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The influence of assuming and role-playing a false identity on event-related potentials

Trevor Paul Deck

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for the degree of Doctor of Philosophy

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Abstract

Identity schemata serve to organize the content and regulate the processing of identity related information. The dissimulation of undercover agents and others has been associated with fundamental changes in the mental schemata and cognitive structures associated with their identity. This processing of identity information can be can be detected and quantified through Event Related Potentials (ERP). The purpose of the study was to compare the P300 ERPs in persons predisposed and not predisposed to dissociative experiences as they responded to factual (real) and counterfactual (false) personal identity information when asked to be themselves or dissimulate their real identity by adopting a false one. The interest was in examining whether information previously irrelevant to one's self-identity would be seen as meaningful when participants cognitively adopted a false identity and when they engaged in social-behavioural role-plays of that false identity. The degree to which the false identity was seen as meaningful was expected to vary as a function of scores on the Dissociative Experiences Scale (DES).

Male students (19 – 24 yrs), 18 scoring high and 17 scoring low on the DES chose among three fabricated identities one they were to assume for the study. Eighty words representing their chosen false identity, their real identity, and two irrelevant identities served as stimulus items in a self-referencing task. ERP recordings from frontal, central, and parietal sites were obtained under four conditions. A pre-test of ERPs to all stimuli was followed by a second presentation where subjects assumed a false identity and denied their real identity. Subjects then participated in three semi-structured role-play interactions while assuming their false identity over a 3-5 day period. ERP recordings while assuming their false identity and again while assuming their real identity were subsequently obtained.

P300 ERPs were elicited to real identity and to false identity information when subjects assumed one or the other. Importantly, previously obtained P300 responses to real identity stimuli were suppressed when ERPs to false identity stimuli were obtained. Role-playing diminished P300 to a false identity. High, compared with low scoring, amnesia subjects of the DES were less able to suppress ERPs to their real identity when adopting a false identity. Results are discussed in relation to identity schema theory, dissociative disorders, with implications for undercover policing.

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Introduction

Identity can be conceptualized as a dynamic collection of stable, but evolving, self-schemata that define who and what a person is and is not (Markus, 1977; 1999). Individuals develop contextualised identity schemata that are activated in specific social situations, such as interacting with a parent, a child, an intimate partner, or a supervisor, but individuals nonetheless report a consistent sense of self. However, this unity is fractured among those who consistently enact a second persona. Undercover officers, for example, change their appearance and construct a new identity to gain acceptance into a criminal milieu. For some officers the line between real and false identity becomes blurred as they report, and are observed, enacting their false undercover identity in unwarranted situations (Girodo, Deck, & Morrison, in preparation). Clinical populations, such as those who develop dissociated identities, also report the manifestation of a fantasized identity that emerges unbidden in social interaction. An understanding of the identity alterations of these two groups can be advanced through the literature on normal identity functions.

Do undercover officers or dissociative patients merely enact an alter persona for extrinsic gains; that is to convince others of the authenticity of a feigned identity? Or, do they create a new meaningful identity that mirrors the structure and influence of a naturally endogenous identity? The literature of undercover investigations, dissociative experiences, and normal identity theory will be drawn upon to answer these questions as well as the question of what processes, cognitive and social, might be involved in the creation and development of a new identity. The present study will attempt to further clarify the influence of cognitive and social tasks on the processing of identity-related information among normal individuals that attempt to adopt a false identity.

Identity Theory

The importance of identity to a range of cognitive, behavioural, and emotional functions has been documented (Markus & Wurf, 1987). Identity achieves this level of influence by virtue of the cognitive framework that it is and that it imposes to manage critical information processing functions. This conceptualization of identity, as a cognitive construct, adheres to the principles of schema theory (Markus 1977; 1999; Petersen, Stahlberg, & Dauenheimer, 2000; Stein, 1996). Eysenck and Keane (1990, p. 275) define a schema as "a structured cluster of

concepts; usually, it involves generic knowledge and may be used to represent events, sequences of events, precepts, situations, relations, and even objects." There have been various models of schema function and organization. Neisser (1967) and Minksy (1975) conceptualized schemata as a computer program-like frame that indicates how information is selected, stored, manipulated, and outputted. Collins and Loftus (1975) propose that schemata are a collection of information nodes in an associative network and that these interconnected nodes activate each other. Finally, Schank and Abelson (1977) propose that individuals manage information by creating sequential scripts for an event.

Markus (1977; 1999) views self-schemata a collection of information elements that are linked together according to themes regarding the self (e.g., that which is "me", "not me", the "good me", etc.). She describes identity schema as "cognitive generalizations about the self, derived from past experience, that organize and guide the processing of self-related information contained in the individual's social experiences." Self-schemata describe, identify, and differentiate individuals. They focus attention, structure information, determine its importance, and determine how it is processed (Markus & Wurf, 1987; Cantor, 1990).

The influence and function of identity schema. Self-schemata are the most influential of all schemata possessed by an individual. Relative to other schemata, they organize, discriminate, and process information more quickly, more deeply, and facilitate easier recall. This has been borne out in a series of studies that were summarized in a recent meta-analysis (Symons & Johnson, 1997). This quantitative summary showed that self-referencing produced superior recall compared to semantic or other-referencing tasks. Rogers, Kuiper, and Kirker (1977) completed a study that is typical of this field. They compared the recall of university students who rated words on a structural, phonemic, semantic, or self-reference basis. The recall of self-referenced words was best. They account for the superior recall of self-referenced information by implicating self-schema. Because self-schema are chronically active, any information associated with the self will be easier to access than information not related to the self.

The dominance of self-schema has been indexed through neurophysiologic measures. Ellwanger, Rosenfeld, Sweet, and Bhatt (1996) demonstrated the sensitivity of Event Related Potentials (ERPs; described below) to the processing of identity information among individuals trying to conceal their identity. Participants asked to simulate amnesia produced larger P300 amplitude, an index of stimulus salience, to identity-related information (i.e., their date of birth)

suggesting they saw it as more meaningful than similar information not associated with their identity (i.e., the experimenter's first name). The participants' attempts to conceal their identity did not diminish their P300 amplitude to the identity information relative to the other stimuli, suggesting that they continued to discriminate their identity.

Folmer and Yingling (1997) demonstrated the sensitivity of ERPs to autobiographical information presented in an auditory format. They found that individuals produced a P300 when they heard their own name, but not when they heard others' names. This finding was replicated in other ERP studies that presented autobiographical words in a visual (Ellwanger, Rosenfeld, & Sweet, 1997; Pratt, 1995) or auditory format (Muller & Kutas, 1996).

Multiple self-schemata. Early notions of self as a stable singular entity have been unseated by a model that views identity as a set of multifaceted and dynamic self-schema (Markus & Wurf, 1987). Individuals have been shown to possess an array of self-schema. Markus and Wurf suggest that,

> some [identity schema] are more important and more elaborated with behavioural evidence than others. Some are positive, some are negative; some refer to the individual's here-and-now experience, while others refer to past or future experiences. Moreover, some are representations of what the self actually is, while others are of what the self would like to be, could be, ought to be, or is afraid of being. (p. 302)

As self-representations become more elaborate they take on the stature of a self-schema and have stronger influence on the storage and processing of information.

