



THE GREEN HOUSE PROJECT
caring homes for meaningful livesSM



Final Program Evaluation for *It's Never 2 Late* and THE GREEN HOUSE® Project

May, 2010

Executive Summary

Overview

It's Never 2 Late (IN2L) integrates cutting edge technological innovations that touch multiple lives daily through building relationships, enhancing engagement, and connecting older adults with the greater community. Being in relationships - *communicating our wants and needs to others* – is core to the human experience. More importantly, social engagement is essential to overall well-being and quality of life and needs to be maintained over the life course. Mather LifeWays Institute on Aging, the research and education arm of Mather LifeWays in Evanston, Illinois, partnered with The Green House Project and It's Never 2 Late to conduct a scientific evaluation of the implementation of IN2L technologies in four Green House homes during 2009. The following report presents final results for the 9-month follow-up evaluation.

Study Design

In order to fully understand the impact or effects of IN2L, a 2-group (control and intervention groups) repeated measures (multiple data collection points over time) design was selected for this study. Four Green House organizations participated in the study that were chosen through a refereed process based on strength of their proposals identifying IN2L implementation plans, “readiness” to implement the technology, and other criteria. Three of the four homes were able to identify a comparable control home. Although homes were not randomly assigned to “control” and “intervention” groups, having the opportunity to add a control home to serve as a “matching” comparison within the same organization provided additional rigor to the research design. Data were collected at baseline (prior to IN2L implementation) and then at 3-months and 9-months post-IN2L implementation. One organization was unable to complete the 9-month post-IN2L data collection (both “control” and “intervention” homes). The value of initially selecting a repeated measures design with control groups is that it allows for small samples as we are concerned with changes “within” subjects over time rather than the traditional focus



on differences “between” subjects.

Key Findings

As a result of participating in IN2L, elders in Green House homes demonstrated significant improvements in a number of areas:

- IN2L participants are significantly more active, more energetic, and are at higher functioning (ADL) levels;
- Demonstrate greater levels of activity and social engagement behaviors;
- Function at higher cognitive levels;
- Express more positive emotions and are less depressed;
- Demonstrate greater self-efficacy;
- Experience greater quality of life; and,
- Have better general health.

There were no statistically significant changes in these measures for elders in control group homes. For most of these measures, trends in improvements in the IN2L group were significantly different from trends of negative changes in the control group.

Participation in IN2L Activities

Frequency of participation in IN2L activities increased from 3-month to 9-months post-IN2L implementation. At 3-months post-IN2L implementation, nearly 49% of elders participated at least once a week in IN2L activities compared to 62% at 9-months post-IN2L implementation, a 27% increase in participation overall. There was a significant increase in the percent of usage at 9-months post-IN2L implementation in the category of entertainment activities (78% increase). Although not statistically significant, there were increases in the percent of elders participating in mind exercises (26% increase), hobbies (23% increase), and learning (13% increase). The four IN2L homes varied in the average amount of usage time ranging from a weekly average of 51 hours 4 minutes up to 85 hours 14 minutes (April through November 2009 IN2L usage data). IN2L usage was significantly associated with some measures. Greater IN2L usage was significantly associated with decreased depression and increased communication.

Impact of IN2L Participation

At 3-months and 9-months post-IN2L implementation, staff was asked about the impact of IN2L participation on interactions and relationships among residents, staff, and families and the time elders are spending in various other activities including therapy, socialization, and daily home activities. A significantly greater percent of staff agree at 9-months post-IN2L that IN2L participation has benefited



interactions and relationships among residents, staff, and families in the following ways:

- Families have higher quality visits (78% increase from 3-months to 9-months post-IN2L implementation)
- Relationship between elder's family and staff is better (144% increase)
- Elder spends more time in social activities (78% increase)
- Quality of interactions between elders and staff has improved (51% increase)
- Relationship between this elder and staff is better (43% increase)
- Quality of interactions between elder's family and staff has improved (53% increase)
- Staff has gotten to know more about this elder (24% increase)

In describing how opportunities to participate in IN2L activities has affected elders 9-months post-IN2L implementation, we see that elders are "expanding their horizons" in what they are trying out and their connections with others in the communities as well as "virtually":

- "Accessing email helps this elder stay in touch with friends and family across the country....and has encouraged housemates to experience the same."
- "This elder enjoys...learning new things on Facebook and You Tube...learning what is going on worldwide...accessing the hometown newspaper via Internet"
- "This elder uses the web cam to have interactions with a housemate that moved."

