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The Recognition of Affective Attunement by Adolescents

by

Danica Hrynchak

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Theology 0469

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Anthropology
- Archaeology 0324
- Cultural 0326
- Physical 0327

Business Administration
- General 0310
- Accounting 0272
- Banking 0770
- Management 0454
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Canadian Studies 0385
Economics
- General 0501
- Agricultural 0503
- Commerce-Business 0505
- Finance 0508
- History 0509
- Labor 0510
- Theory 0511

Folklore 0358
Geography 0366
Gerontology 0351
History
- General 0578
- Ancient 0579
- Medieval 0581
- Modern 0582
- Black 0328
- African 0331
- Asia, Australia and Oceania 0332
- Canadian 0334
- European 0335
- Latin American 0336
- Middle Eastern 0333
- United States 0337

History of Science 0585
Law 0398
Political Science
- General 0615
- International Law and Relations 0616
- Public Administration 0617

Recreation 0814
Social Work 0452
Sociology
- General 0626
- Criminology and Penology 0627
- Demography 0938
- Ethnic and Racial Studies 0631
- Individual and Family Studies 0628
- Industrial and Labor Relations 0629
- Public and Social Welfare 0630
- Social Structure and Development 0700
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Transportation 0709
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Women's Studies 0453

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Agriculture
- General 0473
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- Food Science and Technology 0359
- Forestry and Wildlife 0478
- Plant Culture 0479
- Plant Pathology 0480
- Plant Physiology 0817
- Range Management 0777
- Wood Technology 0746

Biology
- General 0306
- Anatomy 0287
- Biostatistics 0308
- Botany 0309
- Cell 0379
- Ecology 0329
- Entomology 0353
- Genetics 0369
- Limnology 0793
- Microbiology 0410
- Molecular 0307
- Neuroscience 0317
- Oceanography 0416
- Physiology 0433
- Radiation 0821
- Veterinary Science 0778
- Zoology 0472

Biophysics
- General 0786
- Medical 0760

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Geochemistry 0996
Geodesy 0370
Geology 0372
Geophysics 0373
Hydrology 0388
Mineralogy 0411
Paleobotany 0345
Paleoecology 0426
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Paleozoology 0985
Palynology 0427
Physical Geography 0368
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- Audiology 0300
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- Education 0350
- Hospital Management 0769
- Human Development 0758
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- Nursing 0569
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- Obstetrics and Gynecology 0380
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- Ophthalmology 0381
- Pathology 0571
- Pharmacology 0419
- Pharmacy 0572
- Physical Therapy 0382
- Public Health 0573
- Radiology 0574
- Recreation 0575
- Speech Pathology 0460
- Toxicology 0383

Home Economics 0386

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- General 0485
- Agricultural 0749
- Analytical 0486
- Biochemistry 0487
- Inorganic 0488
- Nuclear 0738
- Organic 0490
- Pharmaceutical 0491
- Physical 0494
- Polymer 0495
- Radiation 0754

Mathematics 0405
Physics
- General 0605
- Acoustics 0986
- Astronomy and Astrophysics 0606
- Atmospheric Science 0608
- Atomic 0748
- Electronics and Electricity 0607
- Elementary Particles and High Energy 0798
- Fluid and Plasma 0759
- Molecular 0609
- Nuclear 0610
- Optics 0752
- Radiation 0756
- Solid State 0611

Statistics 0463

Applied Sciences
Applied Mechanics 0346
Computer Science 0984
Engineering
- General 0537
- Aerospace 0538
- Agricultural 0539
- Automotive 0540
- Biomedical 0541
- Chemical 0542
- Civil 0543
- Electronics and Electrical 0544
- Heat and Thermodynamics 0348
- Hydraulic 0545
- Industrial 0546
- Marine 0547
- Materials Science 0794
- Mechanical 0548
- Metallurgy 0743
- Mining 0551
- Nuclear 0552
- Packaging 0549
- Petroleum 0765
- Sanitary and Municipal 0554
- System Science 0790

Geotechnology 0428
Operations Research 0796
Plastics Technology 0795
Textile Technology 0994

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General 0621
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Enseignement primaire. 0524
Enseignement professionnel 0747
Enseignement religieux 0527
Enseignement secondaire 0533
Enseignement spécial 0529
Enseignement supérieur 0745
Évaluation 0288
Finances 0277
Formation des enseignants 0530
Histoire de l'éducation 0520
Langues et littérature 0279
Lecture 0535
Mathématiques 0280
Musique 0522
Orientation et consultation 0519
Philosophie de l'éducation 0998
Physique 0523
Programmes d'études et enseignement 0727
Psychologie 0525
Sciences 0714
Sciences sociales 0534
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- Généralités 0679
- Anciennes 0289
- Linguistique 0290
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- Généralités 0401
- Anciennes 0294
- Comparée 0295
- Médiévale 0297
- Moderne 0298
- Africaine 0316
- Américaine 0591
- Anglaise 0593
- Asiatique 0305
- Canadienne (Anglaise) 0352
- Canadienne (Française) 0355
- Germanique 0311
- Latino-américaine 0312
- Moyen-orientale 0315
- Romane 0313
- Slave et est-européenne 0314

PHILOSOPHIE, RELIGION ET THÉOLOGIE
Philosophie 0422
Religion
- Généralités 0318
- Clergé 0319
- Études bibliques 0321
- Histoire des religions 0320
- Philosophie de la religion 0322

Théologie 0469

SCIENCES SOCIALES
Anthropologie
- Archéologie 0324
- Culturelle 0326
- Physique 0327

Droit 0398
Économie
- Généralités 0501
- Commerce-Affaires 0505
- Économie agricole 0503
- Économie du travail 0510
- Finances 0508
- Histoire 0509
- Théorie 0511

Études américaines 0323
Études canadiennes 0385
Études féministes 0453
Folklore 0358
Géographie 0366
Gérontologie 0351
Gestion des affaires
- Généralités 0310
- Administration 0454
- Banques 0770
- Comptabilité 0272
- Marketing 0338

Histoire
- Histoire générale 0578
- Ancienne 0579
- Médiévale 0581
- Moderne 0582
- Histoire des noirs 0328
- Africaine 0331
- Canadienne 0334
- États-Unis 0337
- Européenne 0335
- Moyen-orientale 0333
- Latino-américaine 0336
- Asie, Australie et Océanie 0332

Histoire des sciences 0585
Loisirs 0814
Planification urbaine et régionale 0999
Science politique
- Généralités 0615
- Administration publique 0617
- Droit et relations internationales 0616

Sociologie
- Généralités 0626
- Aide et bien-être social 0630
- Criminologie et établissements pénitentiaires 0627
- Démographie 0938
- Études de l' individu et de la famille 0628
- Études des relations interethniques et des relations raciales 0631
- Structure et développement social 0700
- Théorie et méthodes. 0344
- Travail et relations industrielles 0629

Transports 0709
Travail social 0452

SCIENCES ET INGÉNIERIE

SCIENCES BIOLOGIQUES
Agriculture
- Généralités 0473
- Agronomie. 0285
- Alimentation et technologie alimentaire 0359
- Culture 0479
- Élevage et alimentation 0475
- Exploitation des pâturages 0777
- Pathologie animale 0476
- Pathologie végétale 0480
- Physiologie végétale 0817
- Sylviculture et faune 0478
- Technologie du bois 0746

Biologie
- Généralités 0306
- Anatomie 0287
- Biologie (Statistiques) 0308
- Biologie moléculaire 0307
- Botanique 0309
- Cellule 0379
- Écologie 0329
- Entomologie 0353
- Génétique 0369
- Limnologie 0793
- Microbiologie 0410
- Neurologie 0317
- Océanographie 0416
- Physiologie 0433
- Radiation 0821
- Science vétérinaire 0778
- Zoologie 0472

Biophysique
- Généralités 0786
- Medicale 0760

SCIENCES DE LA TERRE
Biogéochimie 0425
Géochimie 0996
Géodésie 0370
Géographie physique 0368
Géologie 0372
Géophysique 0373
Hydrologie 0388
Minéralogie 0411
Océanographie physique 0415
Paléobotanique 0345
Paléoécologie 0426
Paléontologie 0418
Paléozoologie 0985
Palynologie 0427

SCIENCES DE LA SANTÉ ET DE L'ENVIRONNEMENT
Économie domestique 0386
Sciences de l'environnement 0768
Sciences de la santé
- Généralités 0566
- Administration des hôpitaux 0769
- Alimentation et nutrition 0570
- Audiologie 0300
- Chimiothérapie 0992
- Dentisterie 0567
- Développement humain 0758
- Enseignement 0350
- Immunologie 0982
- Loisirs 0575
- Médecine du travail et thérapie 0354
- Médecine et chirurgie 0564
- Obstétrique et gynécologie 0380
- Ophtalmologie 0381
- Orthophonie 0460
- Pathologie 0571
- Pharmacie 0572
- Pharmacologie 0419
- Physiothérapie 0382
- Radiologie 0574
- Santé mentale 0347
- Santé publique 0573
- Soins infirmiers 0569
- Toxicologie 0383

SCIENCES PHYSIQUES
Sciences Pures
Chimie
- Généralités 0485
- Biochimie 487
- Chimie agricole 0749
- Chimie analytique 0486
- Chimie minérale 0488
- Chimie nucléaire 0738
- Chimie organique 0490
- Chimie pharmaceutique 0491
- Physique 0494
- PolymÇres 0495
- Radiation 0754

Mathématiques 0405
Physique
- Généralités 0605
- Acoustique 0986
- Astronomie et astrophysique 0606
- Electronique et électricité 0607
- Fluides et plasma 0759
- Météorologie 0608
- Optique 0752
- Particules (Physique nucléaire) 0798
- Physique atomique 0748
- Physique de l'état solide 0611
- Physique moléculaire 0609
- Physique nucléaire 0610
- Radiation 0756

Statistiques 0463

Sciences Appliqués Et Technologie
Informatique 0984
Ingénierie
- Généralités 0537
- Agricole 0539
- Automobile 0540
- Biomédicale 0541
- Chaleur et ther modynamique 0348
- Conditionnement (Emballage) 0549
- Génie aérospatial 0538
- Génie chimique 0542
- Génie civil 0543
- Génie électronique et électrique 0544
- Génie industriel 0546
- Génie mécanique 0548
- Génie nucléaire 0552
- Ingénierie des systèmes 0790
- Mécanique navale 0547
- Métallurgie 0743
- Science des matériaux 0794
- Technique du pétrole 0765
- Technique minière 0551
- Techniques sanitaires et municipales 0554
- Technologie hydraulique 0545

Mécanique appliquée 0346
Géotechnologie 0428
Matières plastiques (Technologie) 0795
Recherche opérationnelle 0796
Textiles et tissus (Technologie) 0794

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Généralités 0621
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Psychologie clinique 0622
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Psychologie sociale 0451
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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "The Recognition of Affective Attunement by Adolescents" submitted by Danica Hrynchak in partial fulfillment of the requirements for the degree of Master of Science.

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ABSTRACT

Current theories regarding the emotional development of children focus largely on affective regulation (e.g., Garber & Dodge, 1991) and discrete overt affective expression (e.g., Dunn, 1988). One aspect of the socioemotional development of adolescents which has not, as yet, been examined is that of affective attunement. It is defined as a process whereby individuals mutually create, match and share inner affective experiences (Stern, 1985).

Subjects were required to distinguish between people in slides experiencing a high and low state of attunement, complete a demographic questionnaire and the Affective Attunement Questionnaire (AAQ).

The results suggest that when extreme levels of attunement are used, adolescents can accurately discriminate between high and low stimulus sets. Females responded more accurately than males to the higher levels of attunement stimuli, and beliefs and behaviors as assessed by the AAQ. Responses to the AAQ were also significantly related to their recognition of attunement in the experimental stimuli.

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With warmest appreciation, I am grateful of the efforts made by my supervisor, Dr. Gregory Fouts, in the conception and execution of my research. His guidance and support throughout our lengthy discussions helped to actualize this project. Thanks also to my committee members, Dr. Keith Dobson, Dr. Bob Franken and Dr. Anita Li whose efforts and suggestions contributed to the final product.

Many people contributed to the completion of this project. I would like to thank Dr. Jos Eggermont and Dr. Jerry Ells for providing me with the necessary extension in funding which allowed me to complete my research due the unforeseen circumstances of my mother's death in the spring and also the many professors and graduate students who contributed to my education through discussions of psychology. A special thanks to Dr. Lary Mosley who's many conversations with me over the years helped to intellectually stimulate and facilitate my own conceptions of the world and this project; and to Dr. Bruce Dunn who's humor will always be remembered.

And finally, I am also grateful to my best friend, Gayle Waldner, who's encouragement, patience and understanding throughout the years supported me in ways she will never know. Her strength, wisdom and beauty is always felt.

DEDICATION

In memory of my mother,

her courage and strength will be felt forever

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

INTRODUCTION

Theorists such as Freud, Darwin and James (as cited in Garber & Dodge, 1991) have discussed in their writings the role of emotions in human life. In general, they focused upon the processes by which individuals control, express, repress, and display particular affects (i.e., of momentary duration) and emotions (i.e., of longer duration). More recently, however, there has been a resurgence of researchers who have examined the emotional development of children, specifically, the socialization practices related to emotional expression (e.g., Dunn, 1988; Vygotsky as cited in Rogoff, 1990), the processes involved in emotion regulation (e.g., Garber & Dodge, 1991; Rogoff, 1990), and their understanding and experience of emotion (e.g., Saarni & Harris, 1989; Stern, 1985). Other researchers have also examined children's discrete emotion expressions such as empathy (e.g., Eisenberg & Strayer, 1990; Strayer, 1989), attachment (e.g., Bartholomew, 1990; Campos, Barrett, Lamb, Goldsmith & Stenberg, 1983; Cicchetti, Ganiban & Barnett, 1991), and love, affection and affiliation (e.g., Zahn-Waxler, Cole & Barrett, 1991). These and other theorists, who examine the emotional development of children, continue nevertheless, to view emotion as a protean and abstruse phenomena; for example, they focus upon how emotion has structured and organized cognitive development (e.g., Campos et. al., 1983; Gordon, 1989), or the particular cognitions associated with discrete emotions, such as empathy (e.g., Strayer, 1989), instead of the emotion per se or the processes which may underlie the expression and experience of emotions (Izard, 1991). Thus, theoretically, they emphasize

cognitions and other variables (e.g., perceptions, sensations, physiological arousal) within the context of discrete emotions. Stern (1985) has proposed a socioemotional model of development which may address and exemplify how individuals acquire a template (i.e., the organization and structure of affective processing and functioning) of emotional scripts as well as which processes underlie phenomena essentially emotional in nature, such as attachment or empathy. This process is affective attunement.

Affective attunement is an important component in the socioemotional development of individuals. It is defined by Stern (1985) as a process whereby individuals develop the ability to match, share with and recognize the affective states of other people. Stern (1985) describes the ability to attune with others as arising from early parent-infant and parent-child interactions, whereby the parent matches and elaborates upon the infant's or child's affective state(s). He argues that attunement is a process through which individuals mutually create and share a "union" of inner affective experiences and is experienced by individuals as a state of affective intersubjective (i.e., the interchange and sharing of two subjective or mental experiences) focusing and complementary and/or similar nonverbal (e.g., facial, gestural, postural and vocal) cues. Affective attunement is a dynamic process of patterned affective shifts mutually created by two people which extends beyond the experience of discrete affective states or the transposition (i.e., the exchange) of feelings (Stern, 1985); during and as a result of this process, individuals experience a sense of

emotional validation (i.e., a sanction, verification, or sense of affirmation to their experience of affect). A non-psychological example may help illustrate this process. A tuning fork placed beside another tuning fork will initially go through a process of non-resonance but will ultimately reverberate at the same frequency. This is analogous to the initial non-resonance and then resonance of feelings between two individuals, which culminates ultimately in a state of synchronicity and an apex of affective matching and sharing. This is the affective attunement state, a point in time in which the cognitive responses in individuals are temporally suspended.

According to Stern (1985), there are two essential amodal elements to the process of affective attunement which are matched and shared by people, intensity and timing. Intensity refers to the strength of affect present in the interaction, whereas timing refers to the synchronicity of the affective experience. When both intensity and timing are present and shared, individuals experience a state of attunement and, consequentially, they experience a sense of emotional validation.

The ability to affectively attune with others is believed to underlie healthy long-term interpersonal and individual adjustment (Stern, 1985; Sullivan, 1953) through its development within supportive intimate relationships. Conversely, individual maladjustment and the development of certain psychopathologies (e.g., personality disorders such as Antisocial Personality Disorder, Sociopathy, and Borderline Personality Disorder; Stern, 1985) are thought to be etiologically

related to the inability of an individual to affectively attune and connect with others.

There are many aspects of affective attunement which need to be clarified in order to understand the means by which individuals acquire (or fail to acquire) emotional validation through affective attunement. The purpose of this study was to examine one such aspect, whether individuals can recognize affective attunement in others.

This introduction is organized in three sections. First, the theoretical framework for viewing affective attunement as a construct important to the socioemotional development of children will be examined. Second, issues related directly to the design of this study will be outlined, concluding with a statement of the hypothesis. Third, a review of the research addressing possible gender differences in the recognition of affective attunement will be presented, summarizing with a statement of the hypothesis.

Socialization of Affective Attunement

Research which involves the socioemotional development of children has focused upon the regulation of discrete affective expressions of infants and children by parents (e.g., Cicchetti, Ganiban & Barnett, 1989; Dodge & Garber, 1991; Campos, Barrett, Lamb, Goldsmith & Stenberg, 1983; Saarni, 1985), through reinforcement and modelling, and those arising from an emotion program which is internal and automatic (e.g., Izard, 1991; Plutchnik, 1990;

Terwogt & Olthof, 1989). Norms for specific emotions, have also been of interest to researchers (e.g., Gordon, 1989; Russell, 1989), more specifically, which emotions are culturally acceptable to be displayed (i.e., overt expression) and permissible to feel (i.e., appropriate mental reactions) at particular ages. Theorists in emotional development (e.g., Campos et. al., 1983) have examined the internal experience of emotion as well as the overt expression of emotion, and the implications or consequences of both processes which serve to structure and organize daily life.

Stern (1985) has proposed a model of socioemotional development which describes an individual's ability to affectively attune as emerging from early parent-infant and parent-child interactions. The ability to match, share and align internal affective states with others is assumed to develop from and cultivated by parents[1] who, often purposely, match and elaborate upon (i.e., go beyond the initial match of the infant's affect state by qualitatively and/or quantitatively altering his/her own expression or state) their infant's and child's affective states (Stern, 1985). Two different kinds of attunement based on a mother's motivation for a particular outcome has been suggested by Stern's (1985) research. First, affective attunement may serve the sole purpose of a parent sharing (i.e., to experience or unite with the infant affectively) in an

[1] Stern's (1985) research focuses on mother-infant and mother-child interactions and excludes father-infant interactions. Since this is also consistent with the vast majority of research in socioemotional development, the cited research reflects the examination of mother-infant research. However, it is the belief of this author that, although not as yet investigated, fathers also attune their children.

infant's internal affective experience without the intent to alter the infant's state. For example, a mother may merely match the facial expression or gestural position of a joyous infant (e.g., raised brows and smile; e.g., Camras, Malatesta & Izard, 1991) in order to be emotionally aligned with the infant. Second, affective attunement may serve to restructure the mother-infant interaction through altering the infant's affective state. That is, in order to increase or decrease the infant's affective experience and expression, the mother may change the kind and/or intensity of affect she expresses after she has initially matched the infant's affective internal expression. For example, a mother may initially match the facial expression of a distressed infant (e.g., squared open mouth, lowered brows, tightly closed eyes and raised cheeks; e.g., Camras, Malatesta & Izard, 1991), but subsequently alter her expression (e.g., closed mouth, separate brows) in an attempt to shift the infant's affective state to one which she feels is less painful (i.e., she attempts to decrease the aversiveness of the internal and/or external emotional state of her infant). To the degree that the infant shifts and matches the state of the mother, affective attunement is experienced by both the mother and the infant.

Stern (1985) has also reported the occurrence of possible misattunements in mother-infant interactions. Misattunements are proposed to occur when a mother, from the onset of the attunement process, (a) incorrectly identifies her infant's affective state and is unable to match and share in it (e.g., a mother may smile at her sad child, without initially matching the facial,

postural or gestural expression of her infant), and (b) correctly identifies her infant's affective state but is unwilling or unable to match and share in it (e.g., a chronically depressed mother who is more internally focused and isolated from her infant). Thus, the consequence of misattunement is the failure of a mother to affectively align with and validate her infant's internal state for that particular affect and intensity. It is important to note, however, that misattunements play an important role in shaping the internal affective world of the infant. Misattunements are inevitable and allow the individual to develop a growing sense of affective individuation (i.e., through the differentiations or discrepancies experienced between the internal affective world of the mother and the internal affective world of the infant) and thus, are a normal part of development.

According to Stern (1985), profound, consistent and pervasive misattunements or overattunements (i.e., in those unusual cases in which the mother attunes to all the infant's affective states all the time) may also result in psychopathology for the individual later in life (e.g., Borderline Disorder or emotional dependency; Stern, 1985). For example, a consistent and pervasive misattuning mother may retard an individual's ability to share his/her internal affective states; whereas a consistent and pervasive overattuning mother in combination with extreme overprotectiveness (i.e., a mother who is over-identified with her infant, physically hovering, etc.), may retard an individual's sense of affective individuation. This suggests that, perhaps, there is an optimal

amount of affective attunement and misattunement experiences necessary for the healthy development of an individual.