The self-schemata that are currently active are known as the working self-schema. Higgins, King, and Mavin (1982) studied the accessibility of traits that were either self or other descriptive. An accessible trait was one that the participants reported as describing themselves and at least one other. Undergraduates were asked to recall a story that contained traits that were considered accessible and some that were less accessible. They found that participants' recall of accessible self-descriptive traits was greater than for less accessible traits. They concluded that there is a core set of identity schemata that contain these self-descriptive accessible traits and are chronically active and influence information processing.

The activation of any particular schema is influenced by expectations, motivation, the schema's distinctiveness, how recently it was used, and its frequency of use (Higgins & King,

1981). Schemata that are frequently activated will become more elaborate and more dominant. The chronically active core identity schemata produce the consistencies of personality and behaviour. The malleability that is also a characteristic of identity is attributed to the development and activation of non-core (i.e., peripheral) schemata that influence behaviour.

The stability of identity, which manifests through the activation of core identity schema, was demonstrated by Markus and Kunda (1986). They found that university students who were made to feel unique or similar to others did not change the terms that they used to describe themselves. However, the malleability of identity was conveyed by changes in the latency of response, their judgments of whether descriptors had a positive or negative connotation, and in their perceived similarity to a reference group.

A second class of identity schema that has an influence on mood and behaviour are "possible selves" (Markus & Nurius, 1986). A possible self-schema is a self-representation of how one could be in the future. Cross and Markus (1991) reported that

> Possible selves are the elements of the self-system that can most easily assume a new form. ... Possible selves, unlike current or past selves, are usually not firmly anchored in overt social action and have not been the subjects of negotiation through social experiences. As a consequence, individuals have considerable freedom to define and redefine their significant "possible selves". (p. 233)

These self-schemata could be positive or negative and often represent future goals or provide motivation. For example, a business student may develop a "possible self" as a successful, respected businessperson. This self-schema would help motivate the student to achieve his or her goals. A negative "possible self" would be equally motivating. For example, the same business student may have a feared "possible self" as an isolated and lonely office manger that has no family or friends. This would motivate them to find a balance between their career and personal goals.

Stein, Roeser, and Markus (1998) studied the impact of "possible selves" on adolescent delinquent behaviour. They found that engagement in risky behaviour (e.g., smoking tobacco, alcohol use, sexual intercourse, etc.) was predictive of a possible future self as deviant. These types of negative "possible selves" can have a direct impact on current behaviour. Cross and Markus (1994) studied the motivating impact of "possible selves" among university students.

Students who had a positive "possible self" as a problem-solver reported enjoying a problem-solving task more than those who had a negative "possible self".

Factors influencing the activation of self-schemata. A range of social, individual, and schema-related factors influence the activation of identity-schemata. Nurius and Markus (1990) demonstrated the importance of social factors in the activation of self-schema. They asked university students to imagine themselves succeeding or failing at a task and to respond to a series of questionnaires. The act of imaging oneself failing evoked negative self-schema and the participants endorsed more negative self-descriptors and fewer positive self-descriptors. Those who received affirmations generally endorsed more positive self-descriptors. Dykman (1996) replicated this finding with dysphoric and non-dysphoric university students. The dysphoric students who imagined themselves in negative life scenarios rated themselves more negatively than non-dysphoric participants.

Mood has been shown to have an influence the activation of self-schemata. Kelvin, Goodyer, Teasdale, and Brechin (1999) found that a negative mood activated negative self-schema. They induced mild dysphoria in adolescents that varied in emotionality and temperament. All adolescents exposed to the negative mood induction endorsed more negative self-descriptors and fewer positive self-descriptors. Those who were high on emotionality endorsed more negative self-descriptors following the dysphoric mood induction than did those who scored low on emotionality. Likewise, Myers (1995) found that depressed individuals recalled more negative words than did controls following the induction of a depressed mood.

Characteristics of the self-schema, such as how tightly it is integrated, influence its activation. Malle and Horowitz (1995) found that negative self-schemata tended to be more tightly integrated than positive self-schemata among undergraduates. The tightly interconnected negative self-schema produced more consistent self-descriptions across situations, as indexed through self-ratings of personality constructs (e.g., extraversion, nervousness, etc.), than the loosely integrated positive schema. They concluded that for a tightly integrated schema, the strong interconnections among identity elements result in the efficient activation of all elements following the activation of any one element. In contrast, a loosely connected schema will not be fully activated by one unit due to the weak interconnections among units.

The efficiency with which a schema processes information is influenced by the length of time the schema has been used. Davis and Unruh (1981) found that depressive individuals who

used their depressive schema for a longer period of time had better subjective organization and recall of schema-related adjectives than did those who used their depressive schema for a shorter length of time. Kuiper and Derry (1982) conducted a similar study. They found that normal individuals showed better recall of self-referenced non-depressed adjectives than self-referenced depressed adjectives or adjectives that had been semantically rated. Participants who were mildly depressed showed no difference in the recall of self-reference depressed or non-depressed adjectives. The results of these two studies when taken together suggest that the strength of a schema, as indexed through frequency of use, influences the processing and recall of schema-related content.

The development of new self-schema. The development and refinement of one's identity is a lifelong task that begins in childhood. Despite the importance of schema, Eysenck and Keane (1990, p. 280), in a review of the field of schema theory, concluded that "many theorists are either silent about how schemata are formed or assume that some type of ill-specified induction is used in which specific experiences are concatenated." Rumelhart and Norman (1981) suggest that learning occurs through three processes: accretion, tuning, or restructuring. Accretion refers to adding a new instance or example to a schema. Tuning refers to the fine-tuning of an existing schema, and restructuring refers to the revision of an existing schema to fit new circumstances.

Ahn, Brewer, and Mooney (1992) have shown that, with sufficient background, a schema can be formed through exposure to one instance or example. They asked undergraduates to read a story and tested whether they could generate a new schema based on this story. Asking the participant true-false questions, asking them to generate new instances of the techniques used in the story, and asking them to generate an abstract description of the story assessed the presence of a new schema. Students who had a background for the schema (i.e., they had a similar but not identical schema) could generate a new schema based on one experience or example.

Markus and Wurf (1987) suggest that identity schemata develop through internal processes and interactions with others. Self-schemata increase in abstraction over time as they move from behavioural descriptions (e.g., I can shoot a hockey puck) to trait-based abstract concepts (e.g., I am a talented offensive hockey player; Harter, 1983). This movement follows the repetitive pattern of over-generalizing an identity element (e.g., talented hockey player) and then differentiating the descriptor so that is more accurate and specific (e.g., good at scoring, not good at defence).

