UNIVERSITY OF CINCINNATI

DATE: November 18, 2002

I, Lori J. (Sohns) Patterson, hereby submit this as part of the requirements for the degree of:

Doctorate of Philosophy (Ph.D.)
in:
The Department of Psychology

It is entitled:
Stress in Home-based Working Mothers:
The Role of Boundary Management and Psychological Type

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STRESS IN HOME-BASED WORKING MOTHERS:  
THE ROLE OF BOUNDARY MANAGEMENT AND PSYCHOLOGICAL TYPE

A dissertation submitted to the
Division of Research and Advanced Studies
of the University of Cincinnati

in partial fulfillment of the
requirements for the degree of

DOCTORATE OF PHILOSOPHY (Ph.D.)

in the Department of Psychology
of the College of Arts and Sciences

2002

by

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ABSTRACT

Despite a dramatic increase in home-based work in the past decade, the research looking at the stress or strain associated with it has been sparse. Based on several existing gaps in the literature, the objectives for the current study were: to specify the relationship between stress and a potentially stress-reducing variable, boundary management; to investigate whether a boundary management intervention would reduce stress; and to clarify the role of psychological type. The population of interest was home-based working mothers, who have the highest prospects for stress while working at home and, therefore, the greatest potential for stress reduction.

Home-based working mothers were recruited from Home-based Working Mothers (www.hbwm.com), Work-at-Home Moms (www.wahm.com), www.MOMS-HOME-WORK.com, and other sources. Instruments included a survey of demographic information, the Psychological Type Index (PTI), the Home/Work Boundaries Inventory (HBI), and selected subscales from the Holistic Stress Test (HST). Of the 94 mothers that participated, 76 completed the PTI and all pretest measures, and were randomly assigned to one of two conditions:

(1) The Boundary Management-Experimental condition (BME). After the pretest, BME subjects were asked to return to the website to participate in a boundary management intervention. BME subjects implemented the intervention in a self-directed manner over a six-week period.

(2) The No Intervention Control (NIC) condition. After the pretest, the No-Intervention Control (NIC) subjects were told they would be contacted for follow-up in six weeks.

Six weeks from pre-test, subjects in both conditions completed the HST scales and HBI a second time.
Three out of eight hypotheses were significant: there was a negative relationship between boundary management and stress; Introverts did have higher boundary management scores than Extraverts; and Sensing types did have higher boundary management scores than Intuitives. Due to the high attrition rate, hypotheses regarding the intervention were unable to be tested. The study sheds light on the nature of home-based work for mothers; the tasks involved in designing and developing an on-line, self-directed intervention for this population; issues related to subject recruitment and follow-up; and areas for future research and practical application.
Acknowledgements

I thank my committee members for their commitment to this project. Thank you for your timely responses to my requests, your candid feedback, and words of encouragement during some very trying times.

I thank my husband, Adam, for his love and help in ways too numerous to mention, and for bearing with the many inconveniences. I also thank my precious children, Hope and Samuel, for bringing great joy to my life and helping me put the dissertation aside for a while to love, laugh, and play.

A special thanks goes to my mother, Ginny; mother-in-law, Jolene; my sisters Betsy and Sally; and our “nanny” Kelly for the childcare that enabled me to work on this project, and for all your emotional support. In addition, I thank Karin and Faye for “going the extra mile” in helping me find home-based working moms for my sample, and the many moms who found time in their busy schedules to participate in my research. I could not have finished without all of you.

I thank the rest of my family: the Elliotts, Ownbys, Pattersons, Proffitts, Sakoskys and Stocktons. I love you all! I thank my former classmates: Rose for helping to bring a rusty former Statistics TA back up to speed and Jim for sending encouraging e-mails and an occasional, “Get back to work!” I thank friends: Tammy for some much-needed assistance during data collection, Andy for always saying “What’s up, Doc?” and keeping tabs on my progress, and Amy and Theresa for your support and prayers on my behalf.

In loving memory, I thank two very special people who have passed from this life: my father, Herb Sohns, who was very proud of my accomplishments; and my grandmother, Minnie Sohns, who was always such an inspiration.

Most of all, I thank God for the ability to work on this project, and for placing all these wonderful people in my life.
# Table of Contents

**Introduction** ......................................................................................................... 3  
**Home-based Work: Definitions, History, and Prevalence** ................................... 4  
**Home-based Work and Stress Research** ................................................................. 6  
**Home-based Working Mothers and Stress** ............................................................. 8  
**Boundary Management** ......................................................................................... 9  
  - Spatial Boundaries .................................................................................................. 10  
  - Temporal Boundaries ............................................................................................... 11  
  - Sociobehavioral Boundaries .................................................................................... 11  
**Psychological Type** ............................................................................................... 12  
**Internet-based Self-directed Learning and Self-Help** ............................................... 16  
**Rationale for Current Study** .................................................................................. 19  
**Research Objectives** ............................................................................................... 20  
  - Phase I: Pretest-Intervention-Posttest .................................................................... 20  
    - Level One: Baseline Description ...................................................................... 20  
    - Level Two: Effectiveness of Intervention ......................................................... 21  
    - Level Three: Impact of Moderator Variables .................................................... 22  
  - Phase II: On-line Intervention ............................................................................. 23  
    - Aspect One: Design and Development ............................................................. 23  
    - Aspect Two: Recruitment ............................................................................... 24  
    - Aspect Three: Follow-up ............................................................................... 24  
**Method** ................................................................................................................... 24  
  - Phase I: Pretest-Intervention-Posttest .................................................................... 24  
    - Subjects............................................................................................................. 24  
    - Instruments ....................................................................................................... 26  
      - Holistic Stress Test (HST) .............................................................................. 26  
      - Psychological Type Index (PTI) ................................................................. 27  
      - Home/Work Boundaries Inventory (HBI) .................................................... 28  
    - Procedure ........................................................................................................ 29  
  - Phase II: On-line Intervention ............................................................................. 31  
    - Aspect One: Design and Development ............................................................. 31  
    - Aspect Two: Recruitment ............................................................................... 33  
    - Aspect Three: Follow-up ............................................................................... 33  
**Results** .................................................................................................................. 33  
  - Phase I: Pretest-Intervention-Posttest .................................................................... 33  
    - Level One: Baseline Description .................................................................. 33  
    - Level Two: Effectiveness of Intervention ....................................................... 41  
    - Level Three: Impact of Moderator Variables .................................................. 41  
  - Phase II: On-line Intervention ............................................................................. 42  
    - Aspect One: Design and Development ............................................................. 42  
    - Aspect Two: Recruitment ............................................................................... 42  
    - Aspect Three: Follow-up ............................................................................... 43  
**Discussion** .............................................................................................................. 44  
**References** ............................................................................................................. 53  
**Appendixes** ............................................................................................................ 60
List of Tables

Table 1: Psychological Type Dimensions
Table 2: Correlations between Job and Family Stress, and Boundary Management
Table 3: Correlations between Boundary Management and Stress, and Psychological Type
Table 4: Multiple Regression Equations
Table 5: Means and Standard Deviations (Boundary Management and Grouping Variables)
Table 6: T-tests between Boundary Management and Grouping Variables
Table 7: Means and Standard Deviations (Stress and Grouping Variables)
Table 8: T-tests of Grouping Variables with Stress
Table 9: Distribution of Psychological Types

List of Appendixes

Appendix A: Holistic Stress Test (HST)
Appendix B: Psychological Type Index (PTI)
Appendix C: PTI Sample Screenprint
Appendix D: Home/Work Boundaries Inventory (HBI)
Appendix E: Research Website Homepage
Appendix F: Consent Form
Appendix G: Survey of Demographic Information
Appendix H: Boundary Management Experimental Intervention (BME)
Appendix I: Technical Information
Appendix J: BME Screenprint
Appendix K: Action Plan Screenprint
Appendix L: Journal Screenprint
Appendix M: Advertisement
Appendix N: List of Sample Sources
Appendix O: T-tests between Boundary Management and Grouping Variables
Appendix P: Timeline of Development, Pilot, Recruitment and Study Phases
Introduction

In the past decade, home-based work--that is, income-generating work in the home--has become more common, although certainly not to the extent that it was before the Industrial Revolution. Despite a dramatic increase in home-based work, the research looking at the stress or strain associated with it has been sparse. Many of the studies simply provide comparisons of home-based workers to office-based peers (e.g., Trent, Smith, & Wood, 1994) and demonstrate correlations of stress and home-based work with variables such as role conflict and social support (e.g., Hernandez, 1997).

Although some of the research is, at least, longitudinal in nature (e.g., Konradt & Schmook, 1999), no research attempts to establish causal relationships, nor test an intervention designed to reduce stress in this population. Further, despite one study enumerating the distribution of psychological types across home-based workers (Russ, 1996), none have attempted to find differences among psychological types with respect to stress, nor determine how psychological type moderates the effect of any form of intervention. Therefore, the primary objectives for this study were to specify causal relationships between stress and potentially stress-reducing variables such as boundary management, and illuminate the role of psychological type.

The population of interest was home-based working mothers, who have the highest prospects for stress while working at home and, therefore, the greatest potential for stress reduction. To a greater degree than with any other population, many important activities already vie for mothers’ attention while they are at home (Collette, 1984). While several studies look at how home-based working mothers manage the boundaries between home and work (e.g., Ahrentzen, 1990), none examine the relationship of boundary management to stress or employ a boundary management intervention.
An additional avenue of interest was the medium through which the population would fill out surveys and participate in the intervention: the Internet. Research published in the past seven years is beginning to document the preference for and effectiveness of a range of on-line self-directed learning/self-help interventions for a variety of populations including problem gamblers (Cooper, 2001) and Type II diabetics (McKay, Glasgow, Feil, Boles, and Barrera, 2002). However, no protocol currently exists for the on-line stress management of home-based workers in general, or for home-based working mothers specifically. Therefore, designing a similar approach for home-based working mothers appeared to be a logical extension of this line of research. For this reason, a post-hoc objective of the study was to evaluate the design and development process for creating the prototype of an Internet-based, self-directed learning intervention for this population.

Home-based Work: Definitions, History, and Prevalence

There are several common terms used to describe paid work that takes place at home. “Homework,” “work-at-home,” and “home-based work” indicate simply that someone performs income-generating work either in the home, in an adjacent structure, or on the immediate property (Hamilton, 1987). The nature of employment varies from self-employment to direct employment with a company, as does the nature of the work, e.g., from software development to day care. The definitions of “telework” and “telecommuting” are not as clear-cut; however, most do typically indicate that teleworkers are employed by companies, not self-employed (Ellison, 1999). Some researchers use the terms interchangeably, sometimes indicating that “telework” is preferred in Europe and “telecommuting” in the United States. Others distinguish between the two, at least to a certain degree.

The current study will focus on individuals who work from their homes or immediate property on a regular basis. They may be employed directly for a company or university, work
via a contracting firm, or be self-employed. Based on the hypotheses specified, the population will be restricted to people for whom mental concentration is usually essential. Examples include technical writing, software development, and administrative aspects of direct sales.

[For sake of brevity, “HBWs” will be used interchangeably with “home-based workers” to refer to this specific population throughout the remainder of the paper.] Handcrafts such as home shoe work (Beach, 1989), assembling shoes for pay, would not be included. Their work is comparable to recreational crocheting or knitting that can occur simultaneously with, for example, watching television.

The concept of home-based work, of course, is not new. Before the Industrial Revolution in America, the home was the center of labor, primarily in the form of farming. When factories first required workers to be in the same place at the same time mass-producing goods, a commute to work—what most of us view as the norm today—was novel. A slight trend back toward home-based work came during the oil embargo of the mid-1970s, when telework began on a very limited scale. Employees who would typically be working in a company office began working from home a few days per week. In the mid-1980s, advances in communication and information technologies made it a more viable strategy for organizations attempting to achieve certain goals such as minimizing overhead and retaining employees who desired flexibility in scheduling and/or location. Although the “disparity of definitions....and calculation strategies” (Ellison, 1999, p. 340) has made it difficult to determine its prevalence, it is apparent that the number of teleworkers has increased in the past decade. The International Telework Association and Council estimates that there are 19.6 million teleworkers in the US (The 1999 Telework America National Telework Survey; Pratt, 1999). This increase occurred primarily because many sizeable companies, such as AT&T and IBM, instituted programs where up to
30% of their employees work outside the company office at least some of the time (Boroughs, 1995; Flanagan, 1993).

Another common form of home-based work, direct sales, became widespread during the 1970s. The Direct Sales Association estimates that 10.3 million people in the U.S. currently are involved in direct selling (DSA, 2000). Numerous product categories are represented, including beauty and personal care, nutrition and wellness, and children’s toys. Direct sales consultants may use person-to-person contact and/or a “party plan” (i.e., in-home demonstrations to groups) to market their goods. Although product sales may occur at various locations, administrative hours—time primarily spent filling out paperwork—typically occur in the consultant’s home. According to the 1999 DSA National Salesforce Survey, consultants spend 43% of their time selling the product, and 25% in administration. Therefore, for every 5 hours spent selling the product, approximately 3 hours of administration are required.

Home-based Work and Stress Research

The study of home-based work has taken place primarily in the last 20 years. Ellison (1999) reviewed most of the scholarly literature in the field and organized it into six major thematic “concerns”: definition, measurement, and scope; management of home-based workers; travel-related impacts; organizational culture and employee isolation; boundaries between “home” and “work”; and the impact on the individual and the family (p. 339). Stress, in contrast, has been studied for about 100 years, most notably by Cannon (1909) and Selye (1936). A common definition of stress today (e.g., Lazarus and Launier, 1978) is “any event in which environmental or internal demands (or both) tax or exceed the adaptive resources of an individual, social system, or tissue system” (p. 296).

Many of the “concerns” Ellison cites in the home-based work research are potential sources of stress for home-based workers: social isolation (Hamilton, 1987), role conflict created
by blurred boundaries between home and work (e.g., Hernandez, 1997; Ahrentzen, 1990), and the presence of young children in the household (Heck, 1992). However, stress (or “strain”) per se has received little attention. A search of the PsycINFO database (1880s–present) reveals only five studies directly relating stress or strain to teleworkers and/or home-based workers, and none that look directly at stress among direct salespeople. The two most recent studies (Neufeld, 1998; Konradt & Schmook, 1999) compared levels of stress in teleworkers to those of control groups working solely in company offices. Neufeld found lower levels of tension and overload among telecommuters, whereas Konradt and Schmook found no differences between the two groups in terms of strain. Similarly, Hernandez (1997) compared 50 female home-based workers to 50 women who work outside the home with flextime schedules, and 50 who work outside the home without flextime. Her results indicated no significant differences among the three groups in terms of perceived stress, physical symptoms, role conflict, and social support.

In summary, the research on home-based worker stress pinpoints several potential sources of stress: social isolation, role conflict, and presence of young children (e.g., Hamilton, 1987; Ahrentzen, 1990; Heck, 1992). Only one study indicates that home-based workers may experience more tension and overload based on work assignment than do their office-based peers (Neufeld, 1998). In general, they appear to have equal or possibly lower levels of stress than their counterparts (Konradt & Schmook, 1999; Hernandez, 1997; Trent, Smith, & Wood, 1994). It appears, then, that the issue for further study is not how much or how little stress home-based workers experience relative to a comparison group. It is, rather, how to reduce stress by looking at sources of stress that are relatively specific to home-based workers and determining what adjustments will minimize them. Ahrentzen (1990), for example, mentions ways to manage role conflict and role overlap among teleworkers by managing spatial, temporal, and sociobehavioral boundaries.
Home-based Working Mothers and Stress

Despite changes over the past several decades, men and women still differ in terms of the division of housework. Current research shows that women still contribute over 50%, and often two-thirds, of household labor in the United States (Arrighi & Maume, 2000) as well as Australia (Dempsey, 2000), China (Lu, Maume, & Bellas, 2000), Israel (Stier & Lewin-Epstein, 2000) and India (Dutta, 2000). The same holds true for childcare (e.g., Lu, Maume, & Bellas, 2000). Therefore, it is likely that the potential for stress among women working at home--where so many competing roles vie for attention--is higher than it is for home-based working men.

Women also select home-based work for different reasons than men. A survey by Empirica (Huws, Korte, and Robinson, 1990) found that 74% of women were motivated to pursue home-based work primarily for childcare advantages, versus only 7% of men. Similarly, Rowe and Bentley (1992) note that women indicated “care of family” and “flexibility to work in my own way, at my own pace” as the major advantages of home-based work, while men cited “being my own boss” (p. 293) as their primary motivator. Similar to the situation with housework, women are likely to encounter greater stress than men due to juggling family care and work responsibilities under the same roof.

Further, women typically are the primary providers of nurturance to family members (e.g., Collette, 1984). Collette indicates that the nurturing role requires women to be “on call,” which is “particularly true for households which include dependent elderly and young children. Their demands can seldom be negotiated or postponed” (p. 222). Due to their role obligations at home, women reported reductions in privacy more than men did. Decreased privacy, in turn, caused a reduction in psychological well-being. Since home is the source of
this gender difference, one would expect home-based work to magnify women’s privacy issues even more—and, therefore, allow for even greater stress among home-based working women.

Since the Empirica study (Huws, Korte, and Robinson, 1990) indicates that 74% of women work at home because of the childcare advantages, it is safe to assume that the vast majority of home-based working women are mothers. Young children, no doubt, account for most of the reported reductions in privacy among women that Collette (1984) reports. For these reasons, the current study will focus on home-based working mothers. They appear to have the greatest potential for stress due to the location of their paid employment, and, therefore, the greatest potential for stress reduction based on a boundary management intervention.

**Boundary Management**

Critics of home-based work argue that stress occurs when one tries to master multiple roles in the same place (Klein and Froschle, 1988). Therefore, integrating domestic and work activities into the home would be stressful. Although research indicates that home-based workers do not experience higher stress than their counterparts (e.g., Hernandez, 1997), it is likely that different variables account for stress in the two groups. Thus, it would be useful to find ways to minimize the role conflict home-based workers experience by “establishing socially acknowledged boundaries separating [their] roles in the home” (Ahrentzen, 1990, p. 725).

