

# Undergraduate Honors Projects – 2012-2013

## **Chiara Arpaia**

The Effect of Learning to Sew on Self-Esteem, Self-Efficacy, and Optimism in Adolescent Girls

**Advisors:** Marjorie Taylor, PhD and Sara Hodges, PhD

This study explores the extent that teaching adolescent girls to sew their own clothes works as an intervention to improve self-esteem, optimism, and self-efficacy. Twenty-six adolescent girls between the ages of 11 and 16 participated in a sewing class, held once per week for three hours over five weeks. Participants completed questionnaires on self-esteem, optimism, and self-efficacy. Self-esteem and optimism did not show a significant change. However, self-efficacy significantly increased over the five weeks of the sewing course (the Intervention Period) compared with the five weeks before the course (the Control Period). The intervention was run in the same manner as a community sewing class, and the sample consisted of a variety of ethnicities, family situations, and economic levels. Overall, the significant increase in self-efficacy, the high external validity of the study, the diversity of the sample, and the positive feedback on the course indicate that teaching adolescent girls how to sew in an intervention could potentially increase self-efficacy and, thereby, improve positive development.

## **Madeline Barry**

Infant Attachment and Temperament and the Prediction of Childhood Emotion Regulation

**Advisors:** Jennifer Ablow, PhD and Jeff Measelle, PhD

Previous research has shown that an infant's attachment and temperament will predict childhood emotion regulatory behaviors, particularly in The Disappointing Gift Paradigm. The current study investigated the association between infants' temperament and attachment at 18 months and emotion regulation at 5 years of age. As part of a larger longitudinal study, this sample of mother-infant dyads were recruited through the Women, Infants, and Children program (WIC) and represented a high-risk and low socioeconomic status sample. When the infants were 18 months old they visited the lab, and infants' attachment levels were coded through the Strange Situation, and temperament was assessed by The Infant Behavior Questionnaire-Revised (IBQ-R). When the infants reached 5 years of age, they visited the lab and were coded on their ability to regulate emotions during the Disappointing Gift Paradigm. Emotion regulation was coded when the child was by themselves with the gift. Based on previous literature it is proposed that infants with negativity affectivity and/or high temperamental surgency and disorganized attachment levels are more likely to display less emotion regulatory behaviors such as physical and vocal venting during the Disappointing Gift Paradigm. It was also hypothesized that infants with negativity affectivity and/or high temperamental surgency, but a secure attachment level are capable of displaying higher emotion regulatory behaviors.

## **Natalie G. Brezack**

Motionese: Subject to Preference?

**Advisors:** Dare Baldwin, PhD and Jennifer Mendoza, MS

Research by Kuhl, Coffey-Corina, Padden, and Dawson, 2005, demonstrated that typically developing infants prefer to listen to “motherese” speech than a non-speech analog. In contrast, children with autism spectrum disorder show the reverse preference, and the degree to which this is true predicts their progress in phonological development. The current research investigates possible parallels to these findings in children’s processing of human action; specifically, whether developmental skills relevant to autism symptomatology (e.g., executive function and theory of mind) predict the degree to which children a) prefer “motionese” versus a non-action analog (or the reverse), and b) their sophistication in extracting structure within intentional action. Preliminary regression results based on participation from 46 preschoolers revealed both executive function (EF) and theory of mind (ToM) skills independently predicted degree of preference for motionese versus a non-action analog. Motionese preference was also a significant predictor of action segmentation skills. Should these findings be borne out in the full sample, they would point to important links between the development of language and intentional action processing, and they may have implications for designing interventions for children developing atypically.

### **James Brissenden**

Discrete Storage of Associative Chunks in Visual Working Memory

**Advisors:** Ed Awh, PhD and David Anderson, MS

The amount of information that can be maintained online in visual working memory (WM) is limited. Discrete resource models argue that WM capacity is constrained by a fixed item limit, such that no additional information is encoded once item limits are exceeded. However, recent work has demonstrated that the presence of strong inter-item associations within a display allows observers to store more elements in WM. A possible explanation for this apparent violation of fixed item limits in WM storage is that observers are able to chunk associated items together as a single unit. Thus, chunking effectively reduces the number of “items” in a display. To test this hypothesis, we measured contralateral delay activity (CDA), an event-related potential waveform that is sensitive to the number of items maintained during the delay period. If multi-element chunks are stored as discrete units in WM, CDA will be lower for displays containing associated items than for random displays. In line with this hypothesis, CDA amplitude was significantly reduced when regularities were present in a display. These results suggest that associated elements can be compressed into smaller units. Therefore, chunking allows observers to store more items in WM without violating fixed item limits.

