An Exploration of Assessing, Affecting, and Analyzing Attitudes and Attitude Change through the Use of a Multimedia Survey Instrument

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(ABSTRACT)

This study explores the use of a multimedia survey instrument which includes an integrated treatment in the context of a one semester human sexuality course. The instrument was created to assess and affect student attitudes and to improve data collection and analysis options. A literature review on attitudes, attitude assessment, and applications of technology to the affective domain introduces the discussion.

Developed by a team of three university researchers, the survey instrument was created as a stand-alone application using Macromedia Authorware® multimedia authoring system. The instrument was administered to 210 students in a university education technology laboratory via CD-ROM with data collected across the campus network to two remote servers. Due to problems within specific response sets, 21 users' responses were removed from the data set, leaving an N of 189 respondents in the analyzed data.

The application was administered to the students twice, once early and once late in the semester. Each use included demographic data acquisition and two iterations of a 24-item survey instrument with audiovisual and reflective response treatment between them. There were also repines sections on truth of responses and evaluations of the multimedia instrument. The final interactions were opportunities for free text responses with no prompting on content. The four sets of responses to the 24-item survey comprised pretest/posttest data for six pairings of scores across time.

The 24-item survey was explored for the effects of both the multimedia/reflective response treatment and of the human sexuality course on student attitudes. Statistical analysis showed no significant differences in scores among the four iterations of the survey. Further exploration indicated that there were some significant changes for specific survey items.

This document examines the relationship among the elements of the survey and the free responses from the users for further illumination of the quantitative results. Five possible elements that may have affected the survey's outcome are considered in light of the respondents' text input. Themes that emerged from the free responses were identified and explored for possible improvements of multimedia applications for integrated information delivery and data gathering.

Conclusions are discussed and suggestions are made for further study regarding the template on which the application under study was built and regarding other similar multimedia instruments. These include extensions into other disciplines and other types of delivery media.

Because of the exploratory nature of this study, very little can be stated conclusively. The users' reactions to and engagement with the multimedia instrument in this context do suggest broader avenues for such applications. For the moment, this medium seems to present a useful range of options to designers and researchers.

Dedication

To Eileen Moccia, my beloved, for her boundless patience, her kind forbearance, and, most of all, her energetic encouragement, which supported, guided, and propelled me through the process that culminates here; and to my parents, James and Helen Hergert for untold support and faith through years and careers. I wish Papa could be here to read this.

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Introduction

The project discussed in this document represents an exploration of the use of a multimedia survey instrument that employs an integrated treatment in assessing and analyzing attitudes among university students. The project's focus is on the analysis of quantitative and qualitative data gathered by instructor/researchers in a family and child development program's human sexuality course at a large state university in the mid-Atlantic region of the United States. The data were gathered as part of a larger study that seeks to characterize students and their attitudes and attitude changes within the context of a semester-long course.

The current project examined student responses to a multimedia survey instrument that includes text, graphics, photographs, motion video, and a variety of response types. Administered both early and late in the semester, this instrument was designed by a team including one of the instructor/researchers involved in the human sexuality course. Statistical and qualitative analyses of the existing response data have been directed toward understanding the possibility of the interplay and evolution of attitudes during each interaction with the multimedia instrument and through the course of the semester.

Before any analysis of data from an interactive multimedia attitude survey can be begun, it is necessary to consider two regions of study that provide lenses through which to view the current project. Each area is the subject of much work and speculation, and each presents formidable challenges to those who would attempt to understand them.

The first region, the study of attitudes and their formation, alteration, consequences, and assessment, has been approached by researchers in many fields, who either look at attitudes in specific areas of concern or delve into the more difficult regions of what attitudes are, why attitudes exist, and how attitudes are formed and changed. Researchers also probe the power of attitudes and seek to understand attitudes and their effects on "more concrete" behavior and on individuals' perceptions of the external world.

At first glance, the second region, the study of media use and automation in information presentation and in data collection and analysis, may seem a bit distant from the standard pursuits of attitude research. However, when automated information delivery, data collection, and data analyses are employed as methodologies toward further clarity regarding attitudes in particular and the affective domain in general, the study and implementation of these tools are germane to attitude and affective domain research.

For the sake of management and economy, each of these two central areas of concern will be dealt with in turn and somewhat independently. When possible, examples chosen to illustrate and support the points discussing attitude study in general will include technological components to aid the reader in integrating the concepts into the present study.

Chapter 1
Attitude Research

In order to approach the exploration of attitudes, one must begin with a basic understanding of attitudes, their relationship to learning, to behavior, and to each individual's interactions with an external reality. An attitude has been "comprehensively" defined as "a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object.... There are three basic features: the notion that attitude is learned, that it predisposes action, and that such actions are consistently favorable or unfavorable toward the object." (Fishbein & Ajzen, 1975, p. 6). The breadth of this definition allows for broad variance in the application of the definition. This definition is seen by Oskamp (1977, p. 9) as a reasonable distillation of the work of Allport (1935), who assembled a list of seven related but disparate definitions put forth by seven different researchers before 1936 (including his *own* "comprehensive" definition). Oskamp (1977) continues to suggest that attitudes are commonly seen to have three interrelated components: cognitive, affective (emotional), and behavioral, at least in the sense that attitudes are considered to be predispositions to behave in a particular way toward the *attitude object*. Each of these components may also include an evaluative element where the quality of a particular attitude object or class of objects is considered and may influence an actor's predispositions and behavior. The evaluative aspect would be expected to be strongest in relation to the affective realm, a kingdom of shoulds and oughts.

Attitude can be differentiated from the related concepts of *belief* and *behavior*. *Beliefs* are sets of information-based ideas, regardless of whether that information is accurate or inaccurate. Belief does not necessarily have an evaluative component, although it may. It represents only a correlative connection held to be true by the believer. *Behavior* is seen as action and as such is inherently more easily observable and measurable than the essentially internal beliefs and attitudes. (Petty & Cacioppo, 1981). In the study of attitudes and their formation, maintenance, change, and effects, all three concepts—attitude, belief, and behavior—merit close scrutiny.

Even given the many potential points of confusion related to the distinctions described above, most people can and do communicate about attitudes with a relatively clear sense of what they are saying and meaning. Attitude, belief, and their cousin, opinion, are the subject of much conversation, polite and otherwise, and there is a great deal of common sense knowledge connected to them. To say that someone has an "attitude problem," "cops an attitude," or has a "bad attitude" conjures immediately recognizable images for many people in modern American society. Frequent references to attitude in humor and in entertainment in general attest to our culture's collective understanding of the term. Modern usage of the term actually harks back to an earlier usage meaning physical posture. We can easily portray a person with an "attitude" as someone who is "posturing."

However, the apparent ease with which we think we understand each other in conversation about attitudes actually can make theoretical and analytical discourse more difficult. Petty and Cacioppo's (1981) distinctions, especially between attitudes and beliefs, are often ignored in conversations and other forms of informal discourse, especially with the omnipresence of opinion in quotidian communication. The tacit understandings we seem to share can obscure the more problematic aspects of attitudes and their assessment. Eiser (1994) presents a succinct point/counterpoint description of some of these complex connections:

> It is common sense (and true) that we acquire attitudes through learning and interaction with our environment: but how does such learning coalesce to produce the feeling we call an attitude? It is common sense (and true) that we can discuss our attitudes with other people: but how can we understand the private events of other minds? It is common sense (and true) that our attitudes are *about* things that happen in the real world: but how can things that happen 'out there' produce (and be represented in) feelings 'in here'? It is common sense (and true) that our attitudes have a great deal to do with how we choose to behave: but how exactly should this relationship be regarded? It is common sense (and true) that we need a brain in order to have attitudes: but what is it about the brain that allows us to have *our* kinds of attitudes (or any attitudes at all)? More controversially, perhaps, it is common sense that a computer can not have an attitude. (p. 2).

Recognition of the truth in Eiser's common sense statements and understanding of the complexity of his questions combine to insist that accepted conversational exchanges about and around attitudes are far from precise. To see and understand attitudes at all clearly, it becomes necessary to approach their exploration much more systematically.

Assessment of attitudes has been accomplished through myriad means by various researchers with greater and lesser degrees of success. The methodologies and theoretical structures they have embraced delineate a broad range of possible approaches to, and explanations for, attitudes and their relationships to individuals and their behavior. Thurstone (1928) is often cited as an important pioneer in attitude measurement and theory. He holds that the key to measuring and thus understanding attitudes is to locate them *in context*.

> It will be conceded at the outset that an attitude is a complex affair which cannot be wholly described by any single numerical index.... We say without hesitation that we measure a man when we take some anthropometric measurements of him. The context may well imply without explicit declaration what aspect of the man we are measuring, his cephalic index, his height or weight or what not. Just in the same sense we shall say here that we are measuring attitudes. We shall state or imply by the context the aspect of people's attitudes that we are measuring. The point is that it is just as legitimate to say that we are measuring attitudes as it is to say that we are measuring tables or men. (Thurstone & Chave, 1929, p. 6).

Contextualizing the explorations is critical when working with attitude research. Any data gathering must include sufficient information about the subjects and their sociocultural environment and subsequent analysis must account for these variables. In some circumstances it may be possible to temporarily create or exploit a common frame of reference or set of shared experiences as the context for specific inquiries.

The issue of context returns us to Eiser's questions above. These questions can serve as an organizer for beginning the exploration of research done regarding attitudes and on their effects on people's lives, and how to assess both of these phenomena. The following numbered main questions are adapted from Eiser, while the underscored corollaries are this author's. Both sets will help to shape the following discussion of attitudes.

1. How do learning and interaction with the environment coalesce to produce the feeling we call an attitude? How can information and stimuli from the environment, including instructional or educational events, create new attitudes or effect changes in the existing attitudes of individuals and groups?

2. How can we understand the private events of other minds that we know and discuss as attitudes? What tools can best aid us in the assessment of these private events?

3. How can things that happen 'out there' in the real world produce (and be represented in) feelings 'in here' in our private selves? What specific types of external stimuli have most and least powerful, consistent, and measurable effects in our private selves?

4. How should we regard the relationship of our attitudes, explicit or implicit, to how we actually choose to behave? How much of behavior (and learning) can be predicted by attitude assessment?

5. What is it about the brain and the thinking process that allows us to have *our* kinds of attitudes (or any attitudes at all)? What elements of cognition are affected by external stimuli to result in attitude change?

How do learning and interaction with the environment coalesce to produce the feeling we call an attitude?

Most modern definitions of attitude include the idea, as above, that attitudes are learned, and in some sense malleable. That is, continued learning can result in changes in attitude. There is thus a general agreement that attitude has a learned component and that behavior that is influenced by attitudes can cause learning in its own right. This connection implies that there is a series of mechanisms by which attitudes may be learned or changed through learning.

Classical conditioning is a well-documented and heavily researched type of learning. A central tenet is that if an actor receives reinforcement for an action, that action is likely to be repeated. This is also characterized as learning an attitude "in a 'direct' manner." (Gagné & Driscoll, 1988, p. 97). An attitude is learned as a result of positive experience with the object of the attitude. An action that results in praise, success, or a combination thereof will foster a positive attitude and a predisposition toward the activity that spawned the positive experience.

An internalized form of classical conditioning can exist wherein the actors generate their own positive experiences in the form of increased comfort in the consistency of their own beliefs. When by stating, reflecting on, and restating one's beliefs or attitudinal leanings, the attitudes themselves evolve to be more coherent and thus more easily defensible, the attitudes *as finally expressed,* not necessarily as originally held, are reinforced.

> Like Wyer, McGuire (1981) has also addressed the notion of *changes* that occur in belief systems. One type of change that has been documented is called the *Socratic effect* (McGuire, 1960a). This refers to the tendency for belief structures to become more logically consistent simply as a result of asking people to express their beliefs. Presumably, when a person's beliefs about an issue become salient, the strain toward logical consistency increases. Operationally, the Socratic effect has been demonstrated by showing that the

> correlation between the obtained and predicted ratings of the probability of a conclusion is greater in a second rating than in an initial one. (Henniger & Wyer, 1976; Rosen & Wyer, 1972). (Petty & Cacioppo, 1981, p. 191).

In an experiment partially designed to measure this Socratic effect, Linz, Fuson, and Donnerstein (1990) worked with male college students "to mitigate the effects of portrayals of violence against women" (p. 641). Subjects watched "an educational documentary on the impact of 'slasher' films and two rape-education films" (p. 641) and then wrote about the subjects covered. Two groups were assigned to write essays on myths of sexual violence in which they advocated antirape positions while a third group wrote neutral essays on media use. The members of one of the antirape groups and of the neutral group were each videotaped reading their essays aloud and then joined their fellows in watching a playback of the readings. The second antirape group wrote and exchanged essays among themselves, but were neither videotaped nor saw the videotapes of those who were. Two control groups were included in the study. One control group saw a neutral videotape on television-related topics and the final control group only completed the outcome portions of the study's surveys with no intervention.

Later, after watching clips from "slasher" films, the men saw a videotaped dramatization of an acquaintance rape trial. They were asked to evaluate both the slasher films and the situation portrayed in the reenactment. The results were mixed for this study, with the most significant findings being that receiving information, reflecting on that information, and expressing the results of that reflection seemed to cause subjects to more strongly hold the perpetrators rather than the victims responsible in cases of sexual assault against women. Simple exposure to relevant information had some effect, but the effect increased with the subjects' involvement in expressing their own ideas.

Observational learning, on the other hand, is the result of ignoring the old admonition to "do as I say, not as I do." Studies with children regarding charitable actions have shown that imitation of actual observed behavior is more likely than is acting in accord with verbal advice or admonitions that are in opposition to the observed behavior of some model. (Bryan, Redfield, & Mader, 1971; Bryan & Walbek, 1970; Rushton, 1975: as cited in Petty and Cacioppo, 1981). For adult learners such as the targets of advertising and educational "campaigns," Bandura (1965) distances subsequent actions from the acquisition of attitudes or the learning of information, stressing an actor's ability to weigh the relative costs of an action against its potential benefits. That is, if by observing the actions of an exemplary model an individual believes that it is possible to share in the same good fortune being enjoyed by the model *and* that the cost of copying the model's actions is not too great to offset the benefits, then the observer will follow the model's example. Gagné and Driscoll (1988) stress the value of an already established object of admiration as a model for the potential actor. The fate of the gifted athlete or talented musician thrust into the life of a highly scrutinized role model attests to the power of this phenomenon. Testimonial advertisements for products of every stripe are attempts to capitalize, quite literally, on this learning activity. By the same token, advertisements that show young, beautiful, wealthy people enjoying life even more because they use a certain product work on the same impulse, and on the assumption that targeted consumers find youth, beauty, and wealth admirable. By extension then, practitioners who would wish to affect attitudes through media would need to use models who would strike chords of identification and admiration in their target audiences.

How can communicated information and designed stimuli from the environment create new attitudes or effect changes in the existing attitudes of individuals and groups?

Recognizing the mechanisms that operate in the above learning situations, anyone who is interested in affecting attitudes must design appropriate experiences for the intended audiences. Whether the designers aim to educate, seduce, or sell, they choose one or more of the learning strategies above and employ more or less sophisticated techniques and technologies to communicate their intended ideas. Linz, et al. (1990) designed their interventions to affect their subjects' attitudes by informing them about the target issues and by involving them in those issues through their own writing and "public" reading of their work. Viewing the videotapes of themselves and others advocating particular positions then reinforced the Socratic effect with observational learning. Witnessing themselves and their peers espousing these positions served to elevate the value of the positions. Assuming the whole experience to be positive, the activity itself served to reinforce not only the behavior of participating in a study, but also reinforced the attitudes that resulted from the personal work within the study.

How can we understand the private events of other minds that we know and discuss as attitudes?

As with most human attempts at understanding one another, this endeavor centers on issues of communication. All of our interactions with other humans involve some measure of shared reality. Our effort, skill, and desire employed in exploring shared realities govern the extent to which we can share the private events of our minds. Eiser (1994, p. 91) harks us back to Berkeley and his perceptions of a cherry. For Berkeley, the cherry's existence is in the sum of its perceivable attributes. The evidence of his senses convinces Berkeley that a particular cherry exists. His description of its attributes and our previous experience of its relatives combine to convince us that not only Berkeley's particular cherry, but rather a whole class of things called and perceived as cherries exists outside of ourselves. Positing an existence outside of what can be perceived, an essence of cherry, is a much more tenuous proposition.

Attitudes, unfortunately, cannot be directly perceived, even if they can be, and are, easily discussed. These private events can be shared either by explicit expression or through observable behavior. Clear and unambiguous expression of one's attitudes, whether in casual conversation or within a tightly structured survey, depends on a complex web of interconnections. The elements of communication—source, content, medium, receiver—must be finely tuned and well understood when attempting to relate intangibles from inside one mind out into the world and into another mind with its potentially vastly different set of experiences and internal characteristics. The responsibility for, and possibility of, accuracy shift depending on the structure of the exchange. No matter what the medium chosen—spoken, written, visual, aural, or other sensual stimuli—the words, sounds, visuals, symbols, or experiences used must have shared meanings for the communicators for intelligible communication to come about. There must be strategies and tactics for assessing the degree to which those meanings truly are held in common so that the communicators can adjust their interactions toward clearer and more effective exchanges.

In a political discussion, for example, my desire to convince someone else of the wisdom of my attitudes and thus the wisdom of the other's adoption of, and action on, them will shape my communicative activities. The onus is on me to portray the attitudes and their logical behavioral outcomes clearly in order to win a political convert. The presentation can be free-form and improvisational with constant feedback and reiteration to ensure that the attitudes

are properly represented. While no guarantee against miscommunication, the availability of feedback, especially in a face-to-face setting, can be an invaluable asset toward obtaining accurate expression and understanding of attitudes.

A stand-alone written or recorded expression or description of attitudes cannot easily employ reiterative feedback to aid in clarity. Therefore, it must be specific, unambiguous, and complete in its own right. Cultural or experiential divisions among the communicators can be especially troublesome when using a one-time-only construction to convey the complexities of a given set of attitudes. The analysis of qualitative research artifacts depends on these types of records even as their potential ambiguity challenges qualitative researchers to carefully cross check and triangulate attitudinal information whenever possible (Silverman, 1993).

When researchers set out to assess the attitudes of a particular individual or group, they assume the responsibility for creating instruments that will accurately and reliably gather relevant information from the sample population. An instrument designed to elicit expressions of attitudes must prompt responses without unnecessarily constraining the respondents. While related to the written or recorded forms discussed above, this catalytic device requires more of the designer than either of the previous forms. When an informant is asked, with minimal guidance, to freely express opinions and attitudes either in conversation or through some recorded or written medium, there can be a good chance for the record to reflect the informant's true assessment of the situation. The more the researcher shapes the discourse, the greater the risk that something vital will be missed or minimized or that something trivial will be reported as central.

For management's sake we must streamline the handling of information if we are to use it effectively. Conversely, when a course of inquiry is too tightly defined or its parameters too carelessly assumed, the value of the information acquired can be greatly compromised.

> If we can categorize things more inclusively, we can formulate attitudes toward *classes* of objects or issues, and these general attitudes will tend to be predictive of opinions on specific objects within a class. The main danger lies in assuming that objects form a class when, from the perspective of the individual, they may not. Can nuclear weapons be classed together with nuclear power stations or underground storage of nuclear waste to form a single attitude object called 'nuclear power'? Does saving water go along with buying 'ozone-friendly' household goods and recycling glass bottles to constitute a single concept of 'environmental conservation'? These are empirical questions, and the answers will depend on whom you ask and when. (Eiser, 1994, p. 148).

The definitional connection of attitudes to behavior leads us to search for concrete and constant correlations among particular attitudes and particular behaviors *in context*. For Fishbein and Ajzen (1975, p. 14), the "intention to perform a variety of behaviors" toward an attitude object grows out of the total affect associated with the interplay of positive and negative beliefs about an object. It follows that if the relationships of particular behaviors to particular attitudes can be understood, then those behaviors can be windows on the private internal world of attitudes.

<u>What tools can best aid us in the assessment of these private events?</u>

As stated earlier, effective communication skills and tools are central to any expression, solicitation, or assessment of attitudes. To bring the private events of the mind into a public sphere for examination and analysis, those events must be externalized as some form of

behavior. Communicative behavior would seem to be a relatively straightforward approach to externalizing mental activity. The tools then, for the individual who would share attitudes or for the researcher who would explore them, must include language skills, Dewey's "tool of tools" (Hickman, 1992, p. 44), and the tools of Reich's symbolic analyst. "Students should learn to articulate, clarify, and then restate for one another how they determine questions and find answers. Rather than be trained to communicate specialized instructions and requests—skills relevant to high-volume standardized production—students should learn how to share their understandings, and build upon each others' insights" (Reich 1988, p. 23).

Assessment tools must be designed to maximize the effectiveness of communication about attitudes, and to allow for effective management of the data acquired. In constructing instruments to measure and "quantify" attitudes, it is common and effective to use relative measures in which one attitude object is evaluated in relation to or in opposition to another object. According to Mueller (1986, p. 79) "it could be argued that evaluation is *always* ultimately relative. In any case, it is clear that items requiring comparison of the attitudinal object with alternative objects work well in attitude scales. Some attitude objects seem, particularly, to require a relative judgment." Tools such as Likert and semantic differential scales work effectively in defining the sphere in which such comparisons are to be made. Generalized scales such as the Purdue Master Attitude Scales use comparisons with stated or implied alternative objects for most of their assessment. The prospect of using automated instruments both for their capacities to deliver information and to present choices in specialized forms and for their utility in streamlining data collection and management presents researchers with new highly flexible design options.

How can things that happen "out there" in the real world produce (and be represented in) feelings "in here" in our private selves?

In the definitions already reported here, each of the elements included in the concept of attitude have a relationship to the real world "out there." Attitudes are *learned* and learning can be seen as an internalization of external experiences that produces a change inside the learner. The stimuli which provoke learning are often external to the individual. A set of experiences with some automobile sales personnel can engender beliefs that help shape attitudes toward the entire automobile sales force. The subsequent behaviors based on the attitudes formed will contribute to a new set of experiences which will reinforce or contradict the existing beliefs and attitudes. At some point, the rate of change in attitudes based in these experiences slows to the point at which the attitudes can be said to be fixed. It is the then "fixed" attitudes that are the internal results of external "real world" influences. Consistency of favorable or unfavorable actions toward an attitude object then may follow from the attitudes developed.

The attitudes thus formed become part of the individual's private self, which can be shared through various means of communication, but can never be completely known by another. The feelings that are integral to attitudes held can be difficult to describe and communicate, precisely because they are feelings. There is, however, an apparent continuum of emotion that can be communicated and discerned.

Dawes and Kramer (as cited in Dawes, 1972) have explored this continuum. Their study in which they used recordings of dramatic readings of a neutral text to test whether intended emotional content of vocal expression would be perceived as the intended emotion can serve to describe an example of such a continuum. Their results described an affective continuum with anger at one end and love at the other, a "lovingness scale," based on the frequency with which subjects correctly identified or misidentified a projected emotion, whether the words were intelligible or not. The poles of this scale were not love and hate, but rather lovingness and anger. The actors' attempts to project a given emotion were successful in

connecting their own affective sensibilities with their audience's, presumably because of shared interpretations of the meanings of the emotions portrayed and their means of portrayal. The researchers' and actors' manipulations of the external world of the subjects was effective in that target emotions were invoked through understanding the connections between the choices made in dramatic delivery and the likely perceptions of the audience.

What specific types of external stimuli have most and least powerful, consistent, and measurable effects in our private selves?

Much of the research on persuasion done in the last half century has concentrated on just this question. Research into persuasion presented via motion pictures was conducted at Yale University, beginning in the late 1940s. The conclusions were that neither the content nor the style of persuasive verbal presentations were nearly as important as the *source* of the information in predicting effectiveness (Gagné, 1977, p.248). The relationship of the source to the audience members is a crucial factor. The attractiveness of the communicator to the audience plays a central role. Emphasis on designing interventions for maximum credibility, attractiveness, and identification with the intended audience will therefore help to ensure effective communication of target ideas and emotions. It would seem that a well produced and credible fiction in which the characters embody these qualities could be as effective or more effective than a presentation by a known figure.

> Interactions among attitudes and their related beliefs, emotions, and behaviors can combine with external stimuli to change existing attitudes and aid in the formation of new attitudes. If one attitude is changed by external stimuli, then other connected beliefs can be expected to change in the same general direction. The most important contributions of the probabilogical models of Wyer and McGuire are: (1) that there is a strain of hedonic as well as logical consistency in beliefs; and (2) that an induced change in one belief is capable of producing a change in a logically related belief, even though the related belief is never mentioned or attacked directly by a persuasive message. (Petty & Cacioppo, 1981, p. 192).

The web of experience, beliefs, and attitudes from which new attitudes form or within which attitudes are altered can be influenced from many directions and by varied means. Every new experience, each fresh piece of knowledge, and all even slightly relevant beliefs can affect the sets of attitudes we have constructed within ourselves. Gagné (1977) lists internal and external conditions necessary for learning related to attitudes. Internally, the learner must have a usable understanding of the target concept or concepts, a connection (as above) with the source of information, "a set of concepts pertaining to the personal action to which the attitude relates," (p. 250) and a body of information that is sufficient to facilitate good choices related to the target attitudes.

Understanding of concepts and possession of knowledge are not sufficient to effect attitude change. External conditions must also be met to catalyze change. The actions of a model can direct first the attention, then the intention, and finally the action of the audience toward new or altered attitudes. The model must be credible to the audience for some reason. The model already may be known to the audience, an introduction may give the model's credentials, or the construction of a fictional milieu may create a relationship between the model and the audience. Demonstrated reinforcement of the model's choices and anticipated reinforcement of the audience's choices combine to strengthen the message toward change in target attitudes.

> At present, the literature on source credibility can be summarized by saying that there is considerable evidence that the perceived competence of the source adds to the impact of the communication on the informational portion of the recipients' attitudes, evidence that the co-orientation of the source facilitates changes in recipients' likes and dislikes, and the qualified suggestion that confidence in the source's trustworthiness enhances persuasion. (Petty, Ostrom, & Brock, 1981, p. 161).

How should we regard the relationship of our attitudes, stated or not, to how we actually choose to behave?

The connection between attitudes and behavior is probably the most challenging area of attitude research in which to work. Definitions of attitude commonly include reference to behavior or the intention to behave. Research has borne out the existence of some connection, but the results are mixed. Thurstone (1929) explicitly removes the connection from his considerations.

> The measurement of attitudes expressed by a man's opinions does not necessarily mean the prediction of what he will do. If his expressed opinions and his actions are inconsistent, that does not concern us now, because we are not setting out to predict overt conduct. We shall assume that it is of interest to know what people *say* that they believe even if their conduct turns out to be inconsistent with their professed opinions. Even if they are intentionally distorting their attitudes, we are measuring at least the attitude which they are trying to make people believe that they have. (p. 9).

In the time since Thurstone's pioneering work, the concern for attitudes as predictors of behavior has grown considerably. Some of the largest controversies among researchers into attitudes remain in the realm of how and why attitudes affect behavioral choices. Historically, however, attitude measures have not been especially accurate predictors of subsequent behaviors.

> There are three major reasons for the lack of predictive success of attitude measures: (1) The reliability of the attitude measures used in these studies is sometimes quite low. (2) People don't always act in accord with their attitudes. (3) There is sometimes dissimilarity in the attitudinal and behavioral objects studied. (Mueller, 1986, p. 63).

The tension between attitudes as reported and behaviors as performed has been at the heart of attitude research almost since its beginnings (Thomas, 1907; Thurstone, 1924, 1929, as cited in Kahle, 1984). Systematically overcoming Mueller's three factors is central to improving our understanding of the relationships we wish to study. More recent work, typified by Fishbein and Ajzen (1977) has begun to concentrate on distilling elements and attributes of beliefs, attitudes, behaviors, and individuals, working toward sorting out the ranges of variables in each sphere that are essential to their relationships. There can be major discrepancies among an attitude, an intention to act, and a particular behavior (Fazio, 1986). Determining why the differences exist and predicting the shape and impact of the differences has become a focus of much research.