Through the alignment and possible elaboration of various affective states, parents play a predominant role in the socialization of their child's behavioral expression and internal experience of various affects (Saarni, 1989; Stern, 1985; Sullivan, 1953). As a long-term consequence, it is presumed that individuals develop a sense of affective intersubjective relatedness with others and the ability to mutually create, share and communicate their feelings meaningfully through a sense of relatedness. As a result of these experiences, it is assumed that children experience a sense of emotional validation. That is, parents convey to their infants and children which subjective experiences are sharable, and which are not, while validating and reinforcing the sharable affective internal experiences and external expressions of their children. Over time and from consistent exposure to attunement experiences, individuals acquire a repertoire or emotional template which characterizes their validated and invalidated affective experiences. Thus, a foundation from which individuals forge meaningful relationships is established. If an individual's attunement pattern matches that of another individual's pattern, given an acceptable context, the probability increases that the dyad will experience a sense of intersubjective relatedness and thus, the state of affective attunement.

From infancy onwards, an individual develops a quantitatively (range of different affects) and qualitatively (intensity and/or depth of affect) unique

pattern of affective attunement experiences. Both the specific kinds of emotions and corresponding intensities of the emotions are structurally communicated by caregivers and peers through the attunement process. For example, a mother may attune and validate her infant's internal experience of joy only when it is expressed by her infant as an intense emotion, but may misattune and invalidate her infant's experience of sadness expressed at any intensity --- ultimately communicating to her infant that intense joy is sharable and sadness is not. This example demonstrates a pattern of interaction which is structured and organized between the mother and infant. Alternatively, a chronically depressed mother may consistently attune her infant to profound sadness but react indifferently to her infant's expression of joy, thus misattuning the infant's joyous states and attuning the infant's sad states. The diversity of exposure to multiple sources (i.e., parents, caregivers, peers and relatives) also likely contributes to the quantity and quality of attunement experiences infants and children receive. Thus, affective attunement patterns are assumed to vary according to the range and kinds of people to which they are exposed. With an increase in exposure to attunement through a diverse array of sources, it is assumed that an individual's ability to recognize attunement also increases, deepening and widening the individual's affective attunement template. As a consequence of attunement experiences, and for the purposes of the present study it is assumed that (a) the feelings and affective attunement states of the self and others are knowable by subjects, and (b) the feelings and affective

attunement states can be recognized in others independent of personally knowing them as individuals. Thus, individual differences and the diversity of experience with and observation of affective attunement may contribute to the recognition of affective attunement.

With the introduction of language, a child acquires a new channel by which to facilitate affective attunement with others (Stern, 1985). Cognitive development also contributes to the dialectic which may help create and/or facilitate attunement through the articulation of feeling states. Alternatively, such development may also impede attunement through the use of psychological defenses such as rationalization or the denial of feeling states. Thus, with the development of language and symbolic thinking, an individual can structure and organize affective experiences, and transcend or distort reality with representative thought, thereby, creating intimacy by affectively interacting and attuning with others, or creating interpersonal space and isolation by avoiding affective interactions (Stern, 1985).

In summary, individual differences in affective attunement arise from variations in child-rearing socialization patterns associated with affective attunement and misattunement of behavioral expressions and internal states by caregivers (Stern, 1985; Sullivan, 1953). It is likely that temperament (i.e., the biological and physiological reactivity to external stimuli), genetics of both the caregivers and children (e.g., Campos et.al., 1983), and evolutionarily prewired emotional programs (e.g., Izard, 1991; Plutchik, 1990) also play a role in such

individual differences.

Purpose

The purposes of this research were to (a) attempt to develop a methodology by which to assess adolescents' recognition of affective attunement in others, and (b) determine the contribution of subjects' gender to the recognition of affective attunement in others. In order to assess the recognition of affective attunement in others, a methodology was devised which requires individuals to distinguish between people experiencing a state of high affective attunement (i.e., 'high' stimulus set) and people experiencing a state of low affective attunement (i.e., 'low' stimulus set). After discussing the rationale for selecting adolescents as the age group for studying the recognition of affective attunement, some of the major design issues associated with assessing the recognition of affective attunement will be presented.

Adolescents were selected for this study because compared to younger children, they possess specific abilities which may facilitate the awareness and recognition of affective attunement. First, it is assumed that in the course of development, adolescents have acquired experience with affective attunement; and this, with an improvement in their ability to assess transformations, and link and integrate states (e.g., Flavell, 1985; Santrock, 1993), may make them better able to recognize and indicate the presence of attunement in others and in themselves. Thus, as a function of time and experience, adolescents should

be better than children at the awareness and recognition of attunement in a diversity of situations and states of affective attunement. Second, adolescents' higher levels of cognitive and language development allow them to reflect upon and make inferences regarding the subjective qualities of attunement in others. By going beyond concrete surface appearances (or external behavioral cues, such as the postures or gestures indicative of the presence of attunement) and focusing upon attributes or characteristics perceived within the individuals (internal cues of others), adolescents may possess the cognitive skills necessary to perceive the more subjective qualities of affective attunement, such as the sharing and matching of affective states. Third, adolescents advanced abstract thought and functional capacities (e.g., processing of complex information at a greater speed) likely improve their conceptual understanding of attunement as presented in the written and verbal instructions in the experimental instructions (see Appendix I). Fourth, through an increase in adolescents' ability to decenter and think nonegocentricly, adolescents have likely increased their ability to perceive attunement as occurring between others. That is, if individuals have the cognitive ability to take another's affective perspective, can project or place themselves in a situation involving a second and/or third person, they will be better able recognize attunement occurring between others. Fifth, and related to the general improvement of cognitive abilities, is the general emotional development of adolescents as influenced by a combination of multiple forces: pubertal changes (e.g., hormonal levels) which

influence the valence of emotions (Izard, 1991); socialization pressures from peers in relationships of varying degrees of intimacy (Gilligan, Lyons & Hamner, 1989); increase in the frequency and number of sources by which attunement can occur such as greater exposure to a wider variety of peers (Santrock,1993); greater sensitivity to individual differences through increased social comparison of similarities and differences (Flavell, 1985) with others which may lead to increased awareness and recognition of affective attunement. Sixth, and relevant to the methodology of the present study, adolescents typically have longer attentional spans than children (Santrock, 1993); and with the presentation of a large number of stimuli, the ability to focus and attend to stimuli for an extended period of time was necessary. Finally, by 16 or 17 years, most adolescents have had numerous interactions with the opposite sex and have observed opposite sex dyads interacting at a personal level (e.g., parents, teachers, peers, and siblings); and since the experiment employs both same-sex and mixed-sex dyads in the recognition task, adolescents were assumed to be suitable for assessing the recognition of affective attunement in others. Generally, for adolescents, there is a global improvement in and solidification of preexisting cognitive capacities such as verbal expression, conscious reflection, generalization, differentiation, integration, and have accumulated more organized knowledge within the emotion domain, to increase the subjects' ability to perform successfully in an affective attunement recognition task.

Methodological Issues

For the purposes of this study, affective attunement is operationally defined as a state in which two people share and match one another's affective states. It is perceived as a state of affective intersubjective connectedness and is a form of affective communication whereby shared meaning is assumed to be mutually created and experienced. Affective attunement, as a state, is the end point or apex of the attunement process in which the two people have affectively shifted and adjusted in creating the shared affect and meaning.

The recognition of attunement by adolescents was assessed by presenting two sets of stimuli (see Method section). The two sets of stimuli represented dyadic human interactions reliably judged as exhibiting 'high' and 'low' levels of the state of affective attunement, to which subjects were asked to indicate their perception of the presence or absence of attunement within each picture.

There were two rationales for the decision to require a 'yes' or 'no' response from the subjects to the two sets of dichotomous non-overlapping stimuli. First, it was assumed that the 'high' attunement set of stimuli would elicit an internal affective response (i.e., an affective attunement response) within the subjects, with the 'low' attunement stimuli eliciting a low level affective response. Thus, a two choice ('yes' or 'no') response was assumed to maximize discriminatability of these internal affective responses, thus allowing those subjects who can and cannot recognize affective attunement to respond

accordingly. That is, it is assumed that differential responding ('yes' or 'no' response) is based on the degree to which subjects (a) affectively, not cognitively, respond to the dyads in the slides, and (b) are affectively attuned. Second, a two-choice response was assumed to require less effort and frustration than rating levels of affective attunement in the stimuli. If the subjects were required to make a number of response discriminations or ratings, they may be more likely to respond to or process the stimuli cognitively rather than affectively, thereby decreasing the affective attunement response necessary for a correct response in the 'high' attunement slides. For example, if the subjects were asked to carefully scrutinize the slides, they may be more likely to rely heavily on the external or objective cues (e.g., behavioral cues) when processing the slides, thus failing to use their own internal affective response.

Two other considerations were important in designing the present experiment, the intensity and type of emotion expressed by the dyads in the two sets of stimuli. Both sets were matched on these two dimensions in order to facilitate a clear interpretation of the results. This matching was important for the following reasons. The first match was on emotional intensity behaviorally expressed by the individuals in the dyads. In the present study, dyads with a low level of emotional intensity were not employed, only those with higher emotional intensities were used. The reasons were as follows. First, it was assumed that the recognition of attunement in others requires the subject to attend to and respond to the unique characteristics of the affective attunement

state rather than to extraneous variables within the slides such as the salience of the positive or neutral affects displayed (e.g., similar facial expressions, postures and/or gestures). It was further assumed that individuals who can not recognize attunement may be more likely to respond to the intensity of the affective states behaviorally expressed in the dyads rather than the attunement; thus, adolescents with little attunement experience should respond with a higher number of false positives, indicating of their inability to differentiate between 'high' attunement and 'low' attunement stimuli. Thus, pictures which depicted dyads with higher levels of intensity (in both sets) may facilitate the discrimination between those subjects who can (accurately) and can not recognize affective attunement in others; i.e., stimuli were chosen to provide a more conservative assessment of recognition of affective attunement. Second, stimuli with the lowest level of emotional intensity were not used because they possess more extraneous variables (e.g., two individuals engaged in conversation, in which the directionality of the interaction at that moment was from one individual to the other or unidirectional in nature) which may lead subjects to cognitively rather than affectively respond to the stimuli, thus competing with the internal affective attunement response necessary for an accurate judgement of attunement. For example, the subject may process the behavioral cues evidenced by the dyad and ignore the gestalt or subjective qualities of the attunement interaction. Consequently, subjects who have experience with attunement may process the majority of the 'high' attunement

slides affectively without responding cognitively and thus, may perceive attunement; whereas, those subjects with little experience with affective attunement will respond cognitively and indiscriminately regardless of the level of attunement or emotional intensity in the stimuli.

Only pictures with positive and neutral emotions were employed. This was done for the following reasons. First, Stern's (1985) discussion of attunement suggests that people do not often reciprocally attune when experiencing a negative affective state and that such a state often elicits distancing or separation between two people. For example, if two people were in an argument, the individuals may have focused upon one another, experienced the same affect (i.e., anger) and in a situation which was mutually created, but it is unlikely that they experienced an intersubjective sense of relatedness which resulted in shared anger; it is more likely that their anger was experienced defensively and/or independently of one another. Since attunement typically occurs when individuals are experiencing positive to neutral affective states, the 'high' and 'low' stimulus sets were balanced on type (i.e., positive and neutral) of affect. Second, since attunement and negative emotions appear to be mutually exclusive and stimuli of this kind were exceedingly difficult to find, such pictures were excluded from the sets.[2]

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[2] If any could be found, it is not known whether the other variables (e.g., intensity, gender, status and affect) could be balanced between 'high' and 'low' attunement stimuli.

Attunement Hypothesis

It was hypothesized that there would be a significant difference in adolescents' recognition of affective attunement between the 'high' stimulus set and 'low' stimulus set; that is, there would be more 'yes' responses to the 'high' than to the 'low' stimulus sets.

One variable which may influence the magnitude of the response difference between 'high' and 'low' affective attunement stimulus sets is the gender of the subject.

Gender Differences in Affective Attunement

An examination of gender differences in socioemotional development of children has revealed a recent resurgence of both theoretical and empirical interest. However, most research pertaining to gender differences relates to more molar constructs within socioemotional development (e.g., how males and females differ on empathic responses, Strayer, 1989) and how the genders differ on emotion recognition tasks (Campos et. al., 1983; Hall, 1990). The research also examines how the socialization of children by parents is influenced by their children's gender (e.g., Garber & Dodge, 1991; Harris & Saarni, 1989). However, a close examination of such gender differences suggests that they may, in part, be due to differences in how parents affectively attune their daughters and sons. A review of this research will now be

presented.

Research has suggested that parents regulate the emotional understandings and expressions of their children by modulating both their own affective expression patterns and by reinforcing gender appropriate behaviors in their children (e.g., Dunn, 1988; Garber & Dodge, 1991; Greenglass, 1982). For example, it has been found that mothers exhibit differential affective expression patterns towards their daughters and sons (e.g., Malatesta-Magai, 1991; for example, mothers smiled less at their sons than their daughters). Mothers also displayed a greater diversity of expressive behaviors toward their daughters than sons (Malatesta & Haviland, 1982). Steinberg (1987) maintains that involvement in parent-adolescent interactions (defined by emotional intensity behaviorally expressed for both positive and negative emotions) was greatest between mothers and daughters. Saarni (1989) examined parental expectations and reactions to their own children's display of genuine emotions in vulnerable situations (from viewing vignettes) and found that parents exhibited more controlling (rather than accepting) attitudes and behaviors towards their sons than daughters. Strayer (1989), in a study assessing self-attributions and empathic responding, revealed that boys reported more neutral and anger responses, while girls reported more emotions of fear and sadness and a greater frequency of emotions overall. Saarni (1989) interpreted these results regarding boys socialization of emotion as reflecting parents' greater tolerance for the expression of anger and less tolerance for the expression of sadness

and fear. It was also found that emotional responses were more likely to occur in familiar situations in which individuals are encouraged to express their feelings. On the other hand, culture facilitated and permitted greater emotional demonstrativeness and awareness in females than males, resulting in a gender difference in display and feeling norms (Saarni, 1989).

In general, females are also socialized to be more socially oriented than males. Mothers have been found to encourage their daughters to be emotionally closer to them than they do their sons (Chodorow, 1978). Block (1973) revealed that parents reported a greater emphasis on showing physical affection, maintaining close relationships and discussing problems with their daughters, and emphasize control and regulation of affective expressions and feelings with their sons. Researchers have also observed that girls, more often than boys, intervene to resolve family conflicts and disputes (Vuchinich, Emery & Cassidy, 1988). Females have been found to generally adopt a mediational role, characteristic of peacekeeping and reparative functioning; this is thought to arise from different parental nurturance patterns towards boys and girls (Saarni, 1985). Research has also shown that mothers emphasize intrinsic consequences to behavioral transgressions more for girls than boys (Saarni, 1985); this is believed to sensitize girls to the internal states and inner experiences of others.

Other parental behaviors and socialization factors have been found to contribute to females' greater sensitivity and socioemotional focus. Mothers

have been observed to talk more about emotions to their daughters than sons (Dunn et. al., 1987); mothers provided more proximal stimulation to their daughters and distal stimulation to their sons; they also spent more time and effort eliciting smiles from their infant daughters than sons (Lewis & Weinfraub, 1979). Mothers have also been shown to respond with interest when their sons displayed anger and respond with disapproval when their daughters displayed anger (Saarni, 1985). Fagot (1978) observed that mothers responded more positively to daughters who engaged in adult oriented dependent behavior (i.e., solicitation of help or the helping others). These girls were generally perceived as more mature than boys, and thus, subjected to higher parental expectations for interpersonal functioning than boys (Zahn-Waxler, 1991).

Through this process of socialization girls are assumed to learn to value emotions consistent with the creation and maintenance of intimacy; unlike boys, girls may derive their identity from interpersonal relationships and emotional connections with others (e.g., Gilligan, Lyons & Hanmer, 1990; Saarni, 1985; Zahn-Waxler et.al., 1991). More emphasis is placed upon girls' ability to establish close affective relations and to perform to please and accommodate others by alleviating their pain and distress through comforting and healing (e.g., Gilligan et.al., 1990; Zahn-Waxler et.al., 1991).

A conclusion which may be drawn from the literature on gender socialization practices is that females may be more socialized to be socioemotionally oriented than males, and involved in roles which are

characterized by responsibility and nurturance of others. At a more molecular level, girls may have a greater ability not only to experience affective attunement but also to recognize it in others. That is, they may have a greater ability to decode (i.e., be aware of, recognize, translate or interpret) the many nonverbal cues in affective interactions and recognition tasks (e.g., Hall, 1978; Feldman, Phillipot & Custrini, 1991; Patterson, 1991).

Females are better decoders of nonverbal behaviors than males (see Hall, 1990 for a review of research) for both facial cues and body cues. Hall (1990) concluded from her analysis of the research on gender differences and nonverbal cues, that consistent female and male differences occur in their nonverbal communication and expressive styles. Females attend more to visual cues (especially to facial cues) and are socialized, or learn by direct tuition, to be interpersonally observant. They are also more selective in their responses to others (i.e., they are less likely to behaviorally respond to unintended nonverbal cues such as vulnerability or concealment). This pattern of findings is viewed as consistent with facilitating harmonious interpersonal interaction which is related to gender-role appropriate behavior such as the accommodation to others. Underlying these results may be that females, in general, have received more and a wider qualitative range of affective attunement experiences which may in turn, may help facilitate recognition of attunement between themselves and others, as well as between others.

Hall's (1990) review of the research also indicated that females are

better at the nonverbal expression of emotions. For example, females smile more (and are smiled at more) and approach others with a closer distance (and are approached closer by others) than males. Body movements, hand gestures, and positions also reveal a more expressive style indicating greater interpersonal involvement and less restlessness. Thus, as facilitators in socioemotional interpersonal interactions, females are better than males in both decoding and exhibiting the nonverbal affective behavioral cues necessary for affective attunement. Females' nonverbal communication skills and behavioral styles are emotionally adaptive and may also serve to facilitate positive interactions, emotional closeness and understanding with others. Thus, differential socialization patterns, the ability to decode information and overtly express emotion all contribute to the skills, attributes and behaviors necessary for the recognition and occurrence of affective attunement.

To summarize, the design of the study entailed the presentation of two sets of stimuli, with the two sets differing on the presence and relative absence of attunement. The degree of differential responding to the two sets was assumed to reflect the subjects' ability to recognize attunement in the interactions of others. An attempt was made to balance the two sets of stimuli on the gender of individuals in the dyads (e.g., same and mixed sex dyads).

Gender Hypothesis

It was hypothesized that there would be a significant interaction between the type of stimuli ('high' and 'low' stimulus sets) and subjects' gender in the

recognition of affective attunement, such that females would be better in the recognition of affective attunement than males, in both the 'high' and 'low' stimulus sets, but the difference would be smaller in the 'low' affective attunement set. That is, females should be more sensitive to the degree of affective attunement present in the two stimulus sets because their socialization focuses them toward being more socially oriented than males. But with the lower level of attunement present in the 'low' stimulus set, female responses to the presence of attunement should decrease; whereas for males, their responses should be less dependent on the degree of attunement present in the dyads in either sets.

METHOD

The purposes of this research were to (a) assess adolescents' recognition of affective attunement in others, and (b) assess the relationships between the recognition of affective attunement in others and adolescents' gender. To assess adolescents' recognition of affective attunement in others, a methodology that distinguishes between (a) people experiencing a state of affective attunement (i.e., 'high' stimulus set), and (b) people affectively relating to one another behaviorally in a similar manner but not in a state of attunement (i.e., 'low' stimulus set) was used. It was hypothesized that there would be a significant difference between adolescent's recognition of affective attunement in the 'high' and 'low' stimulus sets. A significant interaction between recognition of attunement and gender was also hypothesized; such that females would recognize the presence of attunement in the 'high' stimulus set more than males, and that the gender difference would diminish for the 'low' set.

The design of the study entailed the presentation of two sets of stimuli (matched on a number of dimensions), with the two sets differing on the presence and relative absence of attunement. The degree of differential responding to the two sets was assumed to reflect the subjects' ability to recognize attunement in the interactions of others.

Subjects

Contact was made with the Calgary Board of Education. Two schools

from the public school system granted permission to conduct research in their schools (i.e., Crescent Heights High School and Lester B. Pearson High School). Upon agreement from the principals and classroom teachers, consent forms (see Appendix B) were sent home with approximately 300 students at the high schools inviting the students from Career and Life Management Classes to participate in the study. One hundred and twenty-four students aged 15 to 18 years agreed to participate. The sample was reduced in size to 116 students. A total of 8 subjects were dropped from the analysis for the following reasons: (a) 5 subjects appeared not to take the experiment seriously and gave extreme scores, i.e., they gave 77 or more 'yes' responses to all 80 stimuli, (b) 2 subjects were dropped because they were disruptive to others and unmotivated in the task, and (c) one student was summoned from the class during the experimental session.

