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Activation of Community Television and its Influence on Students' Creative Thinking Level

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ABSTRACT

The goal of the research was to examine whether a relation exists between students' experience in community television and changes in their creative thinking ability. Community television is a tool that enables the expression of wishes, opinions, ideas, thoughts, experiences and skills via community television broadcasts. Learning in community television affords experience with different types of activities. Each role requires different skills and characteristics. In the present research we used job analysis to characterize the different experiences within the framework of community television. Job analysis is a technique for presenting detailed information on activities carried out within the framework of the job. The job analysis used in this research is based on a list of abilities, traits, skills and fields of knowledge from which the person suitable for the role should be chosen. The influence of students' experience in community television on their creative thinking level was examined, as well as whether different experiences in community television have a different effect on the students' creative thinking. The research population included 157 subjects who underwent a set of tests for evaluating their creative tendency (curiosity, originality, and general creativity score). All subjects experienced the production of a movie, while learning the secrets of television production and experiencing production roles according to their personal choice (director, editor, photographer, actor). The choice of experience was made according to each student's personal choice, with the aim of enabling the expression via multiple intelligences. The tendency to creativity was measured using a tendency to creativity questionnaire [1]. After the learning and the process of producing the movie, the subjects took the same set of tests in order to examine the change that took place following this process. They were also interviewed in order to discover their opinions and feelings regarding the process they underwent. Analysis of the tests and the interviews indicates that students who experienced community television production roles improved their creative tendency level in all experience roles: director, editor, photographer and actor. An open experience system that integrates different levels of experience and active learning, autonomous learning and affords expression for multiple experiences with the aim of creating a common project in which all contribute their share towards the final product can develop the tendency for creativity among students.

Keywords: Job Analysis, Creative Thinking, Community Television, Learning by Doing

1. Theoretical Background

We have been researching different variables that may help implement change in learning systems for over thirty years [2,3]. The present research examined the influence of the process of "learning by doing" on students' creative thinking ability.

"Creative" means bringing something into being that did not exist previously, the ability to create a new, original, unexpected and different creation [4-7]. Creativity is a dynamic process. It is ongoing and developing. Creative processes are based on the ability to create new connections while using new schemes of thinking, new ideas and new conclusions via experiences that until that

time were not connected to each other. Creativity is a trait that enables us to deviate from the familiar boundaries, and is perceived as a guarantee for flexibility of thought expressed in affording original solutions and raising new ideas [7,8]. Creativity is a manipulative action of converting the existing, reshaping it, and creating new connections in order to solve a problem. It is actually a kind of unconventional use of existing knowledge, degradation of existing patterns and unexpected use of their components to create new patterns.

Creative thinking is a thinking pattern that tends to lead to creative results, *i.e.* original, continuous and congruous results according to the criteria of a particular field. Creative thinking enables us to activate the trait of

creativity in a systematic manner. It is a conscious and deliberate system that refers to all types of information and its sources, while constantly searching for alternatives. Creative thinking actually refers to the human intellect. Creativity is a kind of intelligence. The need for creativity is found in places where a new idea is needed, when there is a problem, crisis or conflict, when other approaches have failed and where a new idea may create an opportunity that can afford an advantage or benefit. Any occasion that necessitates thinking, needs information, analysis and creativity. Only teaching that includes active thinking will develop independence and creativity in the students that will lead them to effective learning. The classroom should turn into an environment in which students can develop "high order thinking," *i.e.* active participation in collecting, expanding, reconstructing, interpreting, evaluating, transferring and reaching conclusions. Since experiencing roles in community television is a kind of active learning, we assume that such an experience will develop a degree of creativity among the students.

Creativity is also courage, since anything innovative and unknown is also not sure and is not compatible with past experiences. Facing a new insight requires daring. Creative thinking is a way of life, a lifestyle that prevents life's depletion of meaning. Research differentiates between a creative personality characterized by abilities and a creative personality characterized by traits. A creative personality characterized by abilities was defined by Guilford [9] and Lowenfeld [10]. They defined creative thinking as branched thinking characterized by intellectual abilities. Guilford defined creativity by researching the structure of the intellect. In his opinion, the abilities that characterize creative thinking, which can be measured, are fluency abilities (amount of responses), flexibility abilities (diversity of the types of responses), originality abilities (uniqueness of the responses), sensitivity abilities (ability to recognize problems), processing abilities (ability to process data), and redefinition abilities (ability to change data and reformulate them). Lowenfeld also differentiated between factors and abilities. The factors that comprise the intellect are sensitivity, fluency, flexibility and originality and the abilities are redefinition, analysis, synthesis and organization.

Torrance [11-13] viewed creativity as a unique cognitive ability. Creative people use the same cognitive processes as others, but in an efficient and flexible manner while having ambitious and sometimes even dangerous goals. Gardner [14] presented creative people as devoted to their work and enthusiastic, exhibiting the need to do something new and with a strong commitment to their final goals and targets.

The traits that characterize the creative personality are explained as two traits that comprise a fundamental condition for this personality: originality and openness to the environment. Nilsen [15] characterized creative people as

open, sensitive, curious, playful and with a sense of humor. Smith [16] emphasized additional traits that characterize the creative personality: willingness to take risks, willingness to fail and to learn, internal motivation, satisfaction from work. Many studies report that creative people are characterized by openness to new experiences, growth and development [17-21]. Creative thinking is a conscious ability that helps in the development of new unconventional ideas and in the development of several possibilities for solving a problem. The literature lists six principles for creative thinking:

1) Creative thinking necessitates esthetic and practical standards to the same extent. Creative people strive towards originality, and towards something fundamental and powerful with a broad range of influence [22,23].

2) Creative thinking is dependent on focusing on the goal and on the results to the same extent. Creative people examine goals and alternative approaches at an early stage of the thinking effort, evaluate them critically, understand the nature of the problem and the standards necessary for solving it, are willing to change their approach and later redefine the problem according to need [24,25].

3) Creative thinking is dependent on mobility more than on fluency. Creative people can turn problems into more abstract or more tangible, into more general or more unique.

4) Creative thinking is dependent on work at the edge of the thinker's ability more than at its center. Creative people have high standards. They accept conditions of confusion, uncertainty and high risk as part of the creative process, and learn to perceive failure as normal, interesting and challenging.

5) Creative thinking is dependent on objectivity just as it is dependent on subjectivity. Creative people consider different viewpoints. They reject occupation with final products or intermediary products and return to them at a late stage in order to evaluate them from a greater distance [23].

6) Creative thinking is dependent on internal motivation more than on external motivation. Creative people feel that they choose what to do and how to do it. They evaluate the task they were obligated to perform as an answer by itself, and not as a means for achieving an end, and enjoy the activity, its background and its context [26].

The more the person's thinking is guided by these six principles, the more creative it is. We assumed that experiencing community television production roles demands affording several solutions to a problem, with development of new, original and unconventional ideas while realizing principles of creative thinking. Five characteristic dimensions of creative thinking that touch upon the characteristics of the examined role holders are:

- **Meta-cognition:** People thinking and learning on

their own. The students must think about their moves all the time and plan how to advance in light of the results of the action and learning. For example, they must observe the products of the filming in order to decide how the edit. Thinking about the learning is carried out during the entire production process.

- **Critical thinking and creative thinking:** Critical thinking directed towards creating evaluations of things, and action processes and creative thinking directed towards the creation of creative results. The students must think in terms of the viewers of the movie and create evaluations and changes accordingly along the entire process.
- **Thinking processes:** The thinking processes are expressed in the design of concepts and principles, in understanding, problem solving, making decisions, research, composing and verbal dialogue. The production process requires the transmission of a message via the movie and therefore requires thinking processes.
- **Central thinking abilities:** A certain category of abilities has a clear connection to creative thinking, formulation of questions, conclusion and reconstruction. Creating a movie, as mentioned, is a way of asking a question and obtaining an answer. Production of a movie requires formulation of questions, conclusions and reconstruction.
- **Relations between fields of knowledge and thinking:** A creative personality in one field tends to be creative in other fields as well.

Four levels of creative thinking can be discerned:

- 1) When the students begin to answer a question, but do not know what follows and cannot continue with the thinking process.
- 2) When the students give an evasive answer that did not answer the question directly, but is related to it.
- 3) When the students try to think and create an answer, which is correct or incorrect.
- 4) When the students refer to the question or the problem with a detailed answer, accompanied by tangible examples and with reference to their life experience [27].

The present research proposes a model for cultivating the thinking abilities and traits that will promote creativity by means of experiencing the fulfillment of roles in community television.

1.1 Developing the Tendency to Creativity

All people are creative, although the degree of creativity varies from one person to another. If we supply practice and training, organizational structures and systematic techniques, we can raise the general level of the creative ability. Thus, experience can develop the tendency to creativity. Development of creativity does not take place uniformly. We usually begin our lives as very creative,

but at age eight or nine the extent of creativity decreases because of thinking and behavior habits. Guilford [28] indicated an arrest of the development of creativity in the late years of adolescence and its reawakening in the early thirties, years during which the quality of creativity reaches its peak.

Creative thinking can be taught by cultivating patterns of thinking. A deliberate change in creative thinking is possible, but requires a great deal of motivation, energy and the ability to recognize new forms of thinking, feeling and behavior. We claim that experience with community television will develop a certain creative tendency because it is a different pattern of thinking and behavior. Researches indicate an improvement in creativity by training and the development of creative thinking abilities via different teaching methodologies [29]. Experience in community television is, as mentioned, a combination of several teaching methodologies. Numerous approaches to teaching creativity emphasize a diversity of thinking patterns that help break down the structured system of ideas [30-33]. Interdisciplinary teaching serves as a strategy and a tool by the teacher to develop the tendency to creativity in the student. Education towards creativity should expose the students to the taste and texture of the creative inquiry and should strive to cause the students to become enchanted with it. We assume that an environment such as community television will enable creative inquiry and will lead to the development of a tendency to creativity.

The television production process includes many roles (producer, director, editor, photographer, actor, investigator, light or sound person). The present research focused on only four roles (director, editor, photographer, actor). These roles were prominent in the preliminary questionnaire on community television production, as obtained from the report of 45 community television coordinators. The director, photographer, editor and actor comprise an integral part of the television production process. They work in a team and all contribute their professional part to the production of the movie. Each of the students experienced one of these roles during the production process.

The directors direct the movie, position the movie, and give instructions to the other role holders. The directors' main job is to turn the words into pictures, turn the script into a visual picture that will reflect what is written in it and illustrate the text. The directors are supposed to see the final product in their mind's eye.

The photographers, who photograph what they choose, seemingly comprise an "external space" as opposed to the inner world. This space contains unique emotional elements from their inner world, which are created as a response to the circumstances of their lives. Photography itself may have a therapeutic effect and may serve as a spring-board for the youths towards a new type of coping. Photography is a type of observation, a type of process-

ing of stimuli which originate in reality, affording an interpretation to them that takes place in the brain. The brain organizes the data which it receives in a subjective manner that is dependent on the emotional, personal and cultural context, and is based on the collection of information, learning the components of the reality and constructing fixed patterns that identify them as a result of experiencing them in different situations. Photography enables the photographers to observe and arrange the data, the pictures or reality in a way they choose and thus to create the emotional or personal context of their choice. Dealing in photography as an artistic means enables the students to afford an authentic expression to their identity and express their opinions and approaches towards many issues, while creating order and organization within their inner world [34]. Personality factors such as tendency to creativity, emotional intensity and motivation, will contribute to the quality of the photographs because of the uniqueness and sensitivity that will be added to the final picture, which will turn it from a "picture" into a "creation".

The editors are judged by the ability to realize the director's desires during the editing process and by the ability to observe the "materials" (the raw photographs), by an objective observation and by advising the director how to improve and change things pertaining to the editing of the movie, in order to improve the "final product." Editing movies is a creative field, which necessitates wisdom and feeling. Editing is to know how to activate the viewer, to surprise, shock, excite or frighten. The editors actually cut in order to fuse, fuse in order to cut, cut in order to draw near. What was taken apart is re-composed, will be organized in a special order and at a special rate, with a special sound track. The editors create meaning by changing the order of things. Thus, the editors can influence the style of the movie. The role of the editors is to help the directors exhaust the movie's potential, transmit the story, saying or plot in their unique style. The editors edit by means of an editing system that enables control over the time, the picture and the esthetics of the movie. Personality variables such as tendency to creativity, emotional intensity and motivation will influence the editors' imprint on the quality of the final editing.

The actors must present the text visually, and are supposed to "enter the figure" and personify scenes that will appear real to the viewers. The actors perform a type of dramatic act. In the dramatic act the students take on a role and become someone else. They imitate that person in action and in speech, using real or imaginary objects. The students' speech during acting is imitative speech, or declarations that serve as an alternative to objects, actions or situations. Experiencing dramatic acting enables the students to investigate the social roles as preparation for their participation in the life of the family and the community, while developing the ability to view the

world through different eyes. The actors improve their acting ability as they accumulate experience. When participating in different acting roles, their ability to react increases. When acting together with other actors, they become acquainted with the different interpretations which different actors attribute to the same role, and when they act out this role with the same actors in different cases, each acting episode changes shape and becomes something new.

The literature indicates that the goals of dramatic acting include emotional and physical unity, development of social skills and effective communication, encouragement of creativity, imagination and intuition, and processing of emotional contents. Courtney [35] claimed that drama enables all students to cultivate their talents in collaboration with the environment and with the group. Dealing in drama as a spontaneous creative activity removes obstacles, reduces anxieties, increases motivation and perfects the expressive ability. All types of students can be offered a creative dramatic activity for cultivating their natural talents and for affording reinforcements or solutions for their virtues or limitations.

Students who experience community television as actors act a kind of socio-dramatic acting. They take on a role, pretend to be someone else, share the situation with friends and develop social skills via this process. Personality variables such as tendency to creativity and emotional intensity will influence the actors' acting and their ability to persuade the audience of the credibility of their acting.

2. Research Method

The goal of the research was to examine the relation between students' experience in community television and their creative thinking level. Does a relation exist between the actual experience and the development of the students' creative thinking ability? What is the difference between the level of creative ability among students who experienced and students who did not experience community television production processes (control group)?

Two research methods were used in order to achieve the research goals. In the first part of the research we collected information from the students using quantitative instruments, because of the experience in using these instruments and the possibility of processing them and because of the strength of quantitative research in reaching conclusions and generalization from information that is based on a large sample of the population. In the second part of the research, information was collected using the qualitative research method, with the aim of collecting information from the subjects and discovering angles and processes that are not obvious. The qualitative instrument in the present study was the focused guided interview, which affords freedom to the interviewer and the interviewee, and enables achievement of a broader

picture of the researched reality. The qualitative research method had several goals:

1) To supplement and deepen the understanding of phenomena which we identified using the quantitative data of the research.

2) To consolidate and emphasize the psychological characteristics of the role holders, also from the subjects' point of view.

3) To describe behaviors and opinions not expressed in the quantitative research.

Use of the two research methods (quantitative and qualitative) in one research is customary in the research literature and is recommended in studies that examine learning environments, due to the limitation of the quantitative research [36,37]. The qualitative research, via the interview, complements and expands the results of the quantitative research. Combined use of both methodologies is also recommended by researchers [38] in order to strengthen the internal and external validity.

2.1 Sample

The sample included 157 subjects, boys and girls, youths, from ten settlements with a medium-high socioeconomic status. The settlements were sampled randomly from all the settlements in Israel where there are active groups of community television. These are peripheral settlements, since more community television groups are active in them. The control group was also sampled randomly, from the same districts and from settlements with the same socioeconomic status. The groups are similar in terms of their cultural, economic and social background. 119 students experienced community television production processes and 38 comprised the control group, *i.e.* students who did not experience the television production processes.

The subjects: The subjects are boys and girls aged 12-16 who were chosen randomly to be part of a group that experienced community television production. The groups were mixed in terms of the ages (12-16). In order to obtain valuable reciprocal actions between the students, prominence of categorizations which dictate separation (boys-girls, age groups, homeroom class) must be abolished. Mixed-age groups can advance the development of all their members, young and older alike. The youths learn that they can be sources of information and help for their peers. The more they experience situations of literacy in the social context, the more complex, deliberate, planned and continuous is the level of their activity, which ends in a solution [39]. Multi-age learning helps the self-adjustment [40].

2.2 The Research Instruments

The following instruments were employed for the present research: job analysis according to the competency-based approach and a questionnaire for the tendency to creativ-

ity [1].

2.2.1 Job Analysis

Job analysis is a technique for presenting detailed information on the activities carried out within the framework of each role and for determining the data required of each worker in order to perform these actions at a satisfactory level. A job is the entirety of the tasks directed towards the achievement of a particular target. The goal of this technique is to collect data and create quality information on the demands of the role. It was developed in order to supply human resources managers with a systematic and tested tool that can help in the creation of quality information on the demands of the role as the basis for the development of the role holders. Job analysis:

- Helps the manager and the worker define obligations and expected results from the role holder and the tasks derived from them.
- Comprises a document that helps direct the workers in their work.
- Defines the importance and the time frame required for the job.
- Supplies the candidates for the job with realistic information on the work (thus reducing the exchange rate).
- Comprises an instrument for examining the need for the role, its authorities and position in the organization.
- Supplies quality information for making skilled decisions.
- Comprises the basis for creating advancement tracts.

There exist several techniques for performing job analysis:

The competency-based approach (CB): Analyses based on a list of the abilities, traits, skills and fields of knowledge, from which the relevant person for the role should be chosen. CB techniques include: 1) the occupation-mapping model [41] that maps the motivating potential embodied in the role (the abilities that the role requires), the identity of the role, the meaning of the role, the status of the role, the autonomy of the role and the extent of feedback in the role; 2) job analysis based on occupational reward which is based on a complex instrument composed of 21 measures of occupational reward, *i.e.* the extent to which the occupation in the role meets the need for achievement, the extent of authority, creativity and independence, etc.

The behavior-based approach (BB): Analyses based on a list of behaviors or processes, from which the relevant behaviors for the role should be chosen.

The performance-based approach (PB): Analyses based on a list of outputs and targets required for achieving the goals and aims of the organization, from which the relevant outputs for the role should be chosen.

BB and CB techniques include: 1) qualitative job analysis, description of the work as tasks and sub-tasks, features of the work and the requirements of the occupation in terms of traits and abilities (verbal description); 2) functional job analysis, description of the work as tasks and sub-tasks with reference to people, data and objects; 3) job analysis based on a structured questionnaire that presents collection and analysis of frequent activities and their grouping into six groups with a common denominator: information, thinking, achieving outputs, interpersonal activities, environment and different aspects pertaining to the job. The questionnaire contains 182 statements that describe the job in these six measures.

Technique that combines all three approaches (PB + CB + BB): This technique is based on the perception of improvement in performance. The role is perceived as an organizational sub-system. The role therefore has a destination, purpose, organizational environment, superior, suppliers, subordinates, outputs, targets, skills and threshold conditions.

In the present research we used the competency-based approach to job analysis. This is an analysis based on a list of abilities, traits, skills and fields of knowledge, from which the relevant person for the role should be chosen, and is based on Hackman and Oldham [41]. This approach maps the abilities, identity and meaning required by the role.

2.2.2 Examination of the Tendency to Creativity Using the Rookey [1] Questionnaire

The creative tendency test is a questionnaire for examining creative tendencies [1]. The questionnaire tests the traits: creative behavior, ability, self-direction, behavior based on values, flexible thinking, original thinking, developed and branched thinking, willingness to take risks, sense of comfort in complex situations, curiosity and fluency of thought. The questionnaire contains 184 statements, where 23 are formulated such that a positive answer means a creative approach and 161 are formulated such that a negative answer means a creative approach. We therefore performed inversion of the scores such that a high score would express creativity and a low score would express lack of creativity.

The questionnaire is divided into two subquestionnaires, a "curiosity" questionnaire and an "originality" questionnaire. The "curiosity" questionnaire contains statements that refer to the desire to know, to learn new things and to be open to others' experiences. The "originality" questionnaire contains statements that refer to original thinking, flexible and branched thinking, thinking fluency and desire to remember new things.

2.2.3 Scoring

The subjects were asked to indicate the description of the answer that best describes them on a scale of 1 to 5, from "not true at all" to "very true." Higher values indicate

higher creativity. The reliability of the questionnaire was $\alpha = 0.81$. Three measures were created for each subject, two which express curiosity and originality and one general measure. The measures of curiosity and originality were calculated as the means of the answers to the items of the creative tendency, respectively. The general measure for tendency to creativity was calculated as the mean of the answers to all items of the questionnaire. The reliability of the measures was tested as internal consistency according to Cronbach's alpha and was found to be higher than 0.70 for all measures.

2.2.4 Interview

A qualitative research instrument was used to understand the conditions under which the behaviors we observed during the experience in community television production occurred, what the subjects felt and the background that led to these behaviors. The interviews were intended to find the meaning which the subjects attributed to things, what they thought about the research topic, what they believe in, what they prefer and what in their opinion influenced the process. By exposing the students' viewpoints we succeeded in understanding internal processes that were not exposed through the questionnaires. We were also able to cross between the students' answers in the interviews and their answers on the questionnaires by the questions: "What do you think developed in you?" and "What do you think caused the improvement?" Seventy randomly-chosen students were interviewed. However, due to incompatibility with the questionnaires (some interviewees did not participate in the first or second part of the research), only 61 interviews were used.

The interviews were performed according to the rules of an open ethnographic interview [42]. These are interviews based on friendly, harmonic and informal relations and enable free flow of information. The interviews were recorded in order to make it easier for the interviewer to maintain eye contact with the interviewee and to enable a pleasant and comfortable atmosphere. The interviews were later transcribed and encoded. They were constructed as a guided and focused interview whose aim was to understand what variables changed in the students and how they felt with this, according to their role in the production. We also asked what variables they thought did not change and why. The questions in the interview were divided as detailed in **Table 1**.

The interview was held in a friendly informal manner (in order to increase the interviewee's trust in the interviewer). The interviewers had an outline of questions, but their goal was to encourage the interviewees to tell their experiences from the process, describe events and express opinions.

2.2.5 Analysis of the Interview

The interviews were analyzed using content analysis [43,

Table 1. Description of the types of questions asked in the interview

Type of questions according to Spradley [42]	Description of type of question	Questions asked in the research
Far-reaching question	Description of a particular task that the interviewee performs	A. What was your role in the production? B. What in your opinion did the process you underwent contribute? C. What do you feel developed in you?
Local question	Question as a result of the information in the far-reaching question	A. What in this course caused this development? B. Did this change something in your nature?
Example question	The interviewer asks for examples for clarifying the descriptions	A. In what do you think you improved the most?
Experience question	The interviewees are asked to describe an experience they underwent and to contribute from their personal experience	A. What changes do you feel in your ability? B. How do you think this can be improved even more?

44], which is based on the analysis of thematic units [45] that are defined by the contents told in them. The content analysis process includes a search for components that are repeated in the collected data. These components are defined as categories for analysis.

We searched for prominent and interesting components that were repeated at high frequency. The students' sayings were encoded and analyzed according to Strauss and Corbin [46], and categories that describe their sayings were created. These components were defined as categories for analysis. The answers to the interviews were given to ten referees from the field of education who were asked to match between the students' answers and the chosen categories in order to verify the reliability of the categories in each question. Changes were made in the matching between the answers and the categories according to the referees' answers.

2.2.6 Data Analysis

Quantitative data analysis was performed according to the frequency of the appearance, *i.e.* the number of appearances of each category in the analysis units, and the frequency of the appearance of all the categories.

2.2.7 Reliability and Validity

Reliability deals in the possibility of replicating scientific findings [38]. External reliability refers to the repetition of the research by another researcher and internal reliability refers to the extent to which another research and the same instruments and methods can yield identical results. Reliability in a qualitative research is not compatible with reliability in a quantitative research, and is based on the extent of being able to rely on the collected data. The reliability of the qualitative part of the research was maintained by the following:

1) Choosing informants: Informants are the studied population. The students who participated in the experience process are most suitable for supplying the qualitative information on the process they underwent through their experience in community television [47,48].

2) Audit trail: A detailed recording of all the details related to the research in general and the ways of collecting the information and the data analysis process was

conducted in order to enable other researchers to reconstruct the details of the research.

3) Mechanical reporting of the data: The interviews were recorded on a tape recorder, which strengthens the reliability of the results [38].

Validity refers to the verity of the scientific explanations for a social situation, phenomenon or curriculum. Internal validity refers to the correspondence between the results and the subjects' reality. The presence of the researchers during the interview and use of documentation methods such as a tape recorder are among the weaknesses of the internal validity. However, this is also the source for the strength of the method. The interviews were held in the students' natural location in a manner that reflects their life reality. The research validity stemmed from the manner of collecting the information:

1) Internal validity: Use of several research instruments that enable crossing and verification of the data [43,44,48]. The data obtained in the interview were compared with the quantitative data in order to verify the validity of the findings.

2) Content validity, expert referees: The interviews were given to referees from the field of education and after receiving an explanation on the essence of the research they matched between the students' answers and the chosen categories. Changes were made in the choice of categories, according to the referees' answers.

Qualitative research necessitates use of ethics to protect the privacy of the subjects, exhibit sensitivity towards them and construct the researcher's credibility [49,50]. In the present research the encounter between the students and the work with them was based on personal relations between the researcher and the subject and the closeness between them. The following steps were taken to preserve the rules of ethics in the research:

1) The subjects knew that the research examines the learning process via community television and expressed their consent to participate.

2) The subjects used fictitious names in all questionnaires and interviews and remained anonymous. They were not exposed with their full names or any other detail that could indicate their identity.

2.3 The Research Procedure

The research was divided into two parts:

Part A

Job analysis was performed for role holders in community television in order to locate the psychological variables that characterize each experience.

1) Mapping the experiences in community television (role holders) by analyzing roles (questionnaires and interviews).

2) Defining the different levels of experience in community television according to role holders (director, editor, photographer, actor) based on analysis of the roles after their performance.

Part B

1) Pre-test.

2) Intervention in learning via students' experience in community television at a scope of 90 hours.

3) Production of a product (report) by the students after their experience in community television.

4) Post-test.

5) Holding interviews for confirmation of the quantitative research.

Analysis of the roles was divided into several stages: A. Survey; B. Interview; C. Questionnaire; D. Analysis of the questionnaire; E. Questionnaire for creating ranking between the experiences:

1) Survey: Surveys were administered to about 45 community television coordinators in which they were asked: what are the four most significant roles in community television in your settlement? The results of the surveys indicated that the most significant or the most prominent roles are: directors, actors, editors and photographers.

2) Interview: Fifty role holders (professionals) from the field of television (12 directors, 15 actors, 10 editors and 13 photographers) were interviewed and were asked in free form, what personal abilities are required for success in their role. The interviews were held according to the rules of the open ethnographic interview [42]. Such interviews are based on friendly, harmonious and informal relations and enable free flow of information. A long list of personal abilities necessary for success in the role was then prepared.

3) Questionnaire: A questionnaire was administered for creating a ranking between the experiences. After we had the four roles (experiences) that were defined as most significant and prominent, a questionnaire was administered to the same 45 community television coordinators, in which they were asked to rank the experiences and indicate which role requires more creativity and which requires less creativity.

The next stage included the intervention program underwent by the subjects and testing their level of creativity before and after the program. This stage was also di-

vided into several parts: A. Pre-test; B. Learning the television production processes; C. Experience in production roles; D. Producing a movie; E. Post-test; F. Holding interviews. 150 subjects comprised the research group and 50 students comprised the control group. They were all administered the tendency to creativity questionnaire [1].

We did not ask the students to indicate their name, so that they would feel free to report their true feelings, since this is a very personal questionnaire, and we were afraid they would not report their true feelings but rather what they think is expected of them. We therefore asked them to identify themselves by a fictitious name. We also asked unimportant details such as the number of brothers and sisters and the shoe size so that we could match between the pre and post-test.

Analysis of variance of the questionnaires indicated no significant differences between the groups, and a normal distribution. It may be assumed that the groups are homogenous and that the subjects began at a similar starting point.

Learning the television production processes lasted for eight months. Before beginning the studies, the students were told that the goal of the learning is to experience processes of television production and that at the end of the studies they would have to produce their own work, a movie common to the entire production team that will include a director, photographer, actor and editor. The students experienced 24 2-hour meetings during these eight months, *i.e.* a total of 60 hours. At the end of the lessons they received tasks whose goal was to experience the diversity of issues and roles that were studied.

Researches indicate that significant learning takes place via methods that develop activity integrated with learning tasks, stimulating learning that integrates illustrations, practicing the content of learning and educational experiences that encourage in-depth learning [51-54]. The students experienced a diversity of roles from the field of production in order to produce the final product, a movie.

In the first stage they had to choose a role. The principle of personal choice enables the adolescents to choose the field in which they want to deal, the type of activity and the diversity of activities. The rationale behind the choice is the assumption that free choice promotes the creation of real motivation and can strengthen the youths' decision making process and their taking responsibility for their choice. Since the choice of the role is influenced by the personal ability, professional and personal tendency and goals and values, the principle of free choice enabled all students to choose their role and field of activity according to their ability, tendency, personality and goals. The students chose the role they would experience (director, editor, photographer, actor) and the

experience began. The experience took place between the lessons, in tasks they received.

Production of the final movie was the peak activity in the learning process. All role holders participated in the production of the movie, where each comprised a complementary part in the production process. Production of the movie also included experiences not examined in the present research (producer, investigator, sound person, script writer). The production included the directing of the movie, photographing it, acting and editing. The learning process and the reaching of conclusions were performed in real time, during the production via instruction by the coordinator and in collaboration with the director.

135 students from the research group were tested individually in the post-test questionnaire, in role analysis and in a self-image questionnaire (15 students who participated in the first part of the research were absent from the second part, 10 were absent since one group closed during the year and 5 for personal reasons). 40 students from the control group were individually tested in the questionnaires for measuring the variables chosen in the role analysis and in the self-image questionnaire (10 students were absent for personal reasons). The order of the tests was identical for all subjects.

Of the 135 students in the research group who were tested a second time, 119 remained to the end, since 16 questionnaires were invalidated or because of incomplete answering of the questionnaire or because of experiencing a role not included in the research. Of the 40 students in the control group, 38 remained since 2 questionnaires were invalidated or because of incomplete answering of the questionnaire.

After the learning and the production ended, 61 students were interviewed. Each interview lasted about 30 minutes. The students were asked 17 questions referring to the process they underwent, which tried to clarify their feelings, what they thought the process developed, what in the process caused the development, did something change in their ability, what in the course caused the change, etc. The interviewer presented general questions as well as leading questions in order to guide the students. The interviews were recorded on a tape recorder and were later transcribed. The interviews were conducted by teachers with experience in educational work with youths who received written and oral instruction pertaining to the interview design, being strict about a pleasant atmosphere, eye contact with the interviewee, directing the students, expected answers and how to refer to them.

3. Results

The research was carried out in two stages. In the first stage a comparison was made between the subjects who experienced community television production processes (the research group) and subjects who did not experience

these production processes (the control group). The groups were matched in terms of the students' level and their socioeconomic level.

The second stage was intended for the 119 students who experienced the television production processes. These students included 71 boys and 48 girls and were divided into four role holders according to their experience in the production process: director, photographer, actor and editor. The boys were divided into 19 directors, 12 editors, 18 photographers and 22 actors and the girls into 9 directors, 15 editors, 14 photographers and 10 actors.

3.1 Tendency to Creativity

The variable tendency to creativity was divided into the measures curiosity and creativity. The means of the curiosity measure before and after the students' experience in community television production among the research group are presented according to the nature of the role (type of experience). The differences in the level of curiosity before and after the experience in community television in each of the types of experience (director, editor, photographer, actor) were examined by a *t* test for dependent measurements. A significant difference was found in the means of the curiosity measure before and after the experience in community television production in each of the experience types: director ($p < 0.001$, one-way, $t(27) = -4.49$), editor ($p < 0.001$, one-way, $t(26) = -7.29$), photographer ($p < 0.001$, one-way, $t(31) = -7.39$), and actor ($p < 0.001$, one-way, $t(31) = -5.11$). Thus, all four roles resulted in a higher level of curiosity after the experience in community television compared to its level before the experience.

The means of the originality measure before and after the students' experience in community television production according to the nature of the role (type of experience) are presented in **Table 2**. The differences in the level of originality before and after the experience in community television in each of the types of experience (director, editor, photographer, actor) were examined by a *t* test for dependent measurements. A significant difference was found in the means of the originality measure before and after the experience in community television production in each of the experience types: director ($p < 0.001$, one-way, $t(27) = -6.36$), editor ($p < 0.001$, one-way, $t(26) = -5.19$), photographer ($p < 0.001$, one-way, $t(31) = -7.89$), and actor ($p < 0.001$, one-way, $t(31) = -5.21$). Thus, all four roles resulted in a higher level of originality after the experience in community television compared to its level before the experience.