> It is possible to assess a person's attitude toward performing some behavior directly by asking the person to rate the performance of the behavior on a series

> of evaluative semantic differential scales (good-bad, favorable-unfavorable, etc.). According to the theory of reasoned action, however, attitudes are a result of the information that a person has about the attitude object. An alternative procedure for assessing attitudes, then, would be to measure the *salient* (readily available) beliefs that a person has about an attitude object. [Derived from Fishbein & Ajzen, 1975, 1981]. (Petty & Cacioppo, 1981, p. 194).

In the 1980s the Deutsche Forschunsgemeinschaft (DFG), the German analog to the U.S. National Science Foundation, supported a "large-scale, cross-university research project on the relationship between attitudes and behavior" (Upmeyer, 1989, p. v). The results of that project have been reported, not just by compiling the results of the research, but also in an attempt to synthesize the findings and place them in context with preceding and continuing work by other researchers.

Fishbein and Ajzen's work, especially in regard to the (1980) "theory of reasoned action" was treated extensively by the researchers in the German studies. The consensus seemed to be that the theory is often apparently applicable, but that general predictor models are ultimately flawed and that "predictor models of medium range which take into account the characteristics of the behavioral categories to which they are addressed may prove superior over general models of behavior prediction" (Six, Krahé, & Eckes, 1989, p. 164). One conclusion of their study was the identification of "the need for a taxonomy of behavioral categories that is empirically demonstrated to be valid in relation to the task of differential prediction of behaviors located in different categories" (Six, et al., p. 179). A taxonomy so constructed would give researchers another tool for more tightly classifying and defining behavior, and thus its relationship to attitudes could be better explored.

The final chapter in Upmeyer (1989) describes three experiments in which the goals were to induce and measure attitudes using various media (Roth & Upmeyer, 1989, pp. 217-253). In both children and adults, the experimenters were able to elicit behaviors as displays of particular, sometimes induced, attitudes. For the children in two studies, the stimuli for the target attitudes were a mix of slide shows, super-8 motion pictures, verbal instructions, and physical props—all dealing with how to relate to a toy doll that was presented either as a constructive or destructive force in a fictional slide show. The children's play behavior was reviewed via videotape by evaluators who input their ratings directly into a computer for analysis. Behavior toward the doll was consistent with the positive or negative stimuli provided by the experimenters through the doll's portrayal in the fictional piece, the filmed adult's interactions with the doll, and/or the role (e.g., good witch/bad witch) assigned each child. Some positive bias was noted and attributed to generally favorable attitudes of children toward dolls and toys and the subject's apparently positive experiences of the experiment as a whole.

The third study used a randomized series of projected cartoons, "20 nonsense and 20 women-related". Adult male and female subjects were asked "to judge each cartoon on a scale from -3 (very disgusting) to +3 (very funny)" (Roth & Upmeyer, 1989, p. 244). Their ratings (judgment modality) were collected and their facial and vocal reactions were recorded on videotape (non-verbal modality) and later analyzed by trained independent raters and recorded via microcomputer. In some instances, the subjects could see their reflections in a mirror and monitor their own facial reactions. A complex pattern of responses did confirm connections between stated attitudes (judgment) and actual reactive behavior (non-verbal) although the correlations varied considerably. Somewhat predictably, the women's responses to the "women-related" cartoons were much more negative than the men's. The women's responses to the neutral cartoons also were more negative than the men's, perhaps because the neutral cartoons were displayed in context with the "women-related" cartoons. These three studies

worked together to explore not only how attitudes are induced, but more important, how they are expressed through behavior.

The German studies seem to point to some new directions in attitude research that will more directly connect attitudes and behavior by better defining each and discriminating within broad categories. Their use of both communications media and computer technologies shows promise for effective new experimental methods and integrated management and analysis of data.

How much of behavior (and learning) can be predicted by attitude assessment?

This question can be answered well only if one can make clear distinctions among the conditions and attributes of both attitudes and behavior that only recently are beginning to be delineated. The taxonomy of behaviors called for above (Six, Krahé, & Eckes, 1989), along with the discriminations shown to be possible by Roth and Upmeyer (1989), will provide useful tools in this endeavor. It is becoming increasingly clear that the more we know about given subjects or populations, the better we can characterize their attitudes and the strength thereof. It seems to follow that this improved portrait of the subject(s) can include an improved structure within which behavior can be predicted more accurately based on attitude assessments weighted by factors of demography, commitment, salience of beliefs, and so on.

The connections between attitude and behavior have not been well understood. With the new tools and techniques and with enhanced understanding of both attitudes and behavior, it may become possible to develop a clearer understanding of the links that are believed to exist. For now, however, the ability to measure the predictability of behavior based on attitude assessment remains a goal, not an accomplishment.

What is it about the brain and the thinking process that allows us to have *our* kinds of attitudes (or any attitudes at all)?

A cognitive component of attitude appears in every definition. Attitudes are seen to be the result of learning from a variety of sources. We know that understanding of concepts and possession of information are integral ingredients of beliefs and of attitudes (Gagné, 1977). Kahle (1984) synthesizes the work of others, beginning with Piaget, to suggest that attitudes are specialized cognitions useful in the process of adaptation to the environment. They are the result of an abstraction process that "emerges continuously from the assimilation, accommodation, and organization of environmental information by individuals, in order to promote interchanges between the individual and the environment that, from the individual's perspective, are favorable to preservation and optimal functioning" (p. 5).

Simply put, we mentally distill our experience and other information learned into shorthand information sets that we can call on quickly to aid us in dealing with new situations. It is, by necessity, an interactive process that evolves as our base of experience and knowledge grows. Because the mind is nearly always active, the evolution of attitudes is continuous, and the rate of change is what distinguishes more or less fixed attitudes.

What elements of cognition are affected by external stimuli to result in attitude change?

Research suggests that with the acquisition of new information and the enhancement of old information, whether simply by acquiring facts or through direct experience, attitudes can change. Assimilation of new data into existing schemata either will strengthen existing attitudes or alter them, but slightly. Accommodation of radically different information into an attitude set

can cause major change, and organization that integrates new and existing information can reshape attitudinal structures in terms of access to the frame of reference. Each new stimulus must be evaluated and processed *in context* from the immediate perspective of the individual (Krahé, 1989). Attempts to isolate the effects of particular stimuli that do not account for the various contexts—personal, social, cultural, temporal, and so on) that an individual brings to an experience will risk error. For example, an evolving personal relationship with a person of a given ethnic group may affect an individual's attitude toward others in that group. If that personal dynamic were not included in an attitude assessment, the information generated through the assessment could be misinterpreted.

This is largely a process of reflection related to the Socratic effect already discussed. An individual perceives new stimuli within a given situation and reflects on that new stimuli. Attitudes and beliefs already held interact with the new perceptions to create a new attitudinal condition. If the new information is congruent with existing attitudes, the reflection period probably will be brief, and little change is likely. On the other hand, if there is conflict between the present perceptions and extant attitudes, or if the new information highlights internal conflicts in the attitude structure, the resulting tension may well spur deeper introspection and force new and different attitudes, and, perhaps, behaviors. When a set of operant norms enter and increase the tension, the individual's reflective task is further complicated, and subsequent behavior may have to be in conflict with the developing beliefs and attitudes (Fazio, 1986).

> First and foremost, we can infer that attitudes involve selective information-processing. The way things are interpreted will depend on the perspective from which they are viewed. The ease of passing from one thought to another will depend on the paths by which they are associated. (Eiser, 1994, p. 182).

Related to the somewhat fluid nature of attitudes is the concept of cognitive consistency. Research has shown that when faced with discrepancies between stated attitudes and performed behaviors or when made aware of logical inconsistencies among stated attitudes or between attitudes and behaviors, individuals will be likely to change their stated attitudes toward a more consistent and logically coherent structure.

A much-tested mechanism of attitude change employs cognitive dissonance to confront subjects with the inconsistencies in their attitudes. Cognitive dissonance usually results from one or more inconsistencies between the affective (emotional) and cognitive (rational) elements of a particular attitude set. Rosenberg (1960) states that attitude change subsequent to encountering dissonance comes in one of two forms: 1) new information will induce a change in the affective response to the attitude object (i.e., an entirely new response will exist where there was none or an existing response will evolve to reduce the tension); or 2) a new affective response, usually based in some positive or negative experience with the attitude object, will cause the individual to rethink the cognitive response that had been part of the attitude toward the object, or create a new response where there had been none. The tolerance of each individual for cognitive dissonance will govern the degree to which either the affective or the cognitive components of an attitude set are altered in response to a perception of dissonance.

Multimedia and computer technologies as specific methodologies for stimulus presentation and automated data gathering and analysis

Although computer interactive multimedia as recently defined are too new to have been thoroughly examined either as information systems or as instruments for data collection, it is possible to look to the research regarding the various elements that can be included in

multimedia for some understanding of the possibilities for its application. A central trait of multimedia is evident in the term itself, *multi*media. The awareness that previously separate media are combined and managed somehow within a computerized system, directs us toward a beginning point from which each medium or task set can be analyzed. Various media have been used in attitude research and practice, especially as sources for stimuli for attitude inducement or change. A brief survey of some of those uses will prove valuable in further discussions of multimedia applications, accomplished and imagined.

Multimedia use in affecting attitude and in attitude research

Virtually all communications systems and media, especially those that can be called "arts" have affective components. The first dancers around the fire may have intended to share their own feelings about the hunt just completed—the anticipation in the search, the labor in the tracking, the fear of the animal's fangs and claws, and the exhilaration of success were conveyed through the *media* of sound and movement.

Petroglyphs, religious myths, epic poems, and theater all touch humans in their emotions, and most creators intend that their audiences feel something, learn something, and act on their new state of awareness. The combined effect of these responses in the affective, cognitive, and behavioral realms that make up attitude can effect changes in attitudes. Thus attitude change may be seen as an obvious goal for much aesthetic communication. Modern mechanically or electronically reproduced aesthetic artifacts share these goals and intentions with their historical counterparts. However, recognizing artistic intent and measuring its success are quite different endeavors.

Many researchers have used examples of aesthetic communications in studies involving facets of attitude inducement, influence, and assessment. Some of the work discussed in the last sections used audiovisual media, and those elements will be discussed later. Mass communications, especially advertising, are prime examples of aesthetically executed productions that aim to affect audience attitudes (Oskamp, 1977).

The advent of multimedia and computer interactive technologies has created opportunities for new types of connection between audiences and aesthetic expressions. As these means of expression evolve, more work is being done toward understanding their potential contributions to attitude creation and change.

Multimedia for public education on mental health issues

A project developed by researcher/educators at the Missouri Institute of Mental Health serves as an example of such an attempt at understanding and an exploration of a multimedia application in a specific context. They created a multimedia exhibit consisting of a fixed display and a multimedia computer program for public education on mental and addictive disorders (Epstein, Sage, & Wedding, 1995). With two different populations (adult science center patrons and high school students), they were able to show significant improvement in knowledge about mental and addictive disorders and significant positive increase in attitudes toward persons with mental illness, using a 27-item Likert type pretest/posttest questionnaire. The study included a no-treatment control group and controls for pretest sensitization via a posttest-only group.

The gains for the science center patrons, while significant, were relatively small, probably because of the prior knowledge of the sample, 51% of which were mental health or healthcare providers. The learning gains and attitude changes for the high school students were

considerably larger, presumably because they started with lower knowledge scores and less positive attitudes than did the adult science center patrons and because they spent more time on the interaction.

The control for pretest sensitization and the simple pre/post structure suggest that the only external stimuli acting on the subjects were elements of the exhibit and the multimedia application. The Authorware-based multimedia presentation included professionally produced text, graphics, photographs, audio, and motion video resources to illustrate the informational and conceptual content of the piece. Users had some navigational control as they toured the "Mental Health Studios," wherein different artistic media were metaphorically associated with different mental and addictive disorders. While it would take nearly two hours to explore every option in the program, the mean interaction lengths were 4.24 minutes for the adult users and somewhat more for the students, the longest adult interaction being 25 minutes. It is noteworthy that even these limited exposures yielded significant changes in knowledge and attitude. This particular multimedia application proved to be a useful educational tool in the contexts of the science center and the high school library.

The delivery method for the assessment instruments used in the Missouri study is not described in the article, but it seems that the attitude questionnaire was administered on paper and the data later input into whatever analysis systems they employed. In the context of their survey and of this paper, their use of paper and pencil rather than an electronic data gathering tool can be seen as a missed opportunity.

Computer use for data acquisition and data management

Computers offer an avenue for quickly and effectively gathering and processing many types of information, often in complex forms. There is a long history of the use of computers in the analysis of information collected through many avenues, including surveys of various types. In some of the work discussed above, computers were employed not only as calculating machines for statistical analysis, but as data gathering devices (Roth & Upmeyer, 1989). The common use of "opscan" forms and other electromechanical information input systems illustrates the accepted utility of mechanized data handling.

The following paragraphs will attempt to illustrate how the tradition of inquiry described in the previous section can be continued and enhanced through the integration of interactive multimedia as an experimental methodology with computer-based data acquisition, management, and analysis tools. Much of the technology to be discussed is only recently available in the proposed forms, so that the body of work already accomplished with these tool combinations is limited. The discussion will use examples from extant studies in attempting to show how similar studies could be conducted effectively and economically by employing appropriate multimedia technologies.

McLuhan points out "that any technology gradually creates a new human environment" (1964, p. viii). It can be argued that the recent rapid acceleration of technological change has greatly accelerated the rate of creation of new environments for many humans. Ever increasing interaction with computer controlled tools and systems is a dominant feature of our evolving environment.

Recorded media, whether read on the page by the subject or reproduced audiovisually to an audience, are often used as stimuli for experimentation in the affective domain and especially in attitude research. Recorded messages such as those used by most of the studies cited earlier, have the advantage of being consistently repeatable without the risk that each new

researcher or assistant will somehow color the delivery, as might happen if each presentation of a stimulus to a subject were performed fresh, even by the same presenter. It is also relatively easy to randomize the presentation of recorded stimuli and to alter their forms and content systematically to serve the goals of a particular study. (Dawes, 1972; Roth & Upmeyer, 1989).

As a logical extension of recorded stimuli, multimedia applications can provide a rich environment for stimulating user thought processes (Epstein, Sage, & Wedding, 1995), eliciting user reactions, and aggregating and analyzing data. The stimulus presentation and data collection activities of a study can be integrated for the convenience of the research team and to present subjects with a more comprehensible and "user-friendly" experience (or a more foreboding, complex, and arcane experience if that suits the needs of the project). In a multimedia presentation of a survey instrument, for example, item order can be randomized automatically for each participant, and feedback or reinforcement can be given automatically (or randomly). The ability to use a variety of stimuli, to create alternative interaction mechanisms, and to tailor instruments easily to specific contests presents instrument designer s with new tools and fresh ways to implement old techniques.

Three illustrative studies

The Roth and Upmeyer (1989) studies previously cited made use of somewhat primitive forms of "multimedia" in their presentation of stimuli, in their recording of subject reactions, and in tracking the activities of their "independent raters." A tour through the various elements of their studies will allow inspection and speculation regarding where and how their activities might have benefited from access to more integrated multimedia technologies for stimuli presentation (Epstein, Sage & Wedding, 1995) and data acquisition and analysis.

In this journey, it is important to keep in mind the increasing sophistication of audiences at all levels. Media consumers in developed nations are so heavily exposed to well-produced, high quality media presentations that the lowest acceptable level of quality for a presentation is higher than ever before. In order to affect the audience, a presentation must first engage them and keep them engaged (Oskamp, 1977).

The presentational elements and media applications were employed in the following manners in Roth and Upmeyer study one:

1. The female experimenter spent a short period to become acquainted with the subject and parents, including giving instructions to the child.

2. The child watched a synchronized slide/tape presentation of one of two (A+ or A-) fantasy stories involving a toy doll that was the attitude object for the study.

3. The child responded to a 10-item bipolar adjective scale (probably spoken by the experimenter) to assess the induced attitude toward the doll.

4. The child watched one of two sound-on-film super-8 movies that showed an adult female model interacting with the doll, with either six altruistic and six aggressive acts or three altruistic and nine aggressive acts, always presented in the same ordered pattern, each act accompanied by standard spoken text, positive text with altruistic acts and negative text with aggressive acts.

5. The child was led to a playroom to play freely with the doll after oral instructions from the experimenter, including the promise of a monetary reward up to 15 DM depending on how much he or she played. (All were paid the maximum.)

6. The 20 minutes of play activity were videotaped with the parents watching the monitor.

7. The child responded to a repeat of the bipolar adjective list assessment.

8. Separate audio-only and video-only copies were made of each videotape, and verbal and nonverbal behaviors were analyzed independently by a team of four trained raters. The raters input their judgments in real time through a sliding resistor directly into Apple IIe microcomputers, yielding 900 discrete integers captured during the 20-minute interaction with each video or audio tape.

Study two was similar to study one, except that the subjects viewed only the film with equal numbers of altruistic and aggressive acts toward the doll. Subjects were then orally assigned either a negative or a positive role for their playtime. The original suggestion by the experimenter was that they take on the role of either witch or wizard, with the experimenter telling them whether to be evil or benevolent respectively. Subjects were allowed to choose their own role titles, as long as they conformed to the evil/benevolent assignment. After the role negotiations, each child donned an amulet, a cape, and a face mask as emblems of the fictional role and engaged in 20 minutes of play as described above.

Study three in the Roth and Upmeyer series measured adult subjects' reactions to 40 projected cartoons, 20 neutral and 20 women-related. Again they employed visual media as stimuli and videotape recording as part of the data collection and analysis process.

1. Subjects saw rear-projected images of all 40 cartoons in randomized order and judged each on a -3 (very disgusting) to +3 (very funny) scale. The subjects controlled the length of time they viewed each cartoon.

2. Their facial and vocal expressions during the entire process were videotaped using a hidden camera and microphone.

3. Some subjects were provided with a mirror and instructed to observe their own reactions in real time.

4. The video recordings were later content analyzed by a team of raters.

In this instance, the experimenters were looking at correlations between the subjects' evaluation of the cartoons and their spontaneous reactions to them. The effect of the self-observation was a secondary focus of the study.

Each of these three studies could now be performed using interactive multimedia to present the stimuli, record the various types of reactions, and/or manage the data analysis tasks. All of the audiovisual media stimuli in studies one and two could be presented via a multimedia workstation with the only immediately obvious effect being an increase in ease of operation for the experimenters.

There would be additional elements available that could enhance the presentations and improve the science. For example, the still image and audio story about the doll and the bipolar rating scale could be integrated into the multimedia application, eliminating the need for the experimenter to administer the instrument, and standardizing the presentation of the stimuli. The "instructional" film demonstrating a mix of altruistic and aggressive behaviors toward the doll could follow in the application with automatic instructions and minimal intervention by the experimenter. Further, the mix of altruistic and aggressive behaviors in the film and their order of presentation could be reorganized randomly over a broader range, and the particulars of that reorganization could then be recorded as a part of the data set for each subject. As in the original study, the subjects could be asked for a description of, or reaction to, each of the model's behaviors.

The child's play period would need to remain much the same, but it would be possible to electronically track the doll's motion over time and include that more precise information in the analysis of the playtime. The video tapes of the play period could be digitized and analyzed numerically as well as by the rating team. The teams' ratings that originally were entered electromechanically into the Apple IIe computers could be entered more positively by the same raters using digitized video (and an overlaid grid) or digitized audio within a multimedia application.

For study two, the role playing options could be presented to each subject from within the application, including audiovisual stimuli to reinforce the child's image of him/herself in the selected role. Minimizing the experimenter's activity at this stage could further ensure consistency of delivery from subject to subject. The child's costume could match the screen image that was chosen.

For study three, again the stimuli could be presented via a multimedia system with user response and time-of-exposure controls on each screen. The interaction times could thus be recorded automatically for analysis. For the subjects who were given the mirror for self monitoring, a potentially powerful tool could be an automatic playback, either of a still image of the subject's reaction or of a short video clip of the reaction, accompanied by an opportunity to rate the image as accurate or inaccurate in representing the subject's "true" attitude. This rating could be compared later with the subject's original judgment and with the independent raters' analysis of the audiovisual imagery. The system could dynamically enter all of the data gathered, including audiovisual recordings, into an internal multimedia database, available for analysis. The audiovisual images recorded for the independent raters to use could be handled as digital files, streamlining the raters' activities.

If new studies were designed to emulate the work of the three studies just described, and were implemented using multimedia tools as imagined herein, the likelihood of obtaining substantially different results from the original studies is not high. Simply repeating the studies' activities using new tools should have minimal effect. Management considerations would include introducing the option to have instructions and other information delivered from within the system rather than by a human experimenter on the scene. Further mechanization of the rating processes could help to minimize human error and increase processing efficiency. In study three, the addition of video playback for the self-monitoring aspect could serve to create a valuable data set, and the rating processes could benefit as in studies one and two. In each of the studies, remote sites could be employed to broaden the sample if the systems used had no requirement for a human experimenter to tend the activity and if data could be automatically aggregated at a central storage point, perhaps through computer networking technologies. The value of building the multimedia tool sets to execute such studies would come in the standardization of operation, economy of management of resources, simpler administration of the instrument, more straightforward data acquisition, and streamlined data analysis.

The "media comparison" trap

The above discussion of possible uses for multimedia and computer applications in attitude research should in no way be considered a call for media comparison studies to learn if multimedia is "better" at affecting attitude and gathering the resultant assessment than are other media. These tasks are being done well already, if the attendant research is properly designed. Clark (1983a, 1983b, 1994), Clark and Salomon (1986), Salomon (1990), Kozma (1994), Jonassen, Campbell, and Davidson (1994), Ross (1994), and many others have engaged in extensive discourse regarding the merits and demerits of media use in education and the myriad ways in which research around and about media can and should be conducted.

In the present context, Clark's (1983a) famous delivery truck analogy is not especially useful. The technology implementations suggested above require a whole systems approach, both to the design of the instruments and tools and to the presentation of the interactions to the end users. The fact that the educator/researchers would use the tools to compile data from the users as well as to deliver information and stimuli to them demands a much more complex metaphor than can be described by the truck and customer model. A clearer view might come from looking at what is happening in the user/system interaction as a multitasking or parallel processing activity. It is possible to do elaborate mathematical work on a slide rule, or on a pocket calculator, one step at a time, but, for truly complex calculations, the time and resource commitments necessary to achieve acceptable results would be logistically and economically prohibitive. Powerful computers can do the same work far more efficiently and cost-effectively. The calculations are not necessarily done better, and there is no real guarantee that they will be more correct, but there are obvious benefits of increased speed and efficiency.

Attitude research often includes both learning, as when subjects are presented new information to be integrated into their existing frames of reference, and assessment of learning and its impact, as through pre/post survey instruments to measure the effect of new information/stimuli on the subjects. Both the cognitive learning that involves integration of new information and the affective learning from activities such as reflection on or reaction to stimuli and information and the processes by which they are experienced or acquired must be measured to assess the changes in the subject in context. These each can be represented as measurable learning outcomes and categorized according to taxonomies such as Gagné's (Gagné and Driscoll, 1988).

Even while Clark (1994) asserts that learning gains remain unaffected by media choice, he does grant that there can be economies of scale and gains in efficiency achieved through the application of technology to educational problems. "Media and their attributes have important influences on the cost and speed of learning but only the use of adequate instructional methods will influence learning" (p. 27). Because the opportunity to do research, the quality of the research results, and the timeliness of the dissemination of those results can be affected by the cost and speed involved in the entire process, these attributes are of paramount concern in the design of a research system.

The question that designers of tools with which to study attitudes, their formation, and their behavioral connections must ask is not "will medium or tool kit A be better than hypothetical medium or tool kit B?" but rather "with the resources available, how can we best design and create a system of tools that will efficiently and cost effectively aid researchers to affect attitudes and to learn about the attitudes affected in a timely and economically manageable framework?" The design, construction, and testing of such a tool system can be a formidable task with potentially valuable results.

Chapter 2
A Multimedia Instrument Designed for a Specific Context

A modular multimedia computer survey instrument can be an educational tool offering a machine-person interaction that can present a combination of still graphics, audio, motion video, text statements, and text or audio questions to a participant in a study. The computer also can record the user's responses to questions posed and collect data concerning user attitudes and knowledge. As a research tool, this instrument can provide an opportunity for: (a) measurement of target population attitudes toward the target domain before and after the interaction, (b) an educational experience to increase knowledge about the domain, and, when readministered after a semester course of study, (c) measurements of change in target population attitude and understanding of the domain. Use of this type of survey instrument can create a data set illustrating the effect of media stimuli and reflective thinking processes over the short (single session) and long (for example, a semester course) term.

For use in a human sexuality course at a large mid-Atlantic university, a team developed a multimedia survey instrument to make use of the attributes and possibilities of such an instrument as described briefly above. The particular instrument will be described more completely later in this chapter. In this design, four repetitions of responses to a 24-item attitude survey (with pre- and post-interactions offered *early and late* in the semester course) present more detailed pictures of respondent attitudes and attitude change at specific moments over the short and long terms than would be captured via a simple pre- and post-course test or a single multimedia interaction.

The human sexuality course was designed to disseminate factual information, explore the socially constructed nature of gender and sexuality, and create an opportunity for students to reflect on their beliefs and decisions regarding their own sexuality. A number of opportunities existed for student active learning to occur in the four areas of central interest: gender roles, sexual orientation, sex education, and sexual harassment/coercion. The course and the multimedia instrument thus use parallel approaches to the same areas of interest.

Rationale for Project

Students enrolled in the human sexuality course before the present study have reported changes in attitudes toward their own and others' sexuality and often have reported greater learning gains regarding the subject than they anticipated. Students typically reported that they thought themselves well informed about human sexuality, but found that in the course they greatly increased their knowledge base.

Course enrollment is typically from a diverse mix of undergraduate disciplines representing most colleges in the university. The students come from varied religious, ethnic, socioeconomic, and family backgrounds. Prior knowledge and experience vary widely among the students in relation to the range of topics presented in the course. Thus a wide variation in beliefs and attitudes toward course content exists within this population.

Survey research on classroom learning regarding sexual attitudes often consists of paper-and-pencil surveys early in a course term and again later in the term. This study differs from past surveys in three important ways. First, the items are presented to the respondent in random order, individually, and on-line, minimizing item contamination, error, and fatigue. Second, the structure of each treatment includes pre- and posttesting of both the information

received during the interaction and the learning which may occur as a result of the reflective process inherent in viewing an audiovisual presentation module and responding to attitude items related to it. This creates a data set that portrays reflective thinking processes over the short (multimedia interaction) and long (semester course) term learning periods. Third, the sample should have minimal volunteer bias, social desirability errors, and faulty estimation, (Nevid, Fichner-Rathus, & Rathus, 1995) since the survey explores only attitudes regarding sexuality rather than asking individuals to disclose their own personal sexual experience. The four repetitions of the exposure to the attitude items give a more detailed picture of respondent attitude commitment and change over the short and long term than would a simple pre- and post-course test or a single multimedia interaction.

The purpose of this research was to document initial student attitudes, whether specific attitude changes occur after a single-session multimedia interaction and/or after a semester-length course of instruction, and, if they do occur, to what extent those changes in attitude may vary among students with differences in life experience, beliefs, knowledge base, and initial strength of commitment to their attitudes. The efficacy of the multimedia instrument as a predictor of "strength of commitment" to attitudes also will be explored.