Study Design

Survey

A web survey was designed and evaluated by key Green House and Mather LifeWays' personnel. As Green House Guides (administrator role) and Shahbazim from each participating home would be completing the web survey, we also had these staff review the survey and ask for clarification as needed.

The following variables are being measured related to the effects of IN2L:

- **Activity level**—one-item tool measuring the elder's degree of current activity compared to others (a 5-point scale from "much more active" to "much less active"). Measures were modified from Katz' Index of Independence in Activities of Daily Living (Katz, 1970).



- **Energy level**—one-item tool measuring the elder’s level of energy during the past week (a 3-point scale from “high energy” to “low energy”).
- **Activity engagement**—seven-item tool measuring the frequency the elder participates in various activities throughout the home including reading, spiritual activities, helping activities, listening to music, or family activities (5-point scales from “daily” to “never”).
- **Social engagement**—seven-item tool measuring the frequency the elder participates in social or community activities including group interactions, structured group events, and involvement in community life (5-point scales from “daily” to “never”).
- **Depression**—ten-item tool measuring depressive symptoms in elders (4-point scales from “all of the time” to “none of the time”). The tool was modified from the Geriatric Depression Scale (Yesavage and Brink), an instrument that has been widely used in elderly populations in long-term care settings.
- **Self-efficacy**—five-item tool measuring the elder’s belief in themselves to accomplish goals in life with a self-confident outlook (4-point scales from “all of the time” to “none of the time”).
- **Quality of life**—seven-item tool measuring the impact of health issues—physical and psychosocial—on the elder’s normal daily activities (4-point scales from “all of the time” to “none of the time”). Quality of life measures were adapted from the SF-36 health survey of well-being with reliability and validity of the tool being well-established.
- **Communication**—four-item tool measuring the elder’s degree of difficulty with communication (4-point scales from “all of the time” to “none of the time”).
- **Functional abilities**—six-item tool measuring the degree of assistance the elder needs in six areas (i.e., toileting, dining, dressing, grooming, physical ambulation, and bathing (5-point scales from “no assistance needed” to “usually resists assistance”).
- **Cognitive functioning**—three-item tool measuring the elder’s abilities related to reasoning, orientation, and judgment (3-point scales from “generally accurate response” to “significant errors in response”).
- **Emotional status**—nine-item tool measuring the elder’s emotional status over the past week (4-point scales from “all of the time” to “none of the time”).
- **Joy level**—one-item tool measuring the elder’s overall level of “joy in life” over the past week (3-point scale from “often able to find joy” to “unable to find joy”).
- **General health**—one-item tool measuring the elder’s overall health during the past week (5-point scale from “excellent” to “poor”).

(Scores from these measures have been converted to “standard scores” (i.e., all scores converted to a 100-point scale to allow comparison of these changes in measures on an equal basis.)



Additional data collected included:

- (1) preferences for particular activities/interests;
- (2) current participation in those activities/interests;
- (3) daily life patterns; and,
- (4) sensory and mobility capabilities.

We also measured the elder's degree of *resiliency* using a modified version of the Connor-Davidson Resilience Scale. Resiliency is a mediating factor and is significantly associated with all of the above measures except for communication. To that end, in the repeated measures analyses, we treated resiliency as a covariate and thereby controlled for its influence on study outcomes statistically.

For Green House homes in the intervention group, the survey also collected information relative to:

- (1) the frequency of participating in IN2L activities;
- (2) types and frequency of IN2L activities elders participate in; and,
- (3) impact of IN2L activity participation on interactions, time in daily home activities, and relationships among elders, staff, and families.

Findings of Key Measures

Activity Level

Elders in IN2L homes were significantly more active 9-months post-IN2L implementation compared to their pre-IN2L activity level ($F=3.844$, $p=0.026$). Further multivariate analysis between IN2L and control groups revealed that the trend of increased activity in the IN2L group was significantly different from the trend of decreased activity in the control group, supporting the contention that improved activity level resulted from IN2L participation ($F=3.297$, $p=0.048$).

