PURPOSE. The purpose of the study was to examine daily time use of clients of Assertive Community Treatment (ACT) as a measure of their community adjustment and well-being. The actual daily time use of ACT clients in the four categories of personal care, productivity, leisure, and sleep were compared to the data for Canadian population norms.

METHOD. Daily time use data were collected from 27 adult clients from two Assertive Community Treatment Teams in southeastern Ontario using recall time diaries of two weekdays. The data were coded using the Statistics Canada (1999) coding scheme. Descriptive statistics were used to determine time in the major categories of time use and z scores were used to compare the study sample to the adult Canadian population. The percentages of time spent in specific subcategories of activity were also compared.

RESULTS. The results indicated an imbalance in occupation with time use dominated by leisure and sleep activities. Study participants spent significantly more time in passive leisure compared to active leisure and socialization.

CONCLUSION. The activity patterns of ACT clients were not consistent with those associated with community adjustment, health, and well-being. Occupational therapists working in ACT are in a good position to contribute to the literature regarding occupational performance and mental illness and to lead ACT teams in discussions and practices that may promote health through activity.


KEY WORDS
• community integration
• daily time use
• severe mental illness

Assertive Community Treatment (ACT) is a model of service delivery that provides continuous and intensive treatment, rehabilitation, and support to increase the community tenure and adjustment of persons with severe mental illness who are heavy users of the service system (Stein & Santos, 1998). Since its inception in the early 1970s, ACT has been widely disseminated and researched internationally (Marshall & Lockwood, 2001).

The model of ACT has been shown to have overall positive effects on symptomatology and reduction of hospitalization for persons with severe mental illness (see below). Its impact on psychological well-being and quality of life is less clear. The study reported here contributes to our understanding of the outcomes associated with ACT by examining the daily time use patterns of ACT clients as a measure of community adjustment and personal well-being. The discussion focuses on the implications of the study for occupational therapists working with ACT teams.

The ACT Model of Service Delivery

ACT was designed to overcome the limitations associated with short-term and hospital-based services (Stein & Test, 1979). An ACT team works with clients in the community as required, 24 hours a day, 7 days per week. The team functions as a client’s “primary therapist” and caseloads are shared among ACT staff. To ensure
that services are assertive, individualized, and intensive, staff–client ratios are low, typically not exceeding one to ten. The ACT team works directly with clients in the community to promote the development of required daily living skills and to enable accessibility and participation in regular community environments (McGrew & Bond, 1995; McGrew, Bond, Dietzen, & Slayers, 1994).

ACT teams are multidisciplinary, with most team members providing generalist community mental health functions as well as specialist, discipline-specific functions. Occupational therapy has been identified as one of the professions that could fulfill a rehabilitation specialist role on an ACT team (see, for example, the Ontario Ministry of Health, 1998). There is, however, a lack of published literature that details the potential contributions of occupational therapy within the context of ACT (Krupa, Radloff-Gabriel, Whippey, & Kirsh, 2002).

ACT Outcome Studies

Research has repeatedly demonstrated the effectiveness of ACT in decreasing psychiatric hospitalizations and psychiatric symptoms (Burns & Santos, 1995; Essock & Kontos, 1995; Lafave, deSouza, & Gerber, 1996; McGrew et al., 1994; Scott & Dixon, 1995), increasing community tenure and stability in independent living (Essock & Kontos, 1995; Lafave et al., 1996; Scott & Dixon, 1995) and treatment compliance (Scott & Dixon, 1995). The model has been found to be particularly effective for individuals diagnosed with severe mental illness who are high users of inpatient mental health services (Marshall & Lockwood, 2001).

