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## Exercise Behavior in Older Adults: Processes of Change

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EXERCISE BEHAVIOR IN OLDER ADULTS:

PROCESSES OF CHANGE

BY

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## ABSTRACT

Despite the significant health and quality of life benefits of exercise, more than 40% of the older adult population in America do not participate in any dedicated physical activity. As the number of older adults grows, it becomes increasingly important to meet the public health challenge to help seniors adopt and maintain exercise behavior in order to enhance the overall well-being of this population. The purpose of this study is to qualitatively explore the applicability of the Transtheoretical Model of Behavior Change with respect to exercise adoption and maintenance among older adults and to identify the processes of change used by this population. Six focus groups, three “exercising” and three “non-exercising” groups of sixty-six older adults, were conducted at various senior centers, apartment complexes, and athletic facilities throughout Rhode Island. The majority of participants (n=57) were female and 65 or older. Qualitative analysis confirmed the use of 7 out of the 10 processes proposed in the Transtheoretical Model and the predominant use of experiential processes (consciousness raising, dramatic relief, self-reevaluation, and social liberation) and helping relationships by those in the action and maintenance stages. Particularly salient was a physician’s recommendation to exercise following the diagnosis of a major personal health problem. Results indicate that use of behavior change processes employed by this population may not mirror those theorized. Implications from these focus group data can be useful in the development of exercise interventions for older adults in all stages of exercise behavior. Based on the results of this study, it appears that timing and increasing the frequency of physician recommendations and increasing the availability and accessibility of group exercise programs could increase exercise participation among older adults.

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## PREFACE

I was fortunate to be involved in the preliminary stages of the SENIOR Project in the summer of 1999 when I helped develop and facilitate the focus groups upon which this research is based. This engagement was a source of motivation for the present thesis. It was prepared using the standard format.

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## INTRODUCTION

There is little debate that regular physical activity is an essential component of preventative health for all populations, including older adults. The health benefits of physical activity have been extensively documented (U.S. Dept of Health and Human Services, 1996). Studies repeatedly show that many of the diseases and disabling conditions associated with aging can be prevented, postponed, or ameliorated with regular physical activity. For older adults, regular exercise provides a general reduction in the risk of premature mortality and improves cardiopulmonary function, lowers blood pressure, and increases bone mineral content, muscle strength, joint flexibility, and physical energy (Elward & Larson, 1992). In terms of quality of life, research has indicated that strength training and other forms of exercise in older adults improve functional capacity (Sorock et al., 1986), increase self-efficacy and other subjective assessments (Blumenthal & Emery, 1990), reduce the risk of falling, and preserve the ability to maintain independent living status (U.S. Dept. of Health and Human Services, 1996).

Although these significant health and quality of life benefits of exercise are well known, the rate of exercise participation among adults 65 and older is among the lowest of all age groups; over 40% do not participate in any dedicated physical activity, and less than 10% participate in vigorous activity. It is estimated that by the age of 75, one in three men and one in two women will not be physically active at all (U.S. Dept. of Health and Human Services, 1996). Also, of those who begin an exercise program, more than 50% typically drop out within the first three to six months (Dishman & Buckworth, 1997).

It is clear that the challenge has moved from understanding the value of exercise to improving public health. Critical questions remain as to how to help older adults adopt and maintain regular physical activity. Despite the promising application of modern behavior change theories such as the Transtheoretical Model of Behavior Change (TTM) to describe and promote healthier lifestyles (Prochaska & Velicer, 1997), there is still much unknown about the processes of change older adults employ to change the level and frequency of their physical activity.

This study increases understanding of these processes of change through the implementation of focus groups based on the TTM. The results contribute to a greater understanding of how older people change their behavior, thus enabling the development of effective interventions that help the aging adopt and maintain a level of physical activity that is vital to physical and emotional well-being.

## REVIEW OF LITERATURE

### *Review of the Transtheoretical Model of Behavior Change*

Extant research regarding the commencement or maintenance of exercise behavior among the elderly is new and relatively limited. Recent attempts to describe and improve long-term maintenance of exercise behavior of older adults have been based primarily on the model of the stages and processes of change, the Transtheoretical Model of Behavior Change (TTM) (Marcus, Eaton, Rossi, Harlow, 1994; Marcus & Owen, 1992; Nigg & Courneya, 1998; Sonstroem, 1988; Sonstroem & Amaral, 1986), which is currently the most popular and validated of the multistage models.

This model suggests that people adopt a positive behavior by progressing through a series of stages of change with corresponding processes of change (Table 2). The stages of change are *precontemplation* (not intending to make a change), *contemplation* (considering a change), *preparation* (intending to change in the near future), *action* (actively engaging in behavior change), and *maintenance* (sustaining the change over time). The model also suggests that movement through the stages is spiral rather than linear.

The processes of change, which are the concern of this research, are the covert and overt strategies and techniques people use as they progress through these different stages of change (Prochaska & DiClemente, 1983). Based on psychiatric and smoking cessation research, the TTM suggests ten independent processes organized into two hierarchical factors (Table 1). Experiential factors – comprised of consciousness raising, dramatic relief, environmental reevaluation, self re-evaluation and social liberation – concern information that is generated by one's own actions or experiences. Behavioral factors – comprised of counter conditioning, helping

relationships, reinforcement management, self-liberation, and stimulus control – concern information that is generated by environmental events.

The model suggests that the use of processes depends strongly on the individual's stage of change (Prochaska & DiClemente, 1983). Experiential processes are much more important than behavioral processes for understanding and predicting progress in the early stages of change. Behavioral processes are much more important for understanding and predicting transitions from preparation to action and from action to maintenance (Prochaska & DiClemente, 1983).

These basic processes of change have been identified in theoretical and empirical analyses of leading therapy systems (Prochaska & DiClemente, 1984) as well as in retrospective, cross-sectional, and longitudinal studies of self-changers across such diverse problem areas as psychic distress, smoking, and weight control (Prochaska & DiClemente, 1985).

In addition to the processes of change, important variables such as self-efficacy (an individual's degree of confidence that they can abstain from engaging in a problem behavior or engage in a healthy behavior) and decisional balance (the costs and benefits of specific behaviors) are integrated with the stages of change.

#### *Application of the TTM to the Exercise Domain*

As mentioned, the TTM was developed for and has been shown to be a promising approach to treating unhealthy addictions and other negative health behaviors. Research regarding the application of the model to describe or initiate positive behaviors such as exercise is relatively new.

Several recent studies lend credence to the model with respect to exercise behavior. The model and its components have successfully described exercise behavior among adolescents (Nigg & Courneya, 1998), males over the age of thirty (Sonstroem, 1988; Sonstroem & Amaral, 1986), U.S. and Australian adults (Marcus & Owen, 1992), and working adults (Marcus, Rossi, Selby, Niaura, and Abrams, 1992).

Of particular interest is Marcus' (Marcus et al., 1992) research which examined the applicability of the TTM to exercise in an attempt to understand whether common processes are involved in starting a positive behavior versus stopping an unhealthy behavior through studies of worksite participants. Marcus and colleagues administered stages and processes of change questionnaires (PCQ) adapted from Prochaska and colleagues' work to a sample of 1,172 participants in a work-site health promotion project. The PCQ consisted of 39 items that formed 10 subscales measuring 10 processes of change. The questionnaire asked participants to respond on a 5-point Likert scale (1=never, 5 =repeatedly) to the statement "The following experiences can affect the exercise habits of some people. Think of any similar experiences you may be currently having or have had during the past month. Then rate how frequently it occurs." Their research confirmed the use of all ten processes of change.

However, although there were many similarities between their findings and those for smoking cessation, important differences in the use of processes were found. In smoking cessation, the use of experiential processes peaks in preparation and declines in action and maintenance, whereas Marcus and colleagues found that in exercise adoption use of experiential processes peaks in action. Additionally, unlike in smoking

cessation, the use of behavior processes with regard to exercise behavior did not decline from action to maintenance.

### *Application of the TTM to Exercise among Older Adults*

Research regarding the examination of the Transtheoretical Model with regard to exercise behavior in older adults is limited. What exists suggests that the model has value with respect to this domain and population.