The means of the general tendency to creativity measure before and after the experience in community television according to the nature of the role (level of experience) are presented in **Table 3**. The differences in the level of the tendency to creativity before and after the

experience in community television in each of the types of experience (director, editor, photographer, actor) were examined by a *t* test for dependent measurements. A significant difference was found in the means of the tendency to creativity measure before and after the experience in community television production in each of the experience types: director ($p < 0.001$, one-way, $t(27) = -6.41$), editor ($p < 0.001$, one-way, $t(26) = -5.53$), photographer ($p < 0.001$, one-way, $t(31) = -7.97$), and actor ($p < 0.001$, one-way, $t(31) = -5.16$). Thus, all four roles resulted in a higher tendency to creativity level after the experience in community television compared to its level before the experience.

The differences in the tendency to creativity level among the students in the control group before and after the period during which the students in the research group experienced community television were examined by a *t* test for dependent measurements. A significant difference was found in the means of the measure of curiosity among the students in the control group in the period before and after the students in the research group experienced community television ($p < 0.001$, $t(37) = 3.47$). Furthermore, the tendency to creativity level was found to be higher before the experience in community television among the research group (mean = 3.85) compared to after the period of the experience in community television (mean = 3.68).

No significant difference was found in the means of the measure of originality or the means of the general tendency to creativity among the students in the control group in the period before and after the students in the research group experienced community television production ($p < 0.05$).

One-way analysis of variance (ANOVA) was performed. No significant differences ($p > 0.05$) were found in the level of the self-image (personal, social, moral and general measure), the tendency to creativity (curiosity, originality and general measure), leadership (charisma, inspiration, individualism, intellectual stimulation and general measure), motivation to give, emotional intensity and motivation between the students according to their choice of role.

3.2 Interviews

The qualitative findings of the research were obtained

Table 2. Originality, means among students who experienced community television production according to the nature of the role

Role	<i>N</i>	Mean before	<i>SD</i>	Mean after	<i>SD</i>
Director	28	3.22	0.53	3.97	0.52
Editor	27	3.15	0.69	3.88	0.56
Photographer	32	3.08	0.50	3.91	0.58
Actor	32	2.93	0.73	3.56	0.48

through an interview held with the students after their experience. The goal of the interview was to compare the quantitative results and the students' subjective feelings as well as to find out what in their opinion contributed to their development and improvement. The students' frequent answers are presented in **Table 4**.

4. Discussion

This research focused on the relationship between students' experience in community television and a change in their creative thinking ability. The goal of the research was to examine whether experience in community television develops the creative thinking ability in the students and whether different experiences have different effects on the creative thinking ability as presented in the role analysis. The tendency to creativity variable was divided into two factors, curiosity and originality.

Curiosity: The curiosity factor included statements that refer to the desire to know, to learn new things and to be open to the experiences of others. It was found that the level of curiosity was higher after the experience in community television than before the experience in all four experiences, with no difference between the different experiences.

Curiosity is perceived as a motive force in the child's development [55], as incentive for learning achievements [56] and as a major lever for advancing scientific discoveries [57]. The learning process by means of experiencing community television developed more curious students. Their level of curiosity increased, including the need to ask questions and the need to know. Experience in community television enables coping with situations of curiosity in each of the roles. Curiosity is a type of inquiry, a desire to know more, to discover. Maw and Maw [58] defined curiosity as a combination of a positive reaction to new, strange or mysterious events while investigating them, the need or aspiration to know more about yourself or your environment, surveying the environment with the aim of finding new experiences, focusing on the examination and inquiry of stimuli in order to know more about them. The students experienced roles that created the need for curiosity.

Originality: The originality factor included statements that refer to original thinking, flexible and branching thinking, thought fluency and the desire to remember new

Table 3. Tendency to creativity, means among students who experienced community television production according to the nature of the role

Role	<i>N</i>	Mean before	<i>SD</i>	Mean after	<i>SD</i>
Director	28	3.35	0.51	4.07	0.46
Editor	27	3.24	0.66	3.95	0.51
Photographer	32	3.17	0.57	4.02	0.54
Actor	32	3.02	0.72	3.66	0.47

Table 4. A summary of the students' frequent answers in the interviews is presented according to the type of experience

Question	Director	Editor	Photographer	Actor	Answer of the majority
What in your opinion does the process contribute?	Self-confidence	Understanding/information	Understanding/information	Understanding/information	Understanding/information
What developed in you?	Understanding/learning	Understanding/learning	Understanding/learning	Understanding/learning	Understanding/learning
What in the course caused the development?	The cooperation	The role	The role	The role	The role
Did this change something in your personality?	Self-confidence	Express an opinion, participate more	Self-confidence	Self-confidence	Self-confidence
How do you know that this caused a change?	Feel	Feel, am more interested in issues	Feel	Feel	Feel
What in the course caused the change?	Performing the role	Performing the role	Performing the role	Performing the role	Performing the role
Did this change something in your ability?	Knowledge	Knowledge	Knowledge	Knowledge	Knowledge
How do you know that it changed?	Feel	Feel	Feel	Feel	Feel
In what do you feel you improved the most?	Self-image, originality	Self-image	Self-image	Self-image	Self-image
How do you feel? According to what?	Am not afraid, feel confidence	Am not afraid, feel confidence	Am not afraid, feel confidence	Am not afraid, feel confidence	Am not afraid, feel confidence
How is the improvement expressed?	When I am with people I feel openness and improvement	By the professional work	I have confidence that when I am with people I feel openness and improvement	By the professional work	When I am with people I feel openness and improvement
What changes do you feel in your ability following the improvement?	Am not ashamed, confidence	Feel greater efficacy	Am not ashamed, confidence	Feel greater efficacy	Feel greater efficacy
How can this be improved further?	Exposure, training, and experience	Exposure, training, and experience	Exposure, training, and experience	Exposure, training, and experience	Exposure, training, and experience
What is the second concept in which you feel an improvement?	Motivation to give	Motivation	Motivation to give, motivation	Motivation	Motivation
How do you feel that it improved?	I have a desire to do things	I have a desire to do things	I have a desire to do things	I have a desire to do things	I have a desire to do things
What in the course caused this to improve?	The role I was given	The role I was given	The role I was given	The role I was given	The role I was given
What changes do you feel in your ability?	Professional abilities	Professional abilities	Professional abilities	Professional abilities	Professional abilities

things. The level of originality was higher after the experience in community television than before the experience in all four experiences, with no difference between the different experiences. "When making movies there are no rules, there are only sins and the greatest sin of all is: boredom." For the movie to be interesting the production team must exhibit a great degree of originality. Originality is the sophistication of something existing, the ability to see something that we knew existed for generations in reality from a new point of view. The students experienced roles that created a need for originality.

Tendency to creativity (general measure): The level of the tendency to creativity was higher after the experience in community television than before the experience in all four experiences, with no difference between the different experiences. Creative thinking can be taught by means of cultivating thinking patterns. Researches indicate an improvement in the tendency to creativity by training and the development of the abilities of creative thinking by means of different teaching methodologies [29]. The students who experienced community television developed their tendency to creativity after the experience

thanks to the teaching methodologies which they experienced when fulfilling their roles.

The goal of education is to educate people who are able to create new things and not just repeat the actions of previous generations: creative people, inventors, discoverers and scientists. We need active students who learn to search and find on their own and by spontaneous activity as well as by material edited by us, so that they will be able to differentiate between what has been proven and the first idea that came to their mind. This is how the students who experienced production roles created a new creation and developed a tendency to creativity.

The research results can be concluded as follows: Community television is a learning environment that enables all students to experience a role according to their talents and abilities. Experience in this environment develops the self-image regardless of the type of experience. The director, editor, photographer and actor all improved their level of self-image, with no differences between them.

A learning environment that enables a group of students to each experience a different role and enables them to contribute according to their desire and belief in their ability, with a common goal, affords the participants pride in the process and creates an added value that comprises a very important factor for the process of consolidating the self-image. The improvement in the self-image stemmed from the students' good feeling upon finishing the task. Since different experiences are suitable for different students [59], the students will develop their self-image by fulfilling a role after having completed the expectations of them within the framework of their work, regardless of the role.

The students' experience in community television has a positive influence on the tendency to creativity, in all experienced roles: director, editor, photographer, and actor. Many psychological theories present ways for actualizing the creative ability (experiential learning, learning from experience, leaning by doing, autonomous learning, the multiple intelligences theory, open tools). Community television enables a total learning environment that unites the abovementioned theories.

Experience in community television production roles, similarly to the constructivist theory, is focused on the students, their choice and experience. However, it sets clear boundaries within the framework of the production roles that enable a uniform and clear direction of action on the way to achieve the product. This environment invites open learning on the one hand and a clear and directing framework on the other hand, that enables the production of a product, a feeling of success and completion.

Experience in a defined task that enables the students acquaintance with the role, its goals and products together with the belief that they can indeed realize it is significant for developing the creative thinking ability.

When the students perform a task and succeed in it, where the combination of all the efforts leads to a higher product (a movie), the success of the entire group joins the success of the individual, thus strengthening the creative ability. The students view the production of the movie as their personal success and thus both the performance of a defined role together with the ability to bring it to a finish as well as the cumulative success expressed by the finished movie joins their achievements and gives them power. When I have a part in the success of the entire group, my contribution becomes much more significant. The ability for creative thinking increases and is strengthened both because of my individual success in performing my role and because of my success as part of a group with a common goal. The individuals' success in fulfilling their role is strengthened when they acts as part of a group with a common task.

The constructivist theory espouses the idea that students construct their knowledge from their experience, through the experience. The present framework focuses on the students. The students choose the learning activities, and the learning goals and learning environment are adapted to the students' needs via independent learning and self-structuration of the knowledge. Experience in community television, similarly to the constructivist theory, enables the students to construct their knowledge while experiencing production roles. It is student-focused and the students choose the role, the learning environment and the experience environment within which they will perform their part in the production. The students are active learners who learn by experience, cope and strive for meaning. The knowledge is tested in their conscious based on their experience in the activity in the production roles and their interpretation and knowledge structure become more sophisticated.

The constructivist theory claims that people understand the world differently because they have different past experiences. So also in community television, the role holders see their goal differently from each other because of the different experiences in the production process. Correct teamwork, shared production and clear division of roles enables the production people to sit together, understand each other and the other's importance and role and thus achieve a shared product.

"We are not searching for what the students can repeat, but rather what they can create, demonstrate and present." The experience in community television enables the students to create, demonstrate and present according to the role they chose. This experience affords the student an opportunity to construct knowledge by asking questions in the process of carrying out an investigation, questions that pertain to the process of producing the movie, to the photography angles, to the process of editing and to the form of acting, to collect information via an in-depth investigation and the correct work of the di-

rector and activation of abilities that characterize the role in order to connect between asking the questions and collecting the information on the way to produce the movie. The experience is based on the principles of constructivist teaching but contrary to constructivist teaching this learning is characterized by a clear and absolute framework for the construction of knowledge. The students are on the one hand free to choose the role and how to obtain the information, but on the other hand are directed by the production framework that affords clear and uniform (production) tools on the way to the product.

Experience in community television production roles enables the students to choose both the theme of their movie and the active part they will take in the learning process. The students investigate and examine the relevant information for the idea that leads to the movie and in the end choose to produce one part. They must present a diversity of opinions for every truth, must listen to more than one side in order to be objective and create trust in the viewers. If the teaching is supposed to cultivate understanding, it must come to the students and meet them in the place they are found intellectually. The results of the present research indicate that experience in community television enables all students to choose the role they will experience according to their personal tendencies, intelligences that characterize them out of the multiple existing intelligences, and personal abilities. The students learn through experience, learn from experience, learn while presenting the products to the class and their evaluation is carried out as part of the learning process and using the means they used during the production process (not by an exam).

Learning by experiencing community television production is learning with an open tool. When working with open tools, the personal responsibility for learning increases, with the development of abilities and skills for direction towards independent learning. Technology enables active construction of knowledge. Active involvement in the construction, alone or with cooperation, may influence the mind. Constructing programs, for example in the computer, forces the students to significantly connect between the items of their knowledge. Students who write a hypertext lead their audience to understand an idea through connections they planned. Organizing the knowledge in a meaningful manner cultivates the self-understanding of the writer. So also in community television: the students, each in the role they chose, lead the viewer via the product they created (the movie), while connecting between the different items of information to the main idea and passing through the contexts they planned in order to best present the theme of the movie.

The technological revolution which is taking place is accompanied by a pedagogical and social revolution that includes placing the students in the center of the learning process, taking into account the differences between stu-

dents and their social needs, using alternative modes of evaluation and greater freedom of choice for the students. Experience in community television places the students in the center of the learning process and allows them to choose from a variety of experiences in order to enable a constructivist learning process according to the students' wishes and fields of interest. Learning in community television enables use of an open tool, but with clear boundaries. It affords a framework that is interactive, open and supplies experiences with expression of multiple intelligences and active learning on the one hand, and on the other hand the roles of all role holders are clear, defined and structured, the framework is uniform and the goal of all role holders is to achieve a particular product - the movie.

The present research proposes an open learning environment that enables the student imagination, experimenting and action with a feeling of "no limits." The learning environment focuses on the students and the students choose the learning activities and learning goals by independent learning and self-structuration of the knowledge. The entire process converges within the framework of a clear and structured production that enables the students to express abilities, tendencies and intelligences, through interaction with members of their group, according to their roles and abilities, while experiencing existing and defined roles and producing a product - the movie - according to existing rules. The environment enables the students to develop traits, tendencies and abilities. The students feel that they can express themselves in any way they choose, but are placed within a directing framework that enables a rapid product and a feeling of success. This leads to an improvement in the self-image, tendency to creativity, motivation to give, emotional intensity and motivation. This environment invites open learning that enables experience through choice on the one hand and on the other hand a clear and directing framework that enables production of a product as part of a group which comprises empowerment for the feeling of success and thus improvement of the creative thinking ability.

The students' experience in community television has a positive influence on the tendency to creativity (curiosity, originality and general creative tendency) in all experience roles: director, editor, photographer, and actor. The students' experience in community television has a positive influence on the extent of intellectual stimulation in all experience roles: director, editor, photographer, actor, where the degree of improvement was greater among those who experienced the role of director or photographer.

The present research leads to several educational conclusions. Experience in community television production enabled the students' active learning by which they developed their tendency to creativity. This learning environment was found suitable for learning via active learn-

ing by adapting the curriculum to needs of the individual and enabling free expression, learning, experience and action.

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The Effect of Gender on Cognitive Structuring: Who are More Biased, Men or Women?

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ABSTRACT

The effect of gender on the use of cognitive structuring (CS) is examined in three studies (n = 356). Study 1 showed that Israeli men use less diagnostic information (display more confirmation bias) than Israeli women. Study 2 demonstrated that Polish adolescent male but not female were influenced by implicit cues in a judgment task a Study 3 showed that the correlation between trait anxiety and the state anxiety measures, in first degree relatives of patients in a cardiac intensive care unit in Israel, was significantly higher for Israeli men than for women. According to the findings of the three studies, women use cognitive structuring to a lesser degree than men do.

Keywords: Gender, Cognitive Structuring, Confirmation Bias, TSAI, Self Reference Effect

1. Introduction

Ample evidence demonstrates the existence stereotypes about gender differences: men are more rational than women, while women are more emotional, intuitive and biased [1]. Meyers-Levy [2] has hypothesized that indeed men and women use different information processing strategies. However, the direction of the difference she hypothesizes is quite contrary to the stereotypes. In her Selectivity Hypothesis Meyers-Levy [2] theorizes that men are considered to be “selective processors” who often do not engage in comprehensive processing of all available information before rendering judgment. Instead, they seem to rely on various heuristics in place of detailed information processing. These heuristics involve a cue or cues that are highly available and salient and convergently imply a particular inference. Women, on the other hand, are considered to be “comprehensive processors” who attempt to assimilate all available information before rendering judgment.

Despite the importance of the issue and the general interest in gender differences, very limited effort has been made to examine the validity of the Meyers-Levy [2] hypothesis. Among the few studies that have examined this question is Martin's [3] study, which showed that men and women are affected differently by promotional messages. Women were found to process promotional information more comprehensively than men, while men focused on more peripheral information. This implies

that men use schema based heuristic strategies to process information. Hayes, Allinson and Armstrong [4] found, similarly, that women use more analytical (less intuitive) information processing than men. Since the relevant studies are so few and mostly performed in English speaking countries, however, one can criticize their conclusions as representing specific content areas, cultures, or methodologies rather than the general phenomenon they purport to validate. For example, it is possible that shopping behavior are more related to the female role and that women are therefore more motivated to invest the additional effort necessary for piecemeal processing. A more effective examination of the validity of the Meyers-Levy [2] hypothesis would center on examining the general processing strategies characteristic of each gender and would deploy multiple methods and content areas and in different countries.

The present paper is designed to examine the effect of gender on the use of cognitive structuring (CS) versus piecemeal processing. Piecemeal processing involves vigilant behavior, consisting of a bottom-up, systematic and effortful search for relevant information, and the evaluation and unbiased assimilation of that information. CS has been defined as “the creation and use of abstract mental representations (e.g., schemata, prototypes, scripts, attitudes, and stereotypes)—representations that are simplified generalizations of previous experience” [5]. (The conceptualization of the contrast between CS and piecemeal is also described in terms of heuristic thinking and

systematic processing [6]).

CS allows individuals to attain certainty most efficiently because it is relatively automatic, effort-free and faster than piecemeal processing [7,8]. It helps reach certainty by filtering out inconsistent and/or irrelevant information [9] and may make use of previously stored information if needed to attain certainty as to the validity of the inference [9,10]. CS is often identified with holistic and top-down processing. These characteristics make CS very effective. In this vein, Macrae and Bodenhausen [11] suggested that using CS helps the perceiver to make the world a meaningful, orderly, and predictable place.

In addition, however, to the very functional characteristics of CS it also characterized with the use of crudely differentiated categories, stereotypical thinking, and heuristic, and biased cognition [12,13]. The association between CS and the use of biases is explained by the lower utilization of the relevant information as well as the relying on previously stored information that might be in form of stereotypes or other schema [14].

This paper presents three studies designed to examine the effect of gender on the use of CS in information processing, utilizing different methodologies and participants from different age groups, cultures, and level of education. The first study examines the preference for utilizing available diagnostic information (rather than schema-consistent information). Specifically, participants were requested to judge the informative value of behavioral cues that were either schema consistent or inconsistent. It is assumed that the extent of relative importance attributed to schema consistent and inconsistent information represents CS. The second study examines the extent participants used the self-schema to interpret neutral stimulus, using implicit (rather than explicit measurement). It is assumed that CS processing is manifested in greater utilization of self-schema information in the judgment task. Finally, the third study explores the effect of gender on the relationship between state and trait anxiety. It is assumed that trait-state relationship represents CS if the trait (self-schema) is used to interpret the situation (the state characteristics). The authors hypothesize that in all operationalizations of CS in this paper, men will exhibit a higher level of CS use than women will.

2. Study 1

Study 1 was designed to demonstrate that gender affects the use of schema-inconsistent but diagnostic information. The tendency to use or to avoid this type of information has been studied extensively within the phenomenon of confirmation bias. Confirmation bias is defined as the tendency, when examining the validity of a hypothesis, to prefer to corroborative rather than refuting evidence [15]. Several types of confirmation bias have been identified [15,16]. Study 1 focuses on only one, the

tendency to avoid examining rival hypotheses. The phenomenon of confirmation strategies has been validated [17-20] but other researchers claim that people use a diagnostic rather than a confirmation strategy in hypothesis testing [16,21-24]. Thus, people are capable of using both confirmatory and diagnostic strategies. We suggest that confirmation bias is the result of a CS process that allows people to achieve certainty with a low expenditure of effort by mainly attending to schema-consistent information and ignoring schema-inconsistent or irrelevant information. This theoretical reasoning is similar to that of Kruglanski and Mayseless [25], that is, people who are motivated to use CS tend to search for prototypical rather than diagnostic (schema-inconsistent) information, whereas people who are motivated to use piecemeal processing do the opposite. Our hypothesis, therefore, is that women will show greater preference for schema inconsistent and diagnostic information than men show and so show less confirmation bias.

2.1 Method

2.1.1 Participants

One hundred women and 136 men Israelis, all with university education participated in the study. Their average age was 39.05 years ($SD = 10.03$). There was no significant difference between genders in terms of age or education.

2.1.2 Measurements

Stimuli: Participants were presented, in random order, with written impressions of two persons they had supposedly just met, one honest, the other friendly. These impressions functioned to create a hypothesis about the target person. Each impression was followed by 15 information segments regarding the target person's behaviors. Participants were requested to imagine that they wanted to check whether their first impression was correct. They could do so by examining the list of behaviors and rating each behavior on a six-point scale (from "Information not important at all" (1) to "Very important information" (6)). The list of behaviors consisted of five prototypical items, *i.e.*, items consistent with the impression, five diagnostic items, *i.e.*, items inconsistent with the impression, and five items irrelevant to the impression (distraction items). In the case of the honest person, an example of a prototypical item might be "Delivered to the police station money he/she found in the street". An inconsistent item was "Has an extramarital love affair while repeatedly telling the spouse that he/she is faithful". An irrelevant item was "Lives in Ramat Hasharon" (a town in Israel). In the case of the friendly target person, an example of a prototypical item might be "Volunteered to care for lonely older people", an inconsistent item was "Refused to talk with other participants on an organized trip", and an irrelevant item was "Reads Ma'ariv" (an Israeli daily newspaper). Five judges had to validate the

items by sorting them into one of three categories: relevant and consistent with the hypothesis, relevant but directly refuting the hypothesis, and completely irrelevant to the hypothesis. For each item to be included, at least 80% of the judges had to agree.

Based on the study participants' responses to the items regarding the two target persons, two indices were created by averaging the 10 items in each category. The Cronbach's alpha reliability of the hypothesis-consistent index was $\alpha = 0.88$, and of the hypothesis-inconsistent index $\alpha = 0.86$.

2.1.3 Procedure

Participants were approached at their place of employment by the researcher and asked to volunteer for a decision-making study. The response rate was 84%. Upon completion, participants were debriefed.

2.2 Results and Discussion

To examine the hypothesis that men use more CS and therefore, will demonstrate more confirmation bias, a confirmation bias index was created by subtracting the inconsistent information index from the consistent information index. Lower values on this new index implied a lower showing of confirmation bias, *i.e.*, the informative value of inconsistent items is considered to be closer to that of consistent items. A t-test showed that men's confirmation bias ($M = 1.43$ $SD = 1.09$) was significantly higher than women's ($M = 1.09$ $SD = 0.96$) ($t(234) = 2.52$, $p < 0.01$), which supported the study hypothesis that women tended to use cognitive structuring less than men.

The conclusion of this study contradicts other studies that reported lack of effect of gender on confirmation bias. Marsh and Hanlon [26], for example, reported that men do not differ in the extent of searching information consistent with a given hypothesis. In contrast, Chung and Monroe [27] found that female participants rated inconsistent information as more important than male participants did. It is possible that the explanation for the contradicting results is in the method of operationalization of the concept of confirmation bias. In the present study, by virtue of using the confirmation bias index that reflects both schema consistent as well as schema inconsistent information preference, we can conclude that the results of Study 1 demonstrate that women use less confirmation bias (and therefore, less CS) than men do.

3. Study 2

Study 1 demonstrated that women are more sensitive to schema-inconsistent information than men and so use CS less. However, the authors noted that Study 1's outcome variables consisted of an explicit measure that could have influenced the results. For example, Skov and Sherman [23] suggest that asking participants about the utility of

various kinds of available information (exactly what was done in Study 1) focuses the participants' attention on the diagnosticity of that information. Perhaps the women complied more with the instructions than the men. To cover this possibility, a more implicit and non-obtrusive method was needed. In Study 2, therefore, we tested our hypothesis examining the Self Reference Effect (SRE) [28] on the implicit level of information processing. Studies on the SRE show specific, universal rules of information processing about the self [29,30]. One of them leads to positivity bias [31] which may be displayed in overestimation of positive traits, one possess, and under-estimation of negative ones.

In the present study, to measure SRE effect, we used the implicit priming paradigm of Murphy and Zajonc [32]. The original method consisted neutral, novel, unfamiliar targets (like Chinese ideograms or hexagrams) subliminally primed with the affective stimulus – participants have to interpret meaning of targets and they are not aware of the influence of implicit cues on their judgments. Błaszczyk [33,34] made a modification using affective primes, and requesting participants to guess if a given Chinese represents a trait characteristic for the self.

Because the self is more accessible in memory than other cognitive structures it is an important source for the interpretation of ambiguous cues. For example, Candinu and Rothbart [35] have demonstrated that participants used self-knowledge to give meaning to their novel and unfamiliar situation (for similar results, see Otten & Bar-Tal [36]). Study 2 referred to the fact that valence is represented as an attribute of the self-schema. The study was designed, therefore, to examine the extent to which gender affects the tendency of respondents to associate the self with implicit signals of valence. We hypothesized an interaction effect in which since men use CS more than women do, the prime valence would be connected with the self more among them (stronger effect of the valence of the implicit traits) than among women.

3.1 Method

3.1.1 General Design

The study had two phases. The first aimed to provoke activation of the self-schema. Participants were requested to describe themselves using 20 positive and negative traits on a seven-point scale. In the second, a Błaszczyk [33] modification of the implicit priming paradigm [32] was introduced. We presented participants with neutral stimuli—hexagrams—as symbols of human different traits. Each hexagram was primed on a subliminal level with positive and negative words—the same 20 traits used earlier. Participants were requested to make judgments as to what extent each target stimuli represented trait relevant to the self. Thus, the independent variables in the study were the valence of the priming and the

gender of the participant.

3.1.2 Participants

The participants were Polish high-school junior year students, 16 boys and 14 girls who volunteered for the study.

3.1.3 Instruments

Self-descriptive adjectives: The self-descriptive questionnaire comprised 20 adjectives, 10 positive (e.g., “loyal”, “creative”, “efficient”) and 10 negative (“lazy”, “naïve”, “quarrelsome”), selected from a representative list of personal descriptions, constructed and validated in Polish by Lewicka [37]. We selected adjectives to achieve a small variance of valence within each category (negative and positive) and a number of letters between six and eight. For each adjective, participants had to rate themselves from “Much less than others” (1) to “Much more than others” (7).

Priming procedure: Using a PC with Pentium 750 MHZ processor with a 17” monitor and the SuperLab Pro v.1.04 program, each adjective was presented to participants subliminally with 75 ms exposure time.

Target stimuli: After each adjective had been presented subliminally, participants were presented with a neutral stimulus (Chinese hexagrams) for 1000 ms. Before starting, participants were told “Hexagrams are symbols from the Chinese philosophy of nature. You will be presented with hexagrams representing different human traits. Your task is to assess to what extent the hexagram presented on the screen symbolizes a trait that you possess”. To mask primes, hexagrams appeared in the same location on the screen as the primed adjective. Primes and hexagrams were presented in random and counter-balanced order. Participants responded by pressing a number key on a keyboard, ranging from 1 (“definitely NOT ME”) to 5 (“definitely ME”). Two variables were calculated based on participants’ responses: the average of the relatedness to the self of 10 estimates of the hexagrams primed with positive traits ($\alpha = 0.87$) and 10 with negative ones ($\alpha = 0.85$).

3.1.4 Procedure

After obtaining the approval of the high school authorities to conduct the study, it was presented to the junior year students as research into impression formation and human intuition. Students were assured that participation is strictly anonymous. Volunteers were tested individually. All students that were requested agreed to participant in the study.

The first stage was for participants to complete a self-descriptive questionnaire. Then they were presented with two pictures of groups of young people of both genders. In the first picture, participants had to guess, from their posture of the people, who were in romantic relationships. In the second picture, participants had to guess who earned the most money. The point of these two tasks was to

convince participants that the study was designed to examine human intuition. After the priming procedure, the target stimuli appeared on the screen. The following sequence was followed in each trial: a fixation dot appeared on the screen accompanied by a sound; the positive or negative priming trait appeared subliminally, followed by hexagrams; participants responded to the question that appeared on the screen asking how characteristic the trait, symbolized by a given hexagram, was of them. The initial eight trials consisted of hexagrams without priming and were used for training. The actual data stage consisted of 20 trials. Upon completion, participants were debriefed.

3.2 Results and Discussion

To test the study hypothesis of which women will be less influenced by the primed valence, a 2×2 within-between ANOVA was performed, with gender as a ‘between’ factor and the valence of the priming word as a ‘within’ factor. A significant main effect of the valence of the priming words was found: hexagrams in positively primed words were rated as more relevant to self ($M = 3.04$ $SD = 0.49$) than those in negatively primed words ($M = 2.82$ $SD = 0.58$) ($F(1,28) = 4.01$, $p = 0.05$). In addition, the analysis yielded a significant interaction ($F(1,28) = 4.02$, $p = 0.05$). **Table 1** presents the cell means and shows that priming had a greater effect on men than on women. The a posteriori Tukey/b test showed a significant priming effect on men but not on women. These results can be interpreted as supporting the study hypothesis. However, the lower impact of the priming on women may also be attributable to the women’s lower self-esteem, that is, to a stronger association between self and negative valence in women than in men. To test this possibility another 2×2 within-between ANOVA was performed on the positive and negative traits participants ranked themselves at the beginning of the study. Results showed only a main valence effect for the adjectives: positive adjectives ($M = 4.45$, $SD = 0.81$) were judged as more relevant to the self than negative traits ($M = 3.63$, $SD = 0.59$) ($F(1,28) = 14.82$, $p < 0.01$). Since neither gender nor gender-by-valence interaction achieved significance, it indicates that the men in this experiment did not differ a priori from the women in their self-esteem. Therefore, the second explanation, women’s lower self-esteem, can be discounted.

Table 1. Implicit self reference effect as a function of gender¹

	Positive	Negative
M	3.01 (± 0.55)	2.58 (± 0.58)
F	3.07 (± 0.44)	3.07 (± 0.48)

¹The full range of the scale is 1-5.

Similar results were obtained using different manipulations of the independent variables (*i.e.* visual rather semantic implicit priming) and different operationalization of the dependent variable (use of RT) (for review see Jarymowicz [38]). In all studies reviewed by her, there were significant differences between the positive and negative conditions for men but not for women.

Study 2 provides further evidence for the validity of Levi-Mayers hypothesis. It adds to the findings of study 1 by using completely different research paradigm (explicit in Study 1, versus implicit in Study 2), with participants of different age (adults vs. adolescents), and nationality (Israeli vs. Polish) groups.

4. Study 3

One implication of women using CS less than men is that a woman's reaction to, and interpretation of, situations is less affected by her personality traits. This is because personality traits can be viewed as knowledge structures (schema) which predispose individuals to use them in interpreting new information. As with other types of pre-existing schema (e.g., expectations, attitudes, and stereotypes [39-42], personality traits can be viewed as cognitive structures [29,43-45]. For example, when comparing attitudes and traits, Sherman and Fazio [44] reviewed research regarding how one's character traits affect perception of and expectations about others and how these perceptions guide behavior in a trait-consistent manner. It can be argued, therefore, that the extent to which people are affected by their personality traits represents different degrees of use of cognitive structuring. To demonstrate this claim we chose to examine the relationship between trait and state anxiety. The choice of anxiety is based on the fact that state and trait anxiety are used more often than any other state-trait characteristic. Thus, we suggest that the relationship between trait and state anxiety represent CS because trait anxiety creates a negative bias in the processing of social information, especially in highly self-relevant situations where the self feels threatened. Similarly, it can be suggested that cognitive structuring is related to the effect of trait anxiety on a person's emotional distress in a fear-arousing situation.

Study 3 examined the effect of gender on relationships between state and trait anxiety, psychological distress and well-being among the first-degree relatives of patients in a cardiac intensive care unit. On the assumption that men use CS more than women, it was hypothesized that trait anxiety in men is a better predictor of state anxiety, psychological distress and well-being than in women.

4.1 Method

4.1.1 Participants

The sample comprised 44 male and 46 female first-degree relatives (spouse, sibling, child) of patients in a cardiac

intensive care unit in Israel, who agreed to volunteer for the study (The response rate of the participants was 70%). Participants' mean age was 43.04 years ($SD = 13.57$) and mean years of schooling was 14.72 ($SD = 3.50$). The patients' state of health, assessed by a physician in the Unit and ranked on a scale ranging from 1 "very mild" to 6 "very severe", averaged 3.59 ($SD = 1.35$). There were no significant relationships between participants' gender and their characteristics (age, schooling, and category of kinship with the patient).

4.1.2 Instruments

State and trait anxiety: The Hebrew version [46] of the State-Trait Anxiety Inventory (STAI) [47] consists of 40 items: 20 measure trait anxiety and 20 state anxiety. The instructions preceding the trait measure direct participants to describe their feelings in general, while those of the state measure direct participants to describe their present feelings. In Study 3, the reliability scores for the state and trait anxiety scales were $\alpha = 0.93$ and $\alpha = 0.88$, respectively.

