

**HIERARCHICAL INFLUENCE OF PERSONAL VALUES  
AND INNOVATIVENESS ON ADOLESCENT WEB-CONSUMPTION**

by

Jonathan B. Hartman

---

A Dissertation Submitted to the Faculty of the  
DEPARTMENT OF RETAILING AND CONSUMER SCIENCES

In Partial Fulfillment of the Requirements  
For the Degree of

DOCTOR OF PHILOSOPHY

In the Graduate College

THE UNIVERSITY OF ARIZONA

2 0 0 4

UMI Number: 3145070

### INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

**UMI**<sup>®</sup>

---

UMI Microform 3145070

Copyright 2004 by ProQuest Information and Learning Company.

All rights reserved. This microform edition is protected against unauthorized copying under Title 17, United States Code.

ProQuest Information and Learning Company  
300 North Zeeb Road  
P.O. Box 1346  
Ann Arbor, MI 48106-1346

The University of Arizona ®  
Graduate College

As members of the Final Examination Committee, we certify that we have read the

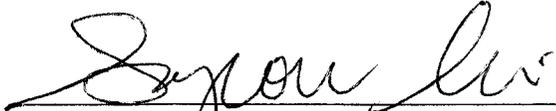
dissertation prepared by JONATHAN B. HARTMAN

entitled Hierarchical Influence of Personal Values and

Innovativeness on Adolescent Web-consumption

and recommend that it be accepted as fulfilling the dissertation requirement for the

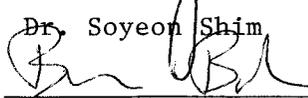
Degree of Doctor of Philosophy



Dr. Soyeon Shim

6/22/04

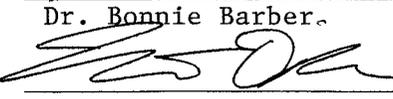
date



Dr. Bonnie Barber

6-22-2004

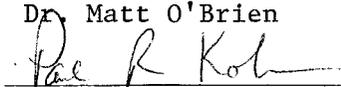
date



Dr. Matt O'Brien

6/22/04

date



Dr. Paul Kohn

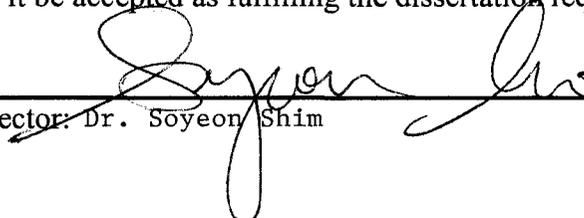
6/22/04

date

\_\_\_\_\_ date

Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copies of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.



Dissertation Director: Dr. Soyeon Shim

6/22/04

date

**STATEMENT BY AUTHOR**

This dissertation has been submitted in partial fulfillment of requirements for an advanced degree at The University of Arizona and is deposited in the University Library to be made available to borrowers under rules of the Library.

Brief quotations from this dissertation are allowable without special permission, provided that accurate acknowledgement of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the Graduate College when in his or her judgment the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

SIGNED: \_\_\_\_\_

A handwritten signature in cursive script, appearing to read "B. Hartman", is written over a horizontal line.

**ACKNOWLEDGEMENTS**

To my wonderful committee:

Soyeon Shim, who took time away from running her school to pull me out of a fire..

Bonnie Barber, who called me a serious, mature, creative scholar.. in writing..

Matt O'Brien, who taught me LISREL, then walked me through the structural mine field..

My long-suffering friend, Paul Kohn (and Skyler)...

Thank you so very much,

Your friend, student, and (I guess now) colleague,



Jonathan E. Hartman, Ph.D.

**DEDICATION**

This work is dedicated to two great men  
who are no longer with us:

NORMAN HARTMAN

&

PHILIP ARTHUR WALSTED

and, fortunately, one great lady who is:

THELMA L. "FRANCESCA" HARTMAN

## TABLE OF CONTENTS

LIST OF FIGURES .....	9
LIST OF TABLES .....	10
ABSTRACT .....	11
CHAPTER 1 INTRODUCTION .....	13
Purpose .....	15
Overview of the Study .....	18
Innovativeness and Personal Values .....	18
Background .....	23
Teen Consumers in the Digital Age .....	23
A Priori Web-Consumption Patterns Among Teens ..	28
Benefits of the Research .....	31
Research Objectives .....	33
Organization of the Study .....	35
CHAPTER 2 LITERATURE REVIEW .....	37
Adolescent Development .....	37
Identity Confusion .....	38
Biological and Cognitive Growth .....	40
Identity Formation, Possible Selves, and Values .....	44
Personal Values .....	45
The Schwartz Value-Dimensions Model .....	48
Innovativeness .....	53
Where Innovativeness "Fits In" .....	54
Innovativeness Decomposed .....	56
Measuring Adolescent Innovativeness .....	60
Theoretical Basis for A Priori outcome Domains of Web-Consumption .....	63
Shopping Motivations .....	65
Adolescent Developmental Goals .....	67
Technology Paradox .....	68
CHAPTER 3 RESEARCH FRAMEWORK AND HYPOTHESIS DEVELOPMENT .....	72
Conceptual Model Development .....	73
Established Links .....	76
Values-to- Innovativeness-to- Web-Consumption Model .....	78
Hypothesis Development .....	79

**TABLE OF CONTENTS - Continued**

Hypothesis 1. A Hierarchical Model of Values, Innovativeness, and Web-Consumption Behavior .....	79
Hypothesis 2. Inter-Relationship Between Personal Values and Innovativeness .....	81
Hypothesis 3. Inter-Relationships Between Innovativeness and Web-Consumption .....	83
CHAPTER 4 METHOD .....	86
Questionnaire Development .....	87
Focus Group .....	87
Sampling and Data Collection .....	90
Demographic Variables .....	92
Respondent Characteristics .....	93
Operational Definitions of the Model Variables .....	93
Exogenous Constructs .....	94
Personal Values .....	94
Endogenous Constructs .....	95
Innovativeness .....	95
Web-Consumption Global Outcomes .....	97
Web-Consumption Specific Outcomes .....	97
Preliminary Data Analysis .....	98
Chapter Summary .....	100
CHAPTER 5 DATA ANALYSIS .....	102
Descriptive Data on Computer Use .....	102
Exploratory Factor Analysis .....	104
Hedonic and Utilitarian Web-Consumption, Behavior-Specific Measure .....	107
Personal Values .....	111
Innovativeness .....	113
Hedonic/Utilitarian Global Web-Consumption Measure .....	114
Confirmatory Factor Analysis .....	116
Individual Latent-Variable, and Construct, Scales .....	117
Model Fit .....	121
Measurement Model .....	121
Structural Model	125
Tests of Mediating Effects - Hypothesis 1 .....	129
Tests of Hypotheses 2 and 3 .....	131
Chapter Summary .....	134

**TABLE OF CONTENTS - Continued**

CHAPTER 6 DISCUSSION .....	135
Identification of Web-Consumption Patterns in	
Teens: Hedonic and Utilitarian .....	135
Hedonic and Utilitarian Behavior Defined .....	136
Utilitarian Behavior: Measurement Effects or	
Less Use? .....	138
Hedonic Behavior: Is There a Problem? .....	140
Hierarchical Sequence: Why Innovativeness "Fits"	
Between Personal Values and Web-Consumption .....	142
Inter-Relationships of the Hierarchical Structure ..	144
Effects of Personal Values on Innovativeness ..	145
Effects of Innovativeness on Web-Consumption ..	148
Structure-Wide Inter-Relationships .....	149
Implications, Limitations, and Future Research .....	150
APPENDIX A. FOCUS GROUP PROTOCOL .....	161
Appendix B. INFORMED CONSENT .....	162
Appendix C. QUESTIONNAIRE .....	163
Appendix D. CORRELATION MATRIX .....	173
REFERENCES .....	175

**LIST OF FIGURES**

Figure 1., The Schwartz Model ..... 51  
Figure 2., Proposed Structural Model ..... 85  
Figure 3., Final Structural Model ..... 127

**LIST OF TABLES**

Table 1., Motivational Value Types .....	50
Table 2., Hedonic/Utilitarian Specific Behavior Items ...	108
Table 3., Exploratory Factor Analysis .....	109
Table 4., Confirmatory Factor Analysis Results .....	118
Table 5., Measurement Model Results .....	122
Table 6., Structural Model Comparisons .....	125
Table 7., Structural Model Results (Total Effects) .....	134

**ABSTRACT**

This study provides a better understanding of both adolescent Web-use and the factors that influence teen Web-consumption. To this end, a hierarchical, cognitive-behavioral decision-making model of personal values → innovativeness → Web-consumption was proposed and tested. More specifically, Web-consumption behavior was thought to dichotomize into hedonic and utilitarian domains. Two hundred high school students from a Southwestern state, representing various socio-economic and ethnic backgrounds, anonymously completed surveys.

Exploratory and confirmatory analyses identified three latent factors of personal values (personal-self, ambition, power); four factors of innovativeness (vicarious-pensive, vicarious-future, adoptive, use); and two factors of global Web-consumption (hedonic, utilitarian). The global Web-consumption scales were cross-validated against specific Web-consumption behaviors. Global utilitarian behaviors were practical and obligatory, while global hedonic behaviors were experiential and discretionary. Specific hedonic Web-consumption included escape from reality, use with friends, and music activities, while specific utilitarian Web-activities included use for future planning, doing homework, and, coaching parental Web-searches.

The two-stage structural equation model analysis with nested comparisons confirmed the hierarchical flow of the

relationships. Results indicated that innovativeness served as a middle-level variable, and mediated between the Web-consumption behaviors of teens and their personal values. Each personal value factor displayed unique predictive power on unique factors of innovativeness, which, in turn, displayed unique paths to each Web-consumption factor. For instance, the "ambition" value predicted "vicarious-future" innovativeness which, in turn, predicted both "utilitarian" and "hedonic" Web-consumption. Also, the "personal self" value linked to "vicarious-pensive" innovativeness, which, in turn, predicted "hedonic" Web-consumption.

The findings suggest that teens are intrinsically motivated to use the Web and benefit from computer use, even if the use is hedonic in nature. However, parents and educators may choose to monitor adolescent Web-consumption more closely. The paradox of technology can create cognitive dissonance, and teens report regular visits to sites that their parents would not approve of.

The study has theoretical and practical import. New measures, and a confirmed a priori hierarchical structure, will be useful tools to researchers of consumer behavior. Professionals are advised to consider applications that would benefit adolescents, including structured after-school activities and curriculum that further integrates the Web and the classroom.

## CHAPTER 1

### INTRODUCTION

Consumption of high tech products and services may be second nature to American teenagers, who are already consuming high tech offerings, such as computers and the World Wide Web (Montgomery et al., 2001). However, academe has gained little empirical knowledge about the ways in which adolescents consume the Web. An understanding of adolescent Web-behavior, and the hierarchy of its origins, will fill a gap in the literature and benefit several constituencies. A clearer understanding of adolescent Web-consumption outcomes and patterns would inform efforts to develop technology and Web-adoption schemes beneficial to adolescents.

Research concerning the Web-consumption outcomes of teens will help determine whether there are hierarchical influences of Web-use that derive from adolescent innovativeness, and whether highest level personal values furnish a basis for understanding distinct consumer dispositions, including innovativeness (Steenkamp, Hofstede, & Wedel, 1999).

An analysis of the ways in which adolescents consume the Web is needed because they are using it more, in ever-

greater numbers, for more hours every day. One example of the paucity of research on these consumers is that researchers have not agreed on a referent for them (i.e., "teens" used by Montgomery et al., 2001, and "adolescents" used by Knafo and Schwartz, 2001). Teen Web-consumption is a prevalent and rapidly diffusing behavior. Children and teenagers (9-17 years) are using the Internet and computers in greater percentages than any other group. Seventy-six percent of all 14-17 year olds use the Web. Family households that include children under 18 are more likely to go on-line (62%) than those without children (53%) or non-family households (35%). Total Internet use increases by about two million new users per month, and minorities and rural area residents have much higher growth rates than others as those user groups "catch up." (US Commerce Department, 2002). Today, Americans have Internet access at home via PCs and other devices, such as video phones, game consoles, and digital cable boxes; this access will have considerable effect on children and adolescents (Montgomery et al., 2001).

How adolescents interact with advanced technology will in large part determine their futures (DeSantis & Youniss, 1991). Computers are now so central to information flow

that "computer literacy is as profound as the ability to read" (Martinez, 1994), and the current state of Web and computer-use underlies the complete transformation of the existing system of communication (Montgomery et al., 2001). The foregoing notwithstanding, research on the consequences of adolescent computer and Web-use is sparse (Subrahmanyam, Kraut, Greenfield, & Gross, 2000). The majority of past research concerning this age group has been done on a proprietary basis by market researchers. Because of the salient influence that the Web exerts on adolescent development and identity creation, academic research regarding adolescent interaction with and consumption of the Web is sorely lagging and urgently needed (Montgomery et al., 2001).

#### **Purpose**

This research posits that teens will display hierarchical, cognitive, and behavioral processes of Web-consumption, originating from the highest level of abstraction (i.e., personal values) and flowing to the lowest level of abstraction (i.e., behavior). To examine this issue, a decision-making model of personal values-to-innovativeness-to-Web-consumption behavior is proposed and tested. The proposed model is adapted from the Homer and

Kahle (1988) hierarchical cognitive decision-making model. The research postulates that teen personal values exist at the highest level of abstraction and function as the source of teen innovativeness. Teen innovativeness will subsequently influence teen Web-consumption behavior. Research has shown that personal values significantly affect consumer innovativeness (Steenkamp et al., 1999), and consumer innovativeness significantly affects consumer behavior (Ram & Jung, 1989; Venkatraman, 1991). To our knowledge, no prior empirical research has identified relationships among these three constructs in the context of teen Web-consumption behavior, or in general. It is certainly possible that exposure to technology could increase innovativeness, and innovativeness may display reciprocal relationships with personal values. This possibility could manifest in a change of direction for the arrows in the proposed model. The literature, albeit sparse, is persuasive in that it increasingly confirms a highest-to-lowest abstraction, hierarchical relationship (Homer & Kahle, 1988; Lotz, Shim, & Gehrt, 2003; Shim & Eastlick, 1998) as we propose. Thus, there are three goals in this study:

1. To examine the patterns of teen Web-consumption behaviors and the factors that might indicate specific patterns.
2. To determine the nature of the direct and indirect relationships among personal values, innovativeness, and adolescent Web-consumption patterns.
3. To demonstrate the effectiveness of a personal values-to- innovativeness-to Web-consumption behavior model as a tool to investigate adolescent Web-consumption.

The study makes the argument that the personal values based hierarchical flow model will illuminate the fundamental sources of teen innovativeness and consumer behavior (i.e., personal values) in the context of Web-consumption. It asserts this position because personal values are fundamental sources of a most-to-least abstract hierarchical flow of human cognitive and behavioral processes (Homer & Kahle, 1988), and influence attitude, judgment, choice, and behavior (Feather, 1995). Individuals exhibit differing degrees of personal value dimensions (Rokeach, 1973), and these differences are reflected in differences in consumer innovativeness (Steenkamp et al., 1999). This study seeks, and expects to

find and describe, the specific relationships among multiple dimensions of each construct in the model.

The study makes the further argument that the hierarchical model should be robust against individual background variables, such as age, gender, years of Web-experience, and ethnicity. This derives from the proposition that personal values endure across circumstances (Bandura, 1986) and transcend specific objects and situations (Rokeach, 1973).

### **Overview of the Study**

#### ***Innovativeness and Personal Values***

This study proposes that teen Web-consumption is a manifestation of innovativeness, and innovativeness is influenced by personal values. Innovativeness is the willingness (propensity, predilection, disposition, tendency, or inclination) of consumers to break existing purchase and use patterns. Hirschman (1980) conceptualized innovativeness as a three-part phenomenon. Consumers first imagine and learn about products/services; next, they acquire/adopt products and services; finally, consumers resolve novel consumption problems by employing existing products/services in ways not contemplated by providers. Teen-innovativeness is of interest because innovativeness

is dynamic in the marketplace; it prompts consumers to desire/acquire/use new and different products and services.

Innovativeness is key to diffusion of new offerings such as computer hardware and software, Web-services, and other high tech goods and services in the marketplace (Midgley & Dowling, 1978). Taking conceptualizations of innovativeness (Hirschman, 1980; Venkatraman & Price, 1990) forward for the purpose of this study, adolescent innovativeness is defined as the inclination to contemplate, adopt, and use new products and services in the context of (criterion variable) Web-consumption.

Personal values are proposed as antecedent to innovativeness and can clarify, validate, and create innovative outcomes (Schwartz & Sagie, 2000). Personal values are generalized beliefs about desired end states and motives that control goal-directed conduct (Feather, 1995). Because of their motivational nature, personal values (Rokeach, 1973) may be effective in predicting innovativeness (please see Chapter 2, value-dimensions used in the study). For example, conservation objectives (Schwartz, 1992) are inconsistent with an inclination toward innovativeness in consumption, because using new products/services breaks with existing behaviors. Since

personal values are primary to the cognitive characteristics of virtually any individual, the values construct affords a strong conceptual foundation for comprehending distinct propensities of consumers. It follows that openness-to-change values would promote innovativeness (Steenkamp et al., 1999). We will adapt the Innovativeness Teen (IT) Scale (Hartman, Gehrt, & Watchravesringkan, 2004, 2003) for use in assessing teen innovativeness.

The Schwartz (1992) Value Survey (SVS) will be adapted to assess teen personal values. Schwartz and colleagues have used the SVS with over 25,000 subjects, and it is proven to be overarching, parsimonious, and highly efficacious in classifying highest level fundamental personal values (Steenkamp et al., 1999). Two specific value dimension groups of the SVS (i.e., openness-to-change and self-enhancement) have been proposed as linked to consumer innovativeness (Steenkamp et al., 1999) and are expected to be more relevant to the study of teens than the other two value dimension groups (Knafo & Schwartz, 2001).

Theoretical literature concerning adolescent Web-consumption behavior domains is sparse. While descriptive statistics and qualitative research tell an interesting

story, the conduct of theory-driven, quantitative, empirical research is clearly desirable. Our research postulates that teen Web-consumption can be characterized in two outcome domains: utilitarian and hedonic consumption.

Utilitarian consumption consists of rational, task oriented activities. Consumption exclusive to the utilitarian domain includes doing schoolwork, newspaper reading, enhancing productivity (Lee & Kuo, 2002), and personal empowerment activities such as building and maintaining a "blog" (Montgomery et al., 2001). Hedonic consumption embodies emotional, pleasure-seeking endeavors such as chatting, Web-surfing, listening to music (on Web-radio and downloaded music), making acquisitions, using products/services that lend prestige (Venkatesh & Brown, 1998), accessing inappropriate material, pornography, gambling, and scams (Washington State Attorney General's Office, 1997). Several consumption outcomes lie in both domains: communicating, shopping and comparing prices, and accessing general information. Additionally, playing games and engaging in self-expressive activities have dual outcomes because they are fun and also build inner-agency (i.e., self-confidence, conceptual flexibility, reflexive

reasoning, self-regulation, knowledge, determination, etc., and in some instances provide flow experiences). Such activities are intrinsically motivating and provide concerted engagement and a temporal arch of increasing challenge that builds initiative (Csikzentmihalyi, 1990; Larson, 2000).

The domains of Web-consumption outcomes proposed in this study are appropriate, established by much empirical support and a long tradition in the literature, inaugurated in the seminal work "The experiential aspects of consumption: Consumer fantasies, feelings, and fun" (Holbrook & Hirschman, 1982). The two domains are meant to be neither exhaustive nor mutually exclusive. Yet, these two domains should capture the majority of teen Web-consumption behavior. A rationale for these two domains is based on (1) traditional shopping literature, (2) life goals of adolescents, and (3) the technology paradox, discussed in Chapter 2.

Finally, we develop our own criterion scale for assessing teen Web-consumption behavior.

## **Background**

### ***Teen Consumers in the Digital Age***

While adolescent influence on family consumption has been studied (Moschis & Churchill, 1979), researchers have justified their inattention to teens as buyers with the assumption that adults are the ones paying for most products and services consumed. However, this inattention is changing to interest as adolescent buying power grows dramatically (Corfman, 1997). There remains a dearth of scholarly research relating to teen consumers, particularly with regard to technological products and services, notwithstanding the popular and professional perception that teens display a natural acumen and affinity for such offerings. The adolescent technology and Web-consumption behavior gap in the literature must be filled in order for scholars, youth development specialists, parents, teachers, and marketers to create the proper technological environment for youth. Society should take best advantage of technological advances, and this research contributes to that end.

In many ways, contemporary teens resemble their predecessors; however, today's adolescent has grown up with powerful tools (e.g., email, search engines, chat rooms)

that allow for creative approaches to age-old issues. As Erikson (1963) suggested, identity formation is very important during adolescence because it leads to alterations of self-perceptions (Harter, 1990).

Adolescents tend to compare themselves to their peers, and while doing so, they try on alternate identities, seeking to determine what a "possible self" (conception of the self in a future state; Markus & Nurius, 1987) might be like.

In the virtual reality of the Web, however, adolescents can experiment with impunity, assuming new, sometimes radically different, identities to see which ones fit best (Turkle, 1995). Because teens have grown up with the notion that "high tech is my tech" (Montgomery, 2000, p. 146), they do not hesitate to use online technologies that offer ways to explore new identities, to try on new selves--the way one tries on a new set of clothes. Teens can meet new people and explore the world or vent frustrations associated with parts of their emerging identities (such as sexuality and aggressiveness) from the safety of their homes by "ducking in and out" of the Web (Suler, 1998). Research indicates that 56% of adolescents on-line use multiple email addresses and/or screen names, doing so to differentiate between portions of their lives

and to assume different trial identities. Contrarily, some adolescents report that the anonymity of the Internet allows them to truly be themselves (Lenhart, Rainie, & Lewis, 2001). When alone, with the help of the Web, adolescents cultivate private self-identities. Part of this identity often includes listening to music, possibly downloaded, with which they connect personally. Music assists in forging their self-identities and may assist them in coping with loneliness, stress, and depression (Larson, 1995). As a part of the process of creating an identity, 25% of teens online create personal Web pages (Lenhart et al., 2001). On these pages they can display their emergent identities in art and writings such as essays or journals (Brown, 1994). Many also create programs to automate their activities online, resulting in further development of their computer skills. From this they gain a sense of competence, status among their peers, and possibly a new identity, all reinforced when they begin teaching younger children what they have learned. They are also compelled to become discriminating consumers of information, since they must sift through the universe of unqualified information that abounds on the Web (Suler, 1998).

As adolescents move from middle school to high school (starting at about age 14 through 18), they spend more time with peers and less time with family. Teens have grown up with "on-screen images" (Soren & Maibach, 1995) and their media preferences have a lot to do with who teenagers think they are, which self they want to project, what friends they seek (Roe, 1995), and how much risk they are willing to take. Adolescents use their friends as sounding boards by discussing their private reflections while seeking approval, personal clarification, and mutual understanding; part of the process called cooperative co-construction (Youniss & Smollar, 1985). When not physically with their friends, they may be joining virtual groups they think they will fit in to. Such cooperative co-construction with group members may help in identity formation (Suler, 1998).

In many cases, teens are much more facile with digital media than their parents. They help their parents use computers and frequently make decisions about which computer products and services the family buys. From this role as technical advisor to his/her parents, an adolescent can gain authority and independence (Bunn, 2000), which may explain why a majority of adolescents report being unmonitored while using the computer (Montgomery, 2000).

While teen Web-activity might concern parents, there are indications that time spent using computers may be beneficial to teens. Durkin and Barber (2002) suggest that computer game-playing teens may have higher GPAs, self-concepts, and mechanical and computer skills, and lower depressed mood and disobedience than non-players. Rather than being shut-in with their computers, these teens prefer the company of peers or family while playing (Durkin & Barber, 2002). It is well documented that structured voluntary youth activities can create initiative (Larson, 2000). Computer games offer structure, challenge, and can provide the essence of a flow experience (Csikzentmihalyi, 1990). The teen is intrinsically motivated to play, his/her motivation is fed by a fluid skill level that increases to meet the game's increasing difficulty (Durkin & Barber, 2002). There is little if any evidence that violent computer games create aggression in young people. Computer use appears to be one of many diverse structured leisure activities that well-adjusted teens engage in (Durkin & Barber, 2002). Computer and Web-use may also help teens obtain part of the conceptual flexibility, reflexive reasoning, and self-regulation needed for the development of critical thinking (Keating & Sasse, 1996).

All types of personal communication are expected to continue their wide popularity among teen users (Montgomery et al., 2001). This is not surprising since relationships are fundamental to the individual teen's self-definition (Youniss & Smollar, 1985). Portable devices are becoming more versatile (e.g., cell phones that download/play music, send/receive text messages, surf the net, play interactive video games, and act as personal planners). When at home, those with the necessary infrastructure may be e-mailing, talking on the phone, watching television, using instant messaging, playing video games all at once (Montgomery et al., 2001) in a process of cooperative co-construction with peers (Youniss & Smollar, 1985).

Sixteen to 17-year-old Web-users are spending an average of 13% of their incomes on the Web, or about \$540 per annum, paying for their purchases with their parents' credit cards or prepaid accounts (Montgomery et al., 2001). Research suggests that teens shop with their friends in bricks and mortar stores (Tootelian & Gaedeke, 1992), but empirical evidence is scarce regarding teen Web-shopping.