Beals (1998), in a review of schema theory, noted that although internal cognitive processes that create interconnections between identity elements mark the process of identity formation, social and cultural forces, such as the feedback of others, also influence the creation of identity schemata. Schwalbe and Mason-Schrock (1996) use the term "identity work" to refer to the process of signifying, labelling, and defining oneself. They describe identity work as a social process that often involves the development and sharing of self-stories. Kitayama, Markus, Matsumoto, and Norasakkunkit (1997) have also shown the importance of social-cultural factors on the development and structure of identity. They recruited Japanese and American undergraduates and found evidence for the collective construction of identity. Among American individuals there is a tendency to present in a self-enhancing fashion, whereas among Japanese individual there is a tendency to present in a self-critical fashion. These differences were shown to result from the influence of social interactions within a cultural context.

In summary, Markus' (1977; 1999) theory of identity suggests that individuals possess a range of self-schemata. Core identity schemata produce stability within the shifting sands of identity and dictate how information is processed and organized. The creation of interconnections among identity elements that form a new schema is believed to be the result of accumulated social interaction. However, there is a limited understanding of these processes that account for identity formation. The identity-related experiences of normal individuals (e.g., undercover officers) and individuals with psychological disorders (e.g., Dissociative Identity Disorder) can provide further illumination on the processes involved in identity schema formation.

Undercover Work and the Manifestation of a New Identity

Undercover work is an investigative method where a government agent secretly investigates criminal activity or threats to national security by insinuating himself into the lives of people intent on wrongdoing. For the agent, the deceit involves the falsification of one's true identity and acting out a part designed to create trust and acceptance by the targeted persons (Girodo, 1998; Jacobs, 1997; 1996; 1993; 1992a; 1992b; Marx, 1988). This dissimulation, often referred to as role-playing or acting, is thought to engage persons in a manner similar to having to perform on a stage. Since pretending and acting seem normal enough pastimes, the act of impersonating someone off stage was not thought of as an activity that would produce mental

health problems or identity alterations.

Mental health and undercover work. The principle fare of recent research on undercover work has centred on the study of job stress in the context of person x environment fit. For example, in a study of occupational maladjustment in 271 federal undercover agents Girodo (1991a), found that the theoretically expected links between misconduct on the one hand and personality traits on the other confirmed that a poor Disciplined Self-Image and high Disinhibition scores would account for much of their wrongdoings.

In another report with the same population of undercover agents, Girodo (1991b) used the Health Opinion Survey to identify who might be in need of psychiatric assistance, and the SCL-90 to pinpoint the type and severity of nine psychiatric symptoms these officers experienced. Here, the combined traits of Introversion and Neuroticism, defined by occupational health theory as providing a poor fit between abilities and job demands in undercover work, satisfactorily explained the source of psychological distress.

In a cross-sectional sample of pre-operational, active operational, and post-operational undercover agents of another federal organization, Girodo (1991c), using the same health instruments, found 8% of pre-operational, 26% of active operational, and 17% of post-operational agents to be "at risk". The severity of symptomatology of the "at risk" active operational agents were as elevated as those of general psychiatric outpatients. Importantly, the shape of the symptomatic profile formed by the nine symptoms among "at risk" agents was almost identical to that of psychiatric outpatients.

Given the extent to which SCL-90 symptom patterns can be differentially sensitive to specific sources of work stress (e.g., such as greater paranoia symptoms among pilots involved in a labour dispute; Girodo, 1988), the failure to find a unique configuration of symptoms in undercover agents would suggest that they are not that different from general psychiatric out-patients in the expression of mental distress. While it can be said that since prevailing psychological theories of work stress comfortably explain the data there is no need to postulate exceptional disturbances, it should be noted that the measures used in these studies were not designed to detect dissociative identity experiences.

Undercover work and the adoption of a new identity. Descriptive accounts of undercover experiences can shed light on the cognitive and behavioural tasks used to create an identity. For example, Jacobs (1996) documented the activities used by 34 high school undercover officers to

infiltrate schools and apprehend drug dealers. The officers adopted the identity of a "bad kid" to move from a position of isolation to one of acceptance. The officers engaged in class clowning, retreatism (i.e., showing no social purpose, defeatist attitude, etc.), and troublemaking to create cognitive bridges or a sense of familiarity with suspected drug dealers.

One case, which dates back over half century, chronicles the impersonation that was carried out for thousands of observers around the world. The personal exposé that followed remains one of the most descriptive accounts of the development of a second identity and the resulting identity disruptions that are linked to misrepresenting one's identity. Air Force Lt. Clifton James, a trained actor in his own right, was enlisted by the British Secret Service in WWII to impersonate General Montgomery in order to deceive the enemy of his whereabouts. James (1954) recounts the mental aspects of assuming someone else's identity and rendering it to a real world. The transition from hours of practising the General's mannerisms and speech to his opening performance in front of hundreds of troops is described as preceded by a "snapping" inside of himself - - an abrupt transformation of persona not unlike a partitioning of personality. Then later,

> As the days went by I slipped into my role so completely that to all intents and purposes I was General Montgomery. ... Even when I was alone I found myself playing the part. ... It's extraordinary, ... usually when an actor goes off the stage he at once drops the part he's playing, but with me it's the other way around. I can't get out of it. The only time I am not Monty is when I'm asleep, and even then I dream about him. (p. 145)

James also depicts the spontaneous appearance of the Monty personality after his assignment was over. These dissociative type emanations of the alter personality were purportedly witnessed by those close to him.

> There was no doubt that I had changed in some curious way ... Since shedding my General's uniform I had tried to get rid of this, but more than once while staying with Terrence I had seen a peculiar look on his face and I had realized that I slipped back into the Monte role. (p.159)

The enactment of a second identity, connected to undercover work, has been put forward as an explanation for illegal activity. In one case, an FBI agent who had spent 15 years in various deep undercover roles was arrested for attempted murder of another FBI agent (Commonwealth of Virginia vs. Bennett, 1997). Dissociative Identity Disorder was entered in a diminished capacity defence. At the trial, the jury listened to 6 hours of recorded conversation between a crazed "Ed", the agent's alter personality who, it was claimed had taken over his behaviour, and local police as they negotiated a resolution of a hostage situation Bennett had created.

Some of the earliest scientific attempts to map out the stress of undercover work noted role and identity strain. For example, in a retrospective study of undercover stress FBI agents recalled experiencing typical symptoms of work stress such as anxiety, loneliness, depression, and family disruptions. Many, however, also reported identity strain associated with prolonged role-playing (U.S. Department of Justice, 1978). Farkas (1986), in a similar survey of undercover officers in Hawaii, found the same conventional symptoms including an incidence of 21% of officers who also spoke of depersonalization, such as often experiencing their self as "unreal" during their undercover assignments.

In an empirical study of undercover agents undergoing intensive training in dissimulation techniques, Girodo and colleagues (in preparation) asked the agents if they had recollections of enacting their false identity outside of assigned tasks. A group of agents reported that after only three weeks of training their alter identities reappeared unexpectedly without their control and influenced their behaviour. The agents' colleagues, when asked if they observed agents extending their roles outside of the training activities, confirmed the agents' self-reports with their observations. The agents who spontaneously enacted their false identity were more likely to score high on the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) than those who did not enact their identity outside of training. These reports suggest that behavioural role enactment may indeed be a contributing factor in experiencing genuine alter-identity reactions among individuals predisposed to dissociate. While the most recent study on identity alterations in undercover agents was based on self-reports and was augmented by observers' reports to confirm these claims, the extent to which these uncontrolled pseudo identity re-appearances are only socially constructed displays, or deeper changes in the processing of identity information, remains to be explored.

