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Correlates of Service Delivery and Social Environment in Adult Day Service Programs

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Abstract

The objectives of this study were to better describe ADS programs and determine how various structural and case mix characteristics of ADS were empirically associated with the services provided in and the social environments of adult day programs. All directors of ADS programs in Minnesota (United States) were contacted from 2011 to 2012 to complete a detailed online survey that collected information on ADS structure, client case mix, services and activities, and social environment ($n = 83$; 67.5% response rate). Several structural characteristics and case mix indicators (e.g., number of clients attending) were significantly associated ($p < .05$) with specific types of ADS service provision, such as health monitoring. Programs that were adequately staffed and perceived as pleasant appeared to also have a more vibrant social environment. The results suggest the potential need for bolstering staffing and enhancing the physical environment of ADS programs.

Keywords

adult day care; case mix; community-based long-term care; respite; social environment; staffing; structure

Over the past several decades researchers, policymakers, and practitioners have searched for services to divert chronically impaired older adults from residential long-term care settings such as nursing homes. This trend was motivated not only by the high financial costs of residential long-term care but also by the psychosocial challenges of institutionalization for both disabled older persons and their family caregivers (Schulz et al., 2004; Wimo et al., 1990). Adult day service (ADS) programs are designed to allow older adults to remain at home and provide “respite” (or, relief) to family caregivers (Wilson et al., 2007). The prevalence of ADS programs has grown in the U.S. (to 4,600 in 2010; Dabelko-Schoeny & Anderson, 2010). However, it remains unclear how diversity in programmatic characteristics, the services and activities provided, and the social environment of ADS are associated. Most current research is conducted on a client or family caregiver level of analysis. As a first step in addressing this gap, the current study included data from a statewide survey of ADS directors in Minnesota (United States) to describe ADS programs in-depth and determine which structural (e.g., size, staffing) and client characteristics of ADS were empirically associated with the services provided in and the social environments of adult day programs.

Background

Adult day service programs first emerged in the 1930s and 1940s as services appended to psychiatric facilities in Moscow and Montreal (Farndale, 1961; Gaugler, Jarrott, Zarit, Stephens, Townsend, & Greene, 2003b; Weissert et al., 1989; Weissert, 1976). In the next several decades “day hospitals” for older adults opened in the United Kingdom. Adult day hospitals are usually affiliated with a health care institution and focus on rehabilitation of older users (Forster, Young, Lambley, & Langhorne, 2008). The efficacy of adult day hospitals in reducing older adults’ service utilization or health outcomes among older clients is mixed (Forster et al., 2008). With the emphasis on de-institutionalization of adults with mental health concerns in the 1960s, adult day services emerged as a community-based long-term care option in the United States. While the total number of clients in ADS programs (approximately 260,000) is nowhere near the number of older adults who use home health care services in the U.S. (1,000,000 in 2007; see http://www.cdc.gov/nchs/fastats/older_americans.htm), ADS remains an important type of community-based long-term care that is thought to potentially delay institutionalization, improve quality of life and function of older clients, and provide respite to family caregivers (Fields, Anderson, & Dabelko-Schoeny, 2012; Gaugler & Zarit, 2001). Adult day service programs offer therapeutic activities for older persons or other adults. ADS activities are provided out-of-home and are supervised. Activities in ADS range from socialization to health services. ADS programs are usually open during “normal business hours” (e.g., Monday through Friday, 9AM to 5PM). (Gaugler, Dabelko-Schoeny, Fields, & Anderson, 2011)

ADS and Client and Family Caregiver Outcomes

Experts have been interested in determining whether ADS acts as a substitute for, or at least delays, nursing home placement. Early evaluations in the 1970s appeared moderately successful in reducing institutionalization among impaired older adults (Capitman, 1982; Harder, Gornick, & Burt, 1986). More empirically rigorous, randomized controlled evaluations of ADS offered less convincing support (see (Fields et al., 2012; Gaugler & Zarit, 2001). A consistent finding was that ADS did not significantly delay institutionalization among users, although utilization across these studies was relatively low (e.g., 10 median days of ADS used per year). Randomized controlled studies examining respite programs such as ADS and in-home help demonstrated mixed effects in reducing caregiver ‘burden’—the perceived financial, social, and emotional challenges of care provision (Lawton, Brody, & Saperstein, 1989; Newcomer, Yordi, DuNah, Fox, & Wilkinson, 1999). Family caregivers in treatment conditions did not utilize extensive amounts of respite services. More recent research that utilized quasi-experimental or single group longitudinal designs found that families who utilized ADS reported significant decreases in caregiver stress and depression (Cho, Zarit, & Chiriboga, 2009; Femia, Zarit, Stephens, & Greene, 2007; Gaugler, Jarrott, Zarit, Stephens, Townsend, & Greene, R., 2003a; Gaugler et al., 2003b; Warren, Kerr, Smith, & Schalm, 2003; Zank, & Schacke, 2002; Zarit, Stephens, Townsend, & Greene, 1998; Zarit et al., 2011; Zarit, Kim, Femia, Almeida, & Klein, 2013). A variety of descriptive studies have also examined variations in ADS design, service delivery, and utilization of ADS (Bull, 2011; Cohen-Mansfield & Wirtz, 2007; Dabelko-Schoeny & Balaswamy, 2000; Douglass & Visconti, 1998; Iecovich & Biderman, 2013; Skarupski et al., 2008).