Psychological distress and well-being. Were measured by the Mental Health Inventory [48], comprising 38 items: 14 measure psychological well-being and 24 measure psychological distress. Questions refer to the participant's life during the past week. Responses to the items are given on a six-point scale from 1 "complete approval" to 6 "complete disapproval" of the item. The reliability scores for psychological distress and well-being were $\alpha = 0.91$ and $\alpha = 0.90$, respectively.

4.1.3 Procedure

The study was conducted in a large university hospital in Israel. The study was approved by the Helsinki committee of the hospital. Participants were told that the study examined factors relating to the coping of individuals with the hospitalization of their first degree relatives in a cardiac intensive care unit. Participants were interviewed individually on the second or third day of their relative's admission to the Unit. Participants were assured that the data would serve research purposes only and that their participation or completion of the study would not affect the patient's treatment. Upon completion, participants were debriefed.

4.2 Results and Discussion

To test the study hypothesis that the correlations coefficients between trait anxiety and the participants' reports of their state are higher for men than for women, we calculated the correlation coefficients for each gender. **Table 2** presents the correlation matrix of the study variables separately for each gender. The correlation between trait anxiety and the measures of state anxiety, distress, and well-being was significantly higher for men than women ($U = 2.08$, $p < 0.05$; $U = 2.57$, $p = 0.01$; and $U = 1.82$, $p < 0.07$, respectively). Thus, this study validates the

Table 2. Correlation matrix of variables in study 3 as a function of gender

	Men				Women			
	1	2	3	4	1	2	3	4
1. State Anxiety								
2. Trait Anxiety	0.61**				0.25			
3. Psychological Distress	0.60**	0.63**			0.55**	0.36*		
4. Well Being	-0.37*	-0.74**	-0.83**		-0.33*	-0.31*	-0.72**	
<i>M</i> ¹	2.34	1.73	2.30	4.43	2.64	1.76	2.57	4.07
<i>SD</i>	0.66	0.44	0.75	0.87	0.67	0.40	0.81	0.92

* = $p < 0.05$ ** = $p < 0.01$; 1) The full range of both STAI scales is 1-4 and that of the other scales is 1-6

hypothesis that men use schematic thinking more than women do.

Few studies demonstrated similar effects. For example, Bar-Tal Gardosh, and Barnoy [49] demonstrated that the traits of negative affectivity and perception of control, measured before a coronary artery bypass graft, predicted significantly better symptom reporting after surgery for men than for women. Also, Eli, Bar-Tal, Fuss and Korff [50] found that pain tolerance of men is more affected by their trait anxiety than that of women (for similar results, see also, Edwards, Auguston and Fillings [51]) Similarly, Shepperd and Kashani [52] found that the components of hardiness (commitment and control) moderated the effect of stress on both physical and psychological symptoms in men. In women, hardiness components did not interact with stress in the prediction of health outcomes. However, Although the STAI is frequently used, little research has been done on the effect of gender on the state-trait relationship. Novy, Nelson, Goodwin and Rowzee [53] are among the very few whose results are related to the question. They found that the correlation among Caucasians in the US men was higher ($r = 0.85$) than among women ($r = 0.65$). Although the authors did not report whether the difference was significant, it nevertheless is consistent with our results.

5. General Discussion

The focus of this article has been gender differences in the use of cognitive structuring. The three studies, deploying very different methods, showed that women tend to use less CS than men do. The studies not only functioned as theoretical replications of each other but were also supported by studies with more or less similar methodologies. The data and findings of the three studies clearly support the idea that men tend to use more CS (and therefore use more cognitive biases) than women do.

Whether there is a difference between genders in their accuracies or biases has been much researched but the results are equivocal. Some studies report greater accuracy and less bias in men than in women [54,55]. Other stud-

ies show men less accurate than women [56,57]. Yet other studies show no gender difference in accuracy or bias [58,59]. The common denominator of these diverse studies is the use of outcomes to assess gender differences in accuracy and bias. That is, the judgment of the participant was compared to a given criteria (supposedly the truth) and the greater the discrepancy between the judgment and the criteria, the less accurate and more biased the judgment was judged to be. It is possible that the diversity of answers to the question of gender differences stem from this common feature. Accuracy of judgment may be related to different skills or motivations rather than to distortions of reality or biases [60-62].

Departing from this prescriptive approach, the present study takes a descriptive approach to the question. It examines whether there are gender differences in the cognitive processes men and women tend to use. More specifically, to what extent do men and women differ in their use of piecemeal vs. CS. Its results indicate that women tend to react more to the objective characteristics of a stimulus, while men react more to pertinent pre-existing schema, which influence their perception.

Before concluding, it is necessary to consider the possibility that the gender differences reported in this paper are the results of specific contents involved in the studies (e.g., self-esteem), motivation and attention toward specific contents (interpersonal interaction). However, the diversity of the contents and experimental paradigms in this paper should be a reasonable answer to such threats. The contents in Study 1 and Study 3 were not related to self-esteem. Thus, in spite of the fact that participants' self esteem was part of Study 2, it is not reasonable to attribute the results of all three studies to the difference in self esteem between men and women. Similarly it is not reasonable to attribute the results mainly to difference between genders in the salience of health related issues (that are in the base of Study 3), because the other two studies do not utilize these contents. Likewise, it is not reasonable to attribute the results to the specific age or level of education of the participants because of the diversity of these characteristic in the three studies.

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Salivary Cortisol in Relation to the Use of Information and Communication Technology (ICT) in School-Aged Children*

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ABSTRACT

Long periods of use of Information and Communication Technology (ICT) may raise strong emotions and lead to cognitive fatigue. The current study focused on the impact of ICT use the preceding day on the next-day salivary cortisol pattern in 72 school-aged children (39 at the age ten and 33 at the age 13). Salivary cortisol levels were measured at five time points from awakening to bedtime. Time spent in different ICT activities the day before salivary sampling was measured by an activity diary. Results showed that the participants who had used ICT on an average three hours the preceding day showed a significantly reduced cortisol increase one hour after awakening (awakening response) compared to those who had used ICT not at all or less than one hour after controlling for pubertal status and the level of depression. The results suggest a stress response as a consequence of a long period of ICT use.

Keywords: ICT, Salivary Cortisol, Stress, Children, Adolescents

1. Introduction

Information and communication technology (ICT; mobile phone, digital games, computer, the Internet) is matching the popularity of traditional media in the lives of Western children and adolescents. Recent findings show that digital game playing exceeds time spent in television viewing among children [1]. Younger children and boys spend more time in digital game playing while adolescents (14-18 years) spend increasingly time in Internet surfing and chatting [2,3]. ICT use serves many motives and functions among children and adolescents. For example, digital game playing offers restoration, social compensation as well as possibilities to experience and learn new or escape worries [4]. Thus, ICT may provide an extra dimension to life in which children and adolescents are able to accomplish things which are not possible for them

in reality [5]. The psychophysiological effects of daily ICT use among children and adolescents have not been studied so far. In this study, we examine relations between the intensity of daily ICT use and psychophysiological stress indicated by diurnal salivary cortisol secretion in school-aged children.

Interactions with ICT can be understood as mental tasks which may comprise different components [6]. These interactions may elicit strong emotional responses, such as enthusiasm, fear, and surprise, affect the individual's arousal level, and demand voluntary, directed attention and cognitive processing. Although adolescents experience the different ICT activities mainly positively, long-lasting use of ICT may, however, result in more negative consequences, such as directed attention fatigue [7] and heightened arousal level which is often antecedents of physiological stress response [7]. Directed attention fatigue as a result of prolonged period of mental effort is independent of the content of a task [8]. Physiological measures of stress can be seen even after a long period of a pleasant task [9]. Thus, the mental tasks during ICT use,

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although experienced positively, may cause stress. In addition, findings suggest that the auditory input, such as built-in music during video game playing, may contribute significantly to the stress response [10]. Recovery from directed attention fatigue occurs during sleep and during involuntary attention, or fascination, requiring no effort, for instance in nature environments [11]. In everyday life children and adolescents may use multiple forms of ICT daily or even at the same time. Also, directed attention is needed most of the time during schooldays and when doing home works. We hypothesize that directed attention fatigue is increased by increasing the total time used in ICT. We further hypothesize that psychophysiological stress results as a consequence of directed attention fatigue and insufficient attentional resources with joint effect of possible other stress-related features of ICT interactions, such as high arousal level and noise.

When an individual is exposed to stress, a cascade of physiological events occur along the hypothalamic-pituitary-adrenal (HPA) axis. Subsequent release of the steroid hormone cortisol is considered the body's major neuroendocrine response to stress [12]. Prior research among children and adolescents shows that the daily rhythm characteristic to cortisol can be disrupted by psychological and environmental influences, such as cumulative environmental risks [13], poverty [14], day-care [15], post-traumatic stress disorder [16], social deprivation [17], performance challenge [18], and violence exposure [19].

In the diurnal profile of cortisol secretion, the cortisol awakening response (CAR) has been recognised as a distinct phenomenon. Under basal conditions, cortisol secretion follows a circadian rhythm, manifested in 50-160% increase in salivary-free cortisol during the first 30-40 min after awakening, drop rapidly in the next few hours and then more gradually throughout the day [20]. The cortisol awakening response has shown to be an intra-individually stable phenomenon [21]. A majority (70%) of 10-12-year-old children show a cortisol awakening rise, although lower than in adults, with higher levels in girls than boys [22,23]. Results concerning relations between cortisol measures and pubertal stage are somewhat contradictory. While some studies have found no relationships [22,23], some findings show correlations between higher pubertal stage and elevated cortisol curves and lower cortisol awakening response [24]. The cortisol awakening response is unrelated to the mean underlying level of cortisol secretory activity throughout the rest of the day [25].

Many studies have found perceived stress to be linked to some aspects of the cortisol awakening response for a review see [20]. Especially the attenuated cortisol awakening response is related to stress, such as acute [26] and long-lasting stress [27], chronic fatigue [28], early loss experience [29] and violence exposure [19]. Contrary to adult studies, adolescents with higher levels of

depressive symptoms showed lower diurnal cortisol levels [24].

Results on the association between ICT use and cortisol levels are limited, describing only short-term experimental conditions concerning digital playing. Some studies have found raised cortisol levels [30] but others have found no change during a digital game [31]. Still some results suggest that higher cortisol levels are due to built-in music of digital games [10]. Instead, psychophysiological effects of daily ICT use have not been studied.

The present study investigated whether the amount of time used on ICT the preceding day was related to salivary cortisol among school-aged children. For cortisol, we used both levels and dynamics of cortisol concentration. We hypothesized that higher ICT use the preceding day is related to higher total cortisol levels and an attenuated cortisol awakening response.

2. Methods

2.1 Participants

Participants for the laboratory measurements were selected from those 222 (123 girls) fourth and 256 (137 girls) seventh graders from seven schools (five elementary and two middle schools) in a city in Finland who completed a survey questionnaire. The age groups were chosen according to the developmental saliency in transition from middle childhood to adolescence [32]. Altogether 88 subjects were stratified into fourth and seventh graders (10- and 13-year-olds), and boys and girls.

Altogether 72 (33 girls, 39 boys; 39 10-year-olds, 33 13-year-olds) schoolchildren took part in the study. The dropouts were due to refusals and unwillingness to provide informed consent on the part of either the schoolchildren or their parents.

2.2 Procedure

Before data collection the approval of the Ethical Committee of Pirkanmaa Hospital District (Code Nr. R 04050) was acquired. Permission was also obtained from the school principals. At each school an information meeting was held, usually for each participating class separately, and an information letter was delivered both for the pupils selected for the study and their parents. Written consents for the participation were obtained from all children willing to participate, and their parent/guardian. The researcher gave directions for an activity diary and the subjects had possibility to ask questions.

At each school, in a peaceful room, the participants were given the saliva collection kits with verbal and written instructions. Children took their saliva samples during one day, and next day they returned the samples and the activity diary to the researcher. One day saliva samples of all the participants were collected during three weeks, from the end of April to the beginning of May.

The sampling day was always an ordinary school day. As a reward for taking part in the study, the subjects received a cinema ticket each.

2.3 Measures

2.3.1 Content and Intensity of ICT Use

Exposure to ICT was measured by use of an activity diary covering the day preceding saliva sample collection. High subject compliance rate and data reliability have been obtained with diary method using objective measures as criterion, both among children and adolescents [33]. The participants were instructed to record in 15 minutes intervals the time spent on different ICT activities with alternatives 1) using mobile phone e.g. for phone calls, text messages, 2) playing mobile phone games, 3) playing TV or console games, 4) playing computer or Internet games, 5) using computer for homework, writing etc., 6) using computer for communication by e-mail, discussion groups, and chatting, and 7) general surfing on the Internet. Participants also recorded their sleeping hours, from going to bed until waking up the next morning. Total time spent on different ICT activities was calculated summing up the 15 min intervals for each activity. Child- reports on time they use for different activities have been shown to have moderately high validity [34].

2.3.2 Salivary Cortisol

Participants took five saliva samples (immediately at wake-up, at 1 hour after wake-up, at 3 hours after wake-up, late in the afternoon and before going to bed) using the Salivette sampling device (Salivette®, Sarstedt, Germany). The Salivette tube consists of a plastic sampling vessel with a suspended insert containing a sterile neutral cotton wool swab that has to be chewed for about one minute and then returned to the insert. Children were instructed not to drink or eat or brush teeth half an hour before collecting the saliva sample. Salivary cortisol sampling compliance has shown to be reasonably high when verified electronically in adults [35]. The next day, the saliva samples were returned to the researcher and immediately mailed to the Finnish Institute of Occupational Health for cortisol assay. Free cortisol levels in saliva were measured using a commercially available chemiluminescence assay (IBL, Hamburg, Germany).

2.3.3 Pubertal Status

In the survey questionnaire, pubertal status was measured by asking 'How old were you when you got your first period/spermarche?' The adolescents had to select one of the options: not yet, at the age of 10, 11, 12, 13, 14, and 15. For this study pubertal status was dummy coded: yes/no at puberty.

2.3.4 Depression

In the survey questionnaire, depression was measured by

depressive and anxiety symptoms. Six items indicating depressiveness were derived from the Child Depression Inventory CDI; [36], and included items such as "I am sad", "I cry easily and often" and "I feel that nobody cares about me". Five items indicating anxiety and fears were from the Screen for Anxiety Related Emotional Disorders 5-item SCARED; [37] and included items such as "I fear that something bad will happen to me", "Many things bother me", and "I fear that I will fail". The participants estimated how well the descriptions fitted them on a 5-point scale: (0) not at all, (1) somewhat, (2) quite well, (3) well, and (4) very well. The depressiveness and anxiety scales have been validated in a Finnish intervention study among children in depressive families [38]. Based on both scales a mean variable of depression was formed, and it had sufficient internal consistency of Cronbach's alpha 0.79.

2.4 Statistical Analysis

For statistical analysis the participants were divided into two groups on the basis of the total sum of hours spent in different ICT activities during the day preceding saliva sample collection. Participants who had used ICT for less than one hour formed the low user group ($N = 42$). In this group 32 participants (76%) had not used ICT at all the day preceding salivary collection. The rest of the participants were called the user group ($N = 30$). In the user group, the total time of ICT usage of 19 participants (63%) was one to less than 3 hours, of six participants (20%) 3 to less than 6 hours, and of five participants (17%) 6-8 hours.

Differences between the ICT user groups in sex, age, classroom, and pubertal status were tested with Chi-square tests. Classroom was included in these analyses to be sure that the groups did not differ systematically according to the amount of ICT use or any other activity during the school day preceding cortisol measurements. Independent-samples t-tests were used to test group differences in depression, time spent in different ICT activities, wake-up time, sleeping hours before sampling, salivary sample times, and single salivary cortisol values. Group differences in daytime cortisol profiles were tested with general linear model (GLM) where five cortisol measures were within-subject repeated measures, and sex, level of depression and pubertal status were as covariates. Greenhouse-Geisser correction was applied because the assumption of sphericity was violated. Preliminary analysis indicated that girls showed significantly higher awakening cortisol levels than boys ($t(70) = 2.22$, $p = 0.030$) but cortisol values did not differ by age and pubertal status and were not correlated with the level of depression.

In addition to short daytime cortisol profiles, areas under the curve with respect to ground (AUC_G) and with respect to increase (AUC_I) based on five measurements were computed according to the formula described by Pre-

ussner, Kirschbaum, Meinlschmid, and Hellhammer [39]. These data were analysed with one-way ANCOVA using sex, the level of depression and pubertal status as covariates.

3. Results

3.1 Descriptive Statistics

The sample characteristics and the data for the two ICT user groups are summarised in **Table 1**. The low user and user groups did not differ by sex, age, classroom, level of depression or pubertal status. Participants in the user group differed significantly from the low user group both in the total time used ICT and in using different form of ICT except for mobile phone use. Hours slept before the salivary sampling, waking time, and sampling times did not differ between the ICT user groups.

3.2 Relations between ICT Use and Salivary Cortisol

The focus of the study was to examine the relation of the amount of time used on ICT to next-day salivary cortisol. In **Table 1** are shown group values for the different cortisol measures. The sample 2 cortisol value tended to be higher in the low user group than in the user group. Analysis of the short daytime cortisol profiles revealed no significant difference between the groups ($F(3.22, 215.90) = 1.58$; $p = 0.191$) (**Figure 1**). The total cortisol level indicated by AUC_G tended to be higher in the low user group than in the user group ($p = 0.09$). A significant group difference was found in AUC_I . As expected, the user group showed a significantly reduced awakening response compared to the low user group ($p = 0.03$) although the effect size was relatively small.

Table 1. Demographic characteristics, intensity of using information and communication technology (ICT), time of saliva collection, and salivary cortisol values in low ICT user and ICT user groups

Variable	Intensity of ICT-usage		Statistic
	Low user ¹ (N = 42)	User ¹ (N = 30)	
Sex (girl/boy)	20/22	14/16	$\chi^2(1, 72) = 0.00$; $p = 0.990$
Age-group (10/13)	21/19	15/15	$\chi^2(1, 72) = .24$; $p = 0.624$
Classroom (17 classrooms)	0-6 students/ classroom	0-4 students/ classroom	$\chi^2(16, 72) = 17.70$, $p = 0.342$
At puberty (yes/no)	14/28	11/19	$\chi^2(1, 72) = 0.13$; $p = 0.716$
Depression	7.86 (7.43)	9.00 (7.29)	$t(71) = -0.649$; $p = 0.518$
Hours used on ICT by activity			
Mobile phone calls, text messages	15 (0.29)	0.17 (0.38)	$t(71) = -0.27$; $p = 0.786$
Mobile phone games	01 (0.05)	09 (0.30)	$t(71) = -1.73$; $p = 0.088$
Playing TV and console games	04 (0.13)	56 (1.20)	$t(71) = -2.81$; $p = 0.006$
Playing computer games	05 (0.17)	1.16 (1.89)	$t(71) = -3.85$; $p = 0.000$
Using computer for writing, homework	01 (0.04)	37 (0.88)	$t(71) = -2.69$; $p = 0.009$
Using computer for communication	02 (0.09)	37 (0.89)	$t(71) = -2.53$; $p = 0.014$
Surfing in the Internet	00 (0.00)	52 (1.26)	$t(71) = -2.71$; $p = 0.009$
Total hours of ICT usage	14 (0.26)	3.15 (2.52)	$t(71) = -7.80$; $p = 0.000$
Wake-up time (h)	0648 (0054)	0707 (0055)	$t(71) = -1.63$; $p = 0.108$
Sleeping hours before sampling	8.60 (1.04)	8.98 (1.27)	$t(71) = -1.39$; $p = 0.170$
Time of saliva collection (h)			
Sample 1	0655 (0036)	0649 (0037)	$t(71) = 0.53$; $p = 0.596$
Sample 2	0758 (0036)	0754 (0050)	$t(71) = 0.26$; $p = 0.794$
Sample 3	1010 (0042)	1001 (0049)	$t(71) = 0.90$; $p = 0.372$
Sample 4	1528 (0100)	1553 (0114)	$t(71) = -1.58$; $p = 0.118$
Sample 5	2103 (0316)	2057 (0400)	$t(71) = 0.11$; $p = 0.913$
Salivary cortisol (nmol/l)			
Sample 1	18.28 (8.55)	20.32 (7.86)	$t(71) = -1.03$; $p = 0.308$
Sample 2	23.14 (17.87)	17.27 (7.88)	$t(71) = 1.68$; $p = 0.097$
Sample 3	16.24 (19.06)	10.94 (9.07)	$t(71) = 1.41$; $p = 0.163$
Sample 4	11.22 (13.49)	7.91 (8.27)	$t(71) = 1.19$; $p = 0.237$
Sample 5	6.70 (8.22)	4.77 (6.27)	$t(71) = 1.08$; $p = 0.282$
AUC_G	191.03 (142.06)	154.72 (85.05)	$F(1, 70) = 2.88$, $p = 0.094$, $\eta^2 = 0.041$
AUC_I	-79.95 (142.83)	-201.59 (175.68)	$F(1, 70) = 4.82$, $p = 0.032$, $\eta^2 = 0.067$

¹For sex, age group and puberty, frequency; for others, mean (standard deviation). AUC_G , area under curve with respect to ground; AUC_I , area under curve with respect to increase. Samples: 1 = at wake-up, 2 = at 1 hour after wake-up, 3 = at 3 hours after wake up, 4 = late afternoon, 5 = before going to bed

4. Discussion

This study provides support for a link between time used ICT and next-day salivary cortisol pattern among school-children. As expected, the participants who had used ICT on the average for three hours the preceding day showed a significantly reduced cortisol awakening response compared to those most of whom had used ICT not at all. This is in line with earlier results which show attenuated cortisol awakening response in relation to stress [19, 26-29].

In measuring cortisol different confounding factors have been identified, most of which, however, have been controlled in our study. According to earlier results both cortisol levels and the cortisol awakening response of 10-12-year-old children show seasonal variability, being highest during summer months [23] which may be related to greater amount of light [40]. Further, greater response has been reported on weekdays compared to weekends both by working adults [41] and children in day-care [15]. This kind of anticipation of a potentially stressful day has been observed in school-aged children, too [42]. In our sampling times there was no seasonal variation, and the sample collection day was always a weekday. Moreover, although earlier findings about the influence of awakening time on cortisol secretion are somewhat mixed [20], some recent studies imply that awakening time may be a confounding variable [43,44]. In this study, participants in the two ICT user groups did not differ according to waking-time or sleeping hours before salivary sampling, nor by sex, age, pubertal status or depression.

Measurement of salivary cortisol, compared to serum cortisol, has the advantage of a non-invasive and stress-free sampling procedure in the subjects' natural environment [23]. However, when saliva samples are collected in a domestic setting, the accuracy of the measurements depends on participant adherence to the instructions [45]. Since no electronic monitoring was used, we have no means to objectively assess participants' compliance to saliva sampling in this study. However, we have no reason to believe that the ICT users were less compliant than the

other participants. Cortisol level is usually at its highest at 30 minutes after awakening. Had this measurement included, the cortisol level in the low user group might have been even higher during the second sample.

Generally, an altered cortisol awakening response is seen as an indicator of stress and stress-related changes in HPA-regulation. Adolescents rarely describe gaming and surfing in the Internet as stressing activities but, instead, as a way of passing time, getting positive experiences, and social communication. Gaming, Internet surfing, and other computer-based activities demand e.g. applying rules and strategies, quick reactions, and processing a lot of new information and experiences. Thus, in spite of the pleasant content, long period of focusing attention to game playing or Internet surfing may result in attention overload and directed attention fatigue [26]. Results have shown that subjective appraisals of stress and physiological reactions do not always match [46,47]. Besides directed attention fatigue, strong emotions may be associated with game and Internet contents, social communication, and successes and failures around these activities. Emotional processes involve both the subjective feelings of the individual and the neural and biochemical basis [9,30]. Thus, strong emotions are another possible source of physiological stress. Earlier results show physiological stress reactions immediately after a play session [30]. Our results suggest that a psycho physiological load due to ICT use can persist over night and have an impact on the regulation of HPA-activity even the next morning. Part of the participants in the user group had spent 1-3 hours on ICT which could be seen quite a moderate and usual amount of ICT usage per day at present. An experimental design would be needed to examine does even quite a moderate period of ICT use alone or only when combined with school work have an impact on diurnal cortisol secretion. The possibility of the low user group to recover and restore after school work may be as important as directed attention fatigue in the ICT user group in explaining group differences.

According to our results salivary cortisol may be a variable of interest when studying stress, strain and restoration in connection with ICT use. Some methodological questions need to be addressed, however. The result should be replicated in other, possibly larger samples, including salivary cortisol measurement at 30 minutes after awakening. Electronic monitoring of wake-up time and saliva sampling, and more objective estimates of time spent in different activities would be advantageous. Inclusion of more than one day would allow assessment of cortisol baseline values and enable measurement of within-subject differences based on ICT use. There are no standards for measuring pubertal development, but the selection of the method depends on which aspect of the puberty may be the most relevant to the research question [48]. In the current study, we were interested in the physical processes related to puberty which could affect

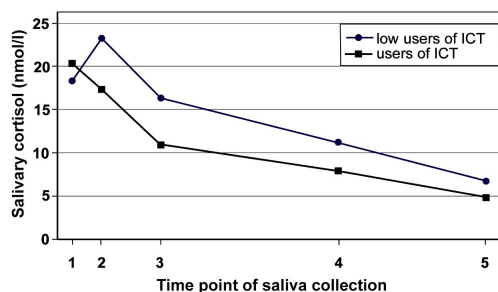


Figure 1. Salivary cortisol daytime profiles (1 = at wake-up, 2 = at 1 hour after wake-up, 3 = at 3 hours after wake-up, 4 = late afternoon, 5 = before going to bed) in the low ICT user group (N = 42) and ICT user group (N = 30)

the diurnal cortisol secretion, not e.g. social or psychological development. Especially menarche appears quite late in the pubertal development [48]. Thus, a more fine-grained measure of stage of pubertal development [49] could be used.

In conclusion, our results suggest that long hours on ICT may imply stress responses during which the physiological regulation system is in imbalanced allostatic state [50]. Excessive use of ICT can be seen as a modern form of Type 2 allostatic load which refers to an individual's capacity to cope in the surrounding social context. It seems possible that long hours of ICT use day after day might work like a naturally occurring stressor, which would predispose some adolescents to the development of allostatic load. Stress from different sources may also have interactive effects [51]. In the face of multiple stressors, for instance, problems in family or peer relations, troubles at school, or living in a noisy or crowded environment, the negative effects of intensive ICT use may be strengthened. Turner-Cobb [50] suggests that under naturalistic conditions even changes within the normal range may be subtle early indicators of, and contributors to, physical health outcomes in adulthood.

Directed attention fatigue can be defined as an insufficient reserve of attention to perform demanding tasks [52]. In addition to physiological signs of stress, negative after-effects have also been observed in next-day performance [53]. It would be urgent to study whether excessive ICT use in the evening negatively affects adolescents' next-day school performance, for instance, in the form of poorer attention, persistence, or memory. There is evidence that changes in cortisol levels are associated with impaired cognitive performance, such as memory [54].

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When the Need for Cognitive Structure does not Cause Heuristic Thinking: The Moderating Effect of the Perceived Ability to Achieve Cognitive Structure

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ABSTRACT

This research explores the hypothesis that the relationship between need for cognitive structure (NCS) and the use of cognitive biases is moderated by the perceived ability to achieve cognitive structure (AACS). NCS is defined as the extent of preference to use cognitive structuring vs. piecemeal processing as a means to achieve certainty. AACS refers to the extent to which individuals believe that they are able to use information processing processes (cognitive structuring or piecemeal) that are consistent with their level of NCS. To examine this hypothesis, Study 1 explored the effect of the NCS by AACS interaction on the use of confirmation bias. Study 2, demonstrated this effect on the use of framing heuristic. The results of the two studies confirm the hypothesis.

Keywords: Need for Cognitive Structure, Ability to Achieve Cognitive Structure, Confirmation Bias, Framing Heuristics

1. Introduction

The idea that human information processing can be characterized by shortcuts which, although normally efficient and powerful, may lead to biases or errors that systematically deviate from some accepted norm or standard, dominates the study of cognitive and social psychology in the last two decades. These shortcuts include a variety of phenomena such as framing, causal schemata and confirmation bias. Inherent in the explanations of these phenomena is the idea that such shortcuts serve as general simplifying strategies for complex cognitive tasks and enable people to make inferences from and predictions on the basis of such scanty and unreliable data as are available. These cognitive biases are often said to originate in the limitations of otherwise reasonable information-processors. There are, however, indications that these shortcuts are also related to more stable, trait-like characteristics. For example, it has been reported that the use of heuristics in negotiation was moderated by the need for cognitive closure [1,2]. Another study found relationships between Openness and judgmental accuracy [3]. The present paper centers on the need for cognitive structure (NCS) as the motivation force that may explain the occurrence of these cognitive shortcuts.

Cognitive structuring has frequently been regarded as the most efficient way of making sense of the world. Cognitive structuring can be defined as “the creation and use of abstract mental representations (e.g., schemata, prototypes, scripts, and stereotypes)-representations that are simplified generalizations of previous experiences” [4]. Cognitive structuring fulfills many functions in human information processing, such as the selection of information, avoidance of inconsistent information, or specific attendance to relevant information all of which are functional in achieving certainty. Finally, cognitive structuring may facilitate achieving certainty by adding previously stored information concerning the validity of the inference [5]. All these characteristics of cognitive structuring combine to offer the most efficient and relatively effortless way of gaining a sense of certainty and control over the situation [6].

While cognitive biases and heuristics are often portrayed as resulting from human cognitive shortcomings, so that the effects of motivational factors on them are not often explored, there is a wide body of research examining the effect of motivational factors on cognitive structuring. The motive that suggested to affect most information-processing behavior is the NCS. Thus, if the mecha-

nism that explains heuristics and cognitive biases is cognitive structuring, individual differences in NCS are expected to be associated with the extent of use of these biases [7].

1.1 The Need for Cognitive Structure

NCS is presently defined as the extent of preference to use cognitive structuring as a means to achieve certainty. NCS has long been at the center of attention in psychological research [4,6,8,9].

This conception shares the assumption that the cognitive processes used by high-NCS individuals to reduce uncertainty are “category based” [10,11], non-systematic and heuristic. They prefer to use holistic and rapid processing, crudely differentiated categories black-and-white type solutions and over-simplified dichotomizations. Fiske [12] suggested that cognitive structuring is the cognitively easier default option when there is no reason to discredit the categorization.

In contrast, low-NCS individuals are believed to prefer to reduce uncertainty using “piecemeal” or “systematic processing”, which are manifested in vigilant behavior, based on a systematic and effortful search for relevant information, its evaluation and unbiased integration [13,14]. It is important to note that NCS is often conceptualized as a dimension, which, at its high pole, predisposes individuals to use cognitive structuring to achieve certainty. At its low pole, however, it is not associated with indifference or low motivation to achieve certainty, but with a high tendency toward piecemeal processes [9].

Bar-Tal [15,16], however, argued that people may not only differ in their need for cognitive structure but also in their perceived ability to achieve cognitive structure (AACCS), which is orthogonal to the need. Thus, the fact that some people prefer to reduce their uncertainty by cognitive structuring does not mean that they believe that they are able to do so. Similarly, other people’s wish to reduce their uncertainty by means of piecemeal processes does not imply that they expect themselves to be able to do so. That is, according to Bar-Tal, AACCS moderates the NCS-cognitive structuring relationship.

1.2 The Perceived Ability to Achieve Cognitive Structure

AACCS refers to the extent to which individuals believe that they are able to employ information processing processes (cognitive structuring or piecemeal) that are consistent with their level of NCS. That is, in case of high need of cognitive structure: 1) to avoid information that either cannot be categorized or clashes with their existing knowledge, and/or 2) to organize their knowledge to fit an already existing cognitive structure. In the case of low NCS this implies the extent to which they believe that they are able to actively and systematically comprehend,

evaluate and integrate all useful information.

This conceptualization suggests that for high-AACCS people, low NCS will probably be associated with individuating process, and high NCS with cognitive structuring. In contrast, for low-AACCS people, low NCS implies that they do not expect themselves to be able to achieve certainty using piecemeal processing. Therefore they will revert to low piecemeal, effortless processing. This postulate is consistent with Chaiken, Giner-Sorolla and Chen [17] who suggest that accuracy motivation (low NCS) does not always lead to systematic processing (piecemeal process) since the latter can only take place if there is an adequate capacity to process information. Chaiken., *et al.* [17] furthermore suggest that when systematic processing is difficult or impossible, an accuracy-motivated person may have no choice but to base a decision on the best rule of thumb available. The present model, however, suggests that the perception of inability is sufficient to explain the tendency to avoid systematic processing.