The consent forms briefly explained the purpose of the study, i.e., each volunteer who receives permission will complete two short questionnaires, and observe and rate slides in the classroom. Consent from parents, adolescents and teachers were obtained (see Appendix B) before the students participated in the study. Volunteers were treated in accordance with American Psychological Association ethical standards.

Materials

Demographic Questionnaire. A 16-question multiple choice questionnaire

(Appendix C) was developed which assessed various demographic variables such as age, gender, socio-economic status, number of siblings, and number of close friendships. It served the purpose of describing the sample (e.g., "What is the highest educational level of your mother?").

Stimulus Materials. Two sets of stimuli (40 'high' and 40 'low' attunement slides) which depicted human dyadic interactions were employed. There were also 16 practice slides (i.e., 3 depicted animal-human interactions and 13 depicted human interactions). The experimenter and a confederate selected 13 stimuli (7 'high' and 6 'low' stimuli) which were presented to the subjects before the 80 experimental stimuli to allow the subjects an opportunity to become familiar with the stimuli and rate of presentation as well as avoid a possible practice effect. The subjects' responses to these stimuli were omitted from the data analysis since the order of presentation was identical for all the groups of subjects and they were not informed of the 13 human dyad practice stimuli at time of testing. The two sets of stimuli were matched on sex of dyads and overall intensity of emotions displayed.

Affective Attunement Questionnaire. An Affective Attunement Questionnaire has been developed to probe subjects' beliefs and behaviors of affective attunement (see Appendix D). This questionnaire was originally developed to assess the awareness of affective attunement in university students (Hrynchak & Fouts, 1992). The items were derived from Stern's (1985) descriptions of the processes involved in mother-child attunement behaviors

and adapting and extending his conceptualizations to university students. Subjects were asked to respond to two sets of questions (beliefs and behaviors) using a Likert scale (i.e., strongly disagree to strongly agree). The first set of questions assessed attunement behaviors such as, "I often engage in an activity with someone because there is a sense of 'emotional connectedness' between us", "I have a best friend with whom I can be myself, complete with all my faults, and still know that we relate well" and, "I can experience the feelings of people I don't know without knowing their circumstances or why they feel the way they do." The second set of questions assessed values assumed to be underlying attunement for example, "I believe that one can feel "emotionally connected" to a virtual stranger without speaking to that person," "I believe that a special kind of chemistry can occur between two people even though they don't know it" and, "I believe that one can share special feelings with other people just by being with (and not speaking to) them." The purpose of this measure was exploratory in nature as well as to provide additional validity to the interpretation of subject's responses to the two sets of stimuli however since the instrument has not undergone validity and reliability checks the latter should be interpreted with caution.

Development of the Stimulus Materials

Design of Experiment and Research Issues

There were several issues related to the selection of the stimulus materials. These are presented below, followed by the method by which the stimuli were selected. It was decided to use two sets of dichotomous non-overlapping stimuli and requiring a 'yes' or 'no' response from the subjects. First, it was assumed that the two choice format to the two sets of stimuli would elicit an affective response, fewer cognitions, and require less effort and frustration than rating levels of affective attunement. That is, if the subjects were required to make a number of response discriminations or ratings, they may be more likely to process the stimuli cognitively rather than affectively. For example, the subjects would have to rely more heavily on objective criteria (i.e., behavioral cues) when processing the interaction and ignore the gestalt. Second, if a continuum of attunement ratings were employed, the middle-range discriminations of affective attunement may be more difficult to judge due to the presence of other variables such as cognitions or the valence of directionality in the communication of affect (i.e, the lack of experiential affective reciprocity) in the dyad. For example, middle-range pictures, as judged by the experimenter and a confederate, often depicted one person of the dyad attuning and the other person attuning to a lesser degree (i.e., the reciprocity of the match was not as evident). And third, the lack of mutuality in the sharing and matching of affect was inconsistent with the theoretical definition of attunement as a state

but reveals the nature of attunement as a process (Stern, 1985), whereby each individual initially attunes to the other but the interaction is non-synchronous and lacking a sense of mutuality in the experience and sharing of affect.

Both sets of stimuli were matched on a number of dimensions to facilitate a clear interpretation of the results, i.e., to control for possible confounding dimensions between the two descriptively different sets of stimuli. One of the most important dimensions was the degree of emotional intensity behaviorally expressed. The rationale for the omission of stimuli with a low level of emotional intensity and a range of high emotional intensity were as follows: first, it was assumed that the recognition of attunement in others requires the subject to attend to the unique characteristics of attunement (see Appendix I) rather than extraneous variables such as positive or neutral affect (e.g., similar facial expressions). Thus, individuals who can not recognize attunement may be more likely to respond to the intensity of the affective states expressed in the dyad, which may result in a higher number of false positives --- an indication of their inability to differentiate between 'high' attunement and 'low' attunement stimuli. Thus, pictures which depicted dyads with higher levels of intensity (in both sets) may discriminate between those subjects who can recognize affective attunement in others and those who cannot. Second, stimuli with lower levels of emotional intensity may be more likely to possess extraneous variables which may lead subjects to cognitively rather than affectively process the stimuli, complicating the subjects' judgement of attunement. For example, such

pictures generally depicted the dyad in a conversation or in acts which detract from the primary emotional communication. Subjects who have little experience with or who do not understand attunement may perceive attunement in such stimuli regardless of the level of attunement cues in the stimuli.

In the original pool of pictures, the experimenter and her supervisor observed a disproportionate number of 'high' affective attunement stimuli which depicted mother-infant interactions. Therefore, recognition could be based, in part, on the status or gender of the people in the dyad (which may in turn interact with the gender of the subject) rather than the actual attunement in the stimuli. Thus, the 'high' and 'low' sets of stimuli were also matched or balanced on (a) perceived status within the dyads (e.g., unequal such as a mother and child, and equal or peer), (b) gender within the dyads (e.g., same sex -- male-male, female-female, and mixed sex -- female-male or undifferentiated gender) and (c) emotions displayed by people in the dyads (e.g., positive and neutral). The stimuli were matched because subjects may assume that attunement occurs more frequently in certain types of relationships (e.g., parent-child, female-female) rather than other types of relationships (e.g., peer-peer, male-male).

It was decided that only pictures with positive and neutral emotions were selected. This was done for the following reasons. First, Stern's (1985) discussion of attunement suggests that people do not often reciprocally attune when experiencing a negative affective state; such a state elicits a distancing or

separation between two people. Since attunement typically occurs when individuals are experiencing positive to neutral affective states, an effort was made to balance affect between the two sets. Second, stimuli which depicted both negative emotions and attunement were exceedingly difficult to find.[3] Third, pictures depicting intense negative emotional states were excluded for ethical reasons since they may cause undue stress in subjects.

A stimulus pool of 265 photographs (3 x 5 inches) were initially selected by the researcher and her supervisor. These photographs were obtained from child development texts. Each photograph was selected using the following criteria: Each picture presented (a) only one dyad, (b) an interaction, (c) no prominent external stimuli directing the dyads focus of attention (e.g., books), and (d) a substantial proportion of both individuals faces and bodies (i.e., sufficient behavioral cues) were visible. These criteria were employed in order to reduce the complexity of the stimuli for greater ease of judgement by the subjects. Attempts to find pictures in other sources such as magazines and photojournalism books were unsuccessful because (1) the pictures typically depicted individuals' focusing in the direction of or posing for the camera (i.e., not interacting with each other), (2) depicted individuals overall in a state of low attunement, and (3) to avoid preformed opinions from the subjects' possible prior exposure to the ads.

These 265 pictures were then independently rated by the experimenter

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[3] If any could be found, it is not known whether the other variables (e.g., intensity, gender and status) could be balanced between 'high' and 'low' stimulus sets.

and her supervisor. The pictures were rated twice on a ten point scale for (1) degree of affective attunement, and (2) degree of emotional intensity behaviorally expressed. The ratings were somewhat bimodally distributed with the majority of pictures falling into higher and lower levels of attunement and fewer pictures falling within the mid-range levels of attunement. The same distribution was observed for the emotional intensity sort. Numerous discussions of the pictures ensued which involved issues of (a) objectivity and reliability of judgements, and (b) development of training instructions for raters in the final selection of stimuli. The discussions resulted in the final development of criteria for judging attunement.

Four raters (2 males, 2 females---all 30 years old or older) were used for the final selection. Each rater independently sorted the pictures twice (i.e., for attunement and intensity of emotion behaviorally expressed). In both sorts, a definition, description and example of the dimension for sorting was provided to the raters (see Appendix E and F). The first sort was on the degree of affective attunement present using 5 levels; low, low-medium, medium, medium-high, high attunement. The second sort was based on the degree of emotional intensity behaviorally expressed using 5 levels; low, low-medium, medium, medium-high, high intensity.

In both sorts, the four raters were instructed to first separate the pictures into three general groups and then further delineate the pictures into 5 groups (see Appendix G). This was procedure suggested by Block, (1961). The raters

were also instructed to judge the pictures based on a bimodal (U-shaped) distribution; with a larger number of pictures falling in the higher and lower levels of affective attunement and a fewer number of pictures falling into the middle range levels of affective attunement (Block, 1961). The same instructions were provided for the affective intensity sort. The rationale for the forced U-shaped distribution (i.e., instructions to judge the pictures based on a bimodal distribution) were as follows. Block (1961) states that there were no clear advantages in an unforced choice Q-sort (i.e., the ommission of instructions based on a distribution). The unforced Q-sort does not provide more information or more reliable information than the forced choice. It also tended to produce more general results, fewer discriminations and a distribution towards rectangularity; whereas, the forced bimodal distribution sort provided more specific results with more discriminations. Thus, since there was no clear advantage in an unforced Q-sort, and a forced Q-sort presents the data in a clear readily processed form, a forced Q-sort was selected to facilitate raters ease and increase reliability.

Sort I: Rating Affective Attunement. In a room at the Department of Psychology, University of Calgary, the experimenter sat across the table from the rater and followed the Experimenter Procedure Sheet (see Appendix G). The experimenter gave the Affective Attunement Instructions (see Appendix E) to the rater and placed nine practice pictures and a practice record sheet on the table. The experimenter stated the purpose of the first sort (i.e., to allow the

experimenter to reduce the set of stimuli reliably for eventual administration to subjects based on their ratings) and the affective attunement practice session began. The practice session served to familiarize the rater with affective attunement and gave the rater an opportunity to clarify any ambiguities he or she may had regarding the instruction sheets (see Appendix E). The instructions to the raters for affective attunement sort were as follows:

> What I want you to look for in each picture is that special, almost "magical" sense of oneness or togetherness that people can sometimes experience with one another. It's that unique feeling when two people are both experiencing and sharing the same feelings because they are emotionally connected to one another. It is that moment when two people, coming from different emotional wave lengths, arrive at the same emotional wave length. It is more than the expression of similar emotions, it is a state where the people are focusing upon and experiencing one another, independent of the situation.
>
> Affective attunement is the sharing of common affective states and attention. The congruence is due to the mutuality of focus upon one another rather than external stimuli. A sense of intersubjective relatedness is experienced through the sharing of affective meaning which results in a mutual affective experience of both people in the interaction. It is the non-verbal sharing of joint attention, intention, and affective state which can be evidenced through postural, gestural, and facial cues. Although the modalities by which the affective attunement is expressed does not have to be identical for both people in the dyad, the behavioral positions, gestures, postures and facial expressions are complementary and/or matching, reflecting the perceived affective state of the other. And finally, since the cues are multidimensional and complex, the dyads should also be viewed as a gestalt, asking yourself the question: Is there a sense of shared affective subjective interconnectedness over-and- above the obvious behavioral cues? Please sort the pictures into the groups of no/low, low-medium, medium, medium-high, high affective attunement.

The experimenter then instructed the rater to read the instruction sheets, write down any questions he or she had and upon completing the task, record the

numbers from the reverse side of the practice pictures on the practice record sheet (see Appendix H). Due to the limited set of stimuli (N=265), the nine practice pictures depicted intra- and interspecies interactions (e.g., animal-animal, animal-human; there were no human-human pictures; see Appendix A).

The experimenter then left the room for 30 minutes. When she returned, she asked the rater four questions (e.g., "Do you think you understand/know what affective attunement is?", "Can you explain to me what you think affective attunement is?", "Can you give me an example of what you think affective attunement is?", and " Do you have any questions or concerns about the task?"; see Appendix G) to probe the rater's understanding of affective attunement. The experimenter gave the rater an opportunity to ask any questions he or she had regarding the instructions. The rater's responses and questions were tape recorded.

The experimenter then gave the rater the 265 human dyadic pictures, which were randomly placed in a manila envelop with 5 record data sheets (see Appendix H). The rater was then instructed to take the instruction sheets, pictures and record data sheets home and sort the pictures in an environment with no distractions. An appointment was made to review the completed affective attunement sort and to provide the second practice session for the emotional intensity sort. The rater was given approximately 3 days and nights to sort the pictures on affective attunement at home.

The raters' instructions (see Appendix E) for the affective attunement sort

directed each rater to reread the instructions before beginning the sort at home. Each rater's attention was directed to four primary aspects of attunement: (1) the mutuality/reciprocity or bidirectionality of the degree of attunement within the dyad, i.e., (a) the focusing of each person on one another, (b) the essence of connectedness within the dyad, (c) whether they are experiencing the same feeling, (d) whether they are experiencing one another; and (2) presence of cognitions which may interfere with attunement, (3) degree of familiarity with each other, and (4) the overall gestalt.

An example was provided to aid the raters in understanding the sort. They were instructed to first separate the pictures into 3 general piles of affective attunement and then further delineate the pictures into 5 piles ultimately resulting in a U-shaped bimodal distribution (with fewer pictures falling in the 'medium' attunement category and the majority of pictures falling into the 'low' and 'high' attunement categories). The raters were also given the opportunity to withdraw from the study or contact the experimenter at any time if they had any questions regarding the sort.

Sort II: Rating Emotional Intensity. In a room at the Department of Psychology, University of Calgary, the experimenter sat across the table from the rater (see Appendix G). The experimenter stated the purpose of the second practice session (i.e., to reduce the set of stimuli for eventual administration to the subjects) and referred the rater to the emotional intensity instructions (see Appendix F). The instructions to the rater for the emotional intensity sort were

as follows:

> The degree of behavioral affect expressed is the judgement of the intensity of affect, behaviorally expressed, for both people in the dyad. The objective here is to examine the overt behavioral dimensions exhibited by the people, viewing each person separately as well as a dyad independent of (or ignoring) the affective attunement which may or may not be present. The question is, what is the overall level of intensity of affect expressed in the dyad? This sorting serves the purpose of a control, with your judgements reflecting the level of intensity of affect independent of any possible attunement occurring between the people in their interaction.

The experimenter then referred the raters to the practice pictures and practice record sheet. The same nine practice stimuli were presented from the previous affective attunement sort in a different random order for the second practice session.

The experimenter instructed the rater to read the instruction sheets, write down any questions he or she had and upon completing the practice sort, record the numbers from the reverse side of the pictures on the practice record sheet (see Appendix H).

The experimenter left the room for 30 minutes. Upon returning, the experimenter asked the rater 4 questions (i.e., "Do you think you know/understand what emotional intensity behaviorally expressed is?", "Can you explain to me what you think emotional intensity behaviorally expressed is?", "Can you give me an example of what you think emotional intensity behaviorally expressed is?" and "Do you have any questions or concerns about the task?"; see Appendix G) to probe the rater's understanding of affective

intensity. The experimenter then gave the rater an opportunity to ask any questions he or she had regarding the instructions. The rater's questions and responses were again tape recorded and an appointment was made to discuss the second sort after a 3 day period.

The raters' instructions (see Appendix F) for the emotional intensity sort directed each rater to reread the instructions before beginning the sort. The raters' were asked to make their judgements of the degree of affective intensity behaviorally expressed in the dyad according to the following criteria: (1) each person experiencing an emotion intensely, (2) both people experiencing an emotion intensely, and (3) the overall impression of intensity in the dyad.

An example was provided to aid them in understanding the sort; and as with the first sort, they were instructed to first separate the pictures into 3 general piles and then further delineate the pictures into 5 piles, ultimately resulting in a U-shaped bimodal distribution (with the majority of picture falling in the 'high' and 'low' categories of intensity and fewer falling in the 'medium' category of intensity. The raters were also given the opportunity to withdraw from the study or contact the experimenter at any time if they had any questions regarding the sort.

Matching of Stimuli. The experimenter rated the 265 stimuli based on the dimensions of gender (i.e., same sex or male-male and female-female, and mixed sex or male-female and undifferentiated sex) and status (i.e., equal or peer, unequal or parent-child). The experimenter and her supervisor then

independently rated the stimuli for affect (i.e., neutral, positive and negative). Inter-rater reliability was found to be significant and high at r=.99, p<.001.

After collecting the ratings of the two sorts from each rater, the experimenter cast all the stimuli into a five by five matrix, based on the five levels of affective attunement (i.e., low, low-medium, medium, medium-high, and high affective attunement) and the five levels of intensity of emotion behaviorally expressed (i.e., low, low-medium, medium, medium-high) as judged by the raters.

Selection of the stimuli which was eventually administered to the subjects was based on the affective attunement (range from 1-5 or 'low' to 'high') and intensity (range from 1-5 or 'low' to 'high') of the four raters. Reliability of the stimuli was determined by examining the variances and means of the four ratings for each picture. The stimuli were rank ordered from lowest to highest on inter-rater reliability for affective attunement and emotional intensity behaviorally expressed. Initially, the 265 pictures were reduced to 193 by deleting those stimuli with a variance of 3.0 or more on both affective attunement ratings (variance range of 0 to 4.25) and emotional intensity ratings (variance range of 0 to 5.33). Twenty-three stimuli with emotional intensity means below 2.0 were then eliminated from the set. Following this, the stimuli were ranked based on their affective attunement means (range of 1.0-5.0); a median of 3.25 was determined and a 'high' stimulus set (N=85; mean range of 3.5 to 5.0) and 'low' stimulus set (N=80; mean range of 1.0 to 3.25) was

formed. Due to the unequal group sizes of the 'low' and 'high' stimulus sets, 5 stimuli with a mean attunement rating of 3.25 from the 'low' stimulus set were deleted (i.e., those stimuli with the highest emotional intensity variance rating).

The experimenter then examined the 80 stimuli in each set ('high' and 'low') in order to equate them on intensity, gender, status, and affect. The two sets were then further reduced based on (a) reliability, or variance of the attunement ratings (i.e., stimuli with a variance of 2.75 were eliminated), (b) the presence of external stimuli in the pictures and negative affect of people in the dyads (i.e., upon agreement of the experimenter and her supervisor that the presence of external cues and negative affect could complicate subjects' judgement of attunement), and (d) emotional intensity means. The overall emotional intensity of both sets was equated and a non-significant difference was found between the 'high' and 'low' stimulus sets, ($\underline{t}(33)=.66$, $p=.51$). Collapsing both sets, the range of emotional intensity means were 2.75-4.75 for the female-female set, 2.25-4.75 for the male-male set, and 2.0-4.75 for the mixed sex set.

The final set of stimuli contained 10 female-female dyads, 7 male-male dyads, and 23 mixed sex dyads in each of the 'low' and 'high' stimulus sets. This resulted in a final set of 80 pictures, 40 'low' stimuli and 40 'high' stimuli (see Table 1).

Table 1.

Final distribution of stimuli into 'high' and 'low' stimulus sets based on gender, status and affect.

		High	Low
Gender			
	Female-Female	10	10
	Male-Male	7	7
	Mixed-Sex	23	23
Status			
	Equal	19	15
	Unequal	21	25
Affect			
	Positive	26	22
	Neutral	14	18
Intensity	Means	3.32*	3.21*

*non-significant difference @ p<.01

Experimental Procedure

In the classroom, the signed Consent forms were gathered by the teacher: those individuals not volunteering in the study were asked by the teacher to leave the classroom while the experiment was in progress. The Demographic Questionnaire (see Appendix C), the Instruction Sheet (see Appendix I), the experimental Answer Sheet (see Appendix J) and the Affective Attunement Questionnaire (see Appendix D) were distributed in a package to each subject. The participating volunteers were then given 10 minutes to complete the Demographic Questionnaire.

Next, the experimenter directed the subjects to go to the Instruction Sheet (see Appendix I and K) and the following instructions were read by the experimenter to the subjects for the rating of the 96 attunement slides (16 practice and 80 experimental):

> Please read the instructions before you, along with me. I am going to show you 96 pictures of people. What I want you to look for in each picture is that special, almost "magical" sense of oneness or togetherness that people can sometimes experience with one another. It's that unique feeling when two people are both experiencing and sharing the same feelings because they are emotionally connected to one another. It is that moment when two people, coming from different emotional wave lengths, arrive at the same emotional wave length. It is more than the expression of similar emotions, it is a state where the people are focusing upon and experiencing one another, independent of the situation. I want you to look at these pictures and rate whether the people are experiencing (yes) or not experiencing (no) this sense of oneness. If you have any questions regarding the instructions, please feel free to ask. Any questions? (pause). Okay, now remember are the people in the slides experiencing that special sense of being emotionally connected? Before we start---to make sure we understand---lets practice on some pictures.