The Research Problem

Assessment of attitudes presents a large challenge for *designers* of survey instruments, especially if those instruments incorporate multimedia technologies. The accompanying challenge addressed herein is how to *analyze* the data garnered through the use of such a multimedia instrument so that we derive not only snapshots of users' attitudes at given points in time, but also a measure of the trends in their attitude shifts and the beginnings of a model from which predictions about attitude can be made.

Research questions

1. To what extent will interaction with a multimedia survey instrument that includes an integrated treatment sensitize students to the topics to be covered in a course on human sexuality?

2. Will student attitudes be reliably assessed through a multimedia survey instrument?

3. Will student attitudes change during the course of a multimedia interaction designed to present them with relevant information and experiences and to give them a chance to systematically reflect on their own attitudes?

4. Can any of the apparent changes be attributed to the video sequences and reflective response treatment within the instrument?

5. Will student attitudes change over the course of the semester during which they participate in a human sexuality course?

6. Will there be any relationship between the changes, if any, that occur during a single multimedia interaction and the changes, if any, that occur over the course of the semester?

7. Will there be certain demographically definable subgroups within the sample for whom attitude changes and demographic characteristics will be positively correlated?

Methodology

The focus of the present study was the analysis of existing data that was gathered using a multimedia instrument during two narrow windows of opportunity during January, April, and May 1996. The data exist, and some analysis was conducted independently by one of the human sexuality course's instructor/researchers. The data set was thoroughly examined to ensure that each individual's response set is intact and that the correspondence between early semester and late semester iterations of the instrument for each participant is correct.

Analysis plan

Three types of analysis were used to explore discrete sections of the data set. Statistical methods were employed in relating the participant's reports of their attitudes at different times and as connected to different treatments within the multimedia instrument and after the semester-long class. Respondents' opinions on the experience and on the instrument itself are reported from free response within the instrument. The results of Likert scale evaluations at the end of each participation is complemented by an examination of the text comments that most students offered as their last interactions with the instrument each time they interacted with it.

In order to understand the analyses that were performed, it is necessary for the reader to have an image of the data that was analyzed and how that data was acquired. The reasoning behind, and structure of, each of the analyses employed can be more clearly understood in the context of the existing data set and the tool that was created to make its acquisition possible. A detailed explanation of the analyses and their relationships to each other and to the multimedia instrument will follow the descriptions of the instrument and the data set.

Technical Description of Multimedia Survey Instrument

The multimedia instrument used in this study was developed collaboratively by two doctoral students and one professor in a College of Human Resources and Education (CHRE), based on previous projects by the professor and one of the participating students. The central design uses a template developed in the Macromedia Authorware® multimedia authoring system. The template allows the compilation of elements in a variety of media, various item configurations, and a wide range of response types into an integrated application that presents the elements and records responses to an electronic file, either on local disk drives or across a network.

One innovative response type is the on-screen "slider" (see Figure 1) which the respondent manipulates with the computer mouse, moving it left or right toward either of a pair of opposing text anchors. The position of the slider is recorded by the system as a response on a 100-point Likert scale.

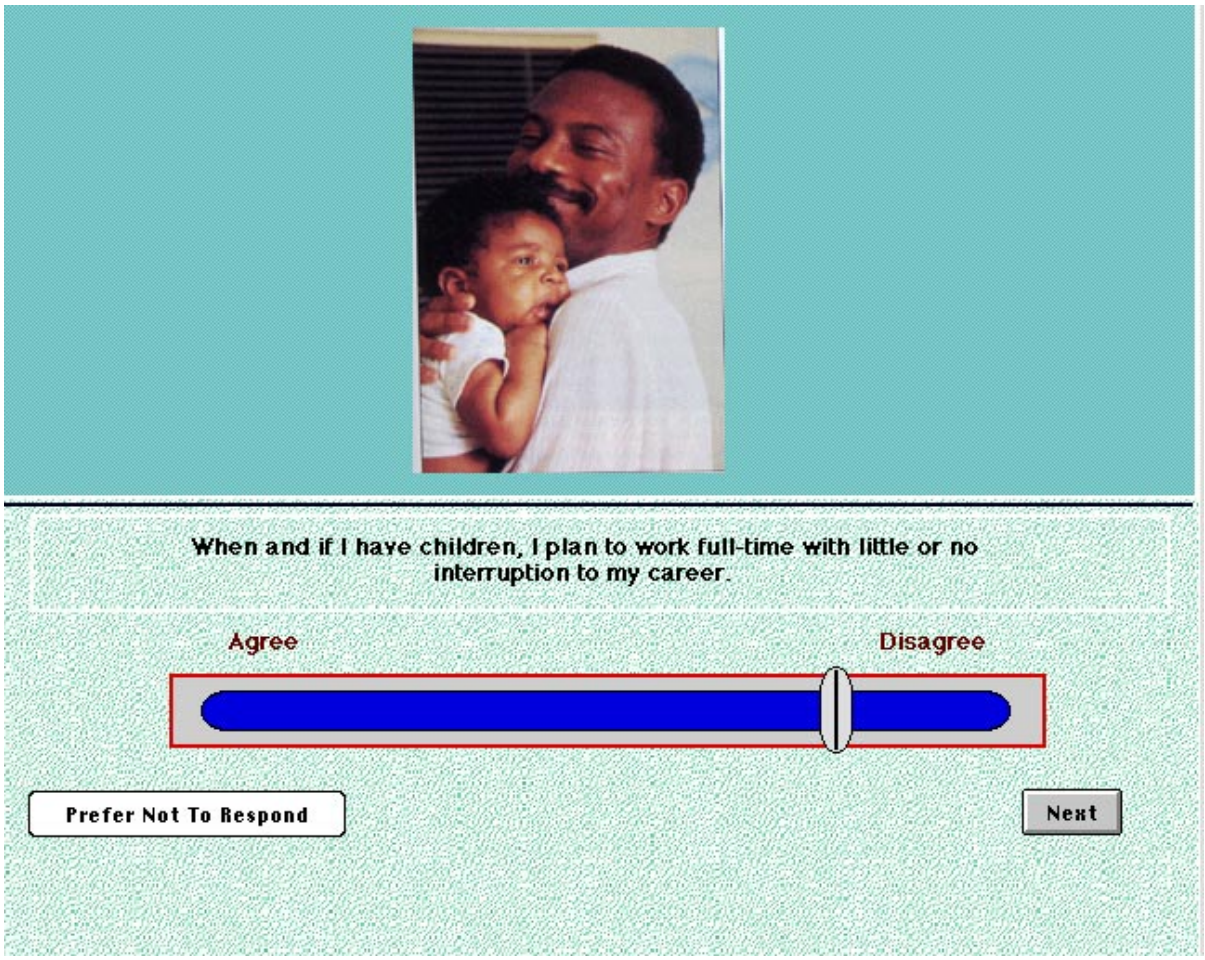

Figure 1. 24-item survey slider response screen.

If the “Prefer Not To Respond” button is clicked, the respondent is presented with a choice among four reasons for the preference. Those responses are encoded and included in the final data set.

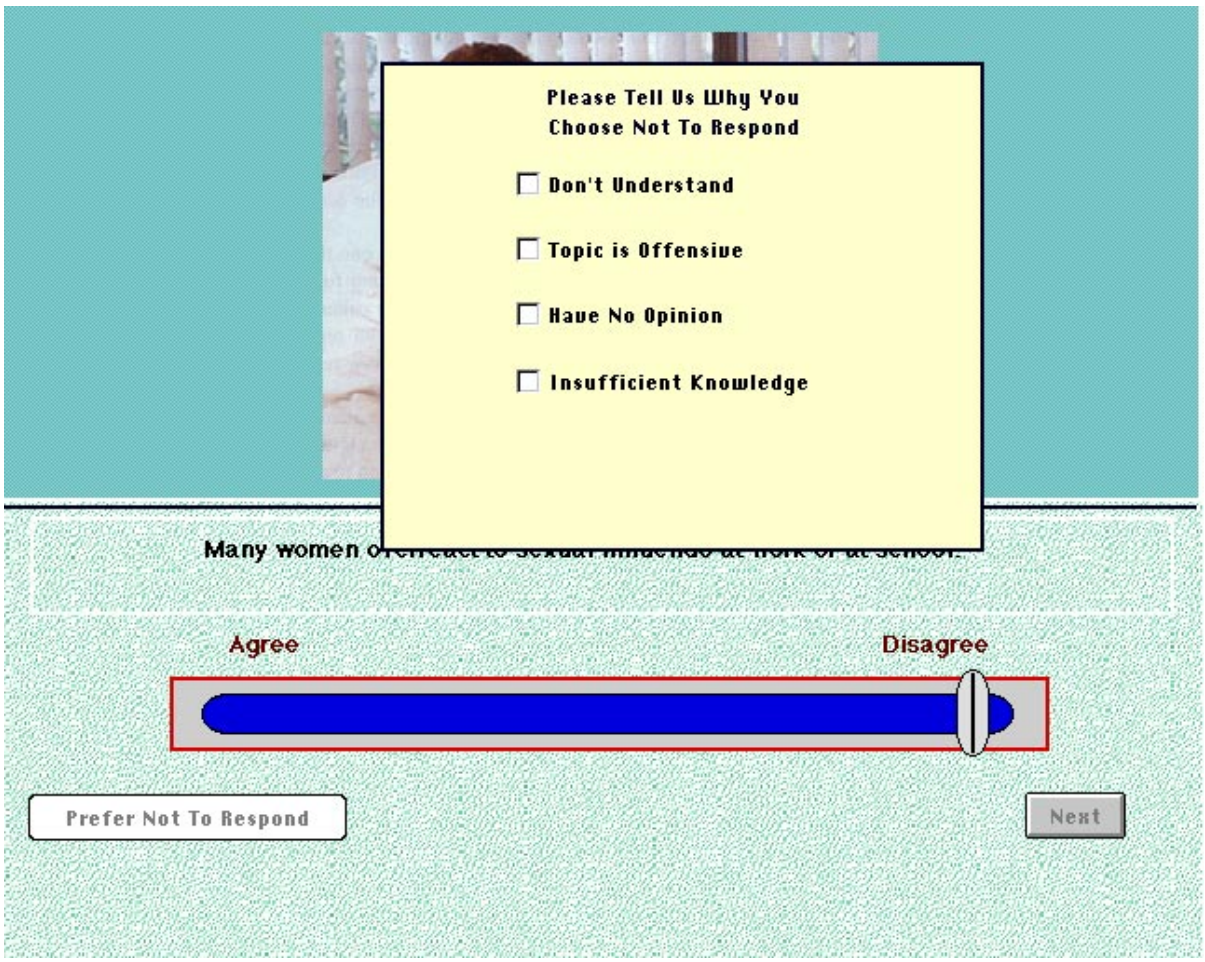

Figure 2. Prefer Not To Respond follow-up screen.

Other response types are click-box multiple choice with single or multiple answers and fill in the blank text responses in short and long forms (see Figures 3 and 4) All response data is recorded as text files, which can easily be imported into spreadsheets and other data analysis applications.

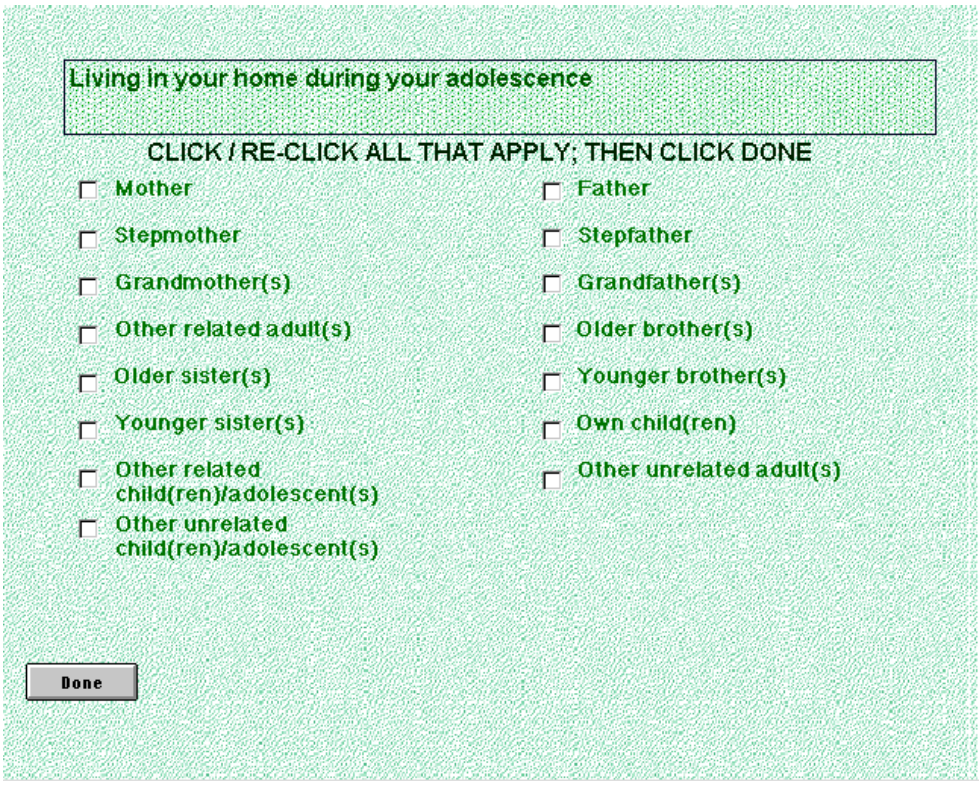

Figure 3. **Click-box multiple choice response screen.**

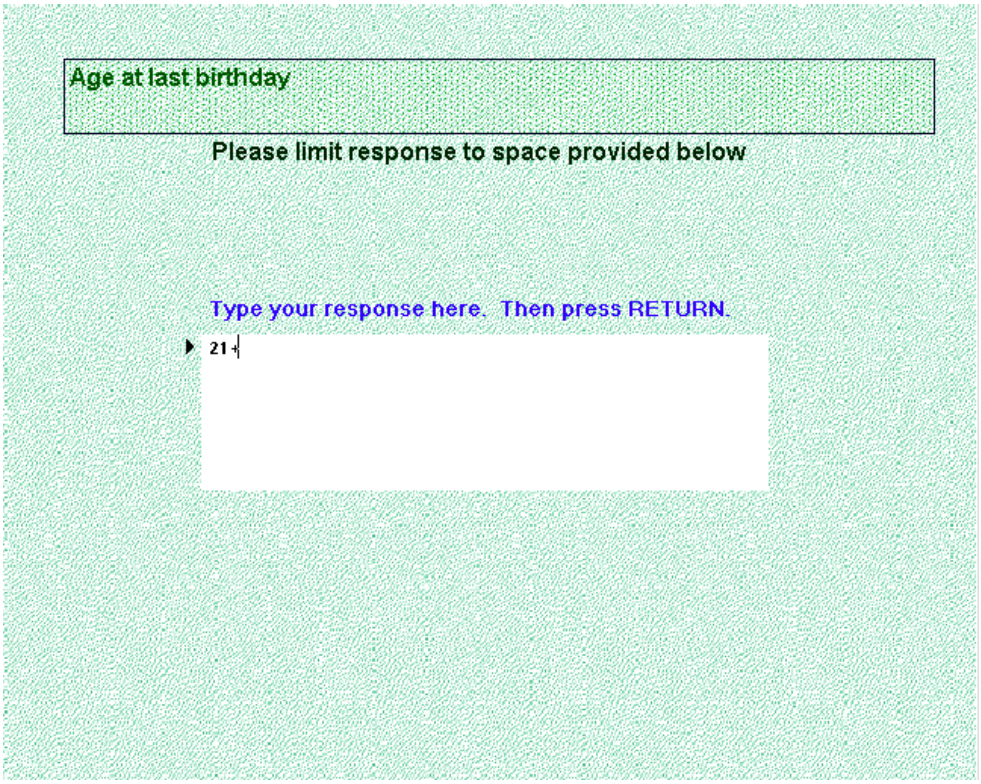

Figure 4. **Fill-in-the-blank response screen.**

For this study, the instrument was designed as a hybrid between a network-based system and a stand-alone application. The on-screen elements all were delivered to the users via CD ROM; all responses were recorded simultaneously through the campus ethernet onto two remote servers. This was accomplished by including programs on the CD that linked each computer with the servers as part of the startup routine of the system. All data files were thus stored redundantly on separate remote servers, access to which was extremely limited.

The graphic and motion video elements were selected by the development team for their connections to the text content of individual items and for their relationship to the topics covered within the application and the course. Textbooks and documentary and dramatic video tapes were the main sources of imagery. Overall screen design was handled by the instructional technology professor who worked on the application design and the instructional technology doctoral student who is an experienced film and video producer.

Data Collection Procedures

Students enrolled in the human sexuality course were given the opportunity to participate in a 20 to 55 minute (depending on the individual) interactive multimedia computer information and response session on selected topics covered in the human sexuality course. The interactive computer session was available at the Education Technology Laboratory (ETL) at the beginning of Spring Semester 1996. An identical interactive computer session was administered there late in the semester. Originally the New Media center in the university library was to be a site for the survey, but technical problems rendered that arrangement impractical. Complete project participation (early and late semester) carried an extra credit value of 5% on the final grade calculation for the human sexuality course. An alternative research task was offered for equivalent extra credit for students who elected not to participate in the multimedia survey.

Explanations of the extra credit assignments, both the computer interaction and the alternative task, were included in the written syllabus and presented orally during early class sessions. The explanations included a description of the interactive multimedia computer interaction and the purpose of the session, the expected length of time for each session, the location of the ETL, who to contact at the site for assistance, and instructions on how to complete the interaction with contact names and telephone numbers included in case any problems were encountered.

Participating students were instructed to go to the ETL during the specified period during normal lab hours with at least 60 minutes of free time to participate in the session. Each student obtained the project software at the administration desk, and the system was configured for the session by an on-site staff or graduate student monitor.

Using the mouse and the keyboard, students responded to survey items about their own demographic backgrounds, their “truthfulness” expectations regarding the present survey, and their general attitudes about four aspects of human sexuality: gender roles, sexual orientation, sex education, and sexual coercion/harassment. Survey items were drawn from past research on attitudes toward these topics (see Appendix A). Each student then interacted with four multimedia modules regarding their attitudes relevant to each module. The original 24 general attitude items were then repeated. Within each of the modules (pre, areas 1-4, and post) the items were randomly ordered by the multimedia application, so that different users interacted with the items in each module in varying sequence. Slider responses and qualitative free response opportunities at the end of each multimedia session elicited student reactions to the interaction itself, to the multimedia application, and to the content presented.

The first multimedia interaction occurred early in the semester. The multimedia computer application stepped through a demographic section, 24 attitude items (iteration #1), four modules of audio visual presentations (up to 2 minutes each) with eight response items reflecting on attitudes relevant to each presentation (Treatment I), and ended with a repetition of the initial 24 attitude items (iteration #2). Treatment I is intended to affect participants' attitudes by presenting information and experiences via video vignettes and eliciting reflective responses to those vignettes. Any changes or lack thereof may indicate degree of sensitization to the topics or relative strength of commitment to originally held attitudes. The initial attitudes measured in the responses to the first series of 24 attitude items (iteration # 1, data set A) were compared to attitudes measured in the responses to the second series of identical items (iteration #2, data set B) after the information/reflection treatment (the audio visual stimuli and the survey items related to them).

Treatment II is the experience of participating in the one semester human sexuality course. Its effects were measured based on the differences in responses between iteration #2 (data set B) and iteration #3(data set C) of the 24-item survey.

Treatment III occurred at the end of the semester and was identical to Treatment I in the early semester interactive multimedia computer session. The late semester session is designed to assess the cumulative effect of course participation (iteration #2 to iteration #3) and a second additional multimedia information/ reflection process (iteration #3 to iteration #4). The iteration #3 to iteration #4 comparisons represent the repetition of Treatment I (see Table 1).

Table 1
Timeline for Multimedia Survey Administration

Early semester interaction			**Human sexuality course**	**Late semester interaction**		
Mid-January			**January -May**	**Late April & early May**		
Data set A	Treatment I	Data set B	Treatment II	Data set C	Treatment III	Data set D
24-item survey iteration 1	Imbedded treatment	24-item survey iteration 2	Normal course activities classes, assignments, discussions	24-item survey iteration 3	Imbedded treatment	24-item survey iteration 4
100-point Likert scale responses	Video clips and 100-point Likert scale reflective responses	100-point Likert scale responses		100-point Likert scale responses	Video clips and 100-point Likert scale reflective responses	100-point Likert scale responses

Participation in both early semester and late semester sessions was required for a student to receive the full extra credit. Assignment completion by each student was noted, but was not traceable to the data sets.

The computer program requested each participant's student identification number and randomly assigned a 4-digit number to each individual's response set. Relation of assigned numbers to student identification numbers was noted only in a single master file for checking assignment completion and compilation and correlation of pre- and post-semester-test results.

Data Set Description in Interaction Order

The existing cumulative data set came from students enrolled in two sections of a human sexuality course in Spring Semester 1996. There were approximately 210 individuals' response sets, 21 of which were eliminated from the analysis because they were incomplete or otherwise flawed, leaving 189 response sets for analysis. At each interaction with the instrument, each subject responded to the following interaction sets:

1. Sets 1-3. partial demographic data—multiple choice and fill-in-the-blank;

2. Set 4. slider/mouse practice;

3. Sets 5-6. "expectations of truthfulness" (for self and others) question set—interactive "sliders" on a 100-point Likert scale;

4. Set 7. 24-item attitude survey focused on four target aspects of sexuality (pretest)—sliders;

5. Sets 8-15. four eight-item reflective surveys that referred to four short video clips related to each of the target aspects—sliders—(videos and reflective responses together constitute the treatment integrated into the instrument);

6. Set 16. a repeat of the 24-item survey as a posttest to check for attitude shifts within the interaction;

7. Set 17. More demographic information—multiple choice and fill-in-the-blank;

8. Set 18. instrument evaluation and "report on truthfulness" question set—sliders;

9. Set 19. Free response text comments on the instrument and the experience (qualitative).

Table 2 describes the interactions between the users and the multimedia survey instrument. Each respondent completed the same interactive sequence both early in the semester and near the semester's end. Individuals' interaction times were between 20 and 55 minutes.

The intention of the analysis was to determine if the instrument-measured attitude change within either interaction or between the early and late semester interactions. Where measurable changes existed for particular items, further analysis addressed certain aspects of the information to help in understanding those items in relation to the whole instrument.

Table 2

Description of interactions within multimedia instrument

Interaction Set #	# of items	Prompt medium	Item type	Response device	Screen response	Data recorded
1	1	text	Student ID #	keyboard	numbers & hyphens	4 digit code equiv.
2	3	text	demo-graphic	mouse	multi.choice click boxes	#s as resp. markers
3	2	text	demo-graphic	keyboard	text & numbers	text field
4	1	photo & text	slider practice	mouse	movable slider	0-100 Likert
5	1	video only	treatment	mouse	play or done	none
6	4	photo & text	honesty evaluation	mouse	movable slider	0-100 Likert
7	24	photo & text	pretest survey	mouse	movable slider	0-100 Likert
8	1	video only	treatment	mouse	play or done	none
9	8	photo & text	reflective response	mouse	movable slider	0-100 Likert
10	1	video only	treatment	mouse	play or done	none
11	8	photo & text	reflective response	mouse	movable slider	0-100 Likert
12	1	video only	treatment	mouse	play or done	none
13	8	photo & text	reflective response	mouse	movable slider	0-100 Likert
14	1	video only	treatment	mouse	play or done	none
15	8	photo & text	reflective response	mouse	movable slider	0-100 Likert
16	24	photo & text	posttest survey	mouse	movable slider	0-100 Likert
17	17	text	demo-graphic	mouse	multi.choice click boxes	#s as resp. markers
18	5	text	instrument evaluation	mouse	movable slider	0-100 Likert
19	2	text	comments	keyboard	text	text field

The video vignettes that were part of Treatments I and III were collected from different sources, including some that were originally produced by one of the instrument's developers. The vignettes appeared in a window at the center of the computer screen (see Figure 5). Each respondent played each vignette through at least once and then had the option to repeat the vignette or continue to the reflective responses.

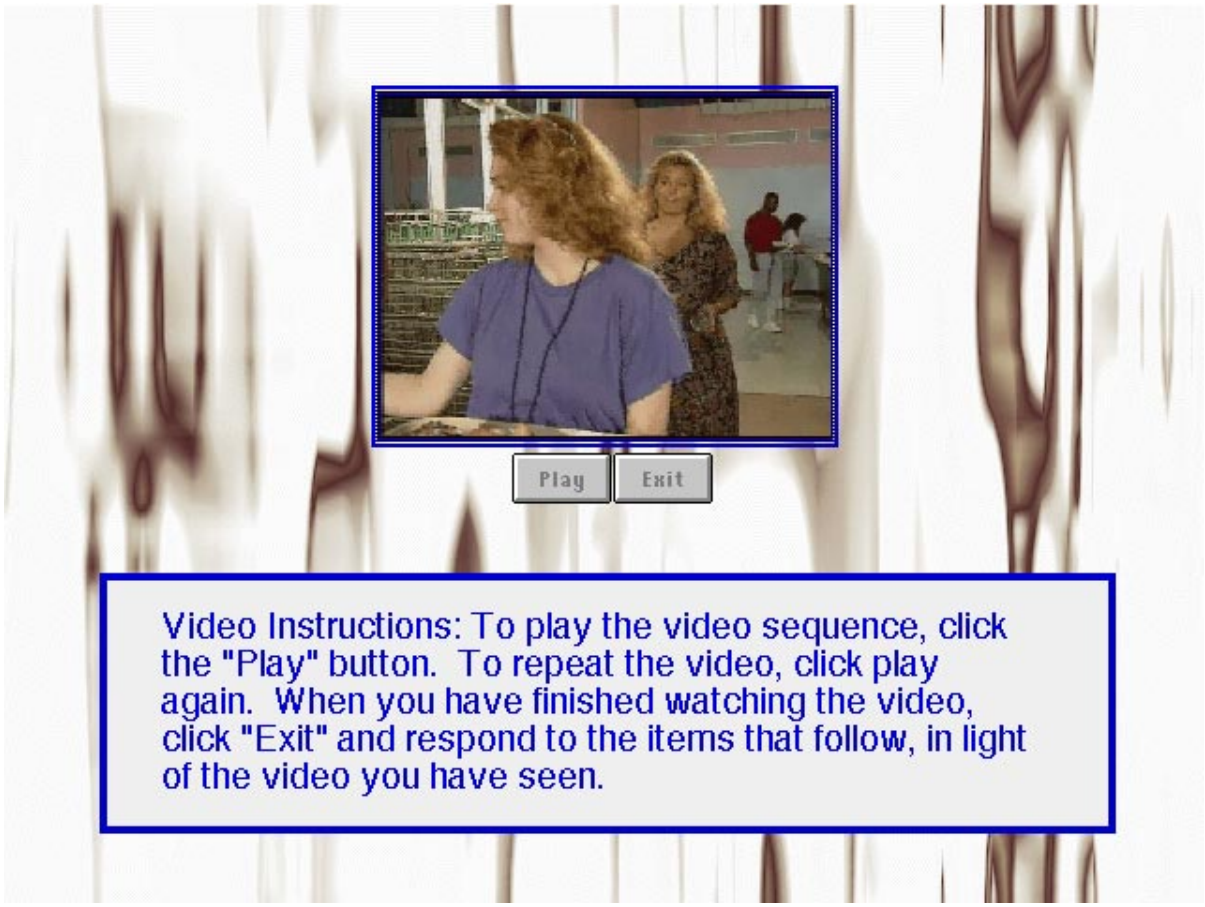

Figure 5. Video viewing screen.

Eight reflective response items followed each video vignette as part of Treatments I and III. The items referred directly to the video scenes or to topics related to them. Responses were registered using sliders (see Figure 6).