Efforts to understand the nature of the community lives of ACT clients have been less definitive. These studies have typically focused on quality of life and employment outcomes. Early reports by the originators of the ACT model (Stein & Test, 1979) stated that ACT clients experienced a better quality of life than those who were hospitalized, but these differences were not found when ACT was compared to other community-based case management programs (McGrew, Bond, Dietzen, McKasson, &Miller, 1995). Quality of life research in community mental health has been associated with several limitations including the difficulties associated with improving the harsh community lives of persons with severe mental illness (Davidson, Hoge, Merrill, Rakfeldt, &Griffith, 1995), the methodological shortcomings of quality of life research and disagreement about the variables that influence quality of life (DeSouza, 2000).

The developers of the ACT service model believed that community outcomes were enhanced if clients were provided support for participation in meaningful activities such as work (Stein & Santos, 1998). They focused on integrating treatment and productivity-related outcomes and defined a vocational component for ACT teams. Studies examining employment outcomes suggested that clients of ACT teams with a dedicated vocational specialist demonstrated improved productivity outcomes when compared to those teams without this vocational component (McGrew et al., 1995; Russert & Frey, 1991). It is important to note that a dedicated vocational specialist is not consistently regarded as a critical feature of ACT in replications of the model (McGrew et al., 1995).

Daily Time Use As a Measure of Community Adjustment

Although work status is an important indicator of community adjustment, it provides a restricted view of the daily lives of persons with severe mental illness living in the community. The employment rates for this population are exceptionally low with only 10 to 20 percent competitively employed (Baron, 1995). Employment as an outcome is, at this time, a meaningful descriptor of community adjustment for only a subset of ACT clients. Considered on its own, work status fails to capture the complex relationship between activity participation, health, and well-being in the community. In response to these limitations we suggest that daily time use may be a useful outcome measure of community adjustment.

Daily time use patterns are related to community adjustment levels both because of the tangible outcomes or products of these activities and because of the sense of satisfaction that can be generated by participation in activities (Juster, Courant, & Dow, 1985). For persons with severe mental illness, daily time use patterns have the potential to enhance community adjustment by providing structure to daily events (Bachrach, 1996; Kotake Smith, 2000; Lette, 1989), and the means to contribute to the broader community and to develop a personal sense of purpose and meaning and worth (Hatfield & Lefley, 1993; Lunt, 2000). Activity involvement is believed to play an important role in adjustment to mental illness and disability (Williamson, 1998). Davidson and Strauss (1995) propose that this daily life context can serve as a powerful framework for recovery from mental illness. They suggest that it enables our understanding of how strengths and weaknesses, and health and disorder, can coexist within individuals as they go about their daily lives.

In his review of studies that examined activity preferences in the general population, Juster (1985) found that individuals had high preferences for certain types of productivity, mainly paid work and childcare, and for active
leisure and socializing activities. Those activities that were least preferred were passive and did not involve personal interaction with others, such as passive leisure and housework. This finding is consistent with Csikszentmihalyi’s (1993) assertion that the intrinsic rewards of participation in daily activities are realized within the context of active involvement in daily pastimes that are experienced as promoting growth at the personal and the social level. Juster’s work is also consistent with empowerment paradigms in community mental health that suggest that active engagement in social roles and activities promote health by promoting interactions with supportive community structures (Clark & Krupa, 2002).

Daily time use studies aim to determine the amount of time that individuals allocate to various daily living activities (Harvey & Singleton, 1989; McKinnon, 1991; Statistics Canada, 1995; Weeder, 1986). They reveal the types of activities that a population of individuals engage in throughout the day as well as amount of time that they devote to these activities. Consistent with models of occupational performance, daily time use activities are typically organized by the major categories of personal care, leisure, productivity, and sleep and rest. These studies may also report on the locations and social contexts of activity participation and on the individual’s experience of satisfaction while engaging in the activity.

Time use studies have been conducted with the general population (Statistics Canada, 1995, 1999), and with individuals with disabilities (see, for example, Pentland, Harvey, & Walker, 1998), including individuals with psychiatric disorders living in the community (Hayes & Halford, 1996; Weeder, 1986). Thus, the results of time use studies permit comparisons of time use patterns between various populations.