The alter-identity experiences reported by these undercover officers are not a common phenomenon. Nonetheless, it is conceivable that the repeated enactment in a social context resulted in a new identity that corresponds with their undercover identity. However, the question remains as to the nature of the psychological processes involved in the development of a second identity, and whether they saw this identity as a meaningful part of themselves. The literature on pathological manifestations of additional identities may shed light on the development of a second identity.

Pathological Models for the Development of Alternate Identities

Though the interest in the present study is in the manifestation of a second identity among normal individuals, the literature on Dissociative Identity Disorder (DID) can be informative for its insight into the development of a new identity. The manifestation of an alternate identity is classified by the American Psychiatric Association (APA, 1994) as a psychological disorder. Two schools of thought have staked out very different views regarding the etiology of DID. The Medical/Trauma model sees dissociation as a psychic defence against memories of childhood trauma and abuse.

Ross (1997) and Cardeña (1997) suggest that dissociation is the principal defence used to manage severe trauma or distress. van der Kolk and colleagues (1996) reported the manifestation of dissociative tendencies in treatment-seeking patients and community residents. Post-Traumatic Stress Disorder (PTSD) patients reported more dissociative symptoms than those with a history of PTSD did, or than those that never had PTSD did. Exposure to abuse before the age of 14 was found to result in more dissociative symptoms (i.e., 88% reported symptoms), than exposure to abuse after age 14 (i.e., 58% reported symptoms), or exposure to a natural disaster (i.e., 47% reported symptoms). The relationship between childhood maltreatment (i.e., sexual or physical abuse) and dissociative symptoms has been shown in self-referred abuse survivors (Anderson, Yasenik, & Ross, 1993), psychiatric inpatients (Chu & Dill, 1990), convicted murderers (Lewis, Yeager, Swica, Pincus, & Lewis, 1997), college students (Sandberg & Lynn, 1992), and members of the general population (Draijer & Langeland, 1999; Maynes & Feinauer, 1994; Mulder, Beautrais, Joyce, Fergusson, 1998). Anderson and colleagues completed structured interviews with self-referred abuse survivors. Eighty-eight percent reported symptoms

consistent with some type of dissociative disorder, and 55% reported symptoms that met the criteria for DID.

Individual differences in normal and abnormal dissociation can be quantified through standardized self-report measures of dissociation. One of the most extensively researched measures of identity alterations is the DES (Bernstein & Putnam, 1986). It was developed to be consistent with clinical definitions of dissociation that reflect a disturbance of identity, memory, emotion, and cognition. Bernstein and Putnam suggest that all individuals are capable of dissociation. A common example of dissociative processing is the inability to recall an experience due to daydreaming, fantasizing, or focusing one's attention on other information. More exceptional manifestations include amnesia or the adoption of a new identity. Factor analytic research with the DES suggests that dissociative experiences can be grouped as amnesia, absorption (i.e., focused attention), mental imagery (i.e., fantasy), and depersonalization (i.e., feeling the self as unreal; Carlson et al., 1990; Ross, Joshi, & Currie, 1991).

There are several cognitive experiences that have been linked to the development of alter identities following exposure to trauma. These experiences include amnesia, mental imagery, or focused attention in combination or separately. During a traumatic event, memory becomes disrupted (i.e., amnesia) as individuals focus their attention (i.e., absorption) on a few prominent details and ignore peripheral details (Christianson & Loftus, 1987; Bremner, Southwick, & Charney, 1997). However, with repeated exposure to trauma, especially during childhood, individuals are more likely to use fantasy and other dissociative strategies to manage distress (Terr, 1988; 1990). The more frequent the trauma, the more adept the individual becomes at escaping into fantasy or distancing themselves with other dissociative experiences.

The role of dissociative experiences in the development of an alter identity has been emphasized by Lynn, Rhue, Young and their various colleagues. Young (1988, p. 15) suggests that "multiple personality reflects the gradual crystallizing of fantasy that is amalgamated with dissociative defences." Individuals that are prone to fantasy are able to transform fantasized alternates into dissociative identities with minimal effort or cognitive control (Bowers, 1991). Sivec and Lynn (1995) suggest that the overuse of fantasy to distance oneself from distressing emotions or thoughts may mark the beginning of DID.

> What originally may start as a relatively harmless adaptive use of imagination and fantasy may, in time (e.g., with prolonged abuse), become more pervasive and "dissociative" in nature, compromising adaptive, integrative aspects of personality (e.g., memory, time orientation) and degrading the ability to function in everyday life. (Sivec & Lynn, 1995, p. 301)

Lynn, Pintar, and Rhue (1997) view dissociation as an imagination-based cognitive experience that serves to manage negative affect. Individuals distract or distance themselves from distress through the use of imagination. This type of imaginative experiences becomes maladaptive when it is overused or becomes automatic rather than purposeful.

Rhue, Lynn, and Sandberg (1995) link dissociative symptoms with dissociative processes using self-report measures. They recruited a small sample of trauma survivors and found a moderate relationship between a history of physical abuse and the reported use of imagination or fantasy to manage this trauma. Segal and Lynn (1993) also reported a relationship between fantasy and dissociation with college students. Positive or worthwhile daydreams were moderately related to increased dissociation.

The Socio-Cognitive approach to the development of alter-identities. The legitimacy of the Medical/Trauma model is challenged by those who believe dissociative identity enactment to be an artifact of social and iatrogenic factors (e.g., Hartocollis, 1998; Lilienfeld, Lynn, Kirsch, Chaves, Sarbin, Ganaway, & Powell, 1999; Spanos, 1996). These beliefs are espoused by a substantial portion of professionals that research and treat DID. Mai (1995) found that 28% of the psychiatrists practising in Ottawa, Ontario doubt its existence. Seventy percent believe that publicity about DID and their personal beliefs affect its prevalence. A recent survey of psychiatrists found that 15% believe DID should not be included as a recognized diagnostic category, and 43% have reservations about its inclusion (Pope, Oliva, Hudson, Bodkin, & Gruber, 1999). Twenty percent believe that it has no scientific validity and 51% have reservations about its scientific validity. These results suggest that there is substantial skepticism about DID.