Conceptual Framework and Research Focus

The conceptual framework for the current study of Minnesota ADS programs is derived from the methodological approach initially developed by Moos (Moos, 1974) and Moos and Lemke (Moos, & Lemke, 1984). Core to the Moos and Lemke model is that the

environmental dimensions of residential long-term care are associated with the quality of life of residents. Specifically, the five main systems or "panels" of the Moos and Lemke approach include an environmental dimension (physical features, policies, staffing), a personal dimension (individual resident characteristics and health/functional indices), cognitive appraisal on the part of residents, efforts at adaptation on the part of residents, and resident stability and change (e.g., resident satisfaction, quality of life). The Moos and Lemke model specifies several mediational/interactional relationships between various dimensions and resident stability and change. This approach culminated in the Multiphasic Environmental Assessment Procedure (MEAP) that operationalized these various dimensions into specific measurement instruments to assess the overall environment of residential settings (Fernández-Ballesteros, 2001; Moos, & Lemke, 1996). The MEAP battery was later refined by Conrad and colleagues (Conrad, Hanrahan, & Hughes, 1990; Conrad, Hughes, Hanrahan, & Wang, 1993) to conduct a national survey of ADS programs in the late 1980s.

The constructs validated in their Adult Day Care Assessment Procedure (AD-CAP) were utilized for the current study along with supplemental questions administered in a recent MetLife survey of ADS programs in the U.S. (Dabelko-Schoeny & Anderson, 2010). Key constructs include *structure*, or the resources available in the ADS (ranging from staffing to physical environment) that may facilitate the delivery of services and activities in ADS and their social environments. Another component of the AD-CAP that could influence services and activities as well as social environments includes *client population and case mix indicators* (e.g., percentage of current clients with Alzheimer's disease or activity of daily living dependencies). *Services and activities* provided in ADS programs, such as clinical services, personal care and training, and support for family caregivers, are also measured in the AD-CAP. The *social environment* of ADS programs refers to staff morale, degree of cooperation between staff, promotion of client independence, and community and family integration in the ADS.

The role of size, staffing, geographic location (i.e., urban vs. rural), racial/ethnic diversity within a given facility, and case mix are important dimensions to consider when examining the level of care/services provided and social environments that promote residents' psychosocial integration, growth and connection while de-emphasizing traditional 'medicalized' models of residential long-term care (Harrington, C., & Swan, 2003; Harrington et al., 2000; Harrington, O'Meara, Collier, & Schnelle, 2003; Kane, 2001; Lawton, 2001; Moos, & Lemke, 1996). While facility-level characteristics have received research attention in residential and institutional long-term care, far fewer studies examine similar program-level characteristics in ADS settings. Prior surveys of ADS programs in the U.S., either national or regional, have often had two purposes: 1) to describe the services, activities, and clients and family members who utilize ADS programs; or 2) to construct typologies of ADS programs (often using empirical techniques such as cluster analysis) in order to differentiate and further define various classes of ADS (Anderson, Dabelko-Schoeny, & Tarrant, 2012; Conrad et al., 1990; Conrad et al., 1993; Cox, Starke, & Holmes, 2002; Reifler, Henry, Sherrill, Asbury, & Bodford, 1992; Weissert et al., 1989). The current study sought to build on this work to identify whether various structural or client population and case mix factors are empirically associated with services and activities delivered and perceptions of the ADS social environment. Identifying whether structural characteristics and case mix influence the ADS social environment or services provided may help better inform routine ADS practice. For example, if certain structural dimensions (such as staff to client ratios) are associated with more positive perceptions of the ADS environment, such findings could begin to suggest how ADS programs could create more beneficial ADS social environments. Understanding how clients with more complex health conditions, such as Alzheimer's disease, influence the types of services and activities offered in ADS or the

ADS social environment would also help to better ascertain the potential challenges or uplifts in caring for such clients.

The Minnesota ADS survey thus sought to answer the following research questions:

1. What is the extent or frequency of case mix and population indicators, structural characteristics, services and activities provided, and the social environment in Minnesota ADS programs?;
2. Which case mix indicators or structural characteristics are significantly ($p < .05$) associated with specific types of services and activities delivered in Minnesota ADS programs?; and
3. Which case mix indicators or structural characteristics are significantly associated with directors' perceptions' of the social environment in Minnesota ADS programs?

The analyses of these data was meant to be exploratory, as there is little guiding preliminary work that has examined how various programmatic components of ADS are empirically associated with each other. As summarized and noted above, the state of the art of ADS research began with evaluations of whether such programs resulted in positive outcomes for clients and family caregivers (via randomized controlled trials conducted in the 1970s, 1980s, and 1990s); the disappointing findings led to qualitative and descriptive/quasi-experimental quantitative research that has examined client and family caregivers' experiences and outcomes in these settings. Current research is fairly silent on how ADS settings are organized or how services are delivered. The present study is designed to address the question of how program-level variables are linked with each other and whether such associations may provide insights into how positive social environments can be promoted in ADS, and thus represents a significant contribution to the existing literature.