**Study Objective**

The purpose of this study was to examine the daily time use patterns of clients of ACT. Our research was directed by the following questions: (1) What are the daily time use patterns of clients of ACT? (2) How does the daily time use of clients of ACT compare to those reported for the general Canadian adult population? We believed that this information would contribute to the understanding of the community adjustment of clients of ACT.

**Method**

The study was descriptive and exploratory. The research was designed to advance our knowledge about daily time use patterns among the ACT client population and promote discussion about the implications for occupational therapy practice.

**Study Participants**

Twenty-seven clients of two ACT teams were recruited. We used convenience sampling when random sampling failed to enlist an adequate number of participants. The study received approval from a university ethics board and informed consent was obtained from all participants.

Twelve participants were recruited from ACT team “A” and fifteen from ACT team “B.” The majority of the participants were male (n = 16) and single (n = 24). The mean age for the participants was 41 with a range from 26 to 51 years. The sample was equally split between those who had completed high school or higher and those who had not completed high school. Two thirds of the sample described their prior work histories as unskilled work, while one third reported histories of skilled or professional work. Diagnostically, the majority of the sample were diagnosed with either schizophrenia (n = 11) or mood–personality disorders (n = 11).

Consistent with ACT standards, the eligibility criteria for both of these ACT teams focused on servicing individuals with severe psychiatric disorders who had multiple needs and were heavy users of the mental health system. Both of the teams in this study were located in the same small city of approximately 120,000 with an economy based primarily in the public sector.

**Procedures**

To ensure agreement with the standard models of ACT, we administered two standard fidelity measures of ACT to each of the participating ACT teams. The Index of Fidelity for Assertive Community Treatment (McGrew, et al., 1994) and the Critical Ingredients of Assertive Community Treatment (McGrew & Bond, 1995) are standardized surveys of the extent to which ACT teams implement key features of the service delivery model. Both of the teams rated high in fidelity to the standard ACT model but inconsistent with the standard critical features of ACT was the lack of a dedicated vocational specialist on both of these teams. ACT team “A” had access to occupational therapists and vocational specialists through a referral process. ACT team “B” had two full-time occupational therapists functioning in a generic ACT mental health worker role. We used the recall time diary method to collect data about time use. This method involved the systematic recall of a person’s use of time over a given 24-hour period through the retrospective, sequential recording of each activity, including start and end times (Harvey & Singleton, 1989). Although people do not typically spend identical
portions of time engaging in the same activities from day to day, time use studies need to attend to the confounding influence of atypical days. In this study we followed Kalton’s (1985) recommendation that smaller samples should use more than one daily time use measurement to obtain a reasonable degree of reliability. We collected time use data for 2 weekdays per person.

One of the investigators met individually with each study participant on three occasions. At the first meeting each participant was introduced to the time budget recall diary as a method of systematically recording time use over a 24-hour period. Participants selected a weekday to apply the time budget diary and a time on the following day to meet with investigator to recall activities. At the second meeting, the time use data were collected through an interview during which the participant was asked “What were you doing at 12:01 a.m. (on the diary day)?” The responses were written verbatim on the diary form and followed by additional questions about the activity such as:

“Where were you?”
“Were you doing anything else at the same time?”
“Who were you with?”

The rest of the diary was completed by “What did you do next?” questions to include the full 24-hour period. The same follow-up prompts were used with each participant to gather complete time use data and to ensure consistency of beginning and ending times for activities reported across participants. Minutes were used as the unit of analysis for time spent in activities. At the end of this second meeting, another 24-hour period for applying the time budget diary was selected by the participants and a third and final meeting for data collection was organized.

Studies have supported recall time use diaries as a reliable and valid approach compared to other methods of recording daily time use that have been presumed to have greater reliability and validity but higher implementation costs (Harvey & Singleton, 1989; Pentland et al., 1998; Robinson, 1988).