According to the Oxford English Dictionary (Simpson & Weiner, 1989), a boundary is “that which serves to indicate the bounds or limits of anything whether material or immaterial; also the limit itself”. Ahrentzen’s approach consists of a taxonomy of boundaries: spatial, temporal, and sociobehavioral. Spatial boundaries are the walls, doors, and/or arrangements of furniture that show where the home-based worker’s office begins and ends. Temporal boundaries are the beginning and ending of a “work block” (p. 738), the time consecutively
engaged in paid work activities. Sociobehavioral boundaries, also referred to as mental boundaries, are the separations—or in some cases, lack thereof—between work and domestic/personal activities. For example, homeworkers generally did not supervise their children while working.

Ahrentzen looked at the degree of separation or overlap between work and domestic roles in terms of time, space, and in the minds of the home-based workers. Her results showed “considerable correlation” among spatial, temporal, and mental overlap (Time x Space, rho = .40; Time x Mind, rho = .52; Space x Mind, rho = .39; p. 733)—which is not surprising. Upon closer examination of her examples of, e.g., “behavioral overlap”—instances where sociobehavioral boundaries have been violated—it becomes apparent that not just one, but either two or all three types of boundaries are involved. For example, relatives entering HBWs’ offices during a work period constitutes the violation of both a spatial and a temporal boundary. This interruption is most likely a violation of the mental boundary as well, because the HBWs may lose concentration.

**Spatial boundaries.** According to Ahrentzen (1990), “[m]uch of the literature on role-conflict boundaries examines the impacts of controlling and setting time schedules, but rarely considers space” (p. 726). She found that 69% of workspaces were used exclusively for work; when a room was not exclusive, the equipment and furniture typically marked the boundaries. Most research implies that clearly defined physical boundaries would be preferable for HBWs, such as a separate room with a door (e.g., Christensen, 1988; Hill, Miller, Weiner & Colihan, 1998). However, some research suggests that this may be detrimental under two circumstances. First, when the home-based worker is concurrently caring for young children (McLaughlin, 1981), the expectation of being able to work undisturbed—due to having a separate office—is violated. Second, Hill et. al. (1998) found that having a home office with a door was
significantly related to decreased work/life balance, attributing it to the HBWs’ “difficulty separating themselves from work” (p. 679).

**Temporal boundaries.** As stated previously, temporal boundaries are the beginnings and endings of work blocks (Ahrentzen, 1990). The average respondent worked in 2.4 blocks per day, while over 15% of the sample performed their work in 4-5 distinct blocks. Similar to spatial boundaries, others or the HBWs themselves may be prone to violating temporal boundaries. Therefore, they need to be set, negotiated, and maintained. Common examples of temporal boundaries are rituals such as those suggested by Hill et. al. (1998). Kissing one’s spouse good-bye, closing the door to the home office, turning on the computer and checking voice-mail messages can form the temporal boundaries that begin the day. Straightening up the home office, turning off the ringer to the office phone line, turning off the computer, and/or locking the door to the home office, mark the end of the day.

The most common examples of other people violating temporal boundaries are interruptions. Interruptions were discussed previously with respect to spatial boundaries, and will be addressed again with respect to sociobehavioral boundaries. Interruptions, no doubt, account for a considerable portion of the Time x Space and Time x Mind correlations, which were the two highest correlations in Ahrentzen’s study (.40 and .52, respectively).

**Sociobehavioral boundaries.** IBM virtual office teleworkers studied by Hill et. al. (1998) report that their productivity is higher than office-based peers because they experience fewer distractions than they would in the office. Even so, many home-based workers are subject to interruptions from children demanding immediate attention, other household members stopping by to talk, and relatives making requests for child care (Ahrentzen, 1990). For example, 43% of Ahrentzen’s homeworkers cared for their children while working; 17% were the exclusive supervisor. Despite the prevalence of concurrent work and child care, home-
based workers in several studies (Ahrentzen, 1990; Olson, 1983; Christensen, 1985; and McLaughlin, 1981) indicated that these were incompatible activities. With very young children, it is virtually impossible to set and maintain sociobehavioral boundaries.

Adults also violate sociobehavioral boundaries. For example, several homeworkers mentioned relatives dropping in and expecting to be entertained, which suggests that others “don’t take my work seriously,” as many homeworkers put it. One woman claimed, “They wouldn’t ask me to babysit their kid at the office. But they do if I am working here [at home].” (Ahrentzen, 1990, p. 738). With adults, however, it should be possible to discuss the need for boundaries and negotiate them.

For the purposes of the current study, the category of sociobehavioral boundaries has been expanded to include social boundaries that must be “managed” in effect by breaking out of them, to account for the physical absence of coworkers in their home work environment. HBWs may have to work harder than their office-based peers to keep up with changes in their professional fields, vent frustrations, solve problems, and avoid feelings of isolation. A home-based worker may choose to remove these social boundaries by regularly eating lunch with colleagues and keeping a professional journal, for example.

**Psychological Type**

Up to this point, many readers might be led to believe that carefully managing boundaries is the key to reducing stress among HBWs. On the other hand, some readers may be saying to themselves, “The idea of rigidly managing boundaries sounds stressful to me!” After all, the home office appears to provide greater flexibility (Hill, et. al., 1998), and flexibility is thought to be advantageous to the person, the job, and the family (Hill, Hawkins, & Miller, 1996). To be sure, there is probably a point of “diminishing returns” with respect to managing boundaries; the HBWs must achieve the “appropriate” balance between structure and
flexibility. So what is the appropriate balance of structure and flexibility to reduce stress? The answer to this question will likely vary based on personality. An individual’s cognitive style—how one processes information and makes decisions—provides a lead regarding what his or her balance might be. HBWs with different cognitive styles undoubtedly will make different decisions regarding which boundaries to manage, and how to manage them. Psychological type is one popular way of assessing cognitive style.

Measures of psychological type such as the Psychological Type Index (PTI: Grasha, 1997), the Myers-Briggs Type Indicator (MBTI: Myers, McCaulley, Quenk, & Hammer, 1998), and the Jungian Type Survey (Wheelwright, Wheelwright, & Buehler, 1964), are based on the model of psychological type proposed by Carl Jung (1921). All such scales contain the following Jungian dimensions: Extraversion-Introversion, conceived of as two basic attitudes or orientations toward life; and Sensing-Intuition and Thinking-Feeling, thought to be the four basic mental functions or processes. All of the above authors also include a Judging-Perceiving continuum designed to evaluate the degree of structure one prefers to have in life. A description of the resulting four scales appears in Table 1. A detailed explanation of the interrelationships among the scales is beyond the scope of this paper, but is available elsewhere (e.g., Myers & McCaulley, 1987). According to Progoff (1969), the interrelationships between the attitudes and the mental functions provide a substantial amount of information about an individual.

Thus far, the only study looking at psychological type and home-based workers is that of Russ (1996). He examined the relationships among personality type, job satisfaction and home office environments for 131 home-based business owners nationwide. The preponderance of ISFJ (Introvert-Sensing-Feeling-Judging) and ESFJ (Extravert-Sensing-Feeling-Judging) types in his sample is consistent with the four male normative samples found
<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Extraversion – Introversion (E-I)</td>
<td>E: Draws energy and, therefore, directs attention toward environment. I: Is energized by the inner world and, therefore, focuses attention inward.</td>
</tr>
<tr>
<td>Sensing– Intuition (S-N)</td>
<td>S: Gathers information through the five senses. N: Collects information through intuition, insights.</td>
</tr>
<tr>
<td>Thinking – Feeling (T-F)</td>
<td>T: Objective; uses logical criteria to make decisions. F: Subjective; considers feelings, values, and people to make decisions.</td>
</tr>
<tr>
<td>Judging-Perceiving (J-P)</td>
<td>J: Seeks closure and order in the environment; experiences discomfort at uncompleted tasks. P: Tolerates ambiguity; values flexibility and open-ended aspects of the environment.</td>
</tr>
</tbody>
</table>

(e.g., Myers and McCaulley, 1987)
in Myers and McCaulley (1987). He found that SJs had medium to high job satisfaction scores for their occupations, which were predominantly in the areas of skilled services such as child/adult care, apparel manufacturing, and catering.

With only one study examining the relationship between subjective well-being and psychological type in home-based workers, the true nature and extent of the relationship has yet to be specified. Further, although job satisfaction relates to stress, the relationship is far from a perfect one. Therefore, it is difficult to draw any conclusions from Russ’s study that relate directly to the current one, due to the difference in variables studied—job satisfaction versus stress.

The relationship between psychological type and boundary management can only be speculated upon as well, based upon the existing body of knowledge about the attributes of particular types (e.g., Myers & McCaulley, 1987). Based on the fundamental attributes of the four scales, the types most likely to differ widely from each other in terms of boundary management are Judgers and Perceivers. Judging types prefer structure, whereas their Perceiving counterparts resonate to flexibility. Further, a defining characteristic of Js is the strong need to achieve closure—and remaining within the boundaries of the current sphere increases the likelihood that the task at hand will achieve closure. Therefore, it is expected that Js will inherently tend to manage boundaries more naturally than Ps, and will be more apt to implement aspects of the intervention.

If additional predictions based on the other three dimensions are made, it is likely that Introverts, Sensors and Thinkers would show higher boundary management scores than their Extravert, Intuitive and Feeling counterparts. For Introverts and Thinkers, this may be the result of managing particular boundaries that Extraverts and Feelers are less inclined to manage: those involving people. As described in Table 1, Extraverts draw energy from the
environment, especially other people. Therefore, they may avoid “cutting off” this source of stimulation despite the need for concentration in their work. Feeling types always consider the impact on others when making decisions, and may choose not to strictly manage boundaries involving people rather than risk offending, for example, a family member. For Sensers, the reason will be similar to that of Judgers. Their tendencies toward proceeding in a systematic, step-by-step fashion will naturally encourage boundary management. Their Intuitive counterparts, on the other hand, will be much more comfortable with “switching gears” from work to home responsibilities when necessary, and less apt to manage boundaries by nature.

**Internet-based Self-directed Learning and Self-Help**

Research published in the past seven years is beginning to document the preference for and effectiveness of various forms of computer-based, self-directed learning and self-help interventions. Three recent studies indicate a preference for on-line learning and interventions over traditional delivery methods, and speculate as to why this is true. Cooper (2001) found that 70% of the problem gamblers in his sample had previously avoided attendance at face-to-face programs due to stigma. Those who experienced the greatest degree of stigma had not received any care other than the online support group. The safety of anonymity allowed these individuals to experience a greater degree of comfort and more active participation in the online group than they would have experienced in a face-to-face situation.

Similarly, Humphreys and Klaw (2001) speculated that Moderation Management (MM), an alcohol self-help organization, attracts women in higher percentages than other alcohol self-help/mutual aid organizations as a result of its Internet-based mutual aid groups. They presume that women prefer the online group because it gives them the flexibility associated with twenty-four hour access, and it makes self-disclosure easier than in a “live” group where most participants are men. Zabinski, Wilfley, Pung, Winzelberg, Eldredge, and Taylor (2001)
found this same preference for web-based self-help in college-age women at risk of eating disorders. They explored the feasibility of an IRC (Internet Relay Chat, or “chat”) in the delivery of an eating disorders prevention intervention, which was facilitated by a moderator in an on-line format. Participants indicated high satisfaction with the program and believed that it was easier to be honest on the computer compared to a face-to-face discussion “because there was less focus on physical appearances” (p. 133).

Regarding the effectiveness of on-line interventions, the results have been more mixed than with respect to preference. Zabinski et. al. (2001) found that college women (at risk of eating disorders) believed that the intervention helped them to avoid negative feelings and behaviors related to body image, instill positive beliefs about their abilities to change; and eat at regular intervals during the day. McKay, Glasgow, Feil, Boles, and Barrera (2002) evaluated D-Net, an Internet-based, diabetes self-management and peer support intervention. Type two diabetics in two of the four conditions had Internet-mediated access to a professional coach with expertise in providing dietary advice to diabetes patients, as well as interactive resources on a website. Results indicated that there was significant overall improvement across conditions, particularly with respect to dietary behavior. Winzelberg, Eppstein, Eldredge, Wilfley, Dasmahapatra, Dev and Taylor (2000) pursued an extension of preliminary research using a computer-assisted health education module. They found significant differences between the intervention and control groups’ follow-up scores, controlling for baseline scores, on body shape and drive for thinness scales. That is, intervention participants reported a significant improvement in body image and a decrease in drive for thinness, whereas the controls did not.

On the negative side, Murphy-Ende (1996) offered a breast cancer computer program to young women who had recently been diagnosed with breast cancer. Unfortunately, the level of self-directed learning, self-efficacy, and health value did not change significantly over a two-
month period of time. Similarly, Kershaw (2000) assessed pre- to post-test dietary behavior change in pregnant and parenting teenage girls who received a general (not tailored) nutrition education intervention. Participants received the intervention through either an on-line module or in a traditional classroom setting. The study did not find a significant change in dietary behavior pre- to post- intervention for either group. Likewise, Meier’s case study of social workers in an on-line support group (2000) revealed no statistically significant changes in occupational stress, psychological strain, or coping resourcefulness.

Researchers have compared the outcomes of online methods to traditional ones, with favorable results. In the study of D-Net by McKay et al. (2002), results indicated that there were no significant differences among the four conditions - all groups experienced improvement, especially relative to diet. Harvey-Berino, Pintauro, and Gold (2002) found comparable results between in-person and on-line follow-ups to a behavioral weight control intervention for obese adults. While results showed that in-person participants were more likely to attend their meetings and feel more satisfied with their group assignment, there were no differences between the Internet and in-person groups in terms of overall attrition or number of peer contacts made. In addition, there was no significant difference in weight loss between the two venues.

Oenema, Brug, and Lechner (2001) compared a web-based, computer-tailored nutrition education module to a standard paper version. Results indicate that the web-based intervention was valued more and rated as more personally relevant than the general nutrition information. In addition, participants in the on-line intervention demonstrated greater personal awareness and greater intention to change behaviors related to fat, fruit, and vegetable intake.

In summary, computer-based self-directed learning was preferred to traditional methods in three out of four studies; was at least comparable, if not preferable, to traditional
approaches in terms of outcome measures; and approximately 50% of the time, showed positive outcomes on a variety of variables (which, of course, is also influenced by the content of the intervention itself—-not just the fact that it is on-line). Based on the fruitfulness of on-line self-directed learning for other populations, designing a similar approach for home-based working mothers was a logical extension of this line of research. Most home-based working mothers use computers in their work, and many have selected home-based work because of the flexibility it provides vis a vis childrearing and other family obligations. Therefore, it seems likely that they would benefit from an Internet-based intervention that is available at their convenience. However, many important activities already vie for mothers’ attention while they are at home (Collette, 1984). Consequently, their ability to find the time to use an on-line intervention, and their success in completing it, was a significant question.

Rationale for Current Study

Despite the growing number of people engaged in home-based work, the sparse research about the phenomenon leaves many gaps in our base of knowledge. Thus far, it fails to present a systematic study of an on-line, self-directed learning intervention for home-based workers in general, or for home-based working mothers specifically, to help them manage stress in their lives. Instead, the research revolves around comparing teleworkers to office-based peers (e.g., Konradt & Schmook, 1999) and pinpointing correlations with several potential sources of stress such as social isolation (e.g., Hamilton, 1987), role conflict due to blurred boundaries (Ahrentzen, 1990), and the presence of young children (Heck, 1992). Further, it does not explore the extent to which cognitive and other psychosocial factors might affect their ability to benefit from such interventions. Lastly, the existing research does not look at the relationship between stress and boundary management, and ignores the potential role of
psychological type. Therefore, the current study will address some of the deficiencies in this body of research.

**Research Objectives**

Based on the two distinct objectives of the study, the objectives are divided into two phases: (1) pretest-intervention-posttest design, and (2) on-line intervention as prototype. The first phase contains the customary research questions and hypotheses. The second phase documents the lessons learned with respect to the on-line, self-directed learning intervention for home-based working mothers from design, development, recruitment, and follow-up perspectives.

**Phase I. Pretest-Intervention-Posttest.**

Phase I objectives address three levels of analysis: (1) a descriptive level employing baseline differences and correlations, (2) an experimental level gauging the effectiveness of the intervention, and (3) a moderator level testing the effects of psychological type and tenure (length of time working at home) on the intervention.

**Level One: Baseline Description.**

**H1-1: There is a negative relationship between boundary management and stress level for home-based workers.** Since role conflict is commonly referred to as a stressor (e.g., Saks and Ashforth, 2000), managing the boundaries between work and personal roles should result in decreased stress.

**Q1-1: Do linear combinations of Psychological Type Index (PTI) dimensions predict levels of boundary management and stress?** Proponents of psychological type are more interested in the joint influence of various dimensions, rather than each in isolation. Continuous scoring of the PTI allows the use of linear combinations in prediction equations (Short and Grasha, 1995).
H1-2: Introverts will have higher boundary management scores than Extraverts.

H1-3a: Thinkers will exhibit higher boundary management scores than Feelers. It is expected that Introverts and Thinkers will be more apt to enforce boundaries involving people than will Extraverts and Feelers, respectively.

H1-3b: Combining H1-1 and H1-3a, Thinkers will experience less stress than Feelers.

H1-4: Sensing types will have higher boundary management scores than Intuitives.

H1-5: Judgers will have higher boundary management scores than Perceivers. A Sensing types’ desire to proceed in a systematic fashion will encourage the management of boundaries; whereas an Intuitives’ preference for “jumping around” may make them less apt to do so. For this reason, Ss should exhibit higher boundary management scores. Similarly, it is expected that Judgers- -by virtue of their affinity for structure and order- -will exhibit higher boundary management scores than Perceivers.

H1-6a: “New” HBWs who have been working for one year or less, will show lower boundary management scores than experienced ones. Ahrentzen (1990) indicates that “in the first year of working at home, interruptions were disruptive and adjustments were consequently made” (p. 738).

H1-6b: Taking H1-1 and H1-6a together, new HBWs will experience greater stress than experienced HBWs do.

Level Two: Effectiveness of Intervention.

H2: An intervention aimed at boundary management will reduce stress. The decrease in stress level for the experimental group, who receives the boundary management intervention, will be significantly greater than that of the no-intervention control group. As in H1-1, increasing boundary management should result in decreased stress.
Level Three: Impact of Moderator Variables.