Methods

Procedure

All ADS directors in the state of Minnesota were identified through the Minnesota Department of Human Services licensed program list (<http://www.dhs.state.mn.us/Licensing/ProgramLists/pdf/fladc.pdf>) and the Minnesota Adult Day Service Association (MADSA)'s membership list in July, 2011 ($N = 150$). Directors were first contacted via email inquiries, telephone, and mailed letters from the summer of 2011 to the summer of 2012 to encourage participation. ADS programs were contacted up to 5 times by the author (the Principal Investigator of this project) or a research coordinator/research assistant throughout this period. A link to an online consent form and the survey was provided to ADS directors. ADS directors could stop and return and complete the online survey as needed. The online survey was delivered on the secure University of Minnesota UMSurvey platform. If ADS directors were unable to complete the ADS Director Survey online, a mail survey version was administered. The research procedure was approved by the University of Minnesota Institutional Review Board (IRB# 0807S39521).

Sample

Following ongoing outreach efforts to ADS programs from the summer of 2011 to the summer of 2012, 41 ADS directors/programs never completed the online Minnesota ADS Directory Survey and 3 directors refused. Another 27 programs were either not licensed at the time of data collection, had no clients, or it was unclear whether an ADS program actually operated or existed following our contact efforts. Eighty-three ADS programs completed (proceeded to the end of the online survey; $n = 50$) or partially completed (ADS directors who skipped any item on the survey and did not proceed to the end of the online

survey; $n = 33$) the Minnesota ADS Director Survey. This resulted in a response rate of 67.5%, which excluded the 27 programs that were not eligible or operational from the original 150 programs that made up the sampling frame (see Figure 1).

Measures

Example items from measures included in the MN ADS Director Survey are included below. Means of item responses served as summary scores for the global and subdomain measures. Internal reliability estimates are based on the data collected in the Minnesota ADS Director Survey. Additional psychometric information on these measures is included in Conrad and colleagues' prior work (Conrad et al., 1990; Conrad et al., 1993).

Services and Activities Scale—The 62-item Services Activities Scale (SAS) includes ratings of the frequency of occurrence of *services and activities* provided on-site in each ADS program. Item responses included 1 = “rarely or never;” 2 = “on admission only;” 3 = “a few times a year;” 4 = “once or twice a month;” 5 = “once a week or more;” and 6 = “daily.” The SAS is divided into the following subdomains: *Clinical Services* (e.g., tube feeding, wound care, intravenous therapy; 22 items, $\alpha = .83$), *Psychosocial Support and Counseling* (e.g., individual counseling, family counseling, reality orientation; 14 items, $\alpha = .90$), *Care Planning* (e.g., monitoring individual care plans; discharge planning; information and referral services; 8 items, $\alpha = .83$), *Personal Care and Training* (e.g., physical fitness/exercise, medication reminders, ambulation training; 28 items, $\alpha = .89$), and *Social Activities and Engagement* (e.g., social hours, parties, arts and crafts; 13 items, $\alpha = .75$).

Social Environment Scale—The 50-item *Social Environment Scale* (SES) assesses morale, staff cooperation, and family member/volunteer involvement. The SES includes the following dimensions: *Caring/Extroversion*; *Social Involvement*; *Morale Problems*; *Independence-Promoting Approach*; *Communication*; *Staff Cooperation*; and *Director Control*. SES item responses included 1 = “strongly disagree;” 2 = “disagree;” 3 = “agree;” and 4 = “strongly agree.” The overall SES had an internal reliability estimate of $\alpha = .83$. Similar to the SAS, Cronbach alpha coefficients were calculated for the various SES subscales. For several of the subscales, items were removed to increase their internal reliability (6-item *Caring/Extroversion*: $\alpha = .81$, e.g., staff members spend a lot of time with clients, activities for clients are carefully planned; 7-item *Social Involvement*: $\alpha = .74$, e.g., the program actively seeks to change the community, family and home caregivers are encouraged to get involved in the program; 12-item *Morale Problems*: $\alpha = .80$, e.g., clients criticize each other a lot, staff sometimes criticize clients over minor things; 5-item *Independence-Promoting Approach*: $\alpha = .72$, e.g., clients organize many of the activities themselves, clients sometimes take charge of activities; 6-item *Communication*: $\alpha = .70$, e.g., clients openly talk about their personal problems, clients talk about their fears; 6-item *Staff Cooperation*: $\alpha = .80$, e.g., staff members work well together, staff members work as a team; and 3-item *Director Control*: $\alpha = .74$, e.g., the ADS director affects the promotion, hiring, and firing of her/his subordinates, the ADS program director has the knowledge to assign tasks to subordinates and instruct them in task completion).

Structure—As summarized in Conrad et al.'s original census (Conrad et al., 1990; Conrad et al., 1993), structure includes the staffing and environmental resources of the program that facilitate delivery of services. The many items that comprise *structure* are included in Table 1.

Client population and case mix indicators—The Minnesota ADS Directory Survey also included a number of *client population and case mix indicators*. Directors estimated the

average age of clients, percent of clients who were female or Caucasian, percent of clients on Medicaid, clients' living arrangements, identity of primary caregiver of clients, percentage of current clients with Alzheimer's disease, depression, incontinence of urine, and those who are unable to walk. Directors also estimated the percentage of clients who could perform 8 activities of daily living and 3 instrumental activities of daily living (see Table 1).