Barke' and Nicholas (1990) measured the stages of change in a group of 59 older adults aged 59 to 80 and compared the stages between an active and inactive subgroup as a means of validating stages of behavior change. They found that action and maintenance subscale scores were significantly higher than those of precontemplation, indicating that a large number of older adults are not sedentary. Analyses between groups revealed that exercise and elderhostel groups scored significantly higher on action and maintenance subscales than retirees, demonstrating that the stages of change scale does effectively distinguish groups of older adults who differ in level of physical activity.

Lee (1993) also examined the stages of change construct through a telephone survey of 286 older Australian women aged 50-64. The survey revealed moderate to low levels of activity among the study group. Participants in the action stage were differentiated from those in precontemplation by exercise knowledge, perceived family support, and perceived psychological benefits of exercise. Perceived barriers distinguished those in contemplation and action groups.

Courneya (1995) studied 270 older adults with a mean age of 71.3 and found evidence of constructs from other theories alongside the stage of change framework.

The study, which utilized a written survey, supported the staging of behavior change but found that perceived severity from the Health Belief model and Protection Motivation Theory discriminated precontemplation from all other stages and discriminated preparation from action and maintenance.

#### *Examination of Processes of Exercise Behavior Change in Older Adults*

Two recent studies have applied the Transtheoretical model to specifically understand the processes of change used by older adults with respect to exercise adherence. These studies have used the Process of Change Questionnaire (PCQ) developed for smoking (Prochaska et al., 1988).

In Hellman's (1997) study of adults aged 65 and older discharged from inpatient cardiac rehabilitation settings within the past 18 months, the author interviewed between 55 and 80 participants in each of the five stages of exercise adherence. Respondents were interviewed using the following measures: stage of exercise adherence, modified 7-day activity interview, perceived health status, exercise benefits/barriers scales, prior related exercise behavior, self-efficacy for exercise questionnaire, interpersonal support for exercise, and processes of change in exercise scale.

The research supported the theoretical ordering of stages in that there was a significant increase in exercise time from precontemplation to maintenance. Perceived self-efficacy, perceived benefits of exercise, and perceived barriers to exercise, along with interpersonal support for exercise, were significant predictors of exercise. These predictors together accounted for 50% of the variance in exercise adherence among older adults who experienced a recent cardiac event. As predicted, experiential processes of change (consciousness raising, dramatic relief, environmental

reevaluation, and self-reevaluation) contributed to the differentiation between precontemplation and contemplation stages. However, older adults did not make use of behavioral processes to change exercise behavior. Most notable was the importance of interpersonal support, which was a significant predictor of exercise behavior in this population. Interpersonal support was defined in this study as the perceived strength of the physician's recommendation to exercise.

In a study of the exercise behavior of 583 Australian adults ages 50-65, Gorely and Gordon (1995) used the PCQ to assess processes of change in an effort to examine the relationship between stage of change and the constructs of processes of change, self-efficacy, and decisional balance. It was found that only five out of the ten processes of change emerged as significant: self-reevaluation, consciousness raising, counterconditioning, self-liberation, and stimulus control. The authors speculate that the absence of two experiential processes – environmental reevaluation and social liberation – may indicate that older adults do not perceive inactivity as having a social cost or being a problem lifestyle. Consistent with other findings, those in the precontemplation group used each process of change significantly less than did individuals in all other stages. The irrelevancy of five of the processes was clear even while the research was underway, with comments by some participants indicating that some items, particularly the PCQ items, were difficult to interpret or were perceived as meaningless.

### *Limitations of Current Research*

It is clear from this summary of existing literature that the use and timing of the processes of exercise behavior change among older adults may not parallel those used by other populations and in other domains and that further investigation is required.

Among other issues limiting the existing literature has been the assumption that older adults use the same ten processes as other populations and with regard to other behaviors. Exercise researchers have looked to validate theoretical processes used by older adults through the use of the PCQ questionnaire that requires participants to discriminate among the ten processes of change. This questionnaire requires participants to choose among a pre-existing list of items originally designed to examine smoking behavior which has been adapted and revised for exercise. This cautious approach has neglected the possibility of relevant features or processes unique to this domain and population.

Rather than asking subjects to identify or rank existing response choices whether or not they understand the question or whether the available response choices are appropriate, qualitative research in the form of focus groups offers the opportunity to pose broad, open-ended questions to arrive at larger themes using the language of the target population. Focus group research allows participants to answer questions in the manner that makes sense for them and allows interaction among participants that can lead to a richer, more complex understanding of the target population rather than relying on surveys that reduce reality to numbers and subjective scales (Krueger, 1998). Focus group research is also particularly useful for understanding the “how” as opposed to just the “what” or the “how many” (Miles & Huberman, 1994). As a result, focus group research can help to generate or revise conceptual frameworks by

offering a more complete understanding of a topic free of *a priori* assumptions. In this sense, it is the best method for obtaining a native understanding of the processes engaged by older adults who have changed their exercise behavior and promises to be a unique approach to uncovering gaps in real versus theorized processes.

## METHODS

### *Background*

This research is a component of a study of stage-based health promotion among older adults supported by the National Institute on Aging (NIA) Grant 1 RO1 AG16588. The Study of Exercise and Nutrition in Older Rhode Islanders (SENIOR) Project will identify whether a two-behavior intervention based on the TTM is more effective than two independent interventions in improving nutrition and exercise behaviors in community-dwelling older adults. The secondary goals of this project are to assess the overall health effects of the TTM intervention on the two behaviors and to understand how older adults change their health behaviors. A total of twelve focus groups were conducted in order to develop items for questionnaires and intervention materials. Six of these focus groups concerned the physical activity and exercise behavior of older adults.

### *Participants*

Adults over the age of 65 were recruited from senior high rise apartments and senior centers located in urban and suburban sites in the predominately working class state of Rhode Island. Sites were carefully selected demographically to assure similarity to the East Providence population targeted for the SENIOR Project since the focus groups were designed to inform this intervention.

Administrative permission was obtained before recruitment notices were posted in these locations. Flyers were posted that briefly described the purpose of the focus groups and the approximate time commitment required (90 minutes) and offered participants a \$10 gift certificate to a local supermarket.

### *Focus Group Training*

To prepare focus group leaders, researchers and research assistants in the fields of nursing, human development, exercise science, psychology, and social services attended an intensive three-day focus group workshop conducted by a qualified psychologist and qualitative researcher. Instruction was given along with the opportunity to practice skills such as focus group planning, the development of an introduction, and focus group leadership. After a detailed review of the TTM, the group also worked on the development of 6-8 research questions reflecting core theoretical constructs such as processes of change, decisional balance, and self-efficacy. The questions that were formulated for each group (Appendix I) were used in the role-playing sessions and later piloted with a group of six older adults to assure comprehension and relevance. After pilot testing, minor linguistic changes were made to the proposed questions.

### *Focus Group Process*

Meetings of researchers and focus group attendees took place at senior centers and housing sites throughout the state. After obtaining informed consent, the researchers asked participants to complete a brief questionnaire that included basic demographic questions as well as a yes/no screening question regarding self-reported physical activity (“Do you exercise a minimum of three times per week for at least 20 minutes? Examples of exercise include brisk walking, swimming, water aerobics, biking, or exercise class.”). This description of exercise was based on the minimum requirements for physical exercise recommended by the American College of Sports Medicine (1990).

The purpose of the screener was to separate exercisers and non exercisers rather than to identify subjects' stage of change; recruitment of staged groups was not possible given limited time and resources. However, it was predicted that multi-staged groups would provide the information necessary and perhaps even provide a richer data set given the interaction between people in various stages. Individuals in the "exercisers" group were theoretically in the action and maintenance stages; the "non-exercisers" group was composed of individuals in the precontemplation, contemplation, and preparation stages. The groups consisted of between 6 and 12 older adults.

No target for the number of groups was established. Rather, exercising and non-exercising groups were held until no new themes emerged, resulting in three focus groups of each type.

The focus groups were led by a trained moderator and assistant moderator. The moderator served as the discussion leader and was responsible for introducing questions, facilitating discussion, and keeping on task. The assistant moderator helped facilitate discussion and also observed and took note of non-verbal communication and group dynamics.

Following a brief introduction, the moderator began with a defined sequence of questions delivered at a pace that allowed for maximum insight, allowing participants to become familiar with the topic and collect their thoughts. As recommended by Krueger (1998), the initial questions and request to introduce oneself and share favorite activities "broke the ice" and introduced the main topic for discussion. Subsequent questions addressed central issues such as intent, motivation, strategies, and temptations. The exercising and non-exercising groups were asked slightly

different questions aimed at identifying their current, or in the case of the exercisers, their current and past exercise behavior (Appendix I).