Energy Level

Elders in IN2L homes had significantly greater energy levels 9-months post-IN2L implementation compared to their pre-IN2L energy levels ($F=6.451$, $p=0.003$).

Further multivariate analysis between IN2L and control groups revealed that the trend of increased energy in the IN2L group was significantly different from the trend of decreased energy in the control group, supporting the contention that improved energy resulted from IN2L participation ($F=6.525$, $p=0.004$).



Activity Engagement

Activity Engagement refers to participation in areas such as reading, spiritual activities, helping activities, listening to music, or family activities. Elders in IN2L homes had significantly greater activity engagement levels 9-months post-IN2L implementation compared to their pre-IN2L energy levels ($F=14.790$, $p=0.001$). Further multivariate analysis between IN2L and control group homes revealed the trend of greater activity engagement in the IN2L group was significantly different from the trend of lesser activity engagement in the control group, supporting the contention that improved social engagement resulted from IN2L participation ($F=17.417$, $p=0.001$).

Social Engagement

Social engagement refers to participation in social or community activities including group interactions, structured group events, and involvement in community life. Levels of social engagement by elders in IN2L homes were significantly higher 9-months post-IN2L implementation compared to their pre-IN2L levels ($F=8.759$, $p=0.001$). Further multivariate analysis between IN2L and control group homes revealed that the trend of greater social engagement in the IN2L group was significantly different from the trend of lesser social engagement in the control group, supporting the contention that improved social engagement resulted from IN2L participation ($F=9.524$, $p=0.001$).

Depression

Elders in IN2L homes were significantly less depressed 9-months post-IN2L implementation compared to their pre-IN2L depression levels ($F=4.669$, $p=0.013$) (scoring is reversed so higher score = lower depression level). Further multivariate analysis between IN2L and control groups revealed that the trend of decreasing depression levels in the IN2L group was significantly different from the control group (no change over time), supporting the contention that decreased depression resulted from IN2L participation ($F=3.718$, $p=0.035$).

Self-Efficacy

Elders in IN2L homes had significantly greater self-efficacy 9-months post-IN2L implementation compared to their pre-IN2L self-efficacy ($F=10.104$, $p=0.001$). Further multivariate analysis between IN2L and control groups revealed that the trend of increasing self-efficacy in the IN2L group was significantly different from the trend of decreasing self-efficacy in the control group, supporting the contention that improved self-efficacy resulted from IN2L participation ($F=9.436$, $p=0.001$).

Quality of Life

Elders in IN2L homes experienced significantly greater quality of life 9-months post-IN2L implementation compared to their pre-IN2L quality of life levels ($F=4.326$,



$p=0.017$).

Communication

Although not achieving statistical significance, elders in IN2L homes experienced less difficulty with communication 9-months post-IN2L implementation compared to their pre-IN2L communication abilities ($F=2.437$, $p>0.05$) (scoring is reversed so higher score = less difficulty with communication). Elders in IN2L homes were assessed as being less active prior to IN2L implementation compared to elders in control group homes but this difference was not statistically significant ($t=1.223$, $p>0.05$).

Cognition

Cognition functioning levels were significantly higher for elders in IN2L homes 9-months post-IN2L implementation compared to their pre-IN2L cognitive levels ($F=4.822$, $p=0.011$). Further multivariate analysis between IN2L and control groups revealed that the trend of increasing cognitive levels in the IN2L group was significantly different from the trend of decreasing cognitive levels in the control group, supporting the contention that improved cognitive functioning resulted from IN2L participation ($F=6.642$, $p=0.004$).

Emotional Status

Elders in IN2L homes experienced significantly more positive emotions 9-months post-IN2L implementation compared to their pre-IN2L emotional levels ($F=18.423$, $p=0.001$). Further multivariate analysis between IN2L and control groups revealed that the trend of more positive emotional levels in the IN2L group was significantly different from the control group trend, supporting the contention that increased positive emotions resulted from IN2L participation ($F=16.154$, $p=0.001$).

Joy Level

Although not achieving statistical significance, elders in IN2L homes experienced somewhat more feelings of joy 9-months post-IN2L implementation compared to their pre-IN2L levels ($F=0.240$, $p>0.05$). Elders in IN2L homes were assessed as having less feelings of joy at baseline compared to elders in control group homes but this difference was not statistically significant ($t=0.430$, $p>0.05$).

