7. Inventory supplies and clean the group space</li><li>8. Review progress by identifying one's relative mastery rating, celebrate successes, and plan for the next session</li></ol>

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Table 2

*Participant Characteristics*

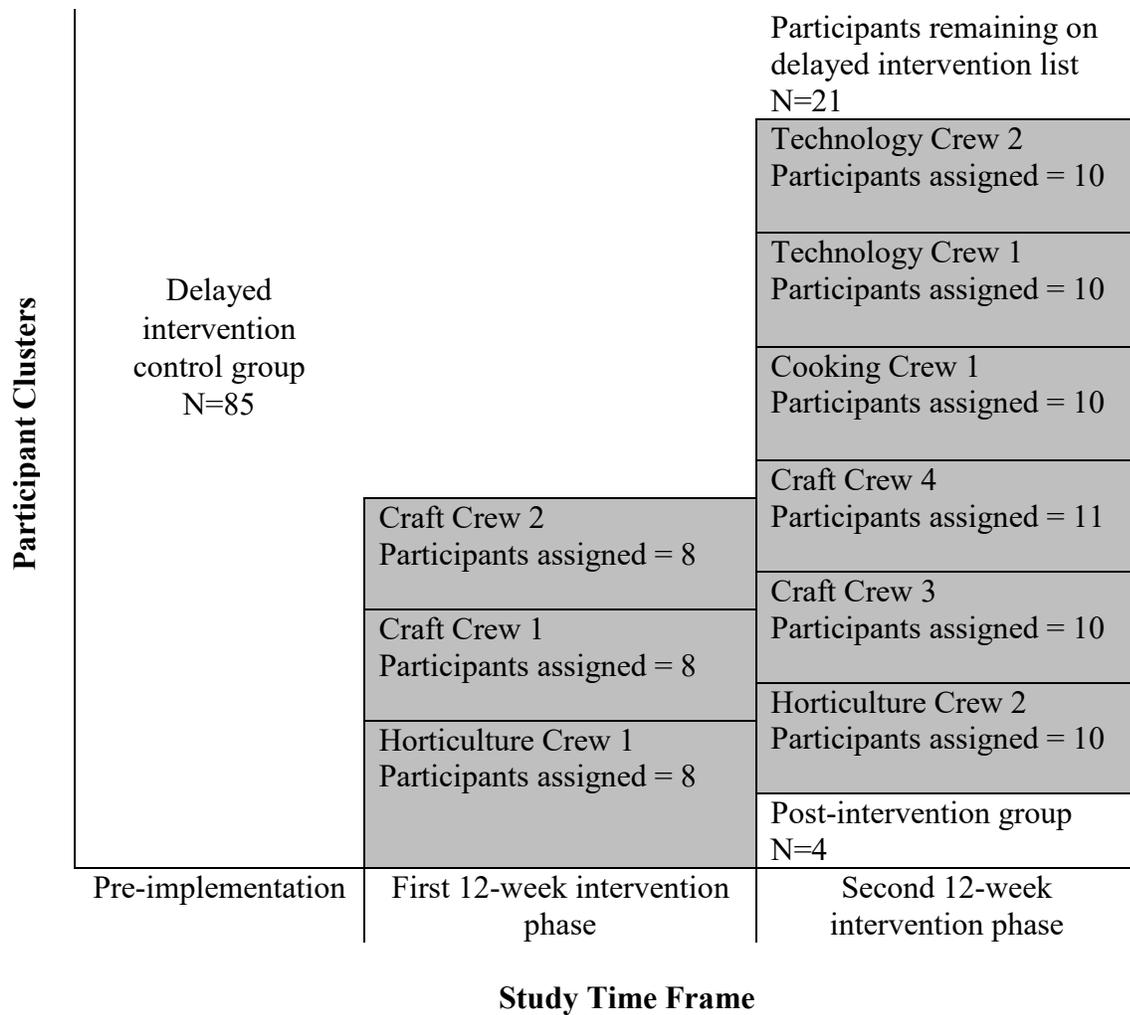
		<i>N</i> = 85	
Age		Parole projected release	
Mean ( <i>SD</i> )	42.4 (12.6)	within 2 years ( <i>n</i> , %)	27 (31.8%)
Range (min – max)	44 (22 – 66)	Years incarcerated	
Race ( <i>n</i> , %)		Mean ( <i>SD</i> )	4.9 (5.7)
Black	43 (50.6%)	Range (min – max)	24 (.1 – 24)
White	25 (29.4%)	Years at the facility ( <i>n</i> ,%)	
Hispanic	15 (17.6%)	≤ 1	47(55.3%)
Asian	1 (1.2%)	2 – 5	17 (20.0%)
Other	1 (1.2%)	6 – 10	13 (15.3%)
IQ Score ( <i>n</i> , %)		11 – 15	5 (5.9%)
55 – 70	47 (55.3%)	≥ 16	3 (3.5%)
71 – 84	27 (31.8%)	Total previous prison stays	
≥ 85	6 (7.1%)	Mean ( <i>SD</i> )	1.4 (0.8)
Mean ( <i>SD</i> )	69.3 (8.4)	Mode (min – max)	1 (0 – 4)
Range (min – max)	44 (55 – 99)	Offense categories ( <i>n</i> , %)	
Education ( <i>n</i> , %)		Violent	53 (62.4%)
Some grade school	57 (67.1%)	Property	12 (14.1%)
High school grad or GED	26 (30.6%)	Drug	11 (12.9%)
Some college	1 (1.2%)	Obstruction/other	9 (10.6%)
College degree	1 (1.2%)		