Low-AACCS/high-NCS individuals, who prefer to use cognitive structuring but do not expect themselves to be able to do so, settle for more effortful processes. According to the present model, a state in which a person with a high need for structure feels that he/she lacks or is unable to use the structure that would enable him/her to organize the available information, causes less efficient and more effortful individuating processing. The idea that high NCS may, under certain circumstances, be connected to intensive bottom-up vigilant information search, rather than the more predictable effortless “category based”, non-systematic, is consistent with Janis and Mann’s [14] description of the hyper-vigilant decision-maker, accordingly, hyper-vigilance is associated with indecisiveness, over-alertness and the uncontrollable search for additional information. Bar-Tal [15] proposed that this behavior pattern stem from these people’s wish to reach an unqualified decision (high NCS), and their perceived inability to achieve the desired certainty by means of cognitive structuring. Note that while low-AACCS/high-NCS people do not use cognitive structuring to achieve certainty, it does not mean that they use high piecemeal. Bar-Tal, Kishon-Rabin and Tabak, [16] suggested that there are differences between high piecemeal and hyper vigilance. For example, while high piecemeal is associated with a sensitivity to all relevant (hypothesis consistent and inconsistent information) hyper vigilance is associated in addition, with sensitivity to hypothesis irrelevant information.

Recently Bar-Tal and his colleagues [15,16,18,19] provided empirical evidence in support of the notion of personal difference in AACCS. Bar-Tal., *et al.* [16] also demonstrated the moderating effect of AACCS on the relationship between NCS and cognitive structuring by using crude generalization and simplification as indices of cog-

nitive structuring. It has to be noted that in these studies, the moderating effect of AACCS on the relationship between NCS and cognitive structuring was demonstrated by means of a variety of operationalizations of NCS including Need for Cognition scale [20].

When applying the idea that cognitive structuring is affected by the interaction between NCS and AACCS to the notion that cognitive structuring is the basic mechanism enabling cognitive biases and heuristics [7,21], one may hypothesize that the interaction will affect the use of biases and heuristics. The present paper consists of two studies that examine this hypothesis. Study 1 considers how the interaction between NCS and AACCS affects participants' use of confirmation bias. Study 2 explores the interaction effect on the use of framing heuristic. We hypothesize that for low-AACCS participants, an increase of NCS will be associated with a lower level of confirmation-bias and heuristic use. In contrast, for high-AACCS participants, the increase of NCS will be associated with increased of confirmation-bias and heuristic use.

2. Study 1

One of the simplification strategies people use when testing a hypothesis is the confirmation bias. This bias is defined as the tendency to seek only corroborating evidence [22], and several types of it have been identified [23,24]. The present research centers on only one of them, namely, the tendency to avoid the examination of rival hypotheses.¹ Baron., *et al.* [23] suggested that errors in hypothesis testing, such as those evident in confirmation bias, can be conceptualized as heuristics which come reasonably close, without actually calculating, to the normative model (as recommended by Popper [25] and others). The phenomenon of confirmation strategies was validated in numerous studies [23,26]. Other researchers, however, have claimed that people use a diagnostic strategy rather than a confirmation strategy in hypothesis testing [24,27,28] so that it can be concluded that people are capable of using both confirmatory as well as diagnostic strategies. It has also been suggested that the choice of confirmatory or diagnostic strategy depends on the nature of the task and of the instruction presented to the participants. Skov and Sherman [28], for example, suggested that asking participants about the utility of various kinds of available information focuses them on the diagnosticity of that information. Also, Devine, Hirt and Gehrke [27] noted that presentation of equally diagnostic hypothesis-true and alternative-true questions leads participants to a preference for hypothesis true question.

Replacing confirmation bias with a diagnostic strategy

¹Baron, Beattie and Hershey [23] suggested three interrelated biases in hypothesis testing (congruence bias, information bias and certainty bias), of which congruence bias corresponds to the type of confirmation bias the present study centers on.

is of particular relevance in the case of medical diagnosis. In the medical profession diagnostic strategy is termed differential diagnosis (DD). The idea is that even when a physician, or a nurse, finds that symptoms A, B and C, which are very common in disease X, are present, he/she cannot therefore safely infer that the patient suffers from disease X since A, B, and C may also be common in disease Y. DD requires the search for symptoms D and E that are common in Y but do not characterize X. Only when symptoms A, B and C are present and D and E have not been found, the physician or nurse may be certain in his/her diagnosis that the patient suffers from X [29]. It has to be noticed however, that confirmation strategy can reveal certain errors in the hypothesis and does not necessarily lead to a mistaken conclusion: even searching only for symptoms A, B and C (a confirmatory strategy) may help to falsify the hypothesis if one or more of the symptoms is missing. A truly diagnostic strategy (examination of alternative explanations), however, would increase the validity of the inference by accounting for both necessary and sufficient conditions [26].

In the present context, people who use confirmation bias are driven by the need to achieve certainty in the validity of the hypothesis under consideration in an efficient and easy way. Alternative hypotheses may not only prolong the validation process and make it more effortful, but may in addition leave the individual uncertain regarding the validity of any of the hypotheses. That is, refutation of the original hypothesis by means of showing the feasibility of an alternative hypothesis does not prove the validity of the alternative. Achieving certainty in the validity of the alternative hypothesis would require examining it, in turn, against its alternative hypotheses. Therefore, a truly diagnostic strategy may not answer the need of those who are motivated to achieve certainty in an easy and fast way (high NCS). It is thus possible to suggest that confirmation bias is the result of a cognitive structuring process that allows people to achieve certainty with a low expenditure of effort by attending mainly to schema-consistent information while ignoring schema-inconsistent or irrelevant information. Our hypothesis is that for low-AACCS participants, the higher their NCS the more they will tend to use an individuating process and search for diagnostic (DD) information. In contrast, for participants with high AACCS, the higher their NCS, the greater will be their use of schematic and heuristic processes and, therefore, the greater will be their use of confirmation bias (ignoring the diagnostic information).

2.1 Method

2.1.1 Participants

Participants were 55 registered nurses working in a hospital in Israel. Their mean age was 38.82 (sd = 8.44) and their average tenure 15.52 years (sd = 8.44).

2.1.2 Measures

AACS Scale. The measure of AACS was carried out with a 24-item questionnaire. The items were chosen to represent manifestations of ease or difficulty in using cognitive structure (e.g., “Usually, I don’t have afterthoughts upon making a decision”; “Even when I am really bothered by a decision I should make, I still find it hard to make up my mind and free myself from the hassle”, respectively), or ease or difficulty in using piecemeal processes (e.g., “Usually I see to it that my work is carefully planned and well organized”; “Even if I make notes of things I have to do, it is hard for me to act upon them”, respectively). In terms of construct validity of the AACS Scale, a high correlation between the R-S Scale [30] and AACS Scale was found ($r = -0.56$, $p < 0.01$). High score on the Scale represents high sensitivity and an inability to filter out schema (self-schemata) incongruent contents that is accompanied by motivation to maintain positive self-esteem and ego integrity. The R-S scale does not only represent inability to structure ego relevant contents. Hock, Krohne and Kaiser [31] argued that sensitizers do not tolerate uncertainty in general (high NCS) while being constantly and extensively preoccupied with enhanced information search. Therefore, a high R-S score corresponds to low AACS. Also, since AACS represents mastery of using the desired mode of information processing, and since self-efficacy should be strongly related to self-esteem, a positive relationship can be expected between AACS and self-esteem. Using Rosenberg’s Self-Esteem Scale [32], such a relationship was indeed found ($r = 0.52$, $p < 0.01$) in a sample of students. In addition, the AACS Scale was found to significantly correlate ($r = 0.24$, $p < 0.05$) with Cacioppo and Petty’s Need For Cognition Scale [20]. In general, people with a high need for cognition prefer piecemeal processing and expend more effort in processing information [33,34]. Finally, the AACS Scale correlates negatively ($r = -0.41$, $p < 0.01$) with the Dysfunctional Impulsivity Scale [35]. Dickman defined impulsivity as the tendency to deliberate less than most people of equal ability before taking action; impulsivity was divided into functional and dysfunctional types. Functional impulsivity is the tendency to act with relatively little forethought when rapid response is required and/or there is little cost of error. That is, functional impulsivity can be viewed as the tendency to use cognitive structuring when this is the required process. Dysfunctional impulsivity was defined as the tendency to act with less forethought than most people of equal ability, with this tendency being a source of difficulty. Dysfunctional impulsivity can therefore be viewed as the tendency to use cognitive structuring when piecemeal process is required.² Thus, to return to the found correlation between AACS Scale and the Dysfunctional Impulsivity Scale, a negative correlation indicates that the AACS Scale also

measures the perceived ability to avoid cognitive structuring when piecemeal process required.^{3,4} Moreover, the notion that the AACS Scale represents the ability to use both piecemeal process as well as cognitive structuring when desired, was validated in another sample of students, where each functional and dysfunctional impulsivity Scale was found to make a significant contribution to the explanation of AACS, with a multiple R of 0.57.

The test-retest correlation (with an interval of five weeks between measurements) was .86. Responses to the 24 items were on a 6-point Scale ranging from “Completely disagree” (1) to “{Completely agree” (6). The composite AACS Scale score was the mean of responses to the 24 items (Cronbach’s alpha = 0.82).

NCS Scale. NCS was measured by a 20-item questionnaire, with responses on a 6-point scale ranging from “Completely disagree” (1) to “Completely agree” (6). Items of the NCS were chosen to reflect specific personal preferences (e.g., “I am very annoyed when something unexpected disrupts my daily routine”; “I prefer things to be predictable and certain”), as well as general attitudes and values indicating preference for the unequivocal and absolute (e.g., “I don’t like modern paintings in which I don’t know what the painter meant”; “In order to get a good dish it is absolutely essential to follow the recipe exactly”). Items were selected so that they will reflect only motivation and preference, and not actual behavior, since the latter represents ability as well as need.⁵ The composite score was the mean of responses to the 20 items (Cronbach’s alpha = 0.86). The test-retest correlation (with an interval of five weeks between measurements) was 0.85. In terms of construct validity, the NCS Scale was found to be positively correlated ($r = 0.43$) with Rokeach’s dogmatism Scale [36], ($r = 0.45$) with the personal-need-for-structure Scale [4], and ($r = 0.68$) with the need for closure Scale [37], which all represent constructs similar to NCS. Finally, given that the NCS Scale represents a dimension both of whose ends are related to high need for certainty (though each is achieved differently), and that need for certainty, in turn, should be correlated with need for control, a curvilinear relationship between desire for control and NCS could be predicted.

²For the relationship between impulsivity and cognitive structuring see Dickman [60] and Dickman and Meyer [61].

³Support for the notion that cognitive structuring is not the preferred method of high dysfunctional impulsives is its negative correlation ($r = -0.27$, $p < 0.01$) with NCS.

⁴It is interesting to note that the negative correlation between DI and AACS exists even after controlling for level of self-esteem ($r = -0.35$, $p < 0.01$). That is, the negative correlation between AACS and DI cannot be explained by the positive correlation between AACS and self-esteem.

⁵This was the original reason for constructing a new scale rather than using one of the already existing one. Only in a latter stage it was established that other existing scales that measure the same construct are not correlated with AACS.

Indeed a significant curvilinear ($r = 0.25$, $p < 0.05$), but not linear ($r = 0.06$, $p = ns$), relationship was found, between Burger and Cooper's [38] desire for control Scale and NCS Scales.

Stimuli Participants were presented with two written scenarios describing patients admitted to the emergency ward: one, a male with a suspected cerebrovascular accident (CVA), the other, a woman with abdominal pains indicating appendicitis. Each scenario was followed by 15 items suggesting possible tests needed to be done to achieve certainty in the diagnosis: positive answers on five of these tests confirmed the hypothesis (given diagnosis), five other items were diagnostic (positive answers pointed at the possibility that the differential diagnosis was correct) and five irrelevant. For the CVA scenario, a typical consistent item was "Checking for hemiparesis", a diagnostic item was "Is the patient taking medicines that are known to cause mental confusion?", while an irrelevant item was, for instance: "Did the patient have rubella as a child?" Similarly, a consistent item with regard to the appendicitis scenario was "Is there a difference between the rectal and oral temperature?" A representative diagnostic item was "Is the patient known to suffer from gallstones?", while an irrelevant item was "Does the patient suffer from asthma?" All items were validated by a panel of two practitioners and three registered nurses.

The participants were asked to read each of the 15 suggested diagnostic questions that came with the scenarios, and to answer the following question: "To what extent can this test/question help you to decide whether the diagnosis is correct?" The reliability of the 10 consistent items was 0.81, that of the diagnostic ones was 0.70 and that of the irrelevant information was 0.77.

2.1.3 Procedure

Participants were approached at their working places by the experimenter who presented herself as a MA Nursing student and asked them to participate in a decision-making study. After completing the two tasks, they were requested to complete the AACS and NCS Scales. Upon completion participants were debriefed.

2.2 Results and Discussion

Since our main hypothesis relates to the moderating effect of the AACS \times NCS interaction on confirmation bias, it is necessary first of all to establish the existence of confirmation bias. For this purpose, the mean ratings of consistent, irrelevant and diagnostic items were compared using a one-way ANOVA with repeated measure test. The analysis yielded a highly significant result ($F_{(2,108)} = 869.20$, $p < 0.01$), with the mean of relevant items ($M = 5.67$) being higher than that of the diagnostic items ($M = 3.95$), while the latter mean was higher than that of the irrelevant items ($M = 1.52$). The a posteriori Bonferoni

Table 1. Correlation among study 1 variables

	1	2	3
1. AACS			
2. NCS	18		
3. confirmation bias	-0.05	05	
mean	3.83	4.10	1.72
sd	66	70	86

tests for dependent measures show that all the three measures differed significantly from each other. Thus, while participants clearly underestimated the utility of diagnostic information relative to hypothesis-consistent information, they nevertheless noticed that the diagnostic information was more informative than the irrelevant information. Hence, the data supported a predominant hypothesis-confirmation strategy, and a less strong, but nonetheless significant tendency to acknowledge the merit of diagnostic information. It is interesting to note that these findings were obtained in spite of the fact that the participants were requested to judge the utility of the test items for achieving certainty regarding the validity of the hypothesis. That is, Skov and Sherman's [28] suggestion that such a method leads to a subject's choice of diagnostic strategy is not supported by the present results.

To test the hypothesis, a confirmation bias index was constructed by subtracting the mean diagnostic items from the consistent items. Consequently, a higher score on the index represents greater extent of deviation from a diagnostic strategy. Next, the correlations among the study variables were calculated (see **Table 1**). Finally, a hierarchical regression was performed in which the two standardized main effects (AACS and NCS) were entered in the first step and the interaction term (AACS \times NCS) was introduced in the second step. Following the suggestion of Dunlap and Kemery [39] concerning the reduction of multicollinearity, all variables were standardized before the respective cross-products were computed. The regression analysis as a whole was significant ($F_{(3,51)} = 3.22$, $p < 0.05$), and only the interaction yielded a significant effect explaining 15% of the variance ($t = 2.98$, $p < 0.01$). The final equation for confirmation bias is

$$Y' = 1.66 - 0.01 \cdot A - 0.08 \cdot B + 0.34 \cdot AB,$$

with A standing for NCS and B for AACS. To interpret the source of the interactions, regression lines of confirmation bias on NCS were calculated separately for high and low AACS according to one standard deviation below and above the mean. Since analyses were based on the z-scores of the independent variables, values were -1 and 1. Regression coefficients (b) were calculated using the equation obtained in the final step; the b of NCS was added to that of the interaction term after the latter was multiplied by either -1 or 1 [40].

In line with our hypothesis, the slope for the low-AACS participants was negative ($b = -0.35$), while it was positive for high AACS ($b = 0.33$). That is, for low-AACS participants, higher NCS was associated with lower confirmation bias and higher use of diagnostic strategy. In contrast, for high-AACS participants higher NCS was associated with higher confirmation bias. Thus, this study demonstrated that the relationship between NCS and the use of cognitive biases is moderated by level of AACS. Finally, the findings show, in contrast to previous research, that the choice of confirmatory or diagnostic strategy is not determined by “cold” cognitive factors only, as mentioned earlier, but also by participants’ epistemic motivation and their efficacy to satisfy this motivation.

3. Study 2

It is widely recognized that when making everyday judgments in uncertain situations people will very seldom use exhaustive statistical analysis to figure out the best choice. Rather, they often rely more pragmatically on simplifying judgmental strategies. These strategies, commonly termed heuristics, provide decision-making shortcuts as an alternative to the elaborate, more rational processes [41,44]. As it their function to achieve certainty in the easiest and quickest way by relying mainly on the most salient information, heuristics can be considered as manifestations of cognitive structuring processes. Indeed, Kruglanski and Freund [45] demonstrated that when people were motivated to achieve cognitive structure they showed a greater tendency to use the numerical anchoring heuristic [44]. Also, Henderson and Peterson [21] suggested that at least some of the framing heuristic scenarios are better explained by categorization processes.

Framing is one of the most commonly cited heuristic strategies. Tversky and Kahneman [46,47] proposed the concept of decision frame. When decision options are phrased in terms of gains, most people choose the risk averse option. But when options are phrased negatively in terms of losses, most people choose the risky option. This preference reversal relates to the alternative framing which causes people to view the outcomes as gains in the positive frame and as losses in the negative frame [46,47]. To account for the deviation of these results from the predictions of expected utility theory, Kahneman and Tversky [48] suggested the prospect theory. In prospect theory, the decision making process is divided into two phases: an editing phase in which the decision problem is edited into a simpler representation in order to make the second phase easier for the decision maker. The framing effect is mainly created in this second phase, which consists of an evaluation of the framed course of action for the final choice. Kahneman and Tversky [49] concluded that the use of framing heuristic is both pervasive and

robust to the extent that it resembles perceptual illusions more than conceptual errors. In spite of ample research supporting Kahneman and Tversky’s findings, recent research challenges their conviction by showing that the phenomenon is much more restricted than they suggested [50-53]. Fagley and Miller [51], for example, found no framing effect and Bier and Connell [50] even described a reversed framing effect. Wang and Johnston [53] demonstrated that the effect appeared only when describing a large-group context but not in a small group. Takemura [54] found that framing effect tends to disappear when participants are requested to justify their choice, to think about it, or when they have a long time for solving the problem. Finally, there are indications that framing effect is strongly affected by individual differences. Smith and Levin [55] established that framing effects are obtained for participants low in need for cognition but not for participants scored high on this Scale. Similarly, Shiloh, Salton and Sharabi [56] demonstrated that rational and intuitive thinking styles [57] are associated with framing effect.

One of Tversky and Kahneman’s most famous examples of framing is the following “Asian disease” example [46].

Imagine that the United States is preparing for the outbreak of an unusual Asian disease expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows (the positive frame):

If Program A is adopted 200 people will be saved.

If Program B is adopted, there is a 1/3 probability that 600 people will be saved and a 2/3 probability that no people will be saved. Which of the two programs

Would you favor?

The other formulation of the programs (negative framing) included the following two options:

If Program C is adopted, 400 people will die.

If Program D is adopted, there is 1/3 probability that nobody will die and

a 2/3 probability that 600 people will die (p. 453).

Tversky and Kahneman [46] indicated that the two versions induced different frames and therefore caused participants to adopt different decisions. Participants preferred program A over B (the risk averse response), but program D over program C (the risk seeking response).

If our assumption that framing heuristic is a manifestation of cognitive structuring is correct, how can this phenomenon be attributed to simplification processes that are consistent with cognitive structuring? The explanation may be as follows: Participants seek the most positive or least negative consequence. However, when motivated to use cognitive structuring process, participants are also motivated to seek the simpler choice. Thus, in the posi-

tively framed scenario, participants prefer program A because it is simpler (only positive consequences are mentioned), in contrast to program B which details both positive and negative consequences and requires calculations. In the negatively framed scenario participants avoid program C because it is clearly negative and by default (*i.e.*, without considering it) they choose program D. Otherwise, they scan program D, find the positive part of it (nobody will die), and disregarding the other elements of the option, they prefer it to the clearly negative option, program C. In line with this explanation, Kuhberger [52] demonstrated that the framing effect disappears when participants are presented with complete and mixed programs, *i.e.*, 200 will be saved and 400 will not be saved, in program A and 400 will die and 200 will not die in program C. That is, when there is no clear-cut program which enables simplification, the framing effect is not evident.

Since framing can be viewed as one of the manifestations of cognitive structuring processes, and since cognitive structuring is affected by the interaction between NCS and AACS, the present study hypothesizes that the use of framing will be moderated by the interaction between AACS and NCS. In other words, high-AACS participants will tend to use more framing the higher their NCS. In contrast, low-AACS participants will manifest negative correlation between their level of NCS and utilization of framing heuristic. The rationale for this hypothesis is that participants with high NCS will be more motivated to use the heuristic; however, those with low AACS will be able neither to sufficiently structure their cognition, nor to avoid inconsistent information, nor, indeed, to use heuristics for the sake of a quick and easy decision process.

3.1 Method

3.1.1 Participants

Participants were 51 women and 42 men whose average age was 39.12 (sd = 13.02) and whose average years of formal education were 14.12 (sd = 2.70); all participants agreed to participate in the study.

3.1.2 Measures

Need and ability to achieve cognitive structure. NCS and AACS were measured by scales described in Study 1. The reliability of AACS was 0.80 and that of NCS was 0.89.

Measure of framing effect. Participants were presented with a modification of Tversky and Kahneman's [46] "plague problem" *i.e.*, they were requested to imagine that they returned a week ago from an exciting trip to the Far East. The Health Department declared that their experience from previous years showed that annually, 1800 people of all those who travel to the Far East were in-

fectured by a certain virus which does not cause an immediate symptom or health problem. A proper diagnosis enables cure of the disease. The Health Department announced that there are two kinds of tests to diagnose the disease, but neither is fully reliable. For the first test there is 1/3 probability that 1800 people will be diagnosed correctly and 2/3 probability that no one will be diagnosed correctly. For the second test, 600 people are diagnosed correctly. The introductory story of the negative version was similar to that of the positive one, the only difference being in the wording of the options, namely, in the first test 1200 people would not be diagnosed correctly, and in the second test, there was 1/3 probability that none would be diagnosed incorrectly and 2/3 probability that 1800 people would not be diagnosed correctly. Having read each of the two scenarios participants were requested to rate the extent to which they would chose to be tested by each of the tests, on 100 mm visual analog scales ranging from "not all" (0) to "to a very large extent" (100). The positive and negative versions were separated by a five-minute distraction task. The order of the two scenarios was counter balanced.

3.1.3 Procedure

Participants were told that the study examined various aspects of decision-making and that their anonymity would be preserved. Then they were requested to complete both versions of the framing scenarios as well as the intervening distraction task. Finally, they answered the 44 items of the AACS and NCS questionnaires.

3.2 Results and Discussion

To examine the effectiveness of the framing manipulation, a 2×2 within-subject ANOVA (gains vs. losses, and risk-aversion vs. risk-taking) was performed. The analysis yielded only a significant interaction effect ($F_{(1,92)} = 29.31$, $p < 0.01$). The *a posteriori* Tukey/b tests performed on the residuals [58] show that in problem 1 (framed as a gain), participants preferred the risk-aversion alternative (9.49) over the risk-taking one (-9.49). In contrast, in the case of problem 2 participants preferred the risk-taking option (9.49) over the risk aversion option (-9.49). Hence, the successfulness of the manipulation of the framing effect is highly evident.

To examine the study's main hypothesis, a total framing score was calculated by summing of the preference for risk-avoiding over risk-taking ratings in the first problem, and the preference for risk-taking over risk-avoiding ratings in the second problem. Subsequently, the correlations among the study variables were calculated (see **Table 2**). Finally, a hierarchical regression analysis was performed in whose first step the effects of AACS and NCS were introduced, while the second examined the interaction effect. The analysis shows that the regression as a whole was significant ($F_{(3,85)} = 3.00$, $p < 0.05$), and only

Table 2. Correlation among study 2 variables

	1	2	3
1. AACS			
2. NCS	-0.01		
3. framing heuristic	-0.02	15	
mean	3.73	4.36	37.96
sd	65	83	67.61

the interaction yielded a significant effect, explaining 9% of the variance ($t = 2.65$, $p < 0.01$). The final equation for framing effect is

$$Y' = 34.18 + 7.88 * A + 2.24 * B + 18.61 * AB$$

with A standing for NCS and B standing for AACS.

The examination of the source of the interaction was performed as in Study 1.

In line with our hypothesis, while the slope of total framing effect for the low-AACS participants was negative ($b = -10.73$), it was positive for high AACS ($b = 26.49$). Thus, as predicted, while high AACS participants tended to use more framing heuristic the higher their level of NCS, low-AACS participants tended to use it less the higher their NCS.

The results from this study contradict Kahneman and Tversky's [49] claim regarding the robustness of the phenomenon of framing heuristic. If there are substantial amounts of people who tend to avoid the use of framing, it is not reasonable to view the framing effect as perceptual illusion. The present results cannot moreover be explained in terms of the prospect theory. Therefore, Tversky and Kahneman's [46] conviction that the framing phenomenon is best explained by prospect theory stands challenged. This study joins the other studies, mentioned earlier, that show the limitations of the phenomenon as well as the limitations of prospect theory's capacity in explaining this phenomenon. In addition, this study contributes in that rather than emphasizing either cognitive (mentioned above), or motivational factors [50,55,57] that effect the framing phenomenon, it demonstrates that framing, like other heuristic and cognitive biases, is influenced by a combination of motivational and cognitive factors.

4. General Discussion

The present paper hypothesized that cognitive biases are affected by the interaction between NCS and AACS. The results of the two studies validated this hypothesis. Study 1 showed that AACS moderates the NCS-confirmation bias relationship: higher NCS is associated with less confirmation bias (greater use of hypothesis inconsistent information). In contrast, for high-AACS participants, higher NCS goes with greater confirmation bias. Study 2

shows that while for high-AACS participants, the level of NCS is positively associated with the use of framing heuristic, for low-AACS participants, the level of NCS is negatively associated with framing heuristic.

The present results further validate our view that cognitive structuring, manifested in the present study by the use of cognitive biases and stereotyping, is affected by both NCS and AACS and not by NCS alone. This conclusion highlights the importance of distinguishing between the two constructs. In addition, the fact that in the two different samples, the correlations between NCS and AACS were found to be very low and non-significant not only supports this conclusion but also indicates that the two measures of AACS and NCS reflect different constructs.

The two studies are based on the assumption that the basic mechanism underlying cognitive biases is similar to that of motivational biases and that both of them are manifestations of cognitive structuring. From this point of view, the present results validate Kruglanski and his colleagues' [7,45,59] claim that both cognitive and motivational biases are manifestations of the same epistemic motivational processes. Our present results however, depart from Kruglanski's lay epistemology theory in one important respect, namely that according to our conception people are not always able to adapt information processing processes (cognitive structuring or piecemeal; freezing or unfreezing, in lay epistemology terms) whenever they wish or need it.

To conclude, the present paper suggests that heuristic thinking cannot be explained by the mere motivation for simplified, relatively homogeneous, well-defined and distinct structures. Rather we suggest that the relation between this motivation and schematic thinking is moderated by the efficacy to achieve cognitive structure.

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Dialectics between Splitting and Integrating in the Lives of Heterosexually Married Gay Men

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ABSTRACT

Mixed-orientation marriage is usually an invisible phenomenon, but its frequency is not insignificant. The present paper describes and examines the experiences of 13 heterosexually married gay men, seven of whose wives were aware and six who were unaware of their husbands' homosexuality. We take the insiders' perspective as a point of departure to develop a conceptual model that may contribute to our understanding of the constructed reality of this relatively unexplored phenomenon. The findings show that life in a mixed-orientation marriage can be understood along a continuum running between two poles: splitting and integrating. This continuum corresponds to the fundamental question in the lives of heterosexually married gay men: Is integration between homosexuality and heterosexual marriage possible, and if so, how?

Keywords: Qualitative Research, Mixed-Orientation Marriage, Disclosure, Gay Men, Integrating, Splitting

1. Introduction

The Mixed-orientation marriage is usually an invisible phenomenon, but its frequency is not insignificant. No accurate estimate of the prevalence of heterosexually married gay men is available in the literature [1]. Kinsey [2] estimated that 1.7-1.9% of heterosexually married men are homosexuals. A survey using a probability sample of gay males found that 42% of the men who self-identified as homosexuals or bisexuals had previously been married to a woman [3]. Other studies show that 20% of homosexuals had been married to a woman at some point in their lives [4-6]. A more recent study [7] shows that an estimated two million homosexuals, lesbians and bisexuals in the US had, at some time in their lives, been part of a mixed-orientation marriage.

What brings a homosexual man to marry a woman? The literature suggests a number of explanations including internal homophobia [8], cultural and social expectations [3-5,9], social and familial pressure, a wish to hide or eliminate the sexual orientation, desire to have children, feelings of love towards the woman, dissatisfaction with the homosexual world and negative feelings towards the homosexual lifestyle [10-12]. This array of motives is dynamic in that it may change over time. For example, Matteson [13] has distinguished between positive and negative motives, corresponding to the periods prior to and following the Stonewall Riots in 1969. These violent

riots took place between policemen and homosexuals, lesbians and transsexuals at Greenwich Village, New York. This event marks the establishment of the gay rights movement in the US and around the world. Matteson found that the most common motive for gay man to marry a woman prior to this incident was the negative perceptions of homosexuality, and following the event, it was the desire for family life.

In principal, mixed-orientation marriage can take one of two forms; the wife is either aware or unaware of her husband's homosexuality [12-14]. Within this context, the present paper examined personal narratives of gay men who were married to women, some of who were aware and some who were unaware of their husbands' homosexuality, to gain a deeper theoretical understanding of mixed-orientation marriages. It is important to note that the nature of unawareness is dynamic and it may evolve over time (*i.e.* a woman can become aware of the man's sexual orientation in different stages of the marriage).

Gay men's heterosexual marriages are usually portrayed as problematic [8,11,14-15]. In an attempt to provide an answer to the question of why mixed-orientation marriages break apart, Higgins [8] referred to cognitive consistency theory. According to this theory, a cognitive dissonance occurs when one's behavior is inconsistent with one's perception of it. In the case of mixed-orientation marriages, a dissonance exists between homosexual

men's attraction to members of their own sex, and their engagement in heterosexual marriages. The cognitive dissonance increases as the man manages two simultaneous relationship systems with a woman and with men, thereby running a double life. In order to obtain consistency, these men make the decision to marry (*i.e.*, invoking the belief that homosexuality is wrong, homosexual relationships are doomed to fail, etc.). To attain congruence in this situation, homosexual men may disclose their sexual orientation, identifying with and participating in the homosexual world [16].

As mentioned, researchers have been aware of the fundamental difference between the two situations in which women are aware or unaware of their husbands' homosexuality [12-14]. Each of these two situations involves certain individual and dyadic processes, which will be examined below.

1.1 Wives are Unaware of their Husbands' Homosexuality

Little has been written about this specific phenomenon. Berger [10] found that although successful marriages of this type are rare, several men reported having satisfying marital relationships. Their wives' and children's lack of awareness is a mediator variable that contributes to the perception of the marriage as successful. The gay men's concealment appears to play an essential role. However, Binger [14] indicates that many of these men are likely to experience guilt and anxiety. Guilt stems from their unauthentic lifestyle and from the concealment itself. Anxiety is associated with the potential harmful ramifications of an unplanned discovery of their homosexuality.

Several theoretical perspectives have been suggested to account for the implications of concealment by heterosexually married gay men. Pennebaker [17,18] suggested that *Inhibition Theory* may provide a useful explanation, as it emphasizes conflict or inhibition over emotional expression (e.g. concealment), which may result in stress-related illnesses or reactions. According to this theory, emotional expression and sharing significant personal aspects with others via disclosure are important to maintaining good mental and physical health. Using a *Minority Stress* conceptual framework, Meyer [19] concluded that the combination of various stress-simulating processes, such as concealment of sexual orientation, can provoke mental health problems. In conclusion, concealment of sexual orientation can have destructive implications for homosexual men, both emotionally and physically. Interestingly, while the wife's unawareness appears to be a contributing factor to the success of the marriage, the concealment of homosexuality is thought to be a disruptive factor.

1.2 Wives are Aware of their Husbands' Homosexuality

Relatively more scholarly attention has been directed to

couples who share the information about the husbands' homosexuality, particularly in the 1980's [11-13]. Disclosure of homosexuality to wives varies and may occur during different stages of the marital relationship: Some men come out prior to the marriage, while others do so during their married lives, which may pose a certain threat to the continuation of the marriage. Both spouses can find themselves in situations where they would initiate termination of their relationships. Even for those who decide to keep their marriage intact, homosexuality can be a source of tension and conflict, introducing continuous pessimism about the future of their marriage [11,12]. In spite of such complexities, some couples manage to sustain their marriage following the discovery of the husband's homosexuality. In these cases, the spouses begin to integrate homosexuality into their heterosexual relationships [12]. Several studies have indicated that some couples indeed survived the crisis following disclosure [13,20], emphasizing that open communication, understanding and acceptance of homosexuality by both spouses can help the couple overcome their difficulties [12].