General Health

Elders in IN2L homes had significantly better general health 9-months post-IN2L implementation compared to their pre-IN2L general health status ($F=4.788$, $p=0.011$). Further multivariate analysis between IN2L and control groups revealed that the trend of increased general health in the IN2L group was different from the trend of decreased general health in the control group, although differences did not achieve statistical significance ($F=3.235$, $p>0.05$).



Mobility

There were no statistically significant changes in mobility levels over time for elders in IN2L homes ($F=0.382$, $p>0.05$) or for elders in control homes ($F=1.459$, $p>0.05$) over time. Elders in IN2L homes were assessed as having poorer mobility levels at baseline compared to elders in control group homes but this difference was not statistically significant ($t=1.309$, $p>0.05$).

Summary of Changes in IN2L Groups Over Time

The greatest percent increase from baseline to 9-month post-IN2L scores were in the following measures: energy level (37% increase); general health (30% increase); self-efficacy (26% increase); and, social engagement (23% increase).

Frequency of Participation in IN2L Activities

Frequency of participation in IN2L activities was examined at 3- and 9-months post-IN2L implementation. At 3-months post-IN2L implementation, 48.6% of elders participated at least once a week in IN2L activities, 21.6% participated 2-3 times per month, and 29.7% participated once a month or less frequently. Although not statistically significant, the percentage of elders participating in IN2L activities at 9-months post-IN2L implementation increased to 61.5%. At 9-months post-IN2L implementation, 19.2% of elders participated 2-3 times per month, and 19.2% participated once a month or less frequently.

Participation in IN2L Activities by Usage Category

Types of IN2L activities were grouped into usage categories (communication, learning, hobbies, physical exercise, mind exercise, and entertainment). There was a significant increase in the percent of usage at 9-months post-IN2L implementation for entertainment activities ($F=4.799$, $p=0.032$). Although not statistically significant, there were increases in the percent of elders participating in mind exercises, hobbies, and learning. There were slight decreases in the percent of elders participating in physical exercises and communication activities.

Participation in IN2L Activities by Type of Activity

Overall, TV games, jukebox, and email were the most popular types of IN2L activities. There were statistically significant increases in participation in TV games and jukebox comparing 3-month and 9-month post-IN2L implementation. There was a slight decrease in the use of email during that period. Although not statistically significant, there was greater participation by elders in the use of IN2L to enjoy videos, read the daily news, and play board games and puzzles.

Resilience as a Component of Successful Adjustment in Later Life

Resilience has been described as being “able to recover from or adjust to



misfortune or change.” In later life, resilience is thought to be an important component of successful psychosocial adjustment and is associated with mental health status. Examining resilience as a “personality” resource has been limited as most researchers have studied resilience as a response to a stressful life event. As a personality trait, resilient individuals have been described as possessing self-confidence, curiosity, problem-solving skills, self-esteem, control over their environment, and self-efficacy. In turn, interventions that aim to build one’s self-confidence, self-efficacy, and intellectual capabilities may have a “boosting” effect to build resilience and therefore improve coping skills.

Significant differences were found between elders who were classified as having “low resilience” versus “high resilience.” There were no significant differences at baseline between elders in IN2L and control group homes, so data from all elders were combined for these analyses.

Regarding overall health, 42% of elders classified as having “high resilience” were in “very good or excellent” health compared to 13% of elders classified as having “low resilience” were in “fair or poor” health.

Similarly, a significantly greater percent of “high resilient” elders were more active (58%) compared to 64% of “low resilient” elders who were less active.

Regarding energy level, 72% of elders classified as having “high resilience” were at high or moderate energy levels compared to 64% of elders classified as having “low resilience” were at low energy levels.

Similarly, a significantly greater percent of “high resilient” elders were able to independently make choices about daily activities (77%) compared to 79% of “low resilient” elders who had at least some difficulty making choices.

Resiliency is a mediating factor and is significantly associated with all of the measures of interest except for communication. To that end, in the repeated measures analyses (pages 11-17), we treated resiliency as a covariate and thereby controlled for its influence on study outcomes statistically.



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