

Homeless shelter food production: positive implications for clients and volunteers

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Abstract

Within the context of a longstanding project (*Behavioral Activation Project in Homeless Shelters*), the Shelter Farm was developed on the grounds of a homeless shelter located in a food desert. The Behavioral Activation Project, which represents a decade-long collaboration between a Professor of Psychology at the University of Dayton (Roger N. Reeb, Ph.D.) and St. Vincent de Paul (Dayton, Ohio), fosters self-sufficiency in shelter residents as they strive to overcome personal challenges and obstacles associated with homelessness. Past research shows that the Behavioral Activation Project enhances the psychological (and adaptive) functioning of shelter residents as well as the civic-related development of service-learning students who assist in implementing the Project. In 2017, Dr. Reeb (University of Dayton) established a collaboration with Ms. Mills-Wasniak (Extension Educator, The Ohio State University Extension Montgomery County) to develop the Shelter Farm at the St. Vincent de Paul Gettysburg Gateway Shelter for Men. A Memorandum of Understanding among the three collaborative entities was developed and approved. Shelter residents volunteered to work alongside service-learning students and community partners on the farm. In the first season, we harvested nearly a ton of produce – all of which was delivered to the shelter kitchen to enhance the nutrition of shelter residents. The Shelter Farm also enhanced St. Vincent de Paul's budget for food, as we estimated wholesale value of the produce at almost \$4,000. This same level of success was replicated in Shelter Farm's second season. As we faced COVID-19 obstacles in the third season, safety protocols were approved by all three aforementioned collaborative entities, and we sustained the Shelter Farm, harvesting approximately 1500 pounds of produce for the shelters. In the first season, a graduate student in clinical psychology at the University of Dayton completed an M.A. Thesis providing preliminary evidence that, as shelter residents volunteer to work alongside students and community partners on the farm, they show decreases in state anxiety and improvements in wellness over time. This manuscript provides the following: (a) a description of the long-standing Project that provided the infrastructure for developing the Shelter Farm, (b) a description of the collaborative process underlying the initiative, the Shelter Farm itself, and the success in sustaining the Shelter Farm, even in the face of COVID-19; (c) an overview of the benefits (nutritional and psychological) of the Shelter Farm for shelter residents; and (d) plans for sustaining and expanding the Shelter Farm (and associated research).

Keywords

shelter farm, homeless shelters, urban farming, behavioral activation, vulnerable community members, service-learning pedagogy

Presenter Information

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INTRODUCTION

The purpose of this manuscript is to provide a general overview of the development, benefits, sustainability, and future plans regarding the Shelter Farm established at the St. Vincent de Paul Gettysburg Gateway Shelter for Men in Dayton, Ohio, which is located in a food desert. The manuscript is organized into a number of sections: In the first section, we provide a brief description of a long-standing project that provided an ideal infrastructure for the establishment and sustainability of the Shelter Farm. In the second section, we describe the process of establishing a collaboration among the University of Dayton, The Ohio State University Extension of Montgomery County, and St. Vincent de Paul to develop the Shelter Farm. A brief description of the Shelter Farm is also provided in this section. Further, we discuss our success of sustaining the

Shelter Farm, even in the face of the COVID-19 pandemic. The third section provides an overview of the demonstrated benefits (nutritional and psychological) of the Shelter Farm for shelter residents. Finally, in the conclusion, we consider some current ideas and plans for sustaining and expanding the Shelter Farm and associated research.