### **Cord Chen**

The Impact of Betrayal Trauma on Feelings of Anxiety and Shame

**Advisors:** Melissa Platt, MS and Jennifer Freyd, PhD

Previous literature has shown a strong link between anxiety and traumas that involve a high degree of betrayal. However, little research has examined different types of anxiety in relation to betrayal trauma theory and betrayal blindness. The present study sought to differentiate between two types of anxiety, internal anxiety and external anxiety and to determine if high betrayal trauma (HBT) or low betrayal trauma (LBT) would predict either type of anxiety. Additionally, the current study examined whether shame would be predicted by HBT and whether shame would be associated with internal anxiety. 415 participants from the UO human subjects pool took an online version of the Sources of Anxiety Scale, the Brief Betrayal Trauma Survey, and the Shame Posture Measure. Results show that internal anxiety was differentiated from external anxiety, that HBT but not LBT predicted both internal anxiety and external anxiety, and that shame was predicted by HBT and associated with both types of anxiety. Implications and future directions for research are discussed.

## **Alex Crane**

Relationships Between Neural Activations Across Multiple Inhibitory Control Domains

**Advisors:** Elliot Berkman, PhD and Ryan Johnson, BS

Using functional Magnetic Resonance Imaging (fMRI) and a real world simulation, we examined multiple domains of inhibitory control and whether real world inhibitory control can be predicted based on lab task results. Subjects were imaged while alternately performing tasks to measure four domains of inhibitory control: affect, memory, motor, and attention. The scanner task was followed by a battery of control-related surveys outside the scanner. In a second session several days after the first, participants completed a difficult word search puzzle in the presence of several real-world distracters (e.g. a bowl of candy, a computer screen, their cell phone, Facebook). Analysis of the fMRI data is ongoing, but preliminary results suggest a partial overlap between simple laboratory tasks assessing inhibitory control performance and real world outcomes such as impulse behavior, use of affect reappraisal, and the experience of rumination. This study will build upon previous research that suggests domain-general brain basis for simple and complex inhibitory control by studying multiple domains of inhibitory control instead of the typical 1 or 2 domains. It will also measure two levels of data involving laboratory tests and a real world simulation using the same subjects to examine whether the laboratory tasks are predictive of the more complex real world situations.

## **Sarah Cunningham**

Sexual Assault, Institutional Betrayal, and Psychological Outcomes in the LGBT

**Advisors:** Jennifer Freyd, PhD and Carly Smith, MS

Several studies have demonstrated that LGBT-identified individuals are at an elevated risk of experiencing trauma (Brown & Pantalone, 2011). Notably, research suggests that LGBT individuals experience higher rates of sexual trauma (Rothman, Exner, & Baughman, 2011). In general, research has shown that institutional failure to prevent or respond appropriately to sexual assault may exacerbate negative outcomes for assault survivors, a phenomenon termed institutional betrayal (Smith & Freyd, 2013). In terms of psychological outcomes, LGBT people typically report more mental health problems than heterosexual people (Hecht, 1998). The aim of this study was to examine the relationships between sexual identity, institutional betrayal, and psychological outcomes. In a self-report survey study of 299 undergraduates (90.3% heterosexual, 9.7% LGBT-identified), LGBT participants reported significantly higher rates of sexual harassment and sexual assault than heterosexual participants. LGBT respondents also reported significantly higher rates of institutional betrayal, even when controlling for incidences of sexual harassment and assault. Finally, LGBT participants exhibited significantly more negative psychological outcomes including post-traumatic stress symptoms, depression, risky sexual behaviors, and low public and private collective self-esteem. These results support prior research suggesting that LGBT individuals experience more traumas and show the importance of sexual identity as a risk factor for institutional betrayal and negative mental health outcomes.