Q3: Do the E-I, S-N, and J-P dimensions moderate the impact of boundary management on stress? Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964) found that Introverts tend to suffer more work-related tension and be much more subject to high role conflict than Extraverts. Therefore, Is might experience a greater degree of stress reduction than Es do. However, Is suffer far less tension under conditions of low role conflict than do Es. Is working at home may not experience “severe” role conflict; thus, the magnitude of the difference, if any, remains to be seen.

With respect to the S-N dimension, it is likely that the magnitude of stress reduction for Sensers will be lower than for Intuitives. Although Ss should exhibit higher boundary management scores both pre-test and post-test, Ns are more comfortable “changing gears” than Ss. Therefore, the interruptions and distractions that result from Ns failing to manage certain boundaries may not have as great an impact on them as it would on Ss. However, the lack of research connecting these tendencies to boundary management makes this supposition largely speculative.

Similarly, Judgers will be more inclined to fully adopt additional boundary management practices during the intervention than Perceivers. Therefore, we would expect Js to exhibit less stress than Ps at post-test. However, P’s greater comfort with “open-endedness” may allow them to thrive under less “bounded” conditions. Thus, it is possible that there will be no difference in pre-test levels of stress. Further, if Ps attempt to implement the intervention, they may actually show an increase in stress from pre- to post-test due to imposing boundaries on themselves. Much as in the case of the S-N dimension, an interaction between the boundary management and the J-P dimension is expected; however, there is insufficient research to support this premise.
Hypothesis 3: The boundary management intervention will be more effective for new home-based workers (HBWs) than for experienced HBWs. The magnitude of the change in boundary management and stress scores between pre- and post-test will be much greater for new HBWs than for experienced ones. New HBWs are still making adjustments to remove distractions (Ahrentzen, 1990), whereas experienced HBWs have already fine-tuned their situations. Although both new and experienced HBWs are asked to manage the same number of new boundaries, new HBWs may be apt to manage more new boundaries than required. Therefore, new HBWs will show a greater increase in boundary management and a larger decrease in stress than experienced HBWs will at post-test.

Phase II. On-line Intervention

The post-hoc Phase II objectives addressed three different aspects of on-line research development and research process: (1) design and development, (2) recruitment, and (3) follow-up.

Aspect One: Design and Development

(1) What are the tasks involved in designing and developing an online research protocol, when the designer/developer is new to website design? How much time does it take? The researcher was well-versed in instructional design, but completely unfamiliar with web design, prior to beginning this research project. Therefore, the study provided an excellent opportunity to determine the tasks involved and to estimate the amount of time a researcher might expect to take to design an on-line research protocol, using a WYSIWIG ("what you see is what you get") web design application such as Microsoft Frontpage 2000 (Microsoft Corporation, 2000).
Aspect Two: Recruitment.

(2) Without an entrée into this population, can the target number of home-based working mothers be recruited for an online intervention? As many researchers can attest, it is often difficult to obtain a sufficient number of subjects under “ideal” circumstances where access to the population in question already exists. Thus, there were two obstacles to overcome in this case: lack of contact with sample sources and no face-to-face or even vocal communication with the majority of the potential subjects. Would the “impersonal,” electronic mail contacts impact the ability to recruit a sufficient number of participants?

Aspect Three: Follow-up.

(3) How time-intensive are follow-up e-mails that remind participants to finish? Although a more experienced web designer would, no doubt, be able to automate the follow-up process, the current researcher could not. Therefore, follow-up communications had to be generated and sent manually. Further, it was expected that many mothers would not succeed in participating in the next phase of the research with only a single follow-up e-mail, but would require multiple follow-ups. Therefore, the amount of time that would be spent following up with “delinquent” participants would be a significant question.

Method

Phase I. Pretest-Intervention-Posttest

Subjects

Subjects who fit the definitional requirements of home-based workers were included, namely: individuals who work from their homes or immediate property (Hamilton, 1987) on a regular basis; who are employed directly for a company or university, work via a contracting firm, or are self-employed; and for whom mental concentration in their work is usually essential. In total, 94 participants were obtained from a non-random, convenience sample. That
is, 94 home-based working mothers went to the website and, at minimum, filled out the consent form. Of those 94, 76 mothers completed the Psychological Type Index (PTI) as well and were able to be assigned to a condition.

Due to the greater degree of involvement required, it was anticipated that the experimental group would show a higher rate of attrition than the control group. Further, Level Three analyses required sufficient numbers of both values of the moderator variables in the experimental group for statistical power. For these reasons, the experimental group was randomly assigned two subjects for every one assigned to the control group (see the Procedure for the specific assignment process). As a result, 51 subjects were randomly assigned to the experimental condition and 25 were assigned to the control condition.

At least 40 subjects (across both conditions) completed all the pre-test measures (the Ns vary based on the measure or items under consideration, as some subjects have missing subscales and/or missing values within certain subscales). Two of the women who completed the S1 (pretest) measures were not mothers and were struck from the analyses. Approximately 17 of the Experimental subjects completed B1 (the first stage of the intervention), 6 of them went on to complete B2, and 3 made it to the B3 (final) stage of the intervention. Of the 51 that were assigned to the Experimental condition, only 1 finished the S2 (posttest) measures. Of the 25 assigned to the Control condition, only 7 finished the post-test measures (28%). The numbers of participants that completed other surveys in the module are presented under Follow-up in the Results section. Note, however, that in order to increase sample size as data collection became drawn out over several months and the high attrition rate was made manifest, participants who signed up toward the end were told that they only needed to complete the S1 section of the research in order to qualify for the free workshop. Although this blurs the “true” attrition rate, it is still apparent that mothers did not find the time to complete the intervention despite up to
two additional follow-up e-mails per phase. As one mother in the experimental group (an ENFP: Extravert-Intuitive-Feeling-Perceiver) reported in her B2 Journal, “well first my time management is slipping away from me. I received the reminder email at the end of [A]ugust and it took me until mid October to reply.”

The high attrition rate is supported by comments various home-based working mothers made. For example, one mother who is a personal contact of the researcher, was invited to participate in the later months of the study. Although she had the best of intentions, she managed to fill out the Consent Form and nothing else. During a subsequent telephone conversation, she said she was just about to sit down to fill out the surveys, when her youngest child (approximately 18 months old) awoke early from his nap and thwarted her efforts. The researcher also received this personal communication from a college friend (an ISTJ: Introvert-Senser-Thinker-Judger) who was participating in the research: “Sorry I’ve been so bad as a ‘subject.’ It’s hard to find enough hours in a day, as you know. I’m happier now that I’m in the office 2-3 days/week (½ time) since I’m able to separate work and home life again. It severely limits my play date time though.” Apparently, many mothers desired to participate more than they could find the time to do so.

**Instruments**

Subscales were selected from the Holistic Stress Test (HST: Grasha, 1996b), a 200-item self-report scale that identifies common stressors and coping strategies used to manage stress. It aims to evaluate perceptions of stressors that affect people’s lives and their perceptions of the coping strategies they use. The seven stress and eight coping strategy subscales of the test are comprised of both personality and situational sources of stress, as well as coping attempts based on personality and behavior. The fifteen subscales were derived through a rational approach to scale construction as delineated by Jackson (1971). The selected subscales are as follows: Work
Stress, Family Stress, Life Changes, and the Resource subscale (See Appendix A). The Family Stress subscale was modified to include three items about parent-child relationships.

Evidence for the reliability and validity of the HST has been established in previous research. The 15 subscales had a mean Cronbach’s alpha of .74 in a previous study (Short and Grasha, 1995). The corresponding mean for sources of stress was .79. In the current study, the Job Stress subscale shows an alpha of .83 ($N = 45$), while the Family Stress subscale has a value of .81 ($N = 51$). In terms of construct validity, the various sets of subscales show the expected positive correlations within types, e.g., the stress subscales. In addition, where two sets of subscales purportedly measure opposite sides of the same process such as the stress subscales and the coping strategy subscales, they correlate negatively as anticipated (Grasha, 1991). Further, the HST shows the anticipated relationships with various other instruments such as the Myers-Briggs Type Indicator (Short and Grasha, 1995).

Psychological Type Index (PTI; Grasha, 1997) is a 68-item scale that employs the empirical correlates of psychological type as assessed by the Myers-Briggs Type Indicator (MBTI; Myers and McCaulley, 1987). The scale is comprised of 17 pairs of statements in each of four bipolar dimensions: Extraversion-Introversion, Sensing-Intuition, Thinking-Feeling, and Judging-Perceiving (see Table 1 for a description of each of the dimensions). Participants are asked to select which of the two statements in each pair best describe themselves. Scoring consists of assigning one point to the preference reflected in a chosen statement. Because each scale contains an odd number of items, scores will be at least one point higher for a particular pole on each dimension; therefore, a preference (e.g., Extravert) can be assigned. Although the item pairs are shown next to each other to conserve space in Appendix B, they appeared on subsequent lines on the website to facilitate clicking on the proper responses (a sample screenprint is presented in Appendix C). To minimize response bias, items from the four
subscales were mixed and choices alternated within each subscale’s set of items such that a roughly equal number of, for example, Extravert and Introvert responses appeared as the first choice within the set.

The Psychological Type Index (PTI) was designed using a rational approach to scale construction (e.g., Jackson, 1971) and is grounded in the outcomes of research studies using the MBTI. Thus far, research suggests that the PTI items identify underlying dimensions which are similar to those of the MBTI. Personality profile classification—based upon combinations of the four dimensions of psychological type—match classifications using the Myers-Briggs Type Index 75% of the time. Using continuous scoring, the PTI shows test-retest reliability over a 7-day period (N = 250): Extraversion-Introversion (r = .88); Sensing-Intuition (r = .83); Thinking-Feeling (r = .79); and Judging-Perceiving (r = .84) (Grasha, 1996a). The advantage of this instrument over the MBTI is the empirical grounding of the items and relatively short administration time (an average of 15 minutes). This has made it ideal for inclusion in current research programs in teaching-learning issues (Boehmer, Howe, & Myers, 1998; Grasha, 1998) and pharmacy dispensing errors (Grasha & Schell, 1998; Tranum, Grasha, Heidemann, & Winterstein, 2000) where large batteries of tests are used.

Home/Work Boundaries Inventory (HBI). This inventory was designed for the current study, drawing from previous research on managing boundaries (Ahrentzen, 1987) and the rituals of home workers (Hill et al., 1998), as well as self-management techniques (Cormier & Cormier, 1998). The final four questions on job/family interference were used by McLaughlin (1981) and the 1977 Quality of Employment Survey (Quinn and Staines, 1979). The HBI can be found in Appendix D. Scoring consists simply of assigning either a one to indicate that a boundary is managed (e.g., “I have a separate room used exclusively for my office”), or a zero if it is not (e.g., “Other activities occur in [my workroom], and my workspace is not separate from
the rest of the space”). Due to the small N for the study, the reliability of the Home/Work Boundaries Inventory (HBI) remains in question. However, the initial estimates of coefficient alpha are .76 for all 19 numerically-scored items (N = 55); .84 for all 8 concentration items (N = 58); and .75 for HBI “Some”, which consists of all eight concentration items, along with the following subset of checklist items: Space 1 and 4, Time 3 and 4, and Social 1 and 2 (N = 58).

Procedure

In the advertisement, participants were given the URL of the website that contained all the research instruments and interventions. The last two paragraphs on the homepage instructed readers to click on either the Information button (if they were new to the study and wanted further details) or the appropriate research button at left (see Appendix E to view the homepage in its entirety). Based on the participant’s stage in the research protocol, she was sent the appropriate username and password combination/s for the next section/s she needed to complete. At all visits to the website, they were asked to read all the instructions carefully and click on the responses that best fit their situations. They were encouraged to take breaks in between screens if necessary, and informed that they could quit at any time. At their initial visit, subjects clicked on the Sign-Up button and filled out the consent form (see Appendix F), the survey of demographic information (see Appendix G), and the Psychological Type Index only. The researcher then matched the sample such that the ratio of each of the 16 PTI types (ESTJ, ENTJ, ISFP, INFP, etc.) across the experimental and control groups was roughly 2:1, randomly assigning to conditions within each type.

Via electronic mail message, participants were asked to return to the website and click on the S1 (pretest) button in order to fill out the Home/Work Boundary Inventory (HBI) and selected subscales from the Holistic Stress Test (HST). The Boundary Management – Experimental (BME) subjects were then asked to click on the B1 button and participate in the
intervention, which follows. A copy of the BME appears in Appendix H. The No-Intervention Control (NIC) subjects had no further activities; they were informed that they would be contacted for follow-up purposes in six weeks. If records for a particular subject were not found for the subscales within a reasonable period of time of the initial notification, follow-up e-mails were sent at regular intervals. The Follow-up in the Results section gives examples of the number and frequency of follow-up communications. This applied to subsequent research activities as well. For technical information about forms submission, downloading data from the website, importing into a statistical package, calculation of psychological type scores and reverse scoring, see Appendix I.

Similar to the protocols of Levi (1985) and Short (1997), BME subjects implemented the intervention in a self-directed fashion over the course of six weeks. First, participants were provided with a brief explanation of boundary management, and told that managing boundaries between home and work help to reduce stress (see Appendix J for a screenprint). Second, they were given a list of reasons and ways to manage boundaries. For several items, additional suggestions that aid their implementation were provided. Finally, they were asked to develop an “action plan” consisting of two new methods from two different boundary categories (e.g., Time, Mental) that they could implement in the subsequent two-week period. A structured format for the action plan was provided (see Appendix K for a view of the Action Plan form).

Two weeks later, BME participants received an electronic mail message asking them to return to the website and click on the B2 section. They evaluated their implementation of the new suggestions by typing in an on-line journal (see Appendix L to view the Journal). They were asked to keep using the ones that were working for them, and add to their action plan two additional ones- -or one “big” (time-consuming) one- -they thought would be helpful in the
next two weeks. Two weeks later (four weeks from pre-test), BME subjects were asked to revisit the website. BME subjects were asked to once again evaluate (via journal) their implementation of the suggestions, abandoning any strategies that were not working, and add a new one or two for the next two weeks.

Two weeks later (six weeks from pre-test), subjects in both conditions (BME and NIC) were asked to return to the website and click on the S2 button. Here, they were administered the selected scales from the Holistic Stress Test and the Home/Work Boundaries Inventory a second time. In addition, BME subjects were to complete open-ended follow-up questions in the Q1 section, which were intended as manipulation checks: asking whether the status of the researcher influenced their participation, verifying that they accomplished their action plan items, and evaluating the effectiveness of the intervention. The BME intervention was then made available to subjects from the NIC condition.

Phase II. On-line Intervention.

Aspect One: Design and Development.

The researcher created an on-line module where participants accessed all research-related forms and the intervention. The module was created using Microsoft Frontpage 2000 (Microsoft Corporation, 2000) and hosted on a University server with Frontpage extensions, allowing for the unique codes of the Frontpage program to execute successfully. The design, flow, and content of the module were established based on sound instructional design principles and the researcher’s previous experience working with developers of on-line training.

All pages of the module used the Microsoft “Sumi Painting” theme for page backgrounds, banners, buttons, headers, bullets and text font. Text color was set to the default for this theme, except in the Consent Form, Action Plan, and Journal where text needed to be
printable from a black-and-white printer. The Shared Borders function was used to provide all pages within the module with links to the homepage, parent level and child level pages. For ease of navigation, sibling level links were placed at the bottom of most pages and anchors were placed in long pages, allowing the participant to “jump” directly to the desired section. The research buttons (S1, B1, etc.) on the homepage were password protected, with a different username and password combination for each. Part of the homepage for the module (http://homepages.uc.edu:8000/~sohnslj/) is shown here:

The majority of forms used radio buttons, which are appropriate for forced-choice responses; and/or checkboxes, where one or more choices may apply. Forms also used textboxes in which the subjects were able to type either a limited (e.g., 25 characters) or unlimited amount of text; and drop-down boxes, where participants were able to choose from
one of several options upon clicking the down arrow located at the end of the box. Issues associated with design and development appear in the Results section.

**Aspect Two: Recruitment.**

Initially, the study was advertised in the electronic magazine of Home-Based Working Moms (www hbwm com), which had a subscribership of 6,000 at the time of advertising; by WAHM (Work At Home Moms; www wahm com); and by MOMS HOME WORK com. Appendix M contains the “advertisement” that study participants received. Later, due to insufficient response from two separate advertisements in these sources, other sample sources were contacted via mail, electronic mail, and telephone in order to increase the number of participants (see Appendix N for a list of sources). As a result of these recruitment efforts, 94 participants were recruited.

**Aspect Three: Follow-up.**

After an initial e-mail reminder, roughly half of the subjects succeeded in completing the S1 (pretest) phase of the research in a timely fashion, as will be seen in the Results section. The other half required a second reminder, and roughly one-third failed to participate again even after three communications. For the purposes of this study, these phenomena are data. An estimate of the length of time taken to follow up with participants appears in the Results section.

**Results**

**Phase I. Pretest-Intervention-Posttest.**

**Level One: Baseline Description.**

**Hypothesis 1-1: There is a negative relationship between boundary management and level of stress for home-based workers.** Zero-order correlations were calculated for the relationships between both the Holistic Stress Test (HST) Job and Family Stress subscales, and
various subsets of the Home/Work Boundaries Inventory (HBI). None of the relationships between the HST Job Stress subscale and HBI subsets were significant, as shown in Table 2. Therefore, this hypothesis was not supported with respect to Job Stress. Hypothesis 1-1 was supported, however, for Family Stress. As the asterisks in Table 2 indicate, three of the four correlations were significant at the .01 level: HBI total score, HBI “Some,” and HBI Concentration. Thus, there does appear to be a negative relationship between boundary management and level of family stress for home-based working mothers.

Question 1-1: How do linear combinations of PTI dimensions predict levels of boundary management and stress? To answer this question, zero-order correlations were calculated first, to determine in which order Psychological Type Index (PTI) dimensions should be entered into the regression equations. As shown in Table 3, none of the zero-order correlations between individual PTI dimensions and boundary management, and single PTI dimensions with Job and Stress subscale scores, were significant. Despite this, linear regression was used to see if, by entering the PTI dimensions in the order of strongest zero-order correlation to weakest, some interesting combinations could be found. Various HBI item subsets, as well as HST Job and HST Family subscales, were entered into separate equations. As shown in Table 4, there were no significant results. Unfortunately, the answer to Question 1-1 appears to be, “They don’t.”