BEHAVIORAL ACTIVATION PROJECT IN HOMELESS SHELTERS: CONTEXT FOR SHELTER FARM

Brief description of behavioral activation project in homeless shelters

The Behavioral Activation Project in Homeless Shelter Farms is a long-standing collaboration between one of the Presenters (Reeb) and St. Vincent de Paul (Dayton Ohio), and it provided an infrastructure developing the Shelter Farm. Behavioral activation provides opportunities to shelter residents to engage in productive activities that yield response-contingent reinforcement (rewarding experience that depends on productive activity), which increases productive behavior and leads to improvements in a sense of mastery, quality of life, mood, and cognition (Kanter et al., 2010). The efficacy of behavioral activation is documented in meta-analyses of the research literature (Cuijpers et al., 2007; Mazzucchelli et al., 2009), and behavioral activation is a recognized evidence-based practice (Society for Clinical Psychology, 2016). We implement three categories of behavioral activation at the shelters: (a) enhance self-sufficiency or empowerment (e.g., computer training, job preparation, health care access, access to reentry program for the previously incarcerated); (b) enhance coping (e.g., stress management, psychosocial education, social support); and (c) the shelter's social climate and sense of community (e.g., recreational/social activities, art, music, cookouts). While behavioral activation was originally developed as an individual treatment for depression, it has efficacy in group formats, and it has been used effectively to treat a variety of psychological problems in numerous populations within a wide array of settings. To our knowledge, however, there is no documentation of using behavioral activation in homeless shelters.

Overview of initial project outcomes

Detailed Project outcomes leading up to the Shelter Farm are beyond our scope (see Reeb et al., 2020; Reeb, Elvers, et al., 2017; Reeb, Hunt, et al., 2017), but a summary is provided here.

1. Outcomes for shelter residents.

A validated quantitative psychometric measure revealed that shelter residents perceived statistically significant immediate benefits of behavioral activation sessions, rating them as highly meaningful, important, worthy of repeating, and enjoyable. Further, over the long course of shelter stay, a validated quantitative measure revealed that shelter residents perceived behavioral activation as having very favorable influences on attributes critical to adaptive functioning, including hope, empowerment, quality of life, purpose/meaning in life, wellbeing, socioemotional support, shelter social climate, and relationships with shelter staff. Qualitative findings (themes in comments written by shelter residents) support the quantitative findings (quantitative and qualitative findings reviewed by Reeb et al., 2020; Reeb, Elvers, et al., 2017).

2. Outcomes for service-learning students assisting with the project.

Regarding outcomes for service-learning students who assist with the project, a series of studies using both quantitative research (well-validated psychometric instruments) and qualitative research (themes in written reflections by students) strongly indicates the following (Reeb et al., 2020; Reeb, Hunt, et al., 2017): Compared to comparison groups of students not involved in

community service, undergraduate service-learning students who assist with the Behavioral Activation Project show significant decreases in stigmatizing attitudes, improvements in community service self-efficacy, and increases in awareness of privilege and oppression.

General features of behavioral activation project

As delineated below, a number of general features of the Behavioral Activation Project in Homeless Shelters created an ideal infrastructure for developing the Shelter Farm.

1. Participatory community action research (PCAR) approach.

PCAR is defined as follows (Minkler & Wallerstein, 2003, p. 6):

A collaborative approach to research that equitably involves all partners in the research process and recognizes the unique strengths that each brings...[PCAR] begins with a research topic of importance to the community with the aim of combining knowledge and action for social change to improve community...

Guiding principles for PCAR include (Strand et al., 2003): (a) collaboration; (b) utilization of multiple sources of knowledge, mixed methods, and multiple forms of dissemination of results; and (c) social action for sake of social justice.

2. Systems (ecological) approach.

Because community problems (e.g., homelessness) are highly complex, a community project may have more impact if guided by a systems (ecological) perspective (Reeb et al., 2017) that acknowledges the relevance of factors at multiple levels (e.g., individual, family, community, socio-cultural-political), recognizes interconnections among systems, and manages transdisciplinary collaborations. For our purposes, a systems approach has two major implications. First, it highlights the importance of transdisciplinarity. According to Tress, Tress, and Fry (2006), *interdisciplinary* involves “several academic disciplines in a way that forces them to cross subject boundaries to...solve a common...goal” (p. 17), while *transdisciplinary* involves projects that “integrate...different disciplines and non-academic participants...to [address] a common goal” (p. 17, emphasis added). For a community problem, no single discipline has all of the answers, knowledge/skills from different disciplines complement one another, and non-academic (community) perspectives critical for comprehensive understanding. Second, community projects guided by a systems perspective is more likely to meet the criteria of what Prilleltensky (2008) calls *psychopolitical validity*. A community project meets criteria of psychopolitical validity if it (a) empowers community members and (b) moves beyond mere ameliorative efforts and strives for institutional, systemic, or structural change.