#### ***A Priori Web-Consumption Patterns Among Teens***

No model exists to guide this research as to how adolescents behave when using the Web. The limited, mostly

qualitative, academic Web-consumption research concurs that interpersonal communication is the key use of the Web by teens (Stald, 2001). Interpersonal communication uses include e-mailing, chatting (including identity playing), and instant messaging (Montgomery et al., 2001; Stald, 2001). Teen girls reported they use the Web for communication with friends, meeting new people, obtaining personal help, and joining groups. Both sexes see this virtual communication as a supplement for, not a replacement of, telephone and face-to face visits (Subrahmanyan et al., 2000). Another important use is for "blogs" or Web logs and personal Web pages that adolescents post for self-expression. These pages are refitted to track adolescents' blooming identities and assist in their experimentation with different identities. Adolescents exhibit themselves to audiences through creation of personal pages, showcasing art, poetry, and journals. They employ the Web to help determine and present different identities while noticing how their Cyberpeers fabricate their own identities (Brown, 1994; Stern, 1999). The blog creation can be self-empowering (Orleans & Laney, 2002). When in multiuser domains (MUDs), role playing games that operate like chat rooms, the user does not know if the

identities of the other participants are real or assumed (Subrahmanyam et al., 2000).

Information search is the second highest Web use by teens, who consume the Web for general information about topics of interest to their age group, as well as schoolwork and school-motivated research (Stald, 2001). Numerous education sites assist adolescents by providing resources online for homework and school reports (Montgomery et al., 2001). By the time they are in middle school, most students have used computers for word processing and information search (Becker, 2000). This "serious" type of Web-consumption is associated with higher levels of newspaper reading, time spent with family and friends, and lower levels of TV watching (Lee & Kuo, 2002; Subrahmanyam et al., 2000). Notwithstanding serious uses, adolescents access sites "unsuitable for academic research" twice as often as "suitable" sites (Ebersole, 2000). Many adolescents become skilled information-consumers by recognizing that much of the vast profusion of information on the Web should be questioned for credibility (Suler, 1998).

Additional Web-consumption includes trading (Mp3 files, digital pictures, videos), playing and gaming

(solitary or group activities), and shopping. The percentage of Web purchases made by teens is much lower than that of adults, in large part because teens lack credit cards, but teens frequently go Web-window-shopping. When teens do buy, their purchases include CDs, DVDs, computer magazines, and other small items (Montgomery et al., 2001). Adolescents' Web-searches have been reported as 68% for music, 54% for films, 52% for relationships, 49% for advice, and 43% for fashion (Montgomery et al., 2001). Adolescents download software, get marketing information from product, service, and concert sites, and get technical support online (Ebersole, 2000). In doing so, they learn more about computers, increase self esteem through mastery and accomplishment, and attain prestige with friends whom they also teach (Suler, 1998).

#### **Benefits of the Research**

Exploring Web-consumption and its antecedents will provide benefits to several constituencies: policy makers, youth development specialists, parents, educators, marketers, and academic researchers. For policy makers and parents, insights provided by this research can guide consumer protection policies. For adolescent development researchers, this research presents an opportunity to look

at Web and computer use as a structured voluntary activity that might be capable of creating initiative in teens. Research has shown that structured voluntary activities can be associated with various advantageous outcomes in adolescents, as well as creating flow experiences for them (Csikzentmihalyi, 1990; Durkin & Barber, 2002; Larson, 2000). Researchers may be able to use the criterion data from this study to determine if Web and computer use "qualify" as such beneficial activities.

Further, the proposed categories of Web-consumption--hedonic and utilitarian--should improve the ability to predict other youth behaviors from Web-consumption and foster understanding of how Web-consumption outcomes may influence adolescent development. For educational professionals, it will inform ways of creating curriculum content that will appeal to adolescents. For marketers, the exploration of innovative behavior is of paramount concern; innovativeness gives the marketplace its dynamic nature (Hirschman, 1980). This theory-driven research will go deeper into the fundamentals of behavior than marketing research does, therefore, it should help identify the adolescent consumer's underlying motivations for interest in high tech products/services. The results of this study

may also suggest communication strategies (e.g., the use of informational or fantastic genres) that will prove effective in reaching different groups of teen consumers. The empirical data generated from our teen Web-consumption study will advance academic research (Montgomery et al., 2001) and potentially validate the IT Scale (Hartman et al., 2003). Empirical exploration of the antecedents and the domain-specific behavioral outcomes (i.e., Web-consumption) of innovativeness, as well as increasingly confirming the full dimensionality of innovativeness, will result in more complete understanding of the innovativeness construct.

### **Research Objectives**

Industry research is rarely theory driven and, typically, is carried out with little sense of social responsibility. The abounding private industry research on teens and their consumption habits are "slice-of-life" studies that look at consumption for the purposes of determining what will sell. Contrarily, this research is being conducted with the objective of informing key groups responsible for teen welfare. It has three objectives:

Adolescents who use computers are deluged with choices that can lead to positive or negative outcomes. For this

reason, many scholars have called for academic research to amplify the insufficient empirical data on adolescent Web-consumption (Montgomery et al., 2001). This study will expand the sparse knowledge regarding adolescent Web-consumption behavior by gathering data on content consumed by teens and identifying patterns in their consumption.

First, it is expected that empirical support will be found such that patterns of Web-behavior can be quantified and categorized within two a priori proposed consumption-outcome domains. Should this be the case, the discovery may assist in more accurate predictions of future technology adoption behavior. It will support academe and industry in designing technology programs that appeal to adolescents, and benefit their development.

Second, the research proposes that there is a hierarchy of cognitive and behavioral processes in adolescents, flowing from highest to lowest levels of abstraction. Identifying the components of the hierarchy will facilitate discovery of the character of direct and indirect relationships among personal values, innovativeness, and adolescent Web-consumption variables through the use of structural equation modeling.

Third, the study should demonstrate the efficacy of the values-innovativeness-Web-consumption outcome model as a method for exploring adolescent Web-consumption.

This work will enable researchers to gauge the degree to which each level impacts the others, thus contributing to the adolescent literature and opening a new avenue of research for adolescent researchers wishing to examine origins of adolescent behavior and the role of Web-consumption in the adolescent development process.

#### **Organization of the Study**

Chapter 1 of the study has petitioned for needed research in the area of consumption, and particularly Web-consumption, by adolescents. From the introduction, purpose, and background of this research, one can conclude that there is an immediate need for this data, and can see the appropriateness of this topic at this time. The residuum of the study is offered in the five chapters that follow: the second chapter presents a review of the literature essential to an understanding of the research problem. The third chapter imparts the theoretical framework and reveals and justifies the proposed hierarchical cognitive decision-making model: personal values impact innovativeness which, in turn, impacts Web-

consumption behavior. The fourth chapter delineates the necessary methodology for this inquiry. The chapter expounds the development of the instrument, the methods for selection of sample, collection of data, respondent characteristics, and conceptual and operational definitions of the variables. The fifth chapter reveals the results of the study, and discussion is provided in Chapter 6.

## CHAPTER 2

### LITERATURE REVIEW

It is the intent of this research to provide new knowledge of adolescent Web-behavior and the antecedent motivating forces behind the behavior. The study explores adolescent development in general and development specific to the digital age. It examines the nature of values and the value-acquisition process. Beyond that, the study focuses on innovativeness as measured by the Innovativeness Teen (IT) Scale (Hartman et al., 2003, 2004). Innovativeness is proposed as the intervening variable through which values influence adolescent Web-consumption. A priori outcomes of Web-consumption are proposed, and the manifest Web-consumption of our sample of teenagers is investigated.

#### Adolescent Development

Adolescence is often a difficult transitory period because the adolescent's faculties begin to approach the core competencies of adulthood albeit without abundant experience. According to adolescent-development experts (such as B. L. Barber), teen "hardware" is similar to adult "hardware," but much of the "software" is missing. In the transitional process, a roadmap for behavior begins to

crystallize, creating an excellent opportunity for researchers to study and predict behavior around choice and rationality.

### ***Identity Confusion***

Sigmund Freud and Erik Erikson (1963) considered adolescence a disruptive period with physiological changes, aggressive drives, and social pressures that instigate identity confusion. Both Freud and Erikson proposed two stages of childhood in which qualitatively distinct types of thought emerge. The first stage, a period of relative calm, occurs from approximately 6 to 11 years. The second stage, a turbulent period due to maturational and social changes and identity formation, begins at approximately 12 years and lasts through young adulthood. Adolescence has historically been associated with identity formation after Erikson's characterization of a "crisis" that occurs in late adolescence (Arnett, 2000). Crisis is the period during which a teen chooses between consequential alternatives and begins to exhibit an individual level of commitment or personal investment (Marcia, 1966). Erikson called this period "identity vs. role confusion;" terms which refer to polar outcomes of the adolescent crisis. Erikson (1968) viewed all important behavior as shaped by

identity tasks. He suggested that identity consists of three things: (1) a conscious sense of uniqueness, (2) an unconscious effort for continuousness of experience and, (3) solidarism with the ideas and values of a chosen group. Part of identity formation for the teen is the "I" comparing its selves to others' selves and creating a tenable balance (*inner-agency*) and this, in turn, provides security for congruous personal existence. Such a balance is difficult for teens to achieve. As an example, physical changes come so quickly that teens do not recognize themselves. The rapid physical change creates cognitive confusion and concern for appearance. Social pressures may also cause adolescents to fear that they appear inadequate to others, diminishing willingness to be different and innovative as they age (Erikson, 1963).

More recent scholarship echoes these themes, suggesting that the unparalleled rapidity with which adolescents develop biologically, cognitively, and socially (Steinberg, 1993), may make them self-conscious, and burden them with questions such as, "What do I think of me?" and, "What do they think of me?" (Conger & Galambos, 1997). Even as they are acquiring cognitive capabilities comparable to adults, adolescents often feel "judged" by

others; this makes them feel very insecure, and they become critical of themselves and others (Durkin, 1995),

### ***Biological and Cognitive Growth***

Research illustrates greater differences in the quality of decision-making processes and general mental abilities between younger and older adolescents compared to small differences between older adolescents and adults (Douvan & Adelson, 1966). Metacognitive capabilities usually consolidate by late-adolescence (Beyth-Marom & Fischhoff, 1997) as brain growth concludes (Crockett & Petersen, 1993). Many mid to late adolescents are comparable to adults in their ability to make and defend choices by considering options (Weithorn & Campbell, 1982). Teens reason on an adult level with comparable analytical defects (Kuhn, Amstel, & O'Loughlin, 1988).

However, adolescents have yet to achieve cognitive maturity (Moshman, 1993). They continue to be childlike in many ways (Crockett & Petersen, 1993). Playing, daydreaming, and active imaginations are important to adolescent psychological well-being during this transitional period (Csikszentmihalyi & Larson, 1984; Timmer, Eccles, & O'Brien, 1985). Arnett (1992) proposed that the adolescent capacity for judgment is faulty because

judgment depends on experience that the adolescent has yet to acquire. Additionally, adolescents are not very able to generalize (Kynigos, Gyftodimos, & Georgiadis, 1993) with their low structure belief systems that focus on specifics (Breakwell & Fife-Schaw, 1987). Young adolescents do not have fully developed decision making skills. By about age 12, they are just beginning to evaluate cost and benefit cues simultaneously. This pre-decisional search behavior does not fully strengthen until late adolescence (Gregan-Paxton & John, 1995).

While their decision-making skills may be deficient, teens must make choices. Adolescents must confront tasks such as finding and keeping jobs, developing reciprocal relationships with their societies, and sustaining feelings of continuity within themselves (Marcia, 1966). All this while enduring feelings of ambivalence with the greater degrees of independence and responsibility they experience (Douvan & Adelson, 1966). To confront these tasks, teens may rely on social learning processes of imitation and social reinforcement. In social learning, the learner directly models personal behavior on the behaviors of role models or significant others (who are most often parents and peers). In social reinforcement, the learner's values

are influenced indirectly by significant others' definitions of appropriate behaviors and values (Kandel & Andrews, 1987).

For adolescents, the social learning process consists largely of selecting and assimilating modes of behavior and personal values, as values have a close relationship with self-image and identity (Burgess, 1992). Values are socialized. "Every human value . . . is a social product that has been transmitted and preserved in successive generations through one or more of society's institutions" (Rokeach, 1973, p. 24).

First, very young children observe the values of their parents (accurately or inaccurately). Second, children accept and internalize the parental values as their own, or, infrequently, reject their parents' values (Knafo & Schwartz, in press). Values are frequently inculcated. For example, Knafo and Schwartz (2001) suggest that those immigrant families (that are desirous of acculturating their progeny to a new country) may encourage their children to accept some of the host country norms that they themselves do not follow. Parents interact with their children in ways that advance specific social cognitive comprehension and behavioral strategies (Durkin, 1995).

Inner-agency builds during this process (from about middle childhood and throughout adolescence) as teens come to know the self more fully and clearly, and become progressively more autonomous. Adolescents will eventually create self-instructions for behavior and for making assessments appropriate to their own environments (Douvan & Adelson, 1966). In so doing, teens begin transformations in relationships with their parents (Youniss & Smollar, 1985).

Social learning can be beneficial or perilous for the adolescent. Bandura (1986) proposed that vicarious experiences are beneficial to development. For example, a youth sees others doing a task, visualizes completing the task, and therefore believes s/he can do it. The increased confidence from this belief raises the level of commitment and builds inner-agency. Similarly, untested teen judgement, modeling and reinforcement of/by peers, adolescent optimism (Arnett, 2000), and feelings of invincibility (Markus & Nurius, 1987) may explain why younger teens seem to embrace, rather than avoid, risk (Arnett, 1992; Jessor, 1992; Moffitt, 1993; Schulenberg, O'Malley, Backman, Wadsworth, & Johnston, 1996). Teens become less concerned about sanctions from their families and more concerned about those from their friends (Douvan &

Adelson, 1966) to the degree that peer groups may act to refine socializing forces such as television or music (Valkenburg & Cantor, 2001). For example, without considering the consequences, a young teen might see older ones smoking cigarettes, vicariously experiences his/her identity as a smoker by cognitively creating social alignment with older teens (Rowe, Rodgers, & Gilson, 2000).

### ***Identity Formation, Possible Selves, and Values***

In the identity and value-building process, adolescents are helping to shape their own development by setting personal goals (based on their personal values) and setting steps into motion to accomplish their goals (Maggs, 1997). Personal goals have been presented as life tasks or personal projects/strivings that impel and mold personal conduct; for adolescents, these include academic and social goals (Maggs, 1997). As adolescents grow older, they constantly revisit their values, and think about their futures (Conger & Galambos, 1997). While this is occurring, tolerance for risk declines (Moffitt, 1993). Schachtel (1959) suggested that as they mature, teens acquire increasing misgivings about deviating from the

tastes, thinking, and values of their parents, peers, and teachers.

Identity and value building continually create new possible selves (future selves or conceptions of the self in future states). Possible selves are cognitive fabrications that bring together concepts of an individual's roles, social categories (e.g., student, fiancée), values, features, habits, and attributes. Possible selves include visions of desired (and undesired) end states, and means to achieve end states, thus providing a "link between salient identities and role performance" (Markus & Nurius, 1987, p. 159). Personal values are visions of desired end states and means that combine with possible selves (Feather, 1995).

### **Personal Values**

In addition to being generalized beliefs about desired states, personal values are motives that create goal directed behavior (Feather, 1995). Individuals see their personal values as helpful and useful modes of behavior and as desirable end states (Burgess, 1992). Rokeach (1973) defined personal values as enduring, valence free conceptual principles, transcending a specific object and/or situation. Personal values symbolize an

individual's ideology regarding manner of behaviors and ultimate outcomes. Thus, personal values are centrally held beliefs (highest order) directing (lower level) conduct and decision making (attitudes, intentions) over objects and situations (Burgess, 1992). Personal values control an individual's goal selections while regulating the behavioral means to achieve them (Vinson, Scott, & Lamot, 1977). Rokeach (1973) made five presumptions concerning the characteristics of personal values:

1. Everyone possesses a small number of values.
2. Essentially, everyone holds like values; values occur in individuals at different levels.
3. Individuals categorize values to form value systems.
4. Values derive from an individual's culture, society, and personality.
5. The outcomes of values are initiated through an individual's innate stimuli, and by circumstances, manifesting in any and every human action/behavior.

Rokeach (1973) characterized values as beliefs that determine an individual's preference for particular end states, irrespective of objects and events. Personal values persist because they are forcefully inculcated into children and adolescents, and because values are initially

offered in isolation and as absolute. Progressively, through maturation and experience, one learns to synthesize these values hierarchically as each value is assigned a priority relative to the others in the hierarchy (Rokeach, 1973).

Personal values act as standards or criteria for making evaluations, are positioned as primary in the cognitive system as well as in personality (Becker & Conner, 1981), and are a central aspect of identity development (Grotevant & Adams, 1984; Marcia, 1966). Thus, values determine behavior and attitudes as a blueprint or map might; the individual consults the part of the map that is relevant to the situation and ignores the other parts for the time being. Different social situations would activate different parts of the map (Rokeach, 1973).

Personal values manage actions through cognitive, affective, behavioral and motivational elements. Consequently, personal values solve internal discords, facilitate decision-making, and can bring an individual to a specific religion or ideology. Personal values are responsible for how teens present themselves to others, try to influence others, and rationalize their own behaviors. Personal values manifest in higher and lower order types.

Global values are highly central and enduring convictions guiding conduct and judgment; one level of abstraction lower are domain specific values, acquired strictly through contextual experience (Burgess, 1992; Vinson et al., 1977).

Personal values are differentiated from attitudes as being more dynamic, because values are closely connected to motivation. Attitudes are associated with specific situations or objects, and therefore exist at a lower level of abstraction; likewise "interests" are associated with even more specific situations or objects. At the lowest level, behavior is a display of an individual's central values and resultant attitudes. Attitude and behavior are based in values (Becker & Conner, 1981) as is intention (Engel, Blackwell, & Miniard, 1990).

#### **The Schwartz Value Dimensions Model**

Schwartz et al. (1987, 1990, 1992, 1994) produced a composite definition of personal values from the literature. Personal values are notions, beliefs, or concepts, ordered in importance by the individual and germane to beneficial behaviors and/or end states. Personal values transcend distinct circumstances while guiding choice or assessments of behavior and events. Proposing that there are three ubiquitous types of human

needs (biological, societal, and survival), Schwartz suggested that when these needs are cognitively symbolized, they become values. During the cognitive-developmental and socialization processes, human beings represent these necessities as purposeful, non-situational goals and values that motivate action, and attribute rank to each goal or value (Schwartz & Bilsky, 1990). Personal values motivate, judge, and justify action (Schwartz, 1994). Actions can have social, practical, or psychological consequences, and behaviors taken in pursuance of a particular value may or may not conflict with the pursuit of other values. Achievement (self-success seeking) values can conflict with benevolence (helping others) values, but appear congruent with power values (that concern social standing and authority).

In identifying 10 "motivational values" and the dynamic way in which they relate, Schwartz, (1992) explains that essentially all human beings possess the 10 universal values outlined in Table 1; each value is discrete in terms of motivational direction.

The Schwartz (1992) Value-Dimensions Model contains the 10 value types in a linked configuration of values,

**Table 1****Motivational Value Types**


---

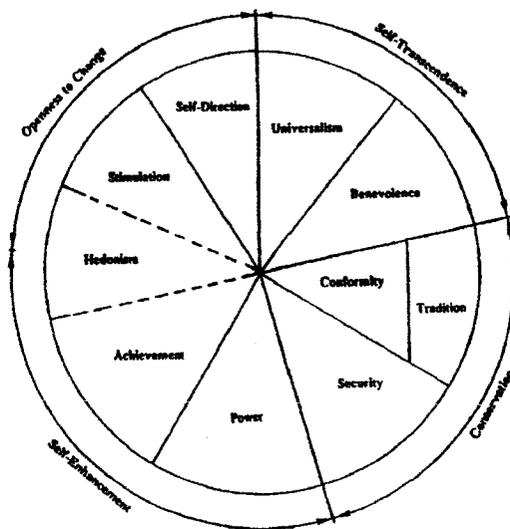
Power:	Social status and prestige, control or dominance over people and resources.
Achievement:	Personal success through demonstrating competence according to social standards.
Hedonism:	Pleasure or sensuous gratification for oneself (enjoying life, self-indulgent).
Stimulation:	Excitement, novelty, daring, and challenge in life.
Self-direction:	Independent thought and action - choosing, creating, exploring, having freedom.
Universalism:	Understanding, appreciation, tolerance, social justice, wisdom, unity with nature.
Benevolence:	Care for the welfare of people (being helpful, honest, forgiving, responsible).
Tradition:	Respect, commitment, and acceptance of the customs that traditional culture or religion provide (humility, moderation).
Conformity:	Restraint of actions that harm others or violate social norms.
Security:	Safety, harmony, and stability .

---

Excerpted from (Schwartz, Sagiv, & Boehnke, 2000).

condensed into two orthogonal dimensions, each containing two opposing higher-level value domains.

Value types are graphically depicted in a pie chart format (see Figure 1) with orthogonal values on opposing "slices." A ring subsumes the pie structure, segregating adjacent values into four contiguous higher-level value domains (or motivational goal groups). The first dimension contains the openness-to-change value domain (containing values compatible with desire for new experiences: self-direction, stimulation, a portion of hedonism) and opposes



**Figure 1. Schwartz Value Dimensions Model.**

the conservatism domain (including order and resistance to change values: conformity, security, tradition values). The second dimension consists of the self-enhancement domain (power and achievement values) versus the self-transcendence domain (universalism and benevolence values).

For several reasons, the study focuses on two of the four domains: the openness-to-change and self-enhancement value domains. In an attempt to create the most parsimonious instrument possible for young participants, the number of personal-values items can be reduced from 56 to 20. Further, we as experts agree with the literature that adolescents will score higher on openness and self-enhancement domains than on their polar opposites. Another reason is methodological, we prefer not to use measures that are summated and subtracted. Schwartz (1992) suggested and Steenkamp et al. (1999) used a summation and subtraction method to uncover "resultant" conservation (summated openness-to-change score minus summated conservation score) and "resultant" self-enhancement scores.

The parsimony gained from eliminating 36 items may be worth forgoing scores on opposite domains that we suspect would be mirror images.

### **Innovativeness**

The definition of innovativeness has been debated in the marketing literature. According to one widely embraced conceptualization, innovativeness is the behavior of consumers purchasing new products and processes (Rogers & Shoemaker, 1971). This conceptualization may be responsible for the acquisition orientation of innovativeness research in early empirical studies and for the belief that the affluent young male is the typical innovative consumer. Research has viewed innovativeness as a generalized personality trait (Midgley & Dowling, 1978), and has suggested that consumers may be "born with" different degrees of innovativeness (Hirschman, 1980; Price & Ridgway, 1983). The effort to draw distinctions between the behavior of adoption and the psychological trait of innovativeness (Midgley & Downing, 1978; Hirschman, 1980) led (Subramanian & Mittelstaedt, 1991) to suggest the possibility of a person possessing a high degree of innovativeness while not being an early-adopter. Venkatraman (1991) agreed that a prevalent problem with prior innovativeness research is that innovators are being so named because of their new product purchase behavior. Venkatraman and Price (1990) argued that consumer

innovativeness is really the desire for new experiences and suggested that more recent research has viewed innovativeness as a latent underlying preference for new and different consumption experiences rather than acquisitiveness.

### ***Where Innovativeness "Fits In"***

Although there has not been decisive scholarly agreement on a definition of innovativeness in the literature (e.g., disposition, tendency, propensity, or inclination), it is clear that innovativeness is considered neither as high an abstraction as personal values, nor as low an abstraction as behavior. Just as attitudes can be consequences of (and less central than) values, and behaviors can be consequences of attitudes (Homer & Kahle, 1988; Rokeach, 1973; Shim & Eastlick, 1998), we propose that innovativeness is less central than values and predicts certain behavior directly.

We propose that innovativeness is a variable that is affected by personal values, affects behavior, and would occupy a place near attitude on an abstraction continuum. There are many similarities among the attitude and innovativeness constructs suggesting that these constructs are similarly abstract. For example, an attitude is an

orientation or belief about a specific situation (Rohan, 2000) as is innovativeness (Goldsmith & Hofacker, 1991). Attitudes have no 'ought' quality, nor does innovativeness. Kotler (1997) defines attitude as "a person's enduring . . . evaluations, emotional feelings, and action tendencies toward some object or idea" (p. 188). This definition, with minor modification, applies to technology-innovativeness (e.g., personal enduring evaluations, feelings and action tendencies toward high technology, high tech products, and the Web).

Since innovativeness has been characterized as a generalized personality trait (Midgley & Dowling, 1978), it is germane to examine personality and trait perspectives. Rokeach (1973) indicated that the concept of a person as a system of values rather than a bundle of traits has merit because values change and cause changes (i.e., normally static traits can change because of a change in values). Schwartz and Bilsky (1994) suggest that personal values require a deliberate commitment on the part of the individual and that values and personality traits are reciprocally causal (i.e., values advance congruent behavior patterns (traits) that, when successful, reinforce values, and so on). Similarly, Erikson (1963) and Marcia

(1966) speak of "identity achievement" in terms of adolescents resolving "crises" by making commitments (personal investments) through their choosing from among meaningful alternatives. In this regard, identity (the self) in large part consists of values (centrally held beliefs) chosen by the adolescent. The implication is that the higher order change-agent for traits is values; innovativeness, if a trait, will be influenced by higher order values and vice versa.

#### ***Innovativeness Decomposed***

Adoption has been defined as "an individual's decision to become a regular user of a product" (Kotler, 1997). Rogers (1983) speculated that five characteristics affect adoption by an individual: (1) Relative advantage, or the perception that the product is better than what it replaced; (2) Compatibility, which refers to how well the product conforms to the individual's experiences, needs, and values; (3) Complexity, meaning the perception of difficulty inherent in the product; (4) Trialability, or the ease with which the product can be used without undue user commitment; (5) Communicability/Observability, or the ability for the user to show and others to see the product in use. In order to adopt or reject a product, individuals

pass through five steps as follows: (1) obtain knowledge (awareness); (2) form an attitude toward (interest); (3) decide to adopt or reject (evaluation); (4) implement (trial); (5) confirm the decision by using the product (Rogers, 1983).