*Note.* Fx = functioning.

Table 3

*Areas of Performance Progress Utilizing GAS Goals*

Performance goal	<i>N</i> = 85 ( <i>n</i> , %)
<b>Prosocial adaptive response behavior</b>	
<i>Performance behavior/external role expectations</i>	
Independence in task performance	21 (24.7%)
Organization	0 (0%)
Sets standards/leadership	2 (2.4%)
Hygiene, grooming, & basic self-care	0 (0%)
<i>Social participation</i>	
Social interaction	14 (16.5%)
Communicating needs or wants/help seeking	4 (4.7%)
Prosocial behavior/altruism	2 (2.4%)
<i>Problem solving &amp; decision making</i>	
Planning/decision making/creating	12 (14.1%)
Awareness of & correction of mistakes/modifying approach	8 (9.4%)
<i>Emotional regulation &amp; coping</i>	
Persists through challenges	6 (7.1%)
Frustration tolerance	1 (1.2%)
Generate novel coping skills	7 (8.2%)
<b>Relative mastery</b>	
<i>Self-esteem &amp; competency</i>	
Positive self-statements	6 (7.1%)
<b>Desire for mastery</b>	
<i>Motivation</i>	
Participation/goal-directed behavior/self-initiation	2 (2.4%)



*Figure 1.* Stepped-wedge design. Illustration of the assignment and crossover of participants from the delayed intervention to the immediate intervention group over the time of the study along with assignment to specific crews.