At the conclusion of the group, the moderator and assistant moderator briefly shared a summary of the discussion results with the group and asked for their evaluation and feedback.

Data were captured in two ways. A recorder took notes on a laptop computer during the group discussion at the same time that the group was recorded on audiotape.

Refreshments were served during and after the group session and participants were informed at the close of the session that the \$10 gift certificate would be mailed to them.

### *Data Analysis*

Immediately following the completion of every focus group, the moderator and assistant moderator debriefed and reviewed the recorded data for accuracy, completeness, and clarification. Participants' comments were discussed as well as any unexpected discussion that surfaced. Affect, body language, reactions, and detachment of participants were noted. Logistical or methodological liabilities were noted and group dynamics were briefly analyzed. The focus group process was evaluated for overall success and comments were made about ways to improve the methodology.

After the completion of all focus groups, data were transcribed verbatim from tape to computer using conventional word processing software. Different fonts were assigned to the six focus groups so that after identifying and categorizing processes,

comments could be identified by group. Transcripts were then sorted into exercising and non-exercising groups and photocopied onto two different colored papers so that this differentiation would also be apparent after categorization of the processes.

The transcripts were then carefully reviewed, and responses were categorized by process indicated, regardless of whether this information was offered by participants in response to a specific question or as part of the general discussion. Comments were cut and pasted onto sheets representing each of the ten processes. If a comment indicated more than one process, it was placed in both corresponding process categories. A sheet was also dedicated to processes indicated by participants that did not fall into these ten existing categories. This sheet was then further separated into distinct themes. Recategorization took place several times as the information took shape until themes were fully clarified and distinguished.

To determine the reliability of data, categorization of items was then reviewed by a doctoral level researcher with substantial knowledge of the TTM and exercise behavior. Discrepancies were reviewed and discussed until a consensus was reached.

Data were then categorized and displayed into an organized, compressed assembly of information that promotes conclusion drawing and action (Miles & Huberman, 1994). Matrices were assembled for exercisers and non-exercisers, listing categories of items as well as sample quotes and frequencies (Table 3). Frequency of processes used was also charted with respect to group (Table 4 and 5) and stage of change (Table 6).

Analysis of the focus group data was guided by the central question posed in this research plan. Gaps between theoretical processes and actual processes used by older adults were identified as well as consistencies and discrepancies regarding the timing of

the use of these processes through the comparison of processes identified by exercisers and non-exercisers.

## RESULTS

### *Sample Description*

As a result of recruitment efforts, three exercise and three non-exercise groups were conducted. A total of sixty-six subjects over the age of 65 participated, 37 in the exercise focus groups and 29 in the non-exercise groups. The groups ranged in size from six to twelve individuals and the majority of participants (n=57) were female. All participants were Caucasian and “young-old,” between the ages of 65 and 75.

Although little demographic information was collected, it can be assumed based on the venues chosen – senior centers and housing sites – that the participants were likely working and middle class.

As mentioned earlier, distinction between the groups was based on self-report, a yes or no response to the question of whether participants regularly exercised at least three times a week for twenty minutes or more. Examples of exercise were given along with the screening question. However, despite the attempt to discriminate between those in pre-action and those in action, three of the groups appeared to be diluted by the apparent presence of exercisers in the non-exercising groups and vice versa. Of the 26 participants who answered “no” when asked if they exercised a minimum of three times per week for at least 20 minutes, it seemed from the focus group comments of nine of these participants that they actually *did* meet the proposed requirements for exercise. Although this group then could more accurately be called the “*self-defined* non-exercise,” for the sake of convention and ease for the reader, it will be called the “non-exercise” group in this study.

Similarly, based on the responses of the 37 participants who defined themselves as “exercisers,” four did appear to meet the requirements proposed. Again, this group

will be called the “exercise focus group” based on self report/self-selection. Possible reasons for the apparent misclassification of participants are reviewed in the discussion section of this study.

Despite the slightly hybrid nature of the groups – especially the non-exercising groups – this study presents valuable data with regard to the processes of change used by older adults with respect to exercise behavior. Those who self classified as non-exercisers despite their exercise behavior made relevant comments about their motivation to change and the tools they used to implement and sustain this change. Likewise, non-exercisers made useful comments that shed light on older adults’ experience with physical activity. In both cases, the identification of change processes by these misclassified participants were counted within their respective groups. Although possibly slightly affecting an understanding of the stage at which processes are used, this lack of precise classification did not affect participants’ willingness nor ability to identify the processes they used.

It was also clear that both types of groups were heterogeneous with respect to past exercise behavior. Non-exercising groups included those who had exercised at some point in their lives and those who had not; participants in exercise groups included those who had exercised their entire lives and those who had begun exercising as adults, or even more recently, as older adults.

#### *Focus Group Process*

In general, study participants were open and eager to discuss their exercise behavior. In fact, one consistent challenge encountered by group leaders was the need to keep participants from interrupting one another. It was not uncommon to find

more than one person talking at a time particularly as the group progressed, making later transcription a bit challenging at times.

The questions posed seemed readily understood and although discussion wandered off topic at times, moderators were consistently able to gently shepherd the discussion and bring participants back to task. Warm laughter and good humor were present in all groups, indicating a level of comfort that likely led to relative candor. It seemed possible that group dynamics may have been influenced by social desirability given that in several of the groups there were more comments indicating agreement or expansion of one concept rather than the introduction of alternative ideas that were present in other groups.

#### *Discovery of Processes of Change*

The main objective of this study was to examine the processes of change used by older adults with respect to the adoption and maintenance of exercise behavior. Based on the TTM, the assumption was that exercisers were more likely to report a higher use and greater number of processes of change since they were asked to discuss not only what helped them to begin to exercise but also what keeps them exercising. That is, the questions posed to exercise groups, whose participants had proceeded through a greater number of stages, aimed to identify processes of change used in the past *and* those presently used:

- *Think back to when you first started to exercise. When was that and what got you started?*
- *What helps you to keep exercising?*
- *If we were to develop a program, what would make people like yourself exercise?*

The types of physical activity reported by these focus group members were walking, swimming, housework, and exercise class. As mentioned earlier, it seemed

that many participants had been accustomed to being active their entire lives while others consciously initiated an exercise program in older age.

Focus groups of non-exercisers were asked a different set of questions. Those aimed toward the discovery of processes were likely to uncover “contingency” processes – i.e., what *would* work – also of value to the central research question:

- *How do you think exercise might help you?*
- *What would it take for you to begin to exercise?*
- *If we were to develop a program, what would make people like yourself exercise?*

Although information regarding the use or potential use of processes of change was gleaned primarily from responses to these targeted questions, subjects in all six groups also offered valuable information regarding processes in response to other questions or as part of the general discussion. Sample comments and frequencies were gathered in the matrices that inform this discussion (Table 3).

#### *Processes Used by Exercisers*

Focus group data indicate that exercisers (those who self-reported exercising at least three times a week for twenty minutes) only employed seven of the ten processes theorized: consciousness raising, dramatic relief, self re-evaluation, social liberation, helping relationships, reinforcement management, and self liberation. The experiential processes (consciousness raising, dramatic relief, self re-evaluation, and social liberation) were used with considerably greater frequency than the behavioral processes. What follows is a description of each process identified by the exercising groups in descending order of frequency.

### Consciousness Raising

The most common process used by participants in the exercising groups was consciousness raising (17 out of 37 or 46%), which has been defined as an increased awareness about the causes, consequences, and cures for a particular problem behavior (Prochaska & Velicer, 1997). For most participants, this information was delivered by the health care professional. Comments such as “The doctor told me I’ve got to get out and exercise and that’s when I first started to walk,” suggest the remarkable esteem and authority afforded to physicians by study participants.

A doctor’s recommendation was particularly motivating when coupled with a diagnosis, as in the following comment which typifies those made by several exercisers interviewed: “When I found out my cholesterol was high I was told to exercise and that’s when I started exercising.” Of the seventeen people who mentioned doctors’ recommendations to exercise as a catalyst for action, thirteen or 76% of participants indicated that this recommendation was made as a result of the discovery of an injury or chronic illness.