## **Mariya Dubrovina**

Using Eye Movements to Assess Task Switching Dynamics Within and Between Perceptual Dimensions

**Advisors:** Jason Hubbard, MS and Ulrich Mayr, PhD

Task switching research often uses tasks from different perceptual dimensions. However, it is not clear in which way task-switch costs are affected by this design choice. In this study we use eye movements to analyze in which way task selection affects switching the allocation of attention when competing task-relevant objects come from either the same or a different perceptual dimension than the current target objects. Participants ( $N = 54$ ) were cued to attend either to the object with the gap or the object with the unique color, then presented with three objects: one target, one distractor, and one neutral object. The objects presented on the screen came from either the same dimension (gap-gap or color-color) or a different dimension (color-gap or gap-color) than the current target object. The results show that the response times in the Between-Dimension tasks are smaller, suggesting that Between-Dimension tasks generally involve more effective attentional selection. Consistent with this, eye movement trajectories to the target versus the distractor object show more effective target-directed fixating and greater benefits from task repetitions in the between-dimension case. Combined, these results suggest that task selection is much more efficient when competing tasks are associated with distinct perceptual dimensions.

### **Anastasia Gilmartin**

The Decision Making Process of Law School Applicants

**Advisor:** Robert Mauro, PhD

This study was conducted in order to understand how people make the decision to attend law school, which schools to apply to, and finally which school to attend. Sixty participants completed an online questionnaire. Results found that the top reasons for attending law school were: to help people (57.8%), good income (53.2%), and like to solve analytical problems (53.1%). The most important factors to applicants in deciding where to apply to law schools were: location, cost, likelihood of being admitted, and bar passage rate. In selecting schools to which to apply, 61% of subjects started with an empty list and added schools that met some criterion such as location or ranking. The most important factors in selecting a school to attend were: location, availability of merit-based scholarships, likelihood of being admitted, bar passage rate, and cost. These findings suggest that most applicants focus on certain criteria (e.g., location) during all phases of the decision making process.

### **Jessica Glaser**

Hierarchy of Values for Eight Countries

**Advisor:** Gerard Saucier, PhD

Is there a rank-order of values that leads to the healthiest outcome for individuals? Four rank-ordered values theories were tested in a correlation study with the United States, Kenya, Morocco, the Philippines, Taiwan, Singapore, India, and Turkey. The theories were tested for their prevalence across countries, as well as an indication of which theory led to the healthiest outcomes across individuals. The Short Schwartz Values Survey (SSVS) was used to measure values responses. Scales from the 36QB6 (a Big Six Personality measure) were used as an outcome criterion for healthy values rank-ordering. In a sample of 2,393 individuals from the *Survey of World Views* (Saucier, et. al, 2013), individual responses concerning the SSVS were correlated with Cicero (44 B.C.), Rollo May (1967), Dugald Stewart (1852), and Hastings Rashdall's (1907) rank-ordered values theories. The theory related  $r$  values were correlated with their personality outcomes. The results indicated that May's theory most resembled the typical value rank-ordering in the United States while Cicero's theory most resembled the typical rank-ordering in the pancultural analyses. The results also indicated that Cicero's rank-ordering of values lead to the healthiest outcome in personality. The implications suggest that, in a globalizing world, it is important to understand the variance of value-priorities across countries and the differing outcomes that a specific rank-orderings of values can produce.

## **Mitchell Gooch**

The Impact of Relationship Closeness and Relationship Type on Secondary Trauma: Results from a Non-High-Risk Sample

**Advisors:** William Schumacher, MS and Holly Arrow, PhD

Secondary Trauma (ST) posits that individuals may become traumatized through close social contact with another person who has suffered a primary trauma. Previous research has focused almost exclusively on samples of high-risk relationships, in which one individual is at high-risk for suffering a primary trauma, therefore increasing the other person's chance of suffering from secondary trauma. The purpose of this study was to assess ST in a non-high-risk sample (n = 551). This is the first study to address the closeness of the relationship and the relationship type as variables. Methods consisted of participants completing the Secondary Trauma Questionnaire (STQ) and PTSD Symptom Scale-Interview (PSSI) in an online questionnaire. Results showed that 14.3% of participants had scores that signify mild to severe ST. These findings supported the prediction that ST was lower in a non-high-risk sample versus a high-risk sample. In addition, a statistically significant relationship was found between STQ scores and relationship type as well as a statistically significant correlation between STQ and PSSI scores. However, contrary to expectations, the closeness of the relationship was not a significant predictor of STQ scores.