Each subject sat approximately 3 to 5 meters from the screen. The subjects were then instructed to turn over the page to the answer sheet. The experimenter turned off the lights, turned on the projector, projected the first practice slide onto the screen and verbally presented an abbreviated description of affective attunement (see Appendix J); for example, "Are the baby and chimp emotionally connected? Please check 'yes' or 'no' next to number 1 under practice pictures." The same procedure was followed for the second and third animal-human practice slides. The experimenter then instructed the subjects that 93 slides would be presented at 15 second intervals and to rate each slide for presence or absence of emotional connectedness being sure not to skip any pictures. Following this instruction, the experimenter presented 13 non-randomized practice slides and 80 randomized experimental slides to each group of subjects. After the presentation of each slide, the experimenter stated the number of the slide and upon the subjects' completion of the first three pages of the Answer Sheet (i.e., after slide number 13, 32 and 51), the experimenter instructed the subjects to turn over the page and gave an abbreviated reminder of attunement (e.g., to look for a unique sense of oneness and emotional connectedness in the slides being sure not to skip any).

Following the experimental session, the subjects were instructed to complete the Affective Attunement Questionnaire (see Appendix D). The participants were given 10 minutes to complete the questionnaire. Upon completion of the second questionnaire, the experimenter thanked the subjects

for participating in the study and collected the packages. The experimenter also stated that the results would be made available to them in 3 months.

Eight groups of students (range in size between N=9 to N=25) were administered stimuli for the following reasons. First, small groups of students who volunteered should be sufficiently motivated to attend to the task. Second, subjects were instructed to complete the task based on their own judgements and thus social comparison of performance was not a concern. Third, the social milieu of the test situation may facilitate subject response to the social stimuli rather than the stress of individual testing.

Development of the Data File

The original subject data sheets (i.e., Demographic Questionnaire, experimental Answer Sheet, and Affective Attunement Questionnaire) were examined and transcribed and placed in a computer data file. This was done by the experimenter.

RESULTS

Subject Characteristics

Fifty-nine percent of the sample (N=116) were female and 41% of the sample were male; the vast majority of individuals were in grade 11 (94%), with the remainder being in grade 12 (6%). The age range was 16 to 18 years, with a mean of 16 years, 11 months. In terms of the subjects' approximate grade average for the past year, a near normal distribution was found; 43% of the subjects fell within the 65 to 75% range, 32% fell within the 75 to 85% range and 20% fell within the 55 to 65% range. Eighty percent of the sample had lived, for the major part of their lives, in a major city (50,000 people or more), with 12% of the sample having lived in a city (8,000 to 50,000 people). Upon completing the demographic questionnaire, 66% of the subjects reported that they were in a neutral, "mellow" or calm mood; 22% reported that they were in a happy state, with 11% being depressed or sad.

In order to examine the sample's socioeconomic status, both the parents' educational level and work patterns outside the home were assessed. Thirty-one percent of the subjects indicated that the highest education level attained by their mother was the completion of high school; 22% of the mothers had taken some college, technical or university courses, and 21% of the mothers had taken less than a high school degree. For fathers, 26% had attained some college, technical or university courses, 24% had completed less than a high school degree, and 20% had obtained a college or university degree. An

examination of parental employment outside the home revealed that before the subject was 10 years old, 46% of the subjects' mothers worked full-time outside of the home, 28% of the mothers worked part-time outside of the home, with 22% having never worked outside of the home. Ninety percent of the fathers worked full-time outside of the home, 5% worked part-time and 3% were absent from the home.

Recognition of Affective Attunement

Recognition Based on 'Yes' Responses. To test the attunement hypothesis, that is, that subjects would be able to discriminate between the 'high' and 'low' stimulus sets, an analysis of the subjects' 'yes' responses was conducted. 'Yes' responses were defined as the number of 'yes' responses to the 'high' stimulus set (i.e., the 40 stimuli judged as falling within a range of 5.0 and 3.5 by the expert raters) and the number of 'yes' responses to the 'low' stimulus set (i.e., the 40 stimuli judged as falling within a range of 3.25 and 1.0 by the raters).

A two-way ANOVA revealed a non-significant difference between the 'high' (M=26.0) and 'low' (M=25.3) stimulus sets. This indicates that 65% of the responses were 'yes' to the 'high' stimulus set, with 63% of the responses being 'yes' to the 'low' stimulus set (an indication of incorrect responses). A correlation of r=.76, p=.01 was found between 'yes' responses to the 'high' and 'low' stimulus sets. These results suggest the possible existence of a positive

response bias of the subjects to the two stimulus sets.

In an attempt to determine if subjects responded above chance to the 'high' and 'low' stimulus sets, two one-sample ANOVA's were conducted. A significant difference was found in subjects' 'yes' responses to the 'high' stimulus set, $F(1,115)=81.24$, $p<.001$, and to the 'low' stimulus set, $F(1,115)=58.94$, $p<.001$. This provides evidence that for both stimulus sets, subjects' responded 'yes' above chance level.

These results indicate that subjects failed to discriminate between the presence of attunement in the 'high' stimulus set and lower levels of attunement in the 'low' stimulus set, thereby failing to support the hypothesis. Although it may suggest the presence of a positive response bias, it may also indicate subjects' recognition of low levels of attunement present in the 'low' stimulus set. That is, since subjects were required to give a dichotomous 'yes' or 'no' response, the minimal amount (not zero) of attunement present in the 'low' stimulus set may have been substantial enough for them to respond 'yes', thus obfuscating the discrimination which may have occurred.

An additional, but not independent approach to analyzing the subjects' recognition of affective attunement was to directly examine the number of correct responses to both the 'high' and 'low' stimulus sets. This was done because of (a) the observed lack of difference between the number of 'yes' responses to the 'high' and 'low' stimulus sets, (b) the positive correlation, and (c) the possible positive response bias of the subjects to both sets of stimuli.

Recognition Based on Correct Responses. A two-way analysis of variance (ANOVA) revealed an overall significant difference in subjects' correct recognition responses (i.e., the number of 'yes' responses to the 'high' stimulus set and the number of 'no' responses to the 'low' stimulus set) between the 'high' and 'low' stimulus sets, $F(1,114)=72.61$, $p<.001$. The overall mean responses to the 'high' and 'low' stimulus sets were 26.0 and 14.7, respectively. Or alternatively, 65% of the responses to the 'high' stimulus set were correct, and 37% of the responses were correct to the 'low' stimulus set. A correlation between subjects' correct responses to the 'high' and 'low' stimulus sets was conducted; a moderately-high negative correlation ($r= -.76$, $p<.001$) was found, indicating that as the number of correct responses to the 'high' stimulus set increased, the number of correct responses to the 'low' stimulus set decreased. This negative correlation suggests a positive response bias in the subjects. That is, subjects may have a tendency to respond 'yes' to both types of stimuli which may be due to their instructions to respond in terms of presence or absence of attunement to the stimuli.

Gender Differences in Recognition of Affective Attunement

It was hypothesized that there would be a significant interaction between the type of stimuli (i.e., 'high' and 'low' stimulus sets) and subjects' gender in their recognition of affective attunement, such that females would be better than males in the recognition of affective attunement in both the 'high' and 'low'

stimulus sets and that the difference in recognition would be smaller in the 'low' stimulus set.

Recognition Based on 'Yes' Responses. A two-way ANOVA revealed a significant main effect for gender, $F(1,114)=5.52$, $p=.02$, and no significant interaction between gender and stimulus sets. Although the interaction was non-significant, further analyses were conducted since specific simple effects were predicted. A closer examination of the gender differences within the non-significant interaction revealed that for the 'high' stimulus set, females ($M=27.5$) responded 'yes' significantly more than did males ($M=24.5$), $F(1,114)=4.74$, $p=.03$; or 69% of the responses of females and 61% of the responses of males were 'yes' to the 'high' stimulus set. For the 'low' stimulus set, females ($M=26.9$) gave significantly more 'yes' responses than did males ($M=23.7$), $F(1,114)=4.90$, $p=.03$. Alternatively, 67% of the responses of females and 59% of the responses of males were 'yes' (incorrect responses) to the 'low' stimulus set. These simple effects, of course, were expected since there was a significant main effect of gender. There were no significant differences found between 'high' and 'low' stimulus sets for either males or females.

Recognition Based on Correct Responses. A two-way ANOVA revealed a significant gender by stimulus set interaction, $F(1,114)=5.52$, $p=.02$. An examination of the simple effects within the interaction revealed significant gender differences within each stimulus set. For the 'high' stimulus set, females gave significantly more correct responses ($M=27.5$) than males ($M=24.5$),

$F=(1,114)=4.74$, $p=.03$. Alternatively, 69% of the responses of females and 61% of the males' were correct to the 'high' stimulus set. For the 'low' stimulus set, males ($M=16.3$) gave significantly more correct responses than females ($M=13.1$), $F(1,114)=4.90$, $p=.03$. That is, 41% of males' responses and 33% of females' responses were correct to the 'low' stimulus set.

Further analysis of simple effects revealed a significant difference between the 'high' and 'low' stimulus sets for males, $t(47)=3.75$, $p<.001$ (means of 24.5 and 16.3 in the 'high' and 'low' stimulus sets, respectively), and for females, $t(67)=8.94$, $p<.001$ (means of 27.5 and 16.3 in the 'high' and 'low' stimulus sets, respectively). There was no significant main effect of gender in the analysis of correct responses.

The statistical analyses of subjects' 'yes' and correct responses only partially supported the gender hypothesis. In the analyses relating to subjects' 'yes' responses, the prediction of a significant gender by stimulus interaction for 'yes' responses was not supported; although females did respond with a higher mean frequency of 'yes' responses than males in both the 'high' and 'low' stimulus sets. This only partially supports the hypothesis in that females were predicted to give more 'yes' responses to the 'high' stimulus set and fewer 'yes' responses to the 'low' stimulus set than males. In the analysis of correct responses, a significant interaction was found between subjects' gender and their correct recognition of affective attunement in the two stimulus sets: females responded with a higher mean frequency of correct responses to the

'high' stimulus set with the opposite trend to the 'low' stimulus set. This may suggest (a) a positive response bias, (b) a greater sensitivity to the minimal amount of attunement present (i.e., behavioral cues indicating the presence of attunement) in the stimuli for female subjects, particularly the 'low' stimulus set, and/or (c) a more cautious approach or response bias in males in judging the stimuli, particularly in the 'low' stimulus set. That is, due to their differential socialization, males may be less sensitive and/or more reluctant to report the presence of attunement in the 'low' stimulus set and may require a greater number of cues, relative to females, to respond 'yes' to the 'low' attunement stimuli. The data for 'yes' and correct responses are depicted in Figures 1 and 2.

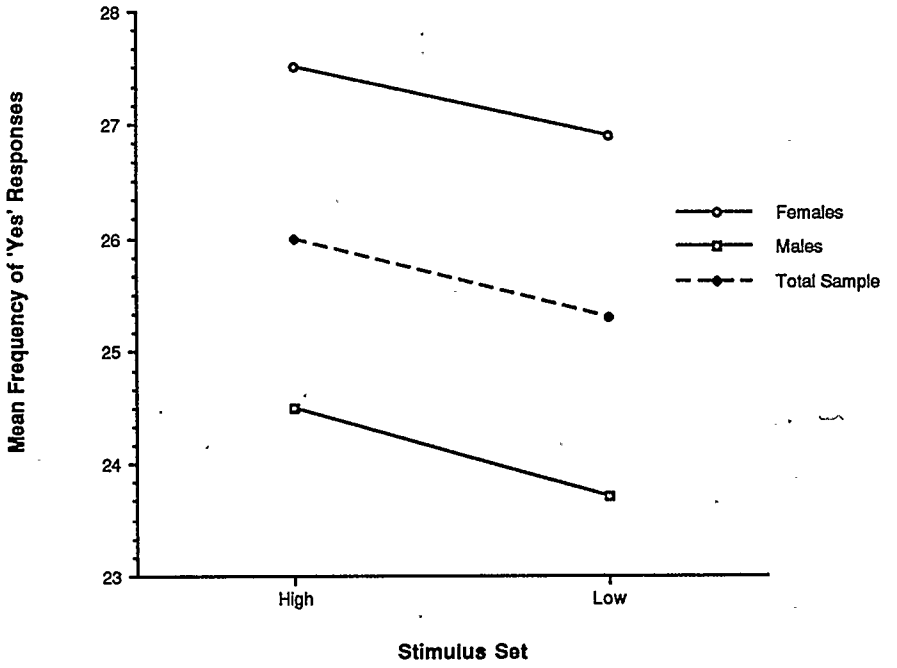

Figure 1. Graph represents total sample and gender recognition based on 'yes' responses to the 'high' and 'low' stimulus sets; n=40 for each stimulus set.

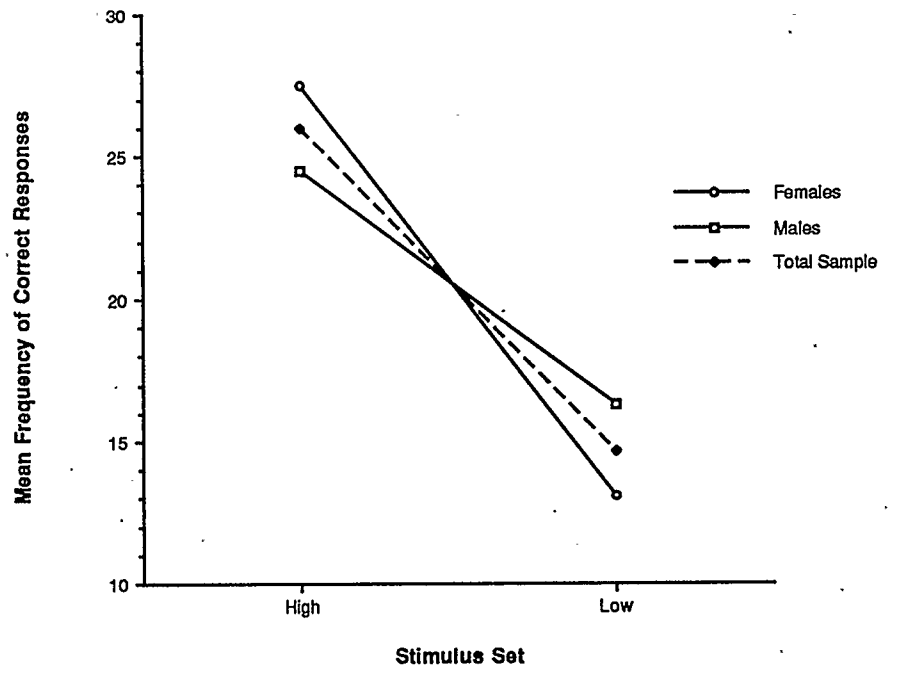

Figure 2. Graph represents total sample and gender recognition based on correct responses to 'high' and 'low' stimulus sets; n=40 for each set.

Subsidiary Analyses

To further examine the attunement hypothesis, that is, the non-significant findings relating to the lack of a significant difference of 'yes' responses to the two stimulus sets, and to further elucidate the possible positive response bias of subjects to the stimulus sets, additional post-hoc analyses were conducted. Subjects' 'yes' and correct responses were reexamined by subdividing the original two sets of stimuli into three stimulus sets, that is, into 'high', 'medium' and 'low' sets and by eliminating 20 of the stimuli. The stimulus sets were reduced from the initial 80 stimuli (40 in the 'high' stimulus set and 40 in the 'low' stimulus set) to 60 stimuli (20 stimuli within each of the 'high', 'medium' and 'low' sets). The resulting ranges for the expert affective attunement ratings, were 5.0 to 4.25 for the 'high' stimulus set, 3.5 to 2.75 for the 'medium' stimulus set and 2.25 to 1.0 for the 'low' stimulus set; the three sets of stimuli were non-overlapping. Twenty stimuli from the original 80 were deleted; 13 stimuli from the original 'high' stimulus set (with ratings of 4.0 or 3.75) and seven stimuli from the 'low' stimulus set (with a rating of 2.5).

The stimuli were tripartated in this way for the following reasons. First, the attunement hypothesis was not supported for the two stimulus set analyses; a non-significant difference was found for subjects' 'yes' responses to the 'high' and 'low' stimulus sets. Second, although the two original attunement sets did not overlap in terms of the experts' ratings of affective attunement, there were middle range stimuli present in the sets due to practical reasons (i.e., 40 stimuli

per set was desired for statistical power of the analyses regarding same and opposite sex dyads). By dividing the stimuli into three sets, the 'high' and 'low' sets become more distinct with respect to the level of affective attunement. It was assumed that the medium stimuli were more ambiguous or contain less distinctive affective cues, thus requiring more cognitive (as apposed to affective) processing. That is, the middle range stimuli may present the process rather than the state of attunement, thus reflecting the ambiguities (i.e., directional vs. bidirectional, mutual vs. individual, and degree of matching affect) in the negotiating process which lead to the state of affective attunement. For example, it appeared to the experimenter that the middle range stimuli seemed to depict the dyadic interaction in a unidirectional fashion (i.e., from one individual to another rather than simultaneous and bidirectional). Although this reflects a part of the attuning process whereby one individual initially attunes to the other, it does not represent the actual resulting state of affective attunement. The middle range stimuli also appeared to lack the sense of sharing or mutual affective communication and/or bidirectionality which is defined as the experience of the state of affective attunement, thus, being inconsistent with the operational definition of attunement as a state used in the present study.

Recognition Based on 'Yes' Responses. A two-way ANOVA revealed a significant main effect of stimulus set for subjects' 'yes' responses, $F(2,114)=8.22$, $p<.001$. The overall means for the 'high', 'medium' and 'low'

stimulus sets were 13.2, 13.4, and 12.1, respectively; significant differences occurred between 'high' and 'low' sets, $t(115)=2.90$, $p=.004$, and 'medium' and 'low' sets, $t(115)=4.46$, $p<.001$. There was also a significant main effect for gender, $F(1,114)=4.58$, $p=.03$, with the overall means for females and males being 14.5 and 12.0, respectively. There was no significant gender by stimulus set interaction.

Despite the non-significant gender by stimulus set interaction and because of the exploratory nature of these subsidiary analyses, the simple effects were examined (a) to parallel the previous analyses using the two sets of stimuli, (b) since a significant interaction was found between gender and the two original stimulus sets for correct responses, and (c) due to the smaller size of stimulus sets (i.e., 20 instead of 40), thus, reducing the power of the statistical analysis.

An examination of gender differences within each set revealed two significant differences; females ($M=13.8$) gave more correct responses than males ($M=12.3$) to the 'high' stimulus set, $F(1,114)=3.69$, $p=.05$ and females ($M=14.1$) gave more 'yes' responses than males ($M=12.4$) to the 'medium' stimulus set, $F(1,114)=5.16$, $p=.03$. Further analyses, examining differences among the three sets for females and males, revealed a significant difference for females between the 'high' ($M=13.8$) and 'low' ($M=12.5$) stimulus sets, $t(67)=2.43$, $p=.02$, as well as between the 'medium' ($M=14.1$) and 'low' ($M=12.5$) sets, $t(67)=3.81$, $p<.001$. For males, there was only one significant

difference; there were more 'yes' responses to the 'medium' (M=12.4) than 'low' (M=11.4) stimulus set, t(47)=2.35, p=.02.

Recognition Based on Correct Responses. A two-way ANOVA revealed a significant gender by stimulus set interaction, F(2,228)=3.14, p=.05, and a significant stimulus set main effect, F(2,228)=52.33, p<.001; no significant main effect for gender occurred. The overall means for the 'high', 'medium' and 'low' stimulus sets were 13.2, 8.9, and 7.9, respectively. All sets were found to be significantly different from one another; 'high' and 'medium' sets, t(115)=8.67, p<.001, 'high' and 'low' sets, t(115)=7.83, p<.001, 'medium' and 'low' sets, t(115)=2.84, p=.005.

Further analyses revealed females' correct responses differed among the three sets: significant differences were found in all combinations of the three sets; 'high' (M=13.8) and 'medium' (M=8.8) sets, t(67)=8.71, p<.001; 'high' and 'low' (M=7.5), t(67)=8.02, p<.001; and 'medium' and 'low', t(67)=2.88, p=.005. For males, correct responses significantly differed between 'high' (M=12.3) and 'medium' (M=9.1) sets, t(47)=3.78, p<.001; as well as between 'high' and 'low' (M=8.6) sets, t(47)=3.25, p=.002.

In sum, the statistical analyses of 'yes' and correct responses for the three stimulus sets were not consistent with the pattern of results obtained with the two stimulus sets. The three stimulus set results support the attunement hypothesis in that recognition of affective attunement was found to vary as a function of the level of attunement present in the stimulus sets. That is,

recognition decreased with lower levels of affective attunement. The results of the analyses of 'yes' responses to the three stimulus sets were inconsistent with the patterns obtained with the two stimulus set; a significant main effect for stimulus set as well as the loss of a significant gender difference in the 'low' stimulus set. These results support the attunement recognition hypothesis for 'yes' responses to the stimulus sets in that recognition varies as a function of the level of attunement present in the stimulus sets. These results also partially support the gender hypothesis with respect to the 'high' stimulus set, but no gender differences were found to the 'medium' or 'low' stimulus sets.