A Socio-Cognitive approach to DID explains the manifestation of alter identities as a socially constructed phenomenon where the patient's knowledge and expectations about DID coupled with implicit therapist suggestions regarding alter personalities create their appearance (Hartocollis, 1998; Lilienfeld, Lynn, Kirsch, Chaves, Sarbin, Ganaway, & Powell, 1999; Spanos,

1996). Spanos, the strongest advocate of this approach, draws parallels between possession states in the Salem witch trials, participants' role enactment in hypnosis experiments, and the origin of alter personalities. He characterized DID patients as attention-seeking individuals that enact multiple identities to explain their problems or gain support. He proposed that they "learn to construe themselves as possessing multiple selves, learn to present themselves in terms of this construal, and learn to reorganize and elaborate on their personal biography so as to make it congruent with their understanding of what it means to be a multiple." (Spanos, 1994, p. 143). The Socio-Cognitive approach has succeeded in drawing particular attention to the role of social factors in reports of multiple identity enactment.

Merskey (1992), in a review of cases dating back to the 1800s, found that therapists have created a context that promotes the adoption of a second identity. Therapists routinely use leading questions to provide clients with names for their alternate personalities and to persuade skeptical patients that they have DID. Spanos, Weekes, and Bertrand (1985) examined whether leading interviews encourage naive individuals to enact multiple identities. They based their study on the case of Ken Bianchi. Mr. Bianchi was accused of raping and murdering several women in California, known as the Hillside strangler murders. During the investigation of these crimes the defendant agreed to undergo hypnosis. The following are excerpts of the hypnotic interview:

> I talked a bit to Ken but I think that perhaps there might be another part of Ken that I haven't talked to. And I would like to communicate with that other part. And I would like that other part to come talk to me. ... And when you're here, lift the left hand off the chair to signal to me that you are here. Would you please come, Part, so I can talk to you ... Part, would you come and lift Ken's hand to indicate to me that you are there ... Would you talk to me Part, by saying "I'm here." (Schwarz, 1981, p. 142-143)

In response to these prompts the identity of "Steve" emerged and confessed to the murders. Following the hypnotic interview Ken did not recall "Steve" emerging or his confession. It has been argued that the hypnotic interview encouraged Mr. Bianchi to take on the role of "Steve" to avoid punishment.

Spanos and colleagues attempted to determine if the type of leading hypnotic interview used with Mr. Bianchi could create multiple identity enactment. They asked undergraduates to

take the role of an accused murder going for a pre-trial psychiatric evaluation. Some received the "Bianchi" interview, others an interview that made less explicit reference to DID symptoms, or an interview that did not involve hypnosis. The role-playing participants that went through the "Bianchi" interview reported more DID symptomatology. They created an identity with a different name and forgot it following the hypnotic interview. These individuals also showed differences between the two identities when given a semantic differential test (i.e., bipolar ratings of words like love, me, sex, etc.) and a sentence completion test. Spanos and colleagues interpreted these results as evidence that individuals can adopt the role of someone with DID in response to contextual cueing (i.e., social demands) and social legitimization.

The impact of role-play. Though Spanos claims that role-playing does not contribute to the development of legitimate new identities, the use of role-play in psychological research and psychotherapy suggests that it may. Social psychological studies have used role-playing as an independent manipulation for inducing attitude and behaviour change (e. g., Janis & King, 1954; Festinger & Carlsmith, 1959; Sarup, 1981). An important factor contributing to such change is the degree of improvisation and involvement in the role-playing. Extending these factors in a humanistic/phenomenological approach to role-play, Yardley-Matwiejczuk (1997) uses the term "engagement" to represent the extent of a participant's incorporation of external objects, events, and real others in the role-play act.

Moreno's (1946) therapeutic use of role-play is termed "psychodrama" (also see Corsini, 1966; Greenberg, 1974). Emphasizing spontaneity and creativity in role-play, patients express emotionally charged material from the past to effect behaviour change. Kelly's Fixed Role Therapy also uses role-play as a way of loosening up past cognitive constructs, for restructuring perceptions and creating new constructs about one's self and others. Armed with new personality descriptions the client is enjoined to act according to new roles on an on-going basis in the everyday world. In Moreno's psychodrama, "boundaries" are established around the role-play so that it does not continue outside of the therapeutic session. Corsini, (1966) however, like Kelly's Fixed Role Therapy, deliberately encourages a carry over of the role-play into the daily life of the client. Yardley-Matwiejczuk (1997), in describing these practices, declares the lifting of role-play boundaries as a potentially dangerous procedure, however, without going into any detail about what psychological risks this might entail.

The negative impact of spontaneous role-play was discussed by Girodo and colleagues (in preparation). Role-plays of a false identity that were spontaneous were associated with out of contexts identity re-enactments. Moreover, the DES was positively correlated with these re-enactments. The reports by James (1954) and of Bennett (Commonwealth of Virginia vs. Bennett, 1997) may implicate certain types of role-playing in dissociative type identity disruptions and criminal behaviour. Clearly, a better understanding of the factors (e.g., personality and contextual) associated with spontaneous role-plays may have implications for managing the behavioural and health risks in persons who do undercover work.

In summary, the Medical/Trauma and Socio-Cognitive account for the manifestation of new identities through cognitive or social factors (i.e., role-playing). The Medical/Trauma Model suggests that individuals have cognitive experiences, such as amnesia, mental imagery (i.e., fantasy), and absorption (i.e., focussed attention), to distract them from trauma. These experiences are linked to the development of a fully elaborated new identity. In contrast, the Socio-Cognitive approach questions the legitimacy of new identities and points to the role of social factors, such as health care professionals, the media, and individual needs in the spurious enactment of a new identity. Though the Socio-Cognitive approach proposes that social factors contribute to the mere enactment of identities, the experiences of undercover officers suggest that social enactment (i.e., role-playing) of a false identity can lead to genuine identity alteration. These cognitive and social processes mirror the processes implicated in the development of normal identity schema. Further exploration of the role of cognitive and social-behavioural experiences in the development of new identities among normal individuals is needed.

The Measurement of Identity Schema

The impact of cognitive and social-behavioural experiences on the development of a new identity is best assessed at a cognitive level. Paper and pencil measures of normal and pathological manifestations of identity have been criticized for assessing epiphenomena. They assess the behavioural experiences rather than directly assessing the cognitive processing of identity information and are subject to the influence of experimental demands or response sets (Markus, 1977; Putnam, 1996). To overcome these criticisms, the cognitive processing of identity information could be indexed through ERPs.

One of the most fruitful approaches for detecting and quantifying cognitive processing is the measurement of ERPs (Allen, 1992; Allen, Iacono, & Danielson, 1992). For example, the P300 component can be used to indicate the recognition of a salient, infrequent stimulus amongst a background of frequent, but less relevant stimuli (Picton, 1992; Polich, 1993). P300 has a positive defection and a latency of approximately 300 ms. It is also known as P3 because it is the third major positive peak in an ERP. It reaches its maximal amplitude at the parietal and central midline regions of the scalp (Polich & Kok, 1995; Polich, 1993). It has been suggested that multiple sites including the hippocampus and polymodal association areas of the frontal, parietal, temporal lobes, and the limbic system generate P300 waves.