Hypothesis 1-2: Introverts will have higher boundary management scores than Extraverts. Table 5 shows the means and standard deviations for three of the HBI item subsets, using the Psychological Type Index dimensions as grouping variable. Introverts had a mean HBI Concentration score of 28.22, while the mean for Extraverts was 23.53. This difference was in the predicted direction, and a t-test for independent samples indicates that Introverts have statistically higher scores than Extraverts do (p < .05, as shown in Table 6). For the HBI
Table 2

H1-1. Correlations between Job and Family Stress, and Boundary Management

<table>
<thead>
<tr>
<th>Measure of Stress</th>
<th>Measure of Boundary Management</th>
<th>N</th>
<th>R</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>HST Job Stress</td>
<td>HBI Total</td>
<td>40</td>
<td>-.18</td>
<td>.14</td>
</tr>
<tr>
<td></td>
<td>HBI Concentration subscale</td>
<td>42</td>
<td>-.22</td>
<td>.08</td>
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<tr>
<td></td>
<td>HBI Checklist</td>
<td>40</td>
<td>-.04</td>
<td>.39</td>
</tr>
<tr>
<td></td>
<td>HBI “Some”</td>
<td>42</td>
<td>-.23</td>
<td>.07</td>
</tr>
<tr>
<td>HST Family Stress</td>
<td>HBI Total</td>
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<td>-.38</td>
<td>.01**</td>
</tr>
<tr>
<td></td>
<td>HBI Concentration subscale</td>
<td>46</td>
<td>-.36</td>
<td>.01**</td>
</tr>
<tr>
<td></td>
<td>HBI Checklist</td>
<td>45</td>
<td>-.21</td>
<td>.08</td>
</tr>
<tr>
<td></td>
<td>HBI “Some”</td>
<td>46</td>
<td>-.36</td>
<td>.01**</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (1-tailed).

“Some,” the difference was also in the correct direction (M = 35.78 v. M = 31.79); however, it failed to reach significance. Therefore, some support was found for Hypothesis 1-2.

Hypothesis 1-3a: Thinkers will exhibit higher boundary management scores than their Feeling counterparts. Although none of the differences were significant (see Table 6), the trends for the HBI Concentration and HBI “Some” subsets were in the predicted direction, as shown in Table 5: M = 27.95 v. M = 25.89; and M = 35.68 v. M = 33.72. For the Checklist and Total scores, Feeling types scored higher than their Thinking peers; although the mean differences are very small (see Appendix O). Therefore, Hypothesis 1-2 was not supported.
### Table 3

**Q1-1. Correlations of Boundary Management and Stress with Psychological Type**

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>n</th>
<th>Extraversion-Introversion</th>
<th>Sensing-Intuition</th>
<th>Thinking-Feeling</th>
<th>Judging-Perceiving</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBI Total</td>
<td>51</td>
<td>-.01</td>
<td>.00</td>
<td>-.05</td>
<td>.06</td>
</tr>
<tr>
<td>HBI Concentration</td>
<td>55</td>
<td>-.23</td>
<td>.08</td>
<td>.17</td>
<td>.09</td>
</tr>
<tr>
<td>HBI Checklist</td>
<td>53</td>
<td>.09</td>
<td>-.21</td>
<td>-.16</td>
<td>-.07</td>
</tr>
<tr>
<td>HBI “Some”</td>
<td>55</td>
<td>-.14</td>
<td>.01</td>
<td>.12</td>
<td>.07</td>
</tr>
<tr>
<td>HST Job Stress</td>
<td>45</td>
<td>-.07</td>
<td>-.10</td>
<td>-.09</td>
<td>-.11</td>
</tr>
<tr>
<td>HST Family Stress</td>
<td>49</td>
<td>.21</td>
<td>-.08</td>
<td>-.09</td>
<td>-.19</td>
</tr>
</tbody>
</table>

### Table 4

**Q1-1. Multiple Regression Equations**

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>R</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBI Total</td>
<td>.13</td>
<td>.94</td>
</tr>
<tr>
<td>HBI Concentration</td>
<td>.29</td>
<td>.55</td>
</tr>
<tr>
<td>HBI Checklist</td>
<td>.24</td>
<td>.57</td>
</tr>
<tr>
<td>HBI “Some”</td>
<td>.22</td>
<td>.40</td>
</tr>
<tr>
<td>HST Job Stress</td>
<td>.15</td>
<td>.55</td>
</tr>
<tr>
<td>HST Family Stress</td>
<td>.30</td>
<td>.38</td>
</tr>
</tbody>
</table>
Table 5

H1-2 – 1-6a. Means and Standard Deviations

<table>
<thead>
<tr>
<th>Measure of Boundary Management</th>
<th>Grouping Variable</th>
<th>n</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBI Total Introverts</td>
<td>35</td>
<td>41.71</td>
<td>9.20</td>
<td></td>
</tr>
<tr>
<td>HBI Total Extraverts</td>
<td>16</td>
<td>39.38</td>
<td>6.71</td>
<td></td>
</tr>
<tr>
<td>HBI Concentration Introverts</td>
<td>36</td>
<td>28.22</td>
<td>6.82</td>
<td></td>
</tr>
<tr>
<td>HBI Concentration Extraverts</td>
<td>19</td>
<td>23.53</td>
<td>9.58</td>
<td></td>
</tr>
<tr>
<td>HBI “Some” Introverts</td>
<td>36</td>
<td>35.78</td>
<td>8.03</td>
<td></td>
</tr>
<tr>
<td>HBI “Some” Extraverts</td>
<td>19</td>
<td>31.79</td>
<td>10.21</td>
<td></td>
</tr>
<tr>
<td>HBI Concentration Thinkers</td>
<td>19</td>
<td>27.95</td>
<td>4.94</td>
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</tr>
<tr>
<td>HBI Concentration Feelers</td>
<td>36</td>
<td>25.89</td>
<td>9.35</td>
<td></td>
</tr>
<tr>
<td>HBI “Some” Thinkers</td>
<td>19</td>
<td>35.68</td>
<td>5.84</td>
<td></td>
</tr>
<tr>
<td>HBI “Some” Feelers</td>
<td>36</td>
<td>33.72</td>
<td>10.24</td>
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</tr>
<tr>
<td>HBI Total Sensing</td>
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<td>7.09</td>
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</tr>
<tr>
<td>HBI Total Intuition</td>
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<td>10.00</td>
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<td>HBI Concentration Sensing</td>
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<td>28.19</td>
<td>7.76</td>
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<tr>
<td>HBI Concentration Intuition</td>
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<td>24.39</td>
<td>8.24</td>
<td></td>
</tr>
<tr>
<td>HBI “Some” Sensing</td>
<td>32</td>
<td>35.84</td>
<td>8.31</td>
<td></td>
</tr>
<tr>
<td>HBI “Some” Intuition</td>
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<td>32.39</td>
<td>9.61</td>
<td></td>
</tr>
<tr>
<td>HBI Concentration Judging</td>
<td>42</td>
<td>26.19</td>
<td>8.68</td>
<td></td>
</tr>
<tr>
<td>HBI Concentration Perceiving</td>
<td>13</td>
<td>27.92</td>
<td>6.01</td>
<td></td>
</tr>
</tbody>
</table>

Note. Mean differences of less than 1.5 appear in Appendix O.
### Table 6

**H1-2 – H1-6a. T-tests between Boundary Management and Grouping Variables**

<table>
<thead>
<tr>
<th>Grouping Variable</th>
<th>Measure of Boundary Management</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion-</td>
<td>HBI Total</td>
<td>-.91</td>
<td>49</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI Concentration</td>
<td>-2.11</td>
<td>53</td>
<td>.02*</td>
</tr>
<tr>
<td></td>
<td>HBI Checklist</td>
<td>-.16</td>
<td>51</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI “Some”</td>
<td>-1.59</td>
<td>53</td>
<td>ns</td>
</tr>
<tr>
<td>Introversion</td>
<td>HBI Total</td>
<td>-.09</td>
<td>49</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI Concentration</td>
<td>.89</td>
<td>53</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI Checklist</td>
<td>-.54</td>
<td>51</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI “Some”</td>
<td>.77</td>
<td>53</td>
<td>ns</td>
</tr>
<tr>
<td>Thinking-Feeling</td>
<td>HBI Total</td>
<td>1.48</td>
<td>49</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI Concentration</td>
<td>1.74</td>
<td>53</td>
<td>.04*</td>
</tr>
<tr>
<td></td>
<td>HBI Checklist</td>
<td>-.27</td>
<td>51</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI “Some”</td>
<td>1.42</td>
<td>53</td>
<td>ns</td>
</tr>
<tr>
<td>Sensing-Intuition</td>
<td>HBI Total</td>
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<td>49</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI Concentration</td>
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<td>53</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI Checklist</td>
<td>-.27</td>
<td>51</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI “Some”</td>
<td>-.49</td>
<td>53</td>
<td>ns</td>
</tr>
<tr>
<td>Judging-Perceiving</td>
<td>HBI Total</td>
<td>.05</td>
<td>45</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI Concentration</td>
<td>.55</td>
<td>49</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI Checklist</td>
<td>-.54</td>
<td>47</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI “Some”</td>
<td>.14</td>
<td>49</td>
<td>ns</td>
</tr>
<tr>
<td>“Old” v. “new” HBWs</td>
<td>HBI Total</td>
<td>.05</td>
<td>45</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI Concentration</td>
<td>.55</td>
<td>49</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI Checklist</td>
<td>-.54</td>
<td>47</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>HBI “Some”</td>
<td>.14</td>
<td>49</td>
<td>ns</td>
</tr>
</tbody>
</table>

* Significant at the .05 level, 1-tailed test.
Hypothesis 1-3b: Combining Hypotheses 1-1 and 1-3a, Thinkers will experience less stress than Feelers. Although the trend for job stress was in the predicted direction (M = 40.63 v. M = 46.38, as shown in Table 7), t-tests failed to show statistical significance (see Table 8). The difference between Thinking types and Feeling types on Family Stress was negligible, with a mean difference of only .5, which also failed to achieve significance. Therefore, Hypothesis 1-3b was not substantiated.

Table 7

<table>
<thead>
<tr>
<th>Measure of Stress</th>
<th>Grouping Variable</th>
<th>n</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Stress</td>
<td>Thinkers</td>
<td>16</td>
<td>40.63</td>
<td>12.65</td>
</tr>
<tr>
<td></td>
<td>Feelers</td>
<td>29</td>
<td>46.38</td>
<td>11.57</td>
</tr>
<tr>
<td>Family Stress</td>
<td>Thinking</td>
<td>15</td>
<td>33.47</td>
<td>11.03</td>
</tr>
<tr>
<td></td>
<td>Feeling</td>
<td>34</td>
<td>33.97</td>
<td>8.86</td>
</tr>
<tr>
<td>Job Stress</td>
<td>“New” HBWs</td>
<td>11</td>
<td>42.91</td>
<td>11.11</td>
</tr>
<tr>
<td></td>
<td>“Old” HBWs</td>
<td>32</td>
<td>44.09</td>
<td>11.47</td>
</tr>
<tr>
<td>Family Stress</td>
<td>“New” HBWs</td>
<td>11</td>
<td>32.91</td>
<td>9.39</td>
</tr>
<tr>
<td></td>
<td>“Old” HBWs</td>
<td>35</td>
<td>32.86</td>
<td>8.68</td>
</tr>
</tbody>
</table>

Hypothesis 1-4: Sensers will have higher boundary management scores than Intuitives. For the HBI Concentration subscale, Sensing types showed a mean score of 28.19 while the mean score for Intuitives was 24.39 (see Table 5). As seen in Table 6, the trend was in the direction predicted and was significant at the .05 level. For the HBI Total and HBI “Some”,
Table 8

H1-3b and H1-6b. T-tests of Grouping Variables with Stress

<table>
<thead>
<tr>
<th>Grouping Variable</th>
<th>Measure of Stress</th>
<th>t</th>
<th>Df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thinking-Feeling</td>
<td>Job Stress</td>
<td>-1.55</td>
<td>43</td>
<td>.07</td>
</tr>
<tr>
<td></td>
<td>Family Stress</td>
<td>-0.17</td>
<td>47</td>
<td>Ns</td>
</tr>
<tr>
<td>“New” v. “Old”</td>
<td>Job Stress</td>
<td>-0.30</td>
<td>41</td>
<td>Ns</td>
</tr>
<tr>
<td></td>
<td>Family Stress</td>
<td>0.02</td>
<td>44</td>
<td>Ns</td>
</tr>
</tbody>
</table>

the differences approached significance (p < .08). Therefore, some support was provided for this hypothesis.

**Hypothesis 1-5: Judging types will have higher boundary management scores than their Perceiving counterparts.** T-tests for independent samples were calculated for the various HBI items subsets and the HBI total, using the PTI J-P dimension as the grouping variable. This hypothesis was not supported for any of the HBI analyses. Perceivers, in fact, had slightly higher scores than Judging types for all four subsets. The largest difference was HBI Concentration, with a difference of 1.7 (as shown in Table 5). Therefore, no significant- -or practical- -difference was found between the boundary management scores of Judging and Perceiving types.

**Hypothesis 1-6a: “New” home-based workers (HBWs) who have been working for one year or less, will show lower pre-test boundary management scores than experienced ones.** For the HBI Checklist, new HBWs did exhibit slightly lower scores (12.92) than their more experienced counterparts (13.62). However, a t-test indicated that the difference was not significant from a statistical or practical standpoint. For the other analyses, new HBWs actually exhibited slightly higher scores than their more experienced counterparts, although the
differences ranged from only .16 to 1.46 and were not statistically significant (see Appendix O). Thus, no support was provided for this hypothesis.

**Hypothesis 1-6b: Taking Hypotheses 1-1 and 1-6a together, new home-based workers (HBWs) will experience greater pre-test stress than experienced HBWs do.** Since H1-6a did not hold, 1b was not expected to be supported, either. T-tests for independent samples were calculated for both the HST Job Stress and Family Stress subscales, using tenure of work at home as the grouping variable; the results appear in Table 8. With respect to Job Stress, “Old” HBWs actually showed slightly higher pre-test stress than did “new” HBWs, although the difference is relatively small (1.18) and the value of the t-test not statistically significant. When Family Stress is considered, there is no significant difference between the two groups. Therefore, no support is found for Hypothesis 1-6b.

**Level Two: Effectiveness of Intervention.**

**Hypothesis 2: An intervention aimed at boundary management will reduce stress.** The decrease in stress level for the experimental group will be significantly greater than that of the control group. Due to the high attrition rate, it was not possible to determine whether the boundary management intervention was effective in reducing stress this study. However, from an anecdotal standpoint, at least four home-based workers wrote e-mails to thank the researcher for doing this study, indicating that the action plan was already helping them, that they were getting some “great” ideas.

**Level Three: Impact of Moderator Variables.**

**Question 3: Do the E-I, S-N, and J-P dimensions moderate the impact of boundary management on stress?** No data are available to make such comparisons in this study. However, there is a substantial amount of qualitative data that points to differences among the
types in terms of how they manage boundaries, which boundaries they choose to manage, and which ones are problematic for certain types.

**Hypothesis 3:** The boundary management intervention will be more effective for new HBWs than for experienced HBWs, such that the magnitude of the change in boundary management and stress scores between pre-test and post-test will be much greater for new HBWs than for experienced ones. Again, there is insufficient data to address this hypothesis.

**Phase II. On-line Intervention.**

**Aspect One: Design and Development.**

(1) What are the tasks involved in designing and developing an online research protocol, when the designer/developer is new to website design? How much time does it take? Among the development tasks were: creating of a flowchart of the research process (both human and computer activities); taking the MS Frontpage tutorial; creating a to-do list for placing the inventories on-line; setting up webpages and the navigation structure; and setting password protection in collaboration with University personnel. Appendix P breaks down the development and pilot phases into individual tasks and their timeframes. The researcher succeeded in designing and developing an online research protocol in what appears to be a reasonable timeframe for a first attempt – 132 hours of work over the course of 2 months and 9 days, concurrently with numerous other research project tasks. Subsequent to pilot testing, the researcher spent an additional 8 ½ hours making revisions based on pilot subjects’ feedback and republishing the website.

**Aspect Two: Recruitment.**

(2) Without an entrée into this population, can the target number of home-based working mothers be recruited for an online intervention? The researcher—despite no previous access to a large sample of this population—was able to motivate 94 subjects to fill out
the consent form; thus, it is possible to recruit HBWs for web-based intervention. However, without the entree into this population, it did take three rounds of recruitment prior to data collection over a period of almost 9 months (see Appendix P) and further attempts at recruiting once the study began. The fact that the sample size is 37% smaller than desired indicates that recruitment is indeed difficult without the prerequisite contacts; however, this is generally the case in “live” formats as well. Although only 18 mothers out of the 50 assigned to the intervention group completed at least the first phase of it (36%), there are several reasons why this outcome is still favorable. First, they knew that the intervention was part of a research study in which they were not being paid to participate. Therefore, their levels of motivation were apt to be those of volunteers viewing this primarily as helping someone else, rather than as self-directed learners helping themselves. Their enthusiasm would have been higher, no doubt, had they seen the intervention as something free that was strictly of benefit to them.

Aspect Three: Follow-up.

(3) How time-intensive are follow-up e-mails that remind participants to finish?

After finishing the sign-up phase, for example, 33 out of 65 mothers did not complete the next phase of the research after just one “launch” e-mail; therefore, sending reminder e-mails appeared to be very time-intensive. The researcher did not plan on reporting this figure a priori and, thus, does not have an exact number to report. However, a ballpark estimate is possible in the context of downloading data, coding PTIs, launching participants to the next phase, and following up with “delinquent” subjects. All of these activities occurred during the same time period, and the researcher documented the time spent executing them as a whole. Over a period of about 5 ½ months, roughly 160 hours were spent on these activities (see Appendix P). Perhaps 100 of those hours were spent checking participant tracking records and sending follow-up e-mails to tardy subjects—just over half the time.
Discussion

The data that were available to be analyzed support three out of eight hypotheses. There was a significant negative relationship between boundary management and family stress for this population. Introverts did have higher boundary management scores than Extraverts, as did Sensing versus Intuitive types. As noted in the Introduction, very little research has been done in this area; therefore, results of the research questions and hypotheses have to be viewed as exploratory. However, the trends in many cases were as predicted, which provides direction for future research.