For correct responses in the three set analysis, females responded significantly higher than males in the 'high' stimulus set; but inconsistent with the two set analyses, males responded non-significantly higher than females in the 'low' stimulus set. As with the two set analyses, the three set analyses partially supported the gender hypothesis in that females responded with a higher frequency of correct responses to the 'high' stimulus set, but not to the 'medium' or 'low' stimulus sets. See Figures 3 and 4 for 'yes' and correct responses to the tripartated sets.

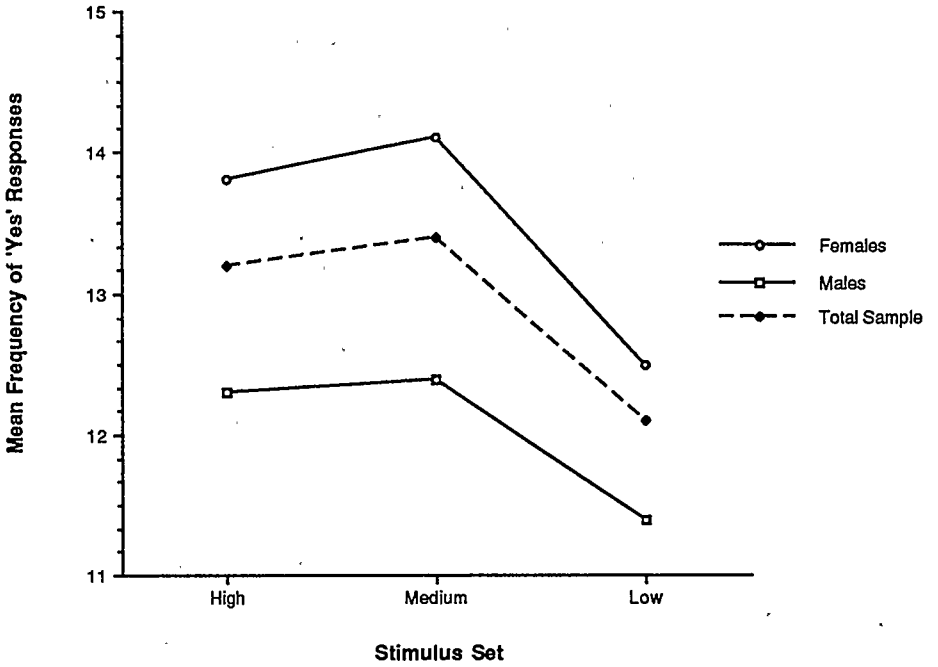

Figure 3. Graph represents total sample and gender recognition based on 'yes' responses to 'high', 'medium' and 'low' stimulus sets; n=20 for each set.

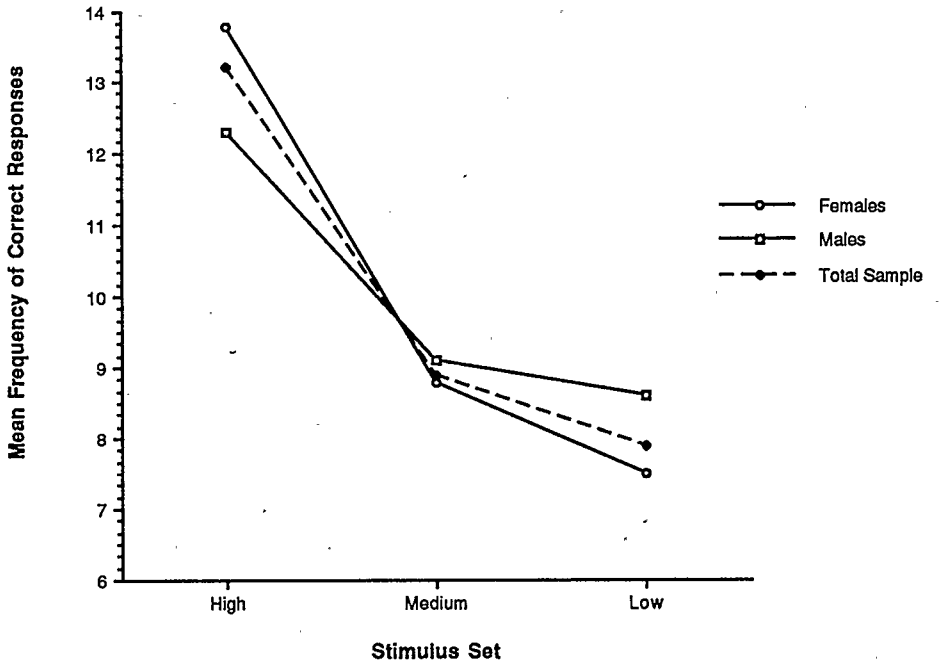

Figure 4. Graph represents total sample and gender recognition of correct responses to 'high', 'medium' and 'low' stimulus sets; n=20 for each set.

Analysis of Emotional Intensities Behaviorally Expressed in the Dyads. Since the stimulus sets were separated into three sets and 20 stimuli were deleted from the total set, ratings of emotional intensity behaviorally expressed by the dyads (as determined by the 4 expert raters) were reanalyzed in order to ensure a balance among the sets on emotional intensity behaviorally expressed in the dyads. An one-way ANOVA revealed a significant effect of stimulus set, $F(3,57)=219.32$, $p<.001$, with follow up analyses revealing no significant differences between the 'high' and 'medium' sets nor between the 'medium' and 'low' sets. A significant difference was found between the 'high' ($M=3.67$) and 'low' ($M=2.96$) stimulus sets, $t(19)=2.36$, $p=.03$, indicating that the 'high' stimulus set contained a higher degree of emotional intensity behaviorally expressed in the dyads than did the 'low' stimulus set. Therefore, any interpretation of the results employing the three sets of stimuli should be viewed cautiously, because it is unclear whether subjects were responding to the different levels of attunement in the sets and/or to the different levels of emotional intensity behaviorally expressed.

Additional Analyses: Assumptions Underlying the Study

Recognition of Attunement Based on Subjects' Responses to Sex of the Dyads

An issue related to the gender differences found in the previous analyses involved the question of whether males and females were differentially influenced by the sex of the dyads (i.e., same-sex and opposite-sex) in the

'high' and 'low' stimulus sets.

Recognition Based on 'Yes' Responses. In an attempt to examine the possible relationship between gender of the subjects and sex of the dyads in the stimuli, 'yes' responses were analyzed with respect to the sex of the dyads (i.e., female-female, male-male and mixed-sex) in both the 'high' and 'low' stimulus sets. A multivariate analysis of variance on stimulus set ('high' and 'low' stimulus sets), sex of dyads (i.e., female-female, male-male and mixed-sex), and gender of subjects was performed using 'yes' responses. The results revealed a significant stimulus set by sex of dyads interaction, $F(2,228)=24.96$, $p<.001$, and a significant main effect for gender, $F(1,114)=5.33$, $p=.02$. Despite a non-significant gender by sex of dyads interaction, further post-hoc analyses were conducted. Proportions are presented due to the unequal number of stimuli in the three sex of dyad groupings. Results revealed a significant effect for 'yes' responses to the 'high' stimulus set for (a) sex of dyads, $F(2,228)=16.05$, $p<.001$ (mean proportions of 69.48 for female-female dyads, 58.99 for male-male dyads and 66.08 for mixed-sex dyads; with female-female dyads being significantly higher than male-male dyads, $t(115)$ 4.99, $p<.001$, and mixed-sex dyads significantly higher than male-male dyads, $t(115)=4.36$, $p<.001$), and (b) gender, $F(1,114)=3.91$, $p=.05$ (mean proportions of 67.81 for females and 60.66 for males). For the 'low' stimulus set, sex of dyads was significant, $F(2,228)=9.88$, $p<.001$ (mean proportions of 62.93 for female-female dyads, 69.46 for male-male dyads and 62.52 for mixed-sex dyads; with male-

male dyads significantly higher than mixed-sex dyads, $t(115)=4.26$, $p<.001$, and male-male dyads being significantly higher than female-female dyads, $t(115)=3.39$, $p=.001$); and gender was also significant, $F(1,114)=5.16$, $p=.03$ (mean proportions of 68.49 for females and 59.98 for males). See Table 2 for the data representing the mean proportion of 'yes' responses.

Table 2.

Mean proportion of 'yes' responses of females and males to sex of dyads.

	Females	Males	Overall
High Stimulus Set			
Female-Female[a]	72.65	65.00	69.48
Male-Male[b]	61.35	55.66	58.99
Mixed-Sex[c]	69.44	61.32	66.08
Overall Means	67.81	60.64	64.24
Low Stimulus Set			
Female-Female[a]	67.50	56.46	62.93
Male-Male[b]	72.69	64.88	69.46
Mixed-Sex[c]	65.28	58.61	62.52
Overall Means	68.49	59.98	64.24

[a] $n = 10$.

[b] $n = 7$.

[c] $n = 23$.

Recognition Based on Correct Responses. A multivariate analysis of variance was performed; a significant 2-way interaction was found between gender and stimulus set, $F(1,114)=5.33$, $p=.02$. Significant main effects were revealed for stimulus set, $F(1,114)=70.46$, $p<.001$, and sex of dyads, $F(2,228)=24.96$, $p<.001$. The overall mean proportions for female-female, male-male and mixed-sex dyads were 53.3, 44.8 and 51.8, respectively. Despite a non-significant gender by sex of dyads interaction, simple post-hoc effects tests were conducted in order to examine the possible relationships between gender and sex of dyads. Results revealed significant effects for correct responses to the 'low' stimulus set for (a) sex of dyads, $F(2,228)=9.88$, $p<.001$ (mean proportions of 37.07 for female-female dyads, 30.54 for male-male dyads and 37.48 for mixed-sex dyads; with mixed-sex dyads being significantly higher than male-male, $t(115)=4.26$, $p<.001$, and female-female dyads significantly higher than male-male dyads, $t(115)=3.39$, $p<.001$) and (b) gender, $F(1,114)=5.16$, $p=.03$ (mean proportions of 31.51 for females and 40.02 for males). See Table 3 for the data representing the mean proportion of correct responses.

Table 3.

Mean proportion of correct responses of females and males to sex of dyads.

	Females	Males	Overall
High Stimulus			
Female-Female[a]	72.65	65.00	69.48
Male-Male[b]	61.35	55.66	58.99
Mixed-Sex[c]	69.44	61.32	66.08
Overall Means	67.81	60.66	64.24
Low Stimulus Set			
Female-Female[a]	32.50	43.54	37.07
Male-Male[b]	27.31	35.12	30.54
Mixed-Sex[c]	34.72	41.40	37.48
Overall Means	31.51	40.02	35.77

[a] n = 10.

[b] n = 7.

[c] n = 23.

In conclusion of the results involving 'yes' and correct responses to the sex of dyads by females and males, a difference in 'yes' or correct responses was found for sex of dyads within the 'high' stimulus set; females responded consistently higher than males across same-sex and opposite sex dyads. Within the 'low' stimulus set, females responded 'yes' consistently more than males across same-sex and opposite sex dyads; or alternatively, males responded with a higher proportion of correct responses. The effect of 'yes' responses for sex of dyads were found to be dependent upon the type of stimulus set; this indicates a higher proportion of correct responses to the 'high' stimulus set than the 'low' stimulus set. The results also revealed that within the 'high' stimulus set, the proportion of 'yes' or correct responses in order from highest to lowest were female-female, mixed-sex and male-male; the pattern of 'yes' responses to the 'low' set was male-male, female-female and mixed-sex; or alternatively, the proportion of correct responses from highest to lowest were mixed-sex, female-female and male-male. Thus, these findings do not further elucidate the gender hypothesis, that is, gender attunement recognition is not dependent on the sex of the dyads depicted in the stimulus set. These findings do suggest, however, that overall subject recognition is contingent upon the sex of the dyads, in that recognition is best for female-female and mixed-sex dyads and worse for male-male dyads. Figures 5 and 7 graphically represents the data for the mean proportion of 'yes' responses. Figures 6 and 8 graphically represents the data for the mean proportions of correct responses.

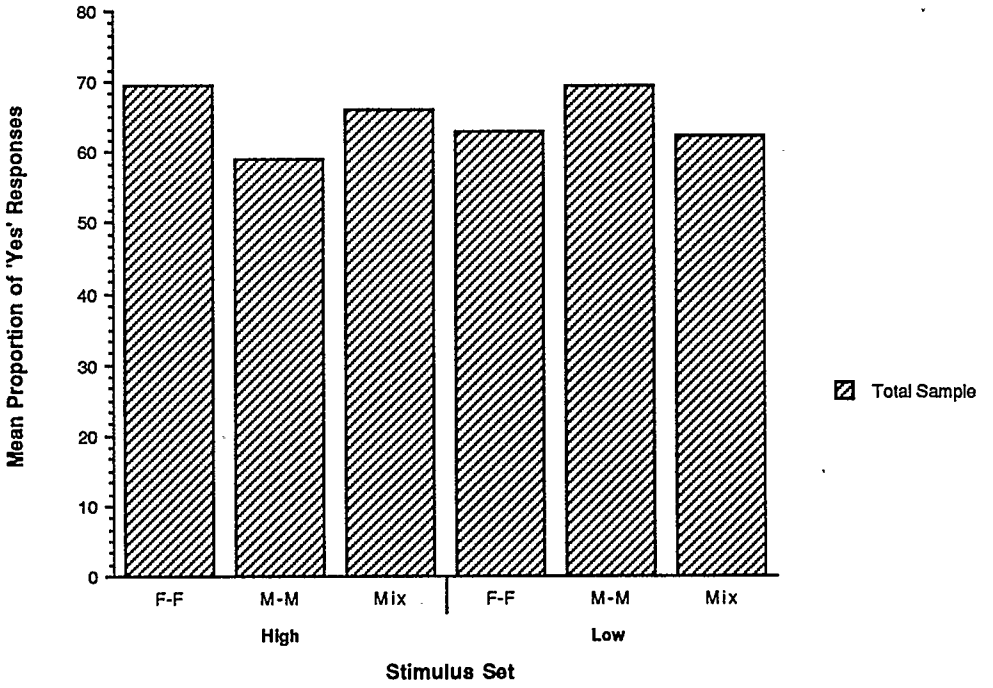

Figure 5. Bar graph represents total sample recognition of 'high' and 'low' stimulus sets based on 'yes' responses to sex of dyads: F-F represents female-female dyads, M-M represents male-male dyads and Mix represents mixed-sex dyads (n=40 in each set).

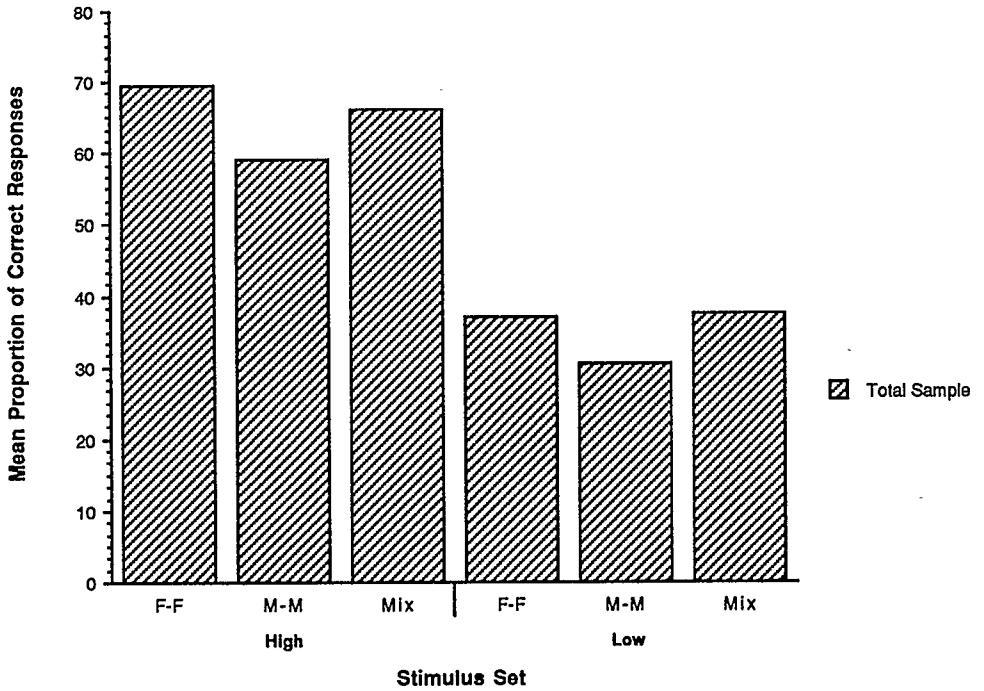

Figure 6. Bar graph represents total sample recognition of 'high' and 'low' stimulus sets based on correct responses to sex of dyads: F-F represents female-female dyads, M-M represents male-male dyads and Mix represents mixed-sex dyads (n=40 for each set)

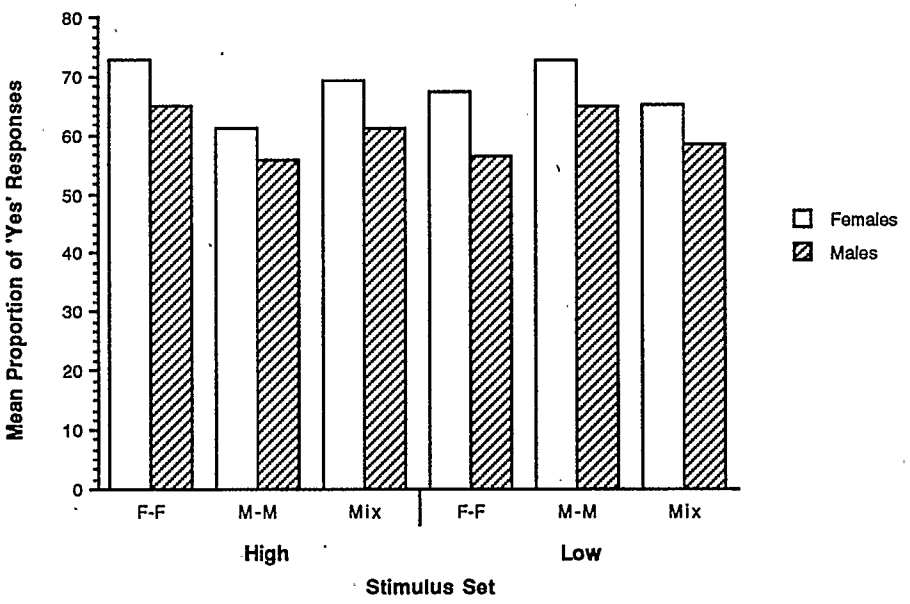

Figure 7. Bar graph represents gender recognition to 'high' and 'low' stimulus sets based on 'yes' responses to sex of dyads: F-F represents female-female dyads, M-M represents male-male dyads and Mix represents mixed sex dyads (n=40 in each set).

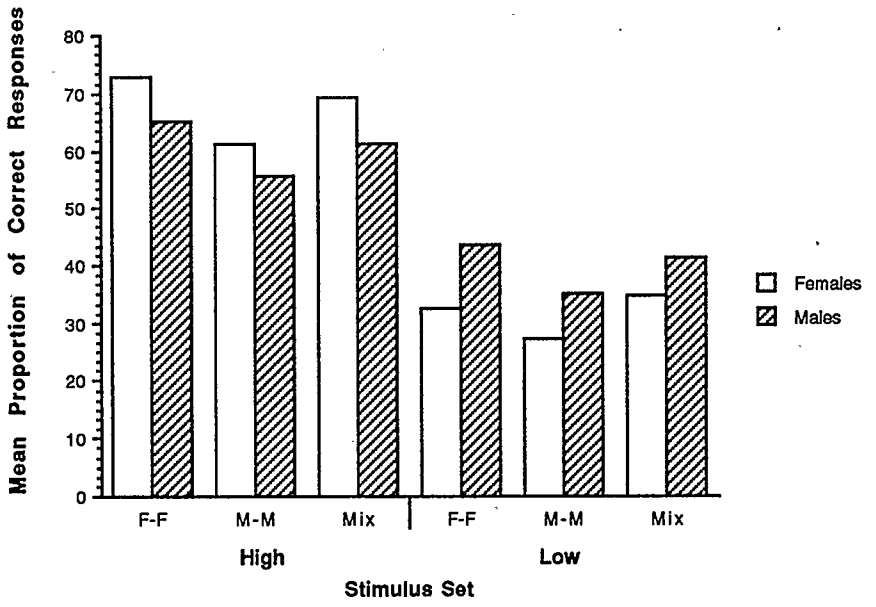

Figure 8. Bar graph represents gender recognition to 'high' and 'low' stimulus sets based on correct responses to sex of dyads; F-F represents female-female dyads, M-M represents male-male dyads and Mix represents mixed sex dyads (n=40 for each set).

Analyses of Questionnaire

Analyses were conducted on subjects' responses to the Affective Attunement Questionnaire as well as related to subjects' responses to the experimental stimulus sets. This was done as a means of verifying two fundamental assumptions underlying the present study; that is, that people who are attuned are more likely to be (a) adolescents who have had (or report on the questionnaire) attunement experiences and were more likely to recognize attunement in the 'high' stimulus set, and (b) those individuals were more likely to be females. This analysis, however, was intended as an exploratory measure since the reliability and the validity of the Affective Attunement Questionnaire have not been ascertained.