Couples in mixed-orientation marriages cope with the complexity of the situation in various ways, including various networks of social support (homosexual, heterosexual and bisexual); professional help or paraprofessional support groups (self-help groups for other men and couples in a similar situation). At the dyadic level, couples develop various accepted rules or routines related specifically to the husband's homosexual behavior and practices, e.g. the husband always comes home at night, takes precautions against infectious diseases, limits his sexual partners, etc. [12]. Successful adaptation to mixed-orientation marriage has been attributed to several factors. One is love and affection between spouses, together with their commitment and desire to maintain a successful relationship. Another is open communication and physical contact, as well as dealing with feelings of guilt and shame related to the husband's sexual orientation. Allowing the wife's sense of self-realization outside the marriage as well as agreeing upon practices related to the husband's homosexual encounters may also contribute to successful adaptation. This can include the creation of a contract between the spouses on such issues; for example, establishing that the woman would not be informed about the husband's sexual contacts, deciding to conduct an open relationship, etc. [11]. In addition, the husband's realization of his homosexuality was found to contribute to the quality and stability of the marital relationships [21].

Most of the literature about mixed-orientation marriages was written during the 1980's and referred to quantitative studies. The present study, however, utilizes qualitative methodology and examines constructed meanings and experiences of heterosexually married gay men [22], with wives who are aware and unaware of their homo-

sexuality. We take the insiders' perspective as a point of departure to develop a theoretical framework that may expand our understanding of the constructed reality of this relatively unexplored phenomenon [23]. Within this perspective, the main research question is as follows: Is integration between homosexuality and heterosexual marriage possible, and if so, how? Is there an alternative way in which a homosexual man can realize his sexual orientation and simultaneously live in a heterosexual marriage?

2. Method

2.1 Participants

The participants were 13 heterosexually married men, who define themselves as "gay". Seven of the wives were aware of their husband's homosexuality and six were unaware. One man had disclosed his sexual orientation to his wife before the marriage, while the other six had made the disclosure at different stages of the marriage. The men's average age was 51 years ($SD = 8.43$), ranging from 35-64 years old. The average duration of marriage was 24 years ($SD = 9$), ranging from five to 37 years of marriage. All the married couples had children, and all participants were secular Jews with high school or academic education.

The participants were recruited using criterion sampling, to ensure their compatibility with the phenomenon under study [22]. We interviewed gay men whose wives were aware of their homosexuality, as well as those whose wives were unaware, to increase variation within the studied phenomenon. In addition, we located participants of different ages and at different stages of married life. This line of reasoning was based on the assumption that any common patterns emerging as a result of greater variation would be valuable in capturing the core experiences [24]. The sampling process ended when theoretical saturation was reached, when new information from the participants fit existing themes, but did not add new categories of meaning [25].

2.2 Procedure

Participants were recruited through a dating website for the homosexual community, according to the criteria specified above. Out of more than 125 men who were contacted, 99 did not respond, 20 responded but refused to be interviewed due to fear of exposure, and only six were willing to participate (four in the WN [wives unaware] group and two in the WA [wives aware] group). The other seven participants were recruited through snowball procedures and by word of mouth. Initial phone calls were conducted with each participant, in which research description, interview processes, documentation methods and procedures to ensure confidentiality were presented, followed by participants' consent to be inter-

viewed. Then, a face-to-face interview was scheduled. Time and place were determined by participants' preferences. Each interview lasted between one and two hours. The interviews were digitally audiotaped. In addition to ensuring accuracy, this also enabled the researcher to be more attentive to the interviewee [24].

2.2.1 Data Collection and Analysis

Data was collected using in-depth semi-structured interviews focusing on the subjective experiences and perspectives of the heterosexually married gay men. The interview followed an interview guide containing a list of issues relevant to understanding the phenomenon [24]. Two versions of interview guide were developed, to meet the special issues characterizing each of the two situations of the studied phenomenon (*i.e.* WA and WN). The main questions in the first version dealt with issues including married life, relationships between the spouses, coping strategies, realization of husband's homosexuality and disclosure of homosexuality to the wife with regard to two time periods: prior to and following disclosure. The second version contained questions that related to the same issues as in the first version, but with no reference to the two time periods. Demographic data were collected uniformly in both versions (*e.g.* age, religiosity, education, etc.).

Data analysis was performed in several stages. First, all recorded interviews were transcribed verbatim and read as text to gain familiarity, bracketing prior perceptions and knowledge [24,26]. Second, a separate case analysis of each interview was performed to identify units of meaning related to the studied phenomenon, which were organized in meaningful clusters. Third, cross-case analysis was conducted, using an *imaginative variation* to find possible meanings and to approach the phenomena from several perspectives [26]. Fourth, *structural synthesis* was established, to reveal the essence of the phenomena and to develop a theoretical framework for more in-depth understanding [24].

2.2.2 Trustworthiness and Credibility

Unlike the positivist researcher who seeks for internal and external validity, the qualitative researcher is geared towards *trustworthiness* of findings and analysis [25]. Accepting that there is no single objective reality, the researcher is concerned with credibility, transferability, dependability and conformability [23]. In the present study, we employed the following procedures to establish trustworthiness. We used information-rich quotations to provide thick descriptions of various aspects of the studied phenomenon. An experienced researcher was closely involved in the analysis and interpretation of findings, which were then shared with some participants to receive their perception of the findings, including suggested meanings and interpretations [25].

2.3 Results

The interview data shows that life in a mixed-orientation marriage can be understood along a continuum running between two poles: *splitting* and *integrating*. This continuum corresponds to the fundamental question in the lives of heterosexually married gay men: Is integration between homosexuality and heterosexual marriage possible, and if so, how? When telling their stories as homosexual married men, participants used contradictory terms to describe their experiences, which indicated mechanisms of *splitting* and *integrating*. In particular, they were attempting to create a separation between their homosexual life and their family life, while apparently integrating or wishing to integrate the two worlds simultaneously.

2.3.1 Splitting in the Lives of Heterosexually Married Gay Men

When *splitting* appears as the dominant theme in their stories, interviewees refer to their double lives in a dichotomous manner, using contradictory language. Such structural aspects may reflect their initial stance: that the two worlds cannot coexist in harmony. This means that only a total split between them would enable them to continue living in both worlds. Thus, splitting appears to be an essential mechanism contributing to the continuation of the heterosexual relationship. Within this context, splitting can be experienced at three related, often overlapping levels: emotional, cognitive and behavioral.

Emotional splitting: All participants perceived their relationships with their wives as essentially different from their relationships with men. Emotional splitting occurs when one relationship system, mostly with the woman, is characterized as emotional, while the other, mostly with the men, is not. Michael, who had been married for 25 years to a wife who was aware of his sexual orientation, used different words to characterize the two relationship systems. Excitement referred to relationships with men, while emotions defined the essence of his relationship with his wife:

Relationships with **men** mean **excitement**. After you have your orgasm, you put on your clothes and that's it, "back to reality." Reality is home, family, kids. Relationships with men are nothing but **fantasy fulfillment**. I'm very satisfied with my relationships with men. I mean the sex part, the sexual attraction and that's it. Sweating, preying, like an animal. Animals are like that. My relationship with my **wife** includes lots of **emotion; love and appreciation**.

By creating a contradiction between relationships with his wife and with men, between reality and fantasy, Michael used splitting as an enabling mechanism. By defining his homosexual relationships as fantasy, he was separating them from reality. After the fantasy was fulfilled, he returned to reality—his routine family life. He

used metaphors from the animal world (e.g., sweating, preying) to describe his sexual encounters with men, which may also intensify the split between his homosexual life and his family life, as "preying" belongs to the fantasy. Thus, splitting allows for the movement between the two worlds, which helps to keep both intact. It would appear that only one relationship system is generally defined as emotional, meaning that love and affection tend to be directed toward only one intimate partner in one relationship system. This can be either a man or a woman, but not both.

Cognitive splitting manifests itself in various ways, including in the minimization of homosexuality and its significance; viewing homosexuality as a temporary phase, as a transient episode; or objectification of the sexual orientation. Daniel, who had been married to his wife for 20 years and discovered his homosexuality five years prior to the interview, used all of these in his narrative:

I hope it will **end** at some point. I want to continue with my normal life, because that is the most important thing in my life. As long as I have control over it and can maybe even stop it, I think it will **go away**. I feel good at the moment. Stop now? No, no, no! I'm enjoying my **new toy** very much. It's as though I've found a new toy. **I play** with it. I think that someday, I will **have had enough** of it—I really hope and believe so. I know myself. Throughout the whole of my life, I have had this tendency **to get fed up of things and move on to something else**. A few years ago, I suddenly had a passion for learning to play the organ. I bought an expensive organ and contacted a teacher. After only one lesson, I felt that it was enough and I stopped.... I know that someday, **my thing with men** will also become a statue.

By objectifying his sexual orientation (*i.e.*, a toy/organ/statue) and defining it as a temporary episode, Daniel actually distinguished between "doing" and "being" without creating a contingency between the two. Contrasting normalcy with playing served to gain a sense of control, allowing him to decide whether or not it was a part of him. This cognitive split served to normalize his life situation and to generate a feeling of stability and security. The two lives were not symmetrical: the heterosexual life was considered as "normal" and received the highest priority. His "thing with men" was just a passing hobby, implying that homosexuality is temporal, insignificant; an object whose excitement will eventually diminish.

Behavioral splitting: Several indications of behavioral splitting were identified in the interviews: limiting the homosexual encounter to an alienated meeting place and treating it as such; defining the encounter as a merely sexual act; washing the body carefully after the sexual encounter and before returning to the normalcy of the heterosexual relationship. All these contribute to the perception of the homosexual encounter as detached from anything in the familiar world. David, whose wife was

unaware of his homosexual orientation, described such encounters as follows:

At that moment, I go down the stairs (after a sexual encounter with another man. If our paths cross, I will **ignore** him. **I am not there any more**. It is important for me to make a **cut**. I must **separate** and I know how to do that, because otherwise, you might get divorced. I will come home, take a good shower and wash everything away...I am clean again.

David had developed certain behavioral rituals to establish his much needed total separation in order to continue with his heterosexual life. At the end of the meeting, the man would leave the place and would totally ignore his male partner, expressing a conscious decision to renounce familiarity with the other man to prevent any continuation of the encounter. Thus, homosexuality was constructed as a merely sexual act, confined to a specific rendezvous, and not as an intimate relationship. This limited construction portrays homosexuality as insignificant, thereby protecting the heterosexual relationship. Indeed, some participants mentioned customarily washing their bodies after homosexual encounters. The apparently physical-behavioral act of washing signified a transition between the two worlds, which simultaneously intensified the split between homosexuality and the routine heterosexual life. Thus, the parallel emotional, cognitive and behavioral splitting enabled participants to lead a double life, and to continue living in both worlds while keeping each world intact.

2.3.2 Integration in the Lives of Heterosexually Married Gay Men

Although splitting was a more prevalent theme in the stories recounted by heterosexually married gay men, few participants spoke of integration between the two worlds. Integration is perceived as a desired ideal, a situation in which one does not have to relinquish either world. Such a perception challenges the dichotomous normative notion that homosexuals cannot be heterosexually married. Arik, who had been married for 25 years, described a period in which he felt good, because of the balance between the homosexual and the heterosexual aspects of his life:

Back in those days, I experienced a “modus Vivendi” in my life. I had my family, my wife, the good life I had with her in our home... and I was a very happy person. During those years, when I had Gil (a male partner), there was some kind of a balance, a feeling of serenity.

Running two parallel, long-term, stable relationship systems—one with the wife and one with another man—was perceived as an ideal, and therefore as a rewarding experience, as the ideal was realized as a possible alternative. Despite their satisfactory relationships with their wives and their love towards them, some interviewees reported the need for a simultaneous, committed, long-term, stable relationship with a man. Some participants

expressed the potential for harmony and coexistence between the two worlds. Realization of one relationship system did not necessarily preclude the continuation of the other. If integration is possible, then splitting is no longer needed, and integration then replaces it.

Our relationship has been best since we got married, but I am still looking for a male partner, one who will accept the fact that I have a very good relationship with my wife that I do not want to break. We (he and his wife) had 25 good years, with ups and downs and we have a very long joint history, which isn't easy to give up. At the same time, I also need a relationship with a man, and I am not talking about casual sex, it's not enough. I need more (Daniel).

Daniel represents a desire voiced by several participants, to conduct two simultaneous, committed, stable relationship systems with a man and with his wife, which are viewed as complementary, creating balanced integration between the two worlds. Unlike the situations of splitting, where participants talked about integration, the homosexual and heterosexual relationship systems were not constructed as essentially different and contradictory, but as complementary. Within this context, it is noteworthy that participants described both the heterosexual relationship and their homosexual sexual encounters as relationship systems, suggesting a perceived implicit similarity between the two.

Although the two mechanisms—splitting and integrating—were presented in a dichotomous manner for heuristic purposes, they are, in fact, dynamic and tend to operate together, often in parallel. For example, a participant might describe in one interview how he detached himself emotionally from relationships with men and then express his yearning to manage two intimate relationships simultaneously, with his wife and with another man.

3. Discussion

Splitting and integrating are interwoven in participants' narratives. Some made a total split between their homosexual and heterosexual relationships; others integrated or wished to integrate the two worlds, and several men spoke in terms of both splitting and integrating. As such, the findings of the present study address the main research question: Can heterosexual and homosexual relationship systems coexist? Is there an alternative way in which homosexual men can fulfill their homosexuality and simultaneously engage in heterosexual marriages?

Leading two fully committed relationship systems with a man and a woman simultaneously, which are characterized as both emotional and sexual, contradicts mainstream Western cultures regarding the nature of intimate relationships [27]. This challenges the ideal of monogamist relationships and the binary structures of man/woman and homosexual/heterosexual [28].

Although most of the literature is pessimistic about the

success of mixed-orientation marriage [8,11,14,15], the findings of this study corroborate findings from several previous studies [12,13], suggesting that such relationship systems are not doomed to failure. In line with this, the concept of polyamory [29,30] may be useful in providing ways to examine dominant mainstream relationship structures, as it undermines the monogamist relationship ideal and the concept that a relationship should exist between two people only. According to this approach, one can co-nduct sexual and/or emotional relationships with a number of people of the same or opposite gender. Although the literature about polyamory relates mainly to bisexual [31] and homosexual [32] couples, we argue that it may also be appropriate for mixed-orientation couples. As we accept the possibility of creating such a relationship system, and as our findings indicate that some participants wished to integrate the two worlds, we suggest an alternative conceptual model for their integration. Based on quantitative methodology, a previous theoretical model [13] suggested developmental stages in mixed-orientation marriages. In contrast to this, our model developed from the subjective experiences of heterosexually married gay men, together with their constructed meanings. Whenever relevant, it integrates accumulated knowledge pertaining to the studied phenomenon, to map the essential components that may contribute to the success of such marriages.

3.1 Integrating Homosexuality within Heterosexual Marriage: A Conceptual Model

1) *Honesty and openness between the couple*—When a couple decides to lead a one-sided or two-sided open relationship, honesty is an essential component [33]. The wife's awareness of her husband's homosexuality is an important part of such integration. The findings of the present study and the literature show that context [34] and timing [13] of disclosure of homosexual orientation can contribute significantly to relationship quality. Therefore, early disclosure of the sexual orientation within a positive context (e.g. to be open and increase intimacy in the relationship) can help both partners to adjust more successfully to the new situation.

2) *Formation of a contract*—Open communication may serve as the basis for an agreed upon contract related to the husband's homosexual practice outside the marriage [11,20]. The contract needs to be clear and dynamic to suit both partners' preferences. Issues that need negotiation include, for example, timing and location of homosexual encounters; what kind of information is disclosed vis-à-vis the homosexual encounters; the nature of the homosexual relations—emotional, physical, or both, long-term vs. temporal relationships, etc.

3) *Acceptance of the sexual orientation*—Acceptance of homosexuality by both partners is necessary for integration of the sexual orientation into the marriage [7,11].

4) *Fulfillment of the sexual orientation*—Another important element in the integration process is the husband's fulfillment of his sexual orientation. The findings of our study show that sense of fulfillment can also project positively on the relationship with the wife. Some of the men returned home after homosexual encounters and felt they had more to give to their wives, both emotionally and physically. Previous research has also suggested that gratification from homosexual relations and a sense of fulfillment contributes to marital satisfaction [21].

5) *Solid basis of the heterosexual relationship*—After years of married life, participants who emphasized that love for their wives had been their main motive for marriage felt that they had established a solid relationship, which served as a good basis for the integration.

6) *Perception of the mixed-orientation marriage as a unique alternative*—Some of the participants in our study perceived heterosexual relationships as normative—"like any other normal heterosexual relationship." As this perception ignores the idiosyncratic components of mixed-orientation marriage, it may cause difficulty in integrating the sexual orientation into the heterosexual marriage. Recognizing that this relationship creates a unique alternative and the understanding that it contains specific issues that are outside of mainstream conventional marriage is an empowering experience, which contributes significantly to successful integration.

We claim that the proposed model offers an alternative for those who decide to keep their marriage intact. We recognize that the model entails some challenging tasks facing the spouses on the personal and dyadic levels, including acceptance of the sexual orientation by both partners, agreement to a non-monogamist relationship system, openness, honesty, etc. This model originated from subjective experiences and meanings of individuals who were living the studied phenomenon, together with knowledge available from theory and research. Thus, it may contribute to our understanding of the constructed reality of gay people who attempt to integrate homosexuality into their heterosexual marriages. Such understanding could be used to help both men and women who are engaged in heterosexual marriages with gay men, as well as professionals working with such couples.

It is important to stress a salient limitation of the current study. Although we have focused on the mens' point of view, this multifaceted phenomenon needs to undergo a broader investigation by taking into account the perspectives of all the individuals involved in the situation, including: the woman, children and male partner if such exists. This deficiency is being addressed in a study we are conducting at the moment.

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Sex, Lies and Letters: A Sample of Significant Deceptions in the Freud-Jung Relationship

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ABSTRACT

This project focuses on an examination of the correspondence between and the writings of Sigmund Freud and Carl Jung. A core theme in their relationship has been identified as deception, which appears to be correlated with and perhaps the cause of the end of their association. Incidences of mistrust and distrust have been detailed and discussed.

Keywords: Freud/Jung Relationship, Minna Bernays, Early Psychoanalytic History

1. Introduction

Sigmund Freud and Carl Jung, seminal figures in the history of Psychology, have been the subject of much study and discussion. A good deal of it focuses on conceptual differences in their theoretical and psychotherapeutic approaches. Some is also related to their differing emphases on, and acceptance of, notions of the unconscious, religious experience, and parapsychological phenomena, among other areas. Jung, in his *Memoirs* [1], Ernest Jones [2] and Peter Gay [3] in their comprehensive biographies of Freud have discussed some of the personal issues that eventually led to the acrimonious break between the two men.

My research is based on an examination of Freud and Jung's writings, their correspondence with each other and colleagues, and the writings and published recollections of their acquaintances. I have identified a central theme, that of deception, that I argue is present throughout the Freud-Jung relationship. In my view, this pattern of deception fostered mistrust between them, and is likely correlated with, if not the cause of, their eventual break.

2. Freud's Affair with Minna Bernays

Jung wrote that in March of 1907, Minna Bernays told him of her sexual intimacy with Freud, her sister's husband. He specified that she "was very much bothered by her relationship with Freud and felt guilty about it. From her I learned that Freud was in love with her and that their relationship was indeed very intimate. It was a shocking discovery for me, and even now (May, 1957) I

can recall the agony I felt at the time" [4].

Apparently Jung never told Freud of Bernays's declaration. In my view, the woman's revelation of the affair had a profound impact on aspects of the Freud-Jung relationship. In particular, I would argue that Freud's actions as related by Bernays influenced Jung's decision to begin an affair with Sabina Spielrein, one of his own patients. The fact that they never discussed the affair and its ramifications played a part in subsequent deceptions in which both Freud and Jung engaged during their mutual dream analyses while on route to America in 1909.

3. Freud Suspects Jung of Anti-Semitism

In August 1908, Freud communicated to Karl Abraham his suspicion that Jung harbored anti-Semitic feelings [5]. Freud did not confront Jung on this issue. But in August 1912, Freud wrote to Otto Rank [3] stating that Jung had problems with achieving an "integration of Jews and anti-Semites on the soil of Psychoanalysis." In his article of 1914, entitled "The History of the Psychoanalytic Movement," Freud publicly chastised Jung for maintaining "certain prejudices with regard to race" [6].

4. Jung's Affair with Sabina Spielrein

I would argue that when Jung discovered that his mentor was having a secret, culturally forbidden affair with his sister-in-law, Minna Bernays, it stimulated and in effect sanctioned his growing desire for his patient and student, Sabina Spielrein. According to letters and entries in Spielrein's diary, Jung lied to both Freud and Spielrein's mother about his relationship with Sabina [7]. In 1909, Spielrein wrote to Freud and told him of her romance

with Jung. Freud apparently did not take Spielrein's allegations seriously and seemed to accept Jung's explanation that Spielrein was emotionally disturbed. When Spielrein visited Vienna in 1912, she and Freud became close, and he then came to accept her version of the earlier episodes, but did not tell Jung of his knowledge of the affair or his view of it. In January of 1913, after his personal relationship with Jung had already deteriorated, Freud wrote to Spielrein, "Since [the time] I received the first letter from you, my opinion of him (Jung) has been greatly altered" [7].

5. Mutual Dream Analyses

Profound deceptions occurred during the dream analyses Freud and Jung conducted reciprocally during their voyage to America in August 1909. The dishonesty itself and Jung's intense reaction presaged the eventual ending of their professional relations and personal friendship.

In his interview with Billinsky [4], Jung recalled that "Freud had some dreams that bothered him very much. The dreams were about the triangle-Freud, his wife and his wife's younger sister. Freud had no idea I knew about the triangle and his intimate relationship with his sister-in-law. And so, when Freud told me about the dream. I asked (him) to tell me some of his personal associations. He looked at me with bitterness and said, 'I could tell you more but I cannot risk my authority!'" Jung commented in his MEMOIRS [1], "At that moment he lost it altogether. That sentence burned itself in my memory; and in it the end of our relationship was already foreshadowed."

For his part Jung was also dishonest about revealing to Freud the meaning of his own dreams. He shared one dream in which he was exploring a house. Descending into a cellar he found an ancient vault containing two human skulls. Analyzing his dream, Freud saw a likely death wish and pressed Jung for his associations to the details. Jung thought his dream really referred to ideas on which he was working, about the collective unconscious. Fearing Freud's resistance to his theories, he lied and said the skulls represented those of his wife, Emma and her sister [1].

Jung's unwillingness to honestly explore the meaning of the two skulls in the dream was clearly a way of protecting his theories from criticism or attack. Jung's deception while seeking to mollify Freud, was additionally I believe, a subtle attempt to establish more honesty in communication by indirectly revealing his knowledge of Freud's affair. Freud, apparently unaware of Jung's knowledge and intent was according to Jung, "greatly relieved" by Jung's deceptive interpretation of the skulls.

6. Another Triangle: Emma Jung, Sandor Ferenczi and Freud

Freud and Jung were not alone in communicating dis-

honestly. Jung's wife, Emma, and Sandor Ferenczi, a colleague of Freud and Jung's, also participated in various deceptions.

Emma Jung attempted, although unsuccessfully, to repair what she perceived to be a growing rift between her husband and Freud. On October 15, 1911, Emma wrote to Ferenczi asking whether he was aware of Freud's disapproval of her husband's latest work, and explicitly requested him not to mention her concerns to Freud [8]. On October 19, Ferenczi betrayed Emma's confidence by sending her letter to Freud with one of his own in which he wondered if Freud was angry with Jung because of the latter's interest in the occult and his revision of the libido theory [8].

Freud's answering letter spelled out the way he wanted Ferenczi to answer Mrs. Jung, asking him not to mention to her neither occultism nor the libido. Because in German the word for "strike" (to avoid) and "emphasize" are similar, Ferenczi misread Freud's letter and his instructions, and informed Emma Jung that her husband's current interests particularly troubled Freud. Ferenczi's error, which was probably inadvertent, led to Emma's secretly writing to Freud [9], Jung subsequently found evidence of that correspondence, and this in turn increased the mistrust between Freud and Jung and further intensified their scientific and professional differences.

7. The "Kreuzlingen Gesture"

Freud himself also inadvertently misled Jung, this time about his sudden visit, in May 1912, to Ludwig Binswanger in Kreuzlingen, Switzerland, about forty miles from Jung's house in Zurich. Freud did not specifically arrange to see Jung who was hurt and upset by what he thought was Freud's avoiding him. In later correspondence with Freud, Jung referred bitterly to this incident as the "Kreuzlingen gesture" [9].

In fact, two days before his departure, Freud wrote to both Jung and Binswanger and actually assumed that Jung would meet him in Kreuzlingen. However, Jung, out of town, did not receive Freud's note in time to make travel arrangements. More importantly, Jung was not apprised of the fact that the primary reason for Freud's visit was Binswanger's impending surgery for cancer [3,10] because Binswanger had asked that the information not be shared. Thus, yet another minor and finally unnecessary secret contributed to the breakdown of the Freud-Jung relationship.

8. The Committee

In response to the growing tension and mistrust in the Freud-Jung relationship, and, in particular, to the intensity of Jung's reaction to the "Kreuzlingen gesture," Ernest Jones, a feisty and loyal supporter of Freud, initiated a grand deception which had profound implications for both the Freud-Jung relationship and the history of

Psychoanalysis. In the summer of 1912, Jones suggested that a small group of trusted analysts form a kind of “palace guard” around Freud to protect him from future dissension. Freud warmly accepted this idea but cautioned, “The committee would have to be strictly secret in its existence and actions” [2]. The group consisted of Jones, Ferenczi, Rank, Sachs and Abraham, and for many years advised Freud and guided Psychoanalytic policy.

Although Jung was the elected president of the International Psychoanalytic Society and had earlier been designated by Freud as his “son and heir” [9], he was kept ignorant regarding the committee’s existence and actions.

9. Freud, Jung and Homophobia

In a letter written on November 29, 1912, Freud tried to hide his homoerotic feelings for Jung. I believe this deception was a significant element in precipitating the end of their personal relationship. After Freud and Jung had apparently reconciled some of their theoretical differences during a conference in Munich on November 24, 1912, and had cleared up the misunderstanding concerning Freud’s visit to Binswanger, Freud fainted, for the second time, in Jung’s presence. Jung carried Freud over to a sofa. Two days later Jung wrote Freud a very friendly note, apologizing for earlier difficulties and inquiring after Freud’s health [1,9]. Freud’s response to Jung acknowledged some unresolved differences in their theoretical views, specifically on the libido. Then, referring to his fainting spell, he wrote, “according to my private diagnosis, it was migraine not without a psychic factor which unfortunately I haven’t had time to track down a bit of neurosis I ought to look into” [9]. However, Freud was much more candid in a letter to Jones when he attributed his fainting spell to an “unruly homosexual feeling,” which involved a transference of his earlier, intense friendship with Wilhelm Fliess to one with Jung [8].

Jung exploded with rage over Freud’s letter and explanation of his loss of consciousness. He was angry both at Freud’s downplaying the meaning of the faint, and at what he perceived as Freud’s trivializing of Jung’s contribution to Libido Theory [9]. I suspect that on another

level Jung sensed Freud’s homoerotic conflict, perhaps intensified by the physical contact created by his carrying Freud and was angered that Freud was dishonest about its significance.

It should be mentioned that Jung, himself, was particularly vulnerable to both homoerotic and homophobic feelings. Earlier in their relationship, in 1907, Jung had confessed to Freud that as a boy he had been homosexually assaulted by a man he trusted. He also admitted, when he asked Freud for his photograph, that he had “religious crush” on Freud which he was aware had “clear erotic undertones” [9].

After exchanging several angry letters with Jung, Freud waited two weeks and then on January 3, 1913 wrote, “I propose that we abandon our personal relations entirely” [9].

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Ethnic Identification, Attitudes, and Group Relations in Guatemala*

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ABSTRACT

Despite many studies that address relations between the two major ethnic groups—Indigenous and Ladino—in Guatemala, there are no scales devised specifically to measure ethnic attitudes. Participants (196 university students) indicated agreement or disagreement on a four-point scale with a large pool of items expressing positive and negative attitudes towards the two groups, and, on a line from pure Indigenous to pure Ladino, their own ethnic identification (the label they use to describe their ethnicity). Reliable scales measuring Attitudes toward Indigenous (AIG) and Attitudes toward Ladinos (ALG) were constructed, and 35% of the participants claimed mixed ethnic identification. Ethnic identification was related to attitudes, with groups demonstrating in-group favoritism; that is, participants expressed more positive attitudes toward their own ethnic group. The results imply that the dichotomous categories of Ladino and Indigenous are inadequate for measuring ethnicity in Guatemala. The newly developed attitude scales may be used to advance knowledge about ethnic relations in Guatemala and to test the generality of findings relating to relations between dominant and subordinate groups.

Keywords: Guatemala, Ethnic Identification, Ladino, Indigenous, Maya, Ethnic Attitudes

1. Introduction

“Guatemalans, we are a multiethnic, religiously and culturally plural country... So, why is there inequality between Indigenous and Ladinos?... everything depends on how we educate our children...” [1].

Ethnic relations have a long and conflict-ridden history in Guatemala. Numerous scholars, especially anthropologists and historians, have examined ethnicity and its consequences in both the pueblos and urban areas of Guatemala [2-7]. Originating with the Spanish conquest in 1523, lineage and blood were used to justify exploitation and oppression of Indigenous persons. For centuries the ethnic group defined as Spaniards or criollos (“home grown” or locally born persons of pure Spanish descent) was the source of the Guatemalan oligarchy [8]. Throughout colonial times, independence, and into the present, relations between Indigenous persons and those of European or mixed descent have been characterized by ethnocentrism, paternalism, and discrimination against the Indigenous people [4,7,9]. Although the 1996 Peace Ac-

cords that ended the 30-year armed conflict in Guatemala promised rights for Indigenous people, those accords have yet to be put into practice. An excellent summary of the history of ethnic relations in Guatemala is provided by the two volume series *Ethnicity, state, and nation in Guatemala* [10,11] and by its sequel *Ethnic relations in Guatemala, 1944-2000* [12]. Those three volumes document ethnic divisions, attempts to “civilize” and “Ladinize” Indigenous persons, and continued ethnic disparities within Guatemala.

Today, ethnic relations are part of the public discourse. Newspapers such as the *Prensa Libre* frequently feature articles and commentary on ethnic discrimination in Guatemala, and a prominent non-profit foundation El Centro de Investigaciones Regionales de Mesoamérica (CIRMA) sponsored an exhibit and a book series titled *Por qué estamos como estamos* (Why we are like we are) that highlighted ethnicity. The quote that introduces this article represents part of a letter to the editor of *Prensa Libre*. Ethnicity is also part of the political arena with a pan-Maya movement gaining increasing momentum [5, 13]. A presidential commission, Comisión Presidencial contra la Discriminación y el Racismo [Presidential Commission against Discrimination and Racism]—was charged in 2007 with investigating and developing plans to

*An earlier version of this research was presented at the annual meeting of the Society for Cross-Cultural Research, San Antonio, Texas, 2007.

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eliminate discrimination and racism in Guatemala [14,15].

According to the latest census of Guatemala, the two major ethnic groups today are Ladino persons (58.3%) and Indigenous persons (40%). Within Guatemala Ladinos are defined as non-Indigenous persons or persons of mixed Indigenous and European descent. Most Indigenous in Guatemala are of Mayan heritage, speak one of the 22 different Mayan languages, and often identify themselves by the language they speak. Among those the most numerous are the K'iche', who represent over one million persons, and the Kaqchikel and the Q'eqchi', who are slightly less numerous with about 800,000 speakers each [16]. It is important to note that the ethnic categories are socially constructed. For various reasons, people can, and do, change their ethnic identification—the way they label or describe their ethnicity. In Guatemala, some individuals may adopt the Spanish language and Western dress, and claim a non-Indigenous identity. The process of the transformation of individuals or communities from Indigenous to Ladino has been called Ladinization [17].