Perhaps most importantly, the first hypothesis – predicting a negative relationship between boundary management and stress – was supported with respect to family stress. Although the nature of the data precludes the establishment of causation, this finding provides a critical first step in the process: showing that home-based working mothers with higher boundary management, on average, do indeed have lower family stress. Of course, the actual direction of causality may be the converse of what was hypothesized, i.e., it is possible that lower family stress facilitates boundary management. Further, there may be an intervening third variable that accounts for the relationship between the two. However, further research could substantiate the hypothesis that better boundary management does, in fact, reduce family stress, and provide the impetus for the design and implementation of effective boundary management interventions for this population.

Hypothesis 1-2, predicting that Introverts would have higher boundary management scores than Extraverts, was supported. Originally, it was thought that since Introverts gain their energy from working with ideas, not people, it was expected that they would be more apt to manage boundaries involving people in order to minimize the drain on their energy level. Extraverts, on the other hand, are energized by people, and were expected to be less apt to
manage people boundaries and, therefore, cut off their best source of energy. The fact that the difference between the Introvert and Extravert means for HBI “Some” was in the correct direction, points to this possibility. However, the result was not statistically significant, so the idea that they manage “people” boundaries differently could only account for part of the difference between the two. The fact that the Concentration subscale was where the significant difference occurred indicates that there is more to it than that. Reviewing the formal definition of Introverts and Extroverts in Table 1, we see that while an Introvert is energized by the inner world and, therefore, focuses attention inward; an Extravert draws energy and, therefore, directs attention toward environment. Thus, Introverts have better concentration (mental boundary management) than Extraverts, although not necessarily a significantly better “people” boundary management.

Hypothesis 1-4, predicting that Sensing types would have higher boundary management scores than Intuitives, was also supported. The premise behind the prediction was that a Sensing type’s desire to proceed in a systematic fashion would encourage the management of boundaries; whereas an Intuitive’s preference for “jumping around” would make them less apt to do so. Given that Ss did, in fact, exhibit higher boundary management scores, the assertion appears to have validity.

Although the results of Question 1-1, exploring how the various Psychological Type Index (PTI) dimensions predict levels of boundary management and stress, reveals no interesting findings in and of themselves, the lack of significant results may reinforces earlier findings that in unambiguous situations—and for many people, work is one such situation—little room is left for interpretation based on personality characteristics (Mischel, 1968). However, there were some cells of the type table which were empty, as seen in Table 9, which may have contributed to the lack of significance in any of the regression analyses.
Table 9

Distributions of Psychological Types

<table>
<thead>
<tr>
<th>Type</th>
<th>n</th>
<th>Type</th>
<th>n</th>
<th>Type</th>
<th>n</th>
<th>Type</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISTJ</td>
<td>12</td>
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<td>16</td>
<td>INFJ</td>
<td>7</td>
<td>INTJ</td>
<td>0</td>
</tr>
<tr>
<td>ISTP</td>
<td>3</td>
<td>ISFP</td>
<td>4</td>
<td>INFP</td>
<td>11</td>
<td>INTP</td>
<td>0</td>
</tr>
<tr>
<td>ESTP</td>
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<td>1</td>
<td>ENFP</td>
<td>11</td>
<td>ENTP</td>
<td>0</td>
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<tr>
<td>ESTJ</td>
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<td>ESFJ</td>
<td>4</td>
<td>ENFJ</td>
<td>8</td>
<td>ENTJ</td>
<td>1</td>
</tr>
</tbody>
</table>

Despite predictions otherwise in Hypotheses 1-3a and 1-3b, Thinkers neither exhibited higher boundary management scores nor experienced less stress than their Feeling counterparts. Although it was expected that Feelers would be less apt to manage boundaries involving people for fear of hurting their feelings, Feeling types actually scored higher than their Thinking peers on the HBI Checklist and HBI Total scores—although the mean differences were very small. However, it is possible that Feelers are actually more apt to manage boundaries involving people, because they want to take the feelings and values of others into consideration when making decisions. Further research is needed to test this hypothesis.

The finding that was the most surprising to the author was the failure to find support for Hypothesis 1-5: Judging types will have higher boundary management scores than their Perceiving counterparts. It was expected that Js, who have an affinity for structure and order, would exhibit higher boundary management scores than Ps—but no evidence was found for this assertion. In fact, Perceivers had slightly higher scores than did Judgers. Although the largest difference—HBI Concentration—was not significant from a statistical standpoint, the lack of significance may have been due to lack of power in the analysis because of sample size issues. The Perceivers had a sample size of only 13 while the Judgers had an n of
47; therefore, one group suffered from low (n < 20) sample size and there was highly unequal n between the two groups. Perhaps most Ps, despite their natural inclinations against such, are thoroughly socialized in the “work” paradigm so that they automatically set boundaries the same way Js did when they began working at home—or found that they had to in order to counteract their natural tendencies. That is, to prevent a lack of structure and productivity that could reign for Ps while working at home, they imposed it on themselves. However, since the difference was not predicted a priori, further research is indicated.

No statistical support was found for Hypotheses 1-6a and 1-6b, which proposed that new home-based workers (HBWs) would show lower pre-test boundary management scores and higher pre-test stress scores than more experienced home-based workers. However, the difference was in the correct direction. Further, there were only 12 “new” home-based workers as opposed to 37 “old” HBWs; thus, unequal group size becomes an issue. Therefore, subsequent research should look again at the differences between new and tenured home-based workers with respect to boundary management and stress.

Despite the inability to collect data on the effectiveness of the boundary management intervention, there is one piece of qualitative information that suggests it may be quite helpful for new HBWs. An HBW who had only been working at home for 4 months, said in the boundaries inventory, “Since this is still new to me (4 mos), I’m still feeling my way around. But I’ve noticed that…[w]hen I am working, I feel guilty that I’m not spending time with the kids. And when I’m spending time with the kids, I feel guilty that I’m not working. So that’s my challenge – to find the right balance. Your questions are actually helping me rethink my approach and giving me some ideas!!!!”

As Meier (2000) stated, the swift development of the Internet “has created opportunities for…interventions, but it also has sparked a multitude of questions about the nature, feasibility,
processes and effectiveness of such interventions” (pp. 259-260). The current study examined
(1) the feasibility of a computer programming novice developing an online research protocol,
(2) the feasibility of recruiting home-based working mothers for such an intervention, (3) the
ability of busy mothers to find the time to participate in the study, and (4) the effectiveness of
the intervention. There were favorable outcomes for the first two issues: the researcher was
able to design the website without too much difficulty and in a timely fashion, and recruiting
home-based working mothers without a clear connection to this population was certainly
difficult but not impossible. However, outcomes for the latter two issues were not as
encouraging: follow-ups were very time-intensive and mothers were simply unable to find the
time to complete the research; therefore, the intervention was not effective because it was not
fully utilized.

One might argue that the researcher could have attempted to repeat the process. With
all things being equal, the high attrition rate in Kershaw (2000) and the comments of the
mothers mentioned in the Results section suggest that the outcome would have been the same.
Although 380 pregnant or parenting teenagers at least logged into Kershaw’s computer-based
nutrition education program, only 36 respondents completed all pre-test and post-test scores –
9% of the sample. All of them were still enrolled in high school; thus, they were at least a
slightly more “captive audience” than the mothers in this study. Many mothers read the
follow-up e-mails and intended to participate more fully, but were hindered by the numerous
work and family obligations that required their attention.

One factor that undoubtedly played a part in the high attrition rate was e-mail follow-
up. Most people nowadays are virtually (pun intended) inundated with electronic mail
messages, due to the ease with which jokes, stories, etc., can be forwarded. Also, they are justly
concerned with the possibility of e-mails causing viruses and worms to infiltrate their
computers. Therefore, a lot of e-mails are deleted without having been viewed at all, particularly those that come from an “unknown” source. To participants who have forgotten the research e-mail address, homebasedwork@fuse.net, it may look like a “spam” address attempting to solicit home-based work—so it is automatically deleted. This was substantiated in one case, where the participant who is a friend of the researcher, e-mailed the researcher on her personal e-mail account, saying that she had completed the sign-up a while ago and was wondering when she could expect an e-mail directing her to the next phase. The researcher replied that she had already sent two follow-up e-mails. The participant replied that she must have deleted them because she didn’t recognize the e-mail address.

Other factors, such as personality type, may have reduced their motivation to participate. The sample consisted predominantly of NFs (Intuitive-Feelers); therefore, the “boundary management” intervention may not have been as appealing to them as it would have been to STs (Sensing-Thinkers). Health promotion research (e.g., Oenema, Brug, and Lechner, 2001) indicates that computer-tailored nutrition information is a more effective tool for motivating people to change to healthier diets than general nutrition information. Therefore, an intervention tailored to their personality type and, perhaps, age of children, might have met with more success.

Another pertinent factor was perception of benefit. Participants knew that this was part of a research study. Rather than feeling like they were willingly “helping themselves” to a free workshop (and having high intrinsic motivation to participate), most probably felt as if they were spending their time primarily helping someone else (the researcher), with little or no compensation for their valuable time (and, therefore, having very low intrinsic or extrinsic motivation to participate). For this reason, they may not have taken it as seriously as they could have. They may have also thought their names were going to be sold (since nowadays this is
often expressly written when someone is signing up for something), and therefore did not participate.

Further, the terrorist attacks on U.S. soil on September 11th, 2001, influenced the end of the data collection period. The researcher met with a group of approximately ten direct sales consultants on the evening of September 10 to recruit participants. Between September 10th and the end of October, only two of them filled out the consent form and only one proceeded to fill out some of the pretest surveys but nothing more. Several participants who filled out the HST Life Changes subscale in September and October listed the attacks as a major life event and usually accorded it a “3,” the mid-point on the scale asking how much it contributed to her stress. One participant summed it up well as a “national tragedy, which had the effect of a personal tragedy.” Without question, the attacks decreased participation and, perhaps, even tainted the responses somewhat during that time period.

In order to improve participation, any of the following would probably have helped: (1) paying them for their participation; (2) using a group of mothers in one geographic location, find a way for them to be a “captive audience” on those occasions; and/or (3) cutting down on the number of surveys and amount of information in the boundary management intervention and, therefore, reducing the amount of time it take to complete the research. Based on the boundaries mothers chose to manage in this study and their apparent success with them based on Journal entries, certain boundaries or categories of boundaries could be targeted.

However, it is possible that paying them for their participation in this venue may still not have proven effective. Mothers were not even able to find the time to participate in the free workshop. Despite three separate electronic mail communications to 77 mothers (16 messages failed to be delivered to their recipients due to e-mail address changes and host server errors),
only 12 found the time to sign up for the online group where the workshop would be held (15.6%).

As with any study, one must consider the limitations of the methodology. In the case of web-based data collection, the possibility for participants to give false information always exists. Safeguards were taken to prevent blatant misuse of the website by “con artists” filling out forms in order to tamper with the results: advertising the research through carefully selected channels and requiring a substantial sign-up portion to be filled out (which would then be scanned by the researcher for suspicious-looking entries) before the research directory usernames and passwords were provided. Therefore, it seems unlikely that such erroneous information entered the data pool. Further, invalid data would be likely to appear as outliers in the data analyses.

Second, given that the researcher was relatively unskilled at website design, the product was more “low-tech” than those that professional designers would create. Improvements from both the standpoint of intervention design and data management could be achieved. From the perspective of the intervention, an interactive program that is capable of tailoring the intervention to such factors as the personality dimensions of the subject, the age and childcare status of children, and tenure of work at home, would be fruitful. With respect to the data management, a website that automates labor-intensive manual processes such as creating and sending copies of consent forms, launching subjects to new phases, and sending e-mail follow-ups, would be very beneficial.

Although the vast majority of mothers failed to complete the intervention, the research itself has helped to answer many of the “questions about the nature, feasibility, processes and effectiveness of such interventions” as Meier (2000) stated (pp. 259-260). It has shed much light on the nature of home-based work for mothers; issues to consider in developing on-line, self-
directed learning interventions for this population; and areas for future research and practical application.
References


Appendix A. Selected subscales from the Holistic Stress Test (HST).

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Tele: 513-871-6984/513-556-5543

Job Stress

Use the rating scale below to indicate the extent to which you agree or disagree that each statement applies to your job. Click in the appropriate circle to indicate the numerical rating of 1 through 5 that you would assign to each item. Try to be as honest and objective as you can.

1 2 3 4 5
Disagree Agree

1. I am expected to provide extra effort for little or no reward.
2. My boss does not demand that my work meet high standards.
3. I am given too many tasks to complete.
4. My relationship with my boss is very friendly.
5. Rigid policies and procedures make it difficult to do my job well.
6. I have a lot of input about decisions that affect my work.
7. Changes in policy and procedures occur frequently.
8. I seldom argue with others on how my job should be done.
9. My job is not clearly defined.
10. I receive regular and immediate feedback when I do a good job.
11. I do not have enough time to complete the tasks I am assigned.
12. I possess the necessary skills and abilities to do my job well.
13. I feel discriminated against because of my age, sex, and/or race.
14. I respect the people for whom I work.
15. What I am expected to do keeps changing.
16. My job has a lot of career potential and advancement opportunities.
17. Promotions and pay raises have not met my expectations.
18. Very few personal conflicts exist between me and the people with whom I work.
19. I am concerned about my position being eliminated in the future.
Appendix A (cont.). Selected subscales from the Holistic Stress Test (HST).

**Family Stress**

Use the rating scale above to indicate the extent to which you agree or disagree that each statement applies to your relationships with your family members. Please use the term “partner” to apply to your spouse or significant other. Click in the appropriate circle to indicate the numerical rating of 1 through 5 that you would assign to each item, or 0 if the item is does not apply to you.

1. My partner is satisfied with the amount of money I make.
2. Life with my partner places a lot of demands upon me.
3. I have very few arguments with my partner.
4. There are unresolved personal problems in our household.
5. I feel loved and accepted by my partner.
6. My partner and I argue over how to spend money.
7. Neither my job nor my partner’s job interferes with our relationship.
8. Members of my family are not happy with my choice of a partner.
9. Sexual conflict or frustration is not a problem in the relationship.
10. Disagreements exist over “who is in charge” and/or who is responsible for things.
11. My partner appreciates the amount of work that I do.
12. My children demand a lot of me.
13. I have very few conflicts with my children.
14. My children love me.
Appendix A (cont.). Selected subscales from the Holistic Stress Test (HST).

**Life Changes**

Using the text box that appears below, briefly describe any major event/s in your life in the past year. Use the scale above to rate the impact of the event/s on your level of stress.

Examples include:

- death of someone close to you
- getting married or starting a new intimate relationship
- separating from a close relationship
- quitting or being fired from a job; beginning a new job
- moving
- achieving a major goal in life
- personal illness or injury
- having a new family member (e.g., baby, adopted child, aging parent) join your household
Appendix A (cont.). Selected subscales from the Holistic Stress Test (HST).

**Resources**

Rate the extent to which you agree or disagree that each item below applies to your life.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td>Agree</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. I tend to own expensive cars, stereos, jewelry and other personal items.
2. I seldom find time to relax and do the things I enjoy.
3. The furniture, carpets, and other decorations in my home are adequate.
4. My wardrobe is unsuitable for the different things I do in life.
5. My level of education/training is adequate for me to get ahead in life.
6. My home or apartment does not have enough space to meet my needs.
7. I would consider the funds I have saved to be adequate for my needs.
8. I do not have a close and happy relationship with at least one other person.
9. I have sufficient knowledge and skills to manage my life.
10. I am likely to lose my job in the near future.
11. Compared to my peers, I have accomplished a lot in life.
12. I am dissatisfied with the number of friends that I have.
13. I have invested money in property, stocks, bonds and/or other investments.
14. When faced with a problem, I can seldom find people willing to help me out.
15. I usually can see solutions to the problems that affect me.
16. Most things that happen to me eventually turn out badly.
17. I have enough time in my life to do what I really want to do.
18. I do not possess enough knowledge and skill to do well at work.
19. I am optimistic about my chances of eventually getting ahead in life.
20. I am unable to live relatively well on the amount of money that I earn.
21. I have the skills to effectively solve problems and make decisions.
22. Religion/spirituality does not help me cope with adversity in my life.
Appendix B. Psychological Type Index (PTI).

Instructions: look at the corresponding pairs of items and select the one that best describes you.

<table>
<thead>
<tr>
<th>E</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefer to be active.</td>
<td>Prefer to be quiet and reflective.</td>
</tr>
<tr>
<td>Prefer to work with others.</td>
<td>Prefer to work alone.</td>
</tr>
<tr>
<td>Plunge into new experiences.</td>
<td>Hold back from new experiences.</td>
</tr>
<tr>
<td>Relaxed and confident with people.</td>
<td>Less comfortable around others.</td>
</tr>
<tr>
<td>Readily offer my opinions.</td>
<td>Ask questions before giving opinion.</td>
</tr>
<tr>
<td>I'm verbally proficient.</td>
<td>I'm more proficient in writing.</td>
</tr>
<tr>
<td>Short attention span on tasks.</td>
<td>Work intently on tasks.</td>
</tr>
<tr>
<td>Don't mind being interrupted.</td>
<td>Dislike interruptions.</td>
</tr>
<tr>
<td>Aware of time when working.</td>
<td>Often lose track of time when working.</td>
</tr>
<tr>
<td>Have a large breadth of interests.</td>
<td>Known for the depth of my interests.</td>
</tr>
<tr>
<td>Guided by standards of others.</td>
<td>Guided by personal standards.</td>
</tr>
<tr>
<td>Have multiple relationships.</td>
<td>Have limited relationships.</td>
</tr>
<tr>
<td>Tend to skip from one task to another.</td>
<td>Prefer to focus on one task at a time.</td>
</tr>
<tr>
<td>Seek help from others with problems.</td>
<td>Try to handle problems by myself.</td>
</tr>
<tr>
<td>Act before thinking things through.</td>
<td>Think long and hard before acting.</td>
</tr>
<tr>
<td>Use trial and error with problems.</td>
<td>More systematic approach to issues.</td>
</tr>
<tr>
<td>Energized more by taking actions.</td>
<td>Energized more by thinking.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefer not to speculate.</td>
<td>Enjoy speculating.</td>
</tr>
<tr>
<td>I hate to wait to do things.</td>
<td>I don't mind waiting.</td>
</tr>
<tr>
<td>Seldom make factual errors.</td>
<td>Tend to make factual errors.</td>
</tr>
<tr>
<td>Focus thoughts on the &quot;here and now.&quot;</td>
<td>Like to project ideas into the future.</td>
</tr>
<tr>
<td>Seldom act on my hunches.</td>
<td>Frequently act on my hunches.</td>
</tr>
<tr>
<td>Focus on the elements of a problem.</td>
<td>Focus on the patterns and &quot;big picture.&quot;</td>
</tr>
<tr>
<td>Tend to be realistic.</td>
<td>Tend to be imaginative.</td>
</tr>
<tr>
<td>Like established routines.</td>
<td>Impatient with routines.</td>
</tr>
<tr>
<td>Like to memorize details and facts.</td>
<td>Prefer to learn underlying principles.</td>
</tr>
<tr>
<td>Prefer order and structure in my life.</td>
<td>Prefer less order and structure.</td>
</tr>
<tr>
<td>Patient with status quo.</td>
<td>Impatient with status quo.</td>
</tr>
<tr>
<td>Good at checking details.</td>
<td>Poor at checking details.</td>
</tr>
<tr>
<td>Tend to be practical.</td>
<td>Tend to be idealistic.</td>
</tr>
<tr>
<td>Enjoy very stimulating activities.</td>
<td>Prefer quiet activities in my life.</td>
</tr>
<tr>
<td>Like a steady routine work schedule.</td>
<td>Prefer variations in my work schedule.</td>
</tr>
<tr>
<td>Comfortable with the pace of time.</td>
<td>Uncomfortable with the pace of time.</td>
</tr>
<tr>
<td>Seldom think about the meaning of life.</td>
<td>Often think about the meaning of life.</td>
</tr>
</tbody>
</table>
Appendix C (cont.). Psychological Type Index (cont.).