Inherent in these conceptualizations is a three-part phenomenon involving product contemplation, acquisition, and use. Hirschman (1980) proposed that a three-part notion of innovativeness would better represent this process, decomposing innovativeness into adoptive, vicarious, and use innovativeness. To arrive at this conceptualization, Hirschman brought several behavioral constructs together, including novelty seeking, creativity in problem solving, and role performance. Hirschman integrates these constructs in a hypothetical example of high-tech product acquisition:

1. An individual with high novelty seeking tendencies monitors media for information on a novel product or service.
2. A vicariously innovative individual acquires knowledge about the innovation and its attributes and adopts the concept without acquiring the product or service.

3. Based on the expected output of the product or service, as part of his/her role performance, the creative consumer contemplates the need for the innovation. S/he evaluates the potential for additional problem-solving uses of the product/service.
4. Adoptive-innovative individuals acquire a novel offering relatively early in its life cycle.
5. Use-innovative individuals use a previously adopted product/service to solve new consumption problems.

In Hirschman's three-part conceptualization, adoptive innovativeness is defined as acquisition of a product. This conceptualization was formerly called *innovativeness*, and was the concept of innovativeness that has dominated past research. For example, Rogers and Shoemaker (1971) described innovativeness as one's time of adoption of a new offering relative to times when others in the social system adopt the product/service. Midgley and Dowling (1978) suggested that Rogers and Shoemaker's conceptualization was operational; innovativeness was being used to measure behavior rather than as an indication of cognitive construction. What was called innovativeness has essentially been the measurement of purchasing behavior,

focusing on early acquisition of high technology products (Petrosky, 1995). In Hirschman's conceptualization, this definition of innovativeness is applied to adoptive innovativeness.

Vicarious innovativeness is described as the active search for information about new or unfamiliar products and services (Ram & Jung, 1994) or the adopting of a product or service concept without actually acquiring the offering (Hirschman, 1980). Vicarious innovativeness (vicarious exploratory behavior) differs from exploratory purchase behavior in that purchases are not made (Price & Ridgway, 1982). Hirschman (1980) and (Raju, 1980) suggest that vicarious innovativeness (vicarious variety seeking) consists of information gathering for decision making about future purchases. Hirschman (1980) suggested that the consumer can, through vicarious experience, increase consumption knowledge (e.g., by reading about being "bumped" from a flight, rather than experiencing it). To our knowledge, no vicarious innovativeness scales exist to date with the exception of the IT Scale (Hartman et al., 2003, 2004).

Use innovativeness refers to the extent to which an individual seeks variety when using a product. The

consumer is innovative when s/he uses an existing product/service to resolve a new consumption obstacle. Hirschman's (1980) conceptualization suggested two levels of behavior: using a product previously adopted in a novel way and using an owned product in many different ways. This construct describes consumption behavior in which existing products/services are reborn with new uses (e.g., using a weed whacker to strip peeling paint from an old rattan chair).

### ***Measuring Adolescent Innovativeness***

To summarize, Hirschman's conceptualization includes three components of innovativeness: adoption, vicarious exploration, and use and consumption of products and services. Because very little empirical evidence existed about adolescent innovativeness and because existing scales were thought inappropriate, Hartman et al. (2003, 2004) created the Innovativeness Teen (IT) Scale that is sensitive to teen innovativeness and effective in measuring the construct in teens. Since the extant innovativeness scales focus (on product acquisition) creates potential for bias, such scales are not appropriate for use with teens. Several consumer research scales have been shown to be insensitive to particular groups (Bristor & Fischer, 1993).

For example, innovativeness scales have been empirically established as biased against women due to their acquisition-oriented nature (Petrosky, 1995; Venkatraman, 1991).

The adolescent consumers are not in many cases executing purchases of leading-edge offerings, but they are using them. Since many established existing scales focus on the buying behavior of those who make acquisitions (Venkatesh & Nicosia, 1997), the adolescent's role in this process would be lost. The IT Scale is based on Hirschman's three-part conceptualization and was developed with middle school subjects. The IT Scale (Hartman et al., 2003, 2004) avoids the perils of the other scales by including the complete concept of innovativeness. The IT Scale is expected to be an effective predictor of Web consumption. A prior version performed well in a self-report study; subjects with higher innovativeness scores were shown to have higher numbers of uses for, and more usage of, Web-applications.

The IT Scale being used in our study was created with data from 309 Tucson, AZ students (mean age=13 years). The structure of the original IT scale was proposed a priori and created with LISREL 8. The result was 24 items in

three factors as proposed. For the current study, more parsimony was desired, so the original data was subjected to exploratory factor analysis (principal components with varimax rotation, see Chapter 5 for rationale) resulting in a 15 item, four-factor scale. The scale has four factors because the vicarious items dichotomized into two factors based on time: present-day (vicarious-pensive) and future (vicarious-future) items, as follows (with standardized  $\alpha$  values):

1. adoptive innovativeness (.70), germane to acquisition of products/services.
2. use innovativeness (.63), concerning variety seeking while consuming.
3. vicarious-pensive (.71), regarding active search for new information about products and services.
4. vicarious-future (.74), pertinent to contemplation of the future consumer environment.

The specific innovativeness domains are expected to have unique effects on different kinds of Web-consumption. There is no particular theory pointing to this expectation; the innovativeness construct was not empirically split into three domains until the IT scale research was completed.

However, Hirschman (1980) defined these domains and gives an indication of the kind of behavior that might be expected from an individual possessing a high degree of a particular domain of innovativeness. Our thorough knowledge of the innovativeness construct, coupled with Hirschman's suggestions, creates the confidence to suggest that these expectations are reasonable and warrant testing. The  $\alpha$  value of our use-innovativeness subscale is not a concern because the existing, widely used use-innovativeness scale (Price & Ridgway, 1983) has 44 items has demonstrated the factor exists, and its subscales have  $\alpha$  values as low as .56, within the acceptable criterion of .50 (Nunnally & Bernstein, 1994).

#### **Theoretical Basis for A Priori Outcome Domains of Web-Consumption**

A theoretical basis for the proposed two a priori domains of Web-consumption--hedonic and utilitarian outcomes--was derived from three very different theoretical perspectives:

1. The shopping-motivations perspective describes Web-consumers from a shopping/consumption viewpoint.

2. The adolescent, developmental-goal perspective views teens as having two central developmental goals that are essential but also competing.
3. The technology paradox perspective takes the unique and paradoxical nature of technology into account.

These perspectives share an important element in that they dichotomize desired end states into what can be characterized as utilitarian and hedonic behavioral outcomes.

Utilitarian consumption, often defined in terms of information processing models (Holbrook & Hirschman, 1982), is practical in its orientations and is a consequence of purposeful, rational, task-related undertakings (Babin, Darden, & Griffin, 1994). Such consumption results from problem-solving, goal-directed, activity involving careful judgment. Hedonic consumption is primary-process, subjective, experiential, and phenomenological (Holbrook & Hirschman, 1982). Hedonic consumption consists of feelings of fun, excitement, playfulness, arousal, spontaneity, and increased involvement derived from consuming products and services (Hirschman, 1983). MacInnis and Price (1987) suggest that vicarious consumption contains a hedonic component, as the consumer receives the benefit of the

vicariously obtained knowledge at neither cost nor risk. In short, hedonic outcomes are intangible and emotional (Babin et al., 1994).

### ***Shopping Motivations***

In the shopping motivation literature, the two principal domains--hedonic and utilitarian--"maintain a basic underlying presence across consumption phenomena," moreover, consumption "involves experiential as well as instrumental outcomes" (Babin et al., 1994, p. 644). The rich shopping-motives literature offers an evolution of shopping classifications that can generally be fitted into two domains: hedonic and utilitarian. Stone (1954) was first to offer a typology of shoppers based on motivation. The typology consisted of four categories, two of which were utilitarian (economic and apathetic shoppers) and two hedonic (personalizing and ethical shoppers). Stephenson & Willett (1969) propounded four shopping styles: store loyal and recreational shoppers (hedonic) and convenience and price/bargain shoppers (utilitarian). Tauber (1972) asked, "why do people shop?" and determined that shopping consumption is motivated psychosocially and satisfies experiential and utilitarian need. Bellenger and Korgaonkar (1980) found two shopper types, the

(utilitarian) functional economic shopper and the (hedonic) recreational shopper. Westbrook and Black (1985) suggested that consumers have central motives for shopping: a product oriented motive (utilitarian), an experience oriented motive (hedonic), and a combination of both. Reasoning from a motives-to-behavior based perspective, Westbrook and Black (1985) created a taxonomy of seven categories of consumer behavior, each of which held either hedonic or utilitarian motives, or both. Hedonic and utilitarian shopping-consumption motives have been proposed in terms of gaining maximum value from a consumption experience (Babin et al., 1994).

Venkatesh and Brown (1998) reported findings that support 10 years of computer use-research with a hedonic outlook; increases in Web-use are associated with declines in recreational activities, such as TV watching and socializing. They further argued that early adopters of home computers have been more influenced by hedonic than utilitarian motives in their home computer purchases. Nearly all of the early-adopters attributed their computer purchases to hedonic motives, and nearly all later-adopters attributed purchases to utilitarian motives. Similarly, researchers concluded that hedonic aspects of the Web play

at least an equal role to the utilitarian aspects of online retail shopping behavior (Childers, Carr, Peck, & Carson, 2001).

The magnitude of Holbrook and Hirschman's (1982) seminal work lies in its application to products and services offered decades later. In the case of teen Web-consumption outcomes, both utilitarian and hedonic domains should be considered in order to capture the gestalt of the behavior.

### ***Adolescent Developmental Goals***

Goal setting, according to the developmental-action perspective, is the method by which individuals mold and direct their own behavior. Human beings set goals to achieve desired outcomes. Young individuals set goals based on needs recognized in early life (Nurmi, 1997). Research reports that today's students set social goals and academic goals (Maggs, 1997) leading to hedonic and utilitarian outcomes, respectively. Adolescent goals are self-articulated. Goals are set based in fundamental personal values while considering future options. Goals concern culturally dictated obligations or competitions. Goals are first realized cognitively, then they motivate behavior under particular conditions (Nurmi, 1997). Goal

domains are expressed in terms of the parts of life they concern: utilitarian goals such as educational or occupational achievement and hedonic goals for experiencing enjoyment in leisure time (Nurmi, 1991). Students generally report having goals for college that dichotomize into utilitarian (succeeding academically) and hedonic (establishing and maintaining relationships) categories (Cantor, 1990). Adolescents viewed health goals (with regard to alcohol consumption) as dichotomous, facilitating social hedonic activities but interfering with utilitarian academic demands. Students reported that staying healthy, doing well in school (utilitarian), and making friends (hedonic), in that order, were their desired outcomes in undergraduate school (Maggs, 1997). As the vast majority of students are using the Web (Montgomery et al., 2001) the expectation would be that adolescent Web-consumption outcomes would be manifestations of utilitarian and hedonic goals.

### ***Technology Paradox***

Does technology commandeer competence, or does it provide freedom in terms of time and trouble saved? In recent years, scholars have considered a paradox associated with technology. We simultaneously (and rather

paradoxically) extol technology for its greatness and vilify it for its intrusions, complexity, and consequences (Kraut et al., 1998).

In a paradox, something has contradictory qualities; *something is both X and not-X* at the same time. If something is paradoxical, its inconsistent elements shift in prominence like the action of a sea-saw. In this study, the *something* is the nature of Web-consumption, paradoxical for teens because it is simultaneously useful/fruitless and fun/stressful. The paradox is that the Web can fulfill and create needs at the same time, and it frequently manifests this antithetical way (Mick & Fournier, 1998). As a social technology, the Web facilitates communication between individuals engaged in work or leisure activities. Nonetheless, the Web can encourage the user to exchange new, inferior-quality relationships for existing stronger ones. Its effect can be to reduce the user's face-to-face contact with others and reduce the user's physical activity (Kraut et al., 1998).

Mick and Fournier (1998) observed other primary paradoxes of technological products (e.g., control/chaos and efficiency/inefficiency). The Web requires teen

consumers to exercise control or experience chaos that may be desirable to a teen (e.g., aimless surfing, gaming). For adolescents, the Web is simultaneously educational and not educational. The Web-consumer can hone in on a specific topic for a school report or be trapped by many alluring and entertaining links that move the user off track.

Further, the very nature of the Web is efficient and inefficient for teens because of the array of offerings it makes accessible. Without going to the library, the Web-consumer has a profusion of resources available, but s/he cannot easily tell which of these are creditable and which are spurious. The Web-consumer can realize the efficiency of using resources freely available (such as Web-page creation freeware). These resources take time to master, but mastery can confer confidence and Web-use can save time after the preparation is done. However, the time and effort required to learn how to use resources can outweigh their value, and the complexity can be such that a user quickly forgets the specific training needed to use one specific application. Using the Web is work, and it is fun; it can result in purposeful (utilitarian) and playful (hedonic) outcomes.

In sum, a brief examination of three disparate bodies of literature finds that consumption outcomes often dichotomize into what can be labeled utilitarian and hedonic. Considering these different perspectives have assisted in the preparation of criterion items for the study. The three perspectives share a common consequence - behavioral outcomes usually fit into either hedonic or utilitarian categories. This common consequence justifies the a priori expectation that teen Web-consumption outcomes will be hedonic or utilitarian.

### CHAPTER 3

#### RESEARCH FRAMEWORK AND HYPOTHESIS DEVELOPMENT

In several ways, this research breaks new ground. While several researchers have demonstrated a more-to-less abstract hierarchical sequence (Feather, 1995; Homer & Kahle, 1988; Kahle, 1980; Shim & Eastlick, 1998), there have been no studies to date examining personal values-innovativeness-behavior. One study does demonstrate a values-innovativeness flow (Steenkamp et al., 1999), but does not make the last proposed link to behavior. Further, while there is much industry research on adolescent consumption and much academic research regarding adolescent development, there exists virtually no academic research on adolescent consumption in general and Web-consumption in particular. The newness of this research creates opportunities and perils. It presents an opportunity to discover important information about hierarchical relationships that may cause behaviors. It also envisions discovery concerning adolescent Web-consumption. It is perilous in that it requires the principal researcher to propound a relatively untested model and rather broad hypotheses with little prior empirical data from which to take direction.

### **Conceptual Model Development**

The general model adapted for this study is the work of Kahle and colleagues (1980, 1988, 1989). From Kahle's social-adaptation perspective, personal values are cognitions that promote adaptation to the environment. Personal values are at the highest level of abstraction in a hierarchy of social cognitions, and embody the fundamental attributes of adaptation. Personal values act as models or guides, assisting the individual to create attitudes and behaviors. Personal values direct a person to certain situations, and once the person becomes ensconced within a situation, his/her behavior is directed by personal values (Kahle, 1980). Personal values are thought to be at the highest level of abstraction and behavior at the lowest (Homer & Kahle, 1988). While past research has suggested that values are basic for behaviors and consumption, Kahle (1980) theorized that there was a less abstract, more domain-specific, intervening variable. Hence, theoretically, there should exist a downward flow from the highest-level abstract values to some mid-level intervening variable (attitudes) to the lowest level (behaviors). The sequential model, which flows from the highest abstraction to the lowest, has been named "the

value-attitude-behavior hierarchy" (Homer & Kahle, 1988, p. 638). Homer and Kahle (1988) used LISREL to demonstrate causal flow for their model (values-to- nutritional attitudes-to- food shopping behaviors) and found that values predicted nutritional attitudes and nutritional attitudes, in turn, predicted shopping behaviors; the direct path from values to behaviors was non-significant.

Shim and Eastlick (1998) used the value-to- attitude-to- behavior model in assessing shoppers' personal values and reported that values influence mall-shopper attitudes and behaviors, respectively. Through structural equation modeling, Shim and Eastlick were able to demonstrate that personal values had significant relationships with the attitudes subjects held concerning shopping malls. Further, their model demonstrated that these attitudes linked directly with mall-shopping behavior (values the influence of values on behavior was indirect only). The results of this study support the proposition of Homer and Kahle (1988) that influence is hierarchical, flowing from the highest to the lowest level of abstraction. Similar hierarchical structures have been proposed (Feather, 1995; Rohan, 2000). Feather demonstrated that values induced potential action that, in turn, produced outcomes. The

effect of values on outcomes was indirect through potential action.

Because values are so central to a human's cognitive structure, they furnish a robust foundation for the understanding of less abstract consumer dispositions, such as innovativeness (Burgess, 1992; Smith & Schwartz, 1997). Steenkamp et al. (1999) demonstrated that consumer innovativeness is affected by central dispositions (higher levels of abstraction) such as personal values. Citing Schwartz's values research, Steenkamp et al. (1999) postulated that high levels of innovativeness would manifest in individuals motivated by (1) openness-to-change values (self-direction, stimulation, hedonism) and self-enhancement goals (achievement and power). The opposing motivational goal groups--conservation and self-transcendence, respectively--would be related to low levels of innovativeness.

Steenkamp et al. (1999) analyzed values data by examining bipolar value-domain scores after administering the Schwartz Value Survey (SVS). The researchers subtracted summated conservation from summated openness-to-change scores (a procedure, potentially biased by the effects of difference scores, that this research avoids by

using structural equation modeling). Analyzing the result in the context of criterion behavior items designed to indicate innovativeness, they found that greater "resultant conservation" affected innovativeness negatively. When self-enhancement was subtracted from self-transcendence, the "resultant self-enhancement" did not have a significant effect on innovativeness. However, the significant result encourages further testing of values (particularly the openness-to-change domain) and innovativeness in the present study.

### ***Established Links***

The Homer and Kahle (1988) and Shim and Eastlick (1998) studies have established the likelihood of a direct linkage extending from values through attitudes to behavior. Although their study confirmed Homer and Kahle's, Shim and Eastlick obtained a much smaller path coefficient ( $\beta = .16, p \leq .05$ ) from attitude to behavior than that found by Homer and Kahle ( $\beta = .56, p \leq .05$ ); this discrepancy may be explained by attitude functions. Maio and Olson (1995) suggested that attitudes can be value-expressive, in other words, attitudes can be used to express one's self-concept and central values. They found

that behavioral intentions and behaviors could be predicted by "value-expressive attitudes" (p. 273). While Homer and Kahle's (1988) study concerned natural foods, the subject of Shim and Eastlick's (1998) study was mall shopping-behavior. It is possible that natural food consumers feel very strongly about natural foods, whereas mall shoppers may have more nonchalant attitudes about mall shopping. Even though the  $\beta$  coefficients in the Shim and Eastlick study were weaker than those found by Homer and Kahle, both studies reflected similar a hierarchical structure of middle level attitudes to lower order behavior. Similarly, a study of Japanese consumers demonstrated that the most-to-least-abstract cognitive hierarchical framework was robust to situational contingencies, despite its low path coefficients (Lotz et al., 2003).

Research has determined that personal values play an important role in consumer innovativeness. Steenkamp et al. (1999) proposed that the key value dimensions for innovativeness are openness-to-change versus conservation; openness values encourage the individual to pursue new intellectual and emotional avenues, whereas conformity values encourage the individual to seek the preservation of

extant conditions. Innovativeness is proposed as congruent with openness-to-change values because self-direction and stimulation values are concerned with control/autonomy and variety/stimulation respectively. Adopting/using leading-edge products can break entrenched patterns and thereby provide newness, variety, and excitement. Self-enhancement values also may apply to innovativeness in that new products may perform better than old, and new products can lend cachet to their owners. Steenkamp et al. (1999) have established the likelihood of a downward flow in the relationship between values and innovativeness. Additionally, many empirical studies have demonstrated clearly that innovativeness affects consumption behavior (see, for example, Goldsmith & Hofacker, 1991; Price & Ridgway, 1983; Ram & Jung, 1989; Venkatraman, 1991; Venkatraman & Price, 1990).

#### **Values-to- Innovativeness-to- Web-Consumption Model**

From the literature, we glean empirical evidence sufficient to suggest the likelihood of values relating to innovativeness and, in turn, innovativeness relating to Web-consumption. Specifically, the value-to- attitude-to- behavior model has been established empirically (Homer & Kahle, 1988; Shim & Eastlick, 1998). Similarly, a

relationship has been demonstrated between values and innovativeness (Steenkamp et al., 1999) and the effect of innovativeness on consumption behavior is firmly established in the literature. Additionally, definitions of the constructs attitude and innovativeness are comparable, suggesting that attitude and innovativeness would reside closely on an abstraction continuum with values and behavior on opposite poles. We suggest that the foregoing points furnish sufficient justification to hypothesize a personal values-to-innovativeness-to-Web-consumption model.

### **Hypothesis Development**

Three sets of hypotheses coincident to the links of the proposed hierarchical, cognitive, decision-making model are investigated in our study. The sections that follow furnish the fundamental reasoning for each proposed hypothesis.

#### ***Hypothesis 1. A Hierarchical Model of Values, Innovativeness, and Web-Consumption Behavior***

Personal values are considered to be at the highest level of abstraction, and behavior is thought to be the lowest (Homer & Kahle, 1988). While past research has suggested that values are basic to behaviors and

consumption, Kahle (1980) theorized that there is a less abstract, more domain-specific, intervening variable between personal values and behaviors. Several researchers have demonstrated a more-to-less abstract hierarchical sequence (Feather, 1995; Homer & Kahle, 1988; Kahle, 1980; Shim & Eastlick, 1998). Yet, we know of no studies to date that have examined the hierarchical model of personal values-innovativeness-behavior.

Although there has been no decisive scholarly agreement on a definition of innovativeness in the literature (i.e., disposition, tendency, propensity, or inclination), it is clear that innovativeness is considered neither as abstract as personal values, nor as concrete as behavior. For instance, Burgess (1992) and Smith and Schwartz (1997) maintain that because values are so central to a human's cognitive structure, they form a robust foundation for the understanding of lower-level consumer dispositions, such as innovativeness. Skeenkamp et al. (1999) also demonstrated that central dispositions (higher levels of abstraction), such as personal values, influence consumer innovativeness. In summary, there is evidence that personal values influence innovativeness. There is also ample evidence that innovativeness affects consumption

behavior (Goldsmith & Hofacker, 1991; Price & Ridgway, 1983; Ram & Jung, 1989; Venkatraman, 1991; Venkatraman & Price, 1990). Therefore, evidence suggests that the personal values- innovativeness- Web-consumption model should be hierarchical in nature, and should express the notion that innovativeness mediates the relationship between personal values and Web-consumption behavior.

Thus, we hypothesized H1 as follows:

**H1.** A teen's personal values are directly related to his/her innovativeness, which subsequently influences web-consumption outcomes (**H1a**). Personal values are indirectly related to Web-consumption outcomes only through innovativeness (**H1b**).

***Hypothesis 2. Inter-Relationship Between Personal Values and Innovativeness***

While **H1** is concerned with establishing a hierarchical model among the three concepts, **H2** and **H3** concern inter-relationships within the constructs. First examined are the specific relationships between the two domains of personal values (openness-to-change and self-enhancement) and in the three aspects of innovativeness (vicarious, adoptive and use innovativeness). According to Steenkamp et al. (1999), openness-to-change values (e.g., self-direction, stimulation) encourage the individual to pursue

new intellectual and emotional avenues (whereas conformity values encourage the individual to seek the preservation of extant conditions). Openness-to-change values have been shown to be related to all innovativeness domains (Steenkamp et al., 1999). Therefore, we expect that teens' openness-to-change values are related to all aspects of innovativeness, and, therefore, we established the following hypothesis:

**H2a-c.** A teen's openness-to-change values are related to vicarious innovativeness (**H2a**), use innovativeness (**H2b**), and adoptive innovativeness (**H2c**).

Self-enhancement values also may apply to innovativeness in that new products may perform better than old, and new products can lend cachet to their owners. Much of the adolescent development literature indicates that adolescents are self-absorbed. They, for instance, routinely engage in tasks that help them form identities (Erikson, 1968). Therefore, self-enhancement values are expected to be associated with adoptive innovativeness because a teen's high-tech aspirations and acquisitions can be popular topics in conversations with friends. Thus, we suggest the following hypothesis:

**H2d.** Self-enhancement values are related to adoptive innovativeness.

**Hypothesis 3. Inter-Relationships Between Innovativeness and Web-Consumption**

**H3** concerns inter-relationships between dimensions of innovativeness and Web-consumption domains (hedonic and utilitarian). Hirschman (1980) defined vicarious innovativeness in a utilitarian way, as the "acquisition of information about a new product" (p.285). On the other hand, MacInnis & Price (1987) suggest that vicarious consumption contains a hedonic component, as the consumer enjoys the benefit of the vicariously obtained knowledge at neither cost nor risk. Vicarious thinking may put the thinker in a place or situation that can be both hedonic and utilitarian, and as such, the following hypothesis is established:

**H3a.** Vicarious innovativeness is related to both hedonic Web-consumption and utilitarian Web-consumption.

We expect adoptive innovativeness to be associated more strongly with hedonic consumption and use innovativeness to be associated more strongly with utilitarian consumption. Adoptive innovativeness is expected to concern the teen's desire to show off and have a good time. In the diffusion literature, Rogers (1983) explains that, for early adopters, observability is

important. In other words, many teen consumers seek, and expect, to be seen using new products and thus acquire the cachet of being innovative. Since young teens (many too young to drive automobiles) are attempting to be "cool" and to build their identities, the adoptive innovative adolescents will have cell phones and other high-tech portable devices that are very observable. Teens use these devices in the company of their friends, and in places where they can be seen using them. On the other hand, Hirschman (1980) defines use innovativeness as the solving of a novel consumption problem with a product already on hand. The term "problem" is key to her definition; Hirschman proposes that people use products in innovative ways out of necessity, and are thus utilitarian in nature. Therefore, we established the following hypothesis:

**H3b-c.** Use innovativeness is related to utilitarian web-consumption (**H3b**), and adoptive innovativeness is related to hedonic Web-consumption (**H3c**).