A report by the Programa de las Naciones Unidas para el Desarrollo Humano [United Nations Human Development Programme] provided an extensive analysis of ethnicity and its correlates within Guatemala [16]. There is clear evidence for ethnic economic stratification. For example, approximately 80% of Indigenous persons live in poverty or extreme poverty, whereas approximately 45% of non-Indigenous live in poverty. There are almost no Indigenous persons represented in the highest socioeconomic strata. Indigenous persons living in rural areas are most likely to be extremely poor; Thirty-eight percent of rural Indigenous persons earn less than one US dollar per day. Extreme poverty is also unequally distributed among the different language groups with almost 50% of rural Q'eqchi' speakers earning less than one USD per day. The GINI ratio (a measure of economic disparity) of Guatemala is one of the highest in the world, at 0.57 in comparison to the United States at 0.41 and Japan at 0.25 [16].

Occupations are also distributed by ethnicity with the majority of Indigenous persons engaged in agriculture or the informal sector; non-Indigenous persons are more likely to be engaged in commercial or service enterprises [16].

Education is also unequally distributed. Thirty-eight percent of Indigenous persons have no education and 50% are educated only at the primary level; of non-Indigenous persons, those percentages are 17% and 50% respectively. Only 1% of Indigenous persons have post-secondary education. Literacy rates of young people (ages 15 to 24) reach 89.3% for Ladino persons but are lower for all Mayan language groups, for example the K'iche' (73%), the Kaqchikel (82%), and the Q'eqchi' (63%) [16]. In rural areas fewer than one third of Indigenous women can read or write [18]. Even though bilingual education in Spanish and the local Mayan language was guaranteed as

part of the Peace Accords, of the 7,832 schools located in areas with a bilingual population, fewer than one fourth offer bilingual education [16].

There are similar ethnic disparities in health care. For example, with regard to childhood illnesses, over half of Indigenous persons treated their children themselves, and fewer than one fifth sought attention from doctors. The disparity with non-Indigenous persons is, in part, due to the higher numbers of Indigenous persons living in rural areas with less access to health facilities. But the consequence is that infant and childhood mortality rates are higher for Indigenous children than for Ladino children [16].

Although Guatemala is ranked overall as having medium human development as measured by the Human Development Index (based on health, education, and income indicators), the index is lower for Indigenous persons than for Ladino persons. For Ladinos the Index is 0.70, for Kaqchikel speakers 0.61, and for K'iche' speakers 0.55 [16].

In 2005, the Vox Latina-Prensa Libre [16] did a study of social attitudes based on a representative sample of Guatemalans. The results documented widespread agreement that Indigenous persons in Guatemala face discrimination. For example, about three quarters of both Indigenous persons and Ladino persons responded that it is easier for light-skinned persons and Ladinos to find jobs than for dark-skinned persons, and Indigenous. Almost 90% of both groups held that Ladinos are treated better in government and private offices. Slightly fewer believed that Ladinos were treated better on buses. Social attitudes between the two ethnic groups tended to be mutually negative. The majority of those claiming Ladino ethnicity asserted that Indigenous persons were less agreeable, less intelligent, less clean, and less honest than Ladino persons, but also more hardworking. Conversely, persons claiming Indigenous ethnicity held that Ladinos were less hardworking, less agreeable, less intelligent, and less honest. However, the majority of both groups agreed that the other group had good manners. The groups disagreed on whether it was better to have a Spanish or an Indigenous last name, with the groups showing in-group favoritism or preference for the last name of their own group. Reflecting widely-shared stereotypes (oversimplified images of social groups), the majority of persons in both groups claimed that Indigenous persons were better at working in the fields and that Ladinos were better at working in offices [16].

Psychological studies related to ethnic relations in Guatemala are scarce. Using a task in which children assigned adjectives to their own and other group, Quintana and his collaborators showed high levels of ethnic prejudice among Ladino children living in a primarily K'iche' Indigenous community. Older children, those with greater ethnic and social perspective-taking skills, and those who had more terms to describe their own ethnicity

showed less prejudiced responses [19]. Another study conducted within Guatemalan schools showed that children sought more help from teachers of their own ethnicity [20]. In addition Ladino teachers were similar to each other in their perceptions of Mayan students; Mayan teachers held more diverse views of Ladino students. Those results suggest that Ladino teachers may hold stereotypes about Mayan students. Falbo and De Baessa [21] addressed the issue of the value of Mayan (bilingual) education for Ladino and Indigenous middle school students. In a longitudinal study they found that both Ladino and Indigenous students showed greater academic gains if they attended Mayan schools. Using the Multiethnic Identity Measure, a scale developed in the USA (MEIM) [22] the authors measured ethnic identity and attitudes toward the other ethnic group. Those students whose ethnic identity increased during the school year also showed changes toward more positive attitudes toward the other group [21].

The pursuit of research on ethnic relations in Guatemala is hampered by the absence of scales that measure attitudes toward the ethnic groups. For example, on the MEIM, items refer not to specific groups, but to the generalized other. A sample question is "I like meeting and getting to know people from ethnic groups other than my own" [22]. When applied in Guatemala the meaning might be unclear. For example, K'iche' Mayans might interpret the item to apply to other Mayan groups, to Ladinos, or even to foreign visitors. The development of scales measuring attitudes towards specific other groups—those ethnic groups that are important in Guatemala—would greatly facilitate research on this issue.

Thus, the major purpose of the present study was to develop scales specifically measuring attitudes toward Indigenous persons and attitudes towards Ladino persons, and to examine attitudes of ethnic groups in Guatemala toward their own and the other group.

In addition, a number of authors have decried the use of dichotomous (sometimes called bi-polar) categories to represent ethnicity in Guatemala. Those authors [17,23] pointed out that ethnic identification is more complex, fluid, nuanced, and multifaceted than the dichotomous categories suggest.

An example of the fluidity of ethnic identification comes from research by Little [6] in his studies of Mayans working in markets. He reports examples of unusual construals of ethnicity. Some Mayan vendors, for example, told him that he (a European American) was Indigenous. "Thank you, but why?" he asked. The response was two-fold—because he spoke the Mayan language K'achikel well, and because he was disparaged and spit at by some Ladinos for his association with Mayas. So, at least under some conditions, part of the definition of being Indigenous was being denigrated by Ladinos. Little [6] also reported how ethnic identification can be constructed

to serve different purposes. The Mayan vendors often emphasized their Indigenous characteristics in order to sell their wares more effectively to tourists. In a survey among the Mayan vendors, the majority labeled themselves as Indigenous but, in one wave of the study, also Guatemalan [6]. Later they said they had claimed the Guatemalan label because the city officials who regulate the vendors' activities would look more favorably on them for espousing their national identity. These findings show clearly that ethnic identification can be variously defined and also manipulated to fit the circumstances.

Therefore, a second aim of the present study was to evaluate a new way to measure ethnic identification in Guatemala—on a continuum from pure Ladino to pure Indigenous.

2. Method

2.1 Development of the Items

A pool of potential items was written in Spanish based on consultation with informants who were diverse in age, ethnicity, and research experience, and from Guatemalan newspaper accounts of ethnic relations, government reports, and racist events. We compiled a list of 22 potential items concerning attitudes toward Ladino persons and 29 potential items concerning attitudes toward Indigenous persons. Approximately half of the potential items were positive (e.g. "Indigenous persons face their problems with a great deal of dignity" or "In general Ladinos are well brought-up.") The other half of the potential items were negative (e.g. "The majority of Indigenous people speak poor Spanish" or "In general Ladinos are stuck-up (conceited).") The scale was a four-point scale with each point labeled: 1) strongly agree, 2) agree, 3) disagree, or 4) strongly disagree. Positively worded items were reverse-scored so that higher values represented more positive attitudes toward a group.

2.2 Evaluation of the Items

Participants. The participants were 196 university students recruited from a private Catholic ($n = 136$) and a public ($n = 60$) university in Guatemala. To ensure geographic diversity, the private university sample was administered at a meeting of students from campuses all over the country, and the public university sample came from a campus outside the capital in a region heavily populated by Indigenous persons. Ages ranged from 18 through 52 ($M = 25.77$, $SD = 6.41$). Seventy-six participants were male (38.8%) and 120 female (61.2%), with gender unspecified on two questionnaires. Additional demographic information collected included frequency of attendance at religious services, marital status, years of attendance in the university, and father's occupation. Father's occupation was coded using the *Dictionary of Occupational Titles* [24] and then collapsed into two cate-

gories—professional or managerial and non-professional.

Ethnic identification. Ethnic identification was measured by participants marking a point on a 15 cm line. The end points of the line were labeled “pure Indigenous” and “pure Ladino/a” The distance from the left (Indigenous endpoint) was taken as the measure of ethnicity.

Social Desirability. Social desirability was measured by using the 20 item impression management subscale of the Balanced Inventory of Desirable Responding (BIDR) [25].

Procedure. A recruitment letter approved by the Institutional Review Board that emphasized the voluntary and anonymous nature of participation was read to potential participants and also attached to the questionnaires. Participants were recruited from two universities, and completed the questionnaires under various conditions. The participants were not given a time limit to complete the questionnaire packet, but most took about 45 minutes to complete it. About a third of the participants were approached by one of the investigators at a university-sponsored meeting and asked to complete the surveys.

Those who agreed completed the packets in groups of about 15 participants. The other two-thirds of the participants were asked to participate by their professors in university classes. Of those who agreed to participate, about half were given the packet to take home, fill out, and return the next class meeting. The other half completed the packet in a large group in their classroom.

3. Results

3.1 Scale Development

The 29 items relating to attitudes toward Indigenous persons were subjected to an iterative process of examining the item-scale correlation and eliminating negatively or poorly correlating items, and arriving at a scale of 23 items with a Cronbach's alpha of 0.84 (good). Of the retained items 14 were positive and 9 were negative. The percent agreement with each of the retained items is presented in **Table 1**. This scale was named Attitudes toward Indigenous Persons of Guatemala (AIG). (See Appendix A.)

Table 1. Percent agreement with AIG items

Item	Percent agreement
1. The Indigenous traditions provide a cultural base for Guatemala.	91.5
2. Indigenous children should not wear their traditional clothing in school.	13.6
3. In general, Indigenous people are careless in their personal hygiene.	52.5
4. One should not discriminate against professionals for their ethnicity	81.4
5. The majority of Indigenous people speak poor Spanish.	52.5
6. The Indigenous people of Guatemala are very superstitious.	64.4
7. The Indigenous population has a great deal of knowledge.	82.8
8. The rights of Indigenous people should be respected.	89.7
9. The Indigenous communities foster economic development in this country.	73.7
10. The majority of the Indigenous population is hardworking.	82.8
11. Indigenous people face their problems with a great deal of dignity.	57.4
12. The accomplishments of the Maya in astronomy, mathematics and medicine make us proud.	93.1
13. All Indigenous people should learn and use their own language to maintain their culture.	87.9
14. It is appropriate to discriminate against professionals for their ethnicity.	8.8
15. With more political participation from Indigenous people, the country will advance.	67.3
16. Indigenous people are only qualified to fill domestic and manual labor jobs.	3.5
17. The use of traditional clothing allows Indigenous people to maintain their identity.	80.7
18. The majority of Indigenous people speak a lazy Spanish.	38.6
19. In general, Indigenous people are careless about their manners.	57.1
20. The country should encourage the inclusion of Indigenous people in society.	89.5
21. It bothers me when I hear parents tell their children, “Don’t be bad, it makes you seem like an Indian” or something similar.	83.9
22. I like to associate with Indigenous people.	92.6
23. I joke about Indigenous people with my friends.	28.3

The 22 items relating to attitudes toward Ladino persons were subjected to the same procedure, resulting in a 14 item scale with a Cronbach's alpha of 0.79 (acceptable). Of the retained items, 5 were positive and 9 were negative. The resulting scale was named Attitudes toward Ladino Persons of Guatemala (ALG) (See Appendix B). The percent agreement with each of the retained items is presented in **Table 2**.

3.2 Factor Analysis of Scales

Exploratory factor analyses were conducted with each of the scales, using principal axis factoring in SPSS. Oblique rotations were conducted because the factors were expected to be correlated. Factors with an initial Eigenvalue greater than one were rotated and interpreted.

For the AIG, five factors were identified, accounting for a total of 41.9% of the variance. The rotated factors were named Accomplishments, Rejection of Stereotype, Mayan Culture, Anti-discrimination, and Negative Attitudes. Factor loadings greater than 0.40 are presented in **Table 3**.

For the ALG, four factors were identified accounting for a total of 38.8% of the variance. The rotated factors were named Rejection of Stereotype, Accomplishments, High Esteem, and Negative Attitudes. Factor loadings greater than 0.40 are presented in **Table 4**.

3.3 Ethnic Identification

With regard to ethnicity, 35.2% of the participants used the middle portion of the scale (defined as at least 2 cm from either pole), indicating that they felt themselves to be a mixture of Ladino/a and Indigenous. In addition, 34.7% identified themselves as Indigenous (within 2 cm of the left pole) and 30.1% identified as Ladino (within 2

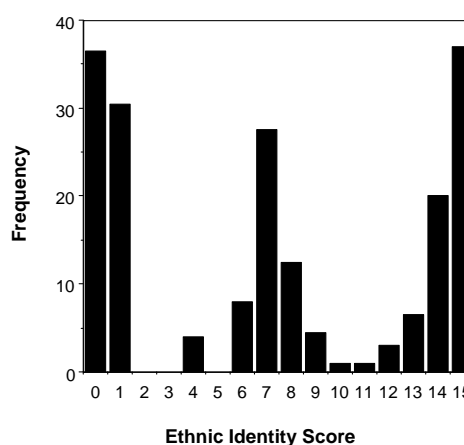


Figure 1. The distribution of ethnic identity marks as measured from the left endpoint of a 15 cm line

cm of the right pole). See **Figure 1** for the distribution of ethnic identification scores.

3.4 Demographic Variables

Table 5 presents the correlations among demographic and other variables. Students at the private Catholic University were slightly more likely to be male, to attend religious services, and to have fathers with professional occupations. Ethnicity was not correlated with any of the other demographic measures, but was significantly correlated with ethnic attitudes.

3.5 Relation of Ethnic Identification to Ethnic Attitudes

Because of the tripolar distribution of ethnic identification scores, for analysis scores were divided into tertiles

Table 2. Percent agreement with ALG items

Item	Percent agreement
1. Ladinos deserve some type of punishment for the suffering that they have caused Indigenous people.	20.5
2. When I see Ladinos in the street, I think bad things about them.	6.3
3. In general, Ladinos are well-mannered.	34.9
4. It is difficult to believe that a Ladino person can listen to and understand what an Indigenous person says.	39.5
5. I think that Ladinos, in general, deserve the contempt of Indigenous people.	6.5
6. In general, Ladinos act like they are better than others.	34.8
7. In general, I have less trust in Ladinos than in Indigenous people.	20.8
8. I feel angry towards Ladinos because they have more opportunities in life.	17.4
9. I admire Ladinos for their accomplishments in government, business, and education.	44.3
10. Ladino men have a negative attitude about the role of women.	47.0
11. The majority of Ladinos are "stuck-up."	36.1
12. The majority of Ladinos speak correct Spanish.	30.3
13. Ladino traditions provide a cultural base for Guatemala.	47.1
14. Ladinos deserve a good economic situation because of their effort.	28.8

Table 3. Factor loadings for five factors of the attitudes toward indigenous persons of Guatemala

Item	Factor 1 Accomplishments	Factor 2 Rejection of stereotype	Factor 3 Mayan Culture	Factor 4 Anti-discrimination	Factor 5 Negative Attitudes
7. Knowledge	0.64				
8. Respect for rights	0.63				
9. Foster economic development	0.77				
10. Hardworking	0.64				
11. Dignity in the face of problems	0.46				
4. Should not discriminate	0.50			0.45	
3. Careless in hygiene		0.53			
5. Speak bad Spanish		0.71			
6. Superstitious		0.48			
16. Only manual labor		0.48		0.45	
18. Speak lazy Spanish		0.74			
2. Traditional clothing in school			0.45		
1. Cultural traditions			0.52		
12. Ancient Maya achievements			0.60		
13. Maintain Mayan languages			0.83		
15. Advance through political participation			0.41		-0.52
17. Identity and traditional clothing			0.60		
20. Inclusion in society			0.46		
14. OK to discriminate				0.63	
22. Like to associate					-0.68

Note: Positive Correlations Represent pro-Indigenous Attitudes and Negative Correlations Represent Negative Attitudes.

Table 4. Factor loadings for five factors of the attitudes toward ladino persons of Guatemala

Item	Factor 1 Rejection of Stereotype	Factor 2 Accomplishments	Factor 3 High Esteem	Factor 4 Negative Attitudes
8. Angry because have more opportunities	0.62			-0.41
10. Negative attitude toward women	0.54			
11. "stuck-up"	0.84			-0.42
3. Well-mannered		0.55		
9. Achievements in government, etc		0.53		
12. Correct Spanish		0.65		
13. Ladino cultural traditions		0.47		
1. Deserve punishment			0.45	
2. Think bad things			0.74	
5. Deserve contempt			0.55	-0.40
6. Act like they are better than others				-0.75
7. Distrust them				-0.64

Note: Positive Correlations Represent pro-Ladino Attitudes and Negative Correlations Represent Negative Attitudes.

Table 5. Correlations among the demographic, ethnic identification, and attitudinal variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Gender	—	–0.13 194	0.02 194	–0.19* 194	–0.18* 195	0.08 180	–0.02 121	0.04 191	–0.10 179	0.06 182
2. Age		—	0.13 194	–0.09 196	0.46** 195	–0.09 180	0.09 121	–0.13 191	–0.06 179	–0.14 182
3. Year University			—	–0.33** 196	0.01 195	–0.15* 180	–0.02 119	–0.01 191	0.03 179	–0.06 182
4. University				—	0.01 196	0.25** 182	–0.23** 121	–0.06 193	0.28** 181	–0.06 184
5. Civil Status					—	–0.13 181	0.06 121	–0.04 192	0.08 180	–0.09 183
6. Religious Services Attendance						—	–0.04 111	0.07 177	0.06 167	0.05 170
7. Father's Occupation							—	0.06 118	0.13 110	0.20* 112
8. Ethnicity								—	–0.31** 176	0.40** 179
9. AIG									—	–0.114 172
10. ALG										—

Note: Cells represent correlations and size of *n*. Gender 1 = male, 2 = female. University 1 = public, 2 = private, Civil Status 1 = Not married, 2 = Married, including common law, Father's Occupation 1 = Professional or Managerial, 2 = Other, Ethnic Identification (see text). ** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).

using the *n*Tiles command on SPSS. This led to three ethnic groups that could be considered Indigenous, Mixed identification, and Ladino. A one-way ANOVA with the mean AIG as the dependent variable and ethnic group as the independent variable (IV) revealed significant differences among the ethnic identification groups, $F(2, 173) = 9.95, p < 0.001$. Tukey HSD post hoc tests revealed that the Indigenous-identified group differed significantly from both other groups, but the mixed identification group and the Ladino identified groups did not differ significantly from each other. The most positive attitudes toward Indigenous persons were reported by persons with an Indigenous identification, and the least positive by persons with a Ladino identification, with mixed identification persons falling in between. See **Table 6**. In order to control for social desirability of responding a second ANOVA was performed with the BIDR score as a covariate. The covariate was significant, $F(1, 175) = 5.73, p < 0.05$. However, the effect of ethnic group also remained significant, $F(2, 175) = 12.36, p < 0.001$.

A one-way ANOVA with mean ALG as the dependent variable and ethnic group as the IV led to complementary results, $F(2, 176) = 15.57, p < 0.001$. Tukey HSD post hoc tests revealed that the Indigenous-identified group differed significantly from both other groups, but the mixed identification group and the Ladino-identified groups did not differ significantly from each other. The most positive attitudes toward Ladinos were held by persons with a Ladino identification, and the least positive by those with an Indigenous identification, with mixed identification persons again falling in between. See **Table**

6. In order to control for social desirability of responding, a second ANOVA was performed with the BIDR score as a covariate. The covariate was significant, $F(1, 175) = 2.81, p < 0.05$; the effect of ethnic group remained significant, $F(2, 175) = 13.00, p < 0.001$.

3.6 Re-Analysis Using Weighted Scores

Because males and public university students were under-represented in the sample, the analyses were re-run using weighted scores. The population statistic for gender was estimated from World Bank data [26], and that for the proportion of public versus private university students from an administrator at a Guatemalan university (F. Cajas, personal communication, July 6, 2008). The following weights were applied: male students at the public university, 4.67, female students at the public university, 1.35, male students at the private university, 0.58, and female students at the public university, 0.39. Using weighted scores, 44.8% of the sample reported a mixed ethnic identification (as defined above, marking a point 2 cm or greater from the pole). Using the same definition of ethnic group (0 to 2 cm = Indigenous, 2.01 to 13 = Mixed, and 13.01 to 15 = Ladino) the ANOVAs with the 3 ethnic groups as the IV and the two attitude scales as the DV were re-run. There was a significant effect for the AIG, $F(2, 171) = 4.46, p < 0.05$, and for the ALG, $F(2, 171) = 5.67, p < 0.01$. Tukey HSD post hoc tests revealed that in both cases, self-identification as Indigenous or Ladino was associated with more positive attitudes toward one's own group. Those with mixed identification did not differ in their attitudes from either of the other groups on either scale.

Table 6. Means and standard deviations of AIG and ALG scores for the three ethnic identification groups

Ethnic Group	AIG		ALG	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Indigenous (NTile 1)	3.30	0.33	2.51	0.37
Mixed (NTile 2)	3.14	0.31	2.74	0.28
Ladino (NTile 3)	3.03	0.37	2.84	0.36

3.7 Correlations between Attitude Scales

The correlation between the AIG and the ALG was $r(172) = -0.11$, NS. When the data from persons falling in the first tertile of ethnic identification (a predominantly Indigenous identification) were examined separately, there was a correlation of $r(59) = -0.25$, NS, between the AIG and the ALG. When the data from persons falling in the third tertile of ethnic identification (a predominantly Ladino identification) were examined separately, there was a correlation of 0.14, $r(59) = 0.14$, NS, between the AIG and the ALG scores.

4. Discussion

The most important outcome of the present study was the development of scales to measure attitudes toward the two major ethnic groups in Guatemala—Indigenous and Ladino. Those scales, named the AIG and the ALG, showed good reliability in terms of internal consistency as measured by Cronbach's alpha. In addition, the significant relationship of ethnic identification to ethnic attitudes suggests that the new scales are valid, and that they can distinguish among persons of different ethnicities.

The second major finding of the present study is that in terms of ethnic identification many Guatemalan university students felt themselves to be neither Ladino nor Indigenous, but a mixture of the two. In the present study approximately one third of the participants claimed a mixed ethnicity. When the data were weighted to approximate the population, almost 50% claimed a mixed ethnicity. Thus, a continuous scale might be a better measure of ethnic identification in Guatemala than the typical measure that uses boxes labeled as Indigenous or Ladino. The mixed-identification of many Guatemalans differs greatly from the clear separation of Indigenous and Ladino populations described by early anthropologists [27-30] and reified by the categories used in current psychological research [19-21]. Although a number of authors [17,23] have urged researchers to move away from the dichotomous categorization of ethnicity in Guatemala, to our knowledge, this is the first study to have taken that step and to have established the usefulness of a continuous measure. The use of a continuous line to record ethnic identification does not imply that "Ladinization" is an inevitable, desirable, or even a prevalent,

process for Indigenous persons of Guatemala. Ladinization is a unidirectional process of assimilation that was described by some anthropologists [31] and promoted by early Guatemalan government policies [11]. According to the Ladinization perspective, with greater socialization and more education Mayas would lose their Indigenous languages, dress, and customs, and become more like Ladino people. In contrast, the use of a continuum to describe ethnicity in the present study allows individuals to represent their own ethnic identification in a more nuanced and complex manner, but does not imply that individuals will/or should demonstrate increasing Ladinization.

Another point worth noting with regard to the results of this study is that negative ethnic attitudes in Guatemala are neither subtle nor covert. Over half of the respondents held that Indigenous people are careless in their manners and over one fourth admitted joking about Indigenous people with their friends. Over a third of respondents agreed that Ladino people are conceited and act like they are better than others. In an anthropological study of contemporary attitudes of Ladinos toward Indigenous, Hale [32] argued that many Ladinos have adopted an ideology of multiculturalism that continues to see the Indigenous as inferior, but with a rationale of "culture" rather than "race". He notes attitudes that would be considered "modern racism" in psychological terms, including a belief that in today's world Mayas receive favored treatment. Although modern racism may be emerging in Guatemala, the present study revealed that old-fashioned prejudice is also in evidence.

The results also demonstrate clear in-group favoritism. Attitudes towards one's own ethnic group were most positive, whether one identified as either Ladino or Indigenous. In-group favoritism in ethnic relations is a very widespread, if not universal, phenomena [33] and forms the basis of Social Identity Theory [34]. In this study, the mean attitudes towards the "other" ethnic group, although significantly less positive, were neutral or slightly positive. With this rating scale, a mean of 2.5 represents neutral attitudes. The mean score of self-identified Ladinos' attitudes towards Indigenous persons was 2.9 (slightly positive) and that of Indigenous persons' attitudes towards Ladinos, 2.5 (neutral). Thus, although there was clear evidence of in-group favoritism, there was no evidence of out-group derogation. The relation of one's own ethnicity to attitudes toward the other group cannot be accounted for by social desirability as the effect persisted even when corrected for socially desirable responding.

Identifying oneself as a mix of both Indigenous and Ladino in Guatemala needs further exploration, because many questions remain unanswered. Are persons claiming mixed identity because of having a parent from each ethnic group? How do individuals integrate their mixed identities? Is the representation of a mixed identification constant or is it context dependent? There is increasing

evidence that context influences the identity that individuals claim [6,35], especially when people have several identities to choose from. In addition, there is evidence that persons with mixed identities are more positively disposed toward other groups [36]. In the present study people with mixed identification did not differ significantly in their attitudes from people with Ladino identification. They were, however, less positive toward Indigenous persons, and more positive toward Ladinos than were Indigenous persons.

A controversy in ethnic identity research is whether a strong ethnic identity fosters more positive feelings toward out-groups, or whether a strong identity with the in-group fosters negative attitudes toward the out-group. The two theories that propose these relationships are the multiculturalism hypothesis [37] and social identity theory [34] respectively. Although we did not explicitly test this hypothesis in the current study, there were no significant relationships between attitudes toward one's own and the other ethnic group.

The present study has important implications for ethnic relations not only within Guatemala but also in other settings. It is estimated that there are currently one million Guatemalan immigrants, refugees and sojourners living in the United States [38]. Those individuals are not uniform in terms of their ethnicity and might be studied more veridically using a continuous measure of ethnic identification. In addition the AIG and ALG scales might be adapted for use in Latin American countries with similar histories of colonialism.

Further studies might also address such issues as the relation of ethnic attitudes to experiences of racism and to social distance and whether a social dominance orientation [39] is related to negative out-group attitudes.

The present study has a number of important limitations. Factor analysis revealed that the scales, although demonstrating adequate alpha, were composed of a number of factors, with significant variance unaccounted for. This suggests that attitudes are complex and not easily represented by a single scale. In addition, the sample was not representative of all Guatemalans, especially because less than 4% of the Guatemalan population has the opportunity to attend university [16]. Although the scales developed will be useful for investigating many issues related to ethnicity in Guatemala, they will not be appropriate for the high percentage of the population that is illiterate; other, non-written tasks will need to be devised. With respect to ethnic identification, even though a bipolar scale may be preferable to "boxes", it is likely that ethnic identification could be even better represented on a multidimensional measure that would allow individuals to rate the extent to which they identified with each of the major ethnic groups.

5. Conclusions

Despite their limitations, the newly developed scales, the AIG and the ALG, will be useful for investigating issues

regarding ethnicity in Guatemala, including the development of ethnic attitudes among youth, the effects of context on ethnic identity and ethnic attitudes, the relation of ethnic attitudes to particular experiences of contact or discrimination, and the instantiation of attitudes in daily life. They also might be used to address such questions as: "What is the role of physical attributes such as skin color in ethnic discrimination?" "Are there situational or daily fluctuations in ethnic attitudes and ethnic identification?" "Is a modern ethnocentrism emerging in Guatemala?" Future studies should also tease out the relative effects of socio-economic status and ethnicity. In addition, more attention needs to be paid to people in Guatemala who define themselves as having a mixed ethnic identification. Those individuals reflect the cultural diversity in Guatemala and have the potential to breach ethnic divisions.

Addressing ethnic attitudes and inter-group relations is critical to reducing prejudice and creating a more egalitarian future in Guatemala. A 2006 report by the Guatemalan presidential commission CODISRA concluded "the fight against racial discrimination ought to be a central pillar in the construction of peace and democracy in Guatemala" [14].

Finally, the Guatemalan context, where approximately 50% of the population is made up of Indigenous people, could be used to examine theories of group relations in a setting where the subordinate group makes up a high percentage of the population.

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Appendix A

The scale of "Attitudes toward Indigenous Persons of Guatemala" in the original Spanish with English translations.

En la sociedad Guatemalteca hay diferentes grupos étnicos. A veces las personas expresan las actitudes positivas o negativas acerca de los grupos. Por favor lee las siguientes frases con mucho cuidado y encierra en un círculo la respuesta que mejor represente *tus* sentimientos acerca de la frase. [In Guatemalan society there are different ethnic groups. Sometimes people express positive or negative attitudes about those groups. Please read the following phrases and circle the response that best represents your feelings about the phrase.]

- [1] (reverse-scored) Las tradiciones indígenas proveen una base cultural para Guatemala. [The Indigenous traditions provide a cultural base for Guatemala.]
- [2] Los niños indígenas no deben usar su traje típico en la escuela. [Indigenous children should not wear their traditional clothing in school.]
- [3] En general, los Indígenas son descuidados en su aseo personal. [In general, Indigenous people are careless in their personal hygiene.]
- [4] (reverse-scored) No se debe discriminar a los profesionales por su etnia. [One should not discriminate against professionals for their ethnicity.]
- [5] La mayoría de los Indígenas habla un mal español. [The majority of Indigenous people speak poor Spanish.]
- [6] Los Indígenas de Guatemala son muy supersticiosos. [The Indigenous people of Guatemala are very superstitious.]
- [7] (reverse-scored) La población indígena tiene muchos conocimientos. [The Indigenous population has a great deal of knowledge.]
- [8] (reverse-scored) Se deben respetar los derechos de los Indígenas. [The rights of Indigenous people should be respected.]
- [9] (reverse-scored) Los pueblos indígenas fomentan el desarrollo económico de este país. [The Indigenous communities foster economic development in this country.]
- [10] (reverse-scored) La mayoría de la población indígena es trabajadora. [The majority of the Indigenous population is hardworking.]
- [11] (reverse-scored) Los Indígenas tienen mucha dignidad frente a sus problemas. [Indigenous people face their problems with a great deal of dignity.]
- [12] (reverse-scored) Los logros de los Mayas en astronomía, matemáticas, y medicina nos hacen orgullosos. [The accomplishments of the Maya in astronomy, mathematics and medicine make us proud.]
- [13] (reverse-scored) Todas las personas Indígenas deben aprender y usar su propio idioma para mantener su cultura. [All Indigenous people should learn and use their own language to maintain their culture.]
- [14] Es propio discriminar a los profesionales por su etnia. [It is appropriate to discriminate against professionals for their ethnicity.]
- [15] (reverse-scored) Con más participación de los Indígenas en la política, el país avanzará. [With more political participation from Indigenous people, the country will advance.]
- [16] Los Indígenas están preparados para ocupar solamente puestos domésticos y oficios manuales. [Indigenous people are only qualified to fill domestic and manual labor jobs.]
- [17] (reverse-scored) El uso del traje típico permite mantener la identidad entre los Indígenas. [The use of traditional clothing allows Indigenous people to maintain their identity.]
- [18] La mayoría de los Indígenas habla un español perezoso. [The majority of Indigenous people speak a lazy Spanish.]
- [19] En general, los Indígenas son descuidados en su educación. [In general, Indigenous people are careless about their manners.]
- [20] (reverse-scored) El país debe desarrollar la inclusión de los Indígenas en la sociedad. [The country should encourage the inclusion of Indigenous people in society.]
- [21] (reverse-scored) Me molesta cuando oigo a los padres diciéndole a su hijo, "No seas necio, pareces indio" o algo como eso. [It bothers me when I hear parents tell their children, "Don't be bad, it makes you seem like an Indian" or something similar.]
- [22] (reverse-scored) Me gusta relacionarme con los indígenas. [I like to associate with Indigenous people.]
- [23] Hago chistes sobre los Indígenas con mis amigos. [I joke about Indigenous people with my friends.]

Appendix B

The scale of “Attitudes toward Ladino Persons of Guatemala” in the original Spanish with English translations.

En la sociedad Guatemalteca hay diferentes grupos étnicos. A veces las personas expresan las actitudes positivas o negativas acerca de los grupos. Por favor lee las siguientes frases con mucho cuidado y encierra en un círculo la respuesta que mejor represente *tus* sentimientos acerca de la frase. [In Guatemalan society there are different ethnic groups. Sometimes people express positive or negative attitudes about those groups. Please read the following phrases and circle the response that best represents your feelings about the phrase.]