Two participants indicated that health care providers also increased awareness leading to behavior change by sanctioning exercise behavior: “I was always afraid (to exercise) because I have a heart condition. I didn’t know how far I could go. But I’ve been to a heart specialist and he said that there’s no limit.” As indicated in the literature, fear is often a barrier to exercise for older adults (Hill, Schwarz, Kalogeropolous, & Gibson, 1996). It seems clear that obtaining professional approval before exercising is a way to help seniors who legitimately need this approval as well as those who just need reassurance to overcome unnecessary anxiety.

It also seemed clear from participants' comments that doctors were not only instrumental in helping them initiate exercise through general or specific recommendation at a teachable moment, but they also seemed important in motivating subjects to maintain exercise behavior through encouragement and professional validation: "The doctor checked me at the end of the program and told me it was beneficial." Again, it is clear from the data that older adults look to their physicians for authoritative information or advice that carries substantive influence.

As opposed to receiving information in dialogue with a physician, one exercising participant actively sought to gain understanding about exercise independently: "I think that if you have a health issue, which probably some of us do here, then you become focused enough to find out about exercise in an instructive fashion." Again, it is clear that this participant was motivated to seek information due to ill health, another example of the potent combination of the processes of consciousness raising and dramatic relief for these exercisers.

### Dramatic Relief

Indeed, dramatic relief in the form of a provoking health problem was the second most common process utilized by participants in the exercising groups. Fifteen out of 37 exercisers indicated that health problems such as high cholesterol, weight gain, heart problems and injuries provided alarming emotional experiences that prompted the initiation of exercise.

As mentioned earlier, identification of a health problem was most often coupled with consciousness raising in a one-on-one discussion with a health care provider regarding the subjects' personal situation. Many subjects had stories to tell about the

diagnosis of personal health problems that, coupled with one on one advice and/or instruction from health professionals, prompted them to move into the action stage with regard to their physical activity.

### Helping Relationships

Exercising subjects also utilized the support of caring others, particularly in the maintenance stage. Fourteen participants indicated that it was easier to exercise as part of a group, that it was difficult to find the willpower without peer/group support: "It's easy when you've got somebody (to exercise with). It's hard to do it by yourself." Comments such as these were substantially more prevalent in Group 1 which was composed of residents at an assisted living facility that hosted an aerobics class on-site.

These subjects also pointed to the value of an inspiring leader as a valuable helping relationship. Three participants expressed affection for the aerobics instructor on site, a warm and enthusiastic leader who provided motivation through caring instruction.

Two exercisers indicated that "having a buddy" kept them on track. Whether they were part of the in-house exercise class or not, these subjects suggested that it was helpful to have the accountability and shared experience offered by a regular exercise partner.

### Self Re-Evaluation

Eleven exercising participants also used self evaluation, defined as both cognitive and affective assessments of self-image and the appraisal of personal values, to change their problem behavior. In some instances, the desire to feel good about oneself and to improve one's self image directly prompted participants to initiate exercise behavior: "I think (what got me started) was looking into the mirror and saying,

“That’s not me!” In addition to personal appearance (mostly focused on weight), subjects talked about the decision to adopt or maintain exercise in order to feel “self-satisfaction,” “personal worth,” and “independence.”

Subjects were also prompted to adopt or maintain exercise in order to alleviate guilt through conformance with personal values: “I don’t feel guilty when I’ve done it,” “You feel like you’ve done something.” Most often, focus group participants seemed to value taking charge of their health, staying active, and being independent – and they exercised in order to feel good about themselves by behaving in conformance with these values.

### Social Liberation

According to the Transtheoretical Model, behavior change is encouraged by an increase in alternatives to problem behaviors available in society. Nine exercising participants indicated that the availability of an exercise class in their residential building or local gymnasium encouraged them to begin or maintain exercise behavior: “If this class wasn’t offered, it would be difficult to exercise.” In addition to availability, participants were also encouraged to exercise by several aspects of the available program, including the organized opportunity to exercise with others, and/or the fact that it was regularly scheduled.

One participant also indicated that she was moved to acceptance of an alternative lifestyle through observing a 92-year old woman in an exercise class. This type of role modeling can be a potent form of public support for people who want to change by providing an indication that society is changing and that others have successfully changed themselves (Prochaska & DiClemente, 1982).

### Self Liberation

Self-liberation was a process used only by participants in the exercising focus groups. Four participants articulated a belief that they could change and make the commitment to act on that belief. One subject who had been a heavy smoker described his strong resolution: "After I stopped (smoking) I decided I better start to pull my life together here...so I decided to do an aerobics class."

For many, this commitment was made easier by the availability and attendance at regularly scheduled exercise classes. For example, one woman talked about how she used to feel obligated to meet the demands of her grandchildren: "Now, with the commitment (to the class), I say, 'No, I can't do it.' Otherwise, I would just put it off and do what they want to do. I find that a structured program helps in that way. Kind of gets me away from that."

### Reinforcement Management

Only one subject commented about the use of behavioral consequences as reinforcement of exercise behavior. One woman was "rewarded" for exercising by her husband: "My husband enjoys it when I go because I just keep moving and doing things rather than sitting down." No participant discussed the use of arbitrary or self-crafted rewards such as food, shopping, or fun activities.

### *Processes Used by Participants in Non Exercising Groups*

As expected, participants in the non-exercising groups indicated less frequent use of fewer processes of change than exercisers (26 vs. 53). This is due in part to that fact that exercisers were asked to identify both current and past processes of change

and had passed through a maximum of five stages while non-exercisers had only transitioned through a maximum of three stages.

Non-exercising focus group participants indicated use of only five of the ten processes: consciousness raising, dramatic relief, self-reevaluation, social liberation, and helping relationships. Like exercisers, they made greater use of experiential processes than behavior processes. Exclusive use of these processes at these stages is congruent with the TTM, which postulates that people in the contemplation and preparation stages utilize experiential processes only.

It is important to note that while the data tabulated in the matrices reflected only participants' comments identifying processes actually utilized, it is also informative to examine the speculative, "contingency" comments made when they were asked, "What would it take for you to begin exercise?" and "If we were to develop a program, what would make people like yourself exercise?" Although these comments might have been projection and as such carried less credibility, they may also have been based on participants' experience given that several non-exercising participants indicated that they had exercised at one point in their lives.

What follows is a review of the processes indicated by this group in descending order of frequency.

### Consciousness Raising

Similar to exercising subjects, non-exercising participants were most likely to utilize this process among the other processes, increasing their information about themselves and the consequences and cures for their sedentary lifestyle in order to change their behavior. In fact, the percentage of participants in the non-exercising groups utilizing

this process was very similar to that of the exercising group (41% vs. 46%). Twelve out of the 29 exercising participants interviewed discussed the use of this process.

Once again, physicians were most likely the source of this consciousness raising information. Nine subjects mentioned their physician's recommendation to exercise. Like their exercising peers, they seemed to respect, understand, and agree with this advice. However, they were most often not following it because of several frequently mentioned barriers: lack of time, lack of availability of exercise opportunities, physical discomfort, and fear of injury.

One participant looked to their physician to sanction exercise much like several of the active subjects: "I talk to my doctor and he agrees with me. I talk about getting active." Although in this and other cases guidance from physicians wasn't followed, it was clear that participants in the non-active focus groups shared the same respect for physicians as the exercising subjects.

On the other hand, subjects in non-exercising focus groups were more likely than those in the exercising groups to be informed by sources other than physicians. One participant talked about seeing older women in water aerobics classes on television and was aware that "they say it is good for arthritis." Another subject talked about how the focus group itself raised her consciousness about exercising just as the fruit and vegetables focus group, a parallel group in the same SENIOR Project, raised her awareness about eating right. It is possible that non-exercisers are less likely to receive consciousness raising information from their physicians because they are not as likely to see their doctors with as much regularity or to have the same relationship or level of communication with their health care providers as exercisers. Whether or not this is the cause or whether this cause is related generally to their lack of health-related self

care, it seems non-exercisers are likely to gain exercise information from sources other than their physicians.