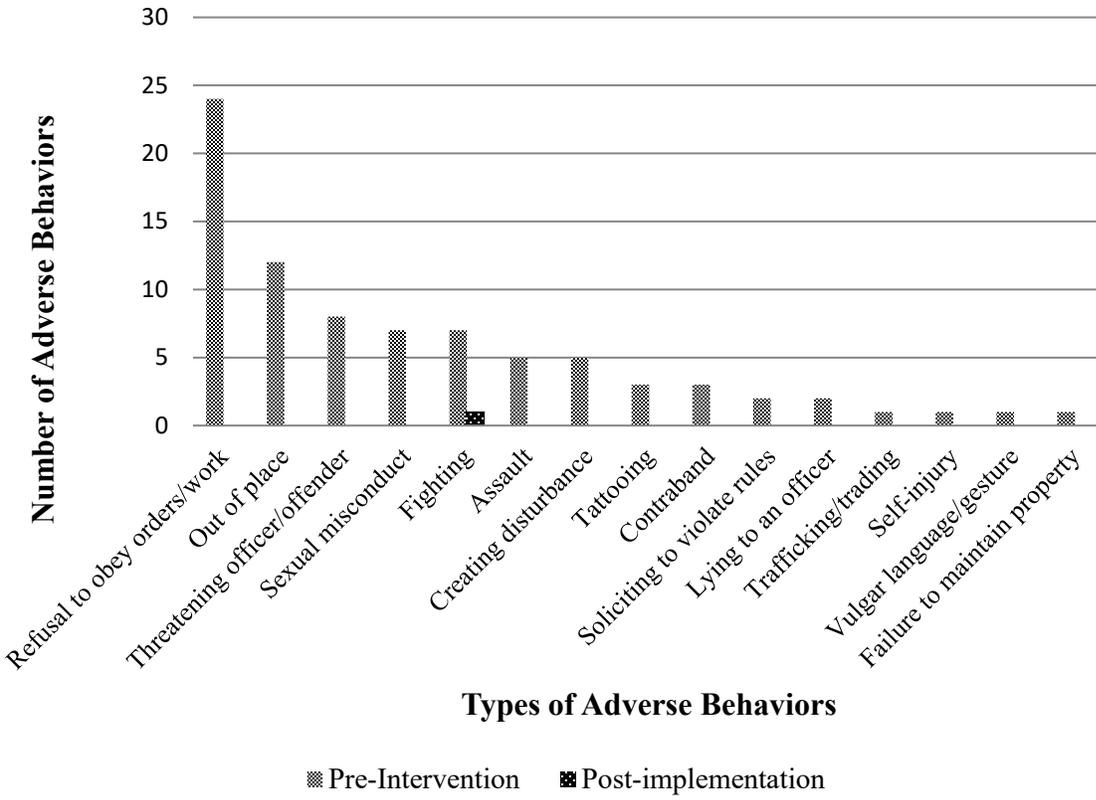
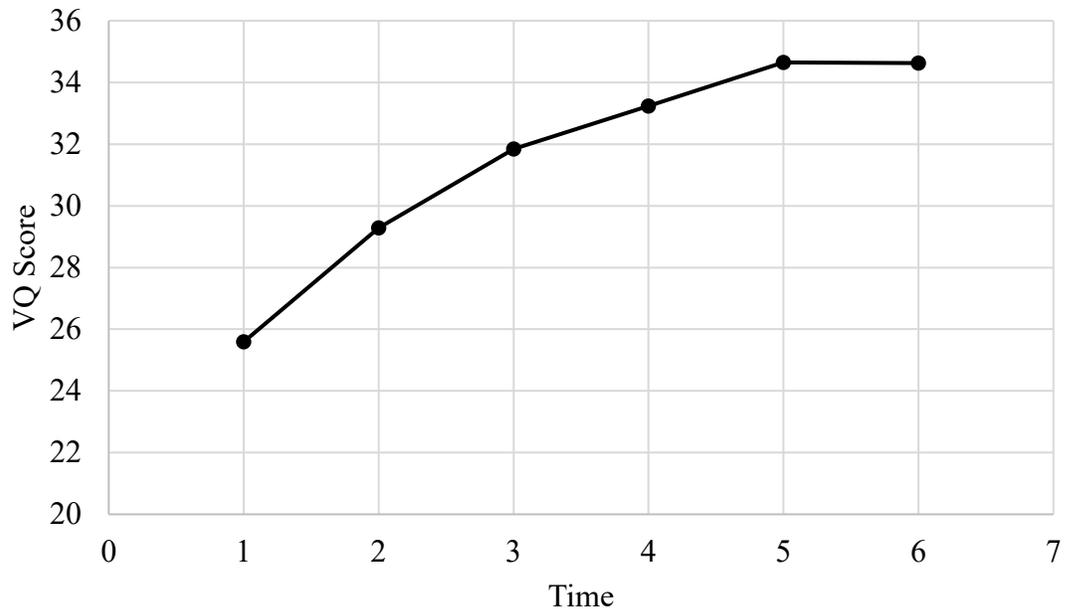
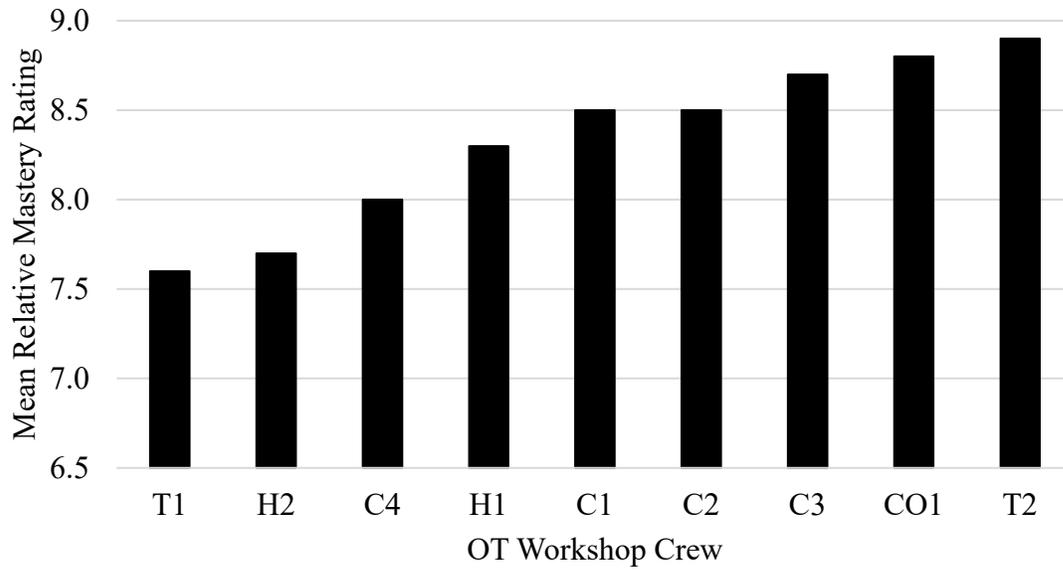