## **Elizabeth J. Ivie**

Do Adolescents Know Themselves? State versus Trait Measures of Emotion Regulation

**Advisors:** Nicole Giuliani, PhD and Jennifer Pfeifer, PhD

The ability to control one's emotions improves with age; particular advances are made during adolescence (Silvers et al., 2012). Adolescence is often marked by more extreme variation in mood states (Larson, Moneta, Richards, & Wilson, 2002) and increased prevalence of internalizing disorders, such as anxiety or depression, particularly for females (McGuinness, Dyer, & Wade, 2012). Additionally, a deficit in emotion regulation is also correlated with an increase in internalizing symptoms (Lougheed & Hollenstein, 2012). This underscores the importance of successful emotion regulation (ER) during this stage of development. In the current study, we assessed ER in 46 adolescent females between the ages of 10-17. Stable (trait) ER was assessed using empirically validated self-report questionnaires including the ERQ-CA and ERICA, and fluctuating (state) ER was assessed using an empirically validated behavioral task (Giuliani et al., 2013). Trait questionnaire measures of ER and age were not significantly related, but state task performance measures of ER were positively correlated with age. Additionally, age was positively correlated with self-reported frequency of positive and negative emotional experience, both of which were significantly correlated with trait and state measures of ER, and self-reported depressive symptoms. Additional analyses will explore the potential interactions among age, trait and state ER, positive and negative affect, and depressive symptoms. Overall, this study describes adolescent female development of ER in two domains (state versus trait) and the ways in which these two measurement domains account for overlapping, yet different, aspects of adolescent emotional health.

## **Clare Knievel**

Trial-to-Trial Fluctuations in Attentional State and their Influence on Goal Neglect in the Antisaccade

**Advisor:** Nash Unsworth, PhD

Throughout the duration of a task attention fluctuates, potentially lapsing and leading to goal neglect. Attention was recorded from trial-to-trial by subject's self reporting. Subjects recorded their attentional state prior to each trial, immediately followed by a saccade task; either an anti- or prosaccade. Results support that pre-trial attentional state can be used to predict accuracy on the saccade task. High attentional ratings yielded high accuracy and subsequently little goal neglect, while low attentional ratings produced the opposite. Additionally, pre-trial attentional ratings showed a larger effect during the antisaccade trials compared to prosaccade trials. Collectively, these results suggest that trial-to-trial fluctuations in attention are a powerful predictor of trial-level performance on attention demanding tasks.

### **Irina Kuzmina**

Belonging and Perceived Similarity as Moderators of Social Projection

**Advisors:** Sara Hodges, PhD and Karyn Lewis, MS

People frequently engage in social projection when making judgments about others. Past research has shown that projection can lead to more accurate perceptions of others, but there may also be a motivational account for projection. In the current study we explore if perceived similarity and belonging needs moderate social projection. Previously unacquainted participants (84 undergraduate students) rated their own personality traits, then had a discussion with a partner, and after that rated their partner's personality traits. In addition, participants completed a measure of belongingness and rated their perceived similarity to their partner. As hypothesized, when participants perceived their partner as more similar, they showed greater projection. Projection was also greater for participants who rated themselves higher in belonging. These results suggest that people might engage in projection with a goal to achieve a sense of connectedness to people.

### **Kathryn Landis**

Pass Me the Ball: Examining the Effects of Culture on Rejection, Coping, and Factors of Well-Being

**Advisors:** Nicole Lawless, MS and Sanjay Srivastava, PhD

Differences between two main cultural worldviews, collectivism and individualism, have been linked to various social and psychological phenomena, such as emotion expression (Kitayana, Markus, & Kurokawa, 2000), self-esteem (Heine, Lehman, Markus, & Kitayama, 1999), and subjective well-being (Diener, Diener, & Diener, 1995). This study investigates how cultural perspective influences coping strategies and responses to interpersonal rejection. Fifty-nine domestic undergraduate students completed a questionnaire that measured individual differences including cultural identification, personality, coping strategies, self-esteem, and perceived ethnic discrimination. The same students then played the online ball-tossing game, Cyberball, which simulated social rejection. During the game participants were rejected by players with either American (individualist) or Chinese (collectivist) names. After the game, participants answered questions that measured emotional response. Data analysis will examine possible relationships between individual differences and coping styles, as well as which names participants saw and emotional response. The results of this type of study may serve to better prepare universities for a student's transition to college, or help healthcare professionals improve quality of care by guiding patients to culturally appropriate coping resources.