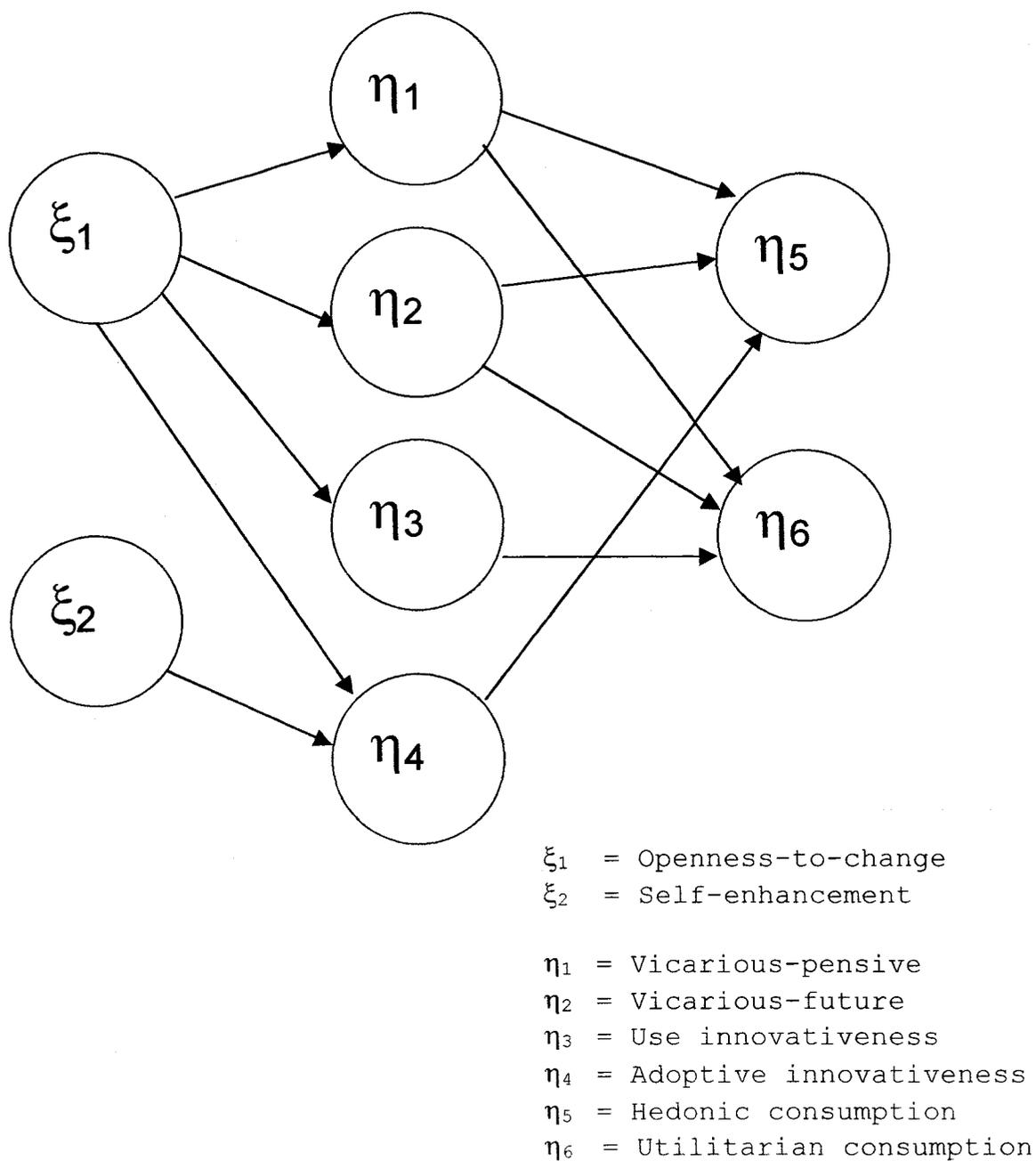


Figure 2. Proposed structural model.

## CHAPTER 4

### METHOD

This study endeavors to furnish an enhanced understanding of the way in which adolescents consume the World Wide Web, which may allow for better prediction of such behavior. In order to do this, a hierarchical, cognitive, decision-making model of personal values-to-innovativeness-to- Web-consumption behavior (an adaptation of the Homer & Kahle model) is proposed and tested. This study argues that teen personal-values exist at the highest level of abstraction and function as the source of teen innovativeness. Teen innovativeness will subsequently influence teen Web-consumption behavior. To justify this position, we point to research that has established personal values as a significant predictor of consumer innovativeness (Steenkamp et al., 1999), and consumer innovativeness as a predictor of consumer behavior (Ram & Jung, 1989; Venkatraman, 1991).

The methods employed to examine relationships in this study are submitted in the three sections that follow. The first section presents a description of questionnaire development. Sampling, data collection, and response characteristics are discussed in the second section.

Finally, the third section introduces operational definitions for variables examined in the investigation and discusses the data-examination protocol.

### **Questionnaire Development**

#### ***Focus Group***

A focus group was convened in January 2003. Our specific goal was to obtain information to assist in developing a varied and comprehensive set of items germane to teen Web-consumption; this was necessary because the literature is sparse (particularly with regard to males) and provides insufficient guidance for item creation. Focus group participants were males, with a mean age of 15 years, and enrolled in the ninth grade. Participants were selected for their high grades, computer literacy, and varied Web-consumption behavior. These teen participants associated with many different types of students through their activities in school and in music, and could clearly articulate their own experiences and observations of their peers. The group was encouraged to speak candidly about varied aspects of their Web-consumption during a controlled discussion procedure. One very interesting point made unanimously by the group was that ninth and tenth grade students are the biggest users of the Web. They said that

these students are in a "pre-car" period. As such, ninth and tenth graders are always "e-communicating." Chat lines are very popular with sophomores, and freshmen, but less so with upperclassmen who are old enough to access cars. The focus group instrument, used to query participants concerning their Web-consumption experiences, was written by Hartman and Shim (see Appendix A).

From the focus group data and the literature, a very attractive, booklet-style questionnaire was developed, for distribution to high school students through their schools. It consisted of measures of three levels of variables as follows: personal values, innovativeness, and adolescent Web-consumption. In addition, criterion items inquired into duration of Web-use, as well as types of uses.

The 12-page questionnaire was printed on heavy stock and was consecutively numbered. It contained four sections: Section A was entitled "What I really care about: my personal values?" (an adaptation of the Schwartz 1992 Value Survey). Section B was called "My thoughts about technology and new products" and contained the Innovativeness Teen (IT) Scale. Section C was named "My uses for the computer" and contained computer-criterion items developed by the researchers. Section D, named "My

uses for the World Wide Web," contained Web-criterion items written by the present author. Section E, the Global Web-behavior section called "My thoughts and feelings about the World Wide Web," was adapted from items by Babin et al. (1994). It contains nine items meant to assess the type of Web-behavior that the adolescents displayed, proposed to be either hedonic or utilitarian behavior. Finally, Section F requested demographic information. As a surrogate for socio-economic status, we asked the respondents to report the highest grades that their parents had attained, and their own educational aspirations. We did not ask for information about parental employment or household income. Sections A, B, and E of the questionnaire contain the data that is tested in the model.

After obtaining approval from the University of Arizona Human Subjects Review Committee, the instrument was pre-tested on a convenience sample of 65 college students, and necessary purification was accomplished. Refinements were few; a similar instrument was successfully used in prior studies (Hartman et al., 2003, 2004) with middle-school subjects. The instrument is very straightforward and was specifically designed for adolescents.

### **Sampling and Data Collection**

The sample consisted of high school students, mostly from ninth and tenth grades, residing throughout Arizona. High school students were desirable because of:

1. The potential continuing need for adult guardianship; teen identities are nearly fully formed by ninth or tenth grade, however, identities remain malleable and could respond to parental or school-sponsored intervention (Eccles, Midgley, et al., 1993) if needed.
2. Subject competence; it is normative for adolescents in their high school years to be more independent, autonomous, and capable than middle school students. Many have been exposed to, or have completed, surveys before.
3. While not conclusive, according to our focus group, ninth and tenth grade students are the largest group of Web-users.

Our student-sampling plan was designed to mirror as nearly as is practicable the population of the state of Arizona. Federal census data suggests that the entire Arizona population is approximated by the populations of Maricopa and Pima Counties (68% white, 3% black, 3.2%

Native American, 2% Asian, 22% Hispanic); the exception is that Native Americans actually represent 5% of the state population (<http://www.census.gov/>). We identified high schools in Pima and Maricopa Counties which represented a comprehensive socioeconomic sample; a wide array of subjects who would represent a continuum of Web-consumers.

The research plan provided for the principal investigator to visit selected high schools to collect data and answer questions, with the intention of collecting 600 questionnaires. The Human Subjects Committee advised a different procedure: the participating schools were to complete parental permission gathering and data collection. The Human Subjects Committee preferred that the schools collect the parental slips and de-identified data, and such protocol was followed.

Data collection proved much more difficult than anticipated. Of the nine high schools selected to participate (based on census data), only three elected to do so. One of the three high schools mailed the questionnaires to 200 graduating seniors, without return envelopes or instructions on how to return the booklets; none were returned. The two remaining schools (that used classroom-collection) were required to obtain parental

permission for each participant before distributing the questionnaires. One school official told the researchers that other surveys had been done at her schools, and one was lucky to secure permission from 10% of parents; the collection effort confirmed her estimation. Because of these difficulties, our respondent base was much smaller than expected. Further, because structural equation techniques are sensitive to missing data, researchers were obligated to disqualify 10% of questionnaires collected. Finally, the data from a total of 180 questionnaires is included in the analysis in Chapter 5.

#### ***Demographics Variables***

Definitions to operationalize and measure demographic variables are as follows:

- Age: actual age written in by the respondent.
- Grade: actual grade written in.
- Parents' Education: respondent selects an answer for each parent, from "grade school" to "graduate degree." This

variable serves as surrogate for SES.

- Education Aspiration: respondent selects "yes, maybe, no" to a list of items from "graduate HS" to "attend graduate or professional school."
- Gender: subject selects male or female.
- Ethnicity: subject selects appropriate ethnic group for each parent.

### ***Respondent Characteristics***

The respondents to this research were high school students in ninth (34%), tenth (30%), eleventh (21%), and twelfth grades (15%). Fifty-five percent of the respondents were male; respondent ages ranged from 14 to 21 years, with 89% of the sample in the of 15 to 18 year range. Our respondents described themselves as being 48% white, 30% Hispanic, 8% American Indian. Asian and African American groups were each less than 2% of the sample; the remaining 10% identified themselves as "other."

### **Operational Definitions of the Model Variables**

Operational definitions applied to each variable are discussed below. The literature associated with each

variable assisted in developing the measures, the majority of which are adaptations of existing scales. First, in its adapted form, is the (1992) Schwartz Value Survey (SVS). Second, is the Innovativeness Teen Scale adapted from Hartman et al. (2003, 2004). It consisted of items from the decomposed innovativeness construct (Hirschman, 1980) and was created for use with adolescents. Third, are the global Web-consumption items, adapted from Babin et al. (1994).

### ***Exogenous Constructs***

***Personal values.*** Personal values are defined as mechanisms of behavior and desired end states that are enduring, valence free, highest order, centrally held, conceptual principles (Burgess, 1992; Rokeach, 1973; Schwartz, 1992). Values were captured with an adaptation of the Schwartz (1992) Value Survey. The SVS has been used extensively and is exceptionally reliable and valid (Steenkamp et al., 1999). For this research, two of the four value domains (motivational goal groups) are of interest: openness-to-change and self-enhancement. These motivational goal groups are important to test because adolescents are expected to score higher on measures of these domains than the other domains. Knafo and Schwartz

(In Press) found age effects; adult subjects score higher and teen subjects score lower across samples on self-transcendence and conservation, the opposing poles of the motivational goal groups that our study tests.

Additionally, Steenkamp et al. (1999) determined that higher scores of openness-to-change personal values lead to higher scores on consumer innovativeness. Twenty items were adapted from the original 56-item SVS instrument to reflect the two value domains of interest. Openness-to-change values are measured by the self-direction, stimulation, and hedonism value categories. Self-enhancement values are measured by achievement and power value categories. The personal values scale will employ 7-point Likert-type assessment, ranging from "not important at all" (1) to "most important of all" (7).

### ***Endogenous Constructs***

***Innovativeness.*** In their research, Hartman et al. (2003, 2004) decomposed the innovativeness construct into three parts based on Hirschman's (1980) concept. For this study, innovativeness items are intended to capture all innovativeness domains. Adoptive items assess the traditional innovativeness domain of being quick to acquire new products/services. Use innovativeness items assess the

subject's propensity (and competence) to modify or assemble products. Vicarious innovativeness items concern active search for new information about products and services, and pertain to contemplation of the future consumer environment.

Using confirmatory factor analysis on a 300-subject middle school sample, Hartman and colleagues (2003, 2004) created a 24-item scale ( $X^2 = 208.51$ ,  $df = 149$ ,  $p = .00$ ;  $GFI = .96$ ,  $RMSEA = .036$ ) consisting of the adoptive, use, and vicarious innovativeness latent constructs. For the present study, additional parsimony was desired so as not to over burden adolescent respondents. Using the prior study data, the number of items from the existing 24 item-scale was substantially reduced by principal components exploratory factor analysis with Varimax rotation, thus enabling a reduction in the size of the instrument for the current research. The factor analysis on the data from the prior studies resulted in 15 innovativeness items that drew on all of the innovativeness domains (adoptive, use, and vicarious-pensive, vicarious-future). The four factors of the resulting scale (with standardized  $\alpha$ ) are: adoptive (.70); use (.63); vicarious-pensive (.71); vicarious-future

(.74). The scale uses 7-point Likert-type response, ranging from "strongly disagree" (1) to "strongly agree" (7).

#### ***Web-Consumption Global Outcomes***

Web-consumption outcomes are proposed by this research to dichotomize to two domains, hedonic and utilitarian. Utilitarian consumption results from problem-solving, goal-directed activity that involves careful judgment. Hedonic consumption is primary-process, subjective, experiential, and phenomenological (Holbrook & Hirschman, 1982). To capture this construct, items were adapted from the seminal work of Babin et al. (1994), and include experiential, and practical, "global" Web-use items. For example, the hedonic latent construct includes "I get a sense of adventure when I go on-line." An example of a utilitarian item is "Success on-line is finding what I'm looking for." Items are Likert-scaled from 1 (strongly disagree) to 7 (strongly agree).

#### ***Web-Consumption Specific Outcomes***

In addition to the global-behavioral items that were designed for use with the modeling procedure, items that inquired of specific Web-behaviors were included in the instrument. One third of the 38 behavior items were

inspired by the work of Montgomery and colleagues (Montgomery, 2000; Montgomery et al., 2001), and the balance was garnered from the focus group data. The purpose of these items was to help establish the proposed dichotic (hedonic and utilitarian) nature of adolescent Web-consumption and to create and refine a definition of hedonic and utilitarian Web-consumption. Hedonic items include: "I hit sites my parents wouldn't approve of," "I download movies or videos," "I gamble on-line," and "I escape reality by using the Web." Utilitarian items include: "I use the Web to help me plan my future," "I make plans for school and/or work on-line," "I hit educational sites," and "I use the Web for doing homework."

Exploratory factor analysis is used to examine the patterns of adolescent responses to the Web-consumption items, and is discussed further Chapter 5. Additionally, the most salient behavioral items are examined for similarities and differences between genders and race/ethnicity, and are presented in the next chapter.

### ***Preliminary Data Analysis***

Using methodology developed by John Tukey (1997), the data collected for this research was examined, for normality and outliers, by visual inspection of box-and-

whisker plots and scatter-plot matrices. The box-plots revealed a slight negative skew to the responses in the values-section. Scatter-plot matrices evidenced, essentially, a normal distribution. According to Howell (1997), a slight skew, such as the one these data displayed, is not considered problematic. Further, skewness and kurtosis (unless they are extreme) are not given great consideration in the social sciences. In any case, the data were checked for these, and neither outliers, nor kurtosis, nor extreme skewness were in evidence.

The entire data set was examined for missing data and, as previously stated, 10 percent of the total (of 200) questionnaires was disqualified for missing responses to more than 5 items. With regard to the questionnaires that were included in the sample, the amount of missing data was small and the items missed appeared to be random.

As to non-response bias, because of the constraints placed on research with young people, it is unfeasible to assess bias, except to say that bias probably exists, because parents are selecting the sample--it is not random. The schools that participated were located in urban settings, in working class and lower-middle class

neighborhoods. Rural schools did not participate in the sample. The ramifications of this "self-selection" process are discussed in the final chapter.

### **Chapter Summary**

Chapter 4 furnished an explanation of the methodology for the empirical testing of the hypothesized decision-making model, and contains an explanation of the questionnaire development, sampling, and data collection procedures, respondent characteristics, data assessment protocol, and operational definitions of the variables. Chapter 5 offers a detailed description of the data analysis. Each scale tested in the analysis was evaluated with exploratory factor analysis (with Chronbach's coefficient alpha) to assess internal reliabilities. The results of the exploratory factor analyses were used to specify a confirmatory factor analysis of each latent variable and construct using LISREL 8.54. The results of the series of confirmatory factor analyses indicated parameters for a measurement model. A two-step model-estimation process was used (Anderson & Gerbing, 1988; Hair et al., 1994). First, the measurement model is established and secured. Second, the relationships of the structural

model are explored with LISREL. Results of the analyses are presented in Chapter 5 and the Survey can be seen in Appendix C.

## CHAPTER 5

### RESULTS

The analysis of the primary data, collected from high school students, is submitted in Chapter 5. The chapter opens with descriptive data on computer use. Next are the results of the exploratory and confirmatory factor analyses. Following this, the model's overall fit is described by presenting the parameters of the measurement and structural models. The two-stage method of structural equation modeling, recommended for determining patterns in data, and for use with scales that are not well established, is discussed in detail. Finally, chapter 5 presents the findings attendant to each tested hypothesis.

#### **Descriptive Data on Computer Use**

Eighty percent of respondents reported their parents put NO time limit on their computer use. Sixteen respondents reported daily computer-use time restrictions: six had 1-hour, six had 2-hour, three had 3-hour, and one had 4-hour restrictions. Sixty-three percent of the sample reported using computers with friends; 59% reported spending between 1 to 3 hours per day, 15% spend 4 or more hours/day, 4% spend zero time per day. With regard to

these behaviors, there were neither racial/ethnic nor gender differences.

There were fewer gender-differences than expected in computer and Web-behavior. Across 48 items, there were only 14 significant behavioral-differences by gender as revealed by two-tail, independent sample  $t$  - tests that follow. Females do more typing/word processing ( $t = -4.09$ ,  $p < .000$ ), find out more about fashion ( $t = -6.01$ ,  $p < .000$ ), and "hit" more educational sites ( $t = -3.91$ ,  $p < .000$ ) than males. Females use the Web for getting information on health matters ( $t = 3.33$ ,  $p = .001$ ) and college ( $t = -2.30$ ,  $p = .023$ ), and doing homework ( $t = -4.06$ ,  $p < .000$ ), more than males do. Males look to the Web for sports information ( $t = 2.60$ ,  $p < .01$ ), for gaming with on-line players ( $t = 3.46$ ,  $p = .001$ ), downloading videos ( $t = 3.30$ ,  $p = .001$ ), comparison-shopping ( $t = 2.48$ ,  $p = .014$ ), and "hit" sites their parents would not approve of ( $t = 4.91$ ,  $p < .000$ ) more than females. Males report having more computers at home than females ( $t = 3.75$ ,  $p < .000$ ). Males do more studying at public libraries ( $t = 3.91$ ,  $p < .000$ ) than females.

With regard to race/ethnicity, because our sample contained so few Asians, African Americans, and others of

varied races and ethnic groups (with their greatly varying cell sizes), we re-coded these respondents to enable ANOVA analyses. The new "other" category included the above mentioned groups. Hispanic, White, and Native American groups were then contrasted with the new "other category." Results showed fewer significant differences in the race/ethnicity analysis than were distinguishable with gender. Whites reported more home computers ( $\underline{M} = 1.76$ ) than any other group, followed by "other" ( $\underline{M} = 1.58$ ), Hispanic ( $\underline{M} = 1.17$ ), and Native American ( $\underline{M} = .57$ ,  $\underline{F} (3,169) = 11.692$ ,  $p = .000$ ). The "other" category of respondents appears to play more video games ( $\underline{M} = 4.12$ ) than whites ( $\underline{M} = 3.85$ ), Hispanics ( $\underline{M} = 3.41$ ), and Native Americans ( $\underline{M} = 2.60$ ), respectively ( $\underline{F} (3,170) = 4.839$ ,  $p = .003$ ). White respondents help their parents look things up on the Web more than the other groups ( $\underline{M} = 3.19$ ,  $\underline{F} (3,170) = 2.970$ ,  $p = .033$ ) but Native Americans report the most computer-use with family members ( $\underline{M} = 2.73$ ,  $\underline{F} (3,169) = 2.739$ ,  $p = .000$ ), followed by whites ( $\underline{M} = 2.56$ ), Hispanics ( $\underline{M} = 2.28$ ), and finally, "other" ( $\underline{M} = 1.73$ ).

### **Exploratory Factor Analysis**

Data reduction procedures were used to refine measures for the current research. Because there is a dearth of

prior empirical data to guide this analysis, it was appropriate to examine the Personal Values, Innovativeness, and Web-consumption scales with exploratory factor analysis in order to identify underlying dimensions of the constructs. The question arose as to which factor analysis procedure would be appropriate. The answer depends on the degree of correlation of the constructs being examined; the methodological principle that guided the exploratory analysis is presented below in theoretical and empirical terms.

If constructs are thought correlated, oblique rotation is called for theoretically (Hair et al., 1994), although it is less frequently used, and is controversial and complicated mathematically. The higher the level of intercorrelation, the simpler it is to resolve patterning of correlations, which is the salient task of factor analysis. However, orthogonal and oblique rotations give essentially the same major groupings and the results of orthogonal and oblique rotation are essentially identical in most instances. For this reason, Nunnally suggests that the researcher select a technique that solves the problem at hand, for example, if factor correlations are very low

in oblique rotation, orthogonal rotation should be used for its simplicity (Nunnally & Bernstein, 1994).

In orthogonal rotation, the second factor extracted is uncorrelated with the first (Gorsuch, 1983). Rotation makes the solution more interpretable, as most solutions will contain a few major factors that account for most of the variation, and then contain a series of factors of lesser importance (Nunnally & Bernstein, 1994). Finally, the Varimax rotation technique is very successful in obtaining orthogonal factors. Should a researcher desire to reduce the number of original variables, Varimax rotation is most helpful because it maximizes the variance of the squared loadings for each factor (Kim & Mueller, 1978). These are the reasons that this procedure is the one most used in the social sciences (Nunnally & Bernstein, 1994). "The Component Factor Model is appropriate when the primary concern is about prediction or the minimum number of factors needed to account for the variance" (Hair et al., 1994, p. 102). In principal components, each eigenvalue delimits the total variation explained by that component, its sum of squared structural elements. Maximum Likelihood Model Estimation creates two most likely values for a parameter by weighting the data; it subjects the two

weighted most likely values to the "likelihood ratio." Either model can be used with either, or no, rotation method (Nunnally & Bernstein, 1994).

The results of the present exploratory factor analyses can be seen in Table 2 (hedonic and utilitarian behavior-specific Web-consumption items) and Table 3 (constructs included in the structural model). The below synopsis conveys an explanation of the salient data and the methodology.

***Hedonic and Utilitarian Web-Consumption,  
Behavior-Specific Measure***

Although the behavior-specific items were not a part of the modeling procedure, it was necessary to include them in an attempt to validate the global scale. Since there is no quantitative data on adolescent Web-consumption, information was needed to propose and support definitions for our hedonic and utilitarian Web-consumption global measures.