Familial and peer relationships may be related to the general socioemotional development of children and specifically to affective attunement. Therefore, these relationships were examined as well as related to affective attunement as assessed by the Affective Attunement Questionnaire. An examination of family and peer data revealed that the majority of subjects (82%) lived with both parents before the age of 10 years, with the remainder living only with their mother (10%) or only with their father (2%). It was also found that a large proportion of subjects visited relatives 7 or more times a year (47%), with the remainder visiting relatives 2 or 3 times a year (16%) or once a year (18%). At the time of the study, 37% of adolescents reported having 2 to 3 "close" friends of the same gender, 26% had 4 to 5 "close" friends of the same

gender, and 30% having more than 6 "close" friends of the same gender. For "close" friends of the opposite gender, 21% reported that they had one such friend, 35% had 2 to 3, and 20% had more than 6 'close' friends of the opposite gender. Thirty-three percent of the sample sometimes dated, 32% often dated, with 16% never dating. Subjects reported their volunteer efforts in organizations which helped others; 37% did this rarely, 28% occasionally, 9% often and 26% never.

Determining Level of Subjects' Affective Attunement from the Questionnaire. Although exploratory in nature, the purpose of the Affective Attunement Questionnaire was to test the assumption that those individuals who were more attuned would be better in recognizing the attunement occurring in the experimental stimuli.

For each of the 27 items on the questionnaire, subjects responded to a 5-point Likert scale from strongly disagree (A) to strongly agree (E). A and B responses were assumed to indicate non-attunement and D and E responses were assumed to indicate affective attunement. Therefore, it was presupposed that the greater the total number of D and E responses (attuning responses) to the items, the more individuals were attuned; and conversely, the greater the number of A and B responses (or non-attuning responses), the less individuals were attuned. The means for total D and E responses and total A and B response were 17.0 and 4.4, respectively. The range for D and E responses was 5 to 27 and the range for A and B responses was 0 to 18.

'Yes' Responses to Experimental Stimuli. Subjects' responses to the Affective Attunement Questionnaire (assessing their beliefs and behaviors associated with affective attunement) were correlated with 'yes' responses to the stimulus sets in the experiment. A significant positive correlation was found between subjects' frequency of D/E's (attuning responses) and the number of 'yes' responses to the 'high' stimulus set, $r=.31$, $p<.01$; a similar significant positive correlation was found between subjects' frequency of D/E's and the total number of 'yes' responses to the 'low' stimulus set (i.e., incorrect responses), $r=.30$, $p<.01$. No significant correlations were found using A/B or non-attuning responses.

Correct Responses to the Experimental Stimuli. Similar separate correlations between attuning responses (D/E) and non-attuning responses (A/B) and correct responses were conducted. There was a significant positive correlation between the number of correct responses to the 'high' stimulus set and frequency of D/E's, $r=.30$, $p<.01$. A significant negative association was found between correct responses to the 'low' stimulus set and D/E's, $r=-.30$, $p<.01$. These correlations indicated that the more attuned adolescents were (by self-report), the better they were at recognizing attunement in the 'high' stimulus set, and the worse they were in correctly responding to stimuli with lower levels of affective attunement. It is possible that those who have been affectively attuned may be better able to detect affective attunement in situations which have minimal cues as in the 'low' stimulus set. It may also suggest a positive

response bias of the attuned subjects; i.e., they may have believed that they see attunement in situations in which there was very little or no attunement present. No significant correlations occurred between correct responses to either 'high' or 'low' stimulus sets and subjects' frequency of A/B responses (an indication of the lack of affective attunement). The failure to find such significant correlations was likely due to the limited range and small number of subjects responding with A and B responses.

These results revealed that the greater the degree of affective attunement, the greater the frequency of correct (and 'yes') responses to the 'high' stimulus set. These results also reveal that the greater the attunement of subjects, the lower the frequency of correct responses and the higher the frequency of 'yes' responses to the 'low' stimulus set. This may indicate a positive response bias or a greater sensitivity of more attuned individuals being able to recognize attunement even when small amounts of attunement cues were present as they were presumed to be in the 'low' stimulus set.

Gender Differences and Responses to Questionnaire. It was assumed that females have a greater number of affective attunement experiences than males; this was the basis of the gender hypothesis. This assumption was examined by looking at gender differences in the beliefs and behaviors of attunement in the subjects' daily lives. Females had significantly higher attuning scores (D/E's) (M=18.2) than males (M=15.4), $F(1,114)=11.40$, $p=.001$. No significant difference was found between males and females using A/B's (non-

attuning responses). Thus, the assumption of females being more attuned than males was supported by their self-report responses on the affective attunement questionnaire.

Demographics and Responses to Questionnaire. In order to determine if attuning (D/E) and non-attuning (A/B) responses were related to other descriptive data, additional analyses were conducted. A one-way ANOVA revealed a significant effect of approximate grade average in school for the past year and attuning responses, $F(4,111)=2.71$, $p=.03$; however, no pair-wise comparisons attained significance. A significant ANOVA was also found for grade average and non-attuning responses $F(4,111)=4.42$, $p=.002$; no pair-wise comparisons attained significance (see Table 4).

A significant ANOVA was found for the frequency of volunteer work on attuning responses, $F(3,112)=4.59$, $p=.005$. Subjects who "occasionally" ($M=19.33$) volunteered had significantly higher attuning responses than those who "never" ($M=16.43$) volunteered, $t(58.7)=2.94$, $p=.005$; subjects who "occasionally" volunteered had significantly higher attuning responses than those who "rarely" ($M=15.93$) volunteered, $t(73.9)=3.53$, $p=.001$. This indicates that the more attuned an adolescent was, the greater the frequency of volunteer work.

A significant effect was found using the number of very "close" friends of the opposite gender, $F(4,111)=2.62$, $p=.04$. Subjects with one "close" friend ($M=18.83$) were higher in their attuning responses than those with 2 - 3 "close"

friends (M=16.72), t(55.9)=3.06, p=.003.

In sum, it appeared that being attuned and non-attuned was related to grades in high school. It also appeared that adolescents who were attuned have a higher frequency of volunteer work and have a higher frequency of one "close" opposite-gender friends. This indicates that adolescents may place themselves in situations where they can help others as well as have more intimate relationships with one member of the opposite sex.

Table 4.

Mean attuned and non-attuned responses with demographics.

	Attuned	Non-Attuned
Approximate Grade Average		
75% - 85%	16.19	5.35
65% - 75%	18.38	3.72
55% - 65%	16.00	3.48
Volunteer Work		
Never	16.43	N/A
Rarely	15.93	N/A
Occasionally	19.33	N/A
Opposite Gender 'Close' Friends		
1	18.83	N/A
2 - 3	16.72	N/A

DISCUSSION

The purpose of this study was to devise a methodology to examine whether adolescents can recognize affective attunement occurring between others, and whether a gender difference exists in the recognition of attunement. The results relating to the affective attunement and gender hypotheses will be presented and reviewed for the two and three stimulus set analyses. Following this, the findings regarding gender in relation to sex of the dyads will be discussed, concluding with an exploratory analysis of the Affective Attunement Questionnaire as it relates to the recognition task and various demographic variables.

Recognition of Affective Attunement

It was hypothesized that subjects would be able to discriminate between the 'high' and 'low' stimulus sets; that is, subjects would respond with more 'yes' responses to the 'high' than 'low' stimulus sets. This prediction was not supported by the two stimulus set analyses; that is, a non-significant difference was found for subjects' 'yes' responses to the 'high' and 'low' stimulus sets, but a significant difference was found for subjects' correct responses to the 'high' and 'low' stimulus sets. Additional analyses found that subjects responded 'yes' significantly above chance for both the 'high' and 'low' stimulus sets, a further indication that subjects did not discriminate between the two sets of stimuli.

In combination, these results may be understood by considering two

possibilities: (a) the adolescents may have had a tendency to respond 'yes' (a positive response bias) to both sets of stimuli, particularly the 'low' stimulus set, and/or (b) they may have been sensitive to even minimal amounts of behavioral cues indicating affective attunement in the 'low' (but not zero) stimulus set. Considering the first possibility, there may be at least three sources of response bias. One source may have been adolescents' emotional lability due to their experiencing hormonal and physical changes, being increasingly focused on interpersonal and peer related issues and issues related to identity and intimacy; thus, they may have had a tendency to respond affirmatively to any subject matter dealing with socioemotional stimuli. Second, the instructions may have led adolescents to respond 'yes', since they did not know that only half of the slides contained higher levels of attunement, thus conforming to the intent of the instructions (to respond 'yes'), and/or wanting to please the experimenter. Third, the middle range stimuli (contained in the lower end of the 'high' stimulus set and the higher end of the 'low' stimulus set) may have been too ambiguous for adolescents to affectively respond to, thus eliciting a more cognitive approach to responding, thus resulting in the loss discriminability between the two sets of affective stimuli. On the other hand, the high proportion of 'yes' responses may be due to adolescents being more sensitive to the attunement cues present in the dyads. First, these results may be due to adolescents being attuned to a wide range and depth of attunement experiences and, thus, are aware of and can recognize even lower levels of attunement. Being attuned to

a wide range and depth of attunement experiences is consistent with the underlying assumption of this study, that adolescents will be able to recognize attunement because they have had attunement experiences in the past. Second, adolescents may be as sensitive to the attunement process and/or misattunements as they are to the state of attunement which was assumed to be presented in the 'low' stimulus set, thus their 'yes' responses were an indication of recognition of process rather than the state of attunement. As a consequence of some of these possibilities, the stimuli were tripartated and the data were reanalyzed.

The three stimulus set analyses supported the attunement hypothesis in that subjects were able to discriminate between the 'high' and 'low' stimulus sets. The results revealed a significant main effect for stimulus set; specifically, subjects gave more 'yes' responses to the 'high' than to the 'low' set, and more to the 'medium' than to the 'low' set. There were more correct responses to the 'high' than 'low', 'high' than 'medium' set, and 'medium' than 'low' set. In combination, these results indicate that adolescents could discriminate the decreasing levels of attunement in the stimuli. Thus, tripartating the stimuli made the sets more distinct and clarified the results for the 'high' and 'low' stimulus set. It also revealed that the possible positive response bias appeared to continue to the 'medium' set (i.e., similar frequencies of 'yes' responses were observed for the 'high' and 'medium' stimulus set). This suggests that the middle range stimuli in the 'medium' set were perhaps more ambiguous to the

subjects (e.g., more unidirectional than bidirectional, more individual than mutual, or reflecting more the negotiating process than the state of attunement), thus, eliciting a positive response bias due to more cognitive, as apposed to affective, processing of the stimuli. It is possible that although the middle and low range stimuli may contain various aspects of the negotiating process of affective attunement, there may also be aspects of misattunement. Since misattunements contain aspects of the attunement process (even though the exact matching and sharing of the state of affective attunement are not present), adolescents may be responding to the unidirectional attunement present in the process of attunement or misattunement. Adolescents may also possess an affective template characterized by many misattunements as well as aspects of the process being imbued with positive affects; thus, they may respond to the minimal cues in the 'medium' and 'low' sets rather than just focusing on the state of attunement manipulated in this study. It should be noted that the results of the post hoc analyses of the three sets of stimuli should be viewed with caution, since the tripartated stimuli were not balanced for sex of dyads (or status and affect) as were the original two sets of stimuli.

On a more molar level, these results are consistent with the notion that children and adolescents are socialized through early attunement experiences to be able to recognize attunement in others. Since adolescents were apparently able to discriminate between higher and lower levels of affective attunement in the tripartated set, it is plausible that the majority of adolescents

have had sufficient attunement experiences to develop an affective template with a depth and range of experiences diverse enough to respond accurately to a wide contextual range of situations (as depicted in the stimuli presented in this study). Thus, early and likely continuing attunement experiences may help to facilitate the affective recognition of attunement occurring between others. Attunement may also facilitate socioemotional development by providing individuals with meaningful affective experiences and unique ways or forms of affectively communicating with others. These skills may help some healthy individuals to develop significant connections and intimacies with others through the sharing and matching of affective states.

Gender Differences Related to Recognition of Attunement

It was hypothesized that a significant interaction would occur between gender of subjects and type of stimuli such that females would be better in recognition of affective attunement than males in both stimulus sets, but that the difference would be smaller in the 'low' stimulus set. This was based upon the assumption that females are socialized to be more socioemotionally oriented; thus, they receive more attunement experiences, better enabling them to recognize as well as be sensitive to varying levels of attunement in people. The results ('yes' responses) indicate that only a significant main effect for gender was found, with females responding significantly higher than males in both the 'high' and 'low' stimulus sets; there was no significant gender by

stimulus set interaction. For correct responses, a significant gender by stimulus set interaction was found, with females responding higher than males in the 'high' stimulus set and males responding significantly higher than females in the 'low' stimulus set. Upon examining females and males separately, a significant difference was found for correct responses between the 'high' and 'low' sets for each gender, indicating discriminability in recognition of attunement for females and males. These results only partially support the gender hypothesis for 'yes' responses; i.e., females responded significantly higher than males in both the 'high' and 'low' sets, but the difference between males and females did not decrease in the 'low' set. On the other hand, for correct responses, a gender by stimulus set interaction occurred, but the shape of the interaction was not consistent with the hypothesis. That is, these results suggest a consistency in 'yes' responding for females in comparison to males, which resulted in apparently less accuracy than males when responding to the 'low' set.

These findings may be the result of a positive response bias to the stimuli for females and/or perhaps a greater sensitivity to the affective attunement behavioral cues present in the 'low' set. These findings are also consistent with past research (e.g., Chodrow, 1978; Block, 1973; Gilligan et.al., 1990) indicating that females are socialized to value socioemotional aspects of their lives and intimate interactions with others. There may also be a response bias in males, resulting in them being more cautious or conservative in their response to the stimuli, perhaps reflecting a socialization pattern characterized

by less of a socioemotional focus and more of a cognitive focus. This supports past gender research in that males are regulated more by parents, and tend to be more inhibited with regard to their emotional expressions than females (e.g., Garber & Dodge, 1991; Saarni & Harris, 1989). On the other hand, males are generally poorer emotional nonverbal decoders than females (Hall, 1990) and, thus, may respond with fewer correct responses to higher levels of attunement.

As a consequence of these findings, which only partially support the gender hypothesis, the data were reanalyzed for gender differences in 'yes' and correct responses to the three stimulus sets. The results for the analysis of 'yes' responses were consistent with the two set analysis and, thus, only partially supported the gender hypothesis. That is, no significant gender by stimulus set interaction was found, but a significant main effect for gender was found. However, post hoc analyses of the non-significant gender by stimulus set interaction provided tentative support for the hypothesis; i.e., females responded significantly higher than males to the 'high' and to the 'medium' stimulus sets with no significant difference occurring between females and males for the 'low' set. Upon examining females and males separately, both females and males responded significantly higher to the 'medium' set than to the 'low' set, with the addition of females responding significantly higher to the 'high' set than to the 'low' set. For correct responses, a gender by stimulus set interaction was found, with females responding significantly higher than males in the 'high' set, but with no significant difference in the 'low' set. Both females

and males responded significantly higher to the 'high' than either to the 'medium' set or the 'low' set. In addition, females responded significantly higher to the 'medium' than to the 'low' set.

In combination, the results (especially for the post hoc three set analyses) provided some support for the gender hypothesis; i.e., females apparently recognized the attunement better than males in the 'high' and 'medium' sets, with this difference decreasing in the 'low' set. Thus, it appears that making the sets more distinct (in terms of the degree of attunement present) helps to understand gender differences in responding to attunement stimuli. The fact that males and females did not differ on the very low levels, or the relative absence, of attunement may suggest that females may not have a positive response bias as has been previously discussed; but rather, females may be more sensitive in recognizing the lower levels of attunement cues present in the dyads in the original 'low' set. That is, if they had a response bias, they would have remained higher than males in responding to the 'low' set. The significant gender difference in responding to the 'medium' set (which contained a larger proportion of 'low' stimuli as originally rated by the expert raters) further supports females' greater sensitivity to minimal cues indicative of attunement since females can accurately discriminate between the two sets. Or alternatively, males and females may have the same response bias to the 'low' set.

These results suggest that females are socialized to be more

socioemotionally oriented than males. On the other hand, the pattern of results can also be understood by examining males' socialization. Perhaps males are socialized with a narrower range and depth of attunement experiences and are unable to generalize these experiences to different contexts, resulting in a narrower pattern of recognition for higher levels of attunement in comparison to females. That is, males' threshold for responding to attunement cues may be higher than females, which may account for their conservative judgements of all three sets. Or alternatively, males may be just as attuned as females, but are socialized to be more inhibited in their expression which may affect their recognition and reporting of attunement. Thus, in the relative absence of such cues, it would not be surprizing that males and females do not differ.

Females were also found to better discriminate the levels of attunement among the three stimulus sets. This is consistent with previous findings and interpretations, in that females may be more sensitive to minimal cues which would allow them greater accuracy than males in the discrimination among varying levels of attunement. That is, females are socialized to be more emotionally oriented (e.g., Gilligan et.al., 1990), place greater emphasis on reading the emotional nonverbal cues of others (Hall, 1990), and have a wider range and depth of attunement interactions. Alternatively, males are traditionally socialized to focus less on emotional interactions, and unlike females, are not held as responsible for intimate relationships with others. Males may also experience a narrower range and depth of attunement experiences; and due to

their minimal experiences, males may also have a higher threshold for recognizing attunement, thus impairing their ability to discriminate among varying levels of attunement.

To put these findings within the context of socioemotional development, there are many variables which may contribute to gender differences in responding to affective attunement in people around them. One is the socialization pattern to which females are exposed which promotes a greater socioemotional awareness and responsiveness in their lives. For example, females receive (a) less parental regulation, a greater tolerance and understanding of a wider range of emotional awareness and expressions (Garber & Dodge, 1991); (b) parental behaviors which encourage smiling in girls (Dunn et.al., 1987), are more often proximally stimulated (Lewis & Weinfraub, 1979), and reinforce more adult oriented dependent behavior (Zahn-Waxler, 1991); (c) parental facilitation and encouragement of an emotional interpersonal emphasis (e.g., Dunn, 1988; Garber & Dodge, 1991) such as nurturance and adopting a mediational role in family conflicts (e.g., Vuchinich et. al., 1988); (d) parental behaviors which focus female children on the intrinsic consequences of behaviors and responsibility for their actions which may sensitize females to the internal states of others (Saarni, 1985); and (e) parenting behaviors consistent with socializing females to be better at affectively responding to stimuli. That is, females are generally more aware of their internal affective states than males (Saarni, 1985). It is possible that, if females were to more cognitively respond to

attunement stimuli, females would continue to respond more positively because their socialization enables them to more readily project themselves into emotional situations; that is, their greater number of attunement experiences may allow them to understand and take a more affective perspective in terms of the dyads of attunement interactions. Thus, girls relative to boys, learn to value emotion as a valid aspect of creating and maintaining intimacy or close affective relations with others by learning to please and accommodate others (e.g., Gilligan et. al., 1990; Zahn-Waxler et.al., 1991). These behaviors are consistent with females being socialized toward a qualitatively and quantitatively wider range of attunement experiences since attuning with others is consistent with the traditional female role of nurturance, mediation and promoting emotional intimacy with others. The ability to be aware of, read, experience and understand the affective states of others, as well as match and share these affective states, may be adaptive and consistent with the greater socioemotional emphasis placed on females' lives as well as aid females in developing and attaining connections and emotional intimacies with others. Thus, girls should generally have a greater ability to be aware of, experience and recognize affective attunement in others.

Another important variable, which results from the parental emotional socialization of females, is their generally greater skill in decoding nonverbal behaviors, specifically facial and body cues (see Hall,1990). The greater ability of females to decode emotional cues would likely aid them in recognizing the

facial and body cues present in attunement interactions and, thus, may have contributed to their greater sensitivity in recognizing attunement in the 'high' and 'medium' stimulus sets in the tripartate analysis, if one assumes there is not a response bias operating.

Hall's (1990) review also concludes that females are better at nonverbal expressions of their emotions. Experience in accurately communicating emotional information behaviorally as well as in decoding others' nonverbal behaviors may have contributed to females' greater recognition of attunement which was reflected in their more correct responding to the 'high' stimulus set. Females' nonverbal decoding skills and exhibition of emotional cues appear to be adaptive and consistent with their socialized roles which facilitate their emotional understanding and behavioral closeness with others.

A third variable contributing to gender differences may be that parents may attune their male and female children differently. Parents may affectively match and share in their daughters' affective states without attempting to alter the intensity or change the state more frequently than their sons. That is, parents may more frequently attempt to change the affective states of their sons by either decreasing or increasing the intensity of the affect or by completely altering their states. Females may also experience a higher proportion of misattunements. The experience of misattunements may help facilitate a wider depth and range of attunement experiences, improve awareness and generalizability of experiences and enable females to be more

sensitive to the process of attunement (and the minimal cues present in the middle range stimuli), thus improving recognition of attunement.