A variety of methodologies, but mostly an "oddball" paradigm, can elicit the P300 wave (Picton, 1992; Polich, 1993). In an oddball paradigm two or more different stimuli are presented in a series, with the oddball (i.e., target) occurring infrequently. The participant is usually seated during recording to minimize artifacts and is asked to attend to the stimuli. If they make a manual response it is advised that they respond with the index finger of their dominant hand. This allows the experimenter to record their reaction time. When recording the P300 wave, the experimenter should attach electrodes to the Fz (i.e., frontal), Cz (i.e., central), and Pz (i.e., parietal) midline electrode sites; with Pz being the one that is analyzed as it generally produces the largest P300 wave (Picton, 1992; Polich & Kok, 1995). It is also recommended that at least 20 trials should be averaged to obtain a stable P300 wave. If possible, the procedure should be repeated to compare the two averages.

Several reviews have concluded that the P300 wave reflects endogenous, cognitive processes (Picton, 1992; Polich & Kok, 1995; Polich, 1993; Verleger, 1988). They also conclude that its amplitude varies according to several factors including the subjective probability of the stimulus, the meaningfulness of the stimulus, and the information transmitted by the stimulus. The less probable the stimulus the larger the P300 (Duncan-Johnson & Donchin, 1977). The probability of the stimulus category is more influential than the probability of an individual stimulus (Courchesne, Hillyard, & Courchesne, 1977). Amplitude is also dependent on temporal probability. It is more dependent on how often a stimulus occurs within a block of time than the stimulus probability (i.e., how many stimuli are of a particular category; Fitzgerald & Picton, 1981). P300 amplitude increases when the participant's task is more complex (e.g., counting vs. predicting a stimulus), when the stimulus is more complex (e.g., visual tasks produce larger

P300s than auditory tasks), and when the stimulus is more significant or important. P300 also increases when the participant believes that they are required to, and believe they have accurately, perceived the stimulus. Finally, the latency of the P300 wave is positively correlated with the difficulty of the task (Kutas, McCarthy, & Donchin, 1977). As the stimulus becomes more complex, the latency of P300 increases.

What is the function of P300? Various reviews have not reached a consensus as to the function of the P300 wave (Picton, 1992; Polich & Kok, 1995; Polich, 1993; Verleger, 1988). The predominant model suggests that the P300 wave reflects the updating of expectancies, schemata, or models contained in working memory (Fabiani, Gratton, Karis, & Donchin, 1985; Donchin, 1981). Alternatively, it has been suggested that P300 may represent the control of updating processes. However, the Updating hypothesis is contradicted by evidence from matching studies. These studies require participants to indicate if a second stimulus is similar to or different from another stimulus. Several researchers have found that P300 can be larger when the stimulus is the same, different, or of equal size (e.g., Rugg, 1984; Sanquist et al., 1980). In each case the second stimuli elicited the P300 wave. According to Verleger (1988) the Updating hypothesis would predict that the first (i.e., unique) stimuli should elicit a larger P300 wave.

It has also been suggested that the P300 wave occurs in response to the confirmation or disconfirmation of expectancies (Verleger, 1988). Individuals have some expectancy about the tasks they are asked to perform and these expectancies may be confirmed or disconfirmed. Again, research suggests that this hypothesis is inaccurate (e.g., Courchesne, Hillyard, & Galambos, 1975; Kutas & Hillyard, 1980). Courchesne and colleagues presented a class of stimuli that the participants were not informed about prior to the study. Though these stimuli did elicit a positive wave at about 300 ms, it was not maximal at the parietocentral region as is characteristic of most P300 waves. Rather, it was maximal at the centrofrontal site and changed to parietal P300s over the course of the study. Furthermore, Kutas and Hillyard report that unexpected words or words that could not be predicted from the previous word in a sentence evoked an N400 but not a P300 wave. From these studies Verleger (1988) concluded that P300 waves are not necessarily evoked by unexpected stimuli.

In a review of P300 research Verleger (1988) hypothesizes that this wave represents the cognitive or perceptual closure of an event or series. He suggests that P300 waves are elicited when expectancies are fulfilled, not when they require revision. In other words, the P300 wave

occurs in response to a stimulus that signifies the meaningful closure of an event. Its amplitude depends on whether an event matches the expectancy for the closing event, the effort invested (positive correlation), and the amount of processing required by the stimulus (negative correlation). However, Picton (1992) questions whether the brain would use a specifically inhibitory process for cognitive or perceptual closure since adaptation is the usual way of allowing new information to be processed. In a review of P300 literature Polich and Kok (1995, p. 106) concluded that, "even though the final chapter has not been written on the theoretical meaning of P300 ERP, the majority of data are consistent with some form of context updating." In other words, P300 appears be similar to an orienting response that involves working memory in the process of updating a mental model or schema.

Other ERP components, such as N400 and additional late positivities, are also implicated in cognitive processing. The N400 component follows P300 and has a negative deflection that occurs around 400 ms. Halgren (1990), in a review of N400 research, concluded that this component was inversely proportional to the ease with which the task can be processed. Kutas and Hillyard (1980) reported, N400 is larger to semantically anomalous information. N400 amplitude appears to vary with the effort required to complete a task, or the difficulty of the task.

A third ERP component has also been shown to vary with cognitive processing. Researchers have identified a second "P3" that occurs after P300. Muller-Gass, Gonthier, Desrochers, and Campbell (2000) asked participants to classify the gender of French nouns. When the indefinite articles (i.e., un or une) were used the participants showed a single P300 peak. When gender labels (i.e., masculine or feminine) were used the participants showed a second positive peak following P300. The task of choosing between "un" and "une" allowed for an immediate match, but the task of choosing between masculine or feminine required the participant to convert the labels to the infinitive articles before a match could be made. They concluded that the task required two decisions and that each decision evoked a P300. Johnson and Donchin (1985) have also reported on the presence of multiple "P300s" in ERP waveforms. They gave participants feedback on their accuracy in estimating time. A P300 was evoked that they attributed to the task of identifying and classifying the feedback. They observed a second "P300" that they attributed to the participants' revision of their working model for responding to the task.

The sensitivity of ERPs to tasks that influence information processing. The sensitivity of ERPs as an index of cognitive processing has attracted researchers interested in hypnotic and dissociative tasks that disrupt information processing. They have shown that individuals asked to experience amnesia, mental imagery, or focused attention show altered perception and information processing. These cognitive experiences are collectively termed dissociative for their disruption of the normal integration of memory, perception, and information processing.

Ellwanger and colleagues (1996; 1997; 1998) and Rosenfeld and colleagues (1995) examined the ability to show amnesia for autobiographical and memorized information. Participants were paid $10 to attempt to not show a P300 to the learned information (Ellwanger et al., 1996). Evidence of amnesia was evident in a baseline-peak analysis as indicated by a smaller P300 for those simulating amnesia. However, there was no indication of amnesia when a peak-peak analysis was used, as indicated by an absence of a difference between these two groups on P300 amplitude. Other researchers have demonstrated hypnotically induced amnesia for a list of learned words (Allen, Iacono, Laravuso, & Dunn, 1995; LaBerge & Zimbardo, 1999). There has also been research to show that P300 is sensitive to the amnesia shown by clinical populations, such as those with Dissociative Generalized Amnesia (Fukuzako, Fukuzaki, Fukuzako, Jing, Ueyama & Takigawa, 1999) and those with DID (Allen & Movius, 2000).