3. Service-learning pedagogy.

A book coauthored by one of the presenters (Reeb), *Service-Learning in Psychology*, guides the incorporation of students in implementing the Behavioral Activation Project. This book (Bringle et al., 2016) provides a contemporary definition of service-learning:

...course-based, credit-bearing educational experience in which students (a) participate in mutually identified and organized service activities that benefit the community, and (b) reflect on the service activity in such a way as to gain further understanding of course

content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility...(p. 8)

Use of service-learning pedagogy to guide supervised students to assist with the implementation of this Project is appropriate, because behavioral activation is relatively uncomplicated, time-efficient, and cost effective; further, it requires less complex skills from therapists and patients, it is effective as a brief treatment (Hopko et al., 2003), and it can be used effectively by non-psychologists and perhaps even paraprofessionals (Jacobson et al., 1996; Martin & Oliver, 2018).

4. Principles of reciprocity for campus-community partnerships.

Strand et al. (2003) identified principles of reciprocity that cultivate mutual investment among partners in tailoring a project to community needs. These principles, which are at the core of campus-community partnerships, are summarized by Bringle et al. (2016, pp 45-47):

(1) ***principles guiding partnership initiation*** – (a) sharing a world view, (b) agreeing about goals and strategies, and (c) possessing trust and mutual respect; (2) ***principles guiding partnership processes*** – (a) sharing power, (b) communicating clearly and listening carefully, (c) understanding and empathizing with each other, and (d) remaining flexible; and (3) ***principles guiding partnerships outcomes*** – (a) satisfying each other's interests and needs, (b) obtaining enhanced organizational capacities, and (c) adopting long-range social change perspectives.

ESTABLISHMENT OF THE SHELTER FARM

As explained, the Behavioral Activation Project in Homeless Shelters is a long-standing collaboration between Dr. Reeb and St. Vincent de Paul (Dayton Ohio), and it provided an infrastructure to develop the Shelter Farm. In 2017, Dr. Reeb (Professor of Psychology, University of Dayton) reached out to Ms. Suzanne Mills-Wasniak (Extension Educator, The Ohio State University Extension (OSUE) of Montgomery County, Ohio) to establish the Shelter Farm on the grounds of the St. Vincent de Paul Gateway Shelter for Men. This building was previously a prison (or prison workhouse), and it is still surrounded by correctional facilities and a barbed wire fence, with a lookout tower nearby. The shelter is in a food desert (away from community resources).

Dr. Reeb asked Ohio State University Extension Montgomery County Agriculture and Natural Resources program area (ANR), Suzanne Mills-Wasniak, Extension Educator, to join in partnership with the University of Dayton's longstanding Behavioral Activation Project in Homeless Shelters (and the St. Vincent DePaul Dayton project in particular). This began an exploratory process to determine if it fit within the scope of her work.

According to the National Institute of Food and Agriculture (NIFA), the agency within the United States Department of Agriculture (USDA) that oversees land grant universities "Extension provides non-formal education and learning activities to people throughout the country – to farmers and other residents of rural communities as well as to people living in urban areas. It emphasizes taking knowledge gained through research and education and bring it directly to the people to create positive changes." (<https://nifa.usda.gov/extension>)

The Ohio State University Extension mission is: "We create opportunities for people to explore how science-based knowledge can improve social, economic, and environmental conditions." (<https://extension.osu.edu/about-vision-mission-values>) The mission statement of the Ohio State University Agriculture and Natural Resources program is "Ohio State University Extension Agriculture and Natural Resources empowers Ohio's agriculture and natural resources

communities, provides outreach and education based on unbiased research, and cultivates relationships to strengthen the economic viability and quality of life for Ohioans.”