<table>
<thead>
<tr>
<th>T</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>___ Prefer to objectively analyze issues.</td>
<td>___ Prefer to subjectively analyze issues.</td>
</tr>
<tr>
<td>___ Rely on facts when deciding.</td>
<td>___ Focus on my values when deciding.</td>
</tr>
<tr>
<td>___ Use objective criteria to decide.</td>
<td>___ Use subjective and personal criteria.</td>
</tr>
<tr>
<td>___ There are no exceptions to rules.</td>
<td>___ Exceptions to rules must be allowed.</td>
</tr>
<tr>
<td>___ Prefer logical order in the world.</td>
<td>___ Prefer harmony in the world.</td>
</tr>
<tr>
<td>___ Justice more important than mercy.</td>
<td>___ Mercy more important than justice.</td>
</tr>
<tr>
<td>___ Tend to be critical of others.</td>
<td>___ Tend to be accepting of others.</td>
</tr>
<tr>
<td>___ Have a skeptical outlook.</td>
<td>___ Have a trusting outlook.</td>
</tr>
<tr>
<td>___ Decisions best based upon logic.</td>
<td>___ Impact of choice on others more important.</td>
</tr>
<tr>
<td>___ Do not keep diaries/scrapbooks/photos.</td>
<td>___ Keep diaries/scrapbooks/photo albums.</td>
</tr>
<tr>
<td>___ Logic tends to override my feelings.</td>
<td>___ Feelings override sense of logic.</td>
</tr>
<tr>
<td>___ Not in touch with feelings of others.</td>
<td>___ In touch with feelings of others.</td>
</tr>
<tr>
<td>___ Brief and business like with others.</td>
<td>___ Display personal qualities with others.</td>
</tr>
<tr>
<td>___ Offended by illogical thinking.</td>
<td>___ Offended by lack of feeling in others.</td>
</tr>
<tr>
<td>___ Prefer logical solutions to conflict.</td>
<td>___ Seek personal ways to resolve conflict.</td>
</tr>
<tr>
<td>___ Its important to me to be on time.</td>
<td>___ Being late is not such a big deal.</td>
</tr>
<tr>
<td>___ Prefer to plan and follow a schedule.</td>
<td>___ Dislike planning and following schedules.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>J</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>___ Prefer specific plans in my life.</td>
<td>___ Prefer to leave my options open.</td>
</tr>
<tr>
<td>___ Not a very spontaneous person.</td>
<td>___ Tend to be a spontaneous person.</td>
</tr>
<tr>
<td>___ Prefer schedules and organization.</td>
<td>___ Prefer less order and flexibility.</td>
</tr>
<tr>
<td>___ Do not handle uncertainty well.</td>
<td>___ Handle uncertainty well.</td>
</tr>
<tr>
<td>___ Seek closure on issues.</td>
<td>___ Resist closure to obtain more ideas.</td>
</tr>
<tr>
<td>___ Dislike unexpected events to occur.</td>
<td>___ Comfortable with unexpected events.</td>
</tr>
<tr>
<td>___ Use a lot of &quot;shoulds&quot; and &quot;oughts.&quot;</td>
<td>___ Have a &quot;live and let live&quot; attitude.</td>
</tr>
<tr>
<td>___ Generally good at managing my time.</td>
<td>___ Not very good at time management.</td>
</tr>
<tr>
<td>___ Have enduring friendships.</td>
<td>___ Tend to change friendships.</td>
</tr>
<tr>
<td>___ Like to make decisions.</td>
<td>___ Have trouble making decisions.</td>
</tr>
<tr>
<td>___ Tend to not over commit to projects.</td>
<td>___ Tend to take on too many projects.</td>
</tr>
<tr>
<td>___ Complete the projects I begin.</td>
<td>___ Have difficulty completing projects.</td>
</tr>
<tr>
<td>___ Customs and traditions are important.</td>
<td>___ Customs and traditions not as important.</td>
</tr>
<tr>
<td>___ More decisive than curious.</td>
<td>___ More curious than decisive.</td>
</tr>
<tr>
<td>___ Can't wait to complete tasks.</td>
<td>___ Tend to procrastinate completing tasks.</td>
</tr>
<tr>
<td>___ Meet deadlines on tasks.</td>
<td>___ Flexible in meeting deadlines.</td>
</tr>
<tr>
<td>___ Believe in &quot;the way things ought to be.&quot;</td>
<td>___ Able to accept things as they are.</td>
</tr>
</tbody>
</table>

Created by Tony Grasha, Ph.D.
Appendix C. Selected screenprint from the website. Psychological Type Index.

PTI - Microsoft Internet Explorer

PTI

Home

Up

Psychological Type Index

Look at the corresponding pairs of items. Select the member of each pair that best describes you.

ID Code: [First 3 SSN, last 4 tele]

1. O Prefer to be active.
   O Prefer to be quiet and reflective.

2. O Prefer not to speculate.
   O Enjoy speculating.

3. O Prefer to objectively analyze issues.
   O Prefer to subjectively analyze issues.

4. O Prefer specific plans in my life.
   O Prefer to leave my options open.

5. O Prefer to work alone.
   O Prefer to work with others.

6. O I don’t mind waiting.
   O I hate to wait to do things.

7. O Focus on my values when deciding.
   O Rely on facts when deciding.

8. O Tend to be a spontaneous person.
   O Not a very spontaneous person.

Appendix D. Home/Work Boundaries Inventory (HBI).

This inventory looks at whether and how you separate “home” from “work.” For most items, click the circle that best applies to your situation. For some items, you will be asked to select as many as apply to your situation. Try to be as honest and objective as you can.

**Space**

1. □ I have a separate room used exclusively for my office. That is, 90-100% of the time that room is in use, I am using it as my office.
   □ My office is in a room that is used only occasionally for other activities, such as a guest bedroom.
   □ The room I use for work is often used for other activities. My workspace in that room is separated from the rest of the room by distinct boundaries such as furniture.
   □ Other activities often occur in the room or rooms I use for work, and my workspace is not separate from the rest of the space.

2. □ The room I use for my office has a door, which I usually keep closed while I work.
   □ The room I use for my office has a door, which I usually keep open while I work.
   □ The room I use for my office does not have a door.

3. □ I use my office for leisure activities, such as recreational use of the computer.
   □ I do not use my office for leisure activities.

4. Check any of the following that apply to your situation:
   □ I met with my family members to explain what “Mom’s workspace” is.
   □ I, either alone or with my family, established rules regarding the use of this space during my work hours.
   □ I/We established rules regarding the use of my space during non-work hours.
   □ I/We established a schedule so that noisy activities do not occur in or around my workspace during my work hours.
Appendix D (cont.). Home/Work Boundaries Inventory (HBI).

**Time**

1. [ ] I only work from my home.
   [ ] I work at home and in another location, such as a company office or at a client/customer’s home or office. I try to have at least one day per week – Wednesday, for example – that I always work at home.
   [ ] I work at home and in another location. I do not keep a set day that I consistently work from home.

   For items 2 through 4, click any choices that apply to your situation.

2. [ ] I do not establish a schedule. I generally allow the hours I work to vary from day to day and/or week to week.
   [ ] I set up a schedule of when I will work.
   [ ] I give copies of my work schedule to close friends and relatives
   [ ] I tell close friends and relatives what my schedule is.
   [ ] I try to work the same days each week.
   [ ] On any given day, I work approximately the same hours that I did on that day during the previous week.

3. [ ] I explained to my friends and relatives that I cannot babysit, run errands, etc., during my work hours.
   [ ] I have met with my family to discuss my work schedule, and the household “rules” that apply while I am working.
   [ ] I work when my young children can be cared for by others, are in school, or are asleep.
   [ ] I make it clear to the babysitter that while I am “at work,” I am not to be disturbed unless a true emergency occurs.

4. [ ] I always or usually refuse requests for favors (e.g., babysitting, errands, etc.) when I am in the middle of work.
   [ ] I let the home answering machine/voice mail pick up personal calls while I am working.
   [ ] If no one else is home to answer the telephone while I am working, I use caller ID to distinguish between personal and business calls. For the most part, I only answer the business calls.
Appendix D (cont.). Home/Work Boundaries Inventory (HBI).

**Mind**

Click on any choices that apply to your situation.

- On an average day, I have one or more “rituals” that directly precede the beginning of my first work session. Examples: exercising, showering, getting dressed, reading the paper.
- I take periodic breaks from work throughout the day.
- On average, I remember to return to work from breaks.
- On an average day, I have one or more rituals that mark the end of my last work session. Examples: turning off the computer, straightening the office, closing/locking the door.

**Social**

For both items, click on any choices that apply to your situation.

1. I keep a professional journal where I record ideas, sort out problems, and/or vent frustration.
   - I ask other people for advice and/or support when I have a problem.
2. I schedule time to talk on the telephone and/or eat lunch with colleagues and/or friends.
   - I attend meetings of a professional association or group of consultants in my field, at least every other month.
   - I get out of the house – more than just opening up the front door to get the mail – during several work breaks every week.
   - I engage in at least one hobby, leisure activity or sport, at least once a week.
Appendix D (cont.). Home/Work Boundaries Inventory (HBI).

**Concentration**

For the next 4 items, please use the following scale:

1 2 3 4 5 6 7
Very Low       Very High

1. Number of distractions at home.
2. Number of interruptions while I work at home.
3. My level of concentration while working at home.
4. Productivity (paid work) at home.

Use the following scale to answer the next 3 items:

4 3 2 1
always often sometimes rarely

1. At the times I don’t normally work, I ________ interrupt household chores or activities to attend to work.
2. I ________ do household chores and my job at the same time (e.g., phone calls while doing laundry).
3. I ________ think about my job when I am doing housework or during family activities.
4. I ________ get distracted thinking about housework or my family when I am working at my job.

**Your Own Viewpoint**

If there are any other special circumstances, problems or issues you face that affect your work-at-home life, or unique solutions you have implemented that you would like to share, please feel free to discuss them here:

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
Appendix E. Selected screenshot from the website. The homepage:

Research on Home-Based Work

As a woman and a mother, chances are that you have the greatest demands placed on you and your time in your household. Current research shows that women still contribute over 50%, and often 2/3 of household labor in the United States as well as Australia, China, India and Israel. The same holds true for childcare.

So what happens when you work at home, where so many competing roles vie for your attention? And what can you do about it?

You can participate in a research study for mothers who work at home. My name is Lori Patterson, and I am a graduate student in the Department of Psychology at the University of Cincinnati. Like you, I am a work-at-home mom – taking care of my 2-year-old daughter and newborn son, and working on this research project to complete my Ph.D.

When you have completed the study in its entirety, I will invite you to participate in a free Internet workshop that will provide you and other work-at-home moms with useful guidelines for increasing your concentration and productivity, and reducing your stress. These will not be "cookie cutter" solutions, but strategies tailored to your personality.

To find out who I'm looking for, what you will do, and more about the free workshops, click on the "Information" button at left.

To start or continue participating in the research, click on the appropriate button at left. All five of the directories are password protected. Please use the username and password provided to you.
Appendix F. Informed Consent Form.

INFORMED CONSENT

Lori J. Patterson
Department of Psychology
University of Cincinnati
P.O. Box 210376
Cincinnati, OH 45221-0376
phone: (513) 563-2463

Before agreeing to participate in this study, it is important that the following explanation of the proposed procedures be read and understood. It describes the purpose, procedures, risks, and benefits of the study. It also describes the right to withdraw from the study at any time. It is important to understand that no guarantee or assurance can be made as to the results of the study.

The purpose of this research is to provide you and other home-based working mothers with useful guidelines for reducing the stress of working at home. A minimum of 150 women will participate. Today, you will sign up for the research by providing some information about yourself and your household, which will take 15-20 minutes. Once you are signed up, you will spend about 25-35 minutes filling out a few short surveys. You may receive e-mails asking you to return to the website and do a little “homework” over the next few weeks, which will require as little as 25 minutes or as much as an hour and 20 minutes – depending upon what you choose to do. In six weeks, you will complete the study by spending about 20 minutes on-line filling out a few brief surveys. After the research is finished, I will be happy to share the findings with you and the other participants. The potential benefits for you and other home-based working mothers are substantial: increased concentration and productivity, and reduced stress.

When you begin filling out the surveys today, I will ask you to generate an identification code that will be used in place of your name in the database. This will insure that your personal information and responses are kept strictly confidential. [Note, however, that if you use a company or university computer to participate in the research, your responses may be accessible by network administrators.] In order to send reminder e-mails during the study and an invitation to the follow-up workshop, a separate file will temporarily link your first names, e-mail addresses, and identification codes. Only I will have access to this file. Immediately after you complete the research, your identification code will be removed.
Appendix F (cont.). Informed Consent Form (cont.).

from the file. In the event you are unable to complete the research, your name, e-mail address, and code will be removed from the file at the end of data collection. At the end of the follow-up Internet workshops, the file will be destroyed.

Participation is voluntary. You may choose to stop participating entirely at any time without penalty. In addition, you are free to leave any answers blank if you do not wish to share that information. There are no foreseeable risks or discomforts associated with participation in this study; however, I am required to provide you with the following statement:

The University of Cincinnati follows a policy of making all decisions concerning compensation and medical treatment for injuries occurring during or caused by participation in biomedical or behavioral research on an individual basis. If I believe I have been injured as a result of research, I will contact Lori Patterson at (513) 563-2463, or Tony Grasha at (513) 556-5543, or Margaret Miller at (513) 558-5212.

If you have any questions regarding the research and your rights as a participant, you may contact any of my faculty advisors or me. Our names, telephone numbers, and e-mail addresses are listed below.

Lori J. Patterson    (513) 563-2463    homebasedwork@fuse.net
Anthony F. Grasha    (513) 556-5543    Anthony.Grasha@uc.edu
David C. Lundgren    (513) 556-5542    David.Lundgren@uc.edu
Daniel Langmeyer    (513) 556-5546    Daniel.Langmeyer@uc.edu

I have read the information provided above. I voluntarily agree to participate in “Stress in Home-Based Working Mothers”. After it is signed, I will receive a copy of this consent form.

<table>
<thead>
<tr>
<th>Signature of Participant</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signature of Investigator</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix G. Survey of Demographic Information.

Your personal information and responses are strictly confidential and will not be shared with anyone. Only information about groups of participants will be used to report any of the information from this survey. For many questions, there are no “best” answers. Try to be as honest and objective as you can when responding. Click in the appropriate circle for the response you have selected.

First, please:

♦ Type your first name in the space provided.
♦ Record your e-mail address.
♦ Type in the following 7-digit identification code: the first 3 numbers of your social security number, then the last four digits of your telephone number. This number is needed for two reasons:
  1) To allow your batches of data over the 6 weeks to be combined correctly.
  2) To maintain confidentiality, your code alone will be used to maintain your record in the database.

ABOUT YOU

Gender:        Birthdate:  __ / __ / __

     ______ male
     ______ female

Marital Status: Race:

     ______ single          ______ African American
     ______ married
     ______ significant other
     ______ separated
     ______ divorced
     ______ widowed

Formal education – indicate highest level achieved:

     ______ Not a high school graduate
     ______ High school graduate or equivalent
     ______ Technical school certificate
     ______ Associate’s degree
     ______ Bachelor’s degree
     ______ Master’s degree
     ______ Doctoral degree

Where you live – city and state if USA, or country:  ______________
Appendix G (cont.). Survey of Demographic Information.

ABOUT YOUR HOUSEHOLD

Members:

Besides yourself, number of adults (18 or older) living in your home _______
Age/s:__________________________________________
Number of children (0-18 years of age) living at home: _______
Age/s:__________________________________________

Income:

Total household income, before taxes _______

ABOUT YOUR JOB

Degree of concentration required:

Use the scale below to answer the following item:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Very High</td>
</tr>
</tbody>
</table>

My job usually requires a _____ _____ amount of concentration.

Example of low to very low concentration (1-2): You are able to watch TV or – if you work on the computer a lot – listen to a radio talk show while you work and still be very productive.

Example of high to very high concentration (6-7): Your job requires extended periods of uninterrupted time. Distractions of any kind almost always cause you to lose your train of thought and have to spend time to recover.

The next few questions ask you to indicate how many years and/or months you have worked in a particular setting. For less than 1 year, you may simply fill in the number of months. For more than 3 years, the number of years is sufficient.