### **Stefanos Lazarides**

## Perceiving and Reconstructing Shapes in Three Dimensions

**Advisor:** Margaret Sereno, PhD

Human beings perceive shapes in multiple dimensions (e.g. 2 or 3). To do this we make objective judgments, judgments about the 3-dimensional characteristics of objects, or projective judgments, judgments about the 2-dimensional characteristics of objects. Our research examines the role of a 3-dimensional context on both projective and objective judgments. We predicted that 3-dimensional context helps with objective judgments and hurts projective judgments, while a lack of a 3-dimensional context has the opposite effect. Analysis remains ongoing but initial findings trend with our expectations. Following this we intend to examine the affect of artistic ability and experience (specifically, drawing skill) on both objective and projective judgments. We predict that artists, compared to non-artists, will be better at making projective judgments of shape as this ability may be necessary to produce accurate drawings of the 3-dimensional world. Our research on this potential relationship also remains ongoing.

## Molly Martini

Recurring Goal Monitoring Display Design: Effects on Completion Rates, Motivation, and Emotional Affect

**Advisor:** Sara Hodges, PhD

Recurring goals, such as exercising every other day, are important for health and work-life balance, yet are often disregarded when other deadlines and daily stressors enter our lives. Given that information presentation affects how one processes and acts upon information, could a visual object display reminder of goals lead to increased motivation and more goal completions compared to a text-based display? Three different goal monitoring tools were created to answer this question: an Android app that shows goals as squares that visually stretch out as goal deadlines approach; another Android app that lists the goals and their deadlines by text; and a paper planner consisting of two calendar weeks. Participants ( $N = 35$ ) were randomly assigned one of these three tools and asked to monitor their own recurring goals for two weeks, completing nightly questionnaires asking about motivation level, goal completion, and emotional affect. No differences were found between conditions. Although the visual app provided an easily-processed display, it appeared to provide no advantage in terms of goal completion or positive attitudes towards goals, suggesting further research is needed to see if balancing one's goals relies on a different task focus than completing one's goals.

## Danaan O'Donnell-Davidson

Are You Certain You Belong? Self-Evaluations and Responses to Ambiguous Feedback

**Advisors:** Sara Hodges, PhD and Karyn Lewis, MS

Participants consisted of psychology and linguistic students recruited from the University of Oregon. There were 508 participants total (69.9% female and 29.9% male). Ages ranged from 18 to 43 ( $M=19.73$  with 95% under 22). Most participants were white (72.9%) and native English speakers (92.9%). Participants were either assigned to the experimental condition or the control condition. Those assigned to the experimental condition learned about a "new dimension of human cognitive performance" called Integrational Complexity. Within the experimental condition participants were assigned to one of two cognitive profiles: Group C, who perform well on IC tasks, and Group X, whose performance "on IC tasks is more uncertain and variable". Participants continued to the "Integrational Complexity Skills Assessment," which consisted of 21 questions. In the control condition participants learned nothing about the make believe IC cognitive profiles. All participants, including those in the control condition, were

then informed that their IC skills were in the average range. They continued to another survey that consisted of 11 questions created to gauge their feelings towards IC. Data has not been analyzed yet, but we predict that subjects placed within the “uncertainty” condition (Group X) will have more negative feelings towards IC, including less motivation to increase their skills within this “new” domain, when compared to those of the “positive” condition (Group C) and the control group.

### **Brendan Ostlund**

The Role of Mother-Infant Affect Synchrony in the Relation between Maternal Depression and Infant Vagal Functioning

**Advisor: Jeff Measelle, PhD**

Research has shown that maternal psychopathology, in particular, depression, is associated with infants’ vagal functioning, a biomarker of infant emotion regulation. This study examined the role of dyadic synchrony as one possible social mechanism by which maternal depression and infant vagal functioning might be related. A high-risk sample of mothers, by virtue of their low socioeconomic status and history of depression, participated in the present investigation. When babies were five-months-old, they and their mothers participated in an unstructured free-play session designed to illicit typical interaction patterns. Of the overall sample, two subgroups were evaluated, specifically, a high-depression group ( $n=20$ ;  $CESD M=24.0$ ,  $SD=6.70$ ) and a low-depression group ( $n=20$ ;  $CESD M=1.95$ ,  $SD=1.19$ ). Synchrony and matched behavioral states between the mother-infant dyad were computed, and baseline Respiratory Sinus Arrhythmia (RSA) was collected as an index of vagal functioning. Analyses reveal a complex set of results such that the association between higher levels of maternal depressive symptoms at five months postpartum and higher infant baseline RSA was partially mediated by different aspects of mother-infant synchrony. These findings may further our understanding of the social mechanisms of an infants’ earliest relationships help to shape the biological bases of emotion regulation.