Given that the request fit within our mission, a series of meetings were held to determine personnel and resources that would need to be committed to the project to make it viable and sustainable. The first meeting at the Gateway Men’s Shelter was held to discuss the mission, vision, and goals for the project and to view the proposed farm site. Representatives from St. Vincent DePaul and the University of Dayton were asked to envision what the proposed project would look like in five years and what would be needed to make it sustainable.

As previously stated, the proposed site of the farm was in an urban area on the site of an old prison (workhouse). The location posed issues to OSUE ANR personnel as the site could possibly be contaminated with heavy metals, possibly requiring expensive remediation. Soil samples were taken from the proposed site and sent to a certified laboratory with the request for heavy metal tests for lead, cadmium, and arsenic along with the basic analysis. OSUE used the soil sampling as an educational opportunity for University of Dayton and St. Vincent DePaul personnel. The importance of knowing the soil’s physical and chemical properties was vital to the success and sustainability of the project. The presence of high levels of certain heavy metals in the soil could prohibit growing directly in the existing soil. Although cadmium, lead, and arsenic exist naturally in low concentrations in the soil anthropogenic activities on or near the proposed site could cause the levels of the heavy metals to reach a toxicity threshold posing human health hazards. High concentration levels of the heavy metals in the soil can be taken up by the growing plant and stored in the roots, leaves, or fruit. Humans consuming contaminated produce can experience human health hazards (i.e. neurologic issues, liver disease). The nutrient status and pH would provide information regarding needed amendments to achieve maximum yield. The soil analysis showed that the levels of the heavy metals lead, arsenic, and cadmium were well below the EPA and CDC toxic thresholds. The soil pH was within the range where nutrients needed by the plants for optimum growth would be readily available. Minimum application rates of nutrients would be needed to achieve maximum plant production. It would be possible to grow in the existing soil thus lowering the initial financial startup costs. (Mills-Wasniak, et al., 2019a, 2019b, 2019c).

The social responsibility aspect of the Behavioral Activation Project necessitated that the growing methods chosen required limited need for manual, repetitive labor (weed control and watering) while still achieving enough production to supplement the shelters’ fresh produce without impacting their food budget. Previous urban agriculture Extension projects in Montgomery County had shown the use of commercial growing techniques worked in projects that were skewed towards social responsibility. The 190 foot by 30-foot production area would employ permeable black plastic groundcover to minimize the need for hand weeding and help to retain moisture. With an expected life span of 4 to 6 years the groundcover would increase the sustainability of the project. The size of the growing area and the need to reduce manual labor dictated the need for an automated irrigation system. The available water supply was approximately 200 feet from the production area. The installation of an auxiliary water line with hydrant near the growing area provided ample water flow and pressure for a drip irrigation system. Four main lines were installed with five lateral driplines on each main. Each lateral dripline was equipped with a shut off valve if water was not needed in the row. The installation of a timer on the hydrant allowed four watering zones to function independently of each other. The timer settings allowed the plants to be watered in the early morning hours so as not to interfere with the shelter’s shower or laundry times. University of Dayton graduate students and shelter personnel were trained in the operation and maintenance of the irrigation system and how to shut the entire system down if necessary.

Eventually some long-term shelter residents were trained in the operation and maintenance of the system.

A thousand tomato, pepper, zucchini, squash, and cucumber transplants were purchased from a local greenhouse the first year. Five flats of annual flower transplants were a surprise addition on delivery. University of Dayton graduate students and service-learning students worked with the residents to design a flower garden in front of the production area. The only requirement from OSUE was that the flower beds needed to be close enough to the production area that the irrigation system could be used to water the flowers. Adding texture and color to the production area the flowers proved to be the enticement for the shelter residents to engage with the UD graduate students and OSUE in the production area. Soon painted rocks outlined the flower beds and ownership of the production area started. When the first harvest of squash and zucchini turned up the next day at dinner it became apparent to the shelter residents that the produce grown on the farm was for their consumption. Residents' interest and participation in harvest activities piqued interest as did the questions about the technology used to grow the produce. Questions went from "Will you have me arrested if I take this tomato to eat? To how does this watering system work? "