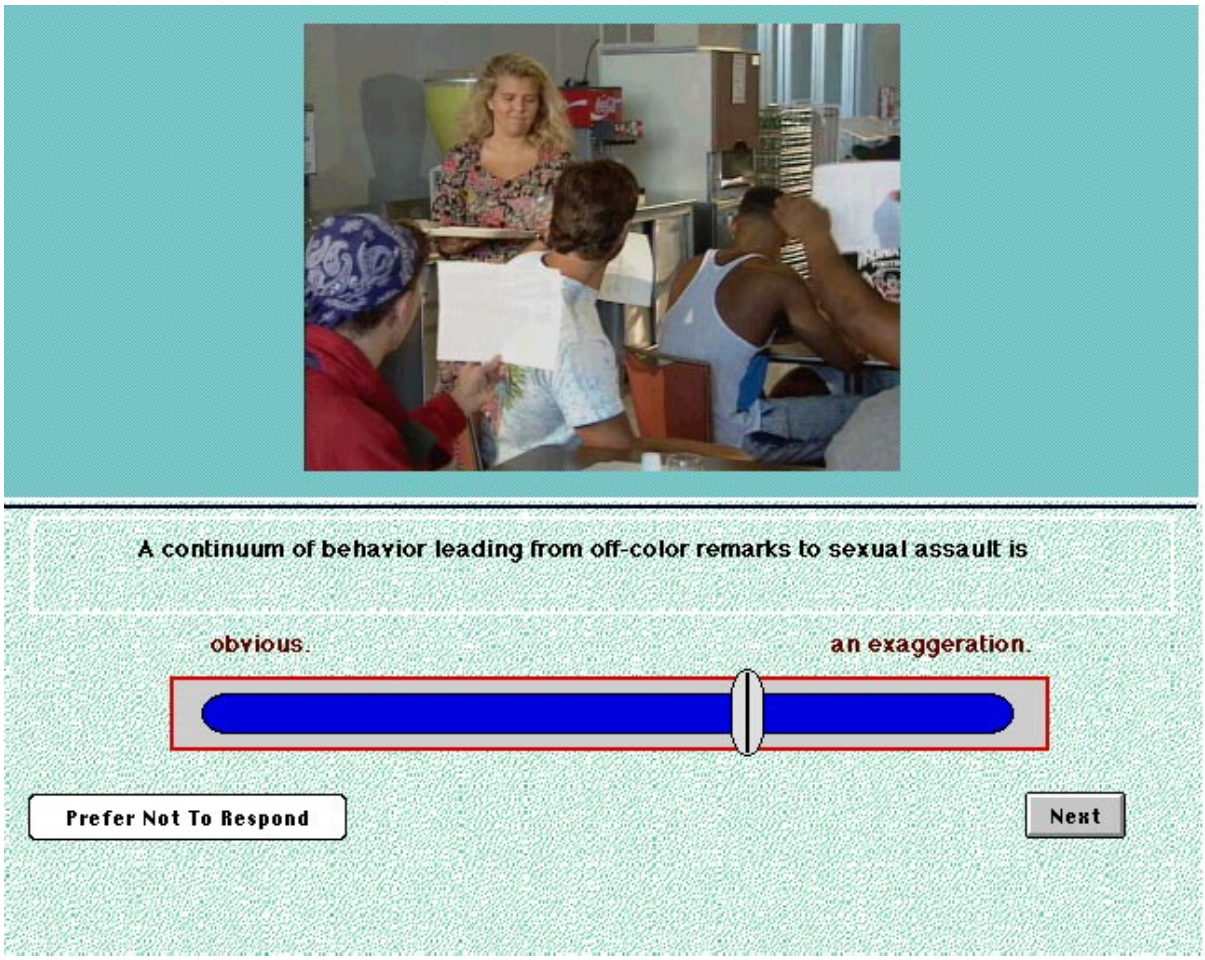

Figure 6. Video vignette response screen.

Still images from the appropriate vignette accompanied each response item. Some images from the vignettes were also used in the 24-item survey. At their first interaction with the survey, the students had not seen the video vignettes and the images from them were unfamiliar. For the second iteration of the survey, the stills from the vignettes came from a known context.

Students interacted with the instrument early in the semester and repeated the interaction near the end of the semester. The only data sets used in this analysis came from individuals who completed the interaction at both points during the semester. Any attitude changes apparent within each interaction and the relationships of those changes to changes measured over the course of the semester are the focus of the analysis.

Statistical Analysis

The main areas of interest regarding the interactions described in Table 2 above are interaction sets 7 and 16 in both the early and late semester iterations of the instrument. Interaction sets 7 and 16 are pretest (data sets A and C) and posttest (data sets B and D) instances of the same 24-item survey on attitudes toward four different areas of human sexuality, with six items addressing each area. In each iteration of the interaction, the items appear in random order to minimize each item's effect on its neighbors. The same 24 items are used to elicit responses from each participant four times in each participant's data set. For the remainder of this discussion, the four repetitions of these 24 items will be referred to as sets A, B, C, and D. A will be the early semester pretest responses, B will be the early posttest responses, and C and D will be the late semester pre- and posttest responses, respectively. (See Table 1)

There are two types of treatments at work in this study, with one of those treatments employed both early and late in the semester. The video sequences and their attendant reflective response sets are the repeated treatments which appear *within each multimedia interaction*, and the human sexuality course is the treatment *between the two multimedia interactions*. The response sets may be characterized as follows:

Set A—the participants' responses with no exposure to the treatments;

Set B—the participants' responses after one exposure to the video/reflective treatment within the multimedia interaction with no other immediate influences;

Set C—the participants' responses with one exposure to the video/reflective treatment within the multimedia interaction and with the exposure to the semester course as a treatment;

Set D—the participants' responses with an early semester exposure to the treatment within the multimedia interaction, the exposure to the semester course as a treatment, and a late semester exposure to the treatment within the multimedia interaction.

The 24 items are used to characterize student attitudes on a continuum, with higher scores indicating appreciation of diversity and of *researched* information, and lower scores indicating preference for homogeneity in one's reference group and acceptance of *received* information. Comparisons using *t* tests were done on the following pairs of sets: A:B, A:C, B:C, A:D, B:D, and C:D. The relationships between A and B were used to determine the effect in isolation of the video segments and reflective responses, Treatment 1—interaction sets 8 through 15 in Table 2. The comparisons of sets A and C described the effects of the combination of one exposure to the multimedia interaction and the exposure to and participation in the semester-long human sexuality course. The B to C comparison was done in an attempt to isolate the effects of the semester course, understanding that the personal histories of the respondents also may affect this comparison. Comparing sets A and D describes the cumulative effect of all three treatment experiences, while the C to D comparison checks for any effect of the video segments and reflective responses after the participants had completed the first exposure and the human sexuality course.

The analysis was directed at understanding any parallels or other relationships between the changes apparent between response set A and each of the other sets. Of particular interest is the relationship of the changes from A to B to the changes from A to C. This relationship connects the effect of the multimedia interaction alone to the cumulative effects of the multimedia interaction and the human sexuality course. The focus of this study is the multimedia interaction's contribution to students' sensitization to the subject matter and to their attendant attitude changes and the relationship of those contributions to attitude changes that occur over a longer period of time and as a result of other experiences. It is also an exploration of the multimedia application's utility as an information delivery and data collection tool.

The 24-item Likert scale response surveys were analyzed using the following tools and procedures:

1. Each participant's responses were aggregated into four subscores, representing the four topic areas for each iteration of the survey.

2. Each participant's response set was aggregated into a single score for each iteration of the survey.

3. *t* tests were run on dependent data between each pair of score and subscore sets and between each pair of individual response sets on an item-by-item basis.

4. The raw data were explored for the possibility of discussing frequencies and possible causes of any apparent trends.

Student responses to the "truthfulness" and instrument evaluation items are reported and discussed. No statistical analysis was performed on the Likert scale items in these categories, but trends are noted and possible explanations offered. The free response opportunities wherein many students gave feedback on the experience of the interaction and on the instrument itself were treated as a pool of anecdotal qualitative data. Again, no statistical analysis was performed on this information. Trends and apparent consensus among users, and anecdotal excerpts to illustrate common themes and idiosyncratic responses are reported here.

Methodology Summary

This document lays the basic groundwork for continuing inquiry using a data set that was acquired via an interactive multimedia survey instrument. The analysis of the existing data has defined some of the parameters within which such an instrument might be a useful tool. It explores some of the correlations between students' attitudes and their demographic characteristics and their freely written text responses. The tool itself is assessed by the statistical analyses and consideration of the user feedback, while the use of a multimedia instrument is viewed in more general terms through the qualitative responses from the users.

These analyses also contribute to the body of knowledge being used by FCD researchers as they explore the various options for planning and executing the human sexuality course around which this study was constructed. The A, B, C, and D data sets may help them to sort out the progress of students and the course in relation to the students' expressed attitudes. The analysis of the individual items' effects may be especially useful in constructing other instruments like the one used here. The information from this project will be available to instructors, planners, and designers as they look toward future implementations of the course.

The promise and possibilities of the multimedia template through which the present instrument was delivered are also focal points for this study. Through understanding how the tool worked logistically, statistically, and subjectively, the designers will be able to refine its capabilities and explore other opportunities for its use. Assessing the tool's efficacy in this situation can be a valuable beginning toward creating a flexible and accessible modular instrument for other applications.

Chapter 3
Statistical Results

Statistical analysis of the quantitative survey data from the human sexuality class indicated no changes in the attitudes of the sample. There were no significant differences between the aggregated scores from the first and second iterations of the 24-item survey within either the early semester or late semester multimedia interactions. Neither were there any significant differences between the early semester and late semester iterations of the application. In the interest of improving this instrument and the template from which it was constructed, further exploration of the data was undertaken. Responses to certain survey items were seen to exhibit statistically significant changes, in some cases, from iteration to iteration.

The results first were approached in aggregate, that is, using a single score for each 24-item set for each respondent. That score was the mean of all responses to the 24 items listed in Appendix A. The four iterations of the base survey yielded four aggregate scores that were then compared and analyzed. In this aggregate form, the scores were correlated to gender and ethnicity for the possibility of differences based on those traits. With no significant differences shown in the aggregate form, the scores were recalculated into four subscores for each 24-item response set to learn if change had occurred in any of the areas of interest. The four subscores came from the Gender Roles, Harassment/Coercion, Sexual Orientation, and Sex Education sections of the 24-item survey. The subscores also were correlated to gender and ethnicity. There were no significant differences to be found in these analyses.

On an item-by-item basis, *t* tests of the paired scores did yield a total of 35 apparently significant changes over time from 144 possible instances (24 items x 6 pairings—A:B, A:C, A:D, B:C, B:D, and C:D)—although only one item showed the anticipated pattern of slight change from A to B, larger change from B to C, and negligible change from C to D.

On the advice of consulting statisticians, further analysis was not conducted.

Chapter 4
Learning from the Responses

The raw data was explored for indications of factors that may have affected the survey's quantitative outcome. A number of possibilities became apparent:

1. The entire instrument may have been flawed in measuring attitude changes that did occur.

2. Design errors in some parts of the instrument were large enough to render the rest of the instrument ineffective.

3. The population was too heterogeneous in its makeup for there to be any common trend in attitude changes.

4. The subject matter is too sensitive and personal for definitive quantitative analysis under the present circumstances.

5. The baseline of student attitudes was already near to high score outcome levels so that there was little change possible.

Consideration of these possibilities could prove useful in regard to future uses of multimedia instruments with elements in common with the one used in this study. Developers of such instruments will be able to make use of the following observations.

Exploring the possibilities

The exploration is based on the quantitative results noted above, and on the qualitative study of the freely written comments from the end of each participant's response files. The qualitative data were examined in three ways: as independent anecdotal evidence, in relation to other information in some response sets, and in relation to the aggregated response sets of the whole sample. Recognizing that there were no significant differences found across time between the aggregated responses, it is also important to acknowledge other caveats as we begin to deconstruct the data.

The five possibilities above will be considered individually and collectively in order to analyze the utility of the specific tool under study and to suggest evolutions of this type of tool and potential applications of similar instruments. Examination of the survey response data, especially the freely written comments at the end of each multimedia interaction, seems to include some support for possibilities one through five, at least for certain survey items or particular issues. The range of numerical scores, the breadth of content of the written comments, and the variety of the idiosyncratic responses and suggestions lend special credence to possibility four. Discussion of each possibility will include representative samples of responses to address all facets of each issue about which the students wrote. If there were conflicting responses, all sides will be represented, including notations regarding which views were expressed most frequently. The relevant responses were coded and selected using "axial coding" as described by Strauss (1987).

The written comments come from two separate response screens that were presented to the participants as their final input to the instrument each time they interacted with it. Some users chose not to respond at all, or to input "no comment" or the equivalent. Many others wrote in both available spaces each time, often addressing many topics in the same small space. There were 756 possibilities for written responses, four opportunities for each of 189 users included in the final data set. There were 226 blank, no comment, or equivalent responses, more often in the second opportunity in each iteration. Only six participants chose to enter nothing, "no comment," or the equivalent into all four of their available fields. As might be expected from completely free responses, there were a wide range of points made and ideas treated by the students. Responses ranged from the many "thank you" or "I liked it" statements to complaints about the instrument or the class. Some of these communications were intended directly for the course instructors and the instrument's authors. The most common themes that emerged from the responses will be discussed later in this document.

Some responses were cut off, apparently in mid-thought, probably through keyboarding errors. Following sections will make liberal use of direct quotations from the responses with spelling, punctuation, and typography corrected, when possible, for the reader's convenience. Repetition within an individual's responses has been eliminated, except where necessary to indicate emphasis. Responses that appear to have been cut off prematurely either will end in ellipses or be completed by this author, with any such conjecture enclosed in brackets [ ]. The excerpts are grouped by the writer's gender, and the writer's age will be noted when it is relevant. Because some individual responses will relate to more than one of the possibilities outlined above and/or to the themes discovered in the response sets, some excerpts may appear more than once. The reader's indulgence is requested as the connections between the responses and each of the possibilities and themes is illustrated. The complete texts of all responses from which excerpts are drawn are included in Appendix B. Where appropriate, excerpts from students' exit slip comments collected by the instructor after certain class sessions will be included to complement the comments written during the multimedia interaction. They will only address topics covered in the classes for which they were collected. Exit slip comments are not identified by the author's gender or age.

1. The instrument was flawed in measuring attitude change that did occur

The written comments of the respondents contain much anecdotal evidence that at least some individuals perceived that their own attitudes had changed at least partially as a result of the course, and, for some, as a result of the reflection and sensitization opportunities presented by the multimedia survey itself. This appraisal is reinforced by the writings of individuals and the impression given by reading all of the responses that treated the themes of personal change and increased thoughtfulness.

Selected women's responses on personal change

> This survey provided me with an overall view of what we will be going over in class. It made me more aware of the different issues within human sexuality.
>
> This survey taught me a lot about myself. It questioned the beliefs I held but never really thought about. It gave me an opportunity to question the beliefs I held but never really thought about. I also found out that I am a little more liberal in my attitudes about homosexuals than I previously thought.
>
> I really think that my answers changed from the beginning of the semester. I think that means that the class has taught me a lot!

I believe that my second set of responses have changed slightly due to this class.

I felt like my responses may not have matched those of before but I enjoyed the computerized survey and hope the responses will help you.

With learning about these topics I hope my mind is more open to thinking and learning.

I am anxious to see how my views change over the semester. As you can see my opinions changed a little throughout the survey.

At least two women seemed to believe that neither the instrument nor the course could affect their attitudes. These two offered the most emphatic and specific expression of this point of view.

At my age I have pretty set views on life and they aren't going to change that much with one semester of human sexuality. Otherwise I didn't mind doing this experiment. (age 20)

Why would my views change on this material in only a few months? I liked it the first time but this was ridiculous. I enjoyed the class but it hasn't changed my views enough that this survey was relevant to me. (age 19)

Selected men's responses on personal change

The questions required a good deal of thought. Taking the survey for the second time made me think about what I have learned in class over the semester. Class made me more sensitive to other's views and made me much more accepting of homosexuality. This was reflected in this survey.

After going through the class I can say that some of my attitudes towards sexuality issues have changed. Others have not varied (views about homosexuality) and others that I had not even considered yet became subject of my thoughts.

I think that having this survey before and after taking the course in Human Sexuality will be very effective. I know that quite a few of my views and opinions have changed because of the class and I'm sure others have done the same.

Exit slip comments collected from students immediately after some classes echo the theme of change based on their in-class experiences regarding specific topics.

I wasn't comfortable with gays and lesbians before. But through this panel, I realized that those people are same as heterosexual people (not exactly but...). I am a little more comfortable with them.

I realized them being gay and me being straight doesn't show when we walk around. We don't go sex craved walking on the drill field. Sexual acts are for

behind doors for both gay and straight people. So I don't mind them being around.

I knew about rape, the definition and things. But today's lecture has made me re-think about my personal experiences. It's made me think about how more conscious I'm going to be. I know I'm smart now and I plan to become even smarter. You learn from your mistakes and learn to be alert. I learned more facts about rape.

This was definitely an eye-opening experience for me. I come from a conservative home, where I was taught that this was very wrong. I now see these people as not much different from me.

Many more respondents to the multimedia instrument reported the likelihood of change in themselves than reported no change. The anecdotal evidence is supported, though not conclusively, by changes in participants' responses to some of the survey items. For eight of the 24 items in the base survey, two tailed *t* tests showed differences between the scores for sets B and C that were significant to the .05 level. There were also nine items that showed significant differences between sets B and D. Common between the sets of eight and nine items, six items showed significant differences for both B:C and B:D comparisons. For five of these six common items, there were also significant differences A:C and A:D. The five items for which significant differences were found for all four pairings (A:C, A:D, B:C, B:D) were:

7. A man can prevent a woman from raping him.
   Always.....Never

9. Most date rape situations are a result of miscommunication by the woman.
   Agree.....Disagree

17. Discussion of sexuality as a process of decision making encourages pre-marital sexual activity in adolescents.
   Encourages.....Discourages

19. People can choose to be homosexual or heterosexual.
   Choice.....Not a choice

24. I am as comfortable seeing gays or lesbians holding hands and kissing in public as I am seeing heterosexuals displaying affection in the same ways.
   Heterosexual couples only.....Any romantic couple

Response scores for item 17 also showed a significant increase from data set A to data set B. With this, it was the only item to show the expected pattern of increases from A:B, A:C, A:D, B:C, and B:D, with no increase from C:D.

2. Design errors in some parts of the instrument were large enough to render the rest of the instrument ineffective;

There are individual items for which the scores reflect some of the patterns suggested elsewhere in this document. There are more items that show no pattern of change, or even occasionally indicate decreases in scores. Within each of the four subgroups of items, there are items that score quite differently from others in that same group. That is, some items seem to

be out of sync with other items in their own subgroup. In each case, the designers intended for the items in each subgroup to reinforce each other. When one or more items scores substantially differently than its supposedly complementary partners, this may indicate flaws in some items. The suspect pattern is illustrated in the subscores for Coercion/Harassment and Sexual Orientation for which the mean response scores by item in the first iteration are reported in Table 3.

Table 3
Mean response scores by item for survey subscore sets

Subscore group	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6
Coercion/Harassment:	38	68	80	80	65	55
Sexual Orientation:	50	63	64	30	48	37

The close spacing among some scores and the wide divergence across each subset suggest that the items may not have been closely enough integrated. The fact that the scores for some items in each of the four subsets increased with each iteration, while others decreased, also points to errors in the construction of individual items.

The source of another design/execution problem that may have affected the overall scores on the survey was the combination of technical and logistical difficulties, students' less than optimum computer skills, and their misunderstandings of instructions or of the operation of the tool.

Selected women's responses regarding flaws in segments of the instrument

> Personal Beliefs should be more accounted for. Sometimes choices other that the ones given could be agreed with. Everything regarding sexuality is not so cut and dry. Some of the statements should be given more answer choices.
>
> I think you should be able to type in comments to those questions also if you wish to further explain yourself.
>
> It is difficult to answer some of the questions because I have an opinion but it is not the same with the responses given.
>
> Some of the questions are phrased weird.
>
> Some of the questions were too vague or the answer could vary depending on the person.
>
> I felt like some of my answers needed reasons or justifications included because just answering with the slider leaning on one side wasn't exactly wh[at I wanted to answer.]
>
> Some of the answers were ones that I did not agree with. At times I wanted to say a totally different answer than either of the two that were there.

This survey could not possibly accurately represent many of my beliefs because many of the topics are situation-specific.

Maybe you should give a chance to type in your own response if you do not agree.

I thought this was a good survey although sometimes I wanted to say it depends on what the situation is like.

Not enough choice were given in the survey by using the slider format. The mood I'm in today may be different than the one I was in when I filled it out at the beginning of the course.

Selected men's responses regarding flaws in segments of the instrument

The questions and answers seemed ambiguous and I felt that a written response would have provided a better answer.

I feel there should be an opportunity for participants to indicate that they don't agree with a question and tell why. Some of the questions were phrased in such a way that moving the slider either way had conflicts with my opinions and attitude.

There were some ?'s that I thought both ends of the slider were right but I could not show this with this format. I think the "prefer not to respond" should have a free response area to give a more detailed explanation.

Some questions were a little too vague left room for misjudgment.

The fact that so many respondents centered their comments on observations and suggestions regarding the makeup of the items and the options for response appears to point to problems either in the instrument or in how the participants were prepared to work with the multimedia interaction. A certain amount of this type of response can be attributed to individual's preference not to be categorized, while many respondents seemed genuinely interested in helping to make the instrument as useful and truthful as possible.

3. The population was too heterogeneous in its makeup for there to be any common trend in attitude changes;

The demographic information gathered through the instrument is reinforced by the written responses in portraying a sample with very diverse backgrounds and equally diverse interests and points of view. The diversity of backgrounds and points of view that may have helped to create a rich learning environment within the course served to dilute the assessment power of the survey instrument. Because participants began with such different sets of values and experiences, and especially because their strengths of commitment to their expressed attitudes appeared to vary greatly, determining a baseline, let alone analyzing change, proved to be extremely difficult. It is telling that in the four iterations of the 24-item survey all but five items received responses that covered the complete range from 0 to 100. The various items were received differently by the group as aggregated as shown by their disparate means, but there were wide variations among the individual respondents for every item.

Another indicator of the groups' heterogeneity is the variety of idiosyncratic responses that individuals chose to offer. Many students used this opportunity to espouse their own causes or to offer opinions on the tone of the course and the instrument.

Selected women's responses illustrating heterogeneity

I wouldn't mind doing a survey on the sexuality of one's self.

It would be interesting to show a porno clip in which a woman is forced to submit and record people's responses—if male do feel turned on and empowered—if female do they feel desirable or degraded or what?

the one about gay public displays of affection. The choice was straight couples or any couples. I disagree with people in general kissing or "maki[ng out" in public]

I think sex education in schools is necessary.

I think that we are being way too liberal on what we call "date rape". Girls can practically ask a man for sex regret it the next day and claim he raped her.

Abstinence has been ignorantly ignored. Is it even an option here in the nineties?

I thought that the woman that was holding the child needed a reality check. She needs to go to lunch with a group of teens.

I think that parents need to take more responsibility in being interested in their child's life. There are too many parents today whose career is more important to them than their children. It's a Shame.

I think it would have been interesting to have more questions about sexual history. What some people may consider "experienced" may be "inexperienced" to another person. It's all relative.

This survey makes you think about all of the different things you learn about sexuality throughout your adolescence and what you really think of all of it. this survey goes into all aspects of sexuality thoroughly.

...this could not reflect some people's true beliefs because it is hard to keep it confidential with not much confidentiality because we are sitting too close.

Selected men's responses illustrating heterogeneity

I think the class has been taught from a liberal viewpoint and that the instructor pushed too many liberal views instead.

The survey was good but it seemed to biased against males. I think it would have been more appropriate to have a less gender specific survey.

The questions were frank and almost to the point of probing. Some of the film clips such as the date rape and adolescent discussion made me a little uncomfortable.

After removing the 21 incomplete or otherwise flawed response sets, there remained 189 complete response sets, 130 from females and 59 from males. The sample included students of at least four ethnic backgrounds, four religious denominations (with Christian taken as a single category), and four levels of religious background. The family information was similarly diverse, while the age range was from 17 to 27, with a mean of 20. The students were enrolled in eight of the university's nine colleges, representing approximately 45 major courses of study. The different points of view engendered by this diversity cannot be discounted as influences on particular responses or as determinants of strength of commitment to particular values or attitudes.

4. The subject matter is too sensitive and personal for definitive quantitative analysis under the present circumstances;

In our sample, it is clear from the adamance with which some respondents write their short comments that at least those individuals have a powerful personal investment in their beliefs and attitudes toward sexuality. One of the most common themes in the comments was that the slider scales and the responses offered "could not" possibly accurately portray the respondent's point of view. These comments stood out in opposition to some very specific references to individual questions or threads of inquiry. In at least two instances, the respondents focused so tightly on a single element or thread that they made no mention of any other content or form issues. Many repeated the same answers in more than one response space. Others questioned the whole premise of the course and the study, certain that their views could not change at this time in their lives or in a few months' time during the course.

Selected women's responses on sensitive and personal subject matter

Why would my views change on this material in only a few months? I liked it the first time but this was ridiculous. I enjoyed the class but it hasn't changed my views enough that this survey was relevant to me.

I wish that the second part of this experiment was different than the previous. At my age I have pretty set views on life and they aren't going to change that much with one semester of human sexuality. Otherwise I didn't mind doing this experiment. (age 21)

Abstinence has been ignorantly ignored. Is it even an option here in the nineties?

I was led to believe that this was an experiment about attitudes but I feel that it should have been more specific by saying it was for "attitudes on gay and lesbian lifestyles."

I think that this survey is somewhat helpful in determining attitudes towards sex but peoples' opinions differ in such a strong issue.

Selected men's responses on sensitive and personal subject matter

> Not enough answer options did not discuss male sexuality makes me feel like you consider all males abusive

> Most of the questions were very frustrating because they didn't allow for an accurate expression of my opinion.

> It seems that males always get the blame but females are just a sexual active as males. Sometimes females feel violated even though they elicit sexual activity.

There were other students who seemed to see the course (and the survey) as a means to explore their own predispositions, to check their information bases, and to gain exposure to other points of view and information sources.

By the same token, some respondents wrote of welcoming the information that the survey and the course offered, and they embraced the changes they perceived in themselves.

Selected women's responses on acceptance of information

> I enjoyed taking this survey in the beginning of this course and at the end. With learning about these topics I hope my mind is more open to thinking and learning.

> Many of the issues posed in this survey were things that I thought about many times during the course of this semester. I think that with education replacing my ignorance I have been able to make my opinions on sexuality more my own and not the way I was...

> This survey helped me to figure out my own beliefs about sex and society.

Selected men's responses on acceptance of information

> I think that having this survey before and after taking the course in Human Sexuality will be very effective. I know that quite a few of my views and opinions have changed because of the class and I'm sure others have done the same.

> The survey asked pertinent questions about sexuality and I imagine some interesting discussions will come of it. The questions required a good deal of thought. Taking the survey for the second time made me think about what I have learned in class over the semester. Class made me more sensitive to other's views and made me much more accepting of homosexuality. This was reflected in this survey.

Those who chose to write on only one subject were more than balanced by those who entered text on all four of the available comments screens, often including multiple ideas in a single response space.

Selected women's responses illustrating multiple ideas

I thought that some of those videos were really goofy. This survey was really fun. This was really boring. Why would my views change on this material in only a few months? I liked it the first time but this was ridiculous. I enjoyed the class but it hasn't changed my views enough that this survey was relevant to me. This survey also was stupid at the end. If you've already asked me a question why ask it again????

The survey seems very affective because of all the privacy!!! I think people will be more likely to respond this way . Thanks for letting me participate The slider gives you the ability to make your answers very specific. The computer froze the first time I tried to do this survey!!! Maybe there is a way to insure that won't happen anymore. Overall I liked this survey because it is personal and no one is looking over your back.