Lamas and Valle-Inclán (1998) demonstrated the influence of mental imagery on perception as indexed by ERPs. Hypnotized individuals were instructed to use mental imagery to obstruct their view of a distracting stimulus. If the distracting stimulus (i.e., a green arrowhead) was successfully obstructed there should be less interference with a target (i.e., a red arrowhead) detection task. Target detection improved when the participants' perception of a distracting stimulus was decreased through the use of a hypnotic command to not see green stimuli. The decrease in the interference caused by a readily visible stimulus was indicated by a larger P300 to the target stimulus. Other researchers documented a smaller P300 when mental imagery was used to obstruct the perception of visual stimuli such as flashes of light (DePascalis 1994; Spiegel, Cutcomb, Ren, & Pribram, 1985) or somatosensory stimuli such as electrical shocks (DePascalis, 1997; Spiegel, Bierre, & Rootenberg, 1989).

DePascalis (1994) used ERPs to examine the influence of absorption (i.e., focused attention) on cognitive processing. He asked participants to detect a target stimulus (i.e., a light flash) amongst two other standard stimuli (i.e., different flashes of light). In the stimulus

enhancement condition the participants were asked to focus their attention on the flashes of light so that they appeared unusually bright and would be easily detected among the random stimuli. A non-significant trend suggested that highly hypnotizable participants saw the target stimuli as more salient, as indicated by a larger P300, when they focused their attention on it. Spiegel and colleagues (1989) confirmed the effects of absorption on perception by showing that students asked to "attend carefully to the stimuli" (p. 751) showed an increase in the perceived intensity of the stimuli (i.e., increased P100).

In summary, these studies have used ERPs to index changes in memory and perception following cognitive experiences, such as amnesia, mental imagery, and focused attention. Each of these experiences has been shown to inhibit or alter the perception or processing of information. What has yet to be explored through ERPs is the impact of these tasks on the processing of identity information when attempting to adopt a new identity.

The Present Study

The present study examined neurophysiological indices of information processing related to self and identity among individuals that were and were not predisposed to dissociate, and who agreed to try various tasks to assume a new identity. The literature on second identity manifestations by undercover officers and dissociative individuals in combination with theories of identity development point to several factors that may play a role in the adoption of a new identity. The present study made use of a range of cognitive experiences and social-behavioural tasks to aid participants in their attempts to adopt a new false identity. To help them see the false identity as meaningful they were instructed to construct a story based on 20 false identity elements, focus on a mental image of their false identity, and role-play it in a social context. They were also asked to "set aside" or suppress their real identity through any means they could. The present study used ERPs to clarify the influence of these cognitive tasks and behavioural enactment on changes in the processing of identity information associated with assuming a new identity.

The interest here was in first confirming that identity information could be isolated in an ERP response from non-identity information. Second, the extent to which some participants might be able to generate an ERP to an assumed role was assessed. The present study employed a repeated-measures design with two groups of participants that scored high or low on the DES.

The participants completed a baseline oddball ERP recognition task where self-relevant and non-self-relevant sentences were presented and discriminated. Then they chose a new identity, created a story for it, and focused their attention on an imagined mental image of it. While assuming this role, they repeated the recognition task with the same stimuli, though some of the previously non-self-relevant sentences were at that point associated with their assumed false identity. Following a series of behavioural role-playing exercises the participant returned for further ERP testing. The same set of stimuli were presented and discriminated once while they assumed their false identity and once while they resumed their real identity.

Research Questions and Expectations

1. It was expected that information relevant to one's self-identity would evoke a larger P300 than comparable information not relevant to one's self-identity.
2. It was expected that information previously irrelevant to one's self-identity would produce a larger P300 when participants adopted a false identity by re-conceptualizing such information as an identity self-reference.
3. It was expected that, following the participants' social-behavioural role-playing of a false identity, information previously irrelevant to one's self-identity would produce a larger P300 than that observed from using cognitive-dissociative tasks to adopt a false identity.
4. It was expected that the P300 results related to the second and third research questions would vary as a function of DES scores. Specifically, high DES compared with low DES participants would respond with a larger P300 to an assumed false identity both after the use of cognitive-dissociative tasks and following role-playing.
5. It was expected that individuals who engaged in spontaneous role-plays would show a larger P300 following these role-play activities. Factors (i.e., personality and contextual) associated with spontaneous false identity enactment will be examined.

Additional Interests

1. Personality factors and psychopathology have often been implicated in dissociation research using the DES. The Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975) and the Depression, Anger-Hostility, and Psychotic Symptoms sub-scales of the Symptom Check List-90 (Derogatis, Lipman, & Covi, 1973) were administered to all participants. An area of additional interest was to explore the association of P300 with the personality measures and

the self-report measures of effort, number of role-plays completed, and the confederate's report on one of the three role-playing tasks.

2. The task of adopting a false identity in the present study will involve two steps: (1) responding to false identity information as if it actually referred to oneself. (2) Suppressing the recognition of real identity stimuli as if such information were irrelevant to them. It was expected that participants might find these tasks differentially difficult or requiring considerable cognitive effort. An examination of Late Negativities as an index of cognitive effort was therefore planned. In addition, the influence of DES scores and the personality and behavioural report measures on late negativity will be explored.
3. Research suggests that tasks that require more than one decision may elicit additional "P3s". It was expected that the task of assuming a false identity would require more than one decision, and therefore produce additional Late Positivities (i.e., P3s). The additional P3 was an area of interest and will be explored for its similarities and differences to the P300 results. In addition, the influence of DES scores and the personality and behavioural report measures on additional P3s will be explored.

Method

Subjects

Approximately 500 undergraduate students completed the DES (Bernstein & Putnam, 1986). See Appendix A for a copy of the DES. Two hundred and fifty-five of the students were male and their overall average DES score was 16.13 (SD = 10.98). Thirty-five of the 75 males who completed the DES and indicated their willingness to participate in the study were contacted by phone and agreed to continue in the study. Four participants did not complete the study because they became too busy to return for the second testing session. Four participants who completed the pilot test were included in the study. A total of 35 males completed the study. The ages of these 35 participants ranged from 18 to 28, with a mean of 19.8 (SD = 2.24). The participants were split into two groups based on their DES scores. The High DES group consisted of the 18 participants with the highest DES scores (M = 29.16, SD = 8.87). The Low DES group consisted of the 17 participants with the lowest DES scores (M = 11.51, SD = 3.24).

Procedures

The participants were contacted by phone and demographic information was collected for use in the study. Willing participants attended two in-lab sessions (lasting up to 2.5 hours and 1.5 hours), and performed three out-of-lab role-playing exercises (lasting 5-10 minutes each). Table 1 summarizes the procedures.

First in-lab session. Upon arriving at the lab, the procedures for the study were explained and informed consent was obtained. Appendix A contains a copy of the consent form. The participants completed biographical questions and a checklist that contained all of the stimuli that was presented during the ERP recognition tasks. Appendix A contains a copy of this questionnaire. Completion of the checklist ensured that all participants had equal exposure to all of the stimuli, and ensured that they associated the correct words with their real identity.