Analysis

To address the first research objective (describe the services and activities, structural environments, and client population of Minnesota ADS programs), univariate descriptive statistics (means, frequencies) were calculated to examine the structure, environment, services, and clients of the Minnesota ADS program sample. The 2nd research objective was to identify which indicators of the ADS structural environment or case mix were associated with ADS services and activities; similarly, the 3rd objective aimed to examine the empirical associations between indicators of the ADS structural environment and case mix with overall and subdomain scores of the SES. Stepwise regression models were utilized to address the 2nd and 3rd research objectives and identify statistically significant ($p < .05$) correlates of SAS and SES in Minnesota adult day programs. Due to the exploratory nature of the current study as well as the ADS program sample size of 83, including all potential structural and case mix characteristics in regression models would have exceeded available statistical power (Cohen, 1992). Therefore, a stepwise regression analysis was used to streamline the large number of potential case mix and structural characteristics to identify significant correlates of the overall or sub-dimension scores of the SES or SAS ($p < .05$). This analytic approach helped to identify multiple relevant correlates of SES and SAS while also reducing potential threats to statistical power. Listwise deletion was used to address missing data in the regression analyses.

Results

Research Objective 1: Description of Minnesota ADS Programs

As shown in Table 1, almost all participating ADS programs were certified by the state of Minnesota (94%) while a little under half were members of the National Adult Day Service Association (49.4%). Close to 40% of ADS programs specialized in serving clients with Alzheimer's disease or a related dementia. ADS programs were 15.84 years old, on average ($SD = 10.01$). Almost all ADS programs in the sample were either private not-for-profit (65.6%) or private-for-profit (31.1%). The average annual budget of participating ADS programs was \$395,369.12 ($SD = 543,730.33$). The average percent of revenue based on client fees was 47.92% ($SD = 32.76$).

On average, 21.43 clients attended ADS programs daily, Mondays through Fridays ($SD = 22.76$). During an average shift the following staff were on-site providing services: 3.85 direct care workers ($SD = 2.61$; certified nurse assistants, nursing assistants, health care aides, or personal assistants), 0.74 registered nurses ($SD = 0.48$), 0.68 licensed practical nurses ($SD = 0.59$), 0.69 social workers ($SD = 0.83$), and 1.06 licensed activities personnel ($SD = 1.06$). Close to 40% of clients utilize a combination of pay sources for transportation to the ADS, whereas close to 1/5th of clients are either charged a fee or received public payment to support their transportation. ADS programs were open, on average, for 9.86 hours during the weekdays ($SD = 4.86$). Slightly over 56% of ADS programs were located in urban areas and 43.4% were from rural areas. Clients were enrolled an average of 36.53 months. The standard full day rate to attend ADS programs was, on average, \$68.38.

The average age of clients was 71.17 years and slightly over half of all clients were female. Approximately 70% of clients were Caucasian. The average annual income of clients in ADS programs was slightly over \$15,000. Over 60% of clients were on Medicaid. Over 30% of clients lived with a spouse, but close to a quarter of clients had a paid individual as the “primary” caregiver. Relatedly, approximately 28% of clients lived in a group setting when not attending ADS. The activity of daily living that clients required the most help with was grooming (24.61%), while the instrumental activity of daily living that clients required the most assistance with was managing money (35.57%). Over 40% of clients had Alzheimer’s disease or a related dementia, high blood pressure, or used assistive devices to walk. Approximately 57% of clients discharged in the past 3 months.

On average, ADS programs provided onsite clinical services on admission or a few times a year ($M = 2.61$, $SD = .99$). Among the three most frequent types of clinical services provided included medication administration ($M = 5.19$, $SD = 1.69$), diabetes and blood sugar monitoring ($M = 5.05$, $SD = 1.74$), and blood pressure monitoring ($M = 4.75$, $SD = 1.27$). Psychosocial and counseling services were provided, on average, a few times a year ($M = 3.13$, $SD = 1.11$). Care planning was offered by ADS programs between a few times a year to once or twice a month on average ($M = 3.65$, $SD = .88$). Personal care services (the mean of various types of personal care, including assistance with toileting and grooming to clients, analysis of activity of daily living needs, medication reminders), were also provided close to once a month on average ($M = 3.95$, $SD = 1.10$). The most frequent personal care service provided in Minnesota ADS programs included physical fitness and exercise ($M = 5.99$, $SD = .11$). Social activities were provided closer to weekly, on average ($M = 4.41$, $SD = .71$). Frequent social activities included bingo, cards, and other games ($M = 5.61$, $SD = .76$). Other external services, such as respite, assistance with banking, home care, and hospice were offered on admission only or annually, but transportation was provided close to daily ($M = 5.11$, $SD = 1.89$). ADS directors rated the global social environment of their programs highly, on average ($M = 3.23$, $SD = .22$; range 1 to 4, with 4 the highest mean score). Among the components of social environment most highly rated included staff cooperation ($M = 3.68$, $SD = .41$).

Research Objective 2: Correlates of Services and Activities

Stepwise regression models helped to identify variables that were most strongly associated with the dimensions of SAS. Two variables were positively associated with the clinical services SAS score: the average number of clients at the ADS program, Monday thru Friday ($\beta = .72$, $p < .001$) and the number of physical therapy equipment items available ($\beta = .30$, $p < .05$) (adjusted $R^2 = .62$; $F(2, 20) = 18.64$, $p < .001$). R for regression was significantly different from zero, $F(2, 22) = 3.50$, $p < .05$, with adjusted R^2 at .17 for psychosocial services. The percent of clients who owned their own vehicle was negatively associated with psychosocial services ($\beta = -.44$, $p < .05$). Another transportation-related variable was associated with care planning service provision: the higher percentage of clients who utilized a special van or bus was associated with care planning in the ADS ($\beta = .39$, $p < .05$; $R^2 = .13$, $F(1, 28) = 5.13$, $p < .05$). The extent of physical therapy equipment available was also significantly associated with ADS personal care provision ($\beta = .49$, $p < .05$; $R^2 = .20$, $F(1, 19) = 6.00$, $p < .05$). ADS programs with an older average age of clients were more likely to offer social activities ($\beta = .53$, $p < .05$; $R^2 = .23$, $F(1, 17) = 6.48$, $p < .05$).