Length of experience:

a) Working from home in current position _____ year/s, _____ month/s
b) Total time you have worked at home, if greater than current position _____ year/s, _____ month/s
Nature of current position:

Job title: ______________________________________________________________

Please give a brief description of your job:

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

Number of hours:

Number of hours worked in a typical workweek*
*If there is no “typical” workweek for you, use last week’s total or an estimated average

_______ hours worked in your home

_______ hours worked elsewhere, if applicable

Income from this job:

US$ _______ / week/month/year  [click on appropriate length of time]
Appendix G (cont.). Survey of Demographic Information.

How you came to work at home:

Click on the option that best describes your situation.

☐ I wanted to work at home.
   I chose this job in order to work at home, OR
   I asked my supervisor if I could work at home, OR
   I volunteered when work at home was offered, OR
   I was selected to work at home, and wanted to do so.

☐ I was okay with working at home.
   My job automatically involves at least some work at home, OR
   I was selected to work at home, and that was okay.

☐ I didn’t want to work at home.
   I was selected to work at home, and didn’t want to switch positions in order to stay
   in the office.

☐ I didn’t want to work at home.
   I had to work at home if I wanted to keep a job with this company.

☐ My manager forced me to work at home.
   I felt that I had no other job option available.

☐ I wanted to work at home.
   I chose this job in order to work at home, OR
   I asked my supervisor if I could work at home, OR
   I volunteered when work at home was offered, OR
   I was selected to work at home, and wanted to do so.

Comparison to previous job:

How does the stress of this job compare to your previous* job?
*Either a different job entirely, or the same position working in a company office.

3 more stress than
2 the same amount of stress that
1 less stress than

I have __________ I did in my previous job.
ABOUT YOUR HOME

Home office characteristics/activities:

Use the following scale to indicate if these activities occur in your workroom. If the activity occurs in the room during work and non-work hours, click on both 1 and 2.

<table>
<thead>
<tr>
<th></th>
<th>Occur in room while I’m working</th>
<th>Occur in room while I’m not working</th>
<th>Do not occur in room</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 2 3 Eating meals*  
*not including your own meal if, for example, you work through lunch

1 2 3 Watching TV, listening to music*, talking, playing  
*not including background music while working

1 2 3 Reading, writing letters, children’s homework

1 2 3 Sleeping

1 2 3 Non-work computer use: e-mail, Internet, games, etc.

1 2 3 Child care/child’s play area

1 2 3 Other (please describe) _______________________

While you are working at home, who else is in the house? Please click on all that apply. Please specify how many of your working hours they are in the house.

Who they are

☐ Spouse/other self-sufficient adults (over 18)  How often

Who is primarily responsible for their supervision and/or care?  

☐ Aging parent/s requiring care  

☐ Special needs children/adults requiring care  
  Specify ages: _____ _____ _____

☐ Children under 5  
  Specify ages: _____ _____ _____

☐ Children ages 6 to 18  
  Specify ages: _____ _____ _____

Who they are

☐ Spouse/other self-sufficient adults (over 18)  How often

Who is primarily responsible for their supervision and/or care?  

☐ Aging parent/s requiring care  

☐ Special needs children/adults requiring care  
  Specify ages: _____ _____ _____

☐ Children under 5  
  Specify ages: _____ _____ _____

☑ Children ages 6 to 18  
  Specify ages: _____ _____ _____
Appendix H. Boundary Management – Experimental (BME).

You have finished all the surveys – whew! Now we’re going to talk about “boundary management.” Because “home” and “office” are in the same building, setting distinct boundaries between them helps you to have better concentration and less stress at work, and allows you to leave work and be more relaxed during non-work hours.

When you began working at home, you set some boundaries almost automatically and others after a little trial and error. And you would have set some of the other boundaries already, perhaps, but you felt that your family would revolt or you would offend a friend. Too, there may be things that you have thought about implementing, but just haven’t gotten around to it. In this research module, you may find:

♦ A new twist for an existing boundary.
♦ The opportunity to say to your family or friend, “Research shows that this is helpful for home-based workers”…
♦ Your inspiration to put new plans into action.

Before we get started, let’s define a few terms that you’ll see later on.

**Workblock** – a block of time dedicated to performing paid work activities. For example, if you work from 9:30 – 11:30 a.m., 2:00 - 4:00 p.m., and 7:00 – 9:30 p.m., you have worked 3 workblocks. Normal-length breaks to stretch, have coffee and/or a quick snack, and visits to the bathroom count as part of a workblock. The beginning of your lunch hour, for example, would signal the end of a workblock.

**Stimulus** – a stimulus is a cue from either your body or the environment that reminds and/or motivates you to do something. Your stomach rumbling is a stimulus, because it usually inspires you to eat. An alarm clock going off is a stimulus to tell you it’s time to get up. Sometimes a stimulus is automatically associated with an activity, such as hunger leading to eating. Others become associated because you pair them together, on purpose or accidentally. For example, you usually eat popcorn while watching a movie, so you start craving it during the opening credits.

**Ritual** – a ritual is simply a routine behavior or set of behaviors, such as a “morning ritual” of getting out of bed, showering, eating breakfast, and brushing your teeth.

Now that we’ve defined a few key terms, let’s get to the heart of managing boundaries. There are numerous ways to divide them up, no doubt, but we will categorize them into four types.

1. **Spatial boundaries.** Physical boundaries you manage – you decide where you work, and where you don’t.
2. **Temporal boundaries.** Boundaries you set around blocks of time, to determine when you work and don’t work.
3. **Mental boundaries.** Rituals and stimuli you need to put in place to help your brain “switch gears” between work and home.
4. **Social boundaries.** In this case, you need to “manage” some of the boundaries of working at home by breaking out of them, in order to avoid getting “cabin fever” and losing touch with the outside world.
Appendix H (cont.). Boundary Management – Experimental (BME).

Instructions

As you read, please record the boundaries you are interested in managing, or managing differently. Also, take note of the ideas that you are interested in implementing. You will be asked to select 3-6 boundaries to manage, one or two at a time, over the next six weeks.

Managing Spatial Boundaries – Where You Work

Managing spatial boundaries means having a defined workspace and working in it. Working in a defined workspace, especially one with four walls and a door, has definite advantages:

1) It allows work time that is relatively free from interruptions by other household members. If this has been a problem, you will have to train them. See the bullet points below for suggestions.

2) It also can provide work time that is relatively free from noise created by other household members. This will vary, of course, based on factors such as the distance of your workspace from the family room and the ages of children in the household.

3) If self-discipline is a problem for you, the workspace becomes a stimulus that helps you avoid interrupting yourself! Because work becomes associated with being in that room or space, you will tend to “get in office mode” and be more apt to concentrate on work when you enter it.

The results of research on home-based work indicate that you should:

- Have a separate room used exclusively for your office, if possible. If not, a room that is used only occasionally for other activities – a guest bedroom, for example – usually works well. If you lack concentration or are frequently interrupted and do not have a “dedicated” room, “find” one. Preferably one with a door! If you have trouble with self-discipline, you’ll need to avoid using the room for leisure activities such as recreational use of the computer.
- To fully separate “office” from “home,” keep the door closed while you work.
- If a separate room is not possible, set up a workspace that is divided from the rest of the room by distinct boundaries.
  - Example: using a corner of a room, mark the entrance to your workspace with short bookcases, and set up the desk/table and other furniture in a square.
- Have a family meeting to define the boundaries of your workspace and rule(s) regarding the use of the space during both work and non-work hours. You may have to restrict access to your workspace when you really have to concentrate, or always. Inform babysitters and others who are in the house frequently.
  - Sample rule: No one should enter Mom’s office while she’s working, except to tell her about something urgent like a broken bone, a fire, a leak…
- If other activities such as eating meals or family entertainment (e.g., music, television, and recreational use of the computer) occur in the room where your workspace is, establish a schedule so that activities generating noise do not occur in your workspace during your work hours.
Managing Temporal Boundaries – When You Work

The key to managing temporal boundaries is to set up a work schedule.¹ A relatively fixed schedule can help you in several ways:

1) Sharing your schedule with your manager/leader, coworkers, customers, and/or clients – people you work closely with – can improve coordination and communication with them. They know when they can contact you about work and when they can expect a fast response to an e-mail or FAX, for example.

2) It also helps to protect your valuable personal and family time by letting work associates know when they should avoid contacting you during non-work hours unless it’s an urgent matter.

3) It allows work time that is relatively uninterrupted by your spouse, children, family members, friends, neighbors, etc., if this has been a problem. When they know what your work and non-work hours are, they can avoid disturbing you at work.

4) If self-discipline is a problem for you, it helps you engage in stimulus control to stay in “office mode” and avoid interrupting yourself! Stimuli such as the amount of natural light entering your office, the amount of noise from traffic, your level of energy, etc., are relatively “controlled” – consistent – at the same time each day. This helps you to “program” yourself to work when those stimuli are like they’re supposed to be at, say, 8:00 a.m.: sun coming in the window, stomach satisfied by recent breakfast, a high level of physical energy perhaps…

5) It may encourage others to see you as more professional. Many researchers conclude that clear distinction and separation of roles enhances one’s credibility as a professional worker. So if you feel as if some people do not think you’re “really working” because you work from home, a disciplined work schedule helps communicate that to them.

The results of research on home-based work indicate that you should:

- Set up a schedule, and try to work the same hours each day, within an hour in either direction, or at least the same workblocks on the same day each week.
  - Example: Monday: 1:00-3:30 and 7:00 – 9:30.
    - Tuesday and Thursday: 9:30 – 11:30, 2:00 – 4:00, and 7:00 – 9:30.
    - Wednesday and Friday: 9:30 – 11:30 and 1:30 - 3:00.
- If you also spend time in a company office each week, try to have at least one day per week that you are always at home. Take into account the schedules of family members and possibly work associates you need to contact “real-time”.
- Share your schedule with your spouse, children who are old enough to understand, other family members, friends and neighbors who are prone to interrupt you, etc. – people you trust with such information. Discuss your need for your work hours to be “sacred” because your work requires uninterrupted quiet time for concentration.

¹ Obtain your manager’s approval if necessary, of course.
Appendix H (cont.). Boundary Management – Experimental (BME).

- It may be helpful or necessary have a family meeting to develop a “contract” consisting of your work schedule, the rules about noise and contacting you during those hours, and the reward/s received when everyone complies. Discuss it positively and tactfully, and have your family sign it. Then you can refer back to it: “Remember, you signed your name, promising that you wouldn’t disturb Mommy when I’m really busy working. And that we get to go outside and take a walk together after I’m done.”
- Whenever possible, work when your young children can be cared for by others, are in school, or are asleep. If someone else is caring for them in your home while you are working, insist that while Mom is “at work,” she is not to be disturbed. This is especially true for preschool children. Whether they are an unpaid relative or paid help, it should be clear that they handle the routine, non-emergency care, but you can be interrupted if a true emergency occurs.
- Encourage household members to write things down that they want to ask or share with you when you’re on break. With children under 2 years, of course, you’ll have to rely on their caretaker/s to enforce the rules; but with older children, it can work. Especially if there is a reward for waiting until you finish your workblock, such as reading or playing together for a while. A message center in the kitchen is a good place to post these notes.
- If you have talked about the need for uninterrupted time but are still being interrupted frequently, have a follow-up conversation. If things are at least somewhat better than before, tell them you appreciate their efforts thus far and that even more uninterrupted time would be wonderful – you really need it to get your work done.
- If no one else is home while you are working, let your home answering machine/voice mail pick up personal calls. If you use the same line for home and work, Caller ID is a great way to determine which calls to answer. If you have a separate business line, you may even want to turn the home line ringer/s down or off when you really need to concentrate. [Just don’t forget to turn them back up later!]
- If your amount of work-related telephone use warrants it, have a separate business telephone line with voice mail or an answering machine. Turn off or ignore the business telephone ringer during your non-working hours – unless you are expected to be “on call” at all times. Let the answering machine/software or voice mail answer.

Managing Mental Boundaries – How You Change Your Focus

Maybe you have trouble managing yourself while working at home. You cannot seem to get started with work. Maybe you forget to take breaks and have trouble quitting for the day. Often, this is caused by not setting mental boundaries that substitute for the daily commute and the normal activities of coworkers:

1) In place of the commute, most home-based workers use one or more morning rituals that become associated with shifting to a work mindset. After the rituals, their minds are ready to work.

---

2 Although many people have sought home-based work as a solution to childcare, most homeworkers have found out that simultaneous work and childcare are not compatible. If you have tried, unsuccessfully, to juggle both at the same time, you’re not alone.
2) In the absence of a coworker stopping by to chat, some home-based workers have to provide themselves with a cue to take breaks. Research shows that most of us can only concentrate on one thing for 40-50 minutes at a time before our minds need a change of pace. In addition, constant computer users need about a 15-minute break every hour, to break the physical monotony of sitting in the same position. In the absence of coworkers waving goodbye at the end of the day, workaholics need to establish a stimulus that will help them leave work behind.

To set mental boundaries between home and work without commutes and coworkers:

- Establish at least one ritual that marks the beginning of the workday. You may choose to do one or more of the following:
  - have coffee and/or eat breakfast
  - engage in a spiritual activity such as reading, meditating, praying
  - read the newspaper, a magazine, or a book
  - straighten the house; start a load of laundry
  - exercise
  - brush teeth, shower, get dressed
  - kiss spouse goodbye
  - close office door, turn on computer, and/or check voicemail and e-mail

- If you often have trouble remembering to take breaks, set up a stimulus that reminds you to stop.
  - Example: When you are working on a very mentally demanding task, set a timer or use an “alarm” function on your computer to tell you when 40-50 minutes are up. Take a 10 to 20-minute break, doing something that will give your mind a rest from heavy-duty thinking and/or limber up your body after sitting in a fixed position. Take a walk, drink a glass of water, stretch, start a load of laundry...

- It may also be necessary to have a ritual for the beginning of each work block throughout the day.
  If you get caught up in reading the mail, doing household chores, etc., in the middle of the day, you may use a stimulus as your cue to return to work:
  - set an alarm to return from lunch
  - let the start of a 1:00 radio or TV program, for example, serve as your cue

---

3 Your dress code is a matter of what works best for you. You may choose to go more casual than you would in a company office, but you may want to dress more like you would there, to help your mind stay in “work mode.” If you dress at least somewhat differently, this also serves as a cue to yourself and others that you’re “at work.”
Appendix H (cont.). Boundary Management – Experimental (BME).

- At the end of the workday, you may opt to do whatever is appropriate or helpful, to help you "switch gears":
  - turn off the computer, turn off the ringer on the office phone, and/or straighten up office
  - write in a journal
  - lock the door to the office or the computer cabinet/keyboard, if possible
  - exercise
  - read the mail
  - start dinner

Managing Social Boundaries

One of the biggest struggles that many home-based workers face is isolation from work associates and other people. If you work at home full-time, you need to “create” some of the interchange that normally would occur in an office on breaks around the water cooler. This helps you to “stay in the loop” on recent developments in your business. Now that your home is the center of most of your activities, you purposefully need to find activities to do elsewhere. Some ways to do this:

- Schedule time to talk on the telephone and/or eat lunch with colleagues and friends.
- Attend meetings of a professional association in your field.
- Keep a professional journal that you write in about twice a week. It is helpful for brainstorming ideas, sorting out potential solutions, capturing key insights, and venting frustration. A journal can be any kind of notebook, binder, or computer file. An art notebook – bound, with plain, unlined pages – works very well because you can even draw diagrams that reflect your ideas.
- If you tend to feel “claustrophobic” after working in the house for a while, GET OUT during several work breaks every week. In nice weather, even a picnic in the backyard may be sufficient. Some other examples:
  - exercising at a fitness center or playing sports
  - bicycling or jogging in your neighborhood
  - attending civic organization meetings
  - participating in religious activities
  - pursuing hobbies
Appendix H (cont.). Boundary Management – Experimental (BME).

**Action Plan**

Now that you have read all the boundaries, review the ones you recorded. Use the chart below to:

1) Decide which two boundaries – or one “big” one – you are going to manage. Try to select one boundary each from two different areas, such as “Time” and “Mental.”

2) For each boundary, determine how it applies to your situation – what managing that boundary would look like for you.

3) Then set a deadline – preferably, as soon as possible within the next two weeks – for when you will have implemented each boundary.

Here is an example:

<table>
<thead>
<tr>
<th>What boundary needs to be managed?</th>
<th>What will I do to address this boundary?</th>
<th>When will I have accomplished this? Specify a date.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time boundary</td>
<td>Set a schedule; share it with family, babysitter, and parents</td>
<td>By noon on March 15, 2001</td>
</tr>
</tbody>
</table>

Now that you have seen an example, fill out your own action plan:

<table>
<thead>
<tr>
<th>What boundary needs to be managed?</th>
<th>What will I do to address this boundary?</th>
<th>When will I have accomplished this? Specify a date.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix I. Technical Information about Data Processing.

Once the user clicks on a particular form (e.g., the Consent Form), fills it out and clicks the Submit button, the form results are sent to the appropriate .txt file that is housed in a private directory on the website. The file allows for new information to be added to current information already existing in the file, i.e., the form results from previous subjects. Once the user receives confirmation that the form results have been submitted, she closes out the window for that form and automatically returns to the previous page in the website. For all forms, the researcher logs into the university homepage system via an FTP (File Transfer Protocol) program and views each file one at a time, checking for new additions to each. When new additions are found, the file is then uploaded to the researchers’ PC. The text files are easily imported into a statistical package such as SPSS Graduate Pack 11.0 for Windows (SPSS Inc, 2001) in a tab-delimited format. In the case of the PTI, the researcher pasted the form results to an Microsoft Excel version 10 (Microsoft Corporation, 2002) spreadsheet. Formulae to determine the four scale scores were appended to the end of each line of data, which calculate continuous scores. Even-numbered results indicate that the subject failed to answer one or more items. Positive values identify a preference for E, S, T or J; whereas negative values specify I, N, F or P preferences. Higher numbers indicate stronger preferences.

In the html code for radio button and checkbox items, the researcher programmed reverse scored items accordingly. Therefore, the downloaded data was already reverse scored.
Appendix J. Selected screenprint from the website. BME Week 1:

You have finished all the surveys - whew! Now we’re going to talk about “boundary management.” Because “home” and “office” are in the same building, setting distinct boundaries between them helps you to have better concentration and less stress at work, and allows you to leave work and be more relaxed during non-work hours.