- [1] Los Ladinos merecen algún tipo de castigo por el sufrimiento que han causado a los Indígenas. [Ladinos deserve some type of punishment for the suffering that they have caused Indigenous people.]
- [2] Cuando veo a los Ladinos en la calle, pienso cosas malas sobre ellos. [When I see Ladinos in the street, I think bad things about them.]
- [3] (reversed) En general, los Ladinos son bien educados. [In general, Ladinos are well-mannered.]
- [4] Es difícil creer que una persona Ladina pueda escuchar y entender lo que una persona indígena dice. [It is difficult to believe that a Ladino person can listen to and understand what an Indigenous person says.]
- [5] Pienso que los Ladinos, en general, merecen el desprecio de los Indígenas. [I think that Ladinos, in general, deserve the contempt of Indigenous people.]
- [6] En general, los Ladinos son creídos. [In general, Ladinos act like they are better than others.]
- [7] En general, tengo menos confianza en los Ladinos que en los Indígenas. [In general, I have less trust in Ladinos than in Indigenous people.]
- [8] Me siento enojado contra los Ladinos porque ellos tienen más oportunidades en la vida. [I feel angry towards Ladinos because they have more opportunities in life.]
- [9] (reversed) Admiro a los Ladinos por sus logros en el gobierno, los negocios, y la educación. [I admire Ladinos for their accomplishments in government, business, and education.]
- [10] Los Ladinos varones tienen una actitud negativa hacia el papel de la mujer. [Ladino men have a negative attitude about the role of women.]
- [11] La mayoría de los Ladinos es “fufurufo”. [The majority of Ladinos are “stuck-up.”]
- [12] (reversed) La mayoría de los Ladinos habla un español correcto. [The majority of Ladinos speak correct Spanish.]
- [13] (reversed) Las tradiciones Ladinas proveen una base cultural para Guatemala. [Ladino traditions provide a cultural base for Guatemala.]
- [14] (reversed) Los Ladinos merecen una buena situación económica por su esfuerzo. [Ladinos deserve a good economic situation because of their effort.]

People with Metabolic Syndrome Disorders Give Lower Offers in Ultimatum Game

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ABSTRACT

Background: The origins of the metabolic syndrome disorders are being increasingly recognized as neuro-behavioural rather than dietary or metabolic. The neuro-behavioural origins hypothesis implies that there should be detectable behavioural differences between people with and without metabolic syndrome disorders. We test here whether the economic behaviour of individuals with any of the metabolic syndrome disorders differs from that of healthy age matched controls using the ultimatum bargaining game. **Methods:** The ultimatum game was played by 59 persons with at least one of four metabolic syndrome disorders namely type 2 diabetes (T2D), hypertension, hypercholesterolemia and cardiovascular disease (MS group) and the results were compared to a healthy age matched control consisting of 71 persons. **Results:** The MS group gave significantly lower ultimatum game offers than the control group. Testing for individual disorders, type 2 diabetics gave significantly lower offers than the non-diabetic group. In binary logistic regression, ultimatum game offer was a better predictor of MS and T2D than Body Mass Index (BMI). **Conclusions:** There are detectable behavioural differences between individuals with metabolic syndrome disorders as compared to age matched healthy controls. The results are compatible with the neurobehavioral origins hypothesis and demonstrate further the association between metabolic states and social and economic behaviour.

Keywords: Economic Behaviour, Fairness, Metabolic Syndrome, Serotonin, Testosterone, Ultimatum Game

1. Introduction

The cluster of diseases including insulin resistance, type 2 diabetes, hypercholesterolemia, hypertension, atherosclerosis and cardio-vascular disease are collectively called insulin resistance syndrome or metabolic syndrome. The name itself reflects the traditional view that the aetiology as well as pathogenesis of these disorders is predominantly metabolic. The syndrome has a strong positive association with obesity [1-3] and imbalance in energy homeostasis is believed to be central to it. Predisposition to these disorders has been said to be owing to a “thrifty” metabolism imparted genetically or by foetal programming [4,5].

From time to time the thriftiness paradigm has been challenged on several grounds [6-8]. Some of the critics of thriftiness family of hypotheses have completely rejected the concept [7,8], whereas others have pointed out the inadequacies of the hypotheses and suggested alternatives which are not incompatible with thriftiness hy-

potheses [6,9]. One of the alternative hypotheses which says that the physiological changes that underlie metabolic syndrome are adaptive to a “soldier” to “diplomat” transition in lifestyle appears to explain most of the metabolic, immunological, reproductive and cognitive changes known to accompany insulin resistance as well as accommodate and reinterpret foetal programming [6]. Belsare [9] pointed out that this behavioural switch hypothesis can also account for thriftiness and that thriftiness can be a subset of the behavioural switch hypothesis. The behavioural switch hypothesis was further refined by Rashidi *et al.* [10] and Belsare *et al.* [11] to elaborate on the mechanisms and pathways by which behavioural transitions can bring about endocrine, metabolic and immunological changes. The behavioural origins paradigm predicts that in addition to obesity, high population density, suppression of physical aggression, suppression of sexual desire and sexual activity, a perception of being physically weak and high social manipulation skills should be associated with many of the metabolic syn-

drome disorders [6,11]. This is potentially a major paradigm shift by which the metabolic syndrome disorders will be more a subject of behavioural sciences than medicine. Although a number of predictions of the behavioural switch hypothesis are supported by meta-analysis [11], more direct tests of the predictions are needed. We state and test here one of the predictions of the behavioural origins hypothesis. If the origins of metabolic syndrome are behavioural, there should be detectable behavioural characteristics associated with the metabolic syndrome disorders. Further a set of quantifiable behavioural changes should be able to predict metabolic syndrome disorders in cross sectional or preferably longitudinal studies. Currently we do not know which specific set of behaviours should one look for and the best possible assays for them. Much careful thinking, standardization and validation would be needed before using such predictive behavioural tests. As a first step towards this goal we test here whether detectable and quantifiable behavioural differences exist between individuals with one or more of the metabolic syndrome disorders and age matched healthy controls. We selected a simple bargaining game that has been used extensively in economics and behavioural science, namely ultimatum game [12]. Ultimatum game was selected owing to its simplicity and a consistent demonstration that levels of certain hormones are associated with the behavioural outcome in the game [13-17].

1.1 Ultimatum Game

The ultimatum game involves two-player bargaining. The two players are unknown to each other. One player (player 1) plays the role of allocator and the other player (player 2) plays the role of recipient. Player 1 is promised some money and is asked to divide it between himself and the other player. The rules stipulate that player 1 must make an offer, and player 2 can either accept the offer or reject it. If player 2 accepts the offer, player 1 receives the promised money and will have to give the offered fraction to player 2. If player 2 rejects the offer, none of them gets any money.

If we assume that each player plays to maximize his benefits, the rational strategies are simple. For player 2 accepting and rejecting are the only two options. Since rejection is bound to give zero returns, accepting any non-zero offer is the only rational strategy. Assuming player 1 knows what is rational for player 2, offering minimum non-zero amount would be the most rational strategy for player 1. However, it is observed that most people do not go by this rationale. In a large number of studies across age groups and cultures the modal offer is typically 50% and the mean offer lies between 40% and 50% of the total amount. Although the game is simple to perform and analyze, the interpretation of the results is complex. The surprising agreement about roughly equal

sharing has been commonly interpreted as a result of an innate human tendency to appreciate fair and to retaliate unfair decisions [12]. This interpretation is certainly attractive and generally widely agreed. However the demonstration that serotonin [13-15] and testosterone [16,17] levels affect ultimatum offers has raised other possibilities too. Both serotonin and testosterone are associated with social dominance hierarchy and aggression in different ways. Manipulating brain serotonin levels can change the dominant status and behaviour of an individual in a wide variety of species [18,19]. It is possible therefore that the ultimatum game offers reflect social hierarchical behaviour in some way and not fairness alone. Social factors related to status and hierarchy have also been reported as risk factors for metabolic syndrome [20,21]. Both serotonin and testosterone play important roles in metabolic syndrome. Chronically elevated serotonin signalling in the hypothalamus induces peripheral insulin resistance [22,23]. Testosterone levels of diabetics are typically low and testosterone has a protective role against many pathological consequences of metabolic syndrome [24-26]. Since serotonin is negatively associated with ultimatum offers and testosterone is positively associated [13-17], one may expect that diabetics may give lower offers in ultimatum game. However, to the best of our knowledge there are no previous studies testing whether behaviour in ultimatum game is associated with any disorder.

2. Methods

2.1 Sample Groups

Sampling was restricted to a narrow socioeconomic sector comprising urban middle class in Pune city selected based on the locality and type of housing. Maintaining the socioeconomic class, 43 households and 14 workplaces were visited and all individuals between the age groups of 40 and 75 were requested to voluntarily participate in the study but the objective and the hypothesis being tested was not disclosed until completing the response sheet. The respondents were given to know the conditions of the game, were promised an amount of INR 500 (approximate equivalent of \$ 10) and asked to write their offers to an anonymous player 2. The occupation, height, weight and self reported history of any of the following metabolic syndrome components diagnosed were noted. The noted disorders were type 2 diabetes (T2D), hypertension, hypercholesterolemia and cardiovascular disease. Since the proportion of individuals with any of these disorders was expected to be low, in order to have comparable numbers, the names of 30 patients with T2D or hypertension were selected from a health camp taking care that they belonged to the same locality and socioeconomic group. They were visited and their participation requested as above. In total the sample group con-

sisted of 71 healthy individuals (without any of the above four disorders) and 58 with at least one of these disorders (47 T2D, 19 hypertension, 5 hypercholesterolemia and 5 CVD).

2.2 Statistical Analysis

The sample group was divided as individuals with at least one of the metabolic syndrome disorders (MS group, $n_1 = 58$, 25 male, 33 female) and healthy controls ($n_2 = 71$, 30 male 41 female). The age group distribution of the two groups was compared with 10 year interval groups. Since the distribution of ultimatum game offers was highly leptokurtic with the mode at 50% represented by a very sharp peak, the data were divided into 3 categories namely the modal offer group ($50\% \pm 5\%$), one with lower offers than the modal group and one with higher offers than the modal group. Frequencies in these three groups in MS versus healthy controls were compared using chi square test. Similar test was performed to compare T2D versus non-diabetic groups. For other disorders the number of affected individuals was too small for a meaningful statistical test. Using MS and diabetes separately as binary variables, logistic regression was used to test which out of the noted variables namely sex, occupation, body mass index (BMI) and ultimatum game offer predicted the disorders.

3. Results

The MS and healthy control groups did not differ significantly in the sex and age class distribution. In the pooled data the modal ultimatum game offers were at 50%. However, as compared to the healthy control group the MS group deviated significantly from the mode, much of the deviation being towards the left. The mean offers by the MS group (Rs 202.55) were substantially lower than the control group (Rs. 241.05) and frequency below the mode was highly significantly greater than the control group (chi square = 32.01, $df = 2$, $p < 0.001$) (**Figure 1**). In both MS as well as healthy groups, the frequencies of the three offer classes did not differ significantly between the two sexes.

The comparison of diabetic and non-diabetic groups showed similar pattern and the difference was highly significant (chi square = 28.42, $df = 2$, $p < 0.001$) (**Figure 2**). For other disorders the sample sizes were too small to allow a meaningful statistical test. There was a weak negative correlation between BMI and ultimatum game offers in the pooled data which was non-significant.

Logistic regression with presence of at least one of the metabolic syndrome disorders as a dependent binary variable and including sex, occupation, BMI and ultimatum offers revealed that the effects of sex and occupation were non-significant whereas BMI (Wald = 3.09, $p = 0.078$) and ultimatum offer (Wald = 3.56, $p = 0.059$)

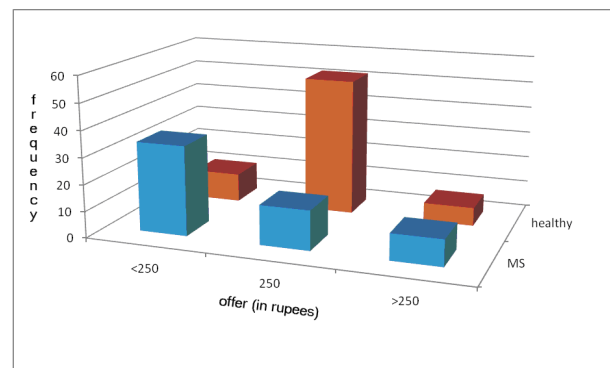


Figure 1. Frequencies of ultimatum offers by people with metabolic syndrome (MS) disorders in comparison with healthy controls: Data are divided in three categories namely modal ($50\% \pm 5\%$), below modal and above modal class. MS give significantly lower offers. (chi square = 32.01, $df = 2$, $p < 0.001$)

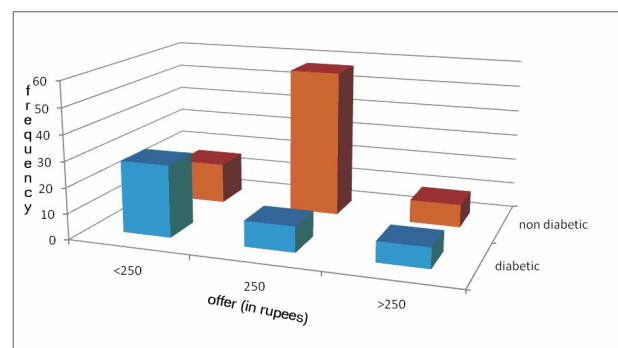


Figure 2. Frequencies of ultimatum offers by people with T2D in comparison with healthy controls: Data are divided in three categories namely modal ($50\% \pm 5\%$), below modal and above modal class. Diabetics give significantly lower offers. (chi square = 28.42, $df = 2$, $p < 0.001$)

were marginally significant with overall predictability of the model being 62.4%. Exclusion of BMI from the regression rendered the effect of ultimatum offer significant (Wald = 5.12, $p = 0.02$) with predictability improving to 68.6%. On exclusion of ultimatum offer the effect of BMI was non-significant and predictability declined to 56.78%. Considering T2D alone the patterns were very similar. Only ultimatum offer significantly predicted T2D in logistic regression (Wald = 4.42, $p = 0.035$) whereas BMI, sex and occupation did not show significant effects, the predictability of the model being 65.52%.

4. Discussion

We found highly significant behavioural differences in people with T2D, hypertension or other components of metabolic syndrome in comparison with healthy age matched controls. This might be unexpected by the conventional view of the syndrome which assumes diet and metabolism to be the root cause of the disorders. How-

ever, with the emerging picture of behavioural origins, detectable behavioural differences are expected to be present. However, currently there are no specific tools standardized to quantitatively assess behavioural differences between healthy versus diabetic or hypertensive people. Designing and validating such tests specifically for this purpose would need much intensive thinking and research inputs. Ultimatum game is a simple and popular standard tool in studying economic and social behaviour in humans and therefore a good test to begin investigations. The demonstration of highly significant differences in ultimatum game should stimulate further empirical research in the behavioural aspects of metabolic syndrome.

Ultimatum game is generally considered as a “fairness” game. However it would be unfair to jump to the conclusion that people with metabolic syndrome are “unfair” to others. This is because the fairness interpretation of ultimatum game itself can be questioned. People may deviate from the economically rational low offers owing to a number of possible alternative reasons. The offers may represent a valuation of relative social ranking with an anonymous person being given a default equal ranking. A high offer may be viewed as a costly signal intended to advertise one’s own status and generosity or it may be driven by a hidden prediction of repeated and reciprocal interactions. All these explanations can be grouped as social status related explanations. It can be perhaps generalized that economic rationality prompts low offers and social status and social justice related factors prompt offers substantially higher than the economically rational ones. On this scale diabetics appear to be more inclined towards economic rationality compared to social rank or social justice related factors. A change in social rank or stress related to social subordination has been shown to be associated with insulin resistance syndrome and related physiological changes in animals as well as humans [20,21]. The hormones which have previously been shown to affect economic game behaviour are serotonin and testosterone both of which are known to play a role in social dominance hierarchy [18,19]. Therefore the more plausible explanation of lower hits by diabetics is likely to be related to a greater importance of economic rationality as compared to an aggressive and competitive social hierarchy. On the other hand there is neither any a priori reason nor evidence showing that metabolic syndrome disorders affect “fairness”.

The social rank explanation is compatible with the upcoming paradigm of behavioural origins of metabolic syndrome. In animal societies the physically strong and dominant “hawk” strategists are insulin sensitive whereas weaker, subordinate but socially smart and opportunistic “dove” strategists are relatively insulin resistant [11]. The former are typically characterized by high testosterone,

low serotonin, low cholesterol and cortisol whereas the later by low testosterone, high serotonin, high cholesterol and cortisol levels. The dove strategists obtain their fitness by being socially smart and opportunistic. For them aggressive fights for higher social rank are likely to be rather counterproductive. They may retract from aggression but be smarter towards tapping opportunities. The human counterparts of the “hawk” and “dove” strategies have been called “soldier” versus “diplomat” strategies [6] and metabolic syndrome is claimed to be a physiological state related to a “diplomat” personality. It therefore makes sense for a diplomat to be economically rational and care less about aggressive social hierarchical struggle. The results of the survey are therefore compatible with the behavioural origins paradigm of metabolic syndrome.

Of much potential interest is the result that ultimatum game offers are good predictors of T2D and other disorders. At least in our sample ultimatum offer was a better predictor of diabetes than BMI, although BMI has been commonly used as a strong predictor of metabolic syndrome disorders. This may not be surprising because of a dual reason. On the one hand in Indian population insulin resistance is not very strongly associated with high BMI [27] and on the other hand the inadequacy of obesity alone in explaining insulin resistance syndrome is increasingly being recognized. Out of the recently identified genetic markers that are significant risk factors for type 2 diabetes very few are significantly associated with obesity parameters [28]. Also the relationship of obesity with life threatening disorders is not constant over time. Along with increasing mean BMI in the population, the optimum BMI ensuring minimum mortality rate appears to have increased substantially over the last hundred years [29]. This is more compatible with the speculation of behavioural origins hypothesis that the relative rather than absolute obesity is the true risk factor [6] and that obesity functions as a behavioural signal [30]. It would be interesting to test whether ultimatum game is a better predictor of metabolic syndrome across cultures and ethnicities. One may also speculate whether it would be possible to design a set of behavioural tests that may be predictive of T2D and related chronic conditions in longitudinal studies. This small study should therefore stimulate further studies along three paths. One would be to test the robustness of the association of ultimatum game offers with metabolic syndrome cross culturally, the other to design and standardize a set of tests to cover a wider variety of behaviours that could be markers of metabolic syndrome and the third to test whether the set of behavioural differences can predict the development of metabolic syndrome disorders in longitudinal studies.

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Disability, Social Policy and the Burden of Disease: Creating an “Assertive” Community Mental Health System in New York

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ABSTRACT

One conclusion of the decade-long epidemiological Global Burden of Disease Project is that five of the top 10 disease “burdens” the world will face by 2020 will be related to mental disabilities. Therefore, developing social policy and community responses to the ways that people with mental disabilities are treated is becoming an important focus for community practitioners, political activists and legislators. The author explores some of the dynamics of our culture’s approach to dealing with difference, especially when manifested in disenfranchized individuals. He discusses a community development project created by a New York City advocacy and social policy organization following the 1999 murder of a woman by an individual whose mental health disability was never treated. Parallels are drawn between the civil rights and community mental health movements, which created a precedent for the 1990 Americans with Disabilities Act. Also examined are the ways in which community mental health systems manifest social policy that alternately resists, repeats and colludes with power operations. The unexamined assumptions that drive this dynamic are examined as ableism or disability oppression.

Keywords: Ableism, Assertive Community Treatment, Civil Rights, Disability, Kendra’s Law

1. Introduction

Over the last century, the pace of urbanization and industrialization in the West has outstripped the development of certain life-sustaining infrastructures that support urban residents. We in the United States are now witnessing a backlash wherein deindustrialization, corporate downsizing, unemployment and the dismantling of the welfare state are adding to the already considerable pressure on our support structures [1,2] and, in turn, on the legislation and social policies that address these structures [3-5]. Epidemiological studies are showing that exponential growth in urbanization and industrialization and their decompensatory effects are resulting in increasing numbers of physical and mental health impairments [6]. Researchers working on the Global Burden of Disease Project (GBD) have used a measure they call disease burden to project future causes of deaths and impairments [7,8]. They believe that by 2020, the leading causes will be heart disease, depression and traffic accidents (Murray and Lopez, 1996, 2004). Furthermore, they predict, along with other researchers [9-11], that

five of the top 10 leading causes of “disease burden” by 2020 will be “psychiatric conditions.” If that is accurate, it is imperative that we evaluate our service provision infrastructure for these conditions, the social policies that support it and the cultural and political implications of such services. These implications include oppression and social injustice in the institutions we create to address our growing burden of psychiatric disease.

I spent four years on the executive board of a community health center in New York City, observing and participating in an effort to develop an effective philosophy and infrastructure for current conditions in the city. In particular, we focused on the changes in social policy that would be necessary to address the needs of our patient population. Over the same period, I also worked with a community development project managed by the Coalition of Voluntary Mental Health Agencies, a social policy and advocacy organization representing over 100 nonprofit community mental health agencies in New York City. These experiences illuminated important intersections and parallels between the civil rights and community mental health movements, and demonstrated

clearly how the two earlier movements created precedents for the Americans with Disabilities Act (ADA).

I will explore how the philosophies underlying these movements both have and have not been enacted in contemporary social policy in the U.S., and how their backgrounds offer insight into the history, development and policies of New York’s current community mental health system. Specifically, I will examine 1) how this system and its social policies are bound by their own history, operational methods and current problems; and 2) how the system’s social policy alternately resists, repeats and colludes with power operations—that is, how policies often cause the system to act against its ostensible goal. The unexamined assumptions that drive this dynamic have been called *ableism* or *disability oppression* [12]. These terms refer to institutional discrimination that excludes individuals with physical and mental disabilities from full participation in society.

The primary task of the community mental health system, in general, is to take responsibility for the health and well-being of people deemed incapable of taking care of themselves. Included in this responsibility is the behavior of such individuals in their communities. I will describe a major breakdown that occurred in the New York City community mental health system in 1999 and the policy changes that were enacted in response.

Of course, the primary task I have sketched above is by definition problematic, since it entails a dynamic that supports disempowerment and chronic dependency in the individuals who use it. It also supports the maintenance of power and control over people who rely on their mentally ill or disabled status to ensure that their physical and mental health needs are addressed and paid for. From this perspective, the concept of impairment is kept separate from expressions of injustice resulting from social, economic and political arrangements [13]. This is a particularly harmful situation in light of the many impairment etiologies that have been “manufactured” and sustained by such arrangements [4,14,15].

2. Civil Rights, Oppression, and the Americans with Disabilities Act (ADA)

In the 1960s, the American civil rights movement finally succeeded in getting the U.S. Congress to pass legislation banning discrimination based on sex, race and national origin. The original laws did not include protection against discrimination based on physical and/or mental disabilities. However, people with disabilities quickly realized that their positions and needs mirrored the racial-, ethnic- and gender-based exclusions and discriminations that were now receiving legal protection.

In 1971, disability advocates convinced several Congressional lawmakers to introduce an amendment to Title VI of the Civil Rights Act of 1964 that would prohibit

discrimination based on physical or mental disabilities. This bill died in committee, as did a 1972 bill addressing employment discrimination for people with disabilities. Both failures reflected the lack of concern of most lawmakers, and many Americans, for the civil rights of persons with disabilities [16]. These individuals were not considered a “class” worthy of protection until the Rehabilitation Act of 1973 was passed and signed into law. That law encouraged disabled populations to see themselves as oppressed minorities with agendas to present to the American people—a new kind of thinking. The grassroots movement that grew from this initial spark lobbied for the Americans with Disabilities Act (ADA), which was passed in 1990. The ADA gave substantial recognition to the difficulties of individuals with disabilities who must navigate their way through a society tailored to the needs of able-bodied persons.

According to the ADA, a disability is interpreted as 1) any physical or mental impairment that substantially limits one or more of an individual’s major life activities; 2) a record of such an impairment; or 3) someone regarded as having such an impairment [17]. This definition individualizes the experience of disability, on the grounds that generalized responses and acts of assistance may not be adequate to provide opportunities for the larger disabled population. That stance—commonly referred to as *disability oppression theory*—advocates responses based on individual needs. In contrast, *ableistic* ideologies advocate “fixing” or “correcting” disabled individuals so that they match standard system designs. Casteneda and Peters have noted that “disability oppression theory insists on the culpability of society’s inhibiting structures, which overvalue economic productivity, undervalue alternative social contributions and attach positive and negative associations to relative forms of independence and dependence” [12].

All laws providing educational and rehabilitation services and prohibiting discrimination in education, employment and access to public programs emphasize similarities in needs and problems within an array of physical, psychological and intellectual impairments. Laws are unlikely to acknowledge *differences* among disabling conditions and their varied impacts on people’s lives. Most importantly, social policy and the programs designed to serve the multifaceted “groups” we call “disabled” are based on an assumption that invites challenge: that any disability is the primary variable that predicts the outcome of social interaction and program success. In fact, it is social context that generally shapes the meaning of a person’s disability.

This means that social policy and related interventions would often do better to target the *disabling environment* instead of the individual disabilities [18]. To the extent that Americans resist laws supporting the civil rights of people with disabilities, we could argue that our entire

society is a disabling environment. However, it may be more fruitful to address these issues on a smaller scale—in the context of the system designed to serve people with mental disabilities.

3. Point of Impact

The current policy of deinstitutionalizing mentally ill individuals in the U.S. was 50 years in the making. The combined population of residents in state and county mental hospitals in this country has dropped from more than 500,000 in 1950 to approximately 50,000 in more current times [19,20]. However, the total population of mentally disabled prison inmates has increased to the point that a person with a serious mental illness is almost five times as likely to be incarcerated than admitted to a psychiatric care facility. And a similar pattern seems to underscore the Crime and Disorder Act (1998) in the U.K. [21,22].

This juxtaposition of declining treatment and increasing incarceration rates has attracted considerable attention from deinstitutionalization critics, who note that most governments have consistently failed to establish promised community-based treatment programs [23]. However, there are signs that the tide is turning. Backed by research asserting that treatment can reduce violence in people with major psychiatric disorders, and by high-profile cases of violent crimes committed by people suffering from severe mental illness, community-based treatment approaches are slowly gaining attention in this drama [24,25]. The issue remains controversial, since it pits public safety concerns against individual rights.

Occasionally some specific incident becomes a symbol/symptom of chronic malfunction in a system. I call such occurrences *points of impact* [26-30]. A point of impact is an acute symptom that makes manifest a more chronic community crisis. Civil unrest is an example—that is, the civil unrest is the force, and the crisis to which it is applied is the *point* of impact. A point of impact—or the collision that it indicates—occurred in New York in 1999, and brought into public awareness the chronic state of crisis in the city’s community mental health system. In hindsight, we can view the event as support for the GBD project’s prediction.

In January of that year, a 30-year-old man with schizophrenia named Andrew Goldstein pushed 32-year-old Kendra Webdale in front of a Manhattan subway train moving at full speed. Goldstein was subsequently convicted of second-degree murder. The murder incited public outrage that was translated into “Kendra’s Law”—a requirement for forced treatment (sometimes called “assisted outpatient treatment”) for people with severe mental illness. Prior to the killing, Mr. Goldstein had made repeated requests for treatment but had been denied each time. Yet the State of New York, which described

Mr. Goldstein as mentally ill when Kendra’s Law was being written and debated, argued in court that he was sane when he pushed Ms. Webdale in front of the train. A final irony is that Mr. Goldstein, as a convicted murderer, is only now receiving the treatment that he had previously been refused. It is a decade later, and the policies and approaches to treatment seem to merely repeat this pattern—even more so now with the closing and impending closing of major inner-city hospitals like Cabrini—*ad infinitum*. What are the dynamics of a culture that implements such policies as the ones institutionalized in Kendra’s Law?

4. Liberal Individualism and a Culture of Ruthless Discrimination

Western societies in general seem to be breeding pools for the development and proliferation of remedies—social, personal, and cultural—for just about anything that might cause discomfort. These remedies notably target pain and anxiety, and also their derivatives: irritation, frustration, sadness, anger and so on. Paradoxically, however, they also serve to marginalize individuals in categories (such as “mentally disabled”) who cause such feelings to arise within members of the majority group. A further paradox is that while *palliative* remedies such as these reduce pain and suffering, they destroy the opportunity to study and treat definitively, and eventually recover from, the problems that underlie the unpleasant symptoms [28]. Palliative remedies help individual members of society to dissociate our awareness of the suffering of others around us. They encourage, that is, a kind of ruthlessness that eventuates in discrimination against various minority groups and their members. On this subject I have previously written that:

Human—that is, emotional—responses to everyday stimuli are increasingly pathologized, and we are increasingly promised the obliteration of all personal suffering. Yet at the core of all these *human responses* to suffering that need remedy is a deep sense of empathy with the struggles of existing at this time in this society, in a state of perpetual dread over the immense social problems that infect those around us, and that seem (and often are) insurmountable [28, emphasis in original].

Certain kinds of empathy are feared, defended against and abstained from in this society, as if compassion—the ability to experience the pain and problematic circumstance of another person—were a contagion that if experienced in full force would lead to breakdown. One of these is empathy for those whom we view (and scapegoat) as carriers of manifest social pathology. Legislation like “Kendra’s Law” encourages us to dissociate the suffering of such people and impose constraints upon them instead.

The general American movement toward *liberal individualism* as described in the sociological analyses of

Bellah, Madsen, Sullivan, Swindler and Tipton [31] supports the Kendra's Law mentality. Bellah and colleagues asserted that the definitive aim of life in a liberal, individualistic society is to promote fulfillment (increased satisfaction and decreased discomfort) for individuals, rather than groups or communities. By individualizing fulfillment and satisfaction, people in such cultures are perfectly set up to ignore and are supported in the practice of ignoring, or dissociating the suffering of others. That is, enacting a ruthless discrimination as a status quo approach to living, making massive categorical biases seem *necessary*. The underside of the argument presented by Bellah and others, such as Amitai Etzioni [32] is that such arguments pose a kind of “new communitarianism” that defines *community* as prior to individual rights and a call for a return to traditional social institutions such as religion and the family [33,34]. The new communitarians largely uphold the liberal Western tradition, criticizing deviations or threats to this tradition [35]. Yet in this process, they wind up repeating the elitist underpinning of the very system they criticize, and becoming the watchdogs of their own version of the “good life.” The pervasiveness of the liberal individualism perspective has been analyzed in many of the social and cultural institutions in capitalist societies, particularly the United States. The mental health machinery of this country has attracted special interest [36,37]. In fact, some authors have specified a sense that the ways in which the major critiques of liberal individualism themselves have been framed supports a kind of “America as Empire” philosophy [38-40] that overlooks crucial issues related to race, class and gender bias [1,41-43] as well as ableism.

The dynamics of discrimination that underlie liberal individualism can be seen as a societal-level character defense that allows us to avoid acknowledging the social consequences of a belief system that supports fulfillment for some and suffering for others. As this belief system rigidifies, it begins to function as an ideology. By ideology I mean “those values and assumptions about the world which have implications for the control and allocation of limited resources” [44]. Problems and fulfillments are increasingly individualized, separated from their social and cultural influences and etiologies, and the resulting control and allocation processes are dissociated [2,45]. The inability or unwillingness to empathize with both self and other diminishes the likelihood that subversive or revolutionary processes will exert any impact on society's daily functions, let alone accomplish any significant social transformations.

When (individual, group or community) awareness of pain and suffering is reduced through the use of sanctioned group-level discrimination, what remains is a form of chronic crisis so muffled that even those in the middle of it may not perceive it. This process not only supports a

“victim-blaming ideology” [46]. It also establishes a framework for defining social problems in terms of social conditions (e.g., poverty, racism, poor healthcare) and the groups that allegedly engender them [47,48]. The dynamics of ruthlessness concretize the split between the subjectified self and the objectified (or “inanimate”) other [13,49,50]. I will now discuss an ongoing social justice project that has attempted to address some of the underlying problems associated with these dynamics.

5. Community Response and the Development of a Responsive Social Policy

The Coalition of Voluntary Mental Health Agencies (the Coalition) considers that its primary task is to ensure that New York's community mental health care system provides adequate care for the people it is meant to serve. The Coalition's member agencies serve more than 250,000 clients in almost all the communities and neighborhoods of our country's most diverse city.

The Coalition is a child of deinstitutionalization. New York State began its deinstitutionalization program in part because advocates and policy makers recognized that people with mental illness deserved better than to languish in huge, impersonal hospitals. Deinstitutionalization implied not only fiscal savings, but also a promise—still unfulfilled—that clients discharged from psychiatric hospitals would receive adequate care upon their return to their communities. The Coalition was born to address the failure of communities to provide that care.