Research Objective 3: Correlates of Social Environment

The stepwise regression models resulted in parsimonious sets of variables that were associated with the SES and its sub-dimensions. For the overall SES score, two variables were significant: the pleasantness of the ADS environment as perceived by ADS directors ($\beta = .39$, $p < .01$) and the number of direct care workers included during typical shifts ($\beta = -.39$, $p < .01$).

31, $p < .05$). For some of the other SES sub-dimensions, the stepwise regression models accounted for more shared variance. Standardized regression coefficients revealed that pleasantness of the ADS environment ($\beta = .40, p < .05$) and the percent of clients that lived less than 30 minutes traveling time from the ADS program ($\beta = .31, p < .05$) were positively associated with ADS directors' perceptions of staff co-operation. Three structural variables were significantly associated with greater staff morale problems: pleasantness of the ADS environment ($\beta = .32, p < .05$), number of direct care workers ($\beta = -.38, p < .01$), and age of the ADS program ($\beta = -.27, p < .05$). Whether in-service training occurred ($\beta = -.27, p < .05$) and the frequency of in-service ADS staff training ($\beta = -.27, p < .05$) were both negatively associated with an independence-promoting approach in ADS. One variable, number of licensed activities personnel, was significantly associated with the SES communication subscale ($\beta = .56, p < .01$) in the regression model. Two variables emerged as significant correlates of caring/extroversion in the stepwise regression model: ADS programs that focus on clients with Alzheimer's disease or a related dementia ($\beta = -.42, p < .01$) and percent of clients with a physical disability ($\beta = -.35, p < .05$). Two variables were also significant in the stepwise regression model of director control: ADS programs that focus on clients with Alzheimer's disease or a related dementia ($\beta = -.36, p < .05$) and percent of clients with urinary incontinence ($\beta = -.38, p < .01$). For the social involvement SES sub-dimension, two variables were significant: whether the ADS program was a private for-profit setting ($\beta = -.47, p < .01$) and whether the ADS program uses other online media to promote the program ($\beta = .41, p < .01$).

Discussion

Many characteristics of programs in the Minnesota ADS Director Survey were similar to recent national surveys. For example, over half of ADS clients in the Minnesota sample and the 2012 MetLife National ADS Survey (Dabelko-Schoeny & Anderson, 2010) were women (53% vs. 58%). While the MetLife National Survey did not calculate mean age, 69% of clients nationally were aged 65 years of age and over which is similar to the Minnesota sample (71.17 years). Nationally, a slightly lower proportion of ADS clients were Caucasian (61%) when compared to the Minnesota sample (70.08%) due in part to the higher proportion of Caucasian older adults in Minnesota when compared to the United States at large (see http://www.aoa.gov/Aging_Statistics/minority_aging/Index.aspx). The average percent of clients who live with a spouse as a primary caregiver was 24.20% in the Minnesota sample; nationally, 23% of family caregivers of clients were spouses. The percent of clients with dementia in the Minnesota sample was estimated by ADS directors as 44.20%; nationally, the estimate was 47% (Dabelko-Schoeny & Anderson, 2010). For most other health conditions, the percentage of ADS clients in the Minnesota sample was either similar to national estimates (hypertension/high blood pressure; developmental disability) or slightly lower (physical disability; cardiovascular disease; mental health issues); these differences again may reflect variations between Minnesota and the U.S. in terms of health, socioeconomic status, and racial/ethnic diversity (see <http://www.health.state.mn.us/healthymnpartnership/sha/>).

The descriptive data from the Minnesota ADS Director Survey suggests an evolving role of ADS as a community-based long-term care service. Specifically, the descriptive data indicated that ADS focuses on the provision of care and services to older adults with dementia or similar chronic conditions, have an ongoing presence in their particular communities, and generally are not designed as profit-making ventures. Overall, safety and other features designed to assist clients with various functional and physical dependencies were common across ADS programs. Staffing patterns in ADS also seemed oriented around direct care worker staff and activities personnel and less towards registered nursing. ADS programs' reach was local, but also tended to retain clients' over time. The daily cost of

attendance, \$68.38, was similar to the national average (\$61.31; Dabelko-Schoeny & Anderson, 2010). Other findings suggested the socio-economic background of ADS participants. Most clients were Medicaid eligible and almost one-quarter of clients had a paid individual (such as an adult foster care home director) as their primary caregiver. There were extensive activity of daily living needs and chronic health care conditions present among ADS clients, emphasizing as in recent national surveys that the type of individuals ADS programs are serving have increasingly complex healthcare needs. The results here also seem to imply that a considerable proportion of ADS clients reside in less-intensive residential care settings and thus rely on the activities and services in ADS for the stimulation and socialization they may not receive in such environments (Gaugler, in press).