Selected men's responses illustrating multiple ideas

The privacy and individual attention afforded by the multimedia survey allows for us to be honest and open about our feelings. After going through the class I can say that some of my attitudes towards sexuality issues have changed. Others have not varied (views about homosexuality) and others that I had not even considered yet became subject of my thoughts. I enjoyed this type of...

Again after finishing all my responses I had to answer the questions again. This was a pain and I felt like this was not so necessary. I did not want to answer the same questions again. That part was annoying. I wonder if my responses changed from the... I hope you do use this survey in up coming years. The quality of sound on this disk was not so great. I do not know if this can be approved or not.

5. The baseline of student attitudes was already near to high score outcome levels so that there was little change possible.

For some items the original mean scores for all participants were already near the top of the scale, so that there was very little room for measurable change in those areas. The following items had first iteration (Data set A) means above 70 on the 0-100 Likert scale:

9. Most date rape situations are a result of miscommunication by the woman.
   Agree.....Disagree

10. Because male hormones can make males more aggressive than females, aggressive behavior by human males should be expected and tolerated.
    Agree.....Disagree

15. After an appropriate sex education, an adolescent should know the proper way to put on a condom.
    Agree.....Disagree
    (Scale reversed 100-0)

16. Adolescent sex education should stick to basic physiology and should not address techniques for birth control and disease prevention.
Physiology only.....Birth control and disease prevention

Of these items, only number nine, regarding explanation of date rape, showed more than one significant change over time. As noted above, it exhibited four out of six possible significant changes. Numbers 10 and 16 each had one significant change, and number 15 had none. It is possible that the treatments had some effect regarding attitudes toward date rape, while the other items followed the more expected pattern. Weis, Rabinowitz, and Ruckstuhl (1992) predicted and verified this pattern in their study of sexual attitudes among college students. They found that those with less restrictive sexual norms when they enter a human sexuality course are less likely to experience attitude change during the period of the course.

6. Neither the treatment integrated into the instrument nor the semester long course affected the target attitudes of the students.

Of the possibilities listed, this is the only one apparently supported by the overall statistical analysis, and the one most roundly and directly rebutted by the written comments of the respondents. As suggested earlier, the majority of the student participants who treated this theme directly in their free responses noted changes in themselves, especially in regard to their propensity to think more deeply about the issues raised in the course and the instrument. Many of them volunteered the belief that their own attitudes had changed as a result of the course. A few even suggested that the early semester iteration of the multimedia survey had begun a process of change that they expected to continue through the semester. As noted above, very few respondents offered the information that they had not changed over the semester. While that silence cannot be taken as evidence that change did occur, it does not contradict the statements of those who aver that they have changed.

If the individual items are taken separately, there is evidence that some change did come about, even though it has proved very difficult to measure conclusively. A look at the themes that emerged in the written comments and the relationships of those themes to the numerical response data for particular survey items guides us toward some further speculation on the utility of this instrument in particular, and other tools like it for use in the affective domain. As noted below, three of the five themes that were addressed most frequently related to the instrument's form, rather than to its content. A valuable observation for developers is that many respondents seemed to enjoy the experience of the multimedia survey and find it accessible. Many of the apparently critical comments were directed at improving the instrument in this and other content areas. they were not simply opportunities to complain.

Emergent themes

The original open coding (Strauss, 1987) of the comments resulted in a preliminary list of 35 topic categories. A reconsideration of the list and the responses yielded a shorter 19-category list in which related categories are merged under collective headings. Further axial coding (Strauss, 1987) resulted in the selection and grouping of user comments for this analysis. One category encompassed particularly idiosyncratic responses, each usually stating a strong point of view, none of which fit well into any of the other recognized themes. Each category's description is followed in parentheses by the number of respondents who commented on that topic. Some respondents repeated their comments exactly from response screen to response screen in a given interaction. Some mentioned the same topic or issue at every opportunity. Some touched on multiple topics in single response areas. The response

counts given for each category ignore repetitions of the same topic by a single author, even as they note multiple topics within a single response space.

1. Enjoyable/entertaining/informative/good—It was common for responses to be relatively non-committal but positive. More often than not, these descriptors accompanied other more specific observations, suggestions, or opinions. (103)

2. Blank, or no comment—Respondents chose to indicate that either they had nothing to offer in a given space or that they considered their previous entries sufficient. As noted above, only six students consistently chose this non-response option. (85)

3. Content/items—Students had a broad range of comments regarding the content of the items and the multimedia stimuli, much of which warrants consideration in future evolutions of this and similar tools. Comments about the items were not as common as comments about the response choices. They generally referred to the wording of specific items or to specific emphases or omissions among the items. (76)

4. Use of multimedia/computers—Very common responses were the expressions of preference for the multimedia instrument over opscan or pencil-and-paper surveys or the idea that the multimedia aspects had made the experience of the survey enjoyable. (71)

5. Answers and answering system—There were many comments about the use of the slider interface. The sliders seemed to be a source of misunderstanding for some and a clever and exact mechanism for responding for others. Users suggested that some response choices were inadequate, irrelevant, or otherwise flawed. Many respondents expressed concern that "neutral" responses were not permitted. **The 10 points in the middle of the 0-100 Likert scale were blocked so that users would have to register a preference.** This caused great consternation for many respondents and may have been one of the instrument's great difficulties, at least in regard to acceptance by the users. (61)

6. Affected my thoughts/caused personal change—Many students noted in each iteration of the survey how their thinking processes had been affected by the survey and the course. Some respondents wrote of their perceptions of changes in their own attitude or opinions that had resulted from participation in the class and/or the multimedia interaction. (33)

7. Accuracy/honesty—Referring partially to the issues of honesty in responding, and partially to how well the instrument addressed their own points of view, many users commented both positively and negatively about the instrument's potential for accuracy. Prompted by the survey items that dealt with individual and group levels of honesty to this type of survey, participants gave their own ideas on the levels of honesty that might be expected in this interaction. (33)

8. Repeating survey/too long/boring—Having to repeat four iterations of the same survey instrument provoked less than satisfied responses from some users and may have affected their response sets. Some users pointed to segments of the interaction, specifically the video vignettes, that might have profited from even more abbreviation, while others stated that the whole interaction was too long.

Often leading with references to repetition or length, some respondents expressed the perception that the experience was boring. (32)

9. Video—Some responses addressed the video vignettes specifically as either valuable elements of the experience or as flawed for a variety of reasons. (30)

10. Helpful for future classes/Use in future—Some users suggested that continued use of this survey could profit future students and instructors. The use of the multimedia instrument's resultant data and conclusions for future human sexuality course planning and improvement was encouraged. (28)

11. Technical problems/misunderstandings/personnel—Misunderstandings, technical difficulties, or confusion with certain aspects of the system or instructions; less than perfect interactions with project monitors; and scheduling difficulties were all addressed. This topic had the largest ratio of negative to positive responses in the survey. (24)

12. Interface advice—Apparently engaged with the experience and the subject matter, some users suggested general and specific improvements for the application's user interface. (18)

13. Survey bias—Certain users noted their beliefs that the multimedia instrument, and perhaps the course, were biased toward a particular agenda. (16)

14. Privacy/controversy/probing/confidentiality —The confidentiality of the application's design and the opportunity to interact privately with the instrument were noted, but also contrasted with some users' concerns that the geography of the laboratory setting and the nature of some of the inquiries made them uncomfortable during the interaction. A few respondents suggested that monitors were too close or specific response items were "probing," or that topics were too controversial or disturbing, although others specifically commented on the fact that they were comfortable with the stimuli and their response options.(16)

15. Thanks/glad/extra credit—Simple expressions of thanks for the opportunity or of being glad to help with the research project appeared from a number of respondents. Expressions of gratitude for the extra credit opportunity mixed with comments regarding the quality of this experience in the realm of extra credit assignments and with some people's belief that five percent of the final grade was inadequate recompense for the effort that they had expended. (13)

16. Clarify/Go back—A surprising number of students used the comments screens to suggest their ideas for improvements to the instrument, including the wish to revisit items to clarify or revise answers. Some students used the comments space as an opportunity to correct or amend previous responses, especially in regard to demographic data. Some noted that they had responded too quickly or carelessly to some items without specifying which ones. (11)

17. Special interests—A catch-all category, this refers to individuals' comments regarding their own points of focus that were not common in the response set. (11)

18. Post results—Respondents requested that the survey results be made public. (5)

19. Personal experience—A few users suggested that the survey would benefit from more specific items regarding the respondents' levels of personal sexual experience. (4)

In regard to most of these categories, there is little to be added to the notes above. Further examination of some others will illuminate the discussion of the present use of the multimedia instrument and point toward some development options for further use of this type of application.

The following nine topics received considerable attention from the respondents. Further exploration of the related responses and their connection to the rest of the response sets will aid in understanding the users' experiences and the results of the survey. These topics will be addressed thematically, not necessarily in the order in which they were introduced above.

Content/items

Answers and answering system

Use of multimedia, computers and video

Technical problems/misunderstandings/personnel

Repeating survey/too long/boring

Accuracy/honesty

Privacy/controversy/probing/confidentiality

Special interests

Affected my thoughts/caused personal change

It is important to be aware that the responses noted above do not necessarily relate to the subject matter of the survey, other than when individuals cite concerns or ideas which are topic specific. Most of the comments discussed herein relate to the use of the multimedia tool in this context, and to the users' perceptions of their experiences.

Content/items

Three main subthemes coexist under this general heading: overall content of the application; construction of the items; and specific response choices and methods. Users often commented on the comprehensiveness of the content, using phrases like "It hit all the major issues" and "seems to get at all aspects of sexuality." These perceptions were balanced by concerns that "Some of the questions were too vague," or "This survey could not possibly accurately represent many of my beliefs because many of the topics are situation-specific."

A striking attribute of many of the free responses was the degree to which students seemed to engage with the material and to think about the tool, its content, and their responses to it. There were requests and suggestions for specific content changes and additions, some of which fit into this category and some of which appear in the special interests section below. Several users suggested more items regarding personal sexual history and experience, an area

that was consciously omitted from the instrument to minimize discomfort for some users. Respondents also noted particular items for which they believed the information was incomplete for them to respond appropriately. The item regarding the beginning age for sex education was of special concern to some users. Requests for added subject matter were common, and there were very few topics or items suggested for omission from the instrument. The only movement in that direction involved the opinion of some respondents, male and female, that the instrument was somehow biased against men.

Aside from comments which will be handled later about the slider interface, there were many concerns expressed about the word choices for the slider anchors. A representative statement of this stance is "Most of the choices were not ones that I would choose." They seemed to fault neither the construction of the items nor the environment of the application, wishing only for a better, richer way to respond. Another complementary suggestion was to allow for "an opportunity for participants to indicate that they don't agree with a question and tell why."

Among all the suggestions for improvement, there seemed to be a sense that the exercise was valuable for the individuals and in the context of the course. This theme runs through nearly all the student responses, regardless of their other comments.

Answers and answering system

The slider interface itself did seem to be a source of concern for some users. Their comments run from discussions of technical problems and misunderstandings (covered below) to the common wish for the opportunity to respond neutrally to the limitations of the two anchor choices.

The blocking of the central ten points on the 0-100 Likert scale described earlier elicited many of the strongest reactions from the respondents. "I hate the no neutral part of the sliders," was among the many unambiguous responses. At the other end of the continuum some users agreed with the woman who stated, "The slider gives you the ability to make your answers very specific."

The preference to not be constrained by the system seemed to influence how users related to the multimedia system. The block on responses in the neutral area of the slider seemed to be interpreted by some respondents as the requirement that a strong choice needed to be made in one direction or the other, thus defeating the subtlety of response that actually was available through this interface.

Many respondents expressed a preference to input text responses to the items rather than to respond using the slider interface. The most common perception in that vein seemed to be that their responses could be more accurate or more complete if not limited by the slider's scale. One student noted that if free responses or comment space were available for all items, "I know this might prove to be time consuming." It is likely that better training, acceptance of neutral or nearly neutral responses, and improved choice of slider anchors would help to avert the limitations that some users experienced.

Use of multimedia, computers and video

For this discussion these topics will be approached together. However, some respondents did seem to distinguish between the use of video and the computer multimedia application.

The reaction to the multimedia tool and to the video and graphic elements contained in it was overwhelmingly positive. The most common responses included the idea that this experience was enjoyable, interesting, and especially, "much better than pencil and paper," and "a great alternative to scantrons." There were some surprising cause and effect attributions from the students such as, "If I am taking an interview I tend to bend the truth. I think that because this was done on a computer I told the truth." The design was appreciated by a user who input, "This survey allowed for good interaction with the ideas brought forth through multimedia and sliders." Even users who had negative comments or very specific criticisms nearly always included a positive statement regarding the overall tool. Many comments noted the novelty of the experience:

> It was my first survey ever done on a computer and I really enjoyed it.
>
> It was a lot more entertaining than I expected.
>
> I really enjoyed this survey...I think this survey is new and very innovative.

The video vignettes themselves were credited with many attributes and effects on the users. Among the comments were the following:

> The movie parts were cool.
>
> This survey really made you take a look at yourself and the videos used were excellent and made the survey a lot more interesting.
>
> The movie graphics and segments made it easier to follow...
>
> It made the situations more real than abstract.
>
> The survey was very interesting and fun to take mostly because of the use of videos on the computer screen.
>
> I liked the videos and everything seemed realistic.

There were, of course, some more negative responses and suggestions for improvement. The students' involvement with the interaction seemed to help them focus on the information and on the delivery medium, allowing them to critique creatively.

> You need to add a way to exit the films if you pick play a second time too (fast forwarding would be nice too).
>
> Some of the videos here were worn out and I only got bits and pieces of it. But the survey was very accurate in portraying situations.

> The last video had too much information at one time for the full effect I think it should be divided up into different segments so we can remember exactly what was said when asked to answer the questions about it.
>
> I thought that some of those videos were really goofy.
>
> It might have been better to use different examples the second time. I recalled the examples and sometimes I remembered the general response I gave.

The respondents seemed to connect with both the media and the messages through this tool. Their positive responses and thoughtful critiques indicate their comfort with the tool and suggest the potential for other uses of similar instruments.

Technical problems/misunderstandings/personnel

A major challenge in the design and use of educational technology tools has been the need to ensure that the technologically demanding applications function smoothly for every user. That challenge includes the creation of clear, concise, and easy to follow instructions and the availability of on-site help as needed. In the application under discussion, a few users had problems in each of these areas.

Some of the technical problems were very real and were not solved, resulting in the restriction of locations for administering the instrument. The hybrid CD/network application was originally tested in the Education Technology Laboratory and in the university library's New Media Center, with computers in both locations approved for use. Some element of the configuration of the New Media Center machines caused erratic operation and response from the application. This was the source of difficulties for many users as noted in the following:

> This survey has been nothing but a frustration. I am in the New Media Center and I am using a computer with a blue dot (Louisville) but on many of the questions the text from the previous question remained on the screen so I could not read the new question. It can't be much of a scientific survey when the machines won't work right. Again a waste of my time and worth much more than five points.

As soon as these limitations were identified, the use of the application was restricted to specific machines in the Education Technology Laboratory where the systems worked more reliably. This change added to already existing confusion on the parts of some users who read only the preliminary instructions to the participants regarding the multimedia interaction. As changes were required, the instructors made announcements in class, and the instructions that accompanied the CDs were updated. The existence of more than one version of the instructions combined with user error to provoke some responses like this:

> Please don't put instructions on BACK of CD box. Not only did I begin this survey on the wrong terminal but have had to instruct two others not to do when they sat there. Probably not a good idea to have two sets of different instructions.

Even though a note at the top of each instruction sheet said to follow "all eight instructions below," some users apparently read only the first instructions handed out very early in the course, or only read the first four instructions on the list distributed with the CDs.

Other sources of confusion were users' unilateral decisions that there were problems with systems that were working fine, scheduling problems when too many students wanted to complete the extra credit assignment at the last minute, and conflicts between the regularly scheduled classes and activities in the lab and users' preferred times for the interaction.

The strength of the expressions of frustration in these responses is balanced somewhat by the fact that there were only 24 users who mentioned these sorts of problems. As this type of application becomes more common, as users become more familiar with computer systems, and as computers and multimedia systems become more and more capable, these types of problems are likely to decrease in number and importance.

Repeating survey/too long/boring

In contrast to the many users who praised the multimedia instrument as interesting, fun, or informative, some individuals stated that the interactions were too long each time, or that the elements of repetition inherent in the pretest/posttest model made the experience boring. It was common, even among these comments to find constructions that were ambivalent. The sentiments that "The media makes this survey more fun but the questions were kind of boring and repetitive," or "it was very long but other than that it was very educational," were typical. Other users appeared to be thinking about the instrument's design, and in some cases, trying to defeat it.

> It seemed as though the same questions were asked at the beginning of the semester. Was this to see how much of an influence the Human Sex course had on changing our minds?

> This survey is very interesting but answering questions more than once was dull. I know this had to be done for reliability reasons, however.

> It was very monotonous doing the exact survey again and I found myself trying to remember the answers I had put down for the first part of the semester.

> I liked it and I had to think about my reactions to make sure I put down the same answers the second time. Good trick!

Some users expressed disappointment that the second set of interactions was the same as the first, in statements such as, "I was disappointed that the second part of this survey was the same as the first. I found myself getting bored and not paying as much attention as I did the first time." For other users the repetition seemed to be useful, and they expressed that utility in statements like:

> Taking the survey for the second time made me think about what I have learned in class over the semester.

> Going through the survey again helped to truly bring out my honest opinions on the topic of sex and how it relates to my everyday life.

There were two users, however, who seemed to believe that the instrument had been changed based on their input during the course. One of them was not pleased with the changes he perceived.

I also do not like the way you are trying to change your experiment midway by including other information that we provided for class. Had I known everything I did for the class was going to be used in this experiment I wouldn't have done it.

I know that you have started using the comments and gendergrams from the Human Sex class. I think that if we had known that those materials were going to be used potentially it would have allowed us to include information that would be more useful to you.

With only 32 respondents mentioning these aspects of the experience, and with many of them exhibiting understanding or at least ambivalence, these do not seem to be major hindrances to the future use of other instruments developed from this one or other multimedia survey instruments in general.

Accuracy/honesty

Some users apparently were concerned with the accuracy of the responses gained through this multimedia tool. It is possible that the focus on their own levels of honesty and those of their fellows may have been prompted by the sections of the interaction that dealt with honesty. It was common for comments to include the idea that the author of the comment had responded honestly and hoped that others would do the same.

I only hope that people were honest in their answers.

I think this was an interesting survey and I hope everyone that takes it is as honest as I am.

The suggestions in the free responses that users were striving for true and accurate responses throughout the survey was reflected in the four survey items that dealt with issues of truth and accuracy. The responses to those items also strongly suggest that the users expect that their own and other people's responses will be true and accurate. Each item is listed below with its anchors arranged with truth and/or accuracy as the 100-point end of the scale and the aggregate score reported as such.

In general, people's responses to this survey will be
invented.....accurate 70

Compared to others completing this survey, my responses will be
less truthful.....more truthful 87

I expect my responses to this survey to correspond to
what I think is expected of me.....my true attitudes 90

My responses to this survey accurately reflect my beliefs and opinions.
Disagree.....Agree 93

Most people's responses to this survey will be truthful and accurate.
Disagree.....Agree 67

These high scores are further evidence that the respondents were answering truthfully and accurately. It is worth noting that their confidence in their own honesty appears to be greater than their confidence in others. One response offered that assessment very directly.

> It was a good study but not all people will be honest or think about how they feel they will just answer.

Comments discussed elsewhere in this document indicate that the content of some items and the slider interactions' structure and response options may have hindered some users in their desire to be honest. That desire, illustrated here, might begin to explain the number and strength of responses regarding item makeup and response options. For many respondents, consideration of honesty and accuracy in the instrument fit inextricably with the issues of privacy and confidentiality.

Privacy/controversy/probing/confidentiality

Although this set of topics did not garner mention by as many respondents as some of the others, the responses that did mention these ideas warrant scrutiny. These issues are important because of the private nature of many topics in the affective realm.

The developers' intention in the creation of the application which this study explores was to create a nonintrusive, easy to use, and comfortable instrument for the users, both respondents and researchers. Most respondents seemed to be relatively comfortable with the content and structure with only a few comments noting exceptions, such as:

> The questions were frank and almost to the point of probing. Some of the film clips such as the date rape and adolescent discussion made me a little uncomfortable.

> Some of the questions and topics were a bit uncomforting but nothing was unbearable.

Others, recognizing the potential for discomfort, elected to offer their own more positive subjective experiences. Given the other positive feedback on many elements of the multimedia instrument, it would seem that these views are likely to be representative of many other respondents.

> The survey was not a lot of effort and the questions didn't make me uncomfortable. I do not consider myself experienced in some of these situations but I tried to answer truthfully.

> I did not mind taking the time in answering the questions. Nothing asked of me made me feel uncomfortable.

Maintaining a reasonable level of comfort with the subject matter and in the interactions with applications such as the one under discussion here may be useful in making these techniques more accessible and user friendly. Achieving this goal might be hindered if some of the suggestions of the respondents were implemented in this instrument.

Special interests

The free response opportunities in the instrument were used by some respondents as the chance to communicate with the application's designers and the course instructors regarding the respondents' own ideas on how the experience might be enhanced. The responses were idiosyncratic for the most part, but may serve to illuminate the variety of individuals' concerns and ideas about human sexuality. A few excerpts will serve as examples.

> It would be interesting to show a porno clip in which a woman is forced to submit and record people's responses if male do feel turned on and empowered if female do they feel desirable or degraded or what?
>
> Abstinence has been ignorantly ignored. Is it even an option here in the nineties?
>
> I think that parents need to take more responsibility in being interested in their child's life.
>
> I think it would have been interesting to have more questions about sexual history.
>
> I think that we are being way too liberal on what we call "date rape." Girls can practically ask a man for sex, regret it the next day, and claim he raped her. We are walking on a very fine line in dealing with this.
>
> I wouldn't mind doing a survey on one's own sexuality.

The variety of these responses attests to the complexity of attempting to discuss human sexuality and the difficulties in teaching about it. It also portrays the challenges for multimedia designers and researchers working in this arena. By extension, it is possible to consider the issues of variety and complexity when considering multimedia applications for use in other regions of the affective domain.

Affected my thoughts/caused personal change

The earlier discussion of the possible reasons for the no significant difference results of the quantitative portions of the multimedia survey used many selections from the free responses that treated the topics of thinking processes and personal change. This topic is tied for sixth position in number of references, with 33 mentions by different respondents.

The instrument was credited by some respondents with raising their awareness, making them think, helping them to figure out their "own beliefs about sex and society," and in at least one case, to "consider the definition of my sexuality and how comfortable I am with it." Others noted their awareness of the pretest/posttest design and asserted that their views on life are "pretty set" and that neither the multimedia interaction nor the course had any effect on them. In some comments, users stated that they were aware of changes in some areas and no change in others. Some of them seemed genuinely surprised at what they say they have learned about themselves through the survey and the class.

These observations cannot be considered as anything other than more elements to consider in this decidedly complex field of research. An interesting aspect is the level of engagement that respondents experienced both with the course and with the multimedia instrument. Another challenge for researchers and practitioners is to exploit this ease of connection through the tool's mediation and use it to improve both student learning and researchers knowledge in the affective domain.

Chapter 5
Conclusions

On the Research Questions

The research problem and the research questions introduced earlier in this document described an ambitious approach to working with existing data gathered through a multimedia survey instrument with an integrated audiovisual/reflective response treatment. At the conclusion of this study, it is easy to see just how ambitious that approach was. A brief look at each question will portray any progress that has been made toward discovering their answers. The lack of significant differences in the quantitative survey response data is acknowledged and precludes any definitive statements based on numerical data. This continuing exploration will consider the discussions in previous sections of this document and suggest how they can be used toward asking better questions, if these ambitious questions cannot be answered here.

1. To what extent will interaction with a multimedia survey instrument that includes an integrated treatment sensitize students to the topics to be covered in a course on human sexuality?

2. Will student attitudes be reliably assessed through a multimedia survey instrument?

3. Will student attitudes change during the course of a multimedia interaction designed to present them with relevant information and experiences and to give them a chance to systematically reflect on their own attitudes?

4. Can the apparent changes be attributed to the video sequences and reflective response treatment within the instrument?

Because only one item of the 24 in the main attitude survey showed any significant change between its first and second iterations, there is no statistical evidence that any sensitization took place nor that any of the other questions should be answered in the affirmative. As reported above, however, there was a perception, independently described by some respondents, that the multimedia experience had affected at least their thought processes regarding the target subject matter.

5. Will student attitudes change over the course of the semester during which they participate in a human sexuality course?

6. Will there be any relationship between the changes, if any, that occur during a single multimedia interaction and the changes, if any, that occur over the course of the semester?

7. Will there be certain demographically definable subgroups within the sample for whom attitude changes and demographic characteristics will be positively correlated?

Again, as reported above, there were no significant differences in the aggregate analysis of the quantitative data from this survey. In regard to question six, there were some individual items that showed significant change over the course of the semester. The only observation,

suggested by this information and supported by the earlier discussion, other than agreeing that no change occurred, is that either many of the items or the 24-item survey instrument as a whole contained errors in design or execution.

The absence of significant changes discovered through the quantitative analysis of the data suggests that all of the originally stated hypotheses are false. It was not possible to reject the null hypothesis in any case.

Alternative Discussion

The inclusion of the freely written responses in the data pool from this multimedia instrument creates a new dimension for the exploration of the instrument's utility. The respondents' statements of their own perceptions of their experiences in the interaction and the course often contradicted the quantitative analysis. These anecdotal and highly subjective reports may seem insignificant until we remember that the affective domain and attitudes in general and human sexuality in particular are very subjective and personal areas of study. The obvious engagement of the respondents with the multimedia application and the subject matter combined to prompt them to offer very specific and telling comments about themselves in relation to sexuality, morality, multimedia, computers, video, and the course that had combined all these. Many respondents asked for more opportunities to express themselves directly about the target issues, stating that they would prefer to write their reactions to the media stimuli, rather than to respond via the graphic interface that was provided. Specific design choices, such as the blocking of neutral responses, contributed to some users' perception that their response choices were unnecessarily constrained. Decisions of this type can often have repercussions that are not immediately apparent. The ability to adopt the user's point of view is a critical skill during every stage of instrument development.

The complexity of the issues addressed in the course is echoed in the complexity of the multimedia instrument, especially the video vignettes, and in the richness and complexity of the users' free responses to all of the elements of the experiences. While simplicity is a virtue in research endeavors, at least for ease of data management, some areas of study may require complex approaches in order to portray their inherent complexities. Through complex instruments that allow the use of a single tool for manageable quantitative and qualitative data gathering and analysis, it may be possible to render the elements of those complexities more accessible and less arcane.

The users' engagement with the multimedia application and their evaluations of it as educational, fun, interesting, and "much better than a paper and pencil survey" combine to suggest that the use of such instruments may help to combat potential subjects' reluctance to participate. This engagement and enjoyment may minimize the temptation for a subject to merely "go through the motions," risking a less-than-optimum response set through boredom or lack of interest in the subject matter or the methodology. This novelty effect will not always be available as these types of tools become more common but, for the present, it offers a potentially useful attribute for research methodologies.

Suggestions for Further Study

The template on which the multimedia instrument was constructed may have much broader applications than are immediately apparent given the "no significant difference" results reported previously. The errors in construction of the items, in delivery of instructions to users, and in design choices within the instrument, all had effects on the final quantitative data and its analysis. This template is not without possibilities as a useful tool, if it is employed to construct instruments that will better exploit its capabilities. This evolutionary process might be undertaken through a series of activities.