A very reliable, face-valid, two-factor scale emerged in 28 items from the 38 behavior-specific Web-consumption behavior items included in the questionnaire. Hedonic items included "I hit sites my parents wouldn't approve of," and "I escape reality by using the Web." Utilitarian

**Table 2**  
***Hedonic and Utilitarian Specific Behavior Items***

Variables and Items	Factor Loading	Eigen Values	% Expl. Variance	Reliability
<b>Hedonic</b>		8.84	29.5	.89
I hit sites that my parents wouldn't approve of	.726			
I use the Web for gaming against other on-line players.	.721			
I download videos or movies	.703			
I buy CDs on-line.	.650			
I buy stuff on-line	.605			
I meet new people on the Web	.601			
I download music and/or trade MP3 files on-line	.587			
I make social plans with friends on-line.	.578			
I gamble on-line	.565			
I buy movie and/or event tickets on-line.	.553			
I compare prices on the Web for stuff I buy later	.540			
I escape reality by using the Web	.533			
I use different on-line identities	.526			
My friend(s) and I use the Web together.	.496			
I get relationship advice on-line	.493			
<b>Utilitarian</b>		3.32	11.1	.88
I make plans for school and/or work on-line	.711			
I use the Web for doing homework	.693			
I use Web sites to help me plan my future	.684			
I hit educational sites.	.675			
I get health advice and/or information on-line	.674			
I use/have used the Web for getting information on college	.665			
I help my parents look things up on the Web	.639			
I use the Web with family member(s).	.617			
I read or watch the news on the Web	.580			
I find information about fashion on-line	.578			
I get information on films from the Web	.517			
I go on-line to get travel information for my family	.510			
I use and/or have used the Web to help find a job	.470			

Table 3

**Exploratory Factor Analysis**

Variable and Items	Factor Loading	Eigen Value	% Expl. Variance	Reliability
<b>Personal Values</b>				
<b>Factor 1 (Personal Self)</b>		4.88	24.40	.76
Having exciting and stimulating experiences	.661			
Satisfying desires, experiencing pleasure	.654			
Being curious, interested in many things	.641			
Being imaginative, creative, unique	.609			
Enjoying leisure time, food, friends	.542			
Taking risks, having adventures	.526			
<b>Factor 2 (Ambition)</b>		1.60	8.01	.72
Achieving goals	.753			
Respecting myself, no matter what others think	.686			
Being capable, effective, efficient	.683			
Choosing my goals, deciding what I become	.640			
Being ambitious, striving to get ahead	.590			
Having a challenging varied life, full of change	.489			
<b>Factor 3 (Power)</b>		1.94	9.70	.70
Controlling friends and peers	.726			
Being a leader, commanding	.654			
Keeping up an image to friends, peers	.633			
Having money, material possessions	.595			
Getting recognition from friends, peers	.587			
Having people seek my opinion	.486			
<b>Innovativeness</b>				
<b>Factor 1 (Vicarious-Pensive)</b>		5.50	3.66	.76
When I hear about cool new products that aren't out yet, I want to learn about them	.655			
I think about how I would use different products that aren't out yet	.594			
I daydream about cool new products	.583			
When I hear about cool new products I like to learn more about them	.498			
I talk to friends about how we would use products we want	.403			
<b>Factor 2 (Vicarious-Future)</b>		3.81	25.39	.75
I imagine what things like communication, travel, and shopping will be like in the future	.952			
I spend a lot of time imagining what the future will be like	.595			
I wonder what products will be like in the future	.587			

Variable and Items	Factor Loading	Eigen Value	% Expl. Variance	Reliability
<b>Factor 3 (Use)</b>		1.23	8.23	.74
I'd rather fix something myself than take it to a repair shop	.769			
I save broken stuff because I might be able to use the parts for something	.633			
When I make something, I can usually get by with using stuff I have already have	.381			
<b>Factor 4 (Adoptive)</b>		1.61	10.76	.73
I usually buy high tech products before my friends do	.898			
I am usually one of the first of my friends to buy new technology products	.798			
I am usually one of the first of my friends to buy new look clothes	.418			
<b>Web-Consumption</b>				
<b>Factor 1 (Hedonic)</b>		3.59	39.85	.85
I really get into Web-surfing	.800			
Being on-line gives me a feeling of excitement, fun, and/or enjoyment	.798			
Compared to other things, being on-line is really enjoyable	.796			
I enjoy passing the time on-line	.767			
I get a sense of adventure when I go on-line.	.750			
<b>Factor 2 (Utilitarian)</b>		1.4000	15.56	.55
I am disappointed when I have to search a lot of sites for what I need for school	.663			
The Web helps me with school	.637			
I like to get in and out of the Web with no time wasted	.630			
Success on-line is finding what I'm looking for	.614			

items included "I make plans for school and/or work on-line," and "I hit educational sites." Principal Components extraction with Varimax rotation was indicated because of

the expectation of orthogonal factors. The loadings and their internal reliabilities were assessed by Chronbach's standardized  $\alpha$ ; two factors clearly emerged, hedonic Web-consumption (15 items,  $\alpha = .89$ , factor loadings = .493 to .726), and utilitarian Web-consumption (13 items,  $\alpha = .88$ , factor loadings = .440 to .711). Variance explained by the two-factor Web-consumption scale is 40.54%).

### ***Personal Values***

Because the Personal Values scale is a first-use adaptation of Schwartz's (1992) scale, principal components extraction was chosen to maximize the variance and determine the smallest number of factors. Theoretically, the factors are correlated, so Direct Oblimin rotation was chosen. From this process, three factors emerged--personal self, power, and ambition. The emergence of three factors was not as predicted. As mentioned in the last chapter, the data for the values-section had a slightly negative skew. It appears that the Schwartz (1992) scale is a bit tricky for young people to understand without instructions given orally by a researcher (impossible because of Human Subjects Committee requirements). It may be for this reason that the reliable and valid Schwartz Value Scale

yielded three factors with this sample. Upon examination of the factors in subsequent tables, one notes the cohesiveness of the items in each of the factors from this research, as well as the respectable alpha coefficients for the factors. One "openness" item loaded on a "self-enhancement" factor, (having a challenging varied life, full of change), but makes theoretical sense in that an ambitious person would seek such a life.

The three factors that emerged were given new names to reflect their new items. The six-item "personal self" factor represented openness of the self to new experiences. The six-item "ambition" factor concerned choosing and achieving goals, and ambition. The six-item "power" factor related to controlling friends, being a leader, and possessing material things.

While conducting reliability analyses, it was determined that one item from the first factor should be eliminated (doing things without help). The item loaded poorly on the first factor (.290) and the internal reliability of the scale improved after the item was eliminated. The loadings and their internal reliabilities as assessed by Chronbach's standardized  $\alpha$  (with loading

ranges) are as follows: personal self = .76 (.526 - .716); ambition = .72 (.489 - .753); power = .70 (.486 - .726). Variance explained by the three-factor personal-values scale is 42.11%.

### ***Innovativeness***

As expected, the innovativeness construct factored to the four scales predicted a priori: adoptive, use, vicarious-pensive, and vicarious-future innovativeness. For the analysis of these correlated items, maximum likelihood extraction and Direct Oblimin rotation were chosen. The adoptive innovativeness factor contained three items that concern buying high tech and high fashion products before others do. The use innovativeness factor contained four items regarding putting products together and fixing things with parts saved from other products. The vicarious-pensive factor manifested in five items pertinent to learning about and discussing products that are new, but not yet owned. The vicarious-future factor included three items regarding what shopping and products might be like in the future.

In the analysis, it was not necessary to eliminate any of the items. The four factors explained 48.04% of the variance. Internal reliabilities, as assessed by

Chronbach's standardized  $\alpha$  (factor loading range), were .73 (.418-.898), .74 (.381-.769), .74 (.498-.655), and .75 (.587-.952) for adoptive, use, vicarious-pensive, and vicarious-future, respectively. Particularly notable were the loadings and internal reliabilities for the vicarious scales, since prior to the research of Hartman et al. (2003, 2004), such scales did not exist.

#### ***Hedonic and Utilitarian Global Web-Consumption Measure***

As proposed, the global Web-behavior measures factored into two components. Principal components analysis with Varamax rotation was indicated for the analysis as the literature of several disciplines suggests a two-factor, orthogonal, solution (hedonic and utilitarian behavior). From the initial analysis, such a two-factor solution emerged. The "hedonic Web-consumption" factor, made up of five items, concerns the phenomenological, such as excitement, enjoyment, fun, and flow of the on-line experience. The "utilitarian Web-consumption" factor consists of four items that describe "work-related" teen Web-behavior, such as "helps me with school." During the analysis, one item (communication on-line seems to be a requirement these days) loaded highly on the hedonic scale,

but made no theoretical sense with the other items. Concerns about face validity, and a Chronbach's  $\alpha$  analysis, suggested dropping the item. After discarding the potentially confusing item, the Chronbach's standardized  $\alpha$  coefficient on the hedonic scale rose to .85 with loadings on the five-item scale ranging from .750 to .800.

To further validate the two dimensions of the global, Web-consumption scale, a correlation matrix of specific, and global, Web-consumption factors was examined. Global-hedonic and specific-hedonic scales exhibited good cross-validity ( $\underline{r} = .54, p = .000$ ). Specific-hedonic and specific-utilitarian scales showed a strong correlation ( $\underline{r} = .49, p = .000$ ), reflecting that although distinct factors, hedonic and utilitarian Web-consumption are similar behaviors. Finally, the global-utilitarian and specific-utilitarian scales were correlated ( $\underline{r} = .29, p = .000$ ) but not enough to claim cross-validation. This appears to reflect a deficiency in the global-utilitarian measure that will be discussed in Chapter 6.

Actual hedonic Web-behavior significantly correlated with the global-hedonic items, as the following examples demonstrate ( $p = .000$ ). "I get a sense of adventure when I

go on-line" global item correlated with "I download music . . ." ( $\underline{r} = .27$ ), "I use the Web for gaming against on-line players" ( $\underline{r} = .27$ ), "I gamble on-line" ( $\underline{r} = .22$ ) "I visit sites my parents wouldn't approve of" ( $\underline{r} = .23$ ), "I use different on-line identities" ( $\underline{r} = .28$ ), and "I download videos . . ." ( $\underline{r} = .26$ ). In another example, the global-item "I really get into Web-surfing" is correlated with ". . . gaming with on-line players" ( $\underline{r} = .28$ ), "I gamble on-line" ( $\underline{r} = .24$ ), "I make social plans on-line" ( $\underline{r} = .24$ ), "I get relationship advice on-line" ( $\underline{r} = .24$ ), "I download videos . . ." ( $\underline{r} = .25$ ).

Specific-utilitarian behavior is significantly correlated with many of the global-utilitarian items. For example, the item "The Web helps me with school" correlated with "I read/watch the news on the Web" ( $\underline{r} = .23$ ), "I get information on films from the Web" ( $\underline{r} = .19$ ), "I get information on fashion from the Web" ( $\underline{r} = .22$ ), and "I get information on travel from the Web" ( $\underline{r} = .20$ ).

### **Confirmatory Factor Analysis**

The exploratory factor analysis provided evidence of construct reliability of the scales. The next step was to conduct confirmatory factor analyses on individual latent variables and on the constructs (each consisting of two to

four latent variables). A correlation matrix (as is recommended for the two-stage, model-estimation process) and LISREL 8.54 were used in order to develop parameters for the measurement model. Prior to testing each entire scale, individual subscales were tested (with one path set to 1.00 to set the metric for the analyses, and provide "working" degrees of freedom) a conservative approach that is recommended by Anderson and Gerbing (1988). The full results of these tests are presented in Table 4, including standardized factor loadings, standard errors, construct reliabilities, proportion of variance extracted, construct-model goodness-of-fit and comparative fit coefficients.

#### ***Individual Latent-Variable, and Construct, Scales***

Every model construct was decomposed, and each latent variable was individually examined for significance, Reliability, and variance accounted for. Each latent variable of the personal values construct (ambition, self, and power) displayed a non-significant chi-square (differences of the predicted and actual matrices are non-significant) indicating an excellent overall fit. The goodness-of-fit (GFI) statistic ranged from .94 -.98, and the root mean square error of approximation (RMSEA)

**Table 4*****Confirmatory Factor Analysis Results***

Construct	Standardized Factor Loading	Construct Reliabilities	Proportion of Variance Extracted	Model Goodness of Fit Index	Model Comparative Fit Index
<b>Personal Values</b>				<b>.86</b>	<b>.90</b>
<b>Self</b>		<b>.73</b>	<b>30%</b>	<b>.97</b>	<b>.99</b>
x <sub>1</sub>	.73				
x <sub>2</sub>	.50				
x <sub>3</sub>	.48				
x <sub>4</sub>	.44				
x <sub>5</sub>	.51				
x <sub>6</sub>	.43				
x <sub>7</sub>	.65				
<b>Ambition</b>		<b>.56</b>	<b>26%</b>	<b>.98</b>	<b>1.00</b>
x <sub>8</sub>	.67				
x <sub>9</sub>	.67				
x <sub>10</sub>	.64				
x <sub>11</sub>	.32				
x <sub>12</sub>	.48				
x <sub>13</sub>	.49				
<b>Power</b>		<b>.68</b>	<b>26%</b>	<b>.96</b>	<b>.93</b>
x <sub>14</sub>	.51				
x <sub>15</sub>	.52				
x <sub>16</sub>	.54				
x <sub>17</sub>	.47				
x <sub>18</sub>	.54				
x <sub>19</sub>	.48				
<b>Innovativeness</b>				<b>.86</b>	<b>.92</b>
<b>Pensive</b>		<b>.48</b>	<b>30%</b>	<b>.97</b>	<b>.98</b>
y <sub>1</sub>	.70				
y <sub>2</sub>	.63				
y <sub>3</sub>	.80				
y <sub>4</sub>	.34				
y <sub>5</sub>	.45				
<b>Future</b>		<b>.60</b>	<b>53%</b>	<b>.99</b>	<b>.99</b>
y <sub>6</sub>	.58				
y <sub>7</sub>	.57				
y <sub>8</sub>	.96				

Construct	Standardized Factor Loading	Construct Reliabilities	Proportion of Variance Extracted	Model Goodness of Fit Index	Model Comparative Fit Index
Use		.45	72%	.91	.85
y <sub>9</sub>	.85				
y <sub>10</sub>	.59				
y <sub>11</sub>	.85				
y <sub>12</sub>	.39				
y <sub>9</sub>	.85				
y <sub>10</sub>	.59				
y <sub>11</sub>	.85				
y <sub>12</sub>	.39				
Adoptive		.77	55%	1.00	1.00
y <sub>13</sub>	.87				
y <sub>14</sub>	.39				
y <sub>15</sub>	.86				
Web-Consumption				.95	.97
Hedonic		.85	53%	.96	.96
y <sub>16</sub>	.78				
y <sub>17</sub>	.69				
y <sub>18</sub>	.68				
y <sub>19</sub>	.75				
y <sub>20</sub>	.74				
Utilitarian		.53	23%	.99	1.00
y <sub>21</sub>	.59				
y <sub>22</sub>	.29				
y <sub>23</sub>	.61				
y <sub>24</sub>	.38				

coefficient ranged from .030 - .089. The personal values construct ( $\chi^2 = 297.25$ ,  $df = 149$ ,  $p = .00$ ; GFI = .86, RMSEA = .072) was deemed acceptable for further analysis. Inspection of the correlation matrix of the latent constructs (phi matrix) alleviated concerns about

multicollinearity, and demonstrated adequate convergent and discriminant validity with an array of phi coefficients from .43 to .67, well within the acceptable guideline range of .20 to .70.

The innovativeness construct, with its latent variables adoptive, use, vicarious-pensive, and vicarious-future, was tested next. The GFI ranged from .91 - .99; the only significant chi-square statistic was associated with the latent variable "use" ( $X^2 = 33.25$ ,  $df = 5$ ,  $p = .00$ ) and was not a concern because the fit indices of the latent factor were strong. The innovativeness construct performed acceptably in testing ( $X^2 = 209.42$ ,  $df = 92$ ,  $p = .00$ ; GFI = .86, RMSEA = .098). While multicollinearity was a concern due to latent variables suspected as highly correlated, inspection of the phi matrix was reassuring. Further, the phi coefficients (.18-.54) provided the construct with evidence of convergent and discriminant validity.

Finally, the Web-consumption construct, consisting of the latent variables hedonic and utilitarian Web-consumption, was tested. The latent variables fit the data well (GFI = .96 - .99), as did the construct ( $X^2 = 46.53$ ,  $df = 27$ ,  $p = .01$ . GFI = .95, RMSEA = .058).

In all, the fit indices of the confirmatory factor analysis of the latent variables, and constructs, were satisfactory and indicated acceptable parameters for further analysis to determine the best measurement model. The reliabilities and proportions of variance extracted from the confirmatory factor analyses were relatively low. The results suggested that a modified model would provide a better fit. The procedure that was followed to establish a better-fitting measurement model is outlined below.

#### **Model Fit**

Overall measurement, and structural, model-fits were estimated by LISREL 8.54. A two-step structural equation modeling methodology, recommended for use with scales that are not well established and for identifying patterns in the data, was followed (Anderson & Gerbing, 1988; Hair et al., 1994). First, parameters from the prior analyses were used to eliminate indicators, specify, test, and confirm a measurement model. Second, the structural model was estimated.

#### **Measurement Model**

The statistical results of the final measurement model are presented in Table 5. Included in the table are standardized factor loadings, standard errors, t-statistics

Table 5

**Measurement Model Results**

Construct/Indicator	Factor Loading	SE	t*	Construct Reliability <sup>b</sup>	Proportion Variance Extracted <sup>c</sup>
$\xi_1$ (Personal Values-Self)				.73	32%
X <sub>1</sub>	.66 <sup>a</sup>		--	--	
X <sub>2</sub>	.51	.14	5.41		
X <sub>3</sub>	.56	.14	5.83		
X <sub>4</sub>	.40	.11	4.34		
X <sub>5</sub>	.47	.14	5.04		
X <sub>6</sub>	.49	.14	5.18		
$\xi_2$ (Personal Values-Ambition)				.69	42%
X <sub>8</sub>	.73 <sup>a</sup>	--	--		
X <sub>9</sub>	.64	.13	6.44		
X <sub>10</sub>	.59	.14	6.17		
$\xi_3$ (Personal Values-Power)				.60	34%
X <sub>14</sub>	.66 <sup>a</sup>	--	--		
X <sub>15</sub>	.49	.16	5.02		
X <sub>16</sub>	.58	.13	5.64		
$\eta_1$ (Vicarious-Pensive Innovative)				.72	46%
Y <sub>1</sub>	.67 <sup>a</sup>		--	--	
Y <sub>2</sub>	.66	.13	7.54		
Y <sub>3</sub>	.71	.13	7.94		
$\eta_2$ (Vicarious-Future Innovative)				.76	52%
Y <sub>6</sub>	.82 <sup>a</sup>	--	--		
Y <sub>7</sub>	.65	.08	7.90		
Y <sub>8</sub>	.67	.10	8.18		
$\eta_3$ (Use Innovativeness)				.77	52%
Y <sub>9</sub>	.93 <sup>a</sup>	--	--		
Y <sub>10</sub>	.82	.11	8.08		
Y <sub>11</sub>	.56	.13	4.62		
$\eta_4$ (Adoptive Innovativeness)				.76	54%
Y <sub>13</sub>	.84 <sup>a</sup>	--	--		
Y <sub>14</sub>	.39	.09	5.18		
Y <sub>15</sub>	.88	.09	11.26		

Construct/Indicator	Standardized Factor Loading	SE	t*	Construct Reliability <sup>b</sup>	Proportion Variance Extracted <sup>c</sup>
$\eta_5$ (Hedonic Web-Consumption)				.85	54%
Y <sub>16</sub>	.75 <sup>a</sup>	--	--		
Y <sub>17</sub>	.77	.10	9.70		
Y <sub>18</sub>	.69	.09	9.07		
Y <sub>19</sub>	.73	.11	8.98		
Y <sub>20</sub>	.77	.11	9.15		
$\eta_6$ (Utilitarian Web-Consumption)				.54	30%
Y <sub>21</sub>	.75 <sup>a</sup>	--	--		
Y <sub>22</sub>	.20	.12	2.19		
Y <sub>23</sub>	.52	.14	4.70		
Y <sub>24</sub>	.34	.14	3.50		

a. The first path (for each construct was set to 1; therefore, SE and t-values are not provided).

b. 
$$\frac{(\sum \text{Std. Loading})^2}{(\sum \text{Std. Loading})^2 + \sum \epsilon_j}$$

c. 
$$\frac{\sum \text{Std. Loading}^2}{\sum \text{Std. Loading}^2 + \sum \epsilon_j}$$

\*p <.001

for each indicator, and reliabilities and proportions of variance extracted for each construct. These results indicated a marked improvement in parsimony, reliabilities, and proportions of variance extracted over those of the confirmatory factor analyses. The improvement was achieved by adding supplementary constraints to the model and by allowing error terms of appropriate indicators (within each construct) to correlate as implied by the theta delta

index. In all, 10 indicators were eliminated by these procedures for the final measurement model. So as not to capitalize on chance, no error terms were allowed to correlate across constructs. A correlation matrix that was used as is recommended by Anderson and Gerbing (1988) and Hair et al. (1994) for scales that are not well established, this matrix and its items are presented in Tables 5A and 5B, in the Appendix D.

An evaluation of the LISREL estimates suggested that factor loadings of indicators of each construct were statistically significant and (considering the ages of the survey participants) met a minimal standard to support the underlying relationships among the constructs. Further, measurement model coefficients suggested that reliabilities and proportions variance extracted were reasonable, therefore allowing all of the constructs to stay in the model as was called for theoretically. As recommended by Hair et al. (1994), the reliabilities and variances extracted were hand-calculated. The range of reliabilities was 0.54 - 0.85, with only one coefficient (Utilitarian Web-consumption) under the 0.60 threshold (Bagozzi & Yi, 1988). The construct was retained, however, because of its face validity and significant t-value ( $p = .01$ ). The

variances ranged from 30 - 54%, with all but the global-utilitarian Web-consumption exceeding the 50% threshold (Bagozzi & Yi, 1988). The coefficients of the phi matrix, ranging from .15 to .67, evidenced the convergent and discriminant validity of the constructs.

### **Structural Model**

The results of the statistical tests of the initially proposed structural model, the final model, and the test of mediation are presented in Table 6. The final model showed

**Table 6**

#### ***Structural Model Comparisons***

Model	$\chi^2$	<u>df</u>	CFI	GFI	RMSEA	$\chi^2$	<u>df</u>
			Difference		Difference		
Saturated (Initially proposed)	1005.92	735	.93	.79	.038		
*Final	603.45	525	.98	.84	.018	402.47	210

#### **Test for Mediation**

Independent to Mediator	634.88	522	.97	.84	.024		
Independent to Dependent	615.09	515	.97	.84	.029	19.79	7
*Fully Mediated	603.45	525	.98	.84	.018	31.43	3

marked improvement over the other models in terms of efficiency and efficacy; complete mediation was established. Figure 3 depicts the final structural model.

The original (saturated) model, initially proposed by this research and based on the hierarchical model of Homer and Kahle (1988), furnished a  $X^2$  of 1,005.92 ( $df = 735$ ,  $p = .000$ ; GFI = .79; CFI = .93; RMSEA = .038;  $X^2/df = 1.36$ ). The convergence of the model (and satisfactory CFI, RMSEA, and normed  $X^2$  according to Hair et al., 1994) gave support to the premise of this research; that adolescent decision-making flows from most-abstract values to least-abstract behavior. However, the high chi square statistic and relatively low CFI suggested that a better fit was possible and that a smaller number and configuration of paths would improve the fit. The first modifications concerned the exogenous Personal Values construct. As had occurred with the Innovativeness construct in this research, the exploratory and confirmatory factor analyses of the Personal Values construct indicated that there were more latent factors than originally proposed. The Self-enhancement latent factor dichotomized into Ambition and Power latent factors (which made sense theoretically), and

established that the exogenous construct contained three, not two, latent factors.

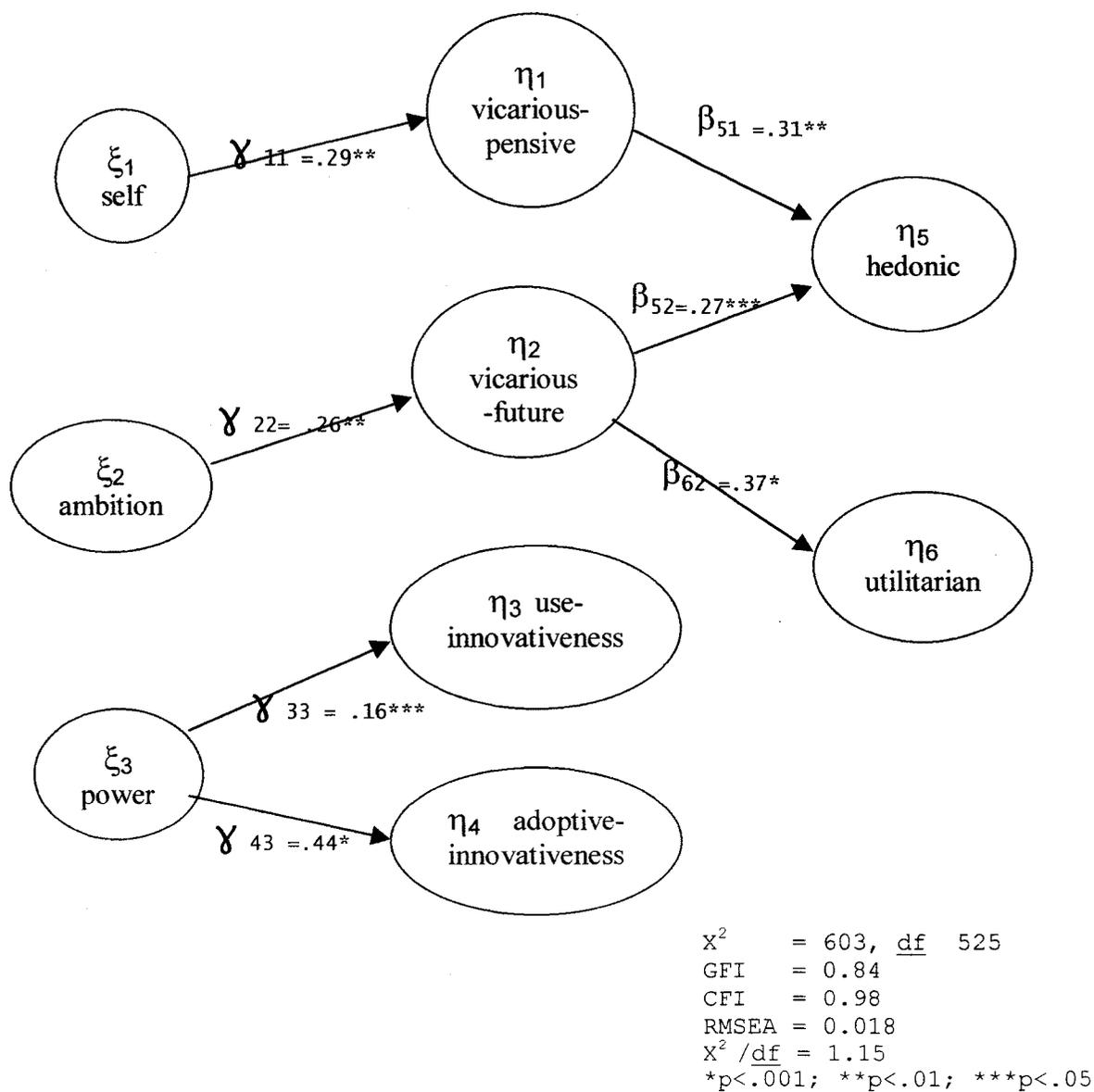


Figure 3. Final structural model.