Several structural characteristics and case mix indicators were significantly associated with ADS service provision. It is important to note that due to the cross-sectional of design of the study, causality/prediction is difficult to interpret. For example, it is possible that the characteristics of ADS program and the services offered attracted a specific group of clients, which may further explain the significant relationships discussed here. A particularly strong correlate of clinical service provision was number of clients attending; larger programs were more likely to provide blood pressure monitoring, medication administration, and diabetes/blood sugar monitoring. The availability of physical therapy equipment also appeared associated with clinical services and personal care provided. Programs with older clients were more likely to offer social activities. From these findings, it appeared that larger programs with potentially more access to skilled care staff such as registered nurses and advanced care equipment (suggesting the presence of physical therapy staff) were more likely to offer clinical services. In addition, programs that feature a more homogeneous client age may have been better able to provide group activities that were more acceptable to clients. Several other findings were more difficult to interpret; for example, two transportation-related variables were linked with services and activities in ADS. It is possible that ADS programs that have a higher proportion of clients with their own vehicles (and are presumably able to use these vehicles) may have fewer functional disabilities and thus have less of a need for psychosocial or care planning services to address co-occurring issues such as depression (which may be more likely among clients with greater functional impairments).

Identification of key structural and client characteristics that were associated with ADS social environment also suggested several patterns. First, programs that were adequately staffed with both direct care workers and licensed activity personnel were correlated with a much more vibrant social environment in ADS. It is likely that more staff allowed for more frequent, one-on-one staff-client exchanges that enhance the social environment of the ADS. In addition, the overall pleasantness of the ADS environment (in terms of appearance, smell, cleanliness, etc.) appeared critical to promoting positive social exchanges and effective care practices between ADS staff and clients. However, programs that were private for-profit, utilized in-service training for staff, and cared for clients with more complex care conditions appeared challenged to offer a more socially-engaged ADS environment. It is likely that programs that care for a high proportion of clients with dementia (and exhibit behavioral disruptions) may have to spend additional staff time addressing these issues while also attempting to implement socially engaging activities and services. Another empirical relationship is for-profit status and ADS social environment. For-profit settings and their requisite emphasis on economic concerns may implement ADS care routines that emphasize efficiency versus more holistic, person-centered care practices (the latter of which are more time-consuming to implement and may require greater staff expertise/training).

While this study yields important insights into how the structure of ADS and client characteristics influence the services provided and perceived social environment, there are

several key limitations to consider. Like many other large-scale descriptive studies of ADS, ADS directors completed all surveys; their responses may have been suspect to social desirability bias. Moreover, non-response was likely not random (as is evident in many self-report survey protocols) but systematic data to compare non-responders to responders in the Minnesota ADS Director Survey were not available. Missing data was also an issue; due to the length of the survey, ADS directors were less likely to complete data about client case mix indices (which was located in the later phases of the survey). This likely attenuated statistical power to examine statistically significant empirical associations. The survey was also limited to the state of Minnesota in the United States and was cross-sectional, which may have limited the findings' generalizability and interpretation of how ADS structure and client case mix variables were associated with ADS services and social environment, respectively.

An important conclusion of this research is that ADS programs have evolved from settings that are largely oriented around social activities to settings that provide various levels of care assistance to clients with a range of chronic conditions (Dabelko-Schoeny & Anderson, 2010). While ADS programs appear to have positioned themselves to serve clients with more complex care needs, they also seem fairly integrated or perhaps bounded by their particular communities. ADS programs in the current survey were in operation for well over a decade and most clients lived within 30 minutes of the program. This may yield several benefits; for example, as demonstrated in residential long-term care (Rowles, Concotelli, & High, 1996) programs that are integrated and recognized in a given community may be more likely to employ staff that know the history of clients under their care and thus can provide more person-centered types of activities and services. However, this identification with singular communities may make it difficult for ADS programs to effectively market and reach out to wider geographical areas; a longstanding concern of ADS directors has been "to get the word out" to primary care providers and others to recognize ADS as a possible community-based long-term care option (Anderson et al., 2012).

Another key implication of these results is the interface between program size, availability of skilled care staff such as registered nurses, presence of physical therapy staff/equipment, and services or social environment. Larger programs and those with more direct care staff and licensed activities personnel appeared more likely to offer personal care and a more positive social environment, but overall the number of registered nurses or other skilled staff available in ADS programs was low when compared to direct care workers and activity directors. An open question raised by these findings is whether the personal, medical, or rehabilitative care needs of ADS clients are adequately met; it remains unknown whether ADS programs as currently organized can effectively meet these needs with their current staffing patterns. The findings here imply that while there is a fairly high number of staff in Minnesota ADS programs, they are largely direct care workers or licensed activity staff as opposed to nurses or other skilled professionals. The findings of the current study, ranging from the clinical complexity of ADS clients to the links between ADS structure (size, staffing), client case mix, service delivery, and ADS social environment indicate the potential need for bolstering the intensity and skilled care delivered in ADS programs.

The pleasantness of the ADS environment, such as program cleanliness, overall attractiveness, fewer odors, and adequate illumination was linked with the overall quality of the social environment as well as greater staff cooperation. The implications of such findings are fairly clear: that physical environment is linked to positive staff to staff and client to staff interactions and relationships in ADS. As one of the goals of the current project was to identify potentially modifiable aspects of ADS to result in a more positive care setting/environment, the emergence of the pleasantness of the ADS environment is particularly intriguing. One issue in ADS is that, due to available resources, the spaces these

programs are located in are often not designed exclusively for ADS programs but are either multi-use or had a prior purpose (e.g., church basement, old hospital or nursing home station; see Gaugler, in press). The findings here suggest that ADS programs can take even simple steps to improve their physical appearance, and such efforts may lead to an improved social environment in ADS.