Analysis
We used the coding scheme of the Statistics Canada (1995; 1999) time use study, part of the General Social Surveys of the Canadian population. The Statistics Canada study reported on daily time use patterns of a representative sample of more than 10,000 Canadians more than 15 years of age, using a telephone survey and a recall diary method to examine how participants spent their time over a 24-hour period. We made two small revisions to the Statistics Canada codes: (1) We separated sleep and personal care to provide a more discrete description of daily activities, and (2) we added day programs as a sub-category of productivity to account for a productivity option available to persons diagnosed with severe mental illnesses.

The raw data were converted into codes for four major categories of daily activity—sleep, personal care, leisure, and productivity—and then coded further into subcategories, consistent with those of the Statistics Canada time use study. The subcategories of productivity included paid work, housework, voluntary and social support activities, educational activities, and day program activities. Personal activities were limited to the individual’s care of the self. Leisure activities included socializing (interacting with others as the primary focus of the activity), passive leisure (activities characterized by witnessing or receiving an event for recreation or rest), and active leisure (actual participation in the process of recreational activities). Finally, sleep included both night sleep and incidental naps. Although only one investigator actually coded the data, we had three other rehabilitation personnel code pilot data for three ACT clients to increase our confidence that the coding was not influenced by rater error. The level of agreement between raters for pilot data was high at 99.83%.

Guttman split-half reliability coefficients were computed to determine the reliability of combining the two interview days for each participant. This is a measurement of the similarity of time use between the 2 days. The coefficients were 0.41 for productivity, 0.56 for leisure, 0.64 for personal care, and 0.38 for leisure. These coefficients were in keeping with Kalton’s (1985) recommendation of reliability levels of 0.40 as compatible with combining data.

To answer our research questions we used descriptive statistics (means and standard deviations) to determine time spent in the major categories of personal care, productivity, leisure, and sleep. We used z scores to determine the distance of the mean of the sample population from that of the Canadian population ages 25–64 years. The data for this age group were obtained directly from Statistics Canada based on the data from the 1998 General Social Survey (Statistics Canada, 1999).

The z score was computed by subtracting the sample means from the Canadian means and then dividing by the standard deviation of the Canadian mean. The z score is considered to be particularly useful for comparing the findings of several measures each with differing means and standard deviations (Vogt, 1999). Since the amount of time available in any given day is 24 hours, the major categories of time use are not independent. Knowing the amount of time that is spent in any three categories determines the amount of time for the fourth category. Thus, one category, sleep, was excluded from the analysis of z scores, as it
describes time when individuals are at rest from the activities of daily life.

We then examined the distribution of specific subcategories of time use as a percentage of time spent within the major categories of leisure, productivity, personal care, and sleep and examined these findings, descriptively, in relation to the Canadian population. This allowed us to explore the way time was actually spent within each of the major categories.

**Results**

We found the daily time use patterns of the study participants to be heavily dominated by time spent in sleep and leisure activities. Over a 24-hour day, the study participants spent a mean of 3.43 hours involved in productivity (SD = 2.08), 2.43 hours in personal care (SD = 1.40), 8.68 hours in leisure (SD = 2.45), and 9.46 hours in sleep (SD = 2.28).

The daily time use patterns for productivity were considerably different from those of the general adult Canadian population (see Table 1). The study means were 1.75 standard deviations below the Canadian mean for productivity, and 1.18 standard deviations higher for leisure. The means for personal care for the sample and Canadian populations were very similar.

Table 2 provides a description of how time was actually spent in each of the major categories of time use. The productivity time of ACT clients was spent predominantly in household activities (70.55%), while Canadian adults spent more than half their time in paid work activities (52.59%). There was little difference between the two populations for the time spent on nonpaid work such as volunteer or educational activities.

Both the ACT clients and the Canadian adults spent approximately one third of their leisure time in socialization activities. The ACT clients spent more time in passive leisure activities (58% compared to 46%) and the Canadian population sample spent more time in active leisure (20% compared to 9%).