There are researchers working in many disciplines who require portable, easy to use information delivery and data gathering instruments who might be recruited for further development of this multimedia template. The use of survey instruments or other data gathering tools that have proven effective in their respective disciplines could alleviate some of the problems that resulted from the original creation of items specifically for the human sexuality application. If such pretested instruments are to be repurposed for use within the multimedia template, it will be critical to design the audiovisual aspects of the interaction to complement the individual items and the instrument as a whole. Excerpts from existing topical motion video sources might be used with still graphics inside the primary instrument, rather than as an integrated treatment. Reviews by experts, end users, and connoisseurs, and basic pilot testing of each instrument will help to ensure a particular instrument's suitability for a specific situation. After such testing, it would be useful to have different researchers and practitioners use the tool in limited circumstances and for them to conduct at least preliminary data analysis before general release.

Any development of the multimedia template for broader applications would require the assembly of specific teams for each incarnation of the instrument. It is possible for some contributors to remain constant from project to project , but others would need to change based on subject matter, choice of media, or target population. For this tool to be useful for other researchers, the data handling functions will need to be better automated. This would require the addition of a skilled statistician to any team that chooses to pursue further development for quantitative research.

The complexity of the tool's capabilities, as discussed earlier, make it an excellent candidate for use in a variety of disciplines and milieus. The flexibility of the design would allow for use even with populations who use a language other than English, are illiterate, or who have disabilities. Each design of the inserted media, the text files, and the data gathering mechanism could accommodate users based on their characteristics and the attributes of the work to be done. A portable version, probably delivering the application via CD-ROM and collecting the data on floppy disks, would be usable on most modern computers. Continued work in education and human resources could create large bodies of comparable data sets from many sources within universities and colleges and from K-12 schools and systems. In the specific application that has been discussed, there might be useful avenues available in adapting proven paper-and-pencil instruments and enhancing them with multimedia stimuli, graphic interfaces, and free text input opportunities. Applications of this type of tool to university outreach programs could expose a larger public to an accessible research program than would normally come in contact with research activities. Internationally, applications could be created with multiple versions, each using a different language, as is commonly done with informational and entertainment CDs. Text-free, entirely audiovisual versions could be used as testing or information gathering devices for groups who either are not literate, or who do not share a common language.

In most of the applications suggested above, the developers should include as much free response type feedback as they believe they can manage. The emergence of the various themes in the free responses in the present study, and the various requests by the users for more such opportunities indicate a need to help users express themselves without constraints. For some of the populations suggested above, that might be a very difficult challenge for the teams who choose to address those groups. The development of a complementary application that would help in coding free responses according to an accepted methodology would be a very useful addition to the present template's functionality.

This template is not the only multimedia survey instrument under development, nor is the technology on which it is based likely to remain current. More general research regarding this type of multimedia tool will benefit the development of this tool and any tools that grow out of it. The growth of web-based interactivity offers opportunities to adapt existing tools or create new ones for specific uses or as generic templates. Creating the right tool for the job and using it well must be the focus of any such endeavor.

References

Ajzen, I., & Fishbein, M. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.

Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ: Prentice-Hall.

Ajzen, I., & Fishbein, M. (1981). Acceptance, yielding, and impact: Cognitive processes in persuasion. In R. E. Petty, T. M. Ostrom, & T. C. Brock (Eds.), Cognitive responses in persuasion. Hillsdale, NJ: Erlbaum.

Allport, G. W. (1935). Attitudes. In C. Murchison (Ed.) Handbook of social psychology, vol. 2. Worcester, MA: Clark University Press.

Bandura, A. (1965). Behavior modification through modeling procedures. In L. Krasner & L. P. Ullman (Eds.), Research in behavior modification. New York: Holt, Rinehart and Winston.

Clark, R. E. (1983a). Reconsidering research on learning from media. Review of Educational Research, 53, (4), 445-459.

Clark, R. E. (1983b). The next decade of instructional technology research. Educational Considerations, 10, (2), 33-35.

Clark, R. E. (1994). Media will never influence learning. Educational Technology Research and Development, 42, (2), 21-29.

Clark, R. E., & Salomon, G. (1986). Media in teaching. In M. C. Wittrock (Ed.) Handbook of research on teaching (3rd ed.). New York: MacMillan.

Dawes, R. M. (1972). Fundamentals of attitude measurement. New York: John Wiley and Sons.

Eagly, A. H., & Chaiken, S. (1993). The psychology of attitudes. Orlando, FL: Harcourt Brace Jovanovich.

Eiser, J. R. (1994). Attitudes, chaos, and the connectionist mind. Cambridge, MA: Blackwell.

Epstein, J., Sage, L., and Wedding, D. (1995). A multimedia program to educate the public about mental and addictive disorders. Behavior Research Methods, Instruments, & Computers, 27 (2), 289-292.

Fazio, R. H.(1986). How do attitudes guide behavior? In R. M. Sorrentino and E. T. Higgins (Eds.), Handbook of motivation and cognition: foundations of social behavior. New York: Guilford Press.

Gagné, R. M. (1977). The conditions of learning (3rd ed.). New York: Holt, Rinehart and Winston.

Gagné, R. M., & Driscoll, M. P., (1988). Essentials of learning for instruction. (2nd ed.). Englewood Cliffs, NJ: Prentice Hall.

Galway, M. A., (1997). Moral development and attitudes about gender, sexual orientation, sex education, and sexual coercion during a college course on human sexuality, unpublished doctoral dissertation, Blacksburg, VA: Virginia Polytechnic Institute and State University.

Hewstone, M. (1989). Causal attribution: From cognitive processes to collective beliefs. Oxford: Blackwell.

Hickman, L. A. (1992). John Dewey's pragmatic technology. Bloomington, IN: Indiana University Press.

Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). Communication and persuasion: Psychological studies of opinion change. New Haven, CT: Yale University Press.

Jonassen, D. H., Campbell, J. P., & Davidson, M. E. (1994). Learning with media: Restructuring the debate. Educational Technology Research and Development, 42, (2), 31-39.

Kahle, L. R. (1984). Attitudes and social adaptation. Oxford, England: Pergamon.

Kozma, R. B. (1994). Will media influence learning? Reframing the debate. Educational Technology Research and Development, 42, (2), 7-19.

Linz, D., Fuson, I. A., & Donnerstein, E. (1990). Mitigating the negative effects of sexually violent mass communications through pre-exposure briefings. Communication Research, 17, (5), 641-674.

McLuhan, M. (1964). Understanding Media. New York: McGraw Hill.

Mueller, D. J. (1986). Measuring social attitudes: a handbook for researchers and practitioners. New York: Teachers College Press

Nevid, J. S., Fichner-Rathus, L., & Rathus, S. A. (1995). Human sexuality in a world of diversity, Ed. 2. Boston, Allyn and Bacon

Osgood, C. E., Suci, G. J., & Tannenbaum, P. H. (1957). The measurement of meaning. Urbana, IL: University of Illinois Press.

Oskamp, S. (1977). Attitudes and opinions, Englewood Cliffs, NJ: Prentice-Hall.

Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In L. Berkowitz (Ed.) Advances in Experimental Social Psychology, vol. 19. New York: Academic Press.

Petty, R. E., & Cacioppo, J. T. (1981). Attitudes and persuasion: Classic and contemporary approaches. Dubuque, IA: Wm. C. Brown Company.

Petty, R. E., Ostrom, T. M., & Brock, T. C. (1981). Cognitive responses in persuasion. Hillsdale, NJ: Lawrence Erlbaum Associates.

Reich, R. B. (1988). Education and the next economy. Washington: National Education Association.

Rosenberg, M. J., & Hovland, C. I. (1960). Cognitive, affective and behavioral components of attitudes. In C. I. Hovland & M. J. Rosenberg (Eds.), Attitude organization and change: An analysis of consistency among attitude components. New Haven, CT: Yale University Press.

Ross, S. E. (1994). Delivery trucks or groceries? More food for thought on whether media (will, may, can't) influence learning. Educational Technology Research and Development, 42, (2), 5-6.

Roth, H-G., & Upmeyer, A. (1989). Behavior as an expressive function of attitudes. In Upmeyer, A. (Ed.), Attitudes and behavioral decisions (pp. 217-253). New York: Springer-Verlag.

Salomon, G. (1990). Cognitive effects with and of computer technology. Communication Research, 17, (1), 26-44.

Silverman, D. (1993). Interpreting qualitative data. London: SAGE Publications.

Six, B., Krahé, B., and Eckes, T. (1989). Predicting behavior in natural settings: Four field studies. In Upmeyer, A. (Ed.), Attitudes and behavioral decisions (pp. 163-182). New York: Springer-Verlag.

Strauss, A. L. (1987). Qualitative analysis for social scientists (pp. 227-36). New York: Cambridge University Press.

Sutton, S. R. (1982). Fear-arousing communications: A critical examination of theory and research. In J. R. Eiser (Ed.) Social psychology and behavioral medicine. Chichester, England: Wiley.

Thurstone, L. J. (1924, 1973). The nature of intelligence. Westport, CT: Greenwood Press.

Thurstone, L. J. (1928). Attitudes can be measured. American Journal of Sociology, 33, 529-554.

Thurstone, L. J., & Chave, E. J. (1929). The measurement of attitude. Chicago: University of Chicago Press.

Upmeyer, A. (Ed.). (1989). Attitudes and behavioral decisions. New York: Springer-Verlag.

Weis, D. L., Rabinowitz, B., & Ruckstuhl, M. F. (1992). Individual changes in sexual attitudes and behavior within college-level human sexuality courses. The Journal of Sex Research, 29, (2), 43-59.

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. American Psychologist, 35, 151-175.

Appendix A
Theoretical Basis for Attitude Items

by M. A. Galway

Gender. Gender is a socially constructed cluster of social and sexual behavior expectations (Osmond & Thorne, 1993; Thompson, 1993). The items in this survey were designed to elicit how much the students' attitudes were influenced by cultural stereotypes. Many college students are just beginning to challenge traditional or media assumptions about their own and others' gender expectations (Street, Kimmel, & Kromrey, 1995). Confusion can exist between sex differences, which are biology-based, and gender differences, which are culture based. Claims of a biological basis for gender stereotypes often are made to defend enforcement of these stereotypes (Hyde, 1990; Thompson & Walker, 1991). These assumptions reflect a lack of awareness of the subliminal power of cultural expectations and support a belief in the personal basis of decisions to behave in a culturally congruent manner (Ganong & Coleman, 1992). The belief that the resulting behavior is more correct and that nonculturally congruent behavior or behavior endorsed by other cultures is wrong, lends power to social, legal, and economic enforcement of the stereotype. Issues such as equal access to educational and athletic facilities can elicit acrimonious debate as a result of these powerful habits of thinking (Koivula, 1995). Family and peer expectations can be powerful inhibitors of individual expression if that expression does not follow the culture's gender rules (Glenn, 1987; Walters, Carter, Papp, & Silverstein, 1988).

1. Biological differences demand different roles for males and females in social and economic areas.
   Agree.....Disagree
   [Biological versus cultural source of gender roles]

2. My decisions about gender roles are not based on family or societal influences, but are based on my personal beliefs.
   Individual.....Cultural
   [Ignorance of cultural influence in role construction]

3. When making a point, it is more important to state my case clearly than to consider the feelings of others.
   Others' feelings.....Clarity
   [Instrumental versus expressive social function, culturally determined as male versus female functions.]

4. My committed partner should have about the same frequency and variety of sexual experience as I have.
   Less sexual experience than I.....More sexual experience than I
   [Concept of marriage gradient in which the male partner is expected to be more experienced, educated, and wealthy.]

5. Affirmative action is no longer necessary, because there are adequate laws in place to level the playing field regarding gender equality.
   Equality exists.....More effort needed
   [Perspective on workplace discrimination and legal recourse.]

6. When and if I have children, I plan to work full-time with little or no interruption to my career.
Agree.....Disagree
[Expectation of own role in family of procreation.]

Sexual Orientation. Sexual orientation refers to the sex of one's partner, "to whom one is attracted, about whom one fantasizes, and with whom one falls in love" (Baber & Allen, 1992, p. 70; Cowden & Koch, 1995). College students may have a clear idea of whether they are attracted to same-sex or opposite-sex partners, however, some may experience a mixture of attraction, fantasy, and love that may shift over time (Wells, 1991). Heterosexuals' attitudes may lie in a range from comfort to intolerance based on attitudes toward intimate relationships and personal experience or knowledge of the every day lives of people with gay, lesbian, or bisexual orientation (Ellis & Vasseur, 1993; Herek & Glunt, 1993; Walters, 1995). The biological basis for sexual orientation is debated by people seeking to protect or condemn choices based on orientation. The social construction of sexual orientation is particularly salient in the social, economic, and political ramifications of compulsory heterosexuality and resulting stratification of power and access to privileges at home, such as family health insurance, or parental rights, and in the workplace, such as right to work issues, or harassment protection (Herek, 1993).

19. People can choose to be homosexual or heterosexual.
Choice.....Not a choice
[Belief in the basis for sexual orientation.]

20. Civil rights protection should be extended to include sexual orientation.
Agree.....Disagree
[Belief in heterosexual privilege and maintenance of that privilege.]

21. I am (would be) comfortable working with a homosexual of my own sex.
Comfortable.....Uncomfortable
[Affect based attitude in public setting.]

22. I would feel comfortable if a member of my own sex expressed attraction for me and asked me out on a date.
Comfortable.....Uncomfortable
[Affect based attitude in social-sexual setting.]

23. Heterosexual couples are more qualified than homosexual couples to raise children.
Agree.....Disagree
[Attitude toward parental rights and heterosexual privilege.]

24. I am as comfortable seeing gays or lesbians holding hands and kissing in public as I am seeing heterosexuals displaying affection in the same ways.
Heterosexual couples only.....Any romantic couple
[Affect based attitude toward open display of sexual orientation.]

Sex Education. Sex education occurs in most state-supported school systems in varying degrees of comprehensiveness in grades kindergarten through high school. In a review of survey data, Greydanus, Pratt, and Dannison (1995) reported that the large majority of parents, teachers, and students wanted to have comprehensive sexuality education in the schools, with percentages in favor on the increase over the past 20 years. Media exposure of children to impersonal, extramarital, and exploitive sexuality is epidemic and consequences of ignorance can be fatal (Holtzman, Mathis, Kann, Collins & Kolbe, 1995; Siegel, DiClemente, Durbin,

Krasnovski & Saliba, 1995). Paradoxically, most parents and children are uncomfortable talking across generation boundaries about responsible sexuality (Kyman, 1995). Debate, meanwhile, continues on what to teach, how much to teach, and when to start teaching it (Henken & Whatley, 1995; Stevenson, 1990; Valois, Roth, Montgomery & Waring, 1995; Visser & Bilsen, 1994). Issues of parental and religious rights often result in children not obtaining any or very limited sexuality education (Baumeister, Flores & Marin, 1995; Kaeser, 1994). Open discussion of responsible moral choices and protections against pregnancy and sexually transmitted disease does not occur easily in home or educational settings (Darling, 1987).

13. Parents should educate their children about sex, and teachers should not be involved.
    Only parents.....Community responsibility.
    [Separation of home and school responsibility.]

14. Sex education should start
    before age 5. .....after age 15.
    [Acceptance of sexuality as a life-long presence.]

15. After an appropriate sex education, an adolescent should know the proper way to put on a condom.
    Agree.....Disagree
    [Degree of knowledge base acceptable in school sex education.]

16. Adolescent sex education should stick to basic physiology and should not address techniques for birth control and disease prevention.
    Physiology only.....Birth control and disease prevention
    [Degree of knowledge base acceptable in school sex education.]

17. Discussion of sexuality as a process of decision making encourages pre-marital sexual activity in adolescents.
    Encourages.....Discourages
    [Beliefs about the outcomes of full sex education curriculum.]

18. As a parent, when it comes to frank discussion of sexual issues with my children I will probably be
    comfortable. .....not comfortable.
    [Affect based attitude toward cross-generational conversation about sexuality.]

Sexual Coercion. Sexual coercion is the "dark side of courtship" (Lloyd, 1991, p. 14) and is the extreme end on a continuum of behaviors that reflect gender stereotypes and "paradoxical gender injunctions ... that can explode in violence" (Goldner, Penn, Sheinberg, & Walker, 1990, p. 343). Researchers on sexual coercion report that women are socialized to maintain relationships and men to maintain control (Walker, Rowe & Quinsey, 1993). The themes of relationship responsibility and control play out in extreme situations to encourage women to stay in abusive relationships and men to use force to control the relationship (Johnson, 1995; Lloyd, 1991; Whitchurch, 1992). College students' attitudes toward these issues can be expressed as denial of the issue or blaming the victim in order to protect themselves against the idea that this could happen to them or that they could be responsible for criminal behavior (Patton & Mannison, 1995).

7. A man can prevent a woman from raping him.
    Always.....Never
    [Belief about stereotype of male-only sexual coercion.]

8. It is better to trust the judgment of the proper authorities if we are to save our moral standards and preserve law and order.
Follow authority.....Question authority
[Authority-based moral decisions as connected to perpetuating violence against women.]

9. Most date rape situations are a result of miscommunication by the woman.
Agree.....Disagree
[Beliefs about legitimacy of victim-blaming.]

10. Because male hormones can make males more aggressive than females, aggressive behavior by human males should be expected and tolerated.
Agree.....Disagree
[Gender stereotypes versus personal responsibility for behavior.]

11. Attitudes toward sexual conduct and violence are affected by a person's exposure to external cultural influences, such as music, television, and movies.
Agree.....Disagree
[Ability to discern cultural influences in sexual violence.]

12. Many women overreact to sexual innuendo at work or at school.
Agree.....Disagree
[Degree of denial of problems or violence or harassment.]

References for Appendix

Baber, K. M., & Allen, K. R. (1992). *Women and families: Feminist reconstructions*. New York: Guilford Press.

Baumeister, L. M., Flores, E., & Marin, B. V. (1995). Sex information given to Latina adolescents by parents. *Patient Education and Counseling, 10,* 233-239.

Cowden, C. R., & Koch, P. B. (1995). Attitudes related to sexual concerns: Gender and orientation comparisons. *Journal of Sex Education and Therapy, 21,* 78-87.

Darling, C. A. (1987). Family life education. In E. B. Sussman & S. K. Steinmetz (Eds.), *Handbook of Marriage and the Family* . New York: Plenum.

Ellis, A. L., & Vasseur, R. B. (1993). Prior interpersonal contact with and attitudes towards gays and lesbians in an interviewing context. *Journal of Homosexuality, 25*, 31-45.

Ganong, L. H., & Coleman, M. (1992). Gender differences in expectations of self and future partner. *Journal of Family Issues, 13*, 55-64.

Glenn, E. N. (1987). Gender and the family. In B. B. Hess & M. M. Ferree (Eds.), *Analyzing gender* (pp. 348-380). Newbury Park, CA: Sage.

Goldner, V., Penn, P., Sheinberg, M., & Walker, G. (1990). Love and violence: Gender paradoxes in volatile attachments. *Family Process, 29*, 343-364.

Greydanus, D. E., Pratt, H. D., & Dannison, L. L. (1995). Sexuality education programs for youth: Current state of affairs and strategies for the future. *Journal of Sex Education and Therapy, 21*, 238-254.

Henken, E. R., & Whatley, M. H. (1995). Folklore, legends, and sexuality education. *Journal of Sex Education and Therapy, 21*, 46-61.

Herek, G. M. (1993). Documenting prejudice against lesbians and gay men on campus: The Yale sexual orientation survey. *Journal of Homosexuality, 25*, 15-30.

Herek, G. M., & Glunt, E. K. (1993). Interpersonal contact and heterosexuals' attitudes toward gay men: Results from a national survey. *Journal of Sex Research, 30*, 239-244.

Holtzman, D., Mathis, M. P., Kann, L., Collins, J. I., & Kolbe, L. J. (1995). Trends in risk behaviors for HIV infection among U.S. high school students, 1989-1991. *AIDS Education and Prevention, 7*, 265-277.

Hyde, J. S. (1990). Meta-analysis and the psychology of gender differences. *Signs: Journal of Women in Culture and Society, 16*, 55-73.

Johnson, M. P. (1995). Patriarchal terrorism and common couple violence: Two forms of violence against women. *Journal of Marriage and the Family, 57*, 284-294.

Kaeser, L. (1994). Education bills easy target for family planning opponents. *Contraceptive Technology Update*(July), 99-100.

Koivula, N. (1995). Ratings of gender appropriateness of sports participation: Effects of gender-based schematic processing. Sex Roles, 33, 543-557.

Kyman, W. (1995). The first step: Sexuality education for parents. *Journal of Sex Education and Therapy, 21*, 153-157.

Lloyd, S. A. (1991). The dark side of courtship: Violence and sexual exploitation. *Family Relations, 40*, 14-20.

Osmond, M. W., & Thorne, B. (1993). Feminist theories: The social construction of gender in families and society. In P. G. Boss, W. J. Doherty, R. LaRossa, W. R. Schumm, & S. K. Steinmetz (Eds.), *Sourcebook of family theories and methods: A contextual approach* (pp. 591-622). New York: Plenum.

Patton, W., & Mannison, M. (1995). Sexual coercion in high school dating. *Sex Roles, 33*, 447-457.

Siegel, D., DiClemente, R., Durbin, M., Krasnovski, F., & Saliba, P. (1995). Change in junior high school students' AIDS-related knowledge, misconceptions, attitudes, and HIV-preventive behaviors: Effects of a school based intervention. *AIDS Education and Prevention, 7*, 534-543.

Stevenson, M. R. (1990). Tolerance for homosexuality and interest in sexuality education. *Journal of Sex Education and Therapy, 16*, 194-197.

Street, S., Kimmel, E. B., & Kromrey, J. D. (1995). Revisiting university student gender role perceptions. *Sex Roles, 33*, 183-201.

Thompson, L. (1993). Conceptualizing gender in marriage: The case of marital care. *Journal of Marriage and the Family, 55*, 557-569.

Thompson, L., & Walker, A. J. (1991). Gender in families: Women and men in marriage, work, and parenthood. In A. Booth (Eds.), *Contemporary families: Looking forward, looking back* (pp. 76-102). Minneapolis, MN: National Council on Family Relations.

Valois, R. F., Roth, N. L., Montgomery, E., & Waring, K. A. (1995). Sex education content of ninth grade health education textbooks: A rhetorical analysis. *Journal of Sex Education and Therapy, 21*, 192-209.

Visser, A. P., & Bilsen, P. V. (1994). Effectiveness of sex education provided to adolescents. *Patient Education and Counseling, 23*, 147-160.

Walker, W. D., Rowe, R. C., & Quinsey, V. L. (1993). Authoritarianism and sexual aggression. *Journal of Personality and Social Psychology, 65*, 1036-1045.

Walters, A. S. (1995). Bringing homophobia out of the closet. *Journal of Sex Education and Therapy, 21*, 231-237.

Walters, M., Carter, B., Papp, P., & Silverstein, O. (1988). *The invisible web: Gender patterns in family relations*. New York: Guilford Press.

Wells, J. W. (1991). The effects of homophobia and sexism on heterosexual relationships. *Journal of Sex Education and Therapy, 17*, 185-195.

Whitchurch, G. G. (1992, November). Commentary on "Dominance norms and domestic violence" by Milardo and Klein, and "A structural-social psychological theory of child abuse" by Sutton and Aldous. Annual conference of the National Council on Family Relations in Orlando, FL.

Appendix B
Full Texts of Free Responses

These responses are exactly as input by the respondents. Each respondent had the opportunity to input text on two consecutive screens for free response at the end of each interaction with the multimedia instrument. The leading three-digit numbers on each entry are the identification numbers used throughout the data analysis. The next number denotes the sex of the respondent—1 for female and 2 for male. the following two digit number is the respondent's age. It is followed by a designation of major program. The input sections for the four screens are separated by tabs.

101 1 20 FCD I like the multimedia questionnaire set up. It made the survey more interesting. This survey provided me with an overall view of what we will be going over in class. It made me more aware of the different issues within human sexuality. This exercise provided me with a more realistic perspective of some of the issues we talked about in class. The issues addresses in class were sexual orientation sexual harassment gender roles and contraception. This experiment was informative. I liked the audio-visual effect.

102 1 20 BIOL I do not understand why we had to answer some questions twice!! cc i enjoyed this survey. The participation in pregnancy/chilbirth question seemed confusing-what were you asking.

103 1 21 PSYC nothing nothing I have o comment I have no comment.

105 1 18 US no comment no comment no comment no comment

106 1 20 BIOL I started over because I was not aware that there would be questions repeated. Students should be told this ahead of time especially because we were told there had been problems already. A man came and told me that I had started over because I was wrong I started over in the middle because I was not aware that there would be ?'s repeated. Students should be told this especially because we were already told that there had been problems. A man came and told me I was wrong for starting over and he was not Being able to so the survey on the computer was neat. You needed to make sure everyone was told what times the lab was open. none

110 1 20 PSYC On some of the questions I didn't fully agree with either choice. I think personal beliefs should account for more reasons. I forgot to click on media as a choice in one of the questions on why I hold the opinions I do. Personal Beliefs should be more accounted for. Sometimes choices other that the ones given could be agreed with. Everything regarding sexuality is not so cut and dry Some of the statements should be given more answer choices. For some questions I didn't necessarily agree or disagree but prefer not to answer didn't work either. Many questions should have other options for answers.

111 1 19 AN SCI I think this was an interesting survey and I hope everyone that takes it is as honest as I am. If so this will be a very good study. I thought it was intersesting. I thought this survey was interesting but there should

have been some new stuff added from the last time we took it. I enjoyed this survey

112 1 20 US It was my first survey ever done on a computer and I really enjoyed it. I think you should be able to type in comments to those questions also if you wish to further explain yourself. I enjoyed the multimedia survey. It was much better than pencil and paper No more comments

114 1 20 US This survey taught me a lot about myself. It questioned the beliefs I held but never really thought about. This survey taught me a lot about myself. It gave me an opportunity to question the beliefs I held but never really thought about. I also found out that I am a little more liberal in my attitudes about homosexuals than I previously thought. Made me think about things I never have before. Made me think about things I have never thought about before. It questioned my beliefs and made me think about myself.

115 1 20 PSYC I think the survey was very good but it seemed a little gender biased. Is there a different survey for mail or female? I also liked the visuals-- it kept my attention more than a regular survey. Some of the questions were a little ambiguous and were diffi I liked it the survey was good the second time around. i don't understand why we had to do it twice. i expected two different surveys. but whatever the reason the survey was fine. the same as before

116 1 20 FCD I found this survey to be more fun to participate in compared to a written out survey I don't have any comments I would be interested to see how I responded to the survey earlier in the year the first time I took it. No comment

117 1 19 HNF I thought that some of those videos were really goofy. This survey was really fun. This was really boring. Why would my views change on this material in only a few months? I liked it the first time but this was rediculous. I enjoyed the class but it hasn't changed my views enough that this survey was relavant to me. This survey also was stupid at the end. If you've already asked me a question why ask it again????

118 1 18 HNF The way that this survey was conducted made it very interesting. The way that this survey was conducted was very interesting. This survey was interesting and should be helpfull in teaching future classes survey was fun

119 1 20 HNF sometimes you have a point to make that can't be made with only one or two responses or words this survey is a lot more interseting than surveys on paper just a little inconvenient. Using famous people as well as average people was helpful.

122 1 21 FCD I was confused about the last couple of questions dealing with childbirth/pregnancy It is difficult to answer some of the questions because I have an opinion but it is not the same with the responses given.

123 1 19 FCD I thought that this was a very good survey. It explored many different issues which are important. I think it should definitely be used in the future. I liked this survey a lot. it should be used again in the future. it was a good indicator of my answers it was good

125 1 19 PSYC I like the videos that were shown. It was much more entertaining than #2 pencil and a questionare. It was a lot more entertaining than I expected. This survey was more interesting then a regular paper and pencil survey. It was more interesting then a regular paper and pencil survey.