Examining paths from the exogenous (Personal Values) to the endogenous construct (Innovativeness) was the next step. Instead of four paths from the proposed Openness-to-change latent factor leading to each factor in the Innovativeness construct as originally proposed, only one path from the new, exogenous, Personal-self latent variable to the endogenous Vicarious-pensive innovativeness latent factor ( $\gamma_{11} = .29, p < .01$ ) emerged. Three additional paths from exogenous to endogenous latent variables were in evidence, as follows: Ambition to Vicarious-future ( $\gamma_{22} = .26, p < .01$ ), Power to Use-innovativeness ( $\gamma_{33} = .16, p < .05$ ) and Power to Adoptive-innovativeness ( $\gamma_{43} = .44, p < .001$ ).

Next examined were the paths from the endogenous construct Innovativeness to the endogenous criterion construct, Web-consumption.

Contrary to the originally proposed model, the paths from Use and Adoptive-innovativeness to Hedonic and Utilitarian Web-consumption were non-significant. Significant paths emerged between Vicarious-pensive

innovativeness and Hedonic Web-consumption ( $\beta_{51} = .31, p < .01$ ), and Vicarious-future innovativeness to Hedonic ( $\beta_{52} = .27, p < .05$ ) and Utilitarian ( $\beta_{62} = .37, p < .001$ ) Web-consumption. The final model exhibited a considerable improvement in fit ( $X^2 = 603.45, df = 525, p = .009$ ; GFI = .84; CFI = .98, RMSEA = .018;  $X^2/df = 1.15$ .) than the model that was initially proposed. With the exception of the marginally acceptable GFI, the goodness-of-fit criteria were well within the acceptable range. Fewer paths notwithstanding, all significant paths were in the direction predicted, lending support to the hierarchical concept that is at the essence of this research.

#### ***Tests of Mediating Effects - Hypothesis 1***

The research followed the spirit of the Baron and Kenny (1986) technique for measuring the effects of mediation. Rather than estimating three separate regression equations as Baron and Kenny prescribe, LISREL 8.54 was employed to develop and test three competing models, with the objective of further demonstrating a hierarchical, downward flow in adolescents (from Personal-values to Innovativeness to Web-consumption behavior).

(dependent on independent variable), and the third model (dependent on the independent and mediating variables) are evaluated by examining significant paths. If significant direct paths of the second model flow from exogenous variables to endogenous criterion variables, and become non-significant in the third model with the introduction of the mediator, the standard for full mediation is satisfied. The results of the three competing models are exhibited in Table 6.

The research hypothesized (**H1**) that a teen's Personal Values directly influence his or her Innovativeness, which subsequently influences Web-consumption behavioral outcomes. Further, Personal Values are related to Web-consumption only indirectly, through Innovativeness. The first model tested consisted of paths  $\gamma_{11}$  (personal-self to vicarious-pensive innovativeness),  $\gamma_{22}$  (ambition to vicarious-future),  $\gamma_{33}$  (power to use) and  $\gamma_{43}$  (power to adoptive); the paths were significant to highly significant ( $p = .001-.05$ ). The second model specified direct paths from exogenous to endogenous criterion variables (paths  $\gamma_{51}$ ,  $\gamma_{61}$ ,  $\gamma_{53}$ ,  $\gamma_{63}$ ). Both Self and Power had significant direct

paths to both Hedonic and Utilitarian Web-consumption ( $p < .05$ ). Ambition displayed a marginally significant path ( $p > .05$ ) to Utilitarian Web-consumption (and a non-significant, but positive, path to Hedonic Web-consumption). When the influence of the mediating variable was introduced (in Model Three), the direct paths ( $\gamma_{51, 61, 62, 53, 63}$ ) became non-significant. Thus, the criteria for full mediation were met, fully supporting **H1**, and lending additional support for the "most-to-least-abstract" character of the hierarchical, adolescent decision-making process proposed by this research.

### ***Tests of Hypotheses 2 and 3***

The relationships between the Openness-to-change (re-named Personal Self) and the four latent constructs of Innovativeness were examined next. The study proposed that a teen's Personal-Self values are directly related to Vicarious-pensive and Vicarious-future (**H2a**), Use (**H2b**), and Adoptive Innovativeness (**H2c**). Examination of the exogenous- to endogenous-factor paths in the final structural model revealed a significant path from Personal Self to Vicarious-pensive innovativeness ( $\gamma_{11} = .29$ ) was significant ( $p < .01$ ), and in the proposed direction,

partially supporting **H2**. There were no other significant paths from the Personal-Self latent construct, therefore, **H2b** and **H2c** were not supported. **H2d** proposed that the Self-Enhancement was related to Adoptive Innovativeness, and this was supported. Further, because the exogenous construct Self-Enhancement had empirically dichotomized, two additional significant ( $p < .05$ ), positive, paths emerged ( $\gamma_{22} = .26$ ) Ambition to Vicarious-future and ( $\gamma_{33} = .16$ ) Power to Use.

The inter-relationships between the endogenous Innovativeness construct and the criterion construct were examined next. **H3a** proposed that Vicarious-innovativeness would be related to both Hedonic and Utilitarian Web-consumption behavioral outcomes. The structural model gave partial support to this hypothesis. Vicarious-pensive Innovativeness is positively and significantly related to Hedonic Web-consumption ( $\beta_{51} = .31, p < .01$ ) and Vicarious-future Innovativeness is related to both endogenous criterion factors ( $\beta_{52} = .27, p < .05; \beta_{62} = .37, p < .001$ ) chiefly supporting **H3a**. Significant paths failed to emerge between Use-innovativeness and the endogenous criterion construct **H3b**, so no support was found for this hypothesis.

between Use-innovativeness and the endogenous criterion construct **H3b**, so no support was found for this hypothesis. Similarly, a significant path failed to emerge between Adoptive-innovativeness and the endogenous criterion construct; therefore, no support was found for **H3c**.

Throughout the analysis, the measures seemed to better capture hedonic Web-consumption behavior than utilitarian behavior. Although several utilitarian items were scored among the highest means (e.g., "The Web helps me with school"  $\bar{M} = 4.81$ ), more variance was captured by hedonic measures throughout the study (e.g., exploratory factor analysis (40% of global and 30% of specific, hedonic, Web-consumption behavior verses 16% and 11%, respectively, for utilitarian). Similarly, construct reliability and variance extracted of hedonic measures were higher than that extracted by utilitarian measures (e.g., hedonic reliability = .85; variance extracted = 54%; utilitarian reliability = .54; variance extracted = 30%). Finally, in terms of the number of significant paths in structural modeling (see Table 7), hedonic appeared again as the better-measured factor of the construct, with two paths leading to it from the mediator, innovativeness, versus one for utilitarian.

**Table 7.****Structural Model Results (Total Effects)**

	$\xi_1$	$\xi_2$	$\xi_3$	$\eta_1$	$\eta_2$	$\eta_3$	$\eta_4$	$\eta_5$	$\eta_6$
$\xi_1$				.29				.09	0
$\xi_2$					.26			.07	.10
$\xi_3$						.16	.44	0	0
$\eta_1$								.31	
$\eta_2$								.27	.37
$\eta_3$								0	0
$\eta_4$								0	0

See Figure 3 for Structural Model.

### Chapter Summary

Structural equation modeling technique, and other data purification techniques, were used on data from 180 teen respondents. As predicted, the data generally supported the model proposed for this research. The statistical results presented in this chapter will be interpreted in the next, and concluding, chapter. Finally, Chapter 6 will offer implications for theory and practice, outline limitations of the, and offer suggestions for future research.

## **CHAPTER 6**

### **DISCUSSION**

Chapter 6 furnishes an enhanced understanding of the research results, and presents implications of the findings for the benefit of scholarly researchers, policy makers, youth development specialists, educators, marketers, parents, and adolescents. In this respect, the chapter will discuss and interpret the statistical findings, and it will suggest how they can be used to benefit young people. The details of the discoveries presently ensue. Following this, implications, limitations, and, finally, suggestions for future research are presented.

#### **Identification of Web-Consumption Patterns in Teens:**

##### **Hedonic and Utilitarian**

The first objective of this study was to demonstrate patterns of teen Web-consumption behaviors. This study was motivated by the convergence of three different theoretical perspectives: shopping behavior (Babin et al, 1994), developmental-action (Maggs, 1997; Nurmi, 1997), and technology paradox (Mick & Fournier, 1998). These bodies of literature share a general precept: behavior dichotomizes into hedonic and utilitarian types.

The study indicates that adolescent Web-consumption behavior can be categorized in hedonic and utilitarian domains. A bifurcated approach was taken to obtain this conclusion. A nine-item global measure, based on the hedonic-utilitarian shopping behavior scale (Babin et al., 1994), was developed to focus on the general behavioral modes. To validate the global measure, a specific behavioral measure of 28-items was developed with the goal of identifying specific activities. Throughout the statistical analysis, the new scales demonstrated two dimensions, and distinguished between hedonic and utilitarian behaviors in teens as predicted, albeit the global-utilitarian measure may not have performed optimally.

#### ***Hedonic and Utilitarian Behavior Defined***

Based on the results, it appears that teen Web-consumption can now be measured specifically and, with less precision, globally. This research offers the first quantitative, empirically based, data-driven definitions of adolescent Web-consumption in terms of general and specific behaviors as follows. The global, hedonic, teen Web-consumption domain represents a behavioral mode that involves feeling excitement, a sense of adventure, really

"getting into," really enjoying passing time, while being on the Web. More broadly, hedonic behavior is phenomenological, primary-process, experiential, recreational, and discretionary. Similarly, behavior-specific, hedonic, Web-consumption includes visiting sites parents would not approve of, gaming against online players, downloading entertainment, meeting new people, escaping reality, creating different on-line identities, making social plans with friends, and getting on-line relationship advice.

Antithetically, the behavior-specific, utilitarian Web-consumption includes making plans for school, doing homework, visiting sites to help plan the future, visiting educational sites, getting health advice, looking up information on college, reading the Web-news, getting travel information, and trying to find a job. In short, the activities that parents might wish their children would do.

The global-utilitarian teen Web-consumption domain represents a general behavioral mode related to work and academics, and involves efficiency and assistance - getting in-and-out of the Web with no time wasted, getting help with school, and completing a task. Generally, utilitarian

behavior is defined as practical, purposeful, obligatory, and necessary.

***Utilitarian Behavior: Measurement Effects or Less Use?***

It is possible that the global-utilitarian measure in this research may not have captured the construct well, and should be refined. It is also possible that utilitarian Web-consumption is less detectable than hedonic throughout this study because practical, task-driven activities are not ones that adolescents lovingly embrace. Young Web-users report being frustrated when looking, and not quickly finding, things that they need for school. The behaviors under the utilitarian classification are the ones that practitioners should emphasize because the orthogonal dichotomy of Web-consumption suggests a technology paradox. The Web is efficient and inefficient; it simultaneously creates opportunities and sets traps; the Web can be useful and wastefully addicting. The average teen may spend hours on the Web, having flow experiences, and getting frustrated. Teens consume the Web for fun. However, they know that the access to all of the tools and information provided by the Web creates certain expectations of knowledge and performance.

With regard to paradoxes in technological adoption and use, as Mick and Fournier's (1998) findings suggest, it is important to understand that teens may experience cognitive dissonance when confronted with the more utilitarian aspects of the Web. Parents and practitioners should discuss this possibility with teens, and adolescents should be encouraged to speak up about issues involving technology, so problems can be solved before frustration "turns them off."

One popular teen Web-activity provides parents with an entrée to discuss issues such as utilitarian uses, technological cognitive dissonance, appropriate Web-content to access, and others. Teens report helping their parents "look things up on the Web" once or twice per month (primary data, this study). This utilitarian-specific Web-consumption activity provides a forum in which parents and teens can engage each other. The reversal of roles creates the opportunity for "joint reasoning" required by the transitional nature of teen-parental relationships. Adolescents seek ever-greater responsibility, and freedom. At the same time they seek and endorsements of their behaviors from, and good relationships with, their parents (Youniss & Smoller, 1985). Teens can build inner agency by

being tech-teachers to their parents. The expert-role can prompt more familial egalitarianism, and validate the appropriateness of changed and changing parental-teen relationships. The role of parent-learner creates a climate conducive to non-threatening monitoring of the activity.

***Hedonic Behavior: Is There a Problem?***

Much of the hedonic behavior appears to seek a flow experience, in which the teen is increasingly challenged as his/her level of skill rises to the challenge, while time seems to disappear. Results of specific, hedonic behavior items suggest that many adolescents are seeking and getting such experiences. They may be spending one to three hours per day on the computer and may be "surfing the Web" and "enjoying passing time on-line". Such experiences are intrinsically motivating and may provide the challenge needed to build initiative and hone skills (Csikzentmihalyi, 1990; Durkin & Barber, 2002). Generally, the majority of teens are learning to use, and using, the tools they need now and will need in the future. They are enjoying themselves while improving their skills, primarily on their own. This research indicates that part of surfing and passing time is spent in exploration of "possible

selves." Possible selves provide the link between the identity and motivation (Marcus & Nurius, 1987). The ability to access the Web for such exploration could be interesting, challenging, and intrinsically motivating to teens as well.

Some of the hedonic activities are just fun, such as swapping MP3 files and downloading movies. Nonetheless, some hedonic activities are of concern. For example, nearly one-third of the sample admits to weekly access of sites their parents would not approve of. Here again, parents can capitalize on the reversal of roles that "tech" creates as the opportunity for "joint reasoning" in teen-parental relationships. Parents can let teens have fun, while the monitoring they provide helps to minimize exposure to material that adolescents are not ready for. Parents can help assure that their teens have appropriate, productive, and safe on-line experiences by portraying an authoritative (Baumrind, 1980) parenting style (non-judgmental, supportive, interested, caring, firm control). "Carte-blanche" Web-access should not be allowed; however, parents should allow reasonable adolescent self-expressive, hedonic use of the Web, since the Web appears to satisfy self-expressive values.

### **Hierarchical Sequence: Why Innovativeness "Fits" Between Personal Values and Web-Consumption**

The second objective was to demonstrate that there is a hierarchy of cognitive and behavioral processes in adolescents (personal values to innovativeness to Web-consumption behavior) by using structural equation modeling. The final structural model demonstrates that adolescent personal-values are significantly related to innovativeness, and innovativeness, in turn, influences teen Web-consumption behavior. Mediation tests (see Chapter Five) confirm the hierarchical flow in which the personal values construct has an indirect influence on Web-consumption behavior.

Specifically, this study establishes that a more-to-less abstract, hierarchical, cognitive-behavioral sequence exists in adolescents, and introduces the personal values-innovativeness-behavior hierarchy to the literature. Examination of the structural model indicates that teen personal values are directly related to their innovativeness, supporting **H1**. The results displayed clear patterns in a slightly different structure than originally proposed, but one that supports the proposition that a cognitive-behavioral hierarchy exists in teens. Schwartz

and Sagie (2000) suggested that adolescents would score very highly on openness-to-change and self-enhancement personal values, and in this research such patterns did emerge. Significant paths flowed from three personal-value latent factors to four, newly discovered innovativeness domains. Generally, this finding suggests that adolescents who are more "open to change" and are more interested in "keeping-up appearances" would tend to be more innovative. As predicted, personal values linked to Web-consumption only indirectly; values predict innovativeness, which in turn, is related to the criterion construct.

A test of mediation, with competing structural models, revealed that the introduction of innovativeness into the model eliminates any significant direct effects from personal values to Web-consumption. This discovery substantiates that innovativeness is an integral part of teen Web-consumption behavior and teen-values, and operates as an intervening, middle-level, variable. Much literature suggests that "middle-level" phenomena, such as innovativeness, intervene between the "managers" of actions (values) and actual behavior (Becker & Conner, 1981; Burgess, 1992). The full mediation of values by innovativeness increasingly confirms the hierarchical,

cognitive, decision-making research of Kahle and colleagues (Homer & Kahle, 1988; Kahle, 1980), and Shim and colleagues (Lotz, Shim, & Gehrt, 2003; Shim & Eastlick, 1998). These new findings suggest, generally, that decisional-behavioral processes are hierarchical. The process starts with personal values, flows to a middle-level, intervening factor, and then influences behavior. Additionally, the findings indicate two areas where attempts to influence teen-behavior may prove productive—personal values (where the behavior originates) and innovativeness (where it is filtered).

#### **Inter-Relationships of the Hierarchical Structure**

The third objective of the research is to illuminate the inter-relationships of the personal values to innovativeness to Web-consumption behavior model as a tool to investigate adolescent Web-consumption. Generally, structural equation modeling is an effective procedure. It isolates contributions made by each predictor variable, and it measures the direct and indirect effects of variables as well. The processes that manifest in observed relationships among variables can be examined, and the proportionate magnitude of alternative structural paths can be estimated. This allows for a better understanding of a

phenomenon in its entirety, including the relationships of variables that constitute the phenomenon (Kahle & Kennedy, 1989). The structural modeling procedure fulfilled its promise in this study. It reveals an abundance of new information (e.g., defines innovativeness as a mediator).

### ***Effects of Personal Values on Innovativeness***

The final structural model displayed paths of broad categories of personal values influencing innovativeness, generally supporting **H2**. Each of the three personal values factors displayed unique predictive power on unique factors of innovativeness. The personal-self factor displayed a unique connection to vicarious-pensive innovativeness, which concerns contemplation of new products and services. The power factor manifested significant paths to both use and adoptive innovativeness (acquisition and retention factors), while ambition displayed a unique path to vicarious-future innovativeness (both are forward-looking factors).

Here are some possible explanations as to why the unique linkages occurred. Erikson (1963) suggested that teens are ensconced in a period of identity formation that leads to alterations of self-perceptions. During this period, teens try on different identities, in a search for

"possible selves," or self-perceptions in future states (Markus & Nurius, 1987). They try on different possible-selves like different sets of clothes to see which fits best (Turkle, 1995). This exploration can be characterized as a search for "identity achievement," during which teens experience "crises" that are best resolved through commitments made from among meaningful alternatives (Erikson, 1963; Marcia, 1966). Teens more open to this process, and more open to new things and ideas in their lives, would be expected to be more thoughtful (pensive) about their present circumstances (represented by the self-to-pensive innovativeness path) than those who are less open.

As regards the ambition-to-future path, the more ambitious possible-selves adolescents possess, the more they would appear to be future oriented. Ambition is a future orientation, and it links with future thoughts about high tech products and services that may assist teens in fulfilling ambitions.

The link from power to adoptive-innovativeness is a pattern consistent with the literature, in that the individuals make new acquisitions to enhance status (Steenkamp et al., 1999). The pattern from power to

acquisition suggests that those teens who seek power would tend to be more acquisitive than those who do not. This would be especially true for those teens who make material possessions part of their self-definitions (Youniss & Smoller, 1985). Teens say that "high tech is my tech" (Montgomery, 2000, p. 146); the power-adoptive link represents adolescents who are seeking to be noticed by their peers -and may be making an attempt at cooperative co-construction. High tech devices help teens "project the self" that they want to show, and may help attract the friends they want. Using their friends as sounding boards, they seek personal clarification, and approval (Roe, 1995; Youniss & Smoller, 1985). Devices can be used as ice-breakers, and teens can obtain prestige by teaching others how to use high tech devices (Suler, 1998).

The path from power to use-innovativeness might indicate a subtler effect. In order to be powerful, one parsimoniously expends resources. If one uses existing products for new applications, this would expand scarce resources to "fight another day." As the research suggests, differences in teen innovativeness may, indeed, be explained by the emphasis they place on their particular personal values.

***Effects of Innovativeness on Web-Consumption***

Innovativeness displayed direct relationships to behavior in the final model, supporting **H3**. The findings indicate that teens are thinking about the future, about future play and future work.

The effect of vicarious-pensive innovativeness flowing to hedonic Web-consumption was predicted, and is theoretically consistent. Hirschman (1980) proposed that the vicariously innovative individual acquires knowledge about the innovation and its attributes, and adopts the concept, without acquiring the product or service. Vicarious-pensive individuals are open to change, and they are open to the things the Web can provide, but have not consumed them all as yet. Vicarious-pensive innovativeness failed to link to utilitarian Web-consumption as predicted. One explanation for this may be that young people are not spending many of their present moments contemplating things-utilitarian. Another explanation may be that, despite utilitarian-item means among the highest in the study, the utilitarian measure was not optimal and needs refinement.

Vicarious-future innovativeness links to both hedonic and utilitarian Web-consumption. It may be that

future-oriented young people are inclined to seek new experiences and, also, to use the Web to build better futures for themselves (e.g., using the Web for success in school).

Teens who score higher on vicarious innovativeness think about, daydream about, and want to learn about "cool new" technological products and services that exist now and in the future. The teen who scores highly on use-innovativeness has a practical, parsimonious cast, would rather try to repair something than have it fixed. High scores on adoptive-innovativeness indicate adolescent high-tech acquisitiveness, and may also indicate attention-seeking behavior.

### ***Structure-Wide Inter-Relationships***

The hedonic Web-consumption factor has more direct relationships (with innovativeness) and indirect relationships (with personal values) than does utilitarian. The hedonic variable emerges more clearly throughout the research. The reason for this is not readily apparent because the participants reported doing utilitarian activities. It may be an artifact of the measures, however, it may be a different reason, indicated by the personal self-pensive innovativeness-hedonic Web-

consumption path. The value construct includes a self-expressive component, and it may be that hedonic self-expression is being satisfied through Web-consumption. In other words, hedonic and utilitarian goals are being achieved through personal values.

The path structure, ambition - future-innovativeness - Web-consumption, is a welcome finding. Ambition to future to utilitarian paths connect in a clear cognitive-behavioral hierarchy in which ambition creates a utilitarian future orientation toward, and an interest in, the technical offerings that could help teens realize ambitions. From this creative, future-oriented, inquisitive point, there is a flow to Web-behavior that is task-oriented, practical, planned, and executed.

The fact that power-value paths reached use and adoptive innovativeness, but did not go on to connect with Web-consumption behavior, may indicate that teens do not satisfy power-values by using the Web. Other possible explanations include artifacts of measurement, and a limitation of this research, discussed in the next section.

#### **Implications, Limitations, and Future Research**

One of the most important findings of this study is that by understanding the connection between Web-

consumption behavior and fundamental human values through the unique role that innovativeness plays, a better understanding of the behavior is realized. The continued promise of this research manifests in the discovery of nine new and distinct latent factors in three latent constructs, the creation of original measures to capture them, the explanation of how the factors and constructs fit together, and the implications of the inter-relationships of the hierarchical structure. The results of the study increase the understanding of adolescent behavior, its sources and directions. The discoveries are a benefit to adolescents, and will assist the professionals and parents who work and live with them.

The research of Hartman et al. (2003, 2004) was the first to isolate three latent factors of innovativeness with the IT scale and confirmatory factor analysis. This study took past efforts farther with a more parsimonious IT scale, and use of the data in a structural model. By applying the scale to a new sample, this study enhances the understanding of the latent innovativeness construct itself. By employing the data in a hierarchical model, the study establishes the place of innovativeness in the

context of a cognitive-behavioral hierarchy and creates a new way to measure adolescent consumer behavior.

There are both theoretical and practical implications from the findings of this research. As to theory, the research produced four new scales that will improve predictability of adolescent Web-consumption behavior. The value of these new measures cannot be overstated.

The structural modeling technique proves its power for modeling relationships between adolescent principles, thoughts, and actions. The modeling technique represents an effective vantage point from which to study all manner of adolescent consumption behavior.

The study confirms that the most-to-least-abstract cognitive hierarchical framework has promise to study adolescent cognitive processes related to high tech products and services, and it should prove effective in investigating a host of adolescent consumption behaviors.

Most important, the new finding regarding two domains of Web-consumption suggests that this construct will be useful for researching other categories of adolescent consumption. The finding appeals for a teen behavior-profile that could better predict behaviors such as academic success or problem conduct.

On the practical side, the discovery of the two domains of Web-consumption gives an indication of how adults might try to exert influence on teen behavior, and the hierarchical structure suggests where those efforts should center.

For parents, the research suggests things they can do to better prepare their teens for productive computer and Web-use. The dark side of the Web is just as accessible as healthy and useful content. Parental involvement, without intrusiveness, is an absolute necessity.

Parents and practitioners may want to consider encouraging the kinds of personal-values that spark thoughtfulness and curiosity (pensive-innovativeness), and guide adolescent innovativeness toward more utilitarian outcomes. Such guidance may assist teens with the complexity of technology that they will face in their higher educational and working lives, and reduce the technological cognitive dissonance that they may be experiencing.

The study shows that the computer and the Web are effective in helping to satisfy adolescent self-expressive values. It is important at this critical period of identity formation that teens be encouraged to pursue self-

expression in Web-interaction. This in turn may motivate them to build skills that can open the door to more utilitarian uses. In order to solicit and encourage such a favorable hierarchical phenomenon, the effort must again start with personal values. The Web has been demonstrated as a tool that can facilitate the process. The Web has its best effect on teens in combination with adult participation.

For professionals in the youth field, the ramifications of these discoveries are many and varied. In the knowledge that most teens are somewhat-to-highly developed on the hedonic Web-consumption side, a host of applications for utilitarian Web-use present themselves. This study demonstrates that the computer is an essential tool *that adolescents WANT to use*--they are motivated to use it. As teens become "technical advisors" to their families and friends, they gain authority and independence (Bunn, 2000). Computers give teens opportunities to become expert in a complex and important world (that does not require a car). Computer expertise earned by teens may bestow "cool" cachet.

Youth professionals can help create good outcomes for teens by harnessing teen motivation to use computers. One

method would be to use computers and the Web as part of voluntary structured youth activities. Youth professionals know that structured youth activities can create initiative (Larson, 2000), a quality sometimes lacking in youth. The Web could be used for group or individual structured leisure activities that were designed with increasing challenge, would offer the kind of experience that would be self-motivating and, in turn, create initiative.