### Self Re-evaluation

Six out of 29 non-exercisers also assessed their self-image and their values with respect to their sedentary lifestyle as a way of promoting behavior change. As with the exercisers, the desire to exercise in order to improve self-image by losing weight was operative in the non-exercising groups. Likewise, several participants felt the guilt of betraying their values by being sedentary, although this appraisal of values was not always sufficient to prompt them to exercise: "I feel guilty if I'm sitting around the house all day. I just feel like I should be moving instead of doing nothing."

### Dramatic Relief

Health problems also created provocative emotional experiences related to a sedentary lifestyle for five subjects in non-exercising groups. These participants, who had started but not necessarily continued to exercise, talked about health problems such as high blood pressure, heart problems, and injuries that startled them like a wake-up call. Unlike exercisers, only one participant coupled a doctor's recommendation to exercise with their provoking health problem. As mentioned earlier, consciousness raising did not result in movement into the action stage unless it was coupled with a provoking health problem. It seemed that these two processes, although present, when independent were not as effective a change process. It is interesting to note that all five participants who mentioned dramatic relief were among those who indicated that they had started but discontinued to exercise.

One subject indicated that it was the realization that heart disease ran in his family rather than an immediate personal health problem that provoked him to accept his need to keep active.

### Helping Relationships

Subjects in non-exercising focus groups were considerably less likely to use helping relationships to change behavior than exercisers. Additionally, unlike the exercisers, non-exercisers relied more upon family for encouragement (3): “My daughter gets after me if I don’t (exercise). She says, ‘Did you walk? Why not?’” Having an exercise “buddy” who provides encouragement and safety was also mentioned (1). Unlike exercisers, none of the non-exercising focus group participants utilized ongoing peer or group support since few were regularly involved in organized exercise.

### Social Liberation

Three participants in pre-action were also influenced by the awareness of alternative, non-sedentary lifestyles in their world. Two participants talked about family members who acted as role models by exercising regularly: “My sister walks on the treadmill for an hour with the TV in front of her. She has diabetes so she does it everyday before breakfast.”

The availability of exercise opportunities was only mentioned as a process for change by one participant in the non-exercising focus groups. However, it is quite noteworthy that many participants in these groups mentioned availability of easy-to-reach programs as something that would likely prompt exercise behavior. In fact, eleven non-exercising subjects – even more than the number of exercisers using this

process - mentioned social liberation as a contingency process. Scheduled exercise groups, transportation, and the availability of an exercise buddy were mentioned by several participants when asked to identify what would provoke them to begin to exercise. In other words, contingent use of this process – an increase in opportunities to exercise – was the most common response to this question.

## DISCUSSION

As mentioned earlier, this study sought a more cautious but richer understanding of the processes used by older adults with regard to exercise behavior. Instead of using a modified questionnaire that presented a narrow selection of answers, this series of focus groups allowed this population to speak for themselves. As such this study stands as the first fundamental inquiry into processes used rather than just a validation of items postulated.

The data gathered in this study both offers support and raises questions about the applicability of the TTM with regard to this domain and population. The study suggests the use of several but not all processes of change by exercisers: consciousness raising, dramatic relief, self-reevaluation, social liberation, helping relationships, reinforcement management, and self-liberation. The data also confirm the use of a subset of change processes used by non-exercisers: consciousness raising, dramatic relief, self reevaluation, social liberation, and helping relationships. The data are congruent with prior research with older adults which suggests that older adults do not make significant use of all ten processes of change (Gorely & Gordon, 1995; Hellman, 1997), that the processes of change with respect to exercise behavior may not be utilized at the stage of change postulated (Marcus et al., 1992), and that constructs from other theories may be at work in this domain and population (Courneya, 1995b).

### *Processes Predominantly Utilized by Older Adults*

#### Consciousness Raising

This study supports existing literature indicating that older adults' exercise behavior is most strongly related to consciousness raising in the form of the personal

physician's recommendation to exercise. Both Hellman (1997) and Ades (1992) found that among older patients with coronary disease, the strength of the primary physician's recommendation was a powerful predictor of exercise. Since both exercisers and non-exercisers discussed this factor as influential in their attitude and exercise behavior, it is likely that consciousness raising is an important process throughout the behavior change continuum.

### Dramatic Relief

As mentioned earlier, the diagnosis of a significant health problem, when combined with a personal physician's recommendation to exercise, was a common experience prompting exercise behavior change in older adults. Consciousness raising appeared insufficient as a catalyst for action by itself; it was primarily those who were also diagnosed with a health problem that adopted the new behavior. Although several comments were made indicating pre-existing knowledge of the benefits of exercise for prevention and improvement in general health, it seems as though it was not until the consequences of a sedentary lifestyle were experienced personally that contemplation or motivation to change happened. The data suggest that although professional recommendation to exercise is likely to move subjects from precontemplation to contemplation or contemplation to preparation, without a concomitant diagnosis of a health problem it is unlikely to move subjects to action. The importance of this process, especially when combined with consciousness raising, speaks to the validity of the Health Belief Model (Rosenstock, Strecher & Becker, 1988), which postulates that health behavior change is related to the individual's perceived severity of risk for developing a health problem.

### Helping Relationships

Although most salient for exercisers, helping relationships of several kinds served both exercisers and non-exercisers. Most helpful were friends or peers with whom to exercise and to whom to be accountable. Groups and friends also provided participants with encouragement, motivation, and enjoyment.

The relative saliency of this process within this study – the value of helping relationships in the form of an exercise companion or an organized class – could reflect the desire for safety that is age-specific. As evidenced by comments made by participants, fear of falling or injury is a barrier to physical activity. Indeed the fear of falling has been shown to be one of the major causes of inactivity among older adults (Hill, Schwarz, Kalogeropoulos, & Gibson, 1996). Several subjects indicated that exercising with others helps mitigate this fear by eliminating the possibility of being left alone following a fall or injury.

Alternatively, the data could reflect the fact that the focus groups were composed primarily of women, who tend to value social relationships more than men (Gilligan, 1982) or the likelihood that voluntary participation in the study was more likely to draw participants who valued social experiences.

### Social Liberation

As mentioned earlier, the availability of suitable, accessible, and enjoyable exercise opportunities seems to be critical for both exercisers and non-exercisers. Exercising participants spoke of the availability of group exercise classes as being key to their behavior change. Conversely, non-exercisers spoke of the lack of available, accessible

opportunities as a barrier to exercising and frequently mentioned the availability of appropriate activities as a contingency process.

It may be that since exercise is not a normative activity for today's older adult, organized group opportunities may be of particular importance as a source of role modeling and reinforcement of the behavior. The importance of exercise opportunities may also be relatively important for this population since elders are often socially and economically marginalized. According to Prochaska and Velicer (1997), an increase in alternatives to problem lifestyles is of particular importance to populations that are relatively deprived or oppressed.

#### *Processes Not Utilized or Underutilized by Older Adults*

What appears most salient in the data is older adults' lack of utilization of several of the processes hypothesized by Prochaska and DiClemente. Neither those participants in pre-action (precontemplation, contemplation, or preparation) nor those in action or maintenance utilized environmental reevaluation as an experiential process. Although predicted by the model, those in the action and maintenance stages did not appear to significantly utilize behavioral processes with the exception of helping relationships and marginally reinforcement management and self-liberation. No subjects in the exercise focus groups discussed using counterconditioning or stimulus control and no subjects in either group utilized environmental reevaluation.

#### Environmental Reevaluation

Environmental reevaluation is the consideration and assessment by the individual of how the problem affects the physical and social environments (Marcus et al., 1992).

On one hand, it is surprising that older adults did not consider the effect of their behavior on others, particularly younger generations, considering the developmental inclination toward generativity theorized by Erikson (Erikson, Erikson, & Kivnick, 1986). The older adults interviewed were not motivated to exercise based on their desire to positively influence future generations either as a model for healthy aging, self-care, or simply keeping fit. Perhaps the older subjects interviewed were more influenced by social expectations that would lead them to conform to stereotypes of inactive aging (Bandura, 1997) and as a consequence did not recognize or value the influence their behavior could have on the health habits of subsequent generations. Gorely and Gordon (1995), who also found that older adults did not use this experiential process, suggested that the absence of this process indicates that older adults do not perceive inactivity as having a social cost or being a problem lifestyle. Ageism may play a role also as it condones frailty and inactivity among older adults.