126 1 21 Sport Mgmt. “I was led to believe that this was an experiment about attitudes but I feel that it should have been more specific by saying it was for “attitudes on gay and lesbian lifestyles”.” None\ no comments no comments

128 1 20 ACCT I wish there was more choices for some of the questions. To answer what you think on some of the questions a sloder just isn't enough. l Good Survey. Hopefully people will be honest and the survey will help you in future classes. '

129 1 21 COMM I think this survey will really help the professors in 3314 know how the people who are taking the class feel about different forms of sexuality. I think knowing how the students feel is very important in being a good teacher. It was a good survey. I really think that my answers changed from the beginning of the semester. I think that means that the class has taught me a lot! I also wish I wouldn't have missed the few classes I did from sickness because I am sure that I missed out on a lot. I tried to be as honest as I could. I hope that I was.

130 1 19 FCD-HS I thought the survey would be different than it was. I think that the responses and questions will be accurate. I enjoyed the survey better than if I had had to write it down I hope that it helps teach others about gender and homosexuality

131 1 20 FIN beneficial to class fun extra credit Good way to get students' truthful responses.

133 1 20 PSYC&COMM The survey seems very affective because of all the privacy!!! I think people will be more likely to respond this way . Thanks for letting me participate The slider gives you the ability to make your answers very specific. The computer froze the first time I tried to do this survey!!! Maybe there is a way to insure that won't happen anymore.. Overall I liked this survey because it is personal and no one is looking over your back.

134 1 22 FCD/PSYC Some of the questions were hard to understand. Some of the questions needed more options than the sliding scale provides. I just did. I would have enjoyed it a lot more if I was not so tired today. Some of the questions are phrased weird. The question about being comfortable seeing gay/lesbian vs. heterosexual - I was not able to accurately answer because I think regardless of sexual I just did.

136 1 22 FCD I really enjoy this survey than any pencil and paper survey. “I really enjoy this survey than any other pencil and paper survey. I hope my survey can help the “Human Sexuality” class. “ This survey was fun and I enjoyed it. It is whole lot better than paper and pencil survey. But this second survey seems like same as first one. Anyway I enjoyed it. This survey was fun. It is whole lot better than paper and pencil survey.

139 1 17 BUS LAW This throughly covered some controversial topics. I liked it. I enjoyed participating. I think it was a good idea to use a multimedia

survey instead of paper and pencil. I enjoyed participating in the survey. I think it was a good idea to use a multimedia survey instead of a paper and pencil survey.

141 1 21 MGT I believe that the survey was really good. It hit all the major issues and I can't think of anything else that I would discuss. I wouldn't change anything. It was very interesting and it kept my attention. I feel that the questions about your participation in pregnancy and your religion was really not necessary. I believe that the questions at the end about your family etc. was really not that important but in all I liked the exercise.

142 1 20 PSYC/FCD There were a few questions that were hard to really share my opinion on. Also a few at the end were hard to understand but I liked the survey because it made me think. I already did. I really enjoyed participating in this survey. I learned more about my own beliefs and it really tied in nicely to the Human Sexuality class. Thank you! I already did.

143 1 20 FIN no comments none the videos made the survey more interesting the survey made me think about my views on many things that i would not think about otherwise

144 1 21 PSYC This survey was very interesting. very interesting This was very interesting and enjoyable. This survey was interesting and enjoyable.

145 1 19 US good videos easy format difficult accessing the computers due to limit in # difficult accessing computers due to high demand

146 1 20 ME I think this is a really good survey. Some of the questions are a little ambiguous. Also there were a couple of questions that I put the wrong answer to. I would like the opportunity to go back and change them. There was 1 question (asked twice) that I didn't care for. There wasn't a correct response for me and no where to put any comments. .

149 1 19 FCD I don't know how the scroll will be calculated but I don't think I really liked that aspect none no comment no response

150 1 21 BIOL why were some of the questions repeated? i think this survey will be very useful for teaching the class i n the future. I think the questions should be phrased differently for the second half of the survey. It was very monotonous doing the exact survey again and I found myself trying to remember the answers I had put down for the first part of the semester. same as previous comments

152 1 19 FCD thankyou for allowing me to be a part of this survey none NONE

153 1 19 BUS MGT I thought it was very intuitive and at the same time entertaining. I did not mind taking the time in answering the questions. Nothing asked of me made me feel uncomfortable. The Survey was very interesting. Very interesting. Good examples used and very interesting. Also not very time consuming or tedious.

155 1 20 LASC I enjoyed the method of presentation. I am willing to return in the end of this semster to continue this survey. I enjoyed the method of presentation.

Ibelieve that my second set of responses have changed slightly due to this class. In this particular survey I think that there were two questions that I responded to incorrectly in the begining so my answer changed at the end. I enjoyed the film excerpts.

156 1 19 LAND. ARC. the use of film was nice however the answer choices were misleading no response none none

158 1 19 US The box that says you did not move the slider needs to go. It isn't necessary.

159 1 19 BIOL where the cursor was placed may lead to their decision i think it should always be in the middle hi hello videos make it interestimg

160 1 19 FCD-HS This survey helped me to figure out my own beliefs about sex and society no comment I have no comments. no comments

161 1 20 LASC Abstinence has been ignorantly ignored. Is it even an option here in the nineties? Abstinence has been ignorantly ignored. Is it even an option in the nineties? There should have been subtle differences in the second survey in stead of making them blatantly the same. There should have been subtle differences in the second survey instead of making them blatantly the same.

163 1 21 BIOL This survey really made you take a look at yourself and the videos used were excellent and made the survey a lot more interesting. This survey was excellent. It really made you look at your -self and the videos within the survey made it more interesting. This was a very interesting survey. The videos made it a lot more interesting than just writing it down on paper. This was a very interesting survey. The movie graphics and segments made it easier to follow and this was a lot better than writing your answers down on paper.

167 1 19 FCD-HS i enjoyed doing this survey- hopefully it will help you gain insight on how people in our age group have varing opinions and beliefs. “i think it would have been interesting to have more questions about sexual history. what some people may consider “experienced” may be “unexperience to another person. it's all relative.” I thought this survey was interesting- I hope this will help you see how young adults view sexuality. I think this cd was scratched or damaged in some sort of way because it was difficult to view and understand a few questions. The writing was distorted on two questions and the sound on one scene was also distorted.

168 1 19 FCD-HS I gave a response that was inaccurate regarding the ability of homosexuals to raise children. I didn't realize this until I was aked the question for the second time. I do believe that homosexuals are just as capable as heterosexuals when it comes to pa none When asking about my adolescence and who lived in my home at the time I was a little unsure about how I should respond since I lived with each of my parents six months out of the year. Maybe in the future you could provide the space for students to descr I enjoyed the survey but I think it would be interesting to allow students to respond in their own opinion about the films and topics. I know this might prove to be time consuming and an overwhelming amount of responses but I think you would get the hone

169 1 18 ACCT This survey made me really think about situations that did or might happen to me and how I might react to them. none A little long none

171 1 21 PSYC i liked the fact that we took it on computers this will definitely help in teaching this class in the future I really enjoyed taking this survey on the computer. I think that there should have been some way that you could have responded to be neutral.

172 1 19 PSYC Media has more of an influence on my sexual orientation than anything else. Some of the questions asked did not have an answer in which I wanted to apply. hmmmmm hmmm

173 1 20 FCD It was very user friendly which helped make it enjoyable. i think this type of survey (on computer) will aid by getting more accurate responses. The pictures helped you think about the questions but then again they kind of mislead me for ex. the young It was enjoyable one question I chose not to answer because the writing was scrambled and I could not read it. It was interesting how some of the audio clips were sterotypical in themsleves. For example the family that was dressed very conservative saying we shouldn't t I've already responded

174 1 20 FCD Hopefully everyone will answer this survey honestly because there were a lot of interesting questions that other Human Sexuality classes could benefit from. I hope that the participants of this survery are honest so that other FCD 3314 classes can benefit. I enjoyed this survey because I could be honest and know that no one was judging me. One question why did we do everything twice?

175 1 20 BIOL I feel that it will be difficult to get accurate anwsers from people because most probablly have'nt formulated their own opinions about the matters. Futermore people don't really care about the study and therefore they do not think about how they feel bu It was a good study but not all people will be honest or think about how they feel they will just anwser. good stuff!!!!! great stuff!!!!!

176 1 21 ENGL The slide response makes it difficult to respond accurately. the silde is limitingbecause it is difficult to jude how you are responding. If you don't agree/disagree strongly its difficlut to record a response. It needs more options. I don't like responding with the slide bar because it is difficlut to judge how you are responding. The response are needs more options because it's hard to record your feelings if you don't agree/disagree strongly. I don't think the slid bar response is very accurate for it does not allow for a neutral response. Some of the questions are ambiguous. As i said before i think the slide response is not effective.

177 1 24 ARCH Some of the video inserts where hard to understand. I am not sure if it was because of the headphones or the quality of the coping. I feel hat some of the video segments needed to be in shorter segments. So we could relate one video segment to each ind Sometimes I felt like it was both of the items on each side of the slider and would have liked to include them to an equal degree yet was not allowed to do so. Again after finishing all my responses I had to answer the questions again. This was a pain and I felt like this was not so necessary. I did not want to answer the same questions again. That part was annoying. I wonder if my responses changed from the I hope you do use this survey in up coming years. The quality of sound on this disk was not so great. I do not know if this can be approved or not.

179 1 20 FCD-CD I found it very interesting especially the video aspect of it. I found it very interesting. The videos made the survey more interesting.I liked the videos and everything seemed realistic

181 1 18 BIOL I hope the participants are honest enough that this survey can be considered accurate. none

182 1 21 PSYC&COMM bye no comments good luck glad i could be a part of this

184 1 19 FCD-HS My beliefs and morals do not always dictate my actions. What I should do and what I do are often two different things. Ambiguous at some points "this was okay I think that we are being way too liberal on what we call "date rape". Girls can practically ask a man for sex regret it the next day and claim he raped her. We are walking on a very fine line in dealing with this. " see ya

186 1 20 SOC I think that parents need to take more responsibility in being intereted in their child's life. There are to many parents today whose career is more important to them then their children. It's a Shame!!! It was to long! It seemed as though the same questions were asked at the beginning of the semester. Was this to see how much of an influence the Human Sex course had on changing our minds? Anyway it was an awesome interesting class and survey that I did answer hones I answered this survey honestly and would take it again. It really makes you think!!

187 1 19 PSYC Some of the questions I felt I was neutral on but could not respond as neutral. I feel that some of my answers were then not as accurate.
Some of my responces were neutral but I had to respond differently to the questions. This made some of my answers not as accurate. I thought my responces to the survey were as accurate as possible. I think that the class has helped me evolve and in some casesI feel that I became more aware of others feelings. I think that if someone feels neutral to a situation that should be allowed to be recorded and if so then they should maybe explain why.

188 1 22 PSCI Some issues were too dichotomized. I would have preferred more categories for response. I found it much more appealing than a survey on paper.
I know that you have started using the comments and gendergrams from the Human Sex class. I think that if we had known that those materials were going to be used potentially it would have allowed us to include information that would be more useful to you I still think the sliding scale is not fully reflective of my opinions

190 1 19 LASC I thought that the survey was interesting but there should have been a wider range of situations to respond to. It was informative and pretty straight forward. Going through the survey again helped to trully bring out my honest opinions on the topic of sex and how it relates to my everyday life. Being that I have developed a deeper relationship with my boyfriend since the time of the last survey I feel that a l I would like to see some of the survey results to see how my peers responded in comparison to my own beliefs. I also think that th esurvey accurately shows some of the issues (gay/lesbian etc) that our generation has to deal with and showed a more object

191 1 20 BIOL It was very interesting. You might consider surveing people of all ages because my personal views have drasticly changed over just a few years. It was good I think that the survey will be useful in highschools to see what teenagers think of sexuality. I thought that the women that was holding the child needed a reality check she needs to go to lunch with a group of teens.

194 1 18 PHSY ED enjoyed doing the survey on the computer. It was a lot more intresting than usual surveys very intresing and important questions asked The

survey is too long some of the questions are repetitive. Doing it twice was boring none

195 1 19 BIOCHEM More detailed and clear questions could have been asked. No comment I think that this survey is somewhat helpful in determning attitudes towards sex but peoples opinions differ in such a strong issue. No more comments

196 1 20 ENSC I think this method allows people confidentiality so that you will get accurate results of peoples' feelings. The multimedia makes it much more interesting. It is useful in helping to teach a human sexuality class b/c you get the ideas held by the group and you can work to make people more tolerant the media makes this survey more fun but the questions were kind of boring and repetitive same

197 1 21 PSYC i really enjoyed this survey. Having it on a CD made it very interesting. it was fun I wish that the second part of this experiment was different than the previous. At my age I have pretty set views on life and they aren't going to change that much with one semester of human sexuality. otheersise I didn't mind doing this experiment. see previous comment

198 1 18 US The survey was different than what I expected but I thought it was a good tool overall. The only problem was the sound didn't work on my computer. I thought that the survey was a good tool for studying what people think about sexual topics. The survey was overall interesting. I agree that it is better than doing a survey on paper. This time however it was harder to get a time to use the computer. I believe that my responses are accurate and will help to teach classes.

199 1 18 SOC none none.

200 1 21 PSYC interesting but I thought it was tiresome after a while. It was interesting but tiresome after a while. This survey is very interesting but answering questions more than once was dull. I know this had to be done for reliability reasons however. This was a good way to collect data and assign extra credit points as well. It makes one take a closer look at their views on these situations.

201 1 18 FCD-HS I liked how it was put together. it made it interesting although some of the questions were not very clear. no comment it was a good way to present the material needed

202 1 22 MATH Not at all what I expected in this survey but I did learn some things about myself! Some of the questions seem geared tpward a certain group of people to get a particular answer. This surveu tunred out to be kind of a hassle. The attitude of the male officiator was rather abrasive in expaining and running the experiment. The way I see it we are helping him (we do get points) so he need not get an attitude!! Not too bad. It tends to get boring answering the same questions again and again.

204 1 19 HTM The questions using the slider bar were often not truly dichotomous. In other words the response given onn one side was not the opposite of the response on the other. Often more than two responses ould have been appropriate for the questions or the resp "Some of the response using the "sliders" should be more clearly dichotomal." It was easy and enjoyable

205 1 20 HPE I think it will be helpful in understanding how students feel today but it can not be looked on as total truth solely as general patterns. None Really seems to get at all aspects of sexuality very nicely done! Well done

206 1 20 PSYC good survey good survey nothing it was okay

207 1 19 FCD The use of videos on the computer screen was very interesting. This was a neat survey to take. The survey was very interesting and fun to take mostly because of the use of videos on the computer screen. the films were very interesting it was fun to participate in

209 1 21 LASC multimedia made much more interesting m no response none

215 1 19 FCD-HS a good survey however i found some questions to be rather repetitive. some of the questions were hard to answer because of my . very thought pervoking well done. some of the questions were vague and hard for me to answer

216 1 21 PSYC&FCD Ienjoyed participating in this survey. One thing I did find was that some the the responses or rather questions seemed controversial. I have no comments at this time. no comment no comment

218 1 19 FCD The last couple of questions were confusing for me. I wasn't sure what was being asked and there was no way to skip it. None Some of the questions were too vague or the answer could vary depending on the person. if a person is not good with kids it would not matter whether they are homo or heterosexual. If they weren't a good person they wouldn't necessarily be a good parent. none

219 1 22 ENGIN. It was a pretty good survey but I felt some things were ambiguous. It was hard to determine if I actually got the message across that I wanted to. I feel that the majority of teens know how to get pregnant and how to use birth control but don't always u I thought it was pretty good. It was time consuming but I understand the importance none

220 1 19 US The computer mouse was hard to use and it became flustrating to move the slider where i wanted it none I think some of the questions were worded funny and I felt like my opinoin couldn't be project in the way i felt t

222 1 20 PSYC&FCD it was very long but other than that it was very educational I think it was very important to ask our opinions before and after viewing the slides. It is a little too long but other than that i† was O.K. none

225 1 19 FCD "I think it could be better if we could go back if we accidently clicked on the wrong box. I know I clicked "prefer not to answer" a couple of times when I didn't mean to and I couldn't go back!" none With the scene of adolescent girls talking about sex I think it was very stereotypical to have them all African American. Why not mixed or all white. Does this have something to do with statistics. none

226 1 21 PSYC I really enjoyed the video aspect of this survey. It made the situations more real than abstract. I only hope that people were honest in their

answers. I really enjoyed participating in this experiment. It was interesting and fun. I'd be curious to find out the results. I sometimes felt that the slider responses were not what I would like to answer with.

227 1 21 BION It was an interesting survey. Some of the questions were thought provoking which is an aspect of a good survey I thin all in all it was a thorough survey This survey was enjoyable to participate in and hopefully will be useful for other classes. It was a thorough survey

230 1 20 MKTG i wouldn't mind doing a survey on the sexuality of one's self i wouldn't mind doing a survey on one's own sexuality I wasn't sure on how to answer some of the questions. The responses available did not reflect the way that I felt some of the answers did not represent my feelings

231 1 20 FCD I think this is as good as any survey could be. My difficulty is that there are sometimes questions or statements that do not necessarily go one way or another but are middle of the fence with explanation provided a person gives explanation. I think more Ialready did. It was annoying to be asked same questions more than once. Still some bugs in program. Should be allowed to be neutral on a topic ar at least be given space to explain yourself. If things to frequently fall on a continuum like we learned in class then yo You got it on the last screen

233 1 21 PSYC I have no comments on some items you should be alowed to respond neutrally because one may not have a very strong opinion on the subject I thought thats what I jsut did

234 1 19 MSCI There were a few questions that seemed ambigious and hard to understand. There were somewhere between three to five questions that I could not answer truthfully due to the fact that they were a little ambigious. I understand that the section about birth control and abstinece was to show the extremes but I absolutley can not believe that people think the way that religious fanatic woman thought. I enjoyed the survey but feel there should have been some different Please see previous section.

235 1 20 FCD no response interesting It was not biased in any way and therefore it was easy to respond. It was more fun than a paper and pencil survey.

236 1 21 CHEM/PREMED Some questions in my opinion required a nuetral response or an actual answer not just agree or disagree. I felt like some of my answers needed reasons or justifications included because just answering with the slider leaning on one side wasn't axactly whI already did this There are some questions were I would like to clerify my answer more. I guess this is extra space for people writing a book. I feel most strongly about birth contro education. I can't believe there is any question about teaching birth control etc.. How can knowledge cause people to do something stupid.

237 1 19 PSYC none none pretty neat survey none

238 1 19 FCD-HS I especially enjoyed watching the films. I also really liked how scales were used to measure our opinion and we didn't have to answer directly agree or disagree etc. nothing I felt like my responses may not have matched those of before but I enjoyed the computerized survey and hope it the responses will help you. same as before

239 1 19 BIO no comment no comment no comments no comment

240 1 20 FCD It seems that the answer bar would be more effective if when each screen came up it were placed in the neutral position. When it is placed towards a certain response it seems that it may influence a biases or less thoughtful response! I will say again that I enjoyed this survey but feel that the answer bar should have been placed in the neutral position on each new screen. I really feel that the location of the answer bar should have been located in the neutral position every time. The location towards one end or the other could affect/influence some people's responses. I enjoyed this survey because it was not pencil and paper!

242 1 19 FCD This survey makes you think about all of the different things you learn about sexuality throughout your adolescence and what you really think of all of it. this survey goes into all aspects of sexuality thoroughly. Thos survey was thorough and after taking the human sexuality class this semester I believe it will help in the planning of the material for the class. I already commented in the previous box

243 1 19 FCD This was better than sitting at a desk and answering on paper. I feel this is a better way of getting more truer answers from the participants. I thought the video part with the guys holding up signs was very disturbing to females who would have to walk by them. it was okay the video clips were good

244 1 18 FS&T this survey will help the professors of the classes know al I think that the responses will be helpful

245 1 19 PSYC I would have liked to have been able to clarify some of my answers. I also would have liked more choices rather than sliders. I liked the survey. It was fun and easy. I didn't particulary care for the sliders. A lot of the situations presented ex. should an adolescent be able to put on a condom after appropriate sex ed. would depend on some individual factors like age. I don't think a 13 yr old who is not 'high risk' I liked the multimedia a lot. A multiple choice would have been easier to answer than the sliders. They made it hard to judge and be consistent esp. w/o a neutral response available.

249 1 22 EE I hope the results of this survey will be used to prove the importance for sexual education for all age groups. "On the questions with "click the box" selections the boxes selected should remain visible when the question to move on or to re-enter response is put on the screen." Many of the issues posed in this survey were things that I thought about many times during the course of this semester. I think that with education replacing my ignorace I have been able to make my opinions on sexuality more my own and not the way I was

251 1 19 PSYC I enjoyed the survey but it was a little long. I enjoyed this survey but it was a little long. the survey is a little long but it was fun

252 1 20 FCD I would have felt more comfortable with my responses if I was able to go back to certain questions and change my answers. For two or three of the questions I realized after I had moved on that my response was not exactly my true feelings. I liked how a picture was shown above every question. I hope people are truthful when answering this survey. If so you will have a lot of good information. k

253 1 19 US I think that the survey missed some important aspects more personal experience oriented of human sexuality but overall was an excellent survey hggjhg

254 1 18 BIOL I feel that this is a good way to conduct a survey because people's responces are going to be more truthful because of the confidentality. I enjoyed it. I feel that this survey is a good idea and hopefully help out in future human sexuality classes. I feel that survey is abetter way to gather information for future classes.

261 1 18 SOC&FCD I don't have a response. My audiovisual equipment malfunctioned during the part where the woman with the baby was talking so I couldn't respond to one of the questions dealing with her. Why were some of the questions asked twice? Are you trying to see if we respond the same way I already did this part. What's wrong with this computer?

262 1 18 BIOL Some of the answers to the questions did not reflect any of my beliefs and sometimes I wished taht there would be a totally different answer. Also at times I wanted to put it in the middle but I was unable to. Otherwise I think this is a very interestin Some of the answers were ones that I did not agree with. At times I wanted to say a totally different answer than either of the two that were there. Also sometimes I wanted to put it in the middle but I couldn't. Otherwise I enjoyed a computerized surv I enjoyed the multimedia survey and I think that it is much better than a survey with a piece of paper and a pencil. Very well done.

264 1 22 CSES&LASC This survey could not possibly accurately represent many of my beliefs because many of the topics are situation-specific. Anything that encourages broad generalizations is both inaccurate and non-productive. This survey could have been written in a way that would have encouraged critical thinking however using words like All WOMEN and ALWAYS to name two encourages only broad generalizations. I would also like to mention that my fiance's computer locked up an This survey has been nothing but a frustration. I am in the New Media Center and I am using a computer with a blue dot (Lousville) but on many of the questions the text from the previous question remained on the screen so I could not read the new questio The questions on this survey did not allow for a choice right in the middle which I thought was needed. It can't be much of a scientific survey when the machines won't work right. Again a waste of my time and worth much more than five points.

268 1 20 BIOL Thee survey was beneficial to class and also was easier to answer because of the videos. I think the survey was beneficail to class and was interesting because of the videos. I thought the servay talked about many important issues that need to be adreesed more often. I think that I will think about these issues more fully

269 1 20 FCD-CD very interesting- mainly because of the video segments. I encourage more exrta credit options similar to this one. Thank you for making extra credit life interesting very interesting. Preferred this type of survey a great deal more than a hand written survey. nice job with graphics

270 1 19 LASC This survey was fun fast and easy to complete. The videos made the survey fun. I enjoyed taking this survey in the beginning of this course and at the end. With learning about these topics I hope my mind is more open to thinking and learning. I enjoyed the videos along with the questions. It made the survey go back quick.

271 1 20 BIOL very interesting very interesting Computers are the best way to go for surveys in the future. enjoyed the multimedia aspect

272 1 19 FCD-HS Some of the questions could be misleading if the participant was gay or homosexual. none hi hi

273 1 19 PSYC&FCD no comment no comments you should be able to respond neutrally you should be able to respond neutrally.

274 1 19 PSYC good job good survey It was very good. k

275 1 18 ENSC i enjoyed the visual aspects of this survey it made it alive and very interseting. i enjoyed the visual aspects of this survey it made the survey more alive and enjoyable. I enjoyed this survey I like the computer version better that a written one. x

277 1 21 LASC "answers were too cut and dry- need more room for variation instead of simply "neutral"" choices of esponses are too general-students should be able to type in opinions because it's too cut and dry

279 1 19 MATH this was ok this was interesting I think that some of the questions that are given need to ahve other choices than those listed. On some questions that were given I felt that I disagreed with both answers. Maybe you should give a chance to type in your own response if you do not agree I already did this

280 1 19 BIOL I think this has been a good survey because it was private and very explanatory. I think that this survey illustrated a lot of different views and questions that society needs to address more openly. I think sex education in schools is neccessary great

281 1 19 FCD I really enjoyed this survey and I think it is a great alternative to scantrons. The only problem is finding enough computers that are working properly. kopko Ithink this survey is new and very innovative. Some of the questions lack information so I could not answer them properly. More questions could be added to find out more information. I feel I can be more honest with this type of survey and it is not mo I just did this.

282 1 19 PSYCH I think that some of the video questions should have given you a medium to work with because you may agree and disagree dependingon the surcumstances. none NONE NONE

283 1 21 ENSC It was very interesting. It was very interesting. it is a very useful survey.

284 1 18 MATH This type of survey is definately more interesting than a writen one. I like the graphics (videos). I hope the results help aid in future classes. As before. I hope this information is helpful for the future classes. None

286 1 18 HIST It was pretty cool. I am not really sure how it will help much no offense. The mouse and the slider was kinda difficult to manover I liked the survey. The last video had too much information at one time for the full effect I think it should be divided up into different segments so we can remember exactly what was said when asked to answer the questions about it. I liked it and I had to think about

my reactions to make sure I put down the same answers the second time. Good trick!

287 1 19 FCD-HS i was kicked out halfway through the survey by another professor and had to come back and start over 2 hours later. That was not necessary. Other than that this could not reflect some people's true beliefs because it is hard to keep it confidential with not much confidentiality because we are sitting too close. That might cause for untrue answers. you should be able to be neutral some of the questions are slightly leading in a certain direction--also is there any way that we get a chance to see the results? It would be interesting to see what others said as well.

288 1 18 CHEM I think the survey covered a great deal of issues and concerns in society today. If people answer this survey accurately it should be benificial to related courses. This is a good survey and covers a lot of topics in today's society. I think this survey could be very helpful in understanding people's attitudes towards these topics. hgsfdhsf

289 1 20 FCD Everything went well. I am anxious to see how my views change over the semester. As you can see my opinions changed a little throughout the survey. However I did miss read a question at the begining. I would like to change my answer. I would not feel comfortable having someone of the same sex ask me out on a date. I thought it sai great job

290 1 27 ACCT This survey was very interesting. I think that it is a good way to find out more about what people realy think about sexuality. I think that some of the questions were hard to answer. As I already wrote the survey is interesting is a good way to find out about people's thoughts. The survey was a good experience and I am sure that you will get accurate responses but it was very borring to do the same thing twice. Very borring to type my response twice.