For curriculum development, the research suggests that professionals can capitalize on the affinity for high-tech gadgets that teens possess, seemingly irrespective of gender or race. Further, research increasingly confirms that computer game-playing teens have higher GPA scores, self-concepts, mechanical skills, and computer skills than those who do not play. Game-players have lower depressed mood and disobedience than others. Game-players prefer to play in the company of friends and family (Durkin & Barber, 2002). MBA and PhD programs, such as the Eller College, University of Arizona, offer computer games as part of their curriculum. High schools could incorporate computer games (with designed educational purposes) into many types of high school curriculum. The respondents to this research are already playing computer games at least one or

two days every week, therefore, there is a stage-environmental fit (Eccles et al., 1993) with the high school segment and computer enhanced curriculum. Game-use in school would create interest on the part of the students, give them exposure to the utilitarian uses of the computer, and may assist teens in constructing the conceptual flexibility, reflexive reasoning, and self-regulation they need to develop critical thinking (Keating & Sasse, 1996).

Another concept for curriculum development involves text messaging. Since relationships are fundamental to teen self-definition, educators can take advantage of the tendency of teens to engage in cooperative co-construction (Youniss & Smoller, 1985) and social learning (Burgess, 1992). Teens are used to communicating, and need to communicate with their peers, for self-reflection, mutual understanding, and approval. Students could be assigned to group projects and instructed to communicate and work primarily by sending text over wire--even as they are sitting in the same building. The usefulness of the Web for teens with regard to utilitarian functions becomes self-evident, and their academic success on small "network" projects might create the generative language and

initiative for further exploration of computers and the Web (Larson, 2002).

For marketers, opportunities present themselves regarding products and services that would benefit teens and be profitable. The manufacturer of any high-tech device or peripheral could, in its marketing concept, stress the utilitarian aspects of the product (the teen will quickly discover the hedonic ones).

Teens realize that not all information they find on the Web is credible (Suler, 1998). Marketer Web-borne messages to teens could include utilitarian content (e.g., Philip Morris youthful-smoking site), and stress the importance of discernment in consumption of information, as well as products, on the Web.

As with most research, there are limitations. A significant limitation of this research was the sample. The sample size was smaller and configuration was different than was planned. This occurred mainly because of the necessity to obtain parental permission for participants to complete the survey. In addition to the reduced size, the sample may not be representative of the population of Arizona teens as it was designed to be. Caution in generalizing these results is advised.

Human subject and informed consent protections are important especially when they concern clinical trials. However, in the social sciences such protections create a serious impediment to research. The requirement for obtaining parental permission before high school students can fill out questionnaires about computers makes it nearly impossible to obtain a random sample. In the event that the student actually brings the permission slip home for the parent and gives it to the parent to read, the question arises "which parents will give permission?" Probably, parents in homes without computers will not, perpetuating the digital divide. Researchers do not know what a "normal sample" would be like, since this research is among the first quantitative studies with teens, computers, and the Web. Ultimately, a disservice is done to the very young people the regulations are designed to protect.

This chapter is written in an era during which computers and the World Wide Web are universally vital tools. In order for younger generations to have bright futures, it becomes increasingly imperative, with each passing day, that the young integrate these tools into their everyday lives. From the results of my study, it appears that young people are rising to the challenge.

The findings suggest ways for adults who are responsible for teen welfare to facilitate the integrative process.

As to the future - there are several avenues for further research. The next project in the research stream will be to refine both the specific and global Web-consumption measures with another sample. While the results of this research suggest that the measures are reliable and somewhat valid, it is always important to re-confirm a new scale. The research detected significant effects, in the predicted direction, through structural equation modeling technique. However, the explained variance was less than expected, and the global utilitarian Web-consumption behavior measure may not have performed optimally. After improving and refining the measures and collection techniques, refined scales will result that should have much to offer consumer behavior and adolescent researchers.

The hierarchical cognitive-behavioral structure discovered by this research should be tested with other types of adolescent consumption. If the structure were discovered as effective in adolescent research, it would be a boon to the consumer behavior field. This research is supported by the results of hierarchical studies and

literature regarding shopping behavior, adolescent goals, and technology paradox that suggested behavior dichotomizes into, essentially, hedonic and utilitarian behavior. With the additional support of this research for the prior findings, there is reason to believe that the cognitive-behavioral structure may help to answer a multitude of research questions regarding the consumption behavior of adolescents.

Finally, it would be interesting to examine the structural model of this research with diverse groups, to determine if the model remains robust without regard to gender, ethnicity, socio-economics, and other demographic variables. It is possible that age (cohort) is a more important indicator of innovativeness, in computer and Web-use, than the other demographic categories. As young people age, it would be beneficial to determine how their Web-behaviors may shift, whether they become more, or less, innovative in different ways, and whether these changes are due to changes in personal values.

**APPENDIX A****FOCUS GROUP PROTOCOL**

Focus group: want to know how teens use the Web - what sites they access, how much time they spend on what.

- 1) Why do you use the Web - for what do you use it?  
*-What kinds of sites do you visit on the Web?*
- 2) If you were telling someone about how much time you spend on the Web - and how often you use it, how would you describe it? (e.g., hours per day, per week?? Several times per day, per week)?  
*-How much time do you spend on games, schoolwork, communicating (in what forms?)... ..*  
*-Where do you use the Web...school, home...?*
- 3) How do you think your friends are using the Web?  
*-Do you think everyone is using the Web - do you know people that don't use the Web - why don't they?*
- 4) When you are deciding what Web site to access, what are you looking for - what criteria do you use to select a site to hit?
- 5) Who influences your choices about Web sites to hit?
- 6) With whom do you use the Web?  
*-Do you think there are benefits to society from using the Web? (for example, in countries where the government controls the news/media).*
- 7) What (if anything) do you shop for on the Web?  
*-How do you pay for stuff you order on the Web?*
- 8) How do those Multi-player games work?  
*-Have you participated in a MUD?*  
*-Are they the same thing?*
- 9) Are there sites you hit that your parents wouldn't approve of?
- 10) What part do you think the Web will play in your future?

**APPENDIX B  
INFORMED CONSENT**

**To participate in a Teen Internet and Computer Study**

(called: "Hierarchical Influence of Personal Values and Innovations on Adolescent Web-Consumption").

Dear Student – *will you please help us???*

You are invited to participate in the **Teen Internet and Computer Study** sponsored by the University of Arizona and your school district. This study will examine patterns of teen Web-consumption behaviors and factors that influence these behaviors (and factors that determine the nature of direct vs. indirect relationships of personal values, innovation, and Internet usage).

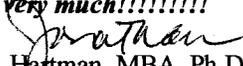
The University of Arizona, the School of Family and Consumer Sciences, and I will be working with your school to collect this information, which your school will then provide to us for analysis.

If you choose to participate in this study, you will be asked to complete the attached questionnaire on what you think and feel about technology and technological products and services. The survey is about your impressions – there are no right or wrong answers. The survey is being distributed to about 800 high school students throughout Arizona. Your role in this research is very important, but **voluntary**. Because your participation is voluntary, you may at any time choose NOT to answer a question or to no longer continue participation in the activity for any reason. **WE DO NOT NEED YOUR NAME ON THE DATA!!!!** The answers are confidential and anonymous and will not be associated with your name or any personal information in any way. This consent form and the survey will be physically separated when you return the survey, so there will be no link to who completed the survey.

By participating in this survey, you are providing your school district and the researchers with valuable information that may help the school district better serve your educational needs as they relate to the use of technology, and specifically the internet.

If you have any questions regarding this project, please contact me at 520-621-4548 or [jhartman@ag.arizona.edu](mailto:jhartman@ag.arizona.edu). If you have questions about your rights you should contact the Human Subjects Protection Office at the University of Arizona at 520-626-6721.

***Thank you very much!!!!!!!!!!***

  
Jonathan B. Hartman, MBA, Ph.D. Candidate  
Associate to the Director  
University Learning Center  
Old Main, 202  
Tucson, AZ 85721

---

I give my consent to participate in completing the attached survey about the use of technology and the Internet. My participation is voluntary and I, or my parent/guardian can withdraw permission at any time. There are no direct risks or benefits to the completion of the survey and I will not be compensated for the 20-25 minutes of time needed to complete the survey.

\_\_\_\_\_  
Signature of Child

\_\_\_\_\_  
Name of Child

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Parent/Guardian

\_\_\_\_\_  
Date

APPENDIX C  
QUESTIONNAIRE



**High School Internet and Computer Study:**

Dear Student:

The **University of Arizona** wants to know what **YOU** think and feel about technology and technological products and services. The survey is about **how YOU feel** - there are no right or wrong answers. The survey will be distributed to about 800 high school students throughout Arizona.

**Your role in this research is critical.** Please complete every question as it relates to your use of the Web and technology.

Participation in this survey is **voluntary**. Your answers are confidential

WE DO NOT NEED YOUR NAME ON THE SURVEY.

**Thank you very much** for being a part of this important research.

A handwritten signature in cursive script that reads "Jonathan".

Jonathan B. Hartman, MBA  
Associate to the Director, University Learning Center  
520-621-4548  
Doctoral Candidate, Retailing and Consumer Sciences  
College of Agriculture and Life Sciences  
University of Arizona, FCS Building  
Tucson, AZ 85721  
520-621-1295

**Part A.*****What I Really Care About: My Personal Values***

*Please read instructions carefully!!!!*

When responding to Part A on page two  please think about:

**"What are my MOST important values that GUIDE MY life –  
and, what values are less important to me?"**

People differ in their personal values. Page two has statements of values that come from different cultures. **Please rate how important each value is for you in your life, using this rating scale:**

---



---

Values Rating Scale

Opposed to my values	not important				important			Very important	Highest importance
-1	0	1	2	3	4	5	6	7	

---

**TO BEGIN.....**

*First*      *Read...the **entire** values list on page two, statements A1 to A20.*

*Second*      *Choose...from all the value statements - the **one or two values most important to you** and circle # 7 (highest importance) on the scale after the statement.*

*Third*      *Choose...from the remaining statements - the **one or two values most opposite your values** and circle # -1.*

*Finally*      *RATE...the remaining statements based on how important the value is to you using the numbers (0,1,2,3,4,5,6).*

A1. Achieving goals	-1	0	1	2	3	4	5	6	7
A2. Having a challenging, varied life, full of change.	-1	0	1	2	3	4	5	6	7
A3. Having money, material possessions	-1	0	1	2	3	4	5	6	7

A4.	Satisfying desires, experiencing pleasure.	-1	0	1	2	3	4	5	6	7
A5.	Being imaginative, creative, unique.	-1	0	1	2	3	4	5	6	7
A6.	Controlling friends and peers.	-1	0	1	2	3	4	5	6	7
A7.	Having exciting and stimulating experiences.	-1	0	1	2	3	4	5	6	7
A8.	Being a leader, commanding.	-1	0	1	2	3	4	5	6	7
A9.	Being ambitious, striving to get ahead.	-1	0	1	2	3	4	5	6	7
A10.	Being curious, interested in many things.	-1	0	1	2	3	4	5	6	7
A11.	Being capable, effective, efficient.	-1	0	1	2	3	4	5	6	7
A12.	Enjoying leisure time, friends, food.	-1	0	1	2	3	4	5	6	7
A13.	Being free to think and do what I want.	-1	0	1	2	3	4	5	6	7
A14.	Doing things without help, being self-reliant.	-1	0	1	2	3	4	5	6	7
A15.	Taking risks, having adventures.	-1	0	1	2	3	4	5	6	7
A16.	Getting recognition from friends, peers.	-1	0	1	2	3	4	5	6	7
A17.	Having people seek my opinion.	-1	0	1	2	3	4	5	6	7
A18.	Choosing my goals, deciding what I become.	-1	0	1	2	3	4	5	6	7
A19.	Respecting myself, no matter what others think.	-1	0	1	2	3	4	5	6	7
A20.	Keeping up an image to friends, peers.	-1	0	1	2	3	4	5	6	7

### Part B.

### ***My Thoughts about Technology and New Products***

To let us know your thoughts about each statement, please score by CIRCLING a number on the 1 to 7 scale that follows the statement.

1 = "I strongly *disagree* with the statement" and 7 = "I strongly *agree* with the statement." Some questions may sound the same, but there are small differences, so please answer all of the questions anyway.

		Strongly disagree			Strongly agree			
		1	2	3	4	5	6	7
B1.	When I hear about cool new products, I like to learn more about them.	1	2	3	4	5	6	7
B2.	When I make something, I can usually get by with using stuff I've already got around.	1	2	3	4	5	6	7
B3.	I wonder what products will be like in the future.	1	2	3	4	5	6	7
B4.	I am usually one of the first of my friends to buy 'new look' clothes when they come out.	1	2	3	4	5	6	7
B5.	I talk to friends about how we would use products we want.	1	2	3	4	5	6	7
B6.	I imagine what things like communication, travel, and shopping will be like in the future.	1	2	3	4	5	6	7

- B7. I spend a lot of time imagining what the future will be like. 1 2 3 4 5 6 7
- B8. I usually buy high tech products before my friends do. 1 2 3 4 5 6 7
- B9. I daydream about cool new products. 1 2 3 4 5 6 7
- B10. I save broken stuff because I might be able to use the parts for something else. 1 2 3 4 5 6 7
- B11. When I hear about cool new products that aren't out yet, I want to learn about them. 1 2 3 4 5 6 7
- B12. I like products that you have to put together. 1 2 3 4 5 6 7
- B13. I am usually one of the first of my friends to buy new technology products when they come out. 1 2 3 4 5 6 7
- B14. I think about how I would use different products, even though I don't have them. 1 2 3 4 5 6 7
- B15. I'd rather fix something myself than take it to a repair shop. 1 2 3 4 5 6 7

### Part C.

### **My Uses for the Computer**

Please tell us about your computer use by MARKING the best answer: (*if you do not use a computer, go to Part F, back page*).

- C1. How many computers do you have at home?  
0\_\_ (skip to C3) 1\_\_ 2\_\_ 3 or more\_\_.
- C2. Is there a *time limit* on your home computer use?  
Yes\_\_ No\_\_. If yes, your **time limit** is\_\_\_\_\_.
- C3. Are you required to use a computer at school?  
Yes\_\_ No\_\_.
- C4. Do you have computer access at school for use during your free time?  
Yes\_\_ No\_\_.
- C5. Where else do you use a computer? (check all that apply)  
a)\_\_\_ Friend's house  
b)\_\_\_ Public library  
c)\_\_\_ Other (please specify)\_\_\_\_\_.

Please mark the circle below each statement that is *most like your actual use*. (Example)

- Never   
 few days a year   
 1 or 2 days a month   
 1 to 2 days a week   
 3-6 days a week   
 7 days a week

- C6. Adding up all the time you spend on computers **during the average day**, what is the total time you spend?

(Mark the circle *closest* to your total time per day)

- |                                 |                                       |                                 |                                |                                 |                                   |  |
|---------------------------------|---------------------------------------|---------------------------------|--------------------------------|---------------------------------|-----------------------------------|--|
| <input type="radio"/> Zero time | <input type="radio"/> Fifteen minutes | <input type="radio"/> Half hour | <input type="radio"/> One hour | <input type="radio"/> Two hours | <input type="radio"/> Three hours | <input type="radio"/> Four or more hours |
|---------------------------------|---------------------------------------|---------------------------------|--------------------------------|---------------------------------|-----------------------------------|--|

Please mark the circle below each statement that is *most like your actual use*.

- C7. I use the computer to play computer games:

- |                             |                                       |   |  |                                       |                                     |
|-----------------------------|---------------------------------------|---|--|---------------------------------------|-------------------------------------|
| <input type="radio"/> Never | <input type="radio"/> few days a year | <input type="radio"/> 1 or 2 days a month | <input type="radio"/> 1 to 2 days a week | <input type="radio"/> 3-6 days a week | <input type="radio"/> 7 days a week |
|-----------------------------|---------------------------------------|---|--|---------------------------------------|-------------------------------------|

- C8. I use the computer to do typing or word processing:

- |                             |                                       |   |  |                                       |                                     |
|-----------------------------|---------------------------------------|---|--|---------------------------------------|-------------------------------------|
| <input type="radio"/> Never | <input type="radio"/> few days a year | <input type="radio"/> 1 or 2 days a month | <input type="radio"/> 1 to 2 days a week | <input type="radio"/> 3-6 days a week | <input type="radio"/> 7 days a week |
|-----------------------------|---------------------------------------|---|--|---------------------------------------|-------------------------------------|

- C9. I use the computer to make charts or graphic art:

- |                             |                                       |   |  |                                       |                                     |
|-----------------------------|---------------------------------------|---|--|---------------------------------------|-------------------------------------|
| <input type="radio"/> Never | <input type="radio"/> few days a year | <input type="radio"/> 1 or 2 days a month | <input type="radio"/> 1 to 2 days a week | <input type="radio"/> 3-6 days a week | <input type="radio"/> 7 days a week |
|-----------------------------|---------------------------------------|---|--|---------------------------------------|-------------------------------------|

- C10. I use the computer to share digital pictures:

- |                             |                                       |   |  |                                       |                                     |
|-----------------------------|---------------------------------------|---|--|---------------------------------------|-------------------------------------|
| <input type="radio"/> Never | <input type="radio"/> few days a year | <input type="radio"/> 1 or 2 days a month | <input type="radio"/> 1 to 2 days a week | <input type="radio"/> 3-6 days a week | <input type="radio"/> 7 days a week |
|-----------------------------|---------------------------------------|---|--|---------------------------------------|-------------------------------------|

- C11. I use the computer to surf the World Wide Web:

- |                             |                                       |   |  |                                       |                                     |
|-----------------------------|---------------------------------------|---|--|---------------------------------------|-------------------------------------|
| <input type="radio"/> Never | <input type="radio"/> few days a year | <input type="radio"/> 1 or 2 days a month | <input type="radio"/> 1 to 2 days a week | <input type="radio"/> 3-6 days a week | <input type="radio"/> 7 days a week |
|-----------------------------|---------------------------------------|---|--|---------------------------------------|-------------------------------------|



If you never use the Web, go to part F, back page.

### Part D.

## ***My Uses for the World Wide Web***

Please tell us about your Web use. Please mark the circle below each statement that is *most like your actual Web use*.

- D1. I chat with my friends on-line.

- |                             |                                       |   |  |                                       |                                     |
|-----------------------------|---------------------------------------|---|--|---------------------------------------|-------------------------------------|
| <input type="radio"/> Never | <input type="radio"/> few days a year | <input type="radio"/> 1 or 2 days a month | <input type="radio"/> 1 to 2 days a week | <input type="radio"/> 3-6 days a week | <input type="radio"/> 7 days a week |
|-----------------------------|---------------------------------------|---|--|---------------------------------------|-------------------------------------|

- D2. I read or watch the news on the Web.

- |                             |                                       |   |  |                                       |                                     |
|-----------------------------|---------------------------------------|---|--|---------------------------------------|-------------------------------------|
| <input type="radio"/> Never | <input type="radio"/> few days a year | <input type="radio"/> 1 or 2 days a month | <input type="radio"/> 1 to 2 days a week | <input type="radio"/> 3-6 days a week | <input type="radio"/> 7 days a week |
|-----------------------------|---------------------------------------|---|--|---------------------------------------|-------------------------------------|

Please mark the circle below each statement that is *most like your actual Web use*.

D3. I hit product and/or service business sites.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D4. I get information about my hobbies and/or interests on-line.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D5. I escape reality by using the Web.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D6. I get sports information on the Web.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D7. I get health advice and/or information on-line.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D8. I download music and/or trade MP3 files on-line.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D9. I use Web sites to help me plan my future.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D10. I use the Web for gaming against other on-line players.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D11. I meet new people on the Web.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D12. I hit educational sites.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D13. I gamble on-line.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

Please mark the circle below each statement that is *most like your actual Web use*.

- D14. I make plans for school and/or work on-line.  
 Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week
- D15. I use the Web for doing homework.  
 Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week
- D16. I make social plans with friends on-line.  
 Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week
- D17. I get information on films from the Web.  
 Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week
- D18. I hit sites that my parents wouldn't approve of.  
 Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week
- D19. I get relationship advice on-line.  
 Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week
- D20. My friend(s) and I use the Web together.  
 Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week
- D21. I find information about fashion on-line.  
 Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week
- D22. I maintain a "blog" or Web-log.  
 Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week
- D23. I maintain a personal Web page.  
 Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week
- D24. I buy stuff on-line.  
 Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

Please mark the circle below each statement that is *most like your actual Web use*.

D25. I use different on-line identities.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D26. I buy movie and/or event tickets on-line.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D27. I help my parents look things up on the Web.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D28. I download videos or movies.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D29. I buy clothes on-line.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D30. I use and/or have used the Web to help find a job.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D31. I buy CDs on-line.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D32. I get tech support and/or software on line.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D33. I use the Web with family member(s).

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D34. I search the Web for images (pictures, photographs).

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D35. I use/have used the Web for getting information on college.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D36. I compare prices on the Web for stuff I buy later.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D37. I help my family with Web purchases.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

D38. I go on-line to get travel information for my family.

- Never |  few days a year |  1 or 2 days a month |  1 to 2 days a week |  3-6 days a week |  7 days a week

**Part E.**

***My thoughts and feelings about the World Wide Web***

To let us know how you feel about each statement, imagine your feelings on a 1 to 7 scale 1 = "I strongly *disagree* with the statement" and 7 = "I strongly *agree* with the statement." The larger the number, the more you agree with the statement. Please CIRCLE the number after each statement that reflects how you feel.

	<b>Strongly disagree</b>						<b>Strongly agree</b>
	1	2	3	4	5	6	7
E1. I get a sense of adventure when I go on-line.	1	2	3	4	5	6	7
E2. I enjoy passing the time on-line.	1	2	3	4	5	6	7
E3. I like to get in and out of the Web with no time wasted.	1	2	3	4	5	6	7
E4. The Web helps me with school.	1	2	3	4	5	6	7
E5. Being on-line gives me a feeling of excitement, fun, and/or enjoyment.	1	2	3	4	5	6	7
E6. Communicating on-line seems like a requirement these days.	1	2	3	4	5	6	7
E7. I am disappointed when I have to search a lot of sites for what I need for school.	1	2	3	4	5	6	7
E8. I really get into Web-surfing.	1	2	3	4	5	6	7
E9. Compared to other things, being on-line is really enjoyable.	1	2	3	4	5	6	7
E10. Success on-line is finding what I'm looking for.	1	2	3	4	5	6	7

**Part F.****My Background**

Please give us some background information. **It is strictly confidential**

F1. I am: Male \_\_\_ Female \_\_\_.

F2. Age: \_\_\_\_\_.

F3. Grade: 9<sup>th</sup> \_\_\_ 10<sup>th</sup> \_\_\_ 11<sup>th</sup> \_\_\_ 12<sup>th</sup> \_\_\_.

F4 & F5. What is the highest level of education your parents received?

(MARK one column FOR EACH PARENT)

<u>Mother</u>	<u>Father</u>
___ grade school	___ grade school
___ some high school	___ some high school
___ high school graduate	___ high school graduate
___ some college or technical school	___ some college or technical school
___ college graduate	___ college graduate
___ some graduate school	___ some graduate school
___ graduate degree	___ graduate degree

F6. Please tell us about your plans for your education: (MARK yes, maybe, or no for each statement).

<u>Yes</u>	<u>Maybe</u>	<u>No</u>	
___	___	___	a) You will graduate from high school.
___	___	___	b) You will get technical or vocational training after high school.
___	___	___	c) You will go into the military right after high school.
___	___	___	d) You will graduate from a two-year community college.
___	___	___	e) You will graduate from a four-year college or university.
___	___	___	f) You will attend graduate or professional school after college.

F7. What is your GPA? \_\_\_\_\_.

F8. What is/are your favorite subject(s)? \_\_\_\_\_, \_\_\_\_\_.

F9. How would you describe yourself?