### Behavioral Processes

With the exception of helping relationships, older adults in the study underutilized the behavioral processes hypothesized in the Transtheoretical Model: counterconditioning, reinforcement management, self-liberation, and stimulus control. As the model predicts, subjects in pre-action did not make use of these processes (with the exception of helping relationships to a small degree). More surprising was the lack of use of these processes by those in action/maintenance. Since the theory holds that those in the maintenance stage do not apply change processes as do people in action, a conclusion that can be drawn is that those in the exercising focus groups

were more likely to have been in the maintenance rather than action stages and so were less likely to use these behavioral processes.

Alternatively, it could be that the model is less appropriate for older adults. Behavior patterns in this population may be more habit-like, and as such are entrenched without the use of behavioral cues, substitution, or artificial rewards. Indeed it seemed as though several participants had been exercising for some time although they were never asked how long they had been exercising regularly.

#### *Processes of Change Unique to Older Adults*

Equally as interesting as the absence of several theorized processes is the possibility of processes of change unique to this domain and/or population. Data from the six focus groups suggest that older adults' choice of activities that are enjoyable and afford social interaction may be key to the adoption and maintenance of regular physical activity.

#### Choice of Enjoyable Activity

The choice of enjoyable exercise activities appears to encourage and sustain exercise activity and is particularly operative in the maintenance stage of exercising focus group participants. A total of 12 participants mentioned enjoyment of the activity as a reason they continue to exercise: "There is nothing negative about exercise as long as you are doing something you enjoy. That's why I do it. I enjoy it. Otherwise, it's tedious and time consuming." This criterion was also mentioned by non-exercisers when discussing ideas for programs that would encourage them to

exercise. “It has to be something I’d enjoy,” mentioned several participants. Ideas for enjoyable exercise activities included line dancing, a Nordic track, or a bike club.

Indeed exercisers in some cases were hooked by the enjoyable nature of the activity itself. One woman discussed how she did not like an aerobics class offered but found an alternative: “I found an aqua fitness class and I enjoyed *that*, so I’ve gone even further now.”

### Choice of Social Activity

Most often, however, enjoyment of exercise was linked with being with others: “[The exercise class] is a lot of fun to me because you get to meet others.” Since isolation and loss of relationships often characterize older age, the choice of an exercise activity that includes social interaction appears to be key to perpetuating exercise behavior for many. Rather than the motivation, accountability, and safety provided by helping relationships, the social aspect of exercise provides engagement with new people, relief from loneliness, and enjoyment. Additionally, exercising in a social or group situation as opposed to exercising alone has been shown to positively affect self-efficacy particularly among older adults, especially women (McAuley et al., 1999). Self-efficacy, the belief that one can perform a specific behavior successfully, is a key dimension of behavior change in the TIM and has been shown to be one of the most modifiable predictors of exercise behavior among older adults (Clark & Nothwehr, 1999).

Interestingly, however, neither enjoyment of the exercise activity nor enjoyment of the social dimension of the activity was mentioned by any of the men interviewed. It is therefore possible that the discovery of this process within the sample may be due in

part to its gender composition; perhaps this choice is more important to women who generally have greater needs for affiliation and sociability.

Also interesting is the possibility that the value of social exercising may be age-related. Younger people may value flexible scheduling and independence over social engagement because of the multiple commitments of parenting and employment. This choice may also not be of equal value to younger and middle aged populations since these commitments also afford regular social interaction.

Although enjoyment and social engagement could be considered benefits or rewards of exercising experienced by those in later stages, neither categorization seems complete. Given the importance of these dimensions of exercise behavior for older adults, the choice to engage in programs that provide these attributes may also be considered a unique process in exercise adoption and maintenance.

#### *Relationship Between Participant's Use of Processes and Stage of Change*

According to Prochaska and DiClemente (1982), efficient self-change depends on doing the right things at the right time. As valuable as the processes themselves is the timing at which they are employed. Although this study does not speak to the theoretical ordering of stages since participants were only divided into two groups, it does offer some indication as to when processes were used by group participants and suggests that the use of processes with this population and for this domain may deviate from those predicted by the TTM.

As a review, the model predicts that experiential processes - consciousness raising, dramatic relief, environmental reevaluation, self-reevaluation, and social liberation - are used generally in the pre-action stages while behavioral processes -

counterconditioning, helping relationships, reinforcement management, self-liberation, and stimulus control – are used in the action and maintenance stages (Table 2).

Although participants were not staged, based on the context of participants' comments, it seemed that some processes that were used by exercising participants were implemented at the appropriate times as postulated by the model. Exercisers frequently used the potent combination of consciousness raising (which is actually considered to be used only when moving from precontemplation to contemplation) and dramatic relief to start exercising. To a lesser extent, exercisers apparently also used self-reevaluation and social liberation as processes of change and precursors to exercise adoption. Likewise, the model predicts that those moving from the action to maintenance stages utilize behavioral processes. The data from this study suggest that this is not the case since with the exception of helping relationships, subjects either minimally utilized or did not utilize these processes. Additionally, according to the model, those in the maintenance stage exclusively use behavior processes. In this sample, participants used only helping relationships in addition to experiential process such as self evaluation and social liberation.

Non-exercisers – those in the pre-contemplation, contemplation, and preparation stages – almost exclusively used experiential processes: consciousness raising (12), dramatic relief (5), self re-evaluation (6), and social liberation (3). As predicted by the model, subjects in these pre-action stages were unlikely to use behavioral processes, although five subjects did utilize helping relationships, a behavioral process, to move them along the continuum. Additionally, the model predicts an increased use of experiential processes by those transitioning from the precontemplation to

contemplation stages. However, in this study, those in pre-action used significantly fewer experiential processes than those in the action stage.

While these results add to our understanding of the TTM with regard to exercise behavior in older adults, further exploration of the use of processes is required. As pointed out earlier, in this study subjects' stage of change was not identified. Adults in the non-exercising groups could have been in one of three distinct stages and exercising subjects could have been in the action or maintenance stages. Also, exercising subjects were asked a retrospective question regarding the initiation of exercise ("Think back to when you started to exercise. When was that and what got you started?"), which yielded valuable information but does not lend understanding as to the precise evolution of behavior change within this sub-sample. Likewise, it was unclear how and at what stage consciousness raising, the most common process used by those in the pre-action focus groups, was used by these subjects.

An assessment of the use of processes in terms of timing was also made more difficult since the non-exercising participants may have been exercisers at one time in their life and based their comments on this experience. Similarly, exercisers may have been active their entire lives and thus made several comments about processes used that were ungrounded in time or stage.

### *Study Limitations*

This study has some limitations that should be kept in mind when interpreting the results. Most salient is the apparent inclusion of exercisers in several of the non-exercising group and vice-versa, which may have been the result of subjects' misunderstanding of the screening question. It is possible that the question may have

been a more valuable metric for the researcher than the population even though examples of exercise were given. Older adults, because of a cohort effect, may not conceptualize exercise as a compartmentalized activity but rather think of it in terms of being busy or having an active lifestyle. The imprecision of the screening question was evidenced by the diverse answers given by subjects when asked to define physical activity versus exercise. Nonetheless, the rich data gathered by the focus group process yielded important, first-hand information regarding each subject's personal experiences with exercising.

Additionally, the collection of demographic data would have enriched our understanding of the population studied. However, it is a good assumption that the sample was relatively homogeneous. All participants were white, and based on the demographics of senior center participants in Rhode Island and the housing sites chosen, it is likely that the sample was composed primarily of "young-old," working or middle class elders with relatively high sociability and little or no higher education.

The use of self-report data constitutes another potential limitation of this study. It is possible, however, that the highly interactive nature and duration of the focus group process could have mitigated this influence. As mentioned earlier, comments regarding exercise patterns made by participants during the course of the focus group eventually revealed the likelihood that they had misidentified themselves as exercisers or non-exercisers.

Technical and temporal issues also created barriers to understanding and interpreting data that may have limited the conclusions of this study. Audio tape quality was difficult to understand at times and even non-existent for one group. However, laptop computer notes were useful and relatively comprehensive. The time

frame between the focus group activity and the time of analysis, one and a half years, may also have inhibited a complete understanding of the data. Although, again, the combination of audio tape and laptop computer notes captured the words and affect of study participants.

### *Future Implications*

#### Research Opportunities

With the impending wave of aging baby boomers and a lengthening life span, maintaining and enhancing the wellness of older adults becomes of increased interest from both economic and humanitarian perspectives. This study enhances the understanding of the adoption and maintenance of exercise behavior at the same time that it provides a launching point for additional research.