291 1 18 BIOL It would be very interesting to know the results of the survey. I enjoyed taking the survey. Thanks for extending the deadline. i enjoyed participating it was a little too long

292 1 21 ENGL It would be interesting to show a porno clip in which a woman is forced to submit and recordpeople's responses if male do feel turned on and empowered if female do they feel desirable or degraded or what? --->to connect the whole porno influence on rape Show a porno clip of woman forsed to submit and see how each gender feels after viewing it...would the males feel empowered<---- to see if in fact reasons behind rape/assault are related to pornography I thought that in some cases you did not give answers appropriate to how I felt or thought like the one about your partner should have or NOT have more sexual experience than you...I'd want some one with about the same. I did not like how we could not do I thought that some answers provided did not allow for how I really felt...also I did not like how we could not answer nuetrally with the slider and I got annoyed with it asking if I wanted to change my answer b/c the computer had the slider already in th

294 1 19 PSYC i think that because it is on a computer it is easier to tell the truth. If i am taking an interview I tend to bend the truth. I think that because this was done on a computer I told the truth. I think that you will get good results. The results will be good

295 1 20 US I thought this was a good survey although sometimes i wanted to say it depends on what the situation is like. For example the question on how

comfortable would i feel when asked out by another girl. i think it would depend on how the girl was i feel unc I think it would help if you could let an in-between answer be used on some questions. Such as the sexual experience one i would prefer that my partner have about the same as me. A

296 1 22 PHYS ED I enjoyed participating in your survey; however I have one suggestion...There were several questions where I was unsure about how I felt. Because my peers and myself were forced to make a stance for every question including those that we had no opinion t It was more fun than I thought it would be. I enjoyed participating in this survey again. I think that my views on sexuality have become somewhat liberated since I have taken this course. I wish that I did not have trouble with the CD that I used previously. I would not have had to redo this survey.

297 1 19 FCD-HS I'm glad I could be of help in conducting this survey! I've really enjoyed helping out by completing this survey. I hope that the information that was obtained is beneficial to you and the course. I have no more comments.

299 1 20 FCD-HS People will respond fairly accuratly. Only in cases of moral contravercy might someone answer in a way that is what is thought to be the expected answer. none none none

300 1 18 ENGL i liked it i liked it. i like doind this sort of thing on the cmputer rather than on paper i liked it

302 1 23 CHEM E This survey made me consider the definition of my sexuality and how comfortable I am with it. I think it would be more useful to delve further into people's insecurities with their sexualtiy to get a more accurate idea of their opinions. This survey allowed for good interaction with the ideas brought forth through multimedia and sliders. I enjoyed participating in this survey because it helped me to think about my sexuality and views on the subject more seriously. It helped me to more closely scrutinize my belief system and why I feel the way I do.

303 1 19 FCD The fact that the suvey is anonymous should ensure more honesty. It did not take a lot of time and the info gained should be useful. Some of the questions dealt with too-exposed topics for example the age and amount of info kids should start hearing about some things. The survey was not a lot of effort and the questions didn't make me uncomfortable. I do not consider myself experienced in some of these situations but I tried to answer truthfully. The survey was well organized and will probably be useful for the next class.

304 1 19 FCD-HD I LIKED WATCHING THE MOVIES I LIKED THE MOVIES I like doing it on the computer it makes it more interesting

305 1 20 PSYC I don't have any none i hated using the mouse it was hard to operate. You should have had a scale from 1 to 10 to respond to instead

306 1 19 UNIV. STUDIES Most of the choices were not ones that I would choose. I would rather have been able to write a response that would be more accurate to my beliefs. My mouse didn't work very well and it was aggravating. From the choices given it was hard for me to accurately express the way that I felt about some of

the issues. I would have rather typed a response or had many different options to choose from. Hi

307 1 21 HNF-NLSP fun The movie parts were cool i enjoyed it i enjoyed it

308 1 21 HIST "I feel that some of my responces were not options on the survey. An example that stands out in my mind is the one about gay public displays of affection. The choice was straight couples or any couples. I disagree with people in general kissing or "maki" this medium can be helpful if improved slightly. Not enough choice were given in the survey by using the slider format. The mood I'm in today may be different than the one I was in when I filled it out at the beginning of the course. The answers may vary do to that fact rather than my change in views.
Thanks for the extra credit opportunity.

104 2 20 AOE The survey asked pertinent questions about sexuality and I imagine some interesting discussions will come of it. The multimedia aspect definitely made it more interesting. I also think the multimedia will assure more accurate resoponces by students taki The questions required a good deal of thought.
Taking the survey for the second time made me think about what I have learned in class over the semester. Class made me more sensitive to other's views and made me much more accepting of homosexuality. This was reflected in this survey. Good luck with the research!!

108 2 22 EE Good luck with the results. I think it can be helpful. Again good luck "Those answers that I marked "prefer not to respond" were done so because the computer jumbled up the question and I couldn't read it. I think the class has been taught from a liberal viewpoint and that the instructor pushed too many liberal views instead" The films were pretty good too. But the organization and general instruction of the course was not very good.

109 2 22 STAT Should talk more about homosexual men. Personally I like Lesbians so it may have been better to show men as well. Overall it was a good experience! None None None

113 2 21 BIOL It seems that males always get the blame but females It seems that males always get the blame but females are just a sexual acitve as males. Sometimes females feel violated even though they elicit sexual activity. "When the screen says that I replied "neutral" I think that should be an exceptable answer." no comment

120 2 20 Engineering While answering some of the questions I wish there was a both or neutral. nothing This was a good survey. I think a neutral option should be allowed.

121 2 22 ISE I did not like the sliders. I wasn't sure if exactly what I meant was being recorded unless I was whole-heartedly agreed or disagreed. A 5 or 7 bubble list with the option of being neutral would have better recorded my answers and let me know exactly wh The questions and answers seemed ambiguous and I felt that a written response would have provided a better answer. I still do not like the sliders. For some of the questions I wanted to provide a neutral answer. Instead I had to prefer not to respond. I can not tell to what degree I am agreeing or disagreeing. I also do not like the way you are trying to change your experiment midway by including

other information that we provided for class. Had I known everything I did for the class was going to be used in this experiment I wouldn't have done it. I think by

124 2 18 ME "I believe this will be an accurate survey for the most part but there were a few questions which shouldn't have had a "yes or no" answer. There were some questions in which I would have liked to have added comments regarding my answer instead of pic" I think by keeping this confidential the responses you receive will be more honest and accurate so this survey should accurately reflect people's opinions. I thought that most of the questions were too specific. There was no middle ground. It makes it seem like it has to be one way or another. none

127 2 20 BUS This was a pretty cool way to take a survey it beats the traditional filling in circles good variety of questions and topics covered The survey was fun but why did we take the same one twice in one semester? I was thinking that the second time around would be a little different. nothing

132 2 19 POL SCI I enjoyed being part of this and will recommend the class to others i enjoyed this survey and will recommend this class to others this was fun ;) i enjoyed myself this is the second time i have seen this

135 2 22 PSYC I really enjoyed this servey and its multimedia format. I really like this survey it was a nice change to scantron surveys

137 2 20 ME I feel there should be an opportunity for participants to indicate that they don't agree with a question and tell why. Some of the questions were phrased in such a way that moving the slider either way had conflicts with my opinions and attitude. Some of the questions were loaded so answering one way or the other would force you to contradict yourself. As I responded the first time I took this survey I disagree with the phrasing of some of the questions as they do not allow a neutral choice or the opportunity to express WHY you disagree with the question. The result is responses which may not accuratel \

138 2 22 BIOL none none I feel that this survey would benefit with a few more questions about past sexual experience. i

140 2 18 PSYC none very good presentation none It was just fine

147 2 22 BUS MGT Give the ability for some questions to be neutral some people do not have a strong view one way or the other. Please post the results of the survey so people can see what others think regarding this subject. Some of the videos here were worn out and I only got bits and pieces of it. But the survey was very accurate in portraying situations It was very useful and accurate

148 2 21 ACCT TOO LONG TOO LONG too long too long

151 2 21 UAP Some of the closing questions about family religion etc. should have had optional fill in the blank style answers - Computers are close enough together that some questions are embarrassing See previous box I kind of wish the end survey were different than the beginning one. I think that the most intelligent thing I heard anyone say in class this year was that young girls should be encouraged in self esteem and confidence as a means of helping their gender I just did

154 2 19 COMM After three tries I have FINALLY completed this survey. I found it to be boring too long and drawn out! Also there are several programming

errors that need to be worked out before giving this survey to others. Finally the choices one is offered to answ I've spent close to two and a half hours to complete this do to fault errors in the programming. And I feel like I've wasted valuable time. This certainly is not worth a mere 5% boonus on my final grade. The value of this project needs to be raised if y I'm glad you got the bugs out of the program. It ran smoothly this time andd I enjoyed participating in it more. Some answers that are made available aren't really fair and make you choose one or the other even though your answer to that question might be more middle of the road. For example the question about when should we start teaching children about sex: the c

157 2 22 ANSC The privacy and individual attention afforded by the multimedia survey allows for us to be honest and open about our feelings. b After going through the class I can say that some of my attitudes towards sexuality issues have changed. Ohers have not varied (views about homosexuality) and others that I had not even considered yet bacame subject of my thoughts. I enjoyed this type of Just typed all my comment before. Thanks for the re-try though.

162 2 20 ACCT I believe doing this type of survey by computer is an excellent idea because people tend to be more truthful about their ideas and beliefs when no one is watching or listening. I felt like there should have been more questions and information in the survey relating to facts as well as people's opinions about AIDS. I believe this is an excellent way to conduct a survey. I think that the results you get will be very truthful and unbiased because of the privacy. I think that having this survey before and after taking the course in Human Sexuality will be very effective. I know that quite a few of my views and opinions have changed because of the class and I'm sure others have done the same.

164 2 22 LASC i liked the multi-media graphics i liked the multi-media graphics this survey was the most interesting survey in which i have been envolved. i liked the multi-media aspects. thanks for the extra credit

165 2 22 FIN none none none none

166 2 20 AOE the answers seemed to be too specific for some of the questions that were asked. it would be better if there was a scale of how much you agreed with something rather than just having the slider some of the questions were too vague i thought that the whole survey was a good idea and it should help with planning out the next class

170 2 22 COMM great well done very nice well done

178 2 22 MATH Although it is better for the survey to not allow neutral responses there were a few questions I would have liked to express my neutrality on more accurately.

183 2 22 PSYC please better correlate the titles on the edges of the scales to the wording of the questions being asked. please don't put instructions on BACK of CD box. Not only did I begin this survey on the wrong terminal but have had to instruct two others not to do when they sat there. Probably not a good idea to have two sets of differnt instructions. same as before. scale cues should more perfectly match the written questions .

185 2 22 FIN Interesting. Some of the questions were difficult to answer because I've never thought about them before. Informative. Informative none

189 2 20 HTM Human sexuality in a multimedia format introduces the public to a more interesting approach at looking towards their sexuality. I noticed that the survey had no grey area- some of the questions forced me into a side. Also I hoped that next time you could have a comment box for each/or some of the questions. The multimedia aspect was very interesting. Maybe you could get a wider response if you placed this program on the internet.

192 2 19 MATH More interesting than written surveys. interesting This was much better than having to read the information off of a paper and writing the answers down on a OpScan form. This survey was good.

193 2 20 IS I think after class today 1/18/96 that most people in the class will have a much easier time expressing themselves on this survey. The survey was answered slightly different the second time through. no response

203 2 20 PSYC the survey addressed some pertinent topics such as date rape touched on a variety of important issues should probably touch on sexual assault etc. more

208 2 26 CS Movies were a little long. Seemed to focus more on women then men. You never discussed men's problems with sexuality in society. none none none

210 2 21 COMM This was definitely the longest survey I've ever taken but I enjoyed it. I thought the survey was interesting and fun to do. It was certainly a more interesting survey than most I have taken. I enjoyed doing this survey. It was designed very interestingly.\

211 2 21 FIN NONE NONE Selector should be placed in exact middle for every question No other comments

212 2 20 UNIV. Studies n/a n/a no comment no comment

213 2 20 US I felt that sometimes there should have been a neutral bar none I felt this survey was really geared towards how men act towards women or basically how men react towards other areas of sexuality. I feel there is room for the woman' aspects. IE-- There was a clip about date rape where the guy was pushy and there was no more

214 2 21 BUS MGT Could use some more general questions Escellant Eacellant

217 2 19 US enjoyed enjoyed It was enjoyable enjoyable

221 2 20 CHEM Good questions. Some really made me think about my own values. I enjoyed the survey Good survey though doing it twice seemed a bit much though it was necessary to see changes in attitudes. good

223 2 20 FCD-HS Thanks for the easy extra-credit!!! Thanks for the easy extra-credit!!! Thanks for the five extra credit points. I liked the video parts.

224 2 24 MSCI POM You probably know this. Positioning the slider to oneside or the other could have an effect on the response given none ghj hgfj

228 2 19 COMM The video sections were too long. "I wish that there was a "go back" response because on ocaisional reflection. I feel that I made the worng desision/answer." p p

229 2 19 BUS. MGT. I think this survey was very interesting and realistic. I really enjoyed the slides. I enjoyed it and I thought it was interesting. once again I thought this was fun and interesting.

232 2 20 BUS need to have more on birth control. none it was interesting it was interesting

241 2 22 PSYC It was more interesting than a written survey but surveys are boring in general anyway. none Too long none

246 2 22 "FOR&WL,&OUT. REC." "There were some ?'s that I thought both ends of the slider were right but I could not show this with this format. I think the "prefer not to respond" should have a free response area to give a more detailed explaination. Not bad but needs work." see other response I hate the no neutral part of the sliders. Any time that i put the slider close to the middle means that i agree with both extremes to some degree about equally or i think that both play a facter in the question. The choices under not responding are ter close at all except for the nonopinion ones for experience of partner. You need to add a way to exit the films if you pick play a second time too (fast forwarding would be nice too).

247 2 21 BUS. MGT. I accidentally said that I had participated in childbirth that is incorrect. I answered as if it were birth control. Besides that I enjoyed this survey. I enjoyed it especially since it was for extra credit I don't agree with not being able to have a neutral feeling recorded.

248 2 20 CSES It should be beneficial to the future teaching of this course. Informative as well as an intelligent way to gather information. I wish the computer would have worked properly the first 3 times I tried to complete this survey. I just answered this question didn't I?!

250 2 19 BUS the survey was very interesting and helpful in thinking about some topics in human sexuality. I was unsure though whether or not the slide was a scale prportionate to how much you lean toward on side or the other or if it was just straight out answers be no comments no comments nocomments

255 2 20 POL. SCI. Some of the questions and topics were a bit uncomforting but nothing was unbearable I hope this i shelpful Very interesting way to do a survey. It definately made it more appealing to the person doing the questionnaire Thank-you

256 2 20 SOC I liked the different ways to answer and the instructions seemed to be clear Videos were a good idea It might have been better to use different

examples the second time. I recalled the examples and sometimes I remembered the general response I gave. Interesting. I rarely thought about what would happen in some of the situations discussed.

257 2 19 ACCT I know for a fact I answered a couple too quickly. I only realized this once I was done selecting the answer. Although we could manuver the slider I feel that some of the statements were too broad. I answered in the other box. Human Sexuality should be better adjusted to the likes and beliefs of the students for next semester. I did not like the method of selecting answers. Some statements were too broad.

258 2 18 ME It was some what of a brief interpetation of what really happens in today's society. none none none

259 2 20 LASC I incorrectly answered one question. I grew up in a suburban area not a rural area. people should be able to respond neutrally on the slider none

260 2 21 HIRM It was enjoyable. I just hope that people are honest. . . One time was enough a

263 2 19 LASC It was an interesting way to take a survey. The older peeople in the videos were the ones being naive. This survey was better than one which would be done on paper. k

265 2 19 CIV E it covered many aspects of sexuality

266 2 20 FIN not enough answer options did not discuss male sexuality makes me feel like you consider all males abusive xxx I was dissapointed that the second part of this survey was the same as the first. I found myself getting bored and not paying as much attention as I did the first time. n/a

267 2 22 CE Certain questions espcially the ones near the end were somewhat vague and/or they did not categorize every possiblity of an answer. I find it somewhat offensive to try to categorize everybody into specific groups. Most people do not fit so nicely into t The video part of the survey should have been introduced so the user could identify what was about to be seen. "The survey had several bugs in it ie it overwrote sentences on top of sentences. I think that this survey may not be conclusive simply because I had to pick "prefer not to respond" for some of the questions because I did not know what they were asking." I felt like the videos did not really go with the questions well.

276 2 18 ARCH I think this will be very helpful in this class. I'm glad that I am able to participate in it so as to give my input. I am glad that I could help. I hope that this helps in the teaching of this course. I hope that this survey helps in the teaching of this course.

278 2 22 ECAS The nueutral option be restricted was not necessary How do I quit? This was the same as before. No different from previous.

285 2 21 PSYC Didn't have headphones so film clips were noisier than I cared for. The questions were frank and almost to the point of probing. Some of the film clips such as the date rape and adolescent discussion made me a little uncomfortable. It was more fun answ I already typed them in the previous response box. sorry.

I don't have any specific comments. It would be nice to be able to do this survey in Newman. Why do I have to type a comment to go on?

293 2 23 ME I was not sure if homosexuality is a choice or not. None The one question about when sex should be taught to children was a bit ambiguous. Was the sider response supposed to be a continuum of ages between 5 and 15 or just whether we would choose 5 or 15 if only given those two choices? None

298 2 21 PSYC whoah it was really a survey Most of the questions were very frustrating because they didn't allow for the accurate expression of my opinions. The sliders were often stupid because it isn't always one side or the other. Most of the questions were very frustrating because they didn't allow for an acurate expression of my opinion. The two ends of the sliders need much impprvement.

301 2 20 HORT It was a worth-while survey and the information will be interesting to hear about when the researsh is done sometimes I anwsered too quickly
This survey was very interesting and it should produce some interesting information. I have a older and younger sibling one x was double clicked so it was recorded wrong sorry.This survey was very interrsting.

309 2 20 US The multimedia was cool. Some questions were a little to fague in some aspects. Some questions were a little to vague left room for misjudgement. The survey was good but it seemed to biased against males. I think it would have been more appropriate to have a less gender specific survey. Same as before.

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M.A.Ed., Instructional Systems Development, 1994, Virginia Polytechnic Institute and State University

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1981-87 Theater arts and foreign language studies, Virginia Polytechnic Institute and State University

1976-79 International studies and foreign languages, University of Nebraska at Omaha

1978 Persian language and Afghan culture coursework, Project Afghanistan, Fulbright Foundation, Kabul University (Afghanistan), and University of Nebraska at Omaha

1974 Summer Photography Workshop, Everett Community College, Everett, Washington

1973 Fall Photography/Film/Video Workshop, Praestegaard Filmskole, Fjerritslev, Denmark

B.A., Communication Arts, (Theater and Film), 1973, Lindenwood College, St. Charles, Missouri

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1997-98 Adjunct instructor, Teaching and Learning Department, Virginia Polytechnic Institute and State University

1997 Teaching team member, Vilm course, Theater Arts Department, Virginia Polytechnic Institute and State University

1996 Teaching team member, Director multimedia course, Instructional Systems Development (ISD) program, Virginia Polytechnic Institute and State University

1992-96 Co-Instructor, Desktop and Digital Video Production, ISD program, Virginia Polytechnic Institute and State University

1992-97 Video consultant, ISD Program, Virginia Polytechnic Institute and State University

1995-97 Trainer and technical consultant, Community Based Natural Resources Management Project, Dakar, Sénégal

1985-97 Individual instruction and technical consultation, various clients

1992 Course assistant/interpreter, video production course, International Film and Television Workshops, Rockport, Maine

1991 Video workshop instructor, Reynolds Homestead Learning Center, Critz, Virginia

1990-91 Trainer and technical consultant, Sénégal Reforestation Project, Dakar, Sénégal

1988 Unit manager/director of photography, Scene Directing, International Film and Television Workshops, Rockport, Maine

1986-88 Video workshop instructor, Blacksburg Public Access and Montgomery County Parks and Recreation

1985-86 Field study instructor, Film Production in a Crew Context, Theater Arts and Communication Departments, Virginia Polytechnic Institute and State University

1987 Instructors' assistant. Advanced Acting Virginia Polytechnic Institute and State University

1979 Film Production Instructor, Metropolitan Technical Community College, Elkhorn, Nebraska

1976-78 Film Maker in Residence (secondary school film production instructor), Omaha Public Schools and Nebraska Arts Council

1977 Film Maker in Residence (secondary school film production instructor), Topeka Public Schools and Kansas Arts Council

HONORS AND SCHOLARSHIPS:

1994-95: Virginia Tech Instructional Fee Scholarships

1993-94: Virginia Tech Instructional Fee Scholarship

1970-73: Member Alpha Psi Omega, theater honors fraternity, chapter president 1972-73

1969-72: Honors Scholarship, Lindenwood College

Awards and recognition of film and video productions by various entities

PUBLICATIONS:

Hergert, T., & Lockee, B. Building visual literacy through multimedia: An interactive approach to visual design. In R. Griffin (Ed.) Eyes on the Future: Visual Literacy in the Information Age. Selected Readings from the International Visual Literacy Association, Blacksburg, Virginia.

Two applied revisions of a multimedia tool: Assessing attitudes towards computer technology and cultural diversity. Hergert T., Holmes, G., & Tlou, J. (1995). In D. Beauchamp, R. Braden, & R. Griffin (eds.), Imagery and Visual Literacy. Selected Readings from the International Visual Literacy Association, Blacksburg, Virginia.

Learning visual design through hypermedia: Pathways to visual literacy. Lockee, B. & Hergert T. (1995). In D. Beauchamp, R. Braden, & R. Griffin (eds.), Imagery and Visual Literacy. Selected Readings from the International Visual Literacy Association, Blacksburg, Virginia.

Combating computer fear and apprehension through interactive multimedia. Hergert T., & Holmes, G. (1994). In D. Beauchamp, R. Braden, & J. Baca (eds.), Visual Literacy in the Digital Age. Selected Readings from the International Visual Literacy Association, Blacksburg, Virginia.

Design consumer horticulture mass media programs for efficiency. Relf, P. D., Frank, M., and Hergert, T. (1991). HortTechnology 1(1):117.

Numerous informational, educational, and narrative film and video productions

Contributions to various multimedia projects and theatrical presentations

PROFESSIONAL PRESENTATIONS:

Hergert, T. R., Galway, M. A., and Holmes, G. A. (1997). "A Multimedia Survey Instrument to Assess Attitudes toward Sexuality." Presented at the International Visual Literacy Association (IVLA), State College, Pennsylvania

Monroe-Baillargeon, A. P., Meltzer, J., and Hergert, T. R.(1997) "Using Multimedia to Explore Educators' Attitudes and Preconceptions Regarding Collaboration." Presented at the International Visual Literacy Association (IVLA), State College, Pennsylvania

Hergert, T. R., Galway, M. A., and Holmes, G. A. (1996). "Exploring Attitudes toward Human Sexuality through a Multimedia Survey." Presented at the International Visual Literacy Association (IVLA), Cheyenne, Wyoming

Hergert, T. R. and Galway, M. A. (1996). "Reflections on Sex: Assessing Student Attitudes via Multimedia." Presented at the Eastern Educational Research Association (EERA), Cambridge, Massachusetts

Hergert, T. R. and Holmes, G. A. (1995). "A Multimedia Exploration of Attitudes Toward Cultural Diversity." Presented at the International Visual Literacy Association (IVLA), Chicago, Illinois

Hergert, T. R. and Lockee, B. B. (1995). "Building Visual Literacy Through Multimedia: an Interactive Approach to Learning Visual Design." Presented at the International Visual Literacy Association (IVLA), Chicago, Illinois

Hergert, T. R. and Holmes, G. A. (1995). "Multicultural Survey." Presented at the Eastern Educational Research Association (EERA), Hilton Head, South Carolina

Hergert, T. R., et al (1995). "Assessing Knowledge/Attitudes Towards Multiculturalism and Diversity via Interactive Multimedia." Presented at the Association for Educational Communications and Technology (AECT), Anaheim, California

Hergert, T. R. and Holmes, G. A. (1994). "Using Multimedia Tools to Assess Knowledge and Attitudes Toward Multiculturalism." Presented at the International Visual Literacy Association (IVLA), Tempe, Arizona

Hergert, T. R. and Holmes, G. A. (1994). "Using Multimedia to Assess Attitudes Toward Computer Technology: A Follow-up Study." Presented at the International Visual Literacy Association (IVLA), Tempe, Arizona

Hergert, T. R. and Lockee, B. B. (1994). "Learning Visual Design through Hypermedia: Pathways to Visual Literacy. Presented at the International Visual Literacy Association (IVLA), Tempe, Arizona

Hergert, T. R. and Lockee, B. B. (1994). "Using Multimedia to Teach Concepts of Visual Composition." Virginia Educational Media Association (VEMA), Richmond, Virginia

Hergert, T. R., et al (1994). "Introductions to Applications That Can Turn You, Your Students and Staff into Multimedia Users and Where to Look for Help". Presented at the Virginia Educational Media Association (VEMA), Richmond, Virginia

Hergert, T. R. and Holmes, G. A. (1994). "Assessing Computer Skills and Phobias Through Interactive Multimedia." Presented at the Eastern Educational Research Association (EERA), Sarasota, Florida

Hergert, T. R. and Holmes, G. A. (1993). "Combating Computer Fear and Loathing through Interactive Multimedia." Presented at the International Visual Literacy Association (IVLA), Rochester, New York

OTHER CONFERENCE ACTIVITIES:

Graduate student participant/staff (1997), Professors of Instructional Design and Technology, Smith Mountain Lake, Virginia

Session Chair (1997), Eastern Educational Research Association (EERA), Hilton Head, South Carolina

Session Chair (1996), Eastern Educational Research Association (EERA), Cambridge, Massachusetts

Session Moderator (1995), Excellence in Education Conference, Blacksburg, Virginia

Session Chair (1995), Eastern Educational Research Association (EERA), Hilton Head, South Carolina

Session Chair (1994), "Evaluating Health Programs for Different Populations," "Multicultural Issues," and "Relationships to Achievement." Eastern Educational Research Association (EERA), Sarasota, Florida

Session Chair (1993), Eastern Educational Research Association (EERA), Clearwater, Florida

PROFESSIONAL MEMBERSHIPS:

International Visual Literacy Association (board member, 1994 to date; Visual Literacy ReView editor, 1996-1997)

Association for Educational Communications and Technology

Eastern Educational Research Association

OTHER PROFESSIONAL EXPERIENCE:

1972 to date Freelance film and video production and postproduction services for various clients, including:
Major corporations
Film and video production houses
Public universities and schools
Public television stations
Commercial television stations
Independent producers

1980-81 Television news photographer/editor, KMTV, Omaha, Nebraska

COMMUNITY ACTIVITIES:

1995-97 Staff Senate, Virginia Polytechnic Institute and State University
Co-chair, Communications Committee
1995-98
Member, Executive Committee
Member, Intellectual Properties Committee

1997-98 Staff representative to Faculty Senate
Member Commission on Faculty Affairs
Member Equal Opportunity and Affirmative Action Committee

1995-97 Volunteer group leader, Peacework, Ixmiquilpan, Hidalgo, Mexico

1992 Volunteer group leader, Peacework, Ixmiquilpan, Hidalgo, Mexico

1991-97 Member, Development and University Relations Staff Association (DURSA), Virginia Polytechnic Institute and State University, President 1993-1994

1991-92 Member, Classified Staff Affairs Committee (CSAC), Virginia Polytechnic Institute and State University

1982-87 Volunteer actor and technician, Theater Arts/University Theater, Virginia Polytechnic Institute and State University

1978-80 Board member, Om Cooperative Foods, President 1978

1976-79 Actor, photographer, volunteer; Omaha Community Playhouse

SPECIAL COMPETENCIES:

Digital and analog video production and postproduction, all facets

Multimedia production experience in Authorware, Director, and Hypercard, including CD ROM production

Macintosh computer skills, some PC/Windows familiarity

Still photography, 35mm through 4x5, including dark room skills

International experience as trainer, volunteer leader, consultant, video producer, and student

Functional Spanish and French with experience in Danish, Russian, Persian, and German languages

PADI certified SCUBA diver

Underwater videography and photography