The total sleep of ACT clients was distributed between night sleep (86.47%) and naps or incidental sleep (13.53%). Data related to the sleep patterns for the Canadian population were unavailable.

**Discussion**

The interpretation of these findings needs to be considered within the limitations of this descriptive study. Because information about the total client population was unavailable to us at the time of this study, we do not know if the study participants are representative of the population of clients served by the two teams. This is an important consideration because time use could be influenced by a wide variety of factors such as length of time in a program or length of time since last hospitalization. In addition, while both of the ACT teams displayed high fidelity to the critical features of ACT, they did not have an integrated vocational component. Generalizing these findings to other ACT teams needs to be done with caution, since teams that have dedicated vocational resources are explicitly structured to positively influence engagement in productivity (Russert & Frey, 1991).

The results demonstrated an imbalance of occupational activities among the ACT clients as compared to the adult Canadian population survey data. They spent fewer hours in productivity and only a small percentage of these hours involved paid work. This finding is not particularly surprising given the low employment rates for this population (Baron, 1995). It is important to note that this low employment was not counterbalanced by participation in nonpaid work activities such as volunteer, school, or attendance at day programs. Instead, 70% of the limited hours in productivity were spent on housework activities.

Low productivity was offset by leisure; these activities were predominantly passive and compounded by the large

<table>
<thead>
<tr>
<th>Activity</th>
<th>ACT Client Means and Standard Deviations (in hours)</th>
<th>Canadian Means and Standard Deviations (in hours)</th>
<th>z Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity</td>
<td>3.43 (2.08)</td>
<td>8.69 (0.05)</td>
<td>1.75</td>
</tr>
<tr>
<td>Leisure</td>
<td>8.68 (2.45)</td>
<td>5.15 (0.04)</td>
<td>-1.47</td>
</tr>
<tr>
<td>Personal Care</td>
<td>2.43 (1.40)</td>
<td>2.26 (0.02)</td>
<td>-0.14</td>
</tr>
<tr>
<td>Sleep</td>
<td>9.46 (2.28)</td>
<td>7.89 (0.02)</td>
<td></td>
</tr>
</tbody>
</table>

*Note: ACT = Assertive Community Treatment*
portion of the day spent taking incidental naps. While the Canadian data for leisure indicate that participation in active leisure constitutes the smallest percentage of time in leisure activities, the data for this study suggests that this small percentage is still considerably higher than that of the ACT clients. The total time spent in socialization and the percentage of time spent in socialization as a leisure activity did not differ between the two populations. This lack of difference is particularly interesting given the common idea that people with severe mental illness are less likely to participate in socialization because of the impairments associated with the illnesses, the isolating effects of institutionalization, and community and internalized stigma.

Theorists and researchers studying the influences of activity on health point out that any activity has the potential to contribute to well-being in a manner that cannot be recognized by simply tallying the number of hours spent in any given pursuit. More important is the extent to which activity participation is experienced as meaningful, engaging, and enhancing community life and personal development (Csikszentmihalyi, 1993; Hasselkus, 2002). This said, an imbalance between work, leisure, and rest is considered a risk factor for compromised well-being, because of its potential to limit the discovery and expression of interests and capacities and the benefits experienced through community participation. In addition, passive leisure, and housework activities have been associated with lower levels of satisfaction and well-being because they are less likely to engender those conditions for health through activity (Csikszentmihalyi, 1993; Juster, 1985).

It is not clear whether the theoretical frameworks developed for daily time use adequately reflect the experiences of persons with severe mental illness. While people with severe mental illnesses have occupational goals and desires similar to the general population (Lord, Schnarr, & Hutchinson, 1987), the relationship between the time they spend in activities and well-being needs further exploration.