Older adults – those over the age of 65 – constitute the most heterogeneous segment of the population. This study is limited in that it examines the behavior of essentially only one age subgroup. It would be valuable to conduct similar focus groups with “middle-old” and “old-old” groups as well as groups of men and minority groups. It would be valuable to identify potential variation in the use of processes by these diverse populations.

Additionally, it would be valuable to conduct stage-specific focus groups to gain a better understanding of the use of processes as individuals progress through the stages of change. Doing so would enable the development of more tailored, efficacious interventions.

Also valuable would be an enhanced, qualitative study of the “enjoyment” and “social” aspects of exercise that motivate elders. While these elements clearly

influence exercise behavior, as noted earlier, it is unclear whether they act as processes, benefits, or pros within the behavior change continuum.

Most importantly, the potent combination of consciousness raising by a physician and dramatic relief in the form of a diagnosed health problem speaks to the potential for an effective public health promotion in the form of a motivational interview delivered at a “teachable moment” in the primary care setting (Colby et al., 1998; Miller & Rollnick, 1991; Monti et al., 1999). A motivational interview (MI) approach is well suited for the primary care setting and the attitudes of older adults regarding their primary care physician in that it is brief and combines personal feedback regarding health status and exercise behavior with an empathic, non-confrontational style. It has been shown to increase motivation and reduce problem drinking among adults (Miller, 1995) and, delivered in the emergency room, has been proven effective for reducing harm associated with drinking among alcohol-positive adolescents (Monti et al., 1999). Although time intensive, piloting a study of trained physicians who combine public health messages with a structured, personal interview and the discussion of newly diagnosed health problems among older adults could prove to be an effective means of changing exercise behavior in this population and merits investigation based on the results of this study.

#### Suggested Programs/Interventions

The expanded understanding provided by the focus group data also suggests the development of several meaningful exercise programs for older adults. The availability and accessibility of regularly scheduled exercise classes with others seemed to be most helpful to older adults both as they initiated exercise behavior and in order to maintain

exercise behavior. The importance of appropriate programs for this population is also supported by the number of non-exercising subjects who mention lack of opportunity as a barrier.

Based on comments by participants, effective programs would be for seniors only (to avoid embarrassment or discouragement) and would be enjoyable and non-threatening. Particularly effective are programs that are accessible, either because of senior or public transportation or because they are offered on-site, for example at residential housing sites such as those that hosted two focus groups. Participants were also interested in programs organized by their local senior center. It seems important for older adults to feel a supportive and enjoyable connection with others with regard to their exercise activity so that building exercise into an existing community would be most effective.

To reach those in the earliest stages of behavior change, physicians should be encouraged to speak with older patients about the importance of exercise not only after a diagnosis but also as part of routine check-ups. Given their position of influence for this population, they have the ability to deliver uniquely potent personal health messages – the recommendation and sanctioning of exercise - which can raise the consciousness of older adults and move them along the change continuum. It is also possible that recommendations to exercise can be delivered by physicians through the print and television media in the form of feature articles and public service announcements.

In addition to recommending exercise to those in precontemplation and contemplation, physicians can also play an active role in validating and encouraging physical activity. Doing so appears to increase the likelihood that older adults will

move into the action and maintenance stages of exercise behavior and, as a result, enhance their physical and emotional well-being.

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*Table 1*

Processes of Change: Definitions/Sample Items

<i>Process</i>	<i>Definition</i>	<i>Sample Item</i>
<b>Experiential</b>		
Consciousness Raising	Efforts by the individual to seek new information and to gain understanding and feedback about the problem behavior	I read articles about exercise in an attempt to learn more about it.
Dramatic Relief	Affective aspects of change, often involving intense emotional experiences related to the problem behavior	Warnings about the health hazards of inactivity move me emotionally.
Environmental Reevaluation	Consideration and assessment by the individual of how the problem affects the physical and social environments	I feel I would be a better role model for others if I exercised regularly.
Self-Reevaluation	Emotional and cognitive reappraisal of values by the individual with respect to the problem behavior	I get frustrated with myself when I don't exercise.
Social Liberation	Awareness, availability, and acceptance by the individual of alternative, problem-free lifestyles in society	I find society changing in ways that make it easier for the exerciser.
<b>Behavioral</b>		
Counterconditioning	Substitution of alternative behaviors for the problem behavior	Instead of remaining inactive, I engage in some physical activity.
Helping Relationships	Trusting, accepting, and using the support of caring others during attempts to change the problem behavior	I have someone who provides feedback about my exercising.
Reinforcement Management	Changing the contingencies that control or maintain the problem behavior	I reward myself when I exercise.
Self-Liberation	The individual's choice and commitment to change the problem behavior, including the belief that one <i>can</i> change	I tell myself I am able to keep exercising if I want to.
Stimulus Control	Control of situations and other causes which trigger the problem behavior	I keep things around my place of work (school) that remind me to exercise.

*Table 2*

Stage of Change in which Specific Processes are Most Useful

	<i>Precontemplation</i>	<i>Contemplation</i>	<i>Preparation</i>	<i>Action</i>	<i>Maintenance</i>
<i>Processes</i>	Consciousness Raising-----I				
	Social Liberation-----I				
		Dramatic Relief-----I			
		Self-Reevaluation-----I			
		Environmental Reevaluation-----I			
				Counterconditioning	
				Helping Relationships	
				Reinforcement	
				Management	
				Self Liberation	
				Stimulus Control	

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Table 3: Summary & Frequency of Processes Used by Exercisers and Non Exercisers.

	CONSCIOUSNESS RAISING	DRAMATIC RELIEF	SELF RE-EVALUATION	SOCIAL LIBERATION
EXERCISERS	<p><i>Professional Recommendation (13)</i>                      "The doctor told me I've got to get out and exercise and that's when I first started to walk."</p>	<p><i>Provoking Health Problem (15)</i>                      "I found out my cholesterol was high." "I put on weight so that's why I started." "I began because I had a knee operation and in order for me to move my knee again, I had to exercise."</p>	<p><i>Feeling Good about Self/ Self Image (8)</i>                      "I think (what got me started) was looking into the mirror and saying, "that's not me!" "I get a sense of independence."</p>	<p><i>Availability of Program (9)</i>                      "If this class wasn't offered, it would be difficult to exercise."                      "When they had this (exercise class) here I said, I think I'll go down and do some exercise."</p>
	<p><i>Professional Sanction (2)</i>                      "I was always afraid because I have a heart condition. I didn't know how far I could go. But I've been to a heart specialist and he said that there's no limit."</p>		<p><i>Alleviating Guilt/ Conformance with Values (3)</i>                      "I don't feel guilty when I've done it." "You feel like you've done something as opposed to staying in your apartment and looking at the walls."</p>	<p><i>Role Model (1)</i>                      "Remember there used to be that 92-year old woman that was in class?!"</p>
	<p><i>Professional Validation (1)</i>                      "The doctor checked me at the end of the program and told me it was beneficial."</p>			
	<p><i>General Pursuit of Information (1)</i>                      "I think if you have a health issue...you...find out about exercise."</p>			

Table 3: Summary & Frequency of Processes Used by Exercisers and Non Exercisers.

EXERCISERS	HELPING RELATIONSHIPS	REINFORCEMENT MANAGEMENT	SELF LIBERATION
	<p><i>Peer/Group Support (9)</i>                      "When you're in the apartment, you don't feel like doing it. But when you come down here with a bunch of people and they're doing the same thing you're doing, it's easier." I skip it when I'm by myself but when I'm with others, it's better."</p>	<p>(1) "My husband enjoys it when I go because I just keep moving and doing things rather than sitting down."</p>	<p><i>Commitment (4)</i>                      "Once you make a commitment to go to the class, you're more apt to do it." "I had been a heavy smoker and after I stopped I decided I better start to pull me life together here."</p>
	<p><i>Inspiring Leader (3)</i>                      "You need a good teacher." "I was inspired when Faith (aerobics instructor) came."</p>		
	<p><i>Having a Buddy (2)</i>                      "Having a buddy helps. Sometimes they feel like it but you don't feel like it."</p>		

Table 3: Summary & Frequency of Processes Used by Exercisers and Non Exercisers.