___ African American	___ Native American
___ Asian American or Pacific Islander	___ White, non-Hispanic.
___ Latino, Hispanic-American	___ Other, please specify _____

**THANK YOU VERY MUCH FOR COMPLETING OUR SURVEY !!!**

**APPENDIX D  
CORRELATION MATRIX**

**Table 5A**

---

**Correlation Matrix Items Key**

---

x <sub>1</sub>	Having exciting and stimulating experiences
x <sub>2</sub>	Being imaginative, creative, unique
x <sub>3</sub>	Being curious, interested in many things
x <sub>4</sub>	Enjoying leisure time, friends, food
x <sub>5</sub>	Being free to think and do what I want
x <sub>6</sub>	Taking risks, having adventures
x <sub>8</sub>	Choosing my goals, deciding what I become
x <sub>9</sub>	Achieving goals
x <sub>10</sub>	Being capable, effective, efficient
x <sub>14</sub>	Having people seek my opinion
x <sub>15</sub>	Being a leader, commanding
x <sub>16</sub>	Getting recognition from friends, peers
y <sub>1</sub>	I daydream about cool new products
y <sub>2</sub>	When I hear about cool new products that aren't out yet, I want to learn about them
y <sub>3</sub>	I think about how I would use different products, even though I don't have them
y <sub>6</sub>	I imagine what things like communication, travel, and shopping will be like in the future
y <sub>7</sub>	I wonder what products will be like in the future
y <sub>8</sub>	I spend a lot of time imagining what the future will be like
y <sub>9</sub>	I like products that you have to put together
y <sub>10</sub>	I save broken stuff because I might be able to use the parts for something else
y <sub>11</sub>	I'd rather fix something myself than take it to a repair shop
y <sub>13</sub>	I am usually one of the first of my friends to buy new technology products
y <sub>14</sub>	I am usually one of the first of my friends to buy "new look" Clothes when they come out
y <sub>15</sub>	I usually buy high tech products before my friends do
y <sub>16</sub>	Being on-line gives me a feeling of excitement, fun, and/or enjoyment
y <sub>17</sub>	I get a sense of adventure when I go on-line.
y <sub>18</sub>	I enjoy passing the time on-line
y <sub>19</sub>	I really get into Web-surfing
y <sub>20</sub>	Compared to other things, being on-line is really enjoyable
y <sub>21</sub>	Success on-line is finding what I'm looking for
y <sub>22</sub>	I like to get in and out of the Web with no time wasted
y <sub>23</sub>	The Web helps me with school
y <sub>24</sub>	I am disappointed when I have to search a lot of sites for what I need for school

---

Table 5B.  
Correlation Matrix - Exogenous and Endogenous Indicators

	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	X <sub>6</sub>	X <sub>8</sub>	X <sub>9</sub>	X <sub>10</sub>	X <sub>14</sub>	X <sub>15</sub>	X <sub>16</sub>	Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>3</sub>	Y <sub>6</sub>	Y <sub>7</sub>	Y <sub>8</sub>	Y <sub>9</sub>	Y <sub>10</sub>	Y <sub>11</sub>	Y <sub>13</sub>	Y <sub>14</sub>	Y <sub>15</sub>	Y <sub>16</sub>	Y <sub>17</sub>	Y <sub>18</sub>	Y <sub>19</sub>	Y <sub>20</sub>	Y <sub>21</sub>	Y <sub>22</sub>	Y <sub>23</sub>	Y <sub>24</sub>			
X <sub>1</sub>	--																																			
X <sub>2</sub>	.360	--																																		
X <sub>3</sub>	.359	.321	--																																	
X <sub>4</sub>	.272	.200	.180	--																																
X <sub>5</sub>	.314	.313	.193	.341	--																															
X <sub>6</sub>	.364	.158	.236	.205	.253	--																														
X <sub>8</sub>	.292	.233	.350	.198	.285	.229	--																													
X <sub>9</sub>	.211	.145	.237	.108	.123	.162	.457	--																												
X <sub>10</sub>	.220	.214	.399	.232	.141	.168	.412	.421	--																											
X <sub>14</sub>	.294	.170	.223	.174	.133	.310	.277	.185	.211	--																										
X <sub>15</sub>	.262	.203	.139	.126	.185	.079	.216	.264	.122	.334	--																									
X <sub>16</sub>	.251	.119	.208	.189	.290	.227	.148	.086	.072	.391	.259	--																								
Y <sub>1</sub>	.067	.147	.009	.065	.088	.034	.046	.122	.062	.124	.049	.144	--																							
Y <sub>2</sub>	.183	.152	.168	.108	.083	.109	.079	.133	.105	.181	.147	.270	.439	--																						
Y <sub>3</sub>	.116	.070	.133	.052	.092	.169	.058	.061	.099	.266	.121	.127	.476	.467	--																					
Y <sub>6</sub>	-.003	.142	.069	.049	.124	.006	.142	.207	.043	.067	.085	.051	.337	.322	.374	--																				
Y <sub>7</sub>	.060	.079	.082	.135	.128	.146	.063	.199	.012	.042	.050	.018	.316	.312	.266	.545	--																			
Y <sub>8</sub>	-.015	.098	.002	.076	.122	.004	.128	.210	.056	-.026	.005	.072	.326	.294	.332	.554	.414	--																		
Y <sub>9</sub>	.071	.230	.019	.107	.136	.112	.123	.016	.037	.148	.116	.045	.381	.367	.464	.222	.234	.234	--																	
Y <sub>10</sub>	-.020	.204	.019	.083	.119	.165	.059	-.038	.086	.145	.103	.064	.306	.266	.387	.050	-.012	.062	.511	--																
Y <sub>11</sub>	-.002	.176	.004	-.026	.015	.111	.044	.001	-.012	-.030	.057	-.069	.139	.204	.311	.072	.036	.088	.585	.458	--															
Y <sub>13</sub>	.083	.101	.116	.069	.176	.154	.075	.118	.078	.166	.181	.299	.430	.419	.417	.250	.296	.267	.358	.145	.157	--														
Y <sub>14</sub>	.073	-.020	-.017	.012	.144	.106	-.040	.138	-.065	.092	.139	.218	.178	.041	.108	.292	.091	.188	.063	.056	.002	.347	--													
Y <sub>15</sub>	.175	.155	.179	.006	.157	.152	.217	.262	.178	.289	.220	.269	.521	.405	.407	.250	.268	.356	.303	.176	.103	.740	.333	--												
Y <sub>16</sub>	.077	.225	.103	.140	.049	.011	.077	.110	.166	.138	.012	.084	.204	.318	.250	.264	.172	.257	.141	.132	.077	.209	.005	.167	--											
Y <sub>17</sub>	.041	.165	.074	.120	.050	.014	.092	.165	.060	.178	.197	.193	.325	.356	.273	.364	.259	.286	.272	.185	.064	.315	.218	.327	.569	--										
Y <sub>18</sub>	.073	.254	.163	.202	.198	.006	.132	.066	.201	.091	-.018	.089	.115	.293	.199	.355	.210	.159	.127	.051	-.023	.192	-.032	.152	.527	.520	--									
Y <sub>19</sub>	.049	.221	-.010	.100	.082	.080	.077	.002	.016	.132	.158	.183	.232	.275	.121	.242	.225	.127	.232	.136	.057	.140	.056	.097	.567	.545	.442	--								
Y <sub>20</sub>	-.044	.104	-.009	.114	.100	-.010	.090	-.015	.024	.168	.022	.177	.266	.366	.162	.266	.140	.192	.092	.089	-.016	.173	-.037	.150	.581	.399	.541	.610	--							
Y <sub>21</sub>	.054	.037	-.079	.074	.130	-.026	.130	.099	.119	.160	.151	.085	.100	.139	.130	.168	.091	.164	.041	.121	.021	.006	.082	.035	.337	.316	.285	.367	.331	--						
Y <sub>22</sub>	.090	.023	.043	-.030	.117	.013	.131	.068	-.033	-.005	.110	.094	.075	.109	.072	.060	.042	.110	.129	.258	.103	.195	.067	.094	.005	.013	.002	-.019	-.043	.168	--					
Y <sub>23</sub>	-.050	.055	-.015	.019	.006	.002	.045	.122	.064	.082	.108	-.002	.064	.127	.227	.269	.192	.260	.120	.012	.050	.008	.033	.033	.194	.233	.121	.255	.177	.371	.150	--				
Y <sub>24</sub>	.157	.035	-.028	.033	.160	.160	.138	.098	-.019	.093	.088	.146	-.027	.155	.019	.169	.049	.163	-.034	-.009	-.012	.085	.016	.058	.151	.039	.059	.079	.175	.259	.170	.178	--			

**REFERENCES**

- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-423.
- Arnett, J. (1992). Reckless behavior in adolescence: A developmental perspective. *Developmental Review*, 12, 339-373.
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from late teens through the twenties. *American Psychologist*, 55(5), 469-480.
- Babin, B. J., Darden, W. R., & Griffin, M. (1994). Work and/or fun: Measuring hedonic and utilitarian shopping value. *Journal of Consumer Research*, 20(March), 644-656.
- Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural models. *Journal of the Academy of Marketing Science*, 16(1), 74-94.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Baumrind, D. (1980). New directions in socialization research. *American Psychologist*, 35, 639-652.
- Becker, B. W., & Conner, P. E. (1981). Personal values of the heavy user of mass media. *Journal of Advertising Research*, 21(5), 37-43.
- Becker, H. J. (2000). Who's wired and who's not: Children's access to and use of computer technology. *The Future of Children*, 10(2), 44-75.

- Bellenger, D. N., & Korgaonkar, P. K. (1980). Profiling the recreational shopper. *Journal of Retailing*, 56(Fall), 77-91.
- Beyth-Marom, R., & Fischhoff, B. (1997). Adolescents' decisions about risks: A cognitive perspective. In J. Schulenberg & J. L. Maggs & K. Hurrelmann (Eds.), *Health risks and developmental transitions in adolescence* (pp. 110-135). New York: Cambridge University Press.
- Breakwell, G. M., & Fife-Schaw, C. (1987). Young people's attitudes toward new technology: Source and structure. In J. H. Lewko (Ed.), *How children and adolescents view the world of work* (Vol. 35, pp. 51-67). San Francisco: Jossey-Bass Inc.
- Bristor, J. M., & Fischer, E. (1993). Feminist thought: Implications for consumer research. *Journal of Consumer Research*, 19(March), 518-536.
- Brown, J. (1994). Teenage room culture: Where media and identities intersect. *Communication Research*, 21(6), 813-837.
- Bunn, A. (2000). The rise of the teen guru. *Brill's Content*(July/Aug.), 64-69; 123-129.
- Burgess, S. M. (1992). Personal values and consumer research: An historical perspective. *Research in Marketing*, 11, 35-79.
- Cantor, N. (1990). "Having" and "doing" in the study of personality and cognition. *American Psychologist*, 45, 735-750.
- Childers, T. L., Carr, C. L., Peck, J., & Carson, S. (2001). Hedonic and utilitarian motivations for online retail shopping behavior. *Journal of Retailing*, 77(4), 511-535.
- Commerce Department. (2002). *A nation online: How Americans are expanding their use of the Internet*. Washington DC: US Department of Commerce.

- Conger, J., & Galambos, N. (1997). *Adolescence and youth: Psychological development in a changing world* (5th ed.). New York: Longman.
- Corfman, K. (1997). *Children as decision makers*. Paper presented at the Advances in Consumer Research Conference.
- Crockett, L. J., & Petersen, A. C. (1993). Adolescent development: Health risks and opportunities for health promotion. In S. G. Millstein, A. C. Petersen, & E. O. Nightingale (Eds.), *Promoting the health of adolescents: New directions for the twenty-first century* (pp. 3-37). New York: Oxford University Press.
- Csikszentmihalyi, M., & Larson, R. (1984). *Being adolescent*. New York: Basic Books.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: Harper.
- DeSantis, J. P., & Youniss, J. (1991). Family contributions to adolescents' attitudes toward new technology. *Journal of Adolescent Research*, 6(4), 410-422.
- Douvan, E., & Adelson, J. (1966). *The adolescent experience*. New York: John Wiley & Sons.
- Durkin, K. (1995). *Developmental social psychology*. Oxford, UK: Blackwell Publishers Inc.
- Durkin, K., & Barber, B. (2002). Not so doomed: Computer game play and positive adolescent development. *Applied Developmental Psychology*, 23, 373-392.
- Ebersole, S. (2000). Uses and gratifications of the Web among students. *Journal of Computer-Mediated Communication*, 6(1). (On-line). Available: <http://www.ascuse.org/jcmc/vol6/issue1/ebersole.html>), 1-20.

- Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., & Iver, D. M. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist*, 48(2), 90-101.
- Engel, J., Blackwell, R., & Miniard, P. (1990). *Consumer behavior* (6th ed.). Hinsdale, IL: Dryden.
- Erikson, E. H. (1963). *Childhood and society* (2nd ed.). New York: W W Norton & Co.
- Erikson, E. H. (1968). *Identity: Youth and crisis*. New York: Norton.
- Feather, N. T. (1995). Values, valences, and choice: The influence of values on the perceived attractiveness and choice of alternatives. *Journal of Personality and Social Psychology*, 68(6), 1135-1151.
- Goldsmith, R. E., & Hofacker, C. A. (1991). Measuring consumer innovativeness. *Journal of the Academy of Marketing Sciences*, 19(3), 209-221.
- Gorsuch, R. L. (1983). *Factor analysis* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Gregan-Paxton, J., & John, D. R. (1995). Are young children adaptive decision makers? A study of age differences in information search behavior. *Journal of Consumer Research*, 21(March), 567-580.
- Grotevant, H. D., & Adams, G. R. (1984). Development of an objective measure to assess ego identity in adolescence: Validation and replication. *Journal of Youth and Adolescence*, 13(5), 419-438.
- Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1994). *Multivariate data analysis* (4th ed.). Upper Saddle River, NJ: Prentice Hall.
- Harter, S. (1990). Processes underlying the construction, maintenance and enhancement of the self-concept of children. *Psychological Perspectives on the Self*, 3.

- Hartman, J. B., K. Gehrt, & Watchravesringkan, K. (2004). Reexamination of the concept of innovativeness in the context of the adolescent segment. *Journal of Targeting, Measurement, and Analysis for Marketing* 12(4).
- Hartman, J. B., Gehrt, K., & Watchravesringkan, K. (2003). Reexamination of the concept of innovativeness among adolescents: Development of a scale. *AMA Educators' Proceedings*, 14, 284-293.
- Hirschman, E. C. (1980). Innovativeness, novelty seeking, and consumer creativity. *Journal of Consumer Research*, 7(December), 283-295.
- Holbrook, M. B., & Hirschman, E. C. (1982). The experiential aspects of consumption: Consumer fantasies, feelings, and fun. *Journal of Consumer Research*, 2(9), 132-149.
- Homer, P. M., & Kahle, L. R. (1988). A structural equation test of value-attitude-behavior hierarchy. *Journal of Personality and Social Psychology*, 54(4), 638-646.
- Howell, D. C. (1997). *Statistical methods for psychology*. Belmont, CA: Wadsworth Publishing Co.
- Jessor, R. (1992). Risk behavior in adolescence: A psychological framework for understanding and action. *Developmental Review*, 12, 374-390.
- Kahle, L. R. (1980). Stimulus condition self-selection by males in the interaction of locus of control and skill-chance situations. *Journal of Personality and Social Psychology*, 38(1), 50-56.
- Kahle, L. R., & P. Kennedy (1989). Using the List Of Values (LOV) to understand consumers." *Journal of Consumer Marketing*, 6(3), 5-12.
- Kandel, D. B., & Andrews, K. (1987). Processes of adolescent socialization by parents and peers. *International Journal of the Addictions*, 22(4), 319-342.

- Keating, D. P., & Sasse, D. (1996). Cognitive socialization in adolescence. In M. Adams, Montemayor, & Guiiotta (Eds.), *Psychosocial development during adolescence* (pp. 232-258). London: Sage.
- Kim, J., & Mueller, C. W. (1978). *Factor analysis: Statistical methods and practical issues* (Vol. 14). Newbury Park, CA: Sage Publications.
- Knafo, A., & Schwartz, S. H. (2001). Value socialization in families of Israeli-born and Soviet-born adolescents in Israel. *Journal of Cross-Cultural Psychology*, 32(2), 213-228.
- Knafo, A., & Schwartz, S. H. (in press). Culture-appropriate parenting and value transmission in families of Israeli-born and Soviet-born adolescents in Israel. In B. Kotic-Friedgut, E. Leshem, & T. Horowitz (Eds.), *Post Soviet youth*. New York: University Press of America.
- Kotler, P. (1997). *Marketing management* (9th ed.). Upper Saddle River, NJ: Prentice Hall.
- Kraut, R., Patterson, M., Lundmark, V., Keisler, S., Mukopadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist*, 53(9), 1017-1031.
- Kuhn, D., Amstel, E., & O'Loughlin, M. (1988). *The development of scientific thinking skills*. Orlando, FL: Academic Press.
- Kynigos, C., Gyftodimos, G., & Georgiadis, P. (1993). Empowering a society of future users of information technology: A longitudinal study of an application in early education. *European Journal of Information Systems*, 2(2), 139-148.
- Larson, R. (1995). Secrets in the bedroom: Adolescents' private use of media. *Journal of Youth and Adolescence*, 24(5), 535-551.

- Larson, R. W. (2000). Toward a psychology of positive youth development. *American Psychologist, 55*(1), 170-183.
- Lee, W., & Kuo, E. C. Y. (2002). Internet and displacement effect: Children's media use and activities in Singapore. *Journal of Computer-Mediated Communication, 7*(2) (On-line). Available: <http://www.ascuse.org/jcmc/vol7/issue2/singapore.html>, 1-18.
- Lenhart, A., Rainie, L., & Lewis, O. (2001). *Teenage life online*. Washington DC: Pew Internet and American Life Project.
- Loehlin, J. C. (1998). *Latent variable models*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Lotz, S., Shim, S., & Gehrt, K. (2003). A study of Japanese consumers' cognitive hierarchies in formal and informal gift-giving situations. *Psychology and Marketing, 20*(1), 59-85.
- MacInnis, D. J., & Price, L. L. (1987). The role of imaginary in information processing: Review and extensions. *Journal of Consumer Research, 13*(March), 473-491.
- Maggs, J. L. (1997). Alcohol use and binge drinking as a goal-directed action during the transition to postsecondary education. In J. Schulenberg, J. L. Maggs, & K. Hurrelmann (Eds.), *Health risks and developmental transitions during adolescence* (pp. 580-613). Cambridge, UK: Cambridge University Press.
- Maio, G. R., & Olson, J. M. (1995). Relations between values, attitudes, and behavioral intentions: The moderating role of attitude function. *Journal of Experimental Psychology, 31*, 266-285.
- Marcia, J. E. (1966). Development and validation of identity status. *Journal of Personality and Social Psychology, 3*(5), 551-558.

- Markus, H., & Nurius, P. (1987). Possible selves: The interface between motivation and the self concept. In Yardley & Honess (Eds.), *Psychological perspectives*. New York: John Wiley.
- Martinez, M. E. (1994). Access to information technologies among school-age children: Implications for a democratic society. *Journal of the American Society for Information Science*, 45(6), 395-400.
- Mick, D. G., & Fournier, S. (1998). Paradoxes of Technology: Consumer cognizance, emotions, and coping strategies. *Journal of Consumer Research*, 25(September), 123-143.
- Midgley, D. F., & Dowling, G. R. (1978). Innovativeness: The concept and its measurement. *Journal of Consumer Research*, 4, 229-242.
- Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Bulletin*, 100, 674-701.
- Montgomery, K. C. (2000). Children's media culture in the new millennium: Mapping in the digital landscape. *The Future of Children*, 10(2), 145-167.
- Montgomery, K. C., Aidman, A., Flynn, S., Gotlieb-Robles, B., Hagemeister, K., Kotler, J., Larson, G. O., O'Brien, E., Schneider, G., Simmons, C., & Stern, S. (2001). *TeenSites.com: A field guide to the new digital landscape*: Center for Media Education. (Online). Available: <http://ome.org/teenstudy/>
- Moschis, G. P., & Churchill, G. A. (1979). An analysis of the adolescent consumer. *Journal of Marketing*, 43(Summer), 40-48.
- Moshman, D. (1993). Adolescent reasoning and adolescent rights. *Human Development*, 36, 27-40.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill, Inc.

- Nurmi, J. E. (1991). How do adolescents see their future? A review of the developmental of future orientation and planning. *Developmental Review, 11*, 1-59.
- Nurmi, J. E. (1997). Self-definition and mental health. In J. Schulenberg, J. L. Maggs, & K. Hurrelmann (Eds.), *Health risks and developmental transitions during adolescence* (pp. 395-419). Cambridge: Cambridge University Press.
- Orleans, M., & Laney, M. C. (2002). *Early adolescent social networks and computer use*. Champaign: Educational Resources Information Center.
- Petrosky, A. R. (1995, Summer). *Gender and use innovation: An inquiry into the socialization of innovative behavior*. Paper presented at the American Marketing Association Conference.
- Price, L., & Ridgway, N. (1982). *Use innovativeness, vicarious exploration and purchase exploration: Three facets of consumer varied behavior*. Paper presented at the Educators' Conference.
- Price, L. L., & Ridgway, N. M. (1983). Development of a scale to measure use innovativeness. *Advances in Consumer Research, 10*, 679-684.
- Raju, P. S. (1980). Optimum stimulation level: Its relationship to personality. *Journal of Consumer Research, 7*(December), 272-282.
- Ram, S., & Jung, H. (1989). *The link between involvement, use innovativeness and product usage*. Paper presented at the Advances in Consumer Research.
- Ram, S., & Jung, H.-S. (1994). Innovativeness in product usage: A comparison of early adopters and early majority. *Psychology & Marketing, 11*(1), 57-67.
- Roe, K. (1995). Adolescents' use of socially disvalued media: Towards a theory of media delinquency. *Journal of Youth and Adolescence, 24*(5), 617-632.

- Rogers, E. M. (1983). *Diffusion of innovations*. New York: The Free Press.
- Rogers, E. M., & Shoemaker, F. (1971). *Communication of innovations*. New York: The Free Press.
- Rohan, M. (2000). A rose by any other name? The values construct. *Personality and Social Psychology Review*, 4(3), 255-277.
- Rokeach, M. (1973). *The nature of human values* (10th ed.). New York: The Free Press.
- Rowe, D. C., Rodgers, J. L., & Gilson, M. (2000). Epidemics of smoking: Modeling tobacco use among adolescents. In J. S. Rose, C. C. Presson, & S. J. Sherman (Eds.), *Multivariate applications in substance use research*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Schachtel, E. G. (1959). *Metamorphosis*. New York: Basic Books.
- Schulenberg, J., O'Malley, P. M., Backman, J. G., Wadsworth, K. N., & Johnston, L. D. (1996). Getting drunk and growing up: Trajectories of frequent binge drinking during transition to young adulthood. *Journal of Studies on Alcohol*, 57, 289-304.
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 1-65). New York: Academic Press.
- Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues*, 50(4).
- Schwartz, S. H., & Bilsky, W. (1990). Toward a theory of the universal content and structure of values: Extensions and cross-cultural replications. *Journal of Personality and Social Psychology*, 58(5), 878-891.

- Schwartz, S. H., & Sagie, G. (2000). Value consensus and importance: A cross national study. *Journal of Cross-Cultural Psychology*, 31(4), 465-497.
- Schwartz, S. H., Sagiv, L., & Boehnke, K. (2000). Worries and values. *Journal of Personality*, 68(2), 309-346.
- Shim, S., & Eastlick, M. A. (1998). The hierarchical influence of personal values on mall shopping attitude and behavior. *Journal of Retailing*, 74(1), 139-160.
- Smith, P. B., & Schwartz, S. H. (1997). Values. In J. Berry, M. Segall, & C. Kagitcibasi (Eds.), *Handbook of Cross-Cultural Psychology* (2nd ed., Vol. 3, pp. 77-118). Boston: Allyn & Bacon.
- Soren, K., & Maibach, E. (1995). The adolescent years. In E. Maiback & R. L. Parrot (Eds.), *Designing health messages: Approaches from communication theory and public health practice*. Thousand Oaks, CA: Sage.
- Stald, G. (2001). *Outlook and insight: Young Danes' uses of the Internet, navigating global seas and local waters*. Copenhagen: University of Copenhagen, Denmark. (Online). Available: <http://www.global.media.ku.dk>
- Steenkamp, J.-B. E. M., Hofstede, F. T., & Wedel, M. (1999). A cross-national investigation into the individual and national cultural antecedents of consumer innovativeness. *Journal of Marketing*, 63(April), 55-69.
- Steinberg, L. (1993). *Adolescence* (3rd ed.). New York: McGraw Hill.
- Stephenson, P. R., & Willett, R. P. (1969). Analysis of consumers' retail patronage strategies. In P. R. McDonald (Ed.), *Marketing involvement in society and the economy* (pp. 316-322). Chicago: American Marketing Association.
- Stern, S. R. (1999). Adolescent girls' expression on Web home pages: Spirited, somber, and self-conscious sites. *Convergence*, 5(4), 22-41.

- Stone, G. P. (1954). City shoppers and urban identification: Observation on the social psychology of city life. *American Journal of Sociology*, 60(July), 36-45.
- Subrahmanyam, K., Kraut, R. E., Greenfield, P. M., & Gross, E. F. (2000). The impact of home computer use on children's activities and development. *The Future of Children*, 10(2), 123-144.
- Subramanian, S., & Mittelstaedt, R. A. (1991). *Conceptualizing innovativeness as a consumer trait: Consequences and alternatives*. Paper presented at the Development in Marketing.
- Suler, J. (1998). *Adolescents in Cyberspace: The good, the bad, and the ugly*: Rider College. (On-line). Available: <http://www.rider.edu/users/suler/psycyber/adoles.html>
- Tauber, E. M. (1972). Why do people shop? *Journal of Marketing*, 36(October), 46-49.
- Timmer, S., Eccles, J., & O'Brien, I. (1985). *Time, goods, and well being*. Ann Arbor: University of Michigan, Institute for Social Research.
- Tootelian, D. H., & Gaedeke, R. M. (1992). The teen market: An exploratory analysis of income, spending, and shopping patterns. *Journal of Consumer Marketing*, 9(4), 35-44.
- Tukey, J. W. (1977). *Exploratory data analysis*. Reading, MA: Addison-Wesley.
- Turkle, S. (1995). *Life on the screen: Identity in the age of the internet*. New York: Touchstone.
- Valkenburg, P. M., & Cantor, J. (2001). The development of a child into a consumer. *Journal of Applied Developmental Psychology*, 22(1), 61-72.

- Venkatesh, A., & Nicosia, F. (1997). *New technologies for the home-development of a theoretical model of household adoption and use*. Paper presented at the Advances in Consumer Research Conference.
- Venkatesh, V., & Brown, S. A. (1998). *A longitudinal investigation of personal computers in homes: Adoption determinants and emerging challenges*. CSI Working Paper, Indiana University (WP-98-01, 1-33).
- Venkatraman, M. P. (1991). The impact of innovativeness and innovation type on adoption. *Journal of Retailing*, 67(1), 51-67.
- Venkatraman, M. P., & Price, L. L. (1990). Differentiating between cognitive and sensory innovativeness. *Journal of Business Research*, 20, 293-315.
- Vinson, D. E., Scott, J. E., & Lamot, L. M. (1977). The role of personal values in marketing and consumer behavior. *Journal of Marketing*, (April), 44-50.
- Washington State Attorney General's Office. (1997). *Consumer education for teens*. (On-line). Available: <http://www.wa.gov/ago/youth/>
- Weithorn, L. A., & Campbell, S. B. (1982). The competency of children and adolescents to make informed treatment decisions. *Child Development*, 53, 1589-1598.
- Westbrook, R. A., & Black, W. C. (1985). A motivation-based shopper typology. *Journal of Retailing*, 61(1), 78-103.
- Youniss, J., & Smollar, J. (1985). *The individual and relations: Adolescent relations with mothers, fathers, and friends* (pp. 160-176). Chicago: University of Chicago Press.