Certainly the field of psychiatric rehabilitation is characterized by conceptual models with contradictory perspectives on the role of activity in promoting health in the face of severe mental illness and the extent to which participation in community activities is possible or desirable. Stress paradigms in mental health suggest that individuals with severe mental illness expend considerable psychoemotional and physical effort in dealing with the demands of activities of daily life. This is believed to lead to a low tolerance for ongoing and active engagement and the potential for exacerbation of acute symptoms of mental illness (Anthony & Liberman, 1986). From this perspective, activity participation has potentially toxic consequences and needs to be carefully monitored. On the other hand, contemporary recovery frameworks argue that increased participation in meaningful activities, grounded in a community context, promotes health and well-being through the development of a personal and social identity, engaging the individual in illness self-management strategies and forging connections to supportive structures and people (Jacobson & Greenly, 2001; Krupa, 2000). From this perspective, recovery from mental illness depends on enabling activity participation in the community. Finally, empowerment-oriented frameworks propose that the alienation from activities of daily life experienced by persons with severe mental illness is largely a reflection of poverty and community stigma that deny equitable access to activities (Clark & Krupa, 2002; Nelson, Lord, & Ochocka, 2001). From this perspective, failure to address activity involvement in the community overemphasizes the role of illness and its impact on capacity and ignores the community contexts and social structures that support participation.

**Occupational Therapy, Daily Time Use, and ACT**

The findings from this study suggest interesting possibilities for the development of the occupational therapy contribution on ACT teams. The benefits of participation in the activities and routines of daily life are central to the occupational therapy paradigm of health and well-being (see, for example, Wilcock, 1998; Hasselkus, 2002). While participation in daily activities inevitably leads to encountering challenges, the persistent absence of engagement in activities has been associated with self-alienation, chronicity in disease, and high levels of stress (Fieldhouse, 2000).

The findings from this study indicate a need for occupational therapy research addressing the relationship between activity participation, mental illness, community adjustment, and models of service delivery. The ACT service model was designed to continuously integrate clinical, rehabilitation, and community integration perspectives to provide individuals with the best supports possible in the community (Stein & Santos, 1998). As such, ACT could prove to be an important avenue for research that addresses activity participation in the life context over time.

Occupational therapists might use the concept of daily time use to encourage the ACT team to think beyond clinical and functional independence outcomes, to consider more directly the occupational well-being of clients in the community. Daily time use, with its attention to all areas of occupation, provides the opportunity for discussion about the meaning of community adjustment, health, and well-being, beyond single dimension outcomes such as employment without undermining the importance of employment as an important and viable goal. With their knowledge and experience in this area, occupational therapists could pro-
provide education and consultation for issues related to time use planning and intervention both at the individual and service level.

Conclusion

This descriptive study of ACT clients’ daily time use as a measure of community adjustment has yielded several important findings. The daily time use of ACT clients was considerably different from that of the Canadian adult population, with an imbalance of work and leisure. The ACT clients spent 14.5 hours a day in passive leisure and sleep activities. Time in productivity was largely invested in housework. Overall, the pattern of daily time use for ACT clients was not consistent with patterns associated with health and well-being.

The lack of a clear theoretical framework for understanding the relationship between activity participation and severe mental illness suggests the need for more investigation in this area. Occupational therapists, who focus on influencing health and personal growth through participation in the routines and activities of daily life, could take a lead role in directing the ACT team’s attention toward developing research and practice guidelines related to client patterns of daily time use.

Acknowledgments

The authors thank Dr. Terry Smith and Dr. Stuart Lawson for their assistance with the statistical analysis and Ms. Salinda Horgan for her contributions as project coordinator. We also thank the ACT clients and staff for their time and interest in seeing this study through to completion. This project was supported by a grant from the Ontario Ministry of Health and Long-Term Care, administered on its behalf by the Ontario Mental Health Foundation. The authors acknowledge the support of the Mental Health Policy Research Group, which is a coalition of the Foundation, the Centre for Addictions and Mental Health, and the Canadian Mental Health Association, (Ontario Division).

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