Clients with more severe disease conditions were less likely to have ADS directors report their given environments as caring/extroverted. This may be due in part to the challenges inherent in providing adequate, group-based assistance to ADS clients with Alzheimer's disease, dementia, or other complex conditions. As noted in prior qualitative work (Gaugler, in press) a particular challenge to delivering services and care in ADS settings was the integration, and in some cases, separation of ADS clients with varying degrees of cognitive impairment. The group-based orientation of ADS along with varying attendance patterns makes the delivery of care in ADS complex and one that requires flexibility. At the same time, the need for individualizing care for all clients, particularly those suffering from dementia, is considerable (Kitwood, 1997). Another issue apparent in prior qualitative work was a consistent lack of engagement displayed by many clients during various times of the day and activities, particularly those with dementia and the difficulty direct care staff sometimes had in engaging such clients (Gaugler, in press). For example, an ongoing tension between what clients want to do and those activities staff believe have therapeutic benefit is a concern. ADS staff may experience some tension to move "beyond bingo" and engage in stimulating activities (Smith, Kolanowski, Buettner, & Buckwalter, 2009). These processes of ADS care may explain why certain aspects of the ADS social environment may suffer when faced with the increasingly complex, chronic health conditions of clients, and could serve as a target for future clinical interventions or systems-level quality improvement efforts in ADS.

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FIGURE 1.
Adult Day Service Program Enrollment.

Table 1

Descriptive Information, Minnesota Adult Day Service (ADS) Programs (N = 83).

Descriptive Characteristic	Mean, Standard Deviation	%
Structure		
State certification/licensure as ADS		94.0
Member of National Adult Day Service Association		49.4
Program specialization		
Alzheimer's/dementia care		39.8%
Young adult clients		10.8%
TBI care		18.1%
Age of ADS program, in years	15.84, 10.01	
Program auspice		
Private for profit		31.1%
Private not for profit		65.6%
Public		3.3%
Program is part of a parent organization		73.0%
Average annual budget, US dollars	\$395,369.12, \$543,730.33	
Average percent of revenue generated from client fees	47.92%, 32.76%	
Average number attending clients, Monday-Friday	21.43, 22.76	
Number of on-site staff during average shift		
Direct care workers (CNAs, health care aides)	3.85, 2.61	
Registered nurses	0.74, 0.48	
Licensed practical nurses	0.68, 0.59	
Social workers	0.69, 0.83	
Licensed activities personnel	1.06, 1.06	
Program offers in-service staff training		94.5%
Frequency of in-service training ^a	2.28, 0.69	
Pleasantness of ADS environment ^b	3.56, 0.37	
Sum of program amenities ^c	4.51, 0.84	
Sum of safety features	3.66, 0.54	
Clients are transported to program in ADS-owned vehicle	51.42%, 0.39%	
Number of hours program is open, weekdays	9.86, 4.86	
Program is in a rural area		43.4%
Percent of clients who spend less than 30 minutes in transit to program	63.72%, 30.24%	
Daily or weekly ADS promotion strategies		
Word of mouth		78.4%
Program web page		48.8%
Meetings/conferences		30.4%
Online media		30.6%

Descriptive Characteristic	Mean, Standard Deviation	%
Number of clients on ADS waitlist	2.27, 7.16	
Square feet of indoor space	2474.23, 2183.18	
Number of physical therapy features ^d	5.88, 3.00	
Average length of client enrollment, in months	36.53, 41.89	
Standard full day rate	\$68.38, \$8.41	
<i>Case Mix/Client Indicators</i>		
Average client age, in years	71.17, 11.53	
Average percent of female clients	52.99%, 16.07%	
Average percent of Caucasian clients	70.08%, 35.51%	
Average annual income of clients	\$15,813.10, \$13,406.20	
Average percent of clients on Medicaid	61.99%, 27.68%	
Average percent of clients living with spouse	32.38%, 23.68%	
Average percent of clients with spouse as primary caregiver	24.20%, 14.79%	
Average percent of clients who live in a residential group setting	27.96%, 23.07%	
Average percent of client ADLs, unable to do		
Appearance/grooming	24.61%, 22.46%	
Eat meals	6.02%, 7.16%	
Dressing	10.99%, 9.11%	
Walk/ambulation	15.08%, 16.14%	
Getting in and out of bed	14.36%, 15.89%	
Taking a bath	22.56%, 24.71%	
Going to the bathroom	18.17%, 15.67%	
Making wishes known	11.24%, 15.47%	
Managing money	35.57%, 27.21%	
Using the telephone	23.11%, 21.99%	
Shopping	28.26%, 23.35%	
Average percent of clients with Alzheimer's disease or a related dementia	44.20%, 26.89%	
Average percent of clients with depression	27.05%, 21.80%	
Average percent of clients with a physical disability	35.10%, 29.18%	
Average percent of clients with diabetes	24.55%, 17.04%	
Average percent of clients with cancer	4.67%, 5.41%	
Average percent of clients with cardiovascular disease	27.30%, 19.43%	
Average percent of clients with high blood pressure	42.74%, 26.63%	
Average percent of clients with developmental disability	18.92%, 29.13%	
Average percent of clients with mental health issues	17.85%, 20.61%	
Average percent of clients with TBI	8.42%, 18.18%	
Average percent of clients with urinary incontinence	38.03%, 25.96%	
Average percent of clients who use assistive devices	42.55%, 25.31%	
Average percent of clients discharged in last 3 months	15.58%, 13.79%	