A fourth variable relates to the emotional intensity of females' interactions. Steinberg (1987) found that mother-daughter adolescent relationships are defined by higher levels of emotional intensity behaviorally expressed in their interactions. Intensity may partially account for the gender difference found in the three set analysis (females discriminated between 'high' and 'low' sets, whereas males did not), since the 'high' set was found to be significantly higher in emotional intensity behaviorally expressed than the 'low' set. Thus, females may more readily recognize high levels of attunement because they generally have more intense emotional interactions with their mothers than sons have with either parent. In the two sets of stimuli, the intensity was equated and perhaps as a consequence, there was no discrimination between the 'high' and 'low' sets. But when the stimuli were tripartated, resulting in the high set being inadvertently more intense than the low set, females discriminated between them while males did not. The absence of a difference between females and males with the 'low' set is also consistent with this argument, since the 'low' set also had low intensity of affect behaviorally expressed. To further examine this gender difference, recognition was examined based on the sex of the dyads.

Recognition Based on Sex of Dyads

To explore whether subjects' recognition of affective attunement varies as a function of gender of the subjects and sex of the dyads (same and opposite sex), an analysis of the two stimulus sets was conducted. Results from this analysis revealed that for 'yes' responses, although there was no significant gender by sex of dyads interaction, there was a significant stimulus set by sex of dyads interaction. Analysis of the simple effects within this interaction revealed that for the 'high' stimulus set, there were significant differences in 'yes' or correct responses between female-female and male-male dyads and also between mixed-sex and male-male dyads. The order of recognition of attunement for the dyads (from high to low) was female-female, mixed-sex and male-male. For 'yes' responses to the 'low' set, significant differences were observed between the mixed-sex and male-male sets, and the female-female and male-male sets. The order of recognition (from high to low) was mixed-sex, female-female and male-male dyads. Alternatively, correct responses to the 'low' set revealed significant differences in recognition between the mixed-sex and male-male dyads and between the female-female and male-male dyads, with the order (from high to low) being mixed-sex, female-female and male-male dyads.

The results suggest that for higher levels of affective attunement, the mean frequency of 'yes' or correct responses significantly decreases from same-sex female and opposite-sex dyads to same-sex male dyads. That is, the

recognition of attunement when there are high levels of attunement cues was best when the attunement occurred between females and between males and females (or females with infants of indiscernible sex), and the worst with males attuning with other males. Consistent with this, subjects' recognition of lower levels of attunement was best with attunement occurring between females and between females and males, and worse with males attuning with other males. Both males and females may be socialized to view affective sharing and matching as part of the domain of females interacting with other females and males, but not of males affectively attuning with other males. Adolescents may also do worse in the recognition of attunement between male-male dyads because they are socialized to believe that males do not attune with other males. The results may also be the consequence of too few stimuli depicting male-male interactions or that male-male interactions depict state attunements less effectively than female-female or mixed-sex interactions in either the 'high' and 'low' sets.

Although in this analysis no gender differences were observed in relation to the sex of dyads, these findings further elucidate the attunement hypothesis and are consistent with an underlying assumption of this study, that adolescents are qualitatively and quantitatively attuned and that this influences their recognition of attunement in others. Due to parental attunement socialization practices, male and female subjects appear capable of affectively responding to and/or cognitively projecting themselves into the states of attunement occurring

in the dyads because of earlier experiences with affective attunement in their lives. More specifically, for males and females who were exposed to a wide array and depth of attunement experiences as children, those experiences were most probably characterized by interactions with other females (such as their mothers). Observing and participating in these attunement interactions may have facilitated the better recognition of attunement occurring in female-female dyads and mixed-sex dyads than male-male dyads. These results are also consistent with cultural emotional norms in that emotional communication occurs most often between females (Gilligan et. al., 1990), and between females and males.

A cautionary note is important in interpreting the sex of dyad findings. There was considerable difficulty in obtaining male-male dyads; therefore, this sex of dyads group contained the fewest number of pictures. It is uncertain whether males do not behaviorally exhibit affective attunement with one other, or whether the emotional cultural norms influenced the photographers and/or editors of the books in which the pictures were found. Consistent with Stern's (1985) focus upon mother-child interaction, it is unknown whether such a focus reflects a reality that males do not often affectively attune with one another, or whether researchers are merely reflecting their own bias.

Analysis of Affective Attunement Questionnaire

There were two major assumptions underlying this study: that individuals

who are attuned will recognize attunement in others, and that these individuals are more likely to be females. In order to explore, assess and attempt to validate them, adolescents' responses to the affective attunement questionnaire (which assessed beliefs and behaviors regarding affective attunement in their daily lives) were examined, and related to recognition of attunement in the experimental stimuli. It was assumed that the greater the total number of D and E (or attuning) responses on the questionnaire, the more individuals were attuned; and conversely, the greater the total number of A and B (or non-attuning) responses to the 27 items, the less individuals were attuned. The results for the 'high' stimulus set revealed a significant positive correlation between the mean frequency of 'yes' or correct responses and frequency of D and E's; for the 'low' set, there was a significant positive correlation between 'yes' responses and frequency of D and E's, and a significant negative correlation between correct responses and frequency of D and E's. No significant correlations were obtained with the frequencies of A and B responses and 'yes' or correct responses to the 'high' or 'low' sets. This was probably due to the small number of A and B responses.

As assessed by this exploratory self-report measure, adolescents believe that they have experienced affective attunement and behave in accordance with affective attunement in their daily lives, i.e., 66% of responses were attuning responses. Thus, the assumption which underlies this study, that most individuals have received some amount of attunement was supported. Although

only exploratory in nature, these results support the assumption underlying the attunement hypothesis in that the more individuals are attuned, the more they recognize attunement occurring between others. It also suggests that attuned individuals may have a positive response bias and/or are more sensitive to minimal amounts of attunement present in the 'low' stimulus set.

Gender differences were also found in level of affective attunement, as assessed by the questionnaire. Females reported more affective attunement experiences and beliefs than males. No gender differences were found for non-attuning responses. This finding supports the assumption underlying the gender hypothesis and suggests that females may be more sensitive or aware of attunement or may have a positive response bias; i.e., their experiences are such that they can recognize attunement even under minimal cue situations. On the other hand, it may be that males are more cautious in their reporting of their beliefs and behaviors regarding attunement, due to their socialization which has served to regulate their emotional expressions.

An examination of attuning responses in relation to various demographic variables revealed that three variables were significant; average grade for the past year, frequency of volunteer work and frequency of close opposite sex friends. That is, those individuals who were more attuned were more likely to volunteer in order to help others and most often had one close friend of the opposite sex. No pair-wise comparisons for average grade attained significance for attuning and non-attuning responses. These results were consistent with

attunement socialization patterns previously described in that attunement, as a form of emotional intimacy and communication, would result in helping behaviors and the intimacy of close friendships. This is also consistent with adolescents' general focus on interpersonal relationships and emotional intimacy.

In summary, it appears that one aspect of socioemotional development which may be important for healthy individuals, is the phenomenon of affective attunement. Affective attunement may be one way in which individuals learn, experience and share emotions by matching the affective states of other people. This unique form of affective communication may help facilitate meaningful and intimate relationships and, thus, help qualitatively enrich individuals daily lives. This study was an initial attempt to investigate affective attunement and, therefore, employed an empirical approach in order to explore the potential existence and recognition of attunement occurring in adolescents' daily lives.

Limitations and Suggestions for Future Research

This study constituted the first attempt in assessing the recognition of affective attunement by adolescents. Therefore, several problems arose in the conduct of the research. These problems and suggestions for the direction of future research are now presented.

Future research should explore and document the possible sources of

response bias as well as possible sensitivity to the minimal amounts of attunement present in the dyads. One suggestion is the development of a control stimulus set which would have no cues for attunement by virtue of the two individuals not being familiar with each other or from the same context. For example, two individuals from separate pictures and interactions could be lifted from their respective pictures and placed together in a common context, thus ensuring the lack of shared and matched affect and intersubjective focusing and/or complementary postures, gestures or facial expressions.

A different approach would be to attempt to reduce the possibility of a response bias. This could be done by changing the instructions so that the subjects are informed that half the stimuli contain higher levels of attunement and half contain lower levels of attunement. In the present study, the dichotomous choice format was utilized to facilitate affective responses rather than cognitive responses which may more likely occur if one were to use, for example, a likert scale in judging degree of affect present in the dyads. The disadvantage of using the rating of levels of attunement approach is that it depends more on cognitions when, in fact, an affective phenomenon is being assessed.

Another suggestion for the assessment of subjects' response bias and/or greater sensitivity to minimal cues could be to develop an experimental design using vignettes, perhaps employing five conditions: (1) the negotiating process and state of attunement, (2) the state of attunement without the negotiating

process, (3) the negotiating process without the state of attunement, (4) the absence of both the process and state of attunement, and (5) a defensive interaction (i.e., avoidance of anxiety). Each condition could have three different levels of emotional intensity behaviorally expressed (i.e., low, medium and high) to determine whether recognition of attunement is facilitated or impeded by emotional intensity behaviorally expressed by the dyads. The use of such a five by three factorial design would also serve to clarify the role of the process of attunement in making the state of attunement salient to the subjects. The inclusion of a defensive condition is consist with Stern's (1985) position; i.e., defensiveness is assumed to be antithetical to the occurrence of affective attunement. Thus, it may be possible to determine whether recognition of attunement has an inverse relationship with recognition of defensiveness. To further elucidate this relationship, it may be beneficial to attain an index of the degree of defensiveness of subjects by using an instrument such as the Defense Mechanisms Inventory (Gleser & Ihelivich, 1969) to determine if there is a relationship between the subjects' degree of defensiveness and recognition of affective attunement experimental stimuli.

The present study attempted to assess in an exploratory manner the relationship between parent-child attunement and recognition of attunement in others. This was done by employing a questionnaire originally developed for use with university students, but adapted for adolescents; it's validity and reliability are unknown. An alternative approach would be to develop a

longitudinal study empirically assessing early parent-child attunement interactions or patterns and their relationship to children's and adolescents' subsequent recognition of attunement. The assessment of parent-child attunement interactions could be done by observing play situations (Stern, 1985) or feeding situations (Sullivan, 1953). Also, by assessing play and feeding situations, one may be able to determine more specifically the quantity and quality of attunement patterns from their interactions with parents and peers. Being developmental in nature, it would also be possible to determine the changing relationships between attunement and the recognition of attunement as a function of age or stage of life. Alternatively, a cross-sectional design employing age groups could be conducted, using objective measures of attunement interactions and relating these measures to recognition of affective attunement.

One issue which arose in the design of the study and interpretation of the results is whether subjects process the attunement stimuli cognitively and/or affectively. One way to approach this issue is perhaps to assess their physiological reactivity to the experimental stimuli, e.g., respiration, heart rate, galvic skin response, muscular tension and pupil dilation. Although controversial (Eisenberg, Fabes, Bustamante & Mathy; 1990) as to the validity of such measures in interpreting the meaning of patterns of physiological reactivity, such measures have been previously used to assess affective responsivity.

Another issue relevant to the design of the study, is the possible

response bias which may have arisen from the experimenter being female. Perhaps female subjects responded with more 'yes' responses overall due to social desirability or being given the opportunity to respond to affective stimuli; whereas, male subjects may have responded with more 'no' responses overall due to their socialization which emphasizes inhibition of emotional experience and expression. Thus, it is recommended that the presence of male and female experimenters should be manipulated in the conduct of the experimental sessions in future research in order to assess the effect of gender of experimenter and its possible interaction with gender of the subjects.

During the conduct of the experimental session, the researcher noticed that some individuals engaged in social referencing, and that this appeared more often with males. Such social referencing may influence the results by diminishing the gender differences found in recognition, since the males most often referenced females. To ensure that subjects individually respond to the stimuli, future research should entail individual administration of the stimuli.

The experimental stimuli were selected based upon the ratings of four 'expert' raters (two of each gender) who were 30 years or older. This was done because it was assumed that older raters would have had enough life experiences and understanding of self and others to reliably rate the pool of available pictures. On the other hand, it may be that older raters may attend to different attunement cues than adolescents, thus resulting in attunement pictures appropriate for their age group but not for adolescents, thereby likely

reducing the discriminability among different levels of attunement. It is recommended that the experts be the same age as the subjects for future research.

This study also relied on volunteers. Self selection may have influenced the results due to the sample being more academically or cognitively focused in their lives. This may have resulted in subjects cognitively processing the stimuli and thus resulting in a higher proportion of false positives. Future research could employ a wider range of subjects in order to ensure that they affectively respond to the stimuli.

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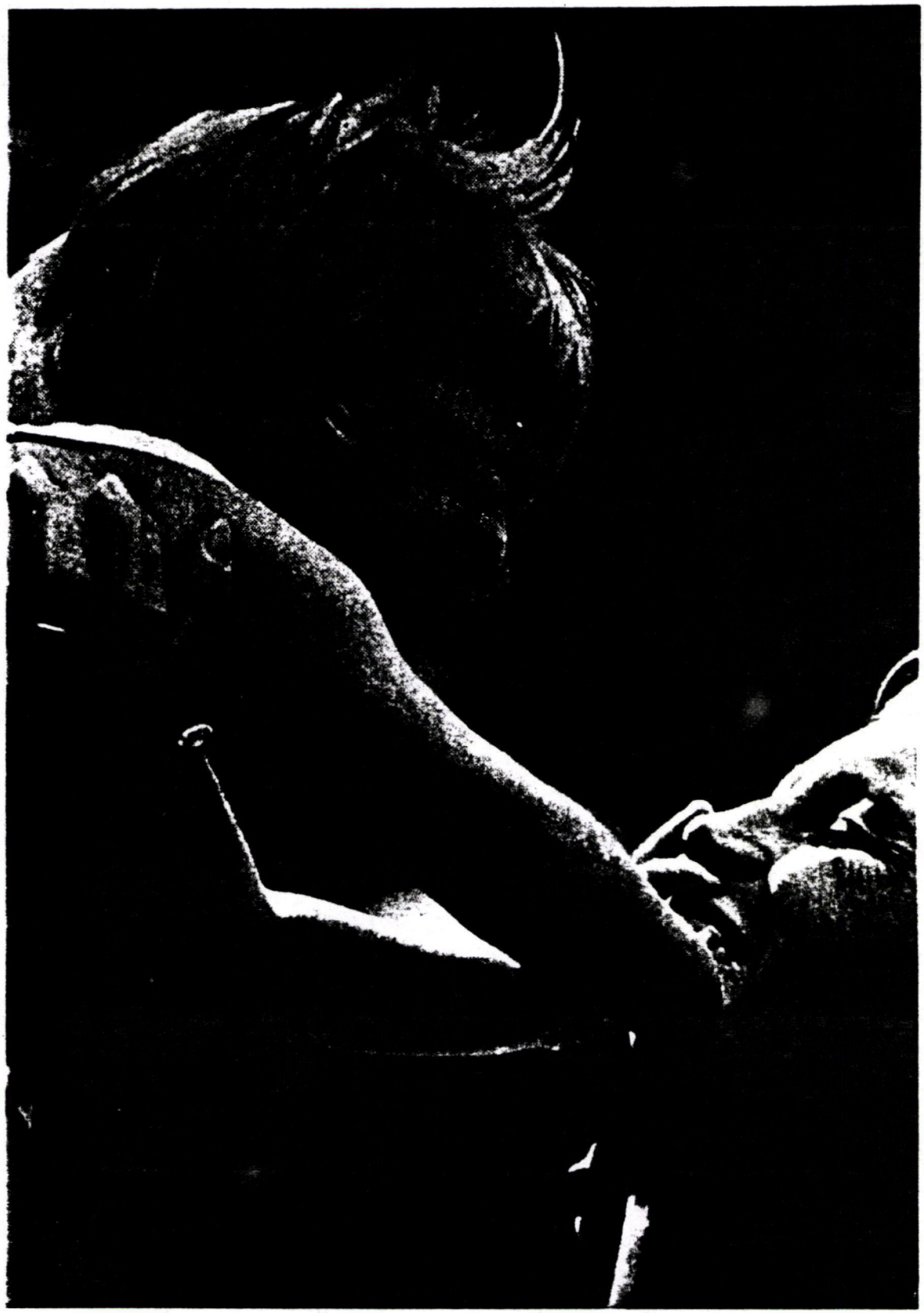
APPENDIX A

Examples of experimental stimuli: 'High', 'low' and animal-human stimuli



FIELD


Pittsburgh

APPENDIX B

Consent Forms

Consent Form

Dear Parent or Guardian,

As a parent, you are aware of the wide range of feelings teenagers experience on a daily basis. Through their interactions with others, teenagers often learn how to recognize the different ways people communicate their feelings to others. In an effort to further understand teenagers, the question arises: What are the factors which influence their ability to recognize the communication of feelings between people? The purpose of the present study is to investigate the role of age, gender and family demographics on teenagers' recognition of how others communicate their feelings.

The purpose of this letter is ask your permission to allow your teenager to participate in this study. In approximately 2 weeks, this study will be carried out in your teenager's classroom at his or her school. The procedure will take 50 minutes to complete and will be scheduled during a class period. The study will involve each student (1) completing a demographics questionnaire, (2) observing 96 slides of people interacting and simply responding to whether or not they see communication occurring, and (3) completing a questionnaire assessing their beliefs and experiences about interactions with people.

The information gathered will be strictly confidential and anonymous. Your teenager will be given the opportunity to ask any questions relating to the study and to withdraw at any time if he or she wishes. The investigator also retains the right to terminate participation of any student. A written copy of the results will be given to each participant upon completion of the study.

This study has been approved by the University of Calgary (Committee on the Ethics of Human Studies, Psychology Departmental Ethics Review Committee, and the Education Joint Research Ethics Committee) and the Calgary Board of Education.

If you have any questions regarding your teenager's participation in this research, please feel free to contact me at 220-3983 or 220-5561 at the University of Calgary.

Thank you for your time.

Sincerely,

Danica Hrynchak, B.A.
Graduate Student, Psychology

Gregory Fouts, Ph.D. (Supervisor)
Professor, Psychology

Student Name:_____

____ **I DO** give permission for my teenager to participate in this study
____ **I DO NOT** give permission for my teenager to participate in this study

_____ _____
Parent's or Guardian signature Date

_____ _____
Student's signature Teacher's signature

APPENDIX C

Demographic Questionnaire

QUESTIONNAIRE
PART A

Please indicate your date of birth: month_____ year_____

PLEASE CIRCLE THE ANSWER WHICH BEST DESCRIBES YOU:

1. **Your gender:**
   A. Male
   B. Female

2. **Your grade in high school:**
   A. 9th
   B. 10th
   C. 11th
   D. 12th

3. **What is your approximate grade average in school for the past year:**
   A. 85% or higher
   B. 75% - 85%
   C. 65% - 75%
   D. 55% - 65%
   E. below 55%

4. **Please indicate whether most of your childhood (before 10 years of age) was spent living with:**
   A. only your mother, step-mother, female guardian/foster parent
   B. only your father, step-father, male guardian/foster parent
   C. both mother and father
   D. mother and step-father
   E. father and step-mother
   F. both male and female foster parents/guardians

5. **Where have you lived the major part of your life?**
   A. rural area, farm
   B. town (less than 8,000 people)
   C. city (8,000 - 50,000 people)
   D. major city (50,000 or more)

6. **What is the highest educational level attained by your mother?**
   A. less than a high school degree
   B. completed high school
   C. some college/technical/university courses
   D. college or university degree
   E. masters or doctorate degree
   F. I don't know

7. **What is the highest educational level attained by your father?**
   A. less than a high school degree
   B. completed high school
   C. some college/technical/university courses
   D. college or university degree
   E. masters or doctorate degree
   F. I don't know

8. **Before you were 10 years old, your mother, step-mother or female guardian/foster parent:**
   A. never worked outside the home
   B. worked part-time outside the home
   C. worked full-time outside the home
   D. mother, step-mother or female guardian was not present in the home
   E. I don't know

9. **Before you were 10 years old, your father, step-father/foster parent:**
   A. never worked outside the home
   B. worked part-time outside the home
   C. worked full-time outside the home
   D. father, step-father or male guardian was not present in the home
   E. I don't know

10. **How often do you and your family visit with relatives:**
    A. we don't visit our relatives
    B. once a year
    C. 2-3 times a year
    D. 4-6 times a year
    E. 7 or more times a year

11. **How often have you done volunteer work with an organization which helped other people?**
    A. never
    B. rarely
    C. occasionally
    D. often

12. **In the last few months, how often have you been on a date?**
    A. never date
    B. rarely date
    C. sometimes date
    D. date often

13. **At the present time, how many brothers and sisters (including step or half brothers and step or half sisters) live in your home?**
    A. 0
    B. 1
    C. 2-3
    D. 4-5
    E. more than 6

14. **At the present time, how many very "close" friends of the same sex do you have?**
    A. 0
    B. 1
    C. 2-3
    D. 4-5
    E. more than 6

15. **At the present time, how many very "close" friends of the opposite sex do you have?**
    A. 0
    B. 1
    C. 2-3
    D. 4-5
    E. more than 6

16. **At the present time, what kind of mood are you in?**
    A. neutral, "mellow" or calm
    B. depressed or sad
    C. happy
    D. nervous
    E. bored

APPENDIX D

Affective Attunement Questionnaire

PART B

INSTRUCTIONS: Please indicate how much you agree or disagree with each of the following statements by **circling** your choice. **If a question does not apply to you, or you do not understand it, leave it blank.**

17. I know that many of my inner-most feelings can be sensed and felt by my <u>mother</u> without having talked about them

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

18. I know that many of my inner-most feelings can be sensed and felt by my <u>father</u> without having talked about them

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

19. I know that many of my inner-most feelings can be sensed and felt by my <u>best friend</u> without having talked about them

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

20. I often engage in an activity with someone because there is a sense of "emotional connectedness" between us

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

21. I can experience some of the inner-most feelings of my <u>mother</u> even though we have never talked about them

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

22. **I can experience some of the inner-most feelings of my <u>father</u> even though we have never talked about them**

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

23. **I can experience some of the inner-most feelings of my <u>best friend</u> without having talked about them**

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

24. **When friends have personal problems, they tend to come to me more often than to others**

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

25. **I have often had that special feeling of really knowing someone by just gazing into his/her eyes**

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

26. **As long as I can remember, my <u>mother</u> has been sensitive to my feelings**

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

27. **As long as I can remember, my <u>father</u> has been sensitive to my feelings**

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

28. **As long as I can remember, my <u>best friend</u> has been sensitive to my feelings**

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

29. **I can have a serious argument with my <u>best friend</u> and yet know that, "deep down," we are still "emotionally connected"**

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

30. **I can have a serious argument with my <u>father</u> and yet know that, "deep down," we are still "emotionally connected"**

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

31. **I can have a serious argument with my <u>mother</u> and yet know that, "deep down," we are still "emotionally connected"**

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

32. **I have a <u>best friend</u> with whom I can be myself, complete with all my faults, and still know that we relate well**

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

33. **I can experience the feelings of people I don't know without knowing their circumstances or why they feel the way they do**

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

34. Most of my friends believe that I am a very caring person

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

35. My friends can usually tell when I am open or "ready" for them to tell me their feelings

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

36. I can usually tell when my friends are "ready" for me to tell them how I truly feel about things

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

37. I believe that a special kind of "chemistry" can occur between two people even though they don't know it

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

38. I believe that one can feel "emotionally connected" to a virtual stranger without speaking to that person

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

39. I believe that one can share special feelings with other people just by being with (and not speaking to) them

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

40. I believe that showing emotional support is more important than solving a problem

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

41. I believe that "humanity" among people is more important than "fairness and equality"

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

42. I believe that one's sense of "connectedness with others" is more important than one's sense of "individualism"

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

43. I most often experience "emotional connectedness" with friends and other people who are of the <u>same</u> sex

A	B	C	D	E
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

THANK YOU VERY MUCH FOR YOUR PARTICIPATION IN THIS RESEARCH

GENERAL RESEARCH FINDINGS WILL BE AVAILABLE IN 3 MONTHS

THANK YOU AGAIN!!!