Equally important to the shelter residents' acceptance of the project was the need to update respective University administrators on the collaboration. During the initial conversations between UD and OSUE each entity committed resources to the fledgling collaboration. A field day with a cookout was organized with shelter residents, UD administrators, and representatives from all four OSUE program areas attending. Dr. Reeb and his graduate students explained their research to OSUE administrators and OSUE Extension Educators explained the production techniques used to UD administrators. Shelter residents enjoyed the interaction with the Universities' personnel thanking them for coming and supporting the project. The interaction between the Universities' administrators and shelter residents would prove to have a profound effect on the continuation of the collaboration during the COVID 19 pandemic.

A review of the first year's production yields and during the season observations revealed compaction and water issues that needed to be addressed in the second year. The growing area was an old soccer field that even when the area was tilled to start production had major soil compaction. Surface water issues were discovered with water from the surrounding area infiltrating the production area. Production losses due to phytophthora (water mold) were directly attributed to standing water issues. Several local contractors made donations of eighty tons of topsoil and equipment and personal time to spread and incorporate the topsoil into the production area. UD graduate students requested that leafy greens be added to the produce and this request would be used as another educational opportunity. Although not subject to the Food Safety Moderation Act (FSMA) the Ohio Department of Agriculture (ODA) Produce Safety Division was offering site visits to aide in understanding compliance. ODA personnel made a site visit which was an educational opportunity for UD graduate students, shelter residents, and St. Vincent DePaul personnel to learn further about the growing technology and harvesting procedures to prevent possible foodborne illness contamination. At the end of the second year growing season the shelter kitchen staff supervisor requested that in year three no leafy greens be grown because of the added staff time needed to clean them. Second year production yields and observations showed increased yields throughout the growing area because of decreased surface water infiltration with compaction issues decreasing.

Plans for the third year of the collaboration were brought to an abrupt standstill when the COVID 19 pandemic began. All OSUE research and community projects were put on hold at the start of the pandemic. UD community projects were also on hold because of the pandemic. The

effect of the pandemic was felt by shelter residents with the need for social distancing resulting in outdoor tents being erected. Soon shelter residents began asking about the farm and if it would continue in 2020. OSUE had established criteria for exemptions to be granted for continuing research and extension outreach considered “mission critical.” The Shelter Farm applied for an exemption citing a strict safety protocol. OSUE granted the exemption and the safety protocol was submitted to the University of Dayton and St. Vincent DePaul. Approved by all three collaborators the protocol called for the farm to operate at a production level of 60 percent while maintaining social distancing and limited number of persons in the production area at any given time. Given the shelter residents interest in maintaining the farm several long-term residents stepped up to assist with plant care and harvesting.

BENEFITS AND SUSTAINABILITY OF THE SHELTER FARM

Nutritional benefits for homeless shelter residents

The Shelter Farm greatly enhanced the nutrition of shelter residents. The planting included 1000 transplants (tomatoes, peppers, cucumbers, squash, and zucchini). In the first season, we harvested almost a ton of produce – all of which was delivered to the shelter kitchen to enhance the nutrition of shelter residents. The Shelter Farm also enhanced St. Vincent de Paul’s budget for food, as we estimated wholesale value of the produce at almost \$4,000. At the end of the summer, we held a celebration and cookout at the Shelter Farm, which involved administrators and staff from all three collaborative parties (University of Dayton, The Ohio State University, St. Vincent to Paul) and shelter residents. This allowed us to showcase the project to administrators and others who donated equipment and other resources in the establishment of the Shelter Farm, and it also allowed all parties involved to socialize and celebrate the success and benefits of the initiative.

This success was replicated in the second season, with almost a ton of produce harvested for nutrition at the shelter. Although our Shelter Farm is exempt from the Food Safety Modernization Act, Ms. Mills-Wasniak arranged for the farm to be inspected by the Ohio Department of Agriculture (Food Safety/Produce Safety Division), and the farm passed the inspection without difficulties.