Descriptive Characteristic	Mean, Standard Deviation	%
<i>Services and Activities^e</i>		
Clinical Services	2.61, 0.99	
Psychosocial and Counseling	3.13, 1.11	
Care Planning	3.65, 0.88	
Personal Care	3.95, 1.10	
Social Activities	4.41, 0.71	
<i>Social Environment^f</i>		
Total Social Environment Score	3.23, 0.22	
Staff Cooperation	3.68, 0.41	
Morale Problems	3.30, 0.41	
Independence-Promoting Approach	2.38, 0.52	
Communication	2.81, 0.40	
Caring/Extroversion	3.63, 0.37	
Director Control	3.66, 0.45	
Social Involvement	3.30, 0.41	

^a 1=Only when needed, 2=Less than once a month, 3=Once or twice a month, 4=Once a week or more;

^b 1=Very negative, 2=Somewhat negative, 3=Somewhat positive, 4=Very positive;

^c Range = 0–5;

^d Range = 0–12;

^e 6=Daily, 5=Once a week or more, 4=Once or twice a month, 3=A few times a year, 2=On admission only, 1=Rarely or never;

^f 4=Strongly agree, 3=Agree, 2=Disagree, 1=Strongly disagree

Table 2

Stepwise Regression Models: Empirical Associations Between Structural Characteristics, Case Mix Indicators, and Services and Activities in Adult Day Service Programs (N = 83)

Variable	<i>B</i>	<i>SE B</i>	β
<i>Clinical Services: $R^2 = .62$; $F(2, 20) = 18.64^{***}$</i>			
Average number of clients, Monday thru Friday	.06 ^{***}	.01	.72 ^{***}
Sum of physical therapy equipment types	.09 [*]	.04	.30 [*]
<i>Psychosocial and Consulting Services: $R^2 = .17$; $F(2, 22) = 3.50^*$</i>			
Percent of ADS clients who own vehicle	-1.04 [*]	.45	-.44 [*]
Community awareness promotion: Other online media	.14	.08	.36
<i>Care Planning Services: $R^2 = .13$; $F(1, 28) = 5.13^*$</i>			
Percent of ADS clients who use a special van or bus	1.26 [*]	.56	.39 [*]
<i>Personal Care Services: $R^2 = .20$; $F(1, 19) = 6.00^*$</i>			
Sum of physical therapy equipment types	.11 [*]	.05	.49 [*]
<i>Social Activities: $R^2 = .23$; $F(1, 17) = 6.48^*$</i>			
Average age of ADS clients	.03 [*]	.01	.53 [*]

* $p < .05$,

*** $p < .001$;

ADS = adult day service; reported R^2 are adjusted R^2

Table 3

Stepwise Regression Models: Empirical Associations Between Structural Characteristics, Case Mix Indicators, and Social Environment in Adult Day Service Programs (N = 83)

Variable	<i>B</i>	<i>SE B</i>	β
<i>Overall Social Environment Score: $R^2 = .22$; $F(2, 41) = 7.06^{**}$</i>			
Pleasantness of environment	.22**	.08	.39**
Number of direct care workers	-.02*	.01	-.31*
<i>Staff Co-Operation: $R^2 = .25$; $F(2, 32) = 6.73^{**}$</i>			
Pleasantness of environment	.42*	.16	.40*
Percent of clients who live less than 30 minutes from ADS	.39*	.19	.31*
<i>Morale Problems: $R^2 = .30$; $F(3, 47) = 8.15^{***}$</i>			
Pleasantness of environment	.36*	.14	.32*
Number of direct care workers	-.06**	.05	-.38**
Age of ADS program	-.01	.01	-.27*
<i>Independence-Promoting: $R^2 = .11$; $F(2, 52) = 4.41^*$</i>			
Whether staff in-service training is provided	-.63*	.30	-.27*
Frequency of in-service training	-.21*	.10	-.27*
<i>Communication: $R^2 = .29$; $F(1, 29) = 13.01^{**}$</i>			
Number of licensed activities personnel	.23**	.06	.56**
<i>Caring/Extroversion: $R^2 = .23$; $F(2, 40) = 7.27^{**}$</i>			
ADS serves a specific population: Alzheimer's disease	-.31**	.10	-.42**
Percent of clients with physical disability	-.01*	.00	-.35*
<i>Director Control: $R^2 = .27$; $F(2, 39) = 8.35^{**}$</i>			
Percent of clients with urinary incontinence	-.01**	.00	-.38**
ADS serves a specific population: Alzheimer's disease	-.31*	.12	-.36*
<i>Social Environment: $R^2 = .46$; $F(1, 31) = 15.72^{***}$</i>			
ADS is private-for-profit	-.50**	.14	-.47**
Community awareness promotion: Other online media	.09**	.03	.41**

* $p < .05$,

** $p < .01$;

*** $p < .001$;

ADS = adult day service; reported R^2 are adjusted R^2