APPENDIX E

Sort I: Affective Attunement

Name of Rater _____

SORT I: AFFECTIVE ATTUNEMENT

Instructions: What I want you to look for in each picture is that special, almost "magical" sense of oneness or togetherness that two people can sometimes experience with one another. It's that unique feeling when two people are both experiencing and sharing the same feeling because they are emotionally connected to one another. It is that moment when two people, coming from different emotional wave lengths, arrive at the the same emotional wave length. It is more than the expression of similar emotions, it is a state where the people are focusing upon and experiencing one another, independent of the situation.

Affective attunement is the sharing of common affective states and attention. The congruence is due to the mutuality of focus upon one another rather than external stimuli. A sense of intersubjective relatedness is experienced through the sharing of affective meaning which results in a mutual affective experience of both people in the interaction. It is the non-verbal sharing of joint attention, intention, and affective state which can be evidenced through postural, gestural, and facial cues. Although the modalities by which the affective attunement is expressed does not have to be identical for both people in the dyad, the behavioral positions, gestures, postures and facial expressions are complementary and/or matching, reflecting the perceived affective state of the other. And finally, since the cues are multidimensional and complex, the dyads should also be viewed as a gestalt, asking yourself the question: Is there a sense of shared affective subjective interconnectedness over-and-above the obvious behavioral cues?

With each picture ask yourself the following questions:

1. Are they emotionally connected?
   Is each person "connected" to the other person emotionally?
   Is it reciprocal?

2. Are they experiencing the same feeling?
   Is each person exhibiting similar and/or complementary postures, gestures or facial expressions?
   Attunement can occur even when behavioral cues differ.

3. Are they focusing on one another?
   Attunement can occur when one or both people are not looking at each other; this can be seen through body postures, facial expressions etc.

4. Are they experiencing one another?
   Is each person experiencing the feeling of the other?
   Is this mutual or reciprocal?

Rating of Pictures for Affective Attunement Sort:
A convenient method of sorting the pictures is to first form 3 general piles---- those high in affective attunement on one side, those low in affective attunement on the other side, and those remaining in the middle. Once the 3 groups have been formed, then go through the pictures again and separate them further into 5 groups representing the degree of affective attunement: (a) low, (b) low-medium, (c) medium, (d) medium-high, or (e) high affective attunement.

Jugdement should be based on the assumption that the pictures fall into a bimodal (U-shape) distribution, with a larger number of the pictures falling in the higher and lower levels of affective attunement and a fewer number of pictures falling into the mid-level range of affective attunement.

For example, for a rating of 5, or high affective attunement, all four criteria must be met. For pictures having less than high levels of attunement: degree of affective attunement depends on how many and to what degree the other criteria are met. For any attunement to be rated as present, the two people must have some degree of being emotionally connected and experiencing the same feeling. For lower levels of attunement (low, low-medium), the two people must show an absence of emotional connectedness and not experience the same feeling.

It is recognized that these judgements are necessarily subjective, particularly in the middle ranges (low-medium, medium, medium-high). Nevertheless, by using a combination of the 4 criteria and your overall impression (gestalt) of the subjective connectedness between the two people, these pictures can be grouped. With experience you will find that judging becomes easier. It is likely that even toward the end of grouping all the pictures, you may change your mind for some of them.

The intent in having you sort this set of pictures, is to allow the experimenter to reduce the set of pictures for administration to subjects based on your ratings. If you find any picture which you feel cannot be placed in a group, please inform me upon completion of the task for this information will be of value to me. Also, if for some reason you cannot or prefer not to complete the task please contact me immediately, Danica Hrynchak, at the University of Calgary, at 220-3983 or 220-5561.

Before begining the task, please reread the instructions.

Upon completion of this task: Please record the numbers on the back of the pictures in the appropriate columns on the next page. The numbers are for identification purposes only; they do not represent degree of affective attunement.

APPENDIX F

Sort II: Emotional Intensity

Name of Rater_____

SORT II: EMOTIONAL INTENSITY

Instructions: The degree of behavioral affect expressed is the judgement of the intensity of affect, behaviorally expressed, for both people in the dyad. The objective here is to examine the overt behavioral dimensions exhibited by the people, viewing each person separately as well as together, independent of (or ignoring) the affective attunement which may or may not be present. The question is: what is the overall level of intensity of affect expressed in the dyad? This sorting serves the purpose of a control, with your judgements reflecting the level of intensity of affect independent of any possible attunement occurring between the people in their interaction.

With each picture ask yourself the following questions:

1. Are they each experiencing an emotion intensely?

2. Are both people experiencing an emotion intensely?

3. What is the overall impression of intensity you see in the dyad?

Rating of Pictures for Emotional Intensity Sort:
A convenient method of sorting the pictures is to first form 3 general piles----those high in affective intensity on one side, those low in affective intensity on the other side, and those remaining in the middle. Once the 3 groups have been formed, then separate the pictures further into 5 groups representing the degree of affective intensity:
(a) low, (b) low-medium, (c) medium, (d) medium-high, or (e) high degree of behavioral affect expressed.

Jugdement should be based on the assumption that the pictures fall into a bimodal (U-shape) distribution; with a larger number of the pictures falling in the higher and lower levels of affective intensity and a fewer number of pictures falling into the mid-level range of affective intensity.

For example, for a rating of 5 (indicating high intensity of affect behaviorally expressed), both people should be exhibiting behaviors characterized by high or intense emotion. This may be independent of the kind of emotions (e.g., happy or sad) and should be independent of the situation and degree of affective attunement they may be experiencing. For a low rating, both people should exhibit

behavior and expressive cues indicating little or no intensity of emotion.

The intent in having you sort this set of pictures, is to allow the experimenter to reduce the set of pictures for administration to subjects based on your ratings. If you find any picture which you feel cannot be placed in a group, please inform me upon completion of the task for this information will be of value to me. Also, if for some reason you cannot or prefer not to complete the task please contact me immediately, Danica Hrynchak, at the University of Calgary, at 220-3983 or 220-5561.

Before begining the task, please reread the instructions.

Upon completion of this task: Please record the numbers on the back of the pictures in the appropriate columns on the next page. The numbers are for identification purposes only, they do not represent degree of affective intensity behaviorally expressed.

THANKYOU FOR PARTICIPATING!

APPENDIX G

Experimental procedure sheet for raters

EXPERIMENTER PROCEDURE SHEET

1) Experimenter sits across the table from the rater in a room at the University of Calgary, Department of Psychology.

2) Experimenter states:

> The purpose of my research is to see if adolescents can recognize affective attunement in others. To do this, I need mature adults to rate the pictures. Based on your judgements, I will eventually administer a reduced set of pictures to my subjects.
>
> There are two parts to this task which will be conducted on different days. The first part will be for you to sort the pictures into levels based on the degree of affective attunement present in the pictures. The second part will be for you to sort the same pictures into levels based on the degree of affective intensity behaviorally expressed.

3) Experimenter gives Affective Attunement Instruction sheet to rater.

4) Experimenter places nine practice pictures, a practice record sheet, a sheet of paper and pencil on the table.

5) Experimenter states:

> The purpose of today's session is to ensure that you understand the instructions for affective attunement, so that you can later sort the pictures at home. But first, what I would like you to do is read the instruction sheets, a sort these practice pictures, and record the numbers from the back of the pictures on the record sheet. If you find that you have questions regarding the task please jot them down and I will answer them later. I am going to leave for about half an hour and when I return, I will ask you some questions. Do you have any questions at this time?

6) Experimenter refers rater to the instruction sheets, record sheet, sheet of paper and pencil.

7) Experimenter leaves the room for 30 minutes.

8) Experimenter returns and states:

"Okay, now I am going to ask you a few questions."

A. Do you think you understand/know what affective attunement is?

B. Can you explain to me what you think affective attunement is?

C. Can you give me an example of what you think affective attunement is?

D. Do you have any questions or concerns about the task?

9) Experimenter records the raters responses to the above questions on a sheet of paper.

10) Experimenter states:

If possible try to set some time aside to sort the pictures when you are alone. Now before you leave can we set up a time in a couple of days to meet and go through the second part of the task? What time is convenient for you?

11) Experimenter repeats the session (steps 1-3) for emotional intensity.

12) Experimenter states:

The purpose today's session is to ensure that you understand the instructions for rating affective intensity behaviorally expressed in the pictures, so that you can later sort the pictures at home. But first what I would like you to do is read the instruction sheets, sort these practice pictures, and record the numbers from the back of the pictures on the record sheet. If you find that you have questions regarding the task please jot them down and I will answer them later. I am going to leave for about half an hour and when I return, I will ask you some questions. Do you have any questions at this time?

13) Experimenter refers rater to the instruction sheets, record sheet, sheet of paper and pencil.

14) Experimenter leaves the room for 30 minutes.

15) Experimenter returns and states:

"Okay, now I am going to ask you a few questions."

A. Do you think you know/understand what emotional intensity behaviorally expressed is?

B. Can you explain to me what you think emotional intensity behaviorally expressed is?

C. Can you give me an example of what you think emotional intensity behaviorally expressed is?

D. Do you have any <u>questions</u> or concerns about the task?

16) Experimenter records the raters responses to the above questions on a sheet of paper.

17) Experimenter states:

If possible try to set a some time aside to sort the pictures when you are alone. Now before you leave can we set up a time in a couple of days to meet. What time is convenient for you?

18) At next meeting, experimenter graciously thanks rater for participating and buys them beer or wine.

APPENDIX H

Record Data Sheet

AFFECTIVE ATTUNEMENT: RECORD DATA SHEET

Record the numbers (on the back of the pictures) in the appropriate columns.

Low	Low-Medium	Medium	Medium-High	High

APPENDIX I

Subject Instruction Sheet

Subject Number _____

INSTRUCTIONS

"I am going to show you 96 pictures of people. What I want you to look for in each picture is that sense of oneness or togetherness that people can sometimes experience with one another. It's that unique feeling when two people are both experiencing and sharing the same feeling because they are emotionally connected to one another. It is that moment when two people, coming from different emotional wave lengths, arrive at the same emotional wave length. It is more than the expression of similar emotions, it is a state where people are focusing upon and experiencing one another, independent of the situation. I want you to look at these pictures and rate whether the people are experiencing (yes) or not experiencing (no) this sense of oneness. If you have any questions regarding the instructions, please feel free and ask. Do you have any questions (pause). Are you ready? Okay, now remember are these people experiencing that special sense of being emotionally connected?"

APPENDIX J

Experimental Answer Sheet

Subject Number _____

ANSWER SHEET

PRACTICE PICTURES:

1. YES _____ NO _____

2. YES _____ NO _____

3. YES _____ NO _____

Remember, look at each picture to see if that unique sense of oneness or togetherness is there. Is that moment there when two people are emotionally connected?

INSTRUCTIONS: While looking at each slide, **check** either yes or no. Please do not skip any.

1. YES _____ NO _____

2. YES _____ NO _____

3. YES _____ NO _____

4. YES _____ NO _____

5. YES _____ NO _____

6. YES _____ NO _____

7. YES _____ NO _____

8. YES _____ NO _____

9. YES _____ NO _____

10. YES _____ NO _____

11. YES _____ NO _____

12. YES _____ NO _____

13. YES _____ NO _____

Remember, look at each picture to see if that unique sense of oneness or togetherness is there. Is that moment there when two people are emotionally connected.

INSTRUCTIONS: While looking at each slide, **check** either yes or no. Please do not skip any.

14. YES _____ NO _____

15. YES _____ NO _____

16. YES _____ NO _____

17. YES _____ NO _____

18. YES _____ NO _____

19. YES _____ NO _____

20. YES _____ NO _____

21. YES _____ NO _____

22. YES _____ NO _____

23. YES _____ NO _____

24. YES _____ NO _____

25. YES _____ NO _____

26. YES _____ NO _____

27. YES _____ NO _____

28. YES _____ NO _____

29. YES _____ NO _____

30. YES _____ NO _____

31. YES _____ NO _____

32. YES _____ NO _____

Remember, look at each picture to see if that unique sense of oneness or togetherness is there. Is that moment there when two people are emotionally connected.

INSTRUCTIONS: While looking at each slide, **check** either yes or no. Please do not skip any.

33. YES _____ NO _____

34. YES _____ NO _____

35. YES _____ NO _____

36. YES _____ NO _____

37. YES _____ NO _____

38. YES _____ NO _____

39. YES _____ NO _____

40. YES _____ NO _____

41. YES _____ NO _____

42. YES _____ NO _____

43. YES _____ NO _____

44. YES _____ NO _____

45. YES _____ NO _____

46. YES _____ NO _____

47. YES _____ NO _____

48. YES _____ NO _____

49. YES _____ NO _____

50. YES _____ NO _____

51. YES _____ NO _____

Remember, look at each picture to see if that <u>unique</u> sense of <u>oneness</u> or togetherness is there. Is that moment there when two people are <u>emotionally connected.</u>

INSTRUCTIONS: While looking at each slide, **<u>check</u>** either yes or no. Please do not skip any.

52. YES _____ NO _____

53. YES _____ NO _____

54. YES _____ NO _____

55. YES _____ NO _____

56. YES _____ NO _____

57. YES _____ NO _____

58. YES _____ NO _____

59. YES _____ NO _____

60. YES _____ NO _____

61. YES _____ NO _____

62. YES _____ NO _____

63. YES _____ NO _____

64. YES _____ NO _____

65. YES _____ NO _____

66. YES _____ NO _____

67. YES _____ NO _____

68. YES _____ NO _____

69. YES _____ NO _____

70. YES _____ NO _____

Remember, look at each picture to see if that unique sense of oneness or togetherness is there. Is that moment there when two people are emotionally connected.

INSTRUCTIONS: While looking at each slide, **check** either yes or no. Please do not skip any.

71. YES _____ NO _____

72. YES _____ NO _____

73. YES _____ NO _____

74. YES _____ NO _____

75. YES _____ NO _____

76. YES _____ NO _____

77. YES _____ NO _____

78. YES _____ NO _____

79. YES _____ NO _____

80. YES _____ NO _____

81. YES _____ NO _____

82. YES _____ NO _____

83. YES _____ NO _____

84. YES _____ NO _____

85. YES _____ NO _____

86. YES _____ NO _____

87. YES _____ NO _____

88. YES _____ NO _____

89. YES _____ NO _____

Remember, look at each picture to see if that unique sense of oneness or togetherness is there. Is that moment there when two people are emotionally connected.

INSTRUCTIONS: While looking at each slide, **check** either yes or no. Please do not skip any.

90. YES _____ NO _____

91. YES _____ NO _____

92. YES _____ NO _____

93. YES _____ NO _____

94. YES _____ NO _____

95. YES _____ NO _____

96. YES _____ NO _____

APPENDIX K

Experimental Procedure Sheet for Subjects

EXPERIMENTER PROCEDURE SHEET: SUBJECT

PHASE I: INITIAL CONTACT

1) Experimenter introduces herself and states the purpose of the study:

The purpose of the study is to look at a special kind of emotional interaction. When two people connect with each other on how they feel about some things, they sometimes experience and share a unique moment of communication.

There will be 3 parts to the study. First, I will ask you to fill out a short questionnaire about yourself. Then I will ask you to look at some slides of people and decide whether you feel this special connection is present. Then I will ask you to fill out another short questionnaire about your beliefs and behaviors.

2) Experimenter distributes the consent forms or teacher distributes consent forms at end of the day.

3) Experimenter asks the potential subjects to return the signed consent forms next week at the time of testing

PHASE II: DAY OF TESTING

1) Experimenter sets-up projector/screen before session begins

2) Experimenter collects the signed consent forms

3) Teacher asks those individuals not participating in the study to leave the classroom

4) Experimenter states the method of the study:

> **Okay, there will be 3 parts to this study. First I will ask you to fill out a short questionnaire about yourself. Then I will ask you to look at some slides and rate them. Finally, I will ask you to fill out another questionnaire.**

5) Experimenter distributes the Demographic Questionnaire, experimental Answer Sheets and Attunement Questionnaire (for each subject, a number will be placed in the right-hand corner of each section in the package)

6) Experimenter states:

> **Please complete the first questionnaire. It should take you about 10 minutes to complete.**
>
> (check if everyone has completed the questionnaire after 5 min.)

7) Experimenter then directs subjects to the next section in the package, (the written affective attunement instructions)

> **Please turn over the page and go to the Instruction Sheet.**

8) Experimenter verbally states the attunement instructions:

Please read the instructions before you, along with me.

"I am going to show you 93 pictures of people. What I want you to look for in each picture is that special, almost 'magical' sense of oneness or togetherness that two people can sometimes experience with one another. It's that unique feeling when two people are both experiencing and sharing the same feeling because they are emotionally connected to one another. It is that moment when two people, coming from different emotional wave lengths, arrive at the same emotional wave length. It is more than the expression of similar emotions, it is a state where the people are focusing upon and experiencing one another, independent of the situation. I want you to look at these pictures and rate whether the people are experiencing (yes) or not experiencing (no) this sense of oneness. If you have any questions regarding the instructions, please feel free and ask. Any questions? (pause) Okay, now remember are the people in the slides experiencing that special sense of being emotionally connected? Before we start---to make sure we understand---let's practice on some pictures."

9) Experimenter directs the subjects to the next section in the package (experimental answer sheets and presents the 3 practice slides)

Please turn over the page and go to the Answer Sheet.

10) Experimenter turns off the lights and presents the first practice slide and states:

Can everyone see their Answer Sheet? Now, lets practice. (turn on projector)

Are the baby and chimp emotionally connected?

Please check 'yes' or 'no' next to #1 under practice pictures.

11) Experimenter presents the next practice slide (2nd) to the subjects and states:

Are the pig and the boy emotionally experiencing one another?

Are they on the same emotional wave length?

Check 'yes' or 'no' next to #2.

12) Experimenter presents the 3rd slide to the subjects and states:

Are the gorilla and kitten experiencing a sense of oneness or togetherness? Check 'yes' or 'no' beside #3.

13) Experimenter then presents the 93 experimental slides to the subjects at 15 second intervals.

Okay now I am going to present 93 slides every 15 seconds. Within that time please check-off 'yes' the two people are emotionally connected, or 'no' they are not emotionally connected. Please make sure you rate each picture 'yes' or 'no' and do not skip any pictures.

14) After each of the experimental slides, presented at 15 second intervals (per slide) the experimenter states the number of the slide. For example,

" 1."

15) Experimenter instructs the subjects to turn the page after slide number:

13, 32, 51, 70, 89

Okay, now turn over the page.

and after slides # 13, # 32 and # 51 states:

Remember, while looking at each slide, check either 'yes' or 'no'. Please do not skip any.
Remember, is there a unique sense of oneness and emotional connectedness.

16) Experimenter directs the subjects to the next section in the package and states:

Please turn over the page and go to the second questionnaire. Complete the questionnaire. It should take you about 10 minutes to complete.

17) Experimenter thanks the subjects for participating, collects the packages and states that the results will be available in 3 months