In the third season, we had to face the challenges and obstacles revolving around the COVID-19 Pandemic, and there was some serious doubt about whether the farm could be sustained due to COVID-19 safety related restrictions. However, The Ohio State University designated the Shelter Farm as *Mission Critical*, and the first author (Suzanne Mills-Wasniak) developed a highly rigorous safety protocol that was approved by all three collaborative parties (The Ohio State University, University of Dayton, and St. Vincent de Paul). This allowed graduate students and shelter residents and staff, who were supervised by Ms. Mills-Wasniak in following safety protocol, to sustain the Shelter Farm in the face of COVID-19, with approximately 1000 pounds of produce harvested in the third season to enhance the nutrition at the shelter. Once again, Ms. Mills-Wasniak arranged for the farm to be inspected by the Ohio Department of Agriculture (Food Safety and Produce Safety Division), and the farm passed the inspection without difficulties.

Psychological benefits of shelter farm for shelter residents

During the first season of the Shelter Farm, a graduate student in the Clinical Psychology Graduate Program in Clinical Psychology (Katie Gibbins) completed an M.A. thesis, chaired by Dr. Reeb, on the psychological benefits for shelter residents who volunteered to work on the Shelter Farm. In general, this preliminary study was based on past research demonstrating the benefits of gardening/farming on physical and mental health (see meta-analysis by Soga et al., 2017). Details regarding the results of the study are beyond the scope of this manuscript, but such details are

available elsewhere (Gibbins, 2019; also see Gibbins, Reeb, et al., 2019), and a full manuscript is in preparation to submit to a peer reviewed journal (Gibbins & Reeb, 2021). In brief, the M.A. thesis yielded the following preliminary findings: Shelter residents who volunteered to work alongside students on the Shelter Farm showed decreases in state anxiety and improvements in wellness. Further, the study provided preliminary evidence that the construct *connectedness-to-nature* moderates the effects of outdoor activity (in this case farming/gardening) on psychological benefits. The study employed well-validated psychometric measures as well as qualitative assessment (themes in written comments by residents) and results were statistically significant. Due to methodological limitations in this study, results should be viewed as preliminary in nature.

CONCLUSION AND FUTURE PLANS

All three collaborative entities (University of Dayton, The Ohio State University, and St. Vincent de Paul, Dayton, Ohio) are committed to sustaining the Shelter Farm. The following are current plans.

1. Our immediate plan is to continue to sustain the Shelter Farm throughout 2021, despite the COVID-19 pandemic, and we are hopeful that we will be able to do so because of the approved safety protocol. We intend to continue to examine the nutritional and psychological benefits of the Shelter Farm for residents, but COVID-19 safety restrictions (e.g., social distancing) will preclude use of psychometric measures to assess psychological functioning, and so we will rely on standardized observational measures and qualitative assessment to assess behavior and functioning of residents as they work on the farm. Examples of qualitative approaches include thematic analysis of (a) interviews (using Zoom) with resident volunteers and shelter staff and (b) written entries in journals regarding observations of behavior of residents, residents' comments during farming, and conversations with residents (respecting social distancing) during farming sessions.
2. As COVID-19 becomes under control in response to vaccines, and as funding for the Behavioral Activation Project (and the Shelter Farm) is fully restored, we anticipate obtaining additional funding to expand the farm in order to significantly extend the growing season (perhaps with hoop houses), so that it can provide nutrition to shelter residents throughout the entire year. We also envision incorporating a tranquility garden to enhance the Shelter Farm's relaxing effects on shelter residents.
3. As COVID-19 restrictions abate, we plan to pursue a full comprehensive evaluation of the Shelter Farms benefits to the health (nutritional and psychological) of shelter residents utilizing mixed methods, including measurements of nutritional improvements in shelter meals, validated psychometric instruments to assess key psychological attributes, and qualitative (thematic analysis) of interviews with residents and written journals by residents and students.
4. Earlier we noted that service-learning students assisting on the Behavioral Activation Project show civic-related development, and we plan to assess the extent to which students working alongside shelter residents on the farm also show improvements in environmental attitudes.

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