	CONSCIOUSNESS RAISING	DRAMATIC RELIEF	SELF RE-EVALUATION	SOCIAL LIBERATION
NON EXERCISERS	<p><i>Professional Recommendation</i> (9)                      "Doctor's orders. I've got to start doing more."</p>	<p><i>Provoking Health Problem</i> (4)                      "I had a bypass seven years ago, so I have to exercise to keep my arteries open."</p>	<p><i>Alleviating Guilt/Conformance with Values</i> (5)                      "I feel guilty if I'm sitting around the house all day. I just feel like I should be moving instead of doing nothing." "That's a good feeling when you know you're doing what's right."</p>	<p><i>Availability of Program</i> (1)                      "The senior center is helping me. If they organize a walking trip I will sign up."</p>
	<p><i>Professional Sanction</i> (1)                      "I talk to my doctor (about getting activity) and he agrees with me."  <i>Media/Community</i> (2)                      "I see a lot on TV. The ladies are in the water and they say how good it is for arthritis." "These focus groups... change my thoughts."</p>	<p><i>Family History</i> (1)                      "My family has had a lot of heart attacks."</p>	<p><i>Self Image</i> (1)                      "I'd like to lose weight (so I know I need to exercise.)"</p>	<p><i>Role Model</i> (2)                      "My sister does the treadmill twice a day for fifteen minutes..."</p>

Table 3: Summary & Frequency of Processes Used by Exercisers and Non Exercisers.

NON EXERCISERS	HELPING RELATIONSHIPS
	<p><i>Family Support (3)</i>                      "My daughter gets after me if I don't. She says, 'Did you walk? Why not?'" "My sister does the treadmill twice a day for 15 minutes. She tries to get me to do it."</p>
	<p><i>Having a Buddy (2)</i>                      "I have a partner who walks with me. This is a long way to walk by yourself."</p>

*Table 4*

Frequency of Processes Responses per Exercise Group

PROCESS	Group 1	Group 2	Group 3	Total
Consciousness Raising	9	3	5	17
Dramatic Relief	6	1	8	15
Self Re-evaluation	2	2	7	11
Social Liberation	4	2	4	10
Helping Relationships	9	4	1	14
Reinforcement Management	0	0	1	1
Self Liberation	0	0	4	4

*Table 5*

Frequency of Processes Responses per Non Exercise Group

PROCESS	Group 4	Group 5	Group 6	Total
Consciousness Raising	6	5	1	12
Dramatic Relief	3	2	0	5
Self Re-evaluation	4	2	0	6
Social Liberation	0	1	2	3
Helping Relationships	2	2	1	5
Reinforcement Management	0	0	0	0
Self Liberation	0	0	0	0

Table 6

Frequency of Processes Relative to Stage of Change

	EXPERIENTIAL PROCESSES					BEHAVIORAL/ENVIRONMENTAL PROCESSES				
	CONS. RAISING	DRAMATIC RELIEF	SELF RE-EVAL	SOCIAL LIBERA TION	TOTAL	HELPING RELATION SHIPS	REIN. FORCE. MNGMT	SELF LIBERA TION	TOTAL	
PRE-ACTION Pre-Contemplation/ Contemplation/Preparation (Non-Exercise Groups) N= 29	12	5	6	3	26	5	0	0	5	
ACTION Action/Maintenance (Exercise Groups) N= 37	17	15	11	10	53	14	1	4	19	

## APPENDIX I

## Focus Group Questions

### EXERCISE GROUP

1. Tell me what the words “physical activity” mean to you.
  - Probe – could you give some examples of physical activities.
2. What does the word “exercise” mean to you?
  - Probe – could you give some examples of exercise.

*At this point, the focus group facilitator should define exercise for the group. “For today, we want you to think about exercise as something that is done a minimum of three times per week for at least 20 minutes. Examples of exercise include brisk walking, swimming, water aerobics, line dancing, biking, or exercise class.”*

3. Think back to when you first started to exercise. When was that and what got you started?
4. What helps you to keep exercising?
5. What gets in the way of you exercising?
6. How do you think exercise is helping you?
  - Probe – what are the benefits?
7. What do you think are the negative aspects of exercise?
8. If we were to develop a program, what would make people like yourself exercise?
9. We have heard your input on exercise. What are your other favorite activities?

## Focus Group Questions

### NON-EXERCISERS

1. Tell me what the words “physical activity” mean to you.
  - Probe – could you give some examples of physical activities.
2. What does the word “exercise” mean to you?
  - Probe – could you give some examples of exercise.

*At this point, the focus group facilitator should define exercise for the group. “For today, we want you to think about exercise as something that is done a minimum of three times per week for at least 20 minutes. Examples of exercise include brisk walking, swimming, water aerobics, line dancing, biking, or exercise class.”*

3. What are the reasons that you don’t exercise?
  - Probe - barriers
4. What do you think are the negative aspects of exercise?
5. How do you think exercise might help you?
  - Probe – what are the positive aspects of exercise in general?
6. What would it take for you to begin exercise?
7. If we were to develop a program, what would make people like yourself exercise?
8. We have heard your input on exercise. What are your other favorite activities?

## APPENDIX II

THE UNIVERSITY OF RHODE ISLAND  
Aging and Health Promotion Partnership

Focus Groups on Physical Activity and Diet

Consent for Participation

I have been asked to take part in the small group activity described below. I understand that it will be explained to me and that any questions I have will be answered before I am asked to sign this form. If I have any questions later, I understand that I can ask any of the program staff or I may call Dr. Phillip Clark at The University of Rhode Island at (401) 874-2689.

Description of this project

This small group activity has been designed to gain an understanding of the most effective ways to encourage older persons to adopt healthy behaviors--such as exercise and good diet. It will help develop educational programs to improve the health and well-being of older adults.

What will happen if I decide to participate in this program.

If I decide to participate in this project, I understand that the following will happen:

1. I will be invited to participate in an hour and a half group meeting at a site in or near my community. Eight to ten individuals like me will be asked to discuss some general questions about our attitudes and practices related to our diet and overall level of physical activity.
2. Our group discussion will be audio taped using a tape recorder, and the tape will be transcribed onto a written, verbatim transcript. All identifiers will be removed, so no one will be able to identify me personally or what I said.
3. At the end of the group meeting, I will receive a small gift to compensate me for my time in attending.

Benefits or risks

I understand that if I do decide to participate in this program, I will help others to learn how to encourage older adults to adopt healthier lifestyles. There are no known risks related to my participation, as the group discussion will only be general and will not deal with sensitive material or questions.

Confidentiality

I understand that any information that is gathered from the group discussions in which I participate will be kept confidential--that is, no one else will know how I answered the questions. When the audiotape is transcribed, personal identifiers will be removed, so no one will be able to connect me with anything I said.

### Right to quit at any time

I understand that I can quit this program at any time, simply by telling a member of the project staff that I no longer want to be included. I understand that if I decide not to participate in this program, or drop out later, nothing will happen and that I will still be eligible for any services to which I am entitled.

### In case of injury

If this study causes me any injury, I understand that I should tell a member of the project staff. I further understand that I should write or call the office of the URI Vice Provost for Graduate Studies, Research, and Outreach, Suite 2, 70 Lower College Road, The University of Rhode Island, Kingston, RI 02881; telephone (401) 874-2635.

### Rights and complaints

If I am not satisfied with the way this study is performed, I may discuss my complaints with Dr. Phillip Clark at URI, telephone (401) 874-2689, anonymously if I choose. In addition, I may contact the URI Vice Provost for Graduate Studies, Research, and Outreach, Suite 2, 70 Lower College Road, The University of Rhode Island, Kingston, RI 02881; telephone (401) 874-2635.

Signature of consent

I have read this form and my questions have been answered. My signature on this form means that I understand the information and agree to participate in this program.

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Signature of Interviewer

\_\_\_\_\_  
Printer Name of Participant

\_\_\_\_\_  
Printed Name of Interviewer

\_\_\_\_\_  
Address of Participant

\_\_\_\_\_  
Phone Number of Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

Screening Question on Exercise:

*“Do you regularly exercise at least 3 times per week for 20 or more minutes?” Some examples of exercise are brisk walking, swimming, water aerobics, biking, or exercise class.*

\_\_\_\_\_ Yes

\_\_\_\_\_ No

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