### **Nicole Rios**

Effects of Early Life Stress on Cognitive and Socio-Emotional Development

**Advisors: Helen Neville, PhD and Elif Isbell, MS**

Decades of research on poverty provide overwhelming evidence for the detrimental effects of low-SES on child development. While several factors could be mediating this relationship, the current study highlights the effects of household stress on cognitive and socio-emotional development using the Life Stress Index (LSI), a subcomponent of the Parent Stress Index (PSI), to provide a measure of household stress for each family that participated in the study. A sample of 152 typically developing three-to-five year olds from low-SES backgrounds were tested on measures of nonverbal IQ and display of problem behaviors to assess the effects of experiencing household stress on their development. The data used in this study is a subset of data from a larger efficacy trial of an intervention designed by the University of Oregon Brain Development Laboratory targeting low-SES families enrolled in Head Start preschool programs. Overall, life stress significantly predicted negative socio-emotional outcomes or increased display of problem behaviors in low-SES children. The effects of life stress on cognitive development, or IQ, were non-significant.

### **Fushu Tan**

## Bullying, Victim, and Aggressor: Past Experience versus Current Behavior

**Advisor:** Holly Arrow, PhD; Second reader: Jordan Pennefather, PhD

Bullying is the most common type of violence in American schools (Swearer & Doll, 2001), and the consequences can persist into adulthood, affecting school achievement, prosocial skills, and psychological well-being for both victims and bullies. The current study examined whether past experience with bullying affects how likely college students are to intervene when someone they know is bullied. 120 college students (50 males, 70 females) completed a questionnaire that assessed their past experience with physical and relational aggression. They then read a scenario that asked them to imagine someone was spreading vicious rumors about a member of their current campus group. Next, they decided whether they would intervene by contacting the aggressor, the victim, or both. Over 95% of participants reported some past experience as both aggressor and victim. Unexpectedly, males reported significantly more past experience as relational aggressors than females. Over half the participants said they would intervene by contacting both victim and bully. However, contrary to the hypothesis, past victimization experience did not increase the likelihood of intervening. In fact, past experience scores tended to be somewhat lower for those who intervened. The only significant past experience predictor was that those who chose not to intervene at all tended to have more experience as a bully and less as a victim. The findings provide additional evidence that exposure to bullying often includes experience as both aggressor and victim and that this can complicate an understanding of how this experience affects future decisions to intervene.

## Chris Valentine

Self-Projection: Comparing Real and Imagined Interactions

**Advisors:** Sara Hodges, PhD and Karyn Lewis, MS

The current studies examine whether the degree of social projection (attributing characteristics of the self to other people) among people who imagine interacting with another person differs from that found among people who have actual face-to-face interactions. The main goal was to determine whether or not perception formed in imagined interactions can be generalized to real interactions. There may be social influences in real interactions that are important to consider because they cause people to form opinions differently. As hypothesized, the results indicate significant differences between these two types of interactions in the way people form perceptions in competitive and cooperative states. More specifically, people demonstrated social projection under cooperative conditions whether the interaction was imagined or real. However, under competitive conditions, participants showed social projection when they actually interacted with a partner, but not when merely imagining an interaction with the other person.

## Hannah White

Neural Mechanisms of Working Memory: An N-back Task

**Advisors:** Phan Luu, PhD, Don Tucker, PhD, and Jennifer Lewis, BS

Working memory is the complex cognitive process of encoding, maintaining, manipulating, and storing information. fMRI literature identifies many areas of the brain associated with working memory processes, including prefrontal and parietal regions, but gives little information about how activity in these areas change over time. The present study uses dense-array EEG, advanced head-modeling techniques, and Principal Component Analysis (PCA) to identify independent temporal and spatial components that reveal networks of working memory. Results show that during inter-trial interval (i.e., when stimuli are not present but their information have to

be maintained) a network composed of orbitofrontal cortex (OFC), temporal poles, and visual cortices is activated. As presentation time of the stimulus to be compared approaches, OFC and temporal poles disappear from this network, leaving only visual-related cortices active. This temporal progression of cortical network engagement suggests that immediately after stimulus onset OFC and temporal pole regions support coordination of memory functions with visual cortex, and as an impending stimulus approaches, a network, comprising of only visual cortices, are primed in anticipation of the to be compared stimulus.