Toward the end of January 1999, the Coalition held a meeting to address the issues raised by the Webdale/Goldstein tragedy. Its spokesperson and executive director, Phillip Saperia, claimed that:

For Andrew Goldstein, it seems we traded a huge state hospital for an 8 × 10 basement room along with alternating hospital readmission and outpatient clinic treatment. Andrew is not blameless in this tragedy, but neither is the State of New York. This was not, as some have suggested, an act so random as to be unavoidable. While we cannot prevent every tragedy, we know how to guard against catastrophes like this one. We know that integrated, assertive, coordinated community-based treatment works. We know that discharging someone from a hospital without a discharge plan to a lonely basement apartment with little professional support, onsite services or crisis intervention does not work [51].

The Webdale/Goldstein tragedy is but one of the cases the Coalition has used to shed light on critical issues affecting adequate treatment, service delivery and policy for people with mental disabilities. The Coalition serves as a vocal advocate for adequate care and the realistic resources—especially legislative—required to provide it. Funding is a major community mental health service issue in New York State, as it is throughout the country;

this is the issue that the Coalition addresses most consistently. Currently the Coalition is confronting cuts in Medicaid and Medicare funding, the movement toward managed care, and the ways that these trends keep the people in their population from enacting their own treatment programs.

The Coalition is struggling to become a more responsive and collaborative organization, willing to engage in necessary self-confrontation and self-critique. Collaboration among its own members and with members of the client population has raised the possibility that the central task of the community mental health system is inherently problematic. That is, to take uncritical responsibility for the health and well-being of people deemed incapable of taking care of themselves sets up endless opportunities for oppressive, colonizing, disempowering and iatrogenic treatment patterns and legislation. The Coalition recognizes that the voices, experiences and insights of those being served must be included when service delivery programs are being developed [52,53]. Since the most successful action plans are developed collaboratively with the clients being served [51], the Coalition is now calling its clients "consumers"—an indication of empowerment and entitlement to make choices about what constitutes adequate care.

This right is clearly challenged by Kendra's Law. Over the last few years, Coalition members have been working with local and state officials (as well as with clients) to develop more appropriate intervention and policy responses to such system failures as the Webdale/Goldstein tragedy. Its goal has been to account for the safety and security needs of both clients and communities, while preserving the right of people with mental health disabilities to be treated in humane ways.

6. Assertive Community Response

Deinstitutionalization began with the closure of many long-term state and private hospitals. It coincided with the introduction of new pharmacological treatments. Since the 1950s, when the process began, there has been ongoing concern about providing care for the most seriously ill patients. In many cases, the multifaceted and complex psychosocial needs of the mentally ill living in local communities were not adequately addressed. Efforts at rehabilitation were at best partially effective, if at all. This policy failure has been attributed to such factors as underfunding, new challenges (e.g., rampant substance abuse) and high rates of noncompliance with medication regimens and treatment programs [54-56].

The Assertive Community Treatment model was created in the 1970s by a Wisconsin mental health team to address policy and implementation issues in a proactive and comprehensive manner [25]. And there has been an ongoing attempt to create a responsive community men-

tal health policy and delivery system. New York State's Assertive Community Treatment (ACT) program, started in 2003 as a belated response to the Webdale/Goldstein tragedy, was born out of collaboration among various community mental health agencies and clients. Observers have noted that there were numerous pleas from the Coalition to start an ACT program well before the murder. Yet it is only recently that ACT has been regularly used as a middle ground between policies of either forced or no treatment for patients experiencing more acute manifestations of mental disability [51,57,58]. Offshoot projects such as the Collaborative Mental Health Initiative have also been created to implement policy and programs that acknowledge and respond to the experiences and needs of the mentally disabled.

To help clients achieve meaningful goals, ACT has accepted a consumer-centered approach to its policies and efforts, very much in contrast to programs based on institutional structures (e.g., homeless shelters, detoxification centers). Goals are expressed in terms of vocational achievement, adequate housing and interpersonal relationships.

Central ACT criteria include:

- 1) Provision of targeted services to the severely mentally ill;
- 2) Provision of direct services through treatment teams rather than outside clinicians;
- 3) A small staff-to-client ratio (1:10 or less);
- 4) Shared team responsibilities so that clients receive attention from multiple staff members;
- 5) Individualized treatment and support;
- 6) Comprehensive and flexible services;
- 7) Administration of most treatments and services outside of clinical settings;
- 8) No time limit on services;
- 9) Service delivery 24 hours/7 days per week; and
- 10) Focus on patients' individual strengths and needs.

Based on innovative and responsive developments in the realm of social policy, ACT teams deliver flexible treatment, rehabilitation, case management and support services to individuals with mental illness whose needs have not been adequately met by traditional service delivery approaches. According to Herinckx *et al.* [59], the results of approximately 25 controlled trials have demonstrated the clinical- and cost-effectiveness of the ACT program. Although evidence-based practices are helpful in terms of program quality, their uniform standards frequently overlook local needs and variations. Thus, too much fidelity to structure can diminish the creativity that ACT requires to evolve and maintain its effectiveness.

7. Ongoing Development of Social Policy and Community Treatment

The fight for civil rights is an ongoing struggle on the part of any groups oppressed by institutions and ideolo-

gies that ignore unique histories, cultural formations, individual and family identities, and the needs of those groups to be adequately represented within a daily societal context. Since the beginning of the civil rights movement, middle-class values clearly legitimate and regulate the cultural hierarchies that demean marginalized groups and reinforce racial, economic and ableistic inequalities—often reflected in the very legislation that targets their struggles. Since the civil rights movement began, middle-class values have been at the top of the cultural hierarchy that dictates and validates the legislation that targets marginalized groups, so that demeaning racial, economic and ableistic inequalities may be reinforced by the same legislation that purports to remedy them. In the struggle for equality, the institutional forms of domination that affect the lives of the disabled cannot be separated from the cultural ones. It should come as no surprise, to anyone familiar with civil rights movement history, that the same dynamics that all historically oppressed groups play out continue within the policies and interventions aimed at individuals with mental and physical disabilities.

Treating mentally ill people without their consent is currently the most contested human rights issue in mental health law and policy. Although 40 jurisdictions in the U.S. have statutes nominally authorizing outpatient commitment (in other words, legal orders to adhere to prescribed community treatment), until recently only a few states have vigorously promoted and enforced such laws [23,55]. National interest in outpatient commitment soared with Kendra’s Law and the 2003 enactment of “Laura’s Law” in California—also named after a young woman killed by a mentally ill person who had not received treatment. Many states are now involved in an emotionally charged, take-no-prisoners battle between advocates of “assisted treatment” (the term preferred by proponents of outpatient commitment) and advocates of “leash laws” (a less flattering term).

Almost every American community has a subpopulation of mentally ill individuals who interact with public agencies and institutions—public housing authorities, social welfare agencies, community mental health centers, public hospitals, substance abuse programs, police departments, courts and the prisons. The increasing number of these people—often labeled “revolving-door patients”—has been attributed variously to more restrictive criteria for involuntary commitment, the limited availability of effective inpatient care, a paucity of effective community-based services and a lack of community support programs [8,60,61], as well as, more recently, the impact of trauma for veterans of the war in Iraq [62]. This population would benefit from responsive legislation built on, and sustained in part by, input from its beneficiaries.

There has always been a fine line between assertive

help-giving practices and oppressive tendencies in this country’s mental health delivery system—especially in large urban centers such as New York City. The effort to create responsive social policies to address the community mental health system—that simultaneously contain the potential for violence and disorder and effectively address the burdensome needs of the mentally disabled—is a narrative of one hand giving and the other taking away. That is, mid-19th century incarceration followed by early-20th century institutionalization, followed by late-20th century deinstitutionalization mandated recapture (e.g., Kendra’s Law) and currently a collaborative approach that includes the voices of “consumers” in such programs as ACT.

The central point of this narrative is an area often overlooked by social justice and cultural theorists; even those who effectively address oppression and discrimination issues along race, class and gender lines. When *ableism* drives interventions for “social justice”—especially for people oppressed and discriminated against for mental disabilities—the contradictions it brings with it are seldom noticed. With a few notable exceptions [e.g., 63-65], the invisibility of the conflict means that social justice discourse (and the social policies it stimulates) do not consider how race, class, gender and sexual orientation issues are also part of the disabled population equation. That oversight then reinforces oppressive and discriminatory practices against the disabled in the very social institutions and policies meant to serve them.

8. Conclusions

As long as we live in a culture that develops and implements repressive social policies, we are all culpable for the oppressive behaviors that such policies support. Don DeLillo speaks to this point in his novel *The Names*, when he writes that “Those who engaged knowingly were less guilty than the people who carried out their designs. The unwitting would be left to ponder the consequences, to work out the precise distinctions involved, the edges of culpability and regret” [66]. Our attempts to redress discrimination are shaped by the very philosophies that cause the discrimination in the first place—the philosophies that exist both to embody and contain our anxieties about frightening social problems, and to unburden us from those anxieties.

Researchers in the Global Burden of Disease Project (GBD) have predicted that by 2020, five of the top 10 “disease burdens” the world will be addressing will be related to mental disabilities [8,67]. Even in an organization like GBD, this is an unfortunate lumping together of mental disability categories; it reduces them to a societal burden as the ableistic and other discriminatory practices do and perpetuates the use of disabled people as scapegoats for societal malfunctions. Reductionistic appro-

aches to people with mental illness—approaches that ignore the facts of complex circumstances, multiple identities, various etiologies and personal struggles—make them easy targets for fearful projections (e.g., breakdowns, violence, instability) within the general population. In its worst form, this process represents a “victim-blaming ideology” [46] that casts doubts on the legitimate rights of oppressed groups and supports cut-backs in, or the elimination of, institutions meant to provide services for them.

Henry Giroux argues that “Domination is never total in its effects; contradictions arise within all public spaces, even those that appear most oppressive” [42]. It seems as though the further we move from social investment, the closer we come to policies of social domination or containment in which state services are reduced to the repressive functions of discipline, control and surveillance [6,45,68-72]. One important focus for challenging the effects of this kind of domination is the creation of *responsive* communities and policies that can address the unique circumstances of individuals in need of mental health services.

The ACT program and offshoot projects such as the Collaborative Mental Health Initiative exemplify how it is possible to address the needs of groups too frequently overlooked in social justice discourses. When we look beyond the language of individual pathology to the more threatening issue of how we treat marginalized *populations*, we expose frighteningly the degree to which many people in this society still lack the security and resources they need for safety, empowerment and well-being.

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Does Child Maltreatment Mediate Family Environment and Psychological Well-Being?

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ABSTRACT

This study tried to establish if childhood maltreatment mediates the established relationship between family environment and psychological well-being, in a sample of Maltese university students (N = 312). However, our analysis suggested partial mediation only. Moreover, results indicated that abusive families are less loving, socially integrated, organized, and more conflicted. Family environment contributed positively, albeit limited, to cognitive well-being after controlling for child abuse history. In particular, cohesion, do add unique variance to subjective well-being, after controlling for child abuse. This study replicates classic research on the important role that family environment plays in children's holistic development.

Keywords: Childhood Maltreatment, Family Environment, Well-Being

1. Introduction

The past focus on human deficiencies has only served to present a “half-baked” psychology [1]. Psychology needs to start getting seriously concerned with the qualities and experiences that make life most worthwhile. Gillham and Seligman [1] point at the sterling work of Rachman [2,3] who helped launch a systematic science of human strengths, in view of his experience with various clients with debilitating emotional disorders and past traumas. Positive psychology requires such strides to balance what has been a one-sided view of human being.

Life's crises challenge our deepest beliefs and assumptions: that good people are somehow immune of bad things, that life always makes sense, and that we are in control in whatever happens. Calhoun and Tedeschi [4] found that for most people, life's crisis ultimately lead to what he calls “post-traumatic growth”. After one's basic assumptions are shattered, a new framework is constructed. Campbell, Brunch, & Foster [5] call this phenomena “ego shock”. Such negative events could potentially evaporate instantly our old habits, self-perceptions and assumptions, leaving only the raw experience of the world.

One such crisis is childhood maltreatment. Research consistently indicates a complex and difficult reality for victims of such trauma. To fully understand the impact of child abuse, key variables need be taken into consideration and evaluated for their contribution. Most impor-

tantly, this paper looks at family environment, the incidence, reality, and impact of childhood abuse in Malta, and the consequences of such trauma on one's subjective well-being.

1.1 Family Environment and Psycho-Social Development

Studies suggest that a key variable for a child's normal development is family environment. Family environment is not just the physical aspect under which children live and grow, but also other relevant factors that affect one's developmental process, such as parental styles and dynamics. Finkelhor and Browne [6] found that the family environment was the context where most of the reported child abuse cases occur. Moreover, Finkelhor [7,8] showed that not only is the family context part of such trauma, but that the perpetrator is often known to the victims.

Scarr [9] stressed that except in extreme cases of abused and at-risk children, environmental experiences play a minimal role in influencing children's cognitive and socio-emotional development. To the contrary, Baumrind [10] found that the environment does have an important role in children's development. Thus parents should not be punitive or aloof, but promote their children with consistent rules along with considerable affection. Baumrind's argument is credible in light of attachment research.

Bowlby [11,12] and Ainsworth [13] spoke of the importance of secure attachment in infancy for normal development. Staying in physical proximity to the primary caregiver helps the child satisfy essentials for survival, such as nourishment and self-defense. They further characterized the importance of reliable care-givers during infancy in two respects: a safe haven in times of distress and a secure base for exploring one's environment. This safety zone helps the child to develop and face life's challenges positively. The contact comfort received from such a secure environment helps the child to develop the resiliency that is critical for survival [14]. Darling and Steinberg [15] also stressed the important implications of parenting styles. Research classifies parenting styles in two directions: 1) a combination of warmth, nurturance, acceptance and responsiveness, defined by parental empathy and closeness, and 2) a demand and control family dynamic, defined by parental neglect and indifference [10]. The first parenting style is the optimal one [16].

1.2 Child Abuse and Related Variables

Abuse may lead to people engaging in various defense mechanisms, repressing the trauma for example so that life can move on. Dickie *et al.* [17] found that worse effects seem to occur when the abuser is the primary care-giver/parent. Children need to find ways to make sense of their trauma. They may internalize their guilt and feel rejected, sinful, unclean, or even ignored by a deity.

Using Bowlby's attachment theory [11], in which individuals are not passive but active in constructing and maintaining close relationships, Kirkpatrick and Shaver [18,19] indicated that God may serve as a "perfect" substitute attachment figure for people with histories of avoidant attachment. Child abuse may be a potential reason for such avoidance. They speculated that the need for attachment is life-long. Kane, Cheston and Greer [20] considered this element important in that "transference might easily occur in a child's mind from father the abuser to God the Father". In related studies, spirituality but not religiosity predicted subjective well-being [21,22].

Besides attachment and spirituality, two key and related variables are family conflict and cohesion. Meyerson, Long, Miranda, and Marx [23] found that family conflict and cohesion are risk factors for the development of psychological distress and depression in adolescence, and therefore they suggest the particular study of these two variables for a more holistic appreciation and better understanding. Various researchers suggest the inclusion of other important variables when focusing on childhood maltreatment, as it never occurs in a vacuum [24,25].

Moreover, patriarchal family systems, which are prevalent in Western countries including Malta, are positively correlated to childhood maltreatment [26]. Other studies suggested the negative prediction of patriarchal

systems on the well-being of family members [27,28]. This is more important in a small country like Malta, with its closely-knit family systems, and under a strong influence by a dominant Catholic faith [29,30].

1.3 The Reality in Malta

This study focused on the experience of childhood trauma in Malta, specifically among a sample of university students. Malta, a tiny republic island in the Mediterranean Sea, with a rich history dating back to thousands of years, has been highlighted in a recent document by the United Nations on children's welfare. The U.N. document [31] called for the urgent need for a comprehensive assessment and public policy decisions regarding this problem. Malta does not have the necessary resources to protect children from child abuse, nor any mandatory reporting laws. Galea reiterates that statistics are scarce, and child protective services are still in their infancy [22]. More awareness and research is required for better and timely response.

Galea *et al.* [29] surveyed Maltese university students on various aspects of childhood trauma and found that almost 11% qualified as severely abused. Interestingly, he indicated that spirituality may serve also as a potential resource in treating victims of childhood maltreatment.

To help further clarify the reality of childhood trauma, this study seeks to know whether family environment gives any additional value to well-being, after controlling other key variables, among Maltese students. The purpose of this study, therefore, was to measure the relationship and the interplay between childhood maltreatment with relevant variables, such as family environment, subjective well-being and others. This study hypothesized that the family background of victims must be conducive to abuse. Thus, such environments would correlate to high family conflict and low cohesion. Moreover, this study sought to clarify the exact nature of relationships between the key variables at play. Finally, this study intended to seek any possible mediator variable effect/s among the key variables, predicting subjective well-being.

Given the lack of relevant studies on this reality in Malta, this study could serve to further related studies among the general population, intended to highlight the incidences and relationships among such important variables to one's psycho-social well-being after trauma. As an overall summary therefore, this chapter looked at research findings on the potential implications of early attachment and family dynamics on the psycho-social well-being of young individuals.

2. Methods

2.1 Participants

The participants in this study were undergraduate stu-

dents from the Mediterranean island of Malta. Overall, the study sampled 800 students. From a response rate of 39%, there were 214 female (69%), and 98 male respondents (31%). The age of the participants ranged from 18 to 25 years old (Mean = 20.45, SD = 2.37). The religious orientation of the respondents consisted of: 97.1% Roman Catholic, 0.6% Protestant, and 2.2% no religion defined.

2.2 Measurements

The Family Environment Scale (FES). Developed by Moos and Moos [32], this is a 90-item, True-False instrument, paper and pencil measure intended to look at the social and environmental characteristics of families. The FES is based on a three-dimensional conceptualization of families, with related subscales: 1) Relationship, 2) Personal growth, and 3) System-Maintenance dimension. The Relationship dimension consisted of Cohesion, the degree of commitment, help, and support family members provide for one another (e.g., "Family members really help and support one another"); Expressiveness, the extent to which family members are encouraged to express their feelings directly (e.g., "We say anything we want to around home"); and Conflict, the amount of openly expressed anger and conflict among family members (e.g., "We fight a lot in our family").

The Personal Growth dimension consisted of Independence, the extent to which family members are assertive and self-sufficient, (e.g., "We think things out for ourselves in our family"); Achievement orientation, how much activities are cast into an achievement-oriented or competitive framework (e.g., "We feel it is important to be the best at whatever you do"); Intellectual-Cultural orientation, the level of interest in political, intellectual, and cultural activities (e.g., "We often talk about political and social problems"); Active-Recreational orientation, the amount of participation in social and recreational activities (e.g., "Friends often come over for dinner or to visit"); and Moral-Religious emphasis, the emphasis on ethical and religious values (e.g., "We don't say prayers in our family"). The System Maintenance dimension consisted of Organization, the degree of importance of clear organization and structure in planning family activities and responsibilities (e.g., "We are generally very neat and orderly"); and Control, how much set rules and procedures are used to run family life (e.g., "There are very few rules to follow in our family").

In this sample, alpha reliabilities for the scales constituting the three dimensions of Relationship, Personal Growth, and System Maintenance ranged from: 0.63 to 0.74, 0.34 to 0.66, and 0.56 to 0.63, respectively. Due to the low alphas of Personal Growth and System Maintenance dimensions in this analysis, they were removed from this study, despite their benefit in other related studies [33].

Internal consistency reliability estimates presented in the manual ranged from 0.61 to 0.78. As for normative values, the inter-correlations among the 10 subscales ranged from -0.53 to 0.45, suggesting that different family characteristics are measured with reasonable consistency [34]. Test-retest reliabilities were found reasonably stable across three intervals within one-year period. Face and content validity of the instrument are supported by the clear statements relating to the 10 subscale domains. Construct validity was also found through comparative descriptions of distressed and normal family samples, as shown in the manual.

Satisfaction with Life scale (SWLS). Well-being was examined from the cognitive well-being component. The Satisfaction with Life Scale (SWLS), developed by Diener, Emmons, Randy and Griffin [35], is a 5-item simple scale that measures life satisfaction and cognitive well-being. Pavot and Diener [36] have consistently found the internal consistencies of the SWLS and alpha coefficients as exceeding 0.80. Test-retest correlation coefficients were found at 0.89. The alpha reliability of the Maltese sample was found to be at 0.95.

Childhood Trauma Questionnaire. The Childhood Trauma Questionnaire (CTQ) is a 28-item Likert-scale, which captures a history of child abuse and neglect across multiple dimensions [37]. Five subscales form the CTQ: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. The alpha reliabilities for the Maltese sample are 0.82, 0.77, 0.93, 0.83, and 0.46 respectively.

For the purpose of this study, an overall composite abuse index score was created based on the total scores of the five sub-scales. This composite score was then reciprocally transformed to meet the assumptions of normal distribution. In this sample 11% of respondents fell in the severe abuse and neglect range while 25% qualified as moderately abused. These percentages are highly similar to rates in the United States based on the studies that validated the CTQ [38].

2.3 Procedure

The questionnaires were mailed to participants who were randomly selected from among a pool of students who volunteer for such surveys.

3. Results

3.1 Hypothesis Testing

Table 1 presents the means, standard deviations, and alpha reliabilities for the study variables. Pearson *r* correlations suggested that abusive families tend to be low on cohesion, expressiveness, intellectual-cultural emphasis, organization, and on moral-religiousness. These family environments seem also to be exposed to high conflict, as was hypothesized.

Table 1. Descriptive statistics for study variables

Variable	M	SD	Range
Age	20.45	02.37	18-25
Cognitive well-being	23.66	06.59	06-35
Positive effect	3.14	1.32	0-5
Negative effect	2.37	1.57	0-5
Total abuse	21	72	0-5
Cohesion	21.52	15.36	04-65
Expressiveness	46.85	04.47	38-58
Conflict	62.58	10.77	33-80
Independence	24.43	13.06	03-53
Achievement	35.50	10.47	16-65
Intellectual	41.56	12.57	19-69
Active-reactive	47.04	10.72	23-69
Moral	42.75	09.30	27-66
Organizational	37.05	10.80	21-69
Control	51.30	11.07	27-76

N = 312

What about the family profile of a person with a history of child abuse? Abuse negatively correlated with cohesion ($r(310) = -0.40, p < 0.001$), expressiveness ($r(310) = -0.30, p < 0.001$), intellectual-cultural orientation ($r(310) = -0.20, p < 0.001$), moral-religious emphasis ($r(310) = -0.22, p < 0.001$), and a sense of organization ($r(310) = -0.23, p < 0.001$). As expected, abuse correlated positively with conflict ($r(310) = 0.41, p < 0.001$). Therefore, results suggest a family profile with a history of child abuse as being: low in cohesion and expressiveness, and high in conflict. These indicate a family dysfunction which evidently is not a promising and positive environment for the normal psycho-emotional development of children, let alone for those already scarred by abuse.

3.2 Mediator Variable Effect

The next step in our analysis concerned the main hypothesis of the study, that of the possibility of a mediator variable effect. One typically looks for mediators if there already is a strong relation between a predictor and an outcome and one wishes to explore the mechanisms behind that relation. More specifically, a mediator is defined as a variable that explains the relation between a predictor and an outcome [39]) variable. The mediator is the mechanism through which a predictor influences an outcome variable [39]. According to this method, there are four steps (performed with three regression equations) in establishing that a variable (e.g., child abuse) mediates the relation between a predictor variable (e.g., family) and an outcome variable (e.g., well-being).

Baron & Kenny [39] explain that a variable functions as a mediator when it meets certain conditions, namely: (a) the independent variable (IV) impacts the mediator variable (MV) in the first equation (path a), (b) the IV impacts the dependent variable (DV) in the second equation (path c), (c) the MV impacts the DV in the third equation (path b), (d) if (a), (b), and (c) all hold in the predicted direction, then the effect of the IV on the DV must be less in the third equation than in the second (path c'). A perfect mediation is said to occur when this is reduced to zero. Otherwise, it is a partial mediation. The mediator variable, then, serves to clarify the nature of the relationship between the independent and dependent variables. Results are shown in **Table 2**.

Table 2 shows the results of the conditions sought to establish mediation. In the first equation, the independent variable (family environment) affected the mediator variable (child abuse): $r(310) = 0.18, p < 0.001$. In the second equation, family environment impacted the outcome or dependent variable (cognitive well-being): $r(310) = -0.28, p < 0.001$. Child abuse impacted the out-

Table 2. Testing mediator effects using multiple regression

Testing steps in mediation model	B	SE B	95%	CI	β
Testing Step 1 (Path a)					
Outcome: child abuse					
Predictor: family environment	0.05	0.01	0.02	0.07	0.18**
Testing Step 2 (Path c)					
Outcome: cognitive well-being					
Predictor: family environment	-0.19	0.04	-0.27	-0.12	-0.28***
Testing Step 3 (Path b and c')					
Outcome: cognitive well-being					
Mediator: child abuse					
Predictor: family environment	-0.16	0.04	-0.23,	-0.09	-0.23***

Note. CI = Confidence Interval; ** $p < 0.01$, *** $p < 0.001$

come variable (cognitive well-being): $r(310) = -0.23$, $p < 0.001$. Results thus indicate only a partial mediation. The Statistical Mediation Model is shown in **Figure 1**.

The partial drop from -0.19 to -0.16 (*i.e.* from path c to c') could explain that child abuse partially mediates the relation between well-being and family. In terms of causation, a fairly strong argument can be made that family environment (predictor variable) preceded both child abuse (mediator variable) and well-being (outcome variable). However, it could be the case that individuals who are suffering from poor well-being (outcome variable) symptoms are more likely to be abused (*i.e.*, that the outcome causes the mediator). In fact, in testing this alternative model, well-being also was a significant mediator of the relation between family and child abuse.

Thus, there are alternative models that are consistent with the data. This study also did not control for other factors that may be related to or cause both family environment and child abuse, such as key personality traits like neuroticism. Thus, all we can say at this point is that our data are consistent with models in which child abuse causes poor well-being, and poor well-being causes abuse. We also must acknowledge that the mediation relations we found might not have been evident if other variables that cause both family environment and child abuse had been included in the model. In conclusion, these results continue to indicate the relevance of family variables to well-being.

4. Discussion

Results indicated that child abuse as the mediator variable partially mediates the established relationship between family environment and psychological well-being. Thus, the main hypothesis of this study was partially approved.

Family environment contributed positively to cognitive well-being after controlling for child abuse history. In particular, cohesion does add unique variance to sub-

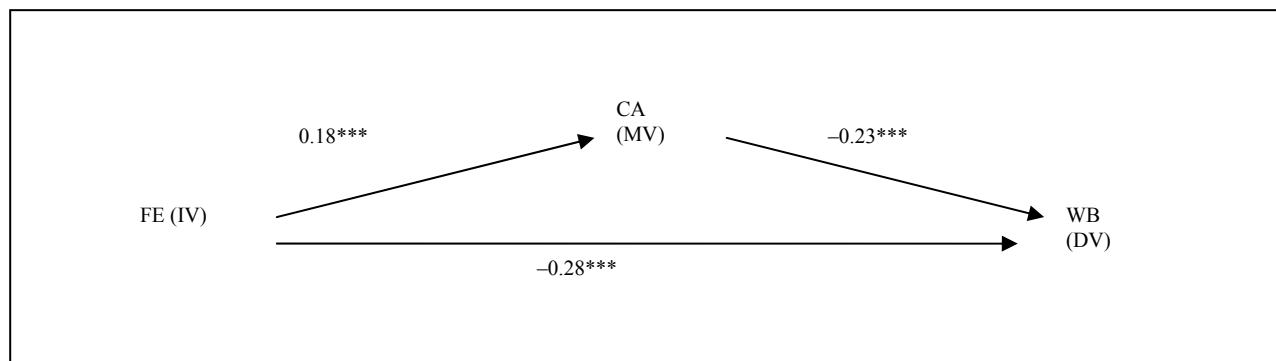
jective well-being, over and above the contribution of abuse.

That dysfunctional family environments are related to childhood trauma, and to later psychological problems, is well documented in research [40,41]. Families who score on low cohesion, expressiveness, intellectual-cultural orientation, moral-religiousness, organization, and high conflict significantly correlate with child abuse and neglect. This study replicates classic studies indicating the important role the family environment plays in children's development [10,42]. Moos and Moos [34] found that abusive families are less loving, socially integrated, and organized. This finding is consistent with the conclusions of the present research.

Although some researchers [15] found a strong positive correlation between child abuse and a rigorous and strictly organized family environment, this was not supported in this study. Moreover, Moos and Moos [34] also indicated that family dysfunction defined as less supportive, socially integrated, and organized, was associated with sexual abuse. Findings in this study indicated no such links between sexual abuse and any of the Family Environment Scales. On the other hand, this study does confirm other research by Moos and Moos [34] whereby abusive families are less loving, socially integrated, and organized.

From a pastoral perspective, therapists who add to their valuable resources key family variables such as cohesion, self-expression and control, will increase their possibilities to arrive at a more holistic evaluation of their clients. This is well grounded in research [23,40], as well as attachment theoretical studies [10,13], as indicated previously.

Finally, repetitive family dysfunction highlighted by high levels of conflict and abuse, can create an atmosphere of learned helplessness. Abramson, Sehgan, and Teasdale [43] proposed that early experience of learned helplessness leads to a cognitive set that predisposes to later depression.



$N = 312$. FE = family environment (independent variable); CA = child abuse (mediator variable); WB = psychological well-being (dependent variable). *** $p < 0.001$

Figure 1. Statistical mediation model

4.1 Limitations

This study was a sample of convenience among university students. Participants were randomly selected by computer, thus containing at least one aspect of participants' self-selection. The cross-sectional nature of the design limits causal inferences. Moreover, the study's reliance upon self-reported and recalled data may have introduced sources of error. The internal reliability of the FES, a key variable measure in this research, which was used to measure family environment, was another limitation, despite opting to use only the best and highest dimension, that of Relationship, which ranged from 0.63 to 0.74.

On the positive side, this study had a relatively large sample size, and was done in a country in which such research is still in its infancy. To this end one hopes that similar studies take the lead from this one and delve deeper into the stark reality of childhood maltreatment. Results from this study continue to confirm other related studies elsewhere on the difficulties in the psycho-social development of victims. Moreover, it continues to highlight the input given by certain variables, which would give a better picture when included in the equation.

4.2 Conclusions

Results from this study continue to add to the existing literature on the importance that family variables have on the psycho-emotional well-being and development of young people. This becomes clearer in view of a history of child abuse and neglect. More specifically, cohesion, emotional self-expressiveness and conflict require particular assessment, when evaluating persons with child abuse history, and when planning therapeutic programs and strategies. The study strongly suggests that the inclusion of family environment offers a better and more holistic perspective on the reality of child abuse and its consequences.

This is the next step in the Maltese scenario. Malta has long been grounded on cohesive families, supported by strong traditional and religious past. However, the effects of globalization are fast gaining pace, with not so positive consequences on such a vital cell within society. Moreover, lack of awareness of the scope of child abuse may further the weakening of the family structure, creating with it a conspiracy of silence that prevents timely action and prevention [44].

Hopefully, studies such as this one may encourage more social alertness, backed up by an appropriate legal framework to help protect victims while preventing perpetrators from pursuing their evil pursuits. It is therefore hoped that this study encourages a drive towards a deeper and more rigorous look into the aftermath of childhood trauma in a culture, which has long been overshadowed by complacency and silence. Specifically, stronger and

clearer legislation, mandatory reporting laws, and availability of professional assistance and education are areas that require serious consideration. The present study can assist in educating people as to the extent, nature, and impact of child abuse in Malta. Besides protecting children, related research will continue to shed more light on the reasons and profiles of perpetrators, who should not be ignored in order to evaluate a more objective appraisal of the reality of child abuse.

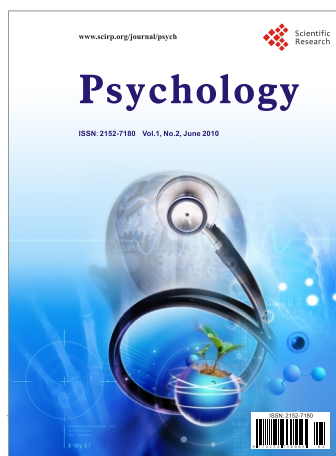
Focusing the research among university students may have been the easiest to reach and study as a start. However, this study opens up an immediate requirement to further it among the general population for more appraisal of this painful reality. Child abuse is a social evil, with dire effects that shroud one's personality and emotional development. Such future research furthermore request the inclusion of key variables such as family environment and subjective-well being, in light of their close affinity to the trauma in focus

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