Figure 2. Types and frequency of documented adverse behaviors during 12-month time frame ( $N = 85$ ).



*Figure 3.* Volitional Questionnaire (VQ) ratings over six times points. Higher scores represent higher levels of occupational participation.



*Figure 4.* Mean relative mastery ratings by individual OT Workshop crew. T = technology; H = horticulture; C = craft; CO = cooking.

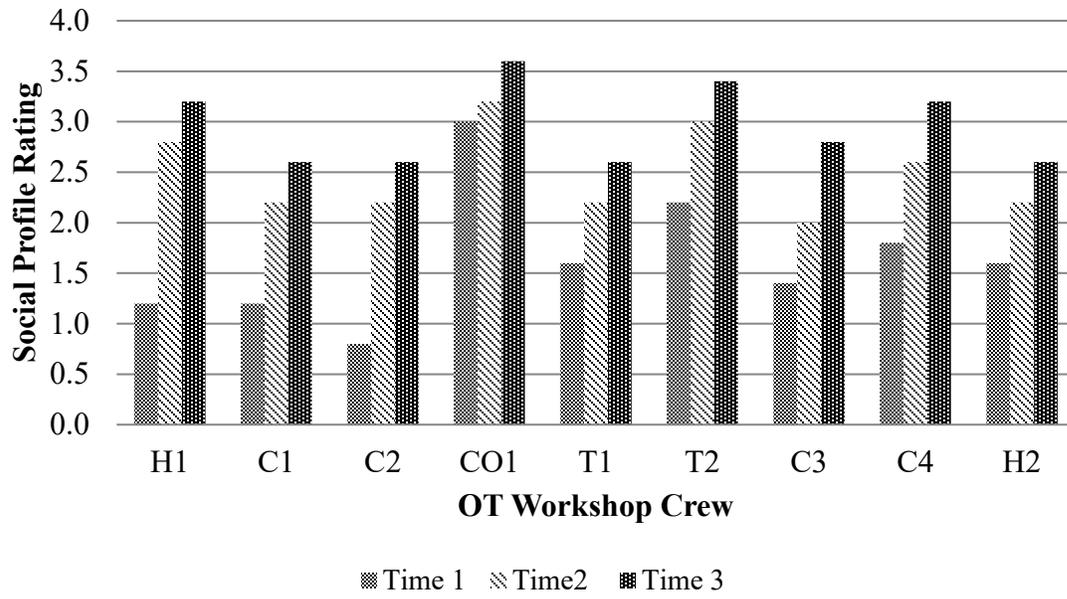


Figure 5. Social Profile (SP) ratings for each OT Workshop crew at three measurement points.