When you began working at home, you set some boundaries almost automatically and others after a little trial and error. And you would have set some of the other boundaries already, perhaps, but you felt that your family would revolt or you would offend a friend. Also, there may be things that you have thought about implementing, but just haven’t gotten around to it. In this research module, you may find:

- A new twist for an existing boundary.
- The opportunity to say to your family or friend, “Research shows that this is helpful for home-based workers”...
- Your inspiration to put new plans into action.

So let’s get to the heart of managing boundaries. There are numerous ways to divide them up, no doubt, but we will categorize them into four types:

1. **Spatial boundaries.** Physical boundaries you manage – you decide where you work, and where you don’t.
2. **Temporal boundaries.** Boundaries you set around blocks of time, to determine when you work and don’t work.
3. **Mental boundaries.** Rituals and stimuli you need to
Appendix K. Selected screenprint from the website. Action Plan:

Action Plan

Now that you have read all the boundaries, review the ones you recorded. Use the chart below to:

1) Decide which two boundaries – or one "big" one – you are going to manage. Try to select one boundary each from two different areas, such as "Temporal" and "Mental."

2) For each boundary, determine how it applies to your situation – what managing that boundary would look like for you.

3) Then set a deadline – preferably, as soon as possible within the next two weeks – for when you will have implemented each boundary.

Here is an example:

<table>
<thead>
<tr>
<th>What boundary needs to be managed?</th>
<th>What will I do to address this boundary?</th>
<th>When will I have accomplished this? Specify a date.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporal boundary</td>
<td>Set a schedule; share it with family, babysitter, and parents</td>
<td>By noon on May 15, 2001</td>
</tr>
</tbody>
</table>

Now that you have seen an example, fill out your own action plan:

ID Code

<table>
<thead>
<tr>
<th>What boundary</th>
<th>What will I do to address this boundary?</th>
<th>When will I have accomplished this?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix L. Selected screenprint from the website. Journal:

Use the textbox below to evaluate your implementation of the boundaries you selected two weeks ago. Answer such questions as:

What is working well?

What is not working well?

If it is not working well, what could I/my family be doing differently with respect to managing this boundary?

ID Code

In order to have your own copy, please be sure to print it (using the Print function in your web browser) before you submit it.
Appendix M. Advertising in Electronic Magazine.

As a woman and a mother, chances are that you have the greatest demands placed on you and your time in your household. Current research shows that women still contribute over 50%, and often 2/3 of household labor in the United States as well as Australia, China, India and Israel. The same holds true for childcare.

So what happens when you work at home, where so many competing roles vie for your attention? And what can you do about it?

You can participate in a research study for mothers who work at home. My name is Lori Patterson, and I am a graduate student in the Department of Psychology at the University of Cincinnati. Like you, I am a work-at-home mom – taking care of my 22-month-old daughter and working on this research project to complete my Ph.D. [I am also pregnant with baby “Beta,” due Memorial Day.] My research will provide you and other work-at-home moms with useful guidelines for increasing your concentration and productivity, and reducing your stress. These will not be “cookie cutter” solutions, but strategies tailored to your personality.

When you have completed the study in its entirety, I will invite you to participate in one of three Internet workshops. You will benefit from my six years researching job/life satisfaction and stress, combined with six years working in corporate training and development, free of charge. I will provide a summary of what I found and what I learned from reviewing the research on working at home that will be helpful to YOU based on your personality. I will also provide you with links to websites where you can learn even more about your style and how it influences the way you work and live. You will also profit from the opportunity to “chat” with other home-based working mothers in the workshop, sharing personal insights and brainstorming ways to address issues associated with working at home.

Who I’m looking for:

- You work from home, for pay, for part or all of your work hours each week.
- You may work for a company, a university, a contracting firm, or yourself, AND/OR you may be a direct sales consultant for a company such as Avon, Discovery Toys, Longaberger baskets, Mary Kay, Pampered Chef kitchen products, PartyLite candles and gifts, Tupperware, Usborne books, etc.
- The work you perform at home often requires mental concentration. Some examples include: reading a book, journal, file or report; filling out paperwork; developing a project plan or proposal; designing software, manuals, or training; etc.
- You are at least 18 years of age.
Appendix M (cont.). Advertising in Electronic Magazine (cont.).

What you will do:

- First, you will log into the website to “sign” a consent form and fill out some basic information about you, your personality, your work, and your household. This will take about 15-20 minutes.
- Once your initial information is received, you will receive an e-mail instructing you to return to the website, click on a particular button, and enter a password. You will spend approximately 25-35 minutes filling out surveys. You can do this in more than one sitting if necessary.
- Over the next month, you may have to make two more short visits to the website - perhaps 15-20 minutes each - and possibly do a little "homework." The timing of the "homework" may vary from 10 minutes to an hour, depending upon what you choose to do.
- Six weeks from the initial phase, you will spend approximately 30 more minutes on-line. Again, you can break it up into two or more sittings.

The total time commitment – spread across six weeks – may be as little as 1 hour, 10 minutes, or possibly as much as 3 hours. It’s a very small time commitment relative to the potential benefit for you and other moms.

If you are interested in participating, please click on the link below or paste the following URL into your web browser:

http://homepages.uc.edu:8000/~sohnslj/

[If you have to type the URL in rather than pasting it and are having trouble finding the “~”, this character is located at the upper left-hand corner of your keyboard.]

If you have any questions, please contact me at: HomeBasedWork@fuse.net

Thank you in advance for your interest and participation –

Sincerely,

Lori J. Patterson
Appendix N. Sample Sources.

Initial Recruitment

*Professional Associations and On-line Groups*

<table>
<thead>
<tr>
<th>Association/Group</th>
<th>Website Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free Agent</td>
<td><a href="http://www.freeagent.com">www.freeagent.com</a></td>
</tr>
<tr>
<td>Free Agent Nation</td>
<td><a href="http://www.freeagentnation.com">www.freeagentnation.com</a></td>
</tr>
<tr>
<td>Home-Based Working Moms</td>
<td><a href="http://www.hbwm.com">www.hbwm.com</a></td>
</tr>
<tr>
<td>International Telework Association and Council (ITAC)</td>
<td><a href="http://www.telecommute.org">www.telecommute.org</a></td>
</tr>
<tr>
<td>Institute for the Study of Distributed Work (ISDW)</td>
<td><a href="http://www.isdw.com">www.isdw.com</a></td>
</tr>
<tr>
<td>Moms-Home-Work</td>
<td><a href="http://www.MOMS-HOME-WORK.COM">www.MOMS-HOME-WORK.COM</a></td>
</tr>
<tr>
<td>Working Solo, Inc.</td>
<td><a href="http://www.workingsolo.com">www.workingsolo.com</a></td>
</tr>
<tr>
<td>Work-at-home Moms (WAHM)</td>
<td><a href="http://www.wahm.com">www.wahm.com</a></td>
</tr>
</tbody>
</table>

*Local Recreation/Fitness Centers*

<table>
<thead>
<tr>
<th>Center</th>
<th>Address</th>
<th>City</th>
<th>State</th>
<th>Zip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Ash Recreation Center</td>
<td>4433 Cooper Rd, Cincinnati, OH</td>
<td>45242</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evendale Recreation Center</td>
<td>10500 Reading Rd, Cincinnati, OH</td>
<td>45241</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharonville Community Center</td>
<td>10990 Thornview Drive, Cincinnati, OH</td>
<td>45241</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tri-Health Fitness and Health Pavilion</td>
<td>6200 Pfeiffer Rd, Cincinnati, OH</td>
<td>45242</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Magazines*

<table>
<thead>
<tr>
<th>Magazine</th>
<th>Website Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Office Computing</td>
<td><a href="http://www.smallbusinesscomputing.com">www.smallbusinesscomputing.com</a></td>
</tr>
<tr>
<td>Family Circle</td>
<td><a href="http://www.familycircle.com">www.familycircle.com</a></td>
</tr>
</tbody>
</table>
Appendix N. Sample Sources (cont.).

Secondary and Tertiary Phases

Direct Sales Consultants

<table>
<thead>
<tr>
<th>Direct Sales Company</th>
<th>Number of consultants contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discovery Toys</td>
<td>1</td>
</tr>
<tr>
<td>Mary Kay</td>
<td>2</td>
</tr>
<tr>
<td>Pampered Chef</td>
<td>3</td>
</tr>
<tr>
<td>PartyLite</td>
<td>4</td>
</tr>
<tr>
<td>Tupperware</td>
<td>1</td>
</tr>
</tbody>
</table>

Magazines

<table>
<thead>
<tr>
<th>The Writer</th>
<th><a href="http://www.writermag.com">www.writermag.com</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Writer’s Digest</td>
<td><a href="http://www.writersdigest.com">www.writersdigest.com</a></td>
</tr>
</tbody>
</table>
## Appendix O. H1-2 – 1-6a. Means and Standard Deviations

<table>
<thead>
<tr>
<th>Measure of Boundary Management</th>
<th>Grouping Variable</th>
<th>n</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBI Checklist</td>
<td>Introverts</td>
<td>35</td>
<td>13.34</td>
<td>4.32</td>
</tr>
<tr>
<td></td>
<td>Extraverts</td>
<td>18</td>
<td>13.17</td>
<td>2.96</td>
</tr>
<tr>
<td>HBI Total</td>
<td>Thinkers</td>
<td>19</td>
<td>40.84</td>
<td>6.18</td>
</tr>
<tr>
<td></td>
<td>Feelers</td>
<td>32</td>
<td>41.06</td>
<td>9.17</td>
</tr>
<tr>
<td>HBI Checklist</td>
<td>Thinkers</td>
<td>19</td>
<td>12.89</td>
<td>3.83</td>
</tr>
<tr>
<td></td>
<td>Feelers</td>
<td>34</td>
<td>13.50</td>
<td>3.95</td>
</tr>
<tr>
<td>HBI Checklist</td>
<td>Sensing</td>
<td>31</td>
<td>13.16</td>
<td>3.65</td>
</tr>
<tr>
<td></td>
<td>Intuition</td>
<td>22</td>
<td>13.45</td>
<td>4.36</td>
</tr>
<tr>
<td>HBI Total</td>
<td>Judging</td>
<td>38</td>
<td>40.82</td>
<td>8.77</td>
</tr>
<tr>
<td></td>
<td>Perceiving</td>
<td>13</td>
<td>41.46</td>
<td>7.97</td>
</tr>
<tr>
<td>HBI Checklist</td>
<td>Judging</td>
<td>40</td>
<td>13.20</td>
<td>3.91</td>
</tr>
<tr>
<td></td>
<td>Perceiving</td>
<td>13</td>
<td>13.54</td>
<td>3.93</td>
</tr>
<tr>
<td>HBI Some</td>
<td>Judging</td>
<td>42</td>
<td>34.07</td>
<td>9.48</td>
</tr>
<tr>
<td></td>
<td>Perceiving</td>
<td>13</td>
<td>35.46</td>
<td>7.21</td>
</tr>
<tr>
<td>HBI Total</td>
<td>“New” HBWs</td>
<td>12</td>
<td>41.50</td>
<td>10.64</td>
</tr>
<tr>
<td></td>
<td>“Old” HBWs</td>
<td>35</td>
<td>41.34</td>
<td>8.12</td>
</tr>
<tr>
<td>HBI Concentration</td>
<td>“New” HBWs</td>
<td>14</td>
<td>27.79</td>
<td>8.57</td>
</tr>
<tr>
<td></td>
<td>“Old” HBWs</td>
<td>37</td>
<td>26.32</td>
<td>8.41</td>
</tr>
<tr>
<td>HBI Checklist</td>
<td>“New” HBWs</td>
<td>12</td>
<td>12.92</td>
<td>3.32</td>
</tr>
<tr>
<td></td>
<td>“Old” HBWs</td>
<td>37</td>
<td>13.62</td>
<td>4.13</td>
</tr>
<tr>
<td>HBI Some</td>
<td>“New” HBWs</td>
<td>14</td>
<td>34.93</td>
<td>9.31</td>
</tr>
<tr>
<td></td>
<td>“Old” HBWs</td>
<td>37</td>
<td>34.51</td>
<td>9.35</td>
</tr>
</tbody>
</table>

**Note.** All mean differences greater than 1.5 appear in Table 5.
Appendix P. Timeline of Development, Pilot, Recruitment and Study Phases.

Note. This process was proceeding concurrently with rewriting and refining the dissertation proposal, the proposal abstract, and the IRB proposal. Therefore, this does not reflect all the work that was occurring on the dissertation during this time period. The amount of time spent on each activity was estimated by reviewing detailed time and work records from the researcher’s planner, along with participant tracking spreadsheets.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date/s</th>
<th>Time spent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Development of Website</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create flowchart research process (human and software activities)</td>
<td>2/21/01</td>
<td>1 hr</td>
</tr>
<tr>
<td>Begin to learn Frontpage via tutorial; create inventory to-do list (in order to place them on-line)</td>
<td>2/23/01 – 2/28/01</td>
<td>3 hr</td>
</tr>
<tr>
<td>Set up webpages, navigation structure</td>
<td>3/1/01 – 3/21/01</td>
<td>35 ½ hrs</td>
</tr>
<tr>
<td>Work on directories; fix bullets, formatting errors, and navigation bars</td>
<td>3/21/01 – 3/30/01</td>
<td>31 ½ hrs</td>
</tr>
<tr>
<td>Set password protection in collaboration with OZ Help</td>
<td>3/30/01 – 4/17/01</td>
<td>24 ½ hrs</td>
</tr>
<tr>
<td>Miscellaneous “punch list” items, including: adding more ID codes, segues, and prompts; recoding inventories; fixing banners and forms; making certain forms (e.g., Action Plan) printable; creating “anchors” to make long pages easier to navigate; placing .txt (output) files in secure directories</td>
<td>4/14/01 – 4/30/01</td>
<td>36 ½ hrs</td>
</tr>
</tbody>
</table>

**Total for Development Phase** 2 mos, 9 days 132 hrs

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date/s</th>
<th>Time spent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pilot testing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create and send e-mails to pilot participants</td>
<td>4/23/01 – 4/30/01</td>
<td>3 ½ hrs</td>
</tr>
<tr>
<td>Make revisions to website based on pilot feedback; republish website</td>
<td>5/5/01 – 5/7/01</td>
<td>8 ½ hrs</td>
</tr>
<tr>
<td><strong>Total for Pilot Phase</strong></td>
<td><strong>2 weeks</strong></td>
<td><strong>12 hrs</strong></td>
</tr>
<tr>
<td><strong>Initial Recruitment of Sample</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assemble list of contacts for sample</td>
<td>5/31/00</td>
<td>4 ½ hrs</td>
</tr>
<tr>
<td>Create and send first round of letters to contacts for sample</td>
<td>6/6/00 – 8/9/00</td>
<td>12 hrs</td>
</tr>
<tr>
<td>Follow-up phone calls, e-mails, facsimiles, and visits to first-round contacts</td>
<td>6/8/00 – 9/20/00</td>
<td>6 hrs</td>
</tr>
<tr>
<td>“Mini” snowball, soliciting help from friends and family via e-mail</td>
<td>8/8/00</td>
<td>3 hrs</td>
</tr>
<tr>
<td>Create and send second round of letters to contacts for sample (direct sales consultants, referrals from snowball)</td>
<td>9/26/00 – 9/27/00</td>
<td>6 hrs</td>
</tr>
<tr>
<td>Follow-up phone calls and e-mails to second-round contacts</td>
<td>9/26/00 – 11/8/00</td>
<td>6 ½ hrs</td>
</tr>
<tr>
<td>Develop a recruiting e-mail to initiate third phase of solicitation</td>
<td>1/23/01</td>
<td>5 ½ hrs</td>
</tr>
<tr>
<td>Follow-up phone calls and e-mails to contacts from third phase</td>
<td>2/2/01 – 2/21/01</td>
<td>2 ½ hrs</td>
</tr>
<tr>
<td><strong>Total for Initial Recruitment Phase</strong></td>
<td><strong>8 mos, 3 wk</strong></td>
<td><strong>46 hrs</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date/s</th>
<th>Time spent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Secondary and Tertiary Recruitment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create “Sell-sell-sell” e-mail</td>
<td>5/25/01</td>
<td>1 hr</td>
</tr>
<tr>
<td>Learn how to submit URL to search engines, add necessary code to website, fill out URL submitters</td>
<td>6/11/01 – 8/14/01</td>
<td>5 hrs</td>
</tr>
<tr>
<td>Draft e-mails/letters</td>
<td>7/9/01 – 7/27/01</td>
<td>3 ½ hrs</td>
</tr>
<tr>
<td>Pursue new magazine via online searches</td>
<td>7/11/01 – 7/14/01</td>
<td>1 hr</td>
</tr>
<tr>
<td>Send e-mails</td>
<td>7/28/01 – 9/25/01</td>
<td>16 ½ hrs</td>
</tr>
<tr>
<td>Create and send second round of letters/e-mails to direct sales consultants, additional magazine, other leads</td>
<td>8/20/01 – 9/6/01</td>
<td>8 hrs</td>
</tr>
<tr>
<td>Talk with sources</td>
<td>9/3/01—9/4/01</td>
<td>2 hrs</td>
</tr>
<tr>
<td>Prepare for meeting, then meet with group of direct sales consultants to solicit participation.</td>
<td>9/10/01</td>
<td>2 ½ hrs</td>
</tr>
</tbody>
</table>

*Total for Secondary/Tertiary Recruitment Phase* 4 months 39 ½ hrs

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date/s</th>
<th>Time spent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Study (Data Collection)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create and send e-mails to on-line sample sources (who then advertised the study in their electronic magazines the week of 5/6/01)</td>
<td>5/2/01 – 5/7/01</td>
<td>3 ½ hrs</td>
</tr>
<tr>
<td>Download data, print data files, code PTIs, assign Ss to conditions, create and update tracking spreadsheets, create participant copies of consent form and e-mail to them, create e-mails and “launch” subjects to next phases, create and send follow-up e-mails to delinquent participants, respond to various participant questions and issues via e-mail</td>
<td>5/6/01 – 10/31/01</td>
<td>158 ½ hrs</td>
</tr>
<tr>
<td><strong>Total for Study Phase</strong></td>
<td>6 months</td>
<td>162 hrs</td>
</tr>
<tr>
<td><strong>TOTAL FOR ALL PHASES:</strong></td>
<td>17 months</td>
<td>391 ½ hrs</td>
</tr>
</tbody>
</table>