Then the electrodes were attached to the face and scalp and participants were asked to complete the Pre-Test ERP recognition task. Appendix A contains a copy of the verbal instructions given to the participants. Participants were instructed to indicate if the statements presented on a computer screen described them (i.e., by pressing a computer mouse button). Five

practice trials were given to familiarize them with the procedures. The statements were presented one word at a time. For example, the participants would read:

"My (blank screen) favourite (blank screen) colour (blank screen) is (blank screen) Blue ..."

Sentence Stem | Stimulus Word

Table 1: Summary of Procedures

	First In-Lab Session	Role-Playing Exercises	Second In-Lab Session
High DES Subjects	· biographical scale and checklist of identity-related words · attach electrodes and complete Pre-Test ERP recognition task · choose false identity, write a story, and focus on a mental image of the false identity · adopt false identity · False Identity Imagined ERP recognition task · role-playing instructions	· adopt false identity for: · phone call · meeting with confederate · conversation with department secretary	· adopt false identity · checklist of identity-related words · attach electrodes and complete False Identity Post Role-Play ERP recognition task · resume real identity · Post-Test ERP recognition task · Memory test, post experiment scales, and debriefing
Low DES Subjects	· biographical scale and checklist of identity-related words · attach electrodes and complete Pre-Test ERP recognition task · choose false identity, write a story, and focus on a mental image of the false identity · adopt false identity · False Identity Imagined ERP recognition task · role-playing instructions	· adopt false identity for: · phone call · meeting with confederate · conversation with department secretary	· adopt false identity · checklist of identity-related words · attach electrodes and complete False Identity Post Role-Play ERP recognition task · resume real identity · Post-Test ERP recognition task · Memory test, post experiment scales, and debriefing

The statements were divided into a "sentence stem" and "stimulus word". Each sentence stem was paired with the real identity stimulus word and with the three other identity words. See Table 2 for a list of the sentence stems and stimulus words. The statements were grouped into three categories. Twenty statements were associated with their real identity (i.e., the Real Identity Stimuli (IS)), 20 were associated with the false identity that they later chose to assume (i.e., the False IS), and 40 were associated with unfamiliar identities (i.e., the Irrelevant IS). The participants were instructed to press the right mouse button when the statement described them, and left mouse button when the statement did not describe them. The participants were seated in

a sound-attenuated chamber in front of a computer monitor. They were asked to focus on the centre of the screen and avoid eye (i.e., including blinking), head, and body movement while the statements were on the screen. These instructions were given to minimize EEG artifacts that obscure ERP waveforms.

Table 2: Sentence stems and stimulus words.

Sentence Stem	Stimulus Words for Pre-Medicine	Stimulus Words for Law	Stimulus Words for Engineering
1. My friends call me	Bill	Frank	Mack
2. My last name is	Dowell	Mutch	Ramey
3. I was born in	1972	1974	1970
4. I was born on	October 2	April 23	July 14
5. I am	26	25	28
6. I was born in	London	Amsterdam	Houston
7. I am a citizen of	England	Holland	USA
8. I graduated from	King's Collegiate	Lowlands General	Kennedy High
9. I worked for	the Red Cross	Parole and Probation	Spar Aerospace
10. I enjoy	sailing	fencing	flying
11. I enjoy	scuba diving	debating	chess
12. I like to listen to	jazz	classical	the blues
13. I like to read	National Geographic	Ian Flemming	popular mechanics
14. I like to watch	Wild Kingdom	NYPD Blue	Discovery channel
15. I major in	Pre-Medicine	Pre-Law	Engineering
16. I wrote a paper on	biotechnology	war crimes	black holes
17. I personally admire	Dr. Bethune	Joyce Milgaard	John Glenn
18. I want to be a famous	cardiologist	judge	aeronautical engineer
19. I can be a little	conceited	suspicious	callous
20. My personality is	warm	distant	cold

To ensure that P300s were generated, (1) the targets were infrequent stimuli compared to the frequent irrelevant stimuli, and (2) the participants were required to press buttons to ensure they attended to and recognized the stimuli. They were instructed to respond as quickly as possible with their dominant hand (i.e., the hand with which they write). The 80 statements were repeated four times for a total of 320 trials. The statements were randomized and the participants received a break after every 80 statements. Each word was presented for 100 ms, with an inter-word-interval of 700 ms. The target stimuli had an inter-stimulus-interval of 3000 ms to allow the participant to respond.

Cognitive tasks to adopt false identity. Following the Pre-Test, the participants chose a role from among three fictional student-related identities. Instructions for critical experimental

manipulations, such as the introduction of the identities, were conveyed via videotape. This ensured that all subjects received the same experimental manipulation. The participants' three student-related identity options included a pre-medicine student, a pre-law student, and an engineering student. They were asked to construct a story using the 20 words associated with the identity they chose (i.e., with the 20 False IS) and read it to the experimenter. An example story was provided. See Appendix A for a copy of the example story. A copy of their story was kept for them to refer to on the second in-lab session.

The participants were instructed to adopt their false identity. They were asked to focus on a mental image of their false identity and complete the False Identity Imagined ERP recognition task. They responded to the same 320 statements that were presented in the Pre-Test. The statements were grouped into the same three categories (i.e., 20 False IS, 20 Real IS, and 40 Irrelevant IS). As with the Pre-Test, participants were instructed to press the right mouse button when the statement describes them (i.e., the False IS) and the left mouse button when it did not (i.e., the Real and Irrelevant IS). The same method of presentation was used (e.g., blocks of 80 sentences repeated four times). Following this recognition task the participants were given instructions for their out-of-lab role-play exercises via videotape. This concluded the first in-lab session.

Social-behavioural role-plays. The participants were asked to complete three out-of-lab role-playing exercises (i.e., one per day). For each exercise they adopted their false identity and interacted with people they did not know. The participants were given a written copy of the verbal instructions. See Appendix A for a copy of written instructions. They were told that one of the exercises involved another person participating in study. This person was a confederate. The participants were informed of the confederate's participation at the conclusion of the study. They were instructed that they could do anything that was not illegal or socially unacceptable. They were also told to end any role-playing exercise if they had a problem or felt distressed.

The first role-playing exercise consisted of a phone call to a professional association that was associated with the participant's chosen false identity. See Appendix A for a list of the associations that were contacted. A total of 34 associations were identified so that no one association received more than 2 phone calls. The participants were instructed to assume their false identity. They were told to ask questions, but were advised that it was more important to enact their false identity than to obtain information. The conversations lasted 5-10 minutes.

For the second role-playing exercise the participants met and talked to a confederate. The confederate played the part of someone from the study that was trying to determine if the participant was enacting a role or being their real identity. The confederate was instructed to "interview" the participant. The goal was to engage the participant in a casual conversation that touched on information relevant to the false identity. The participant was told to try to be convincing because it was very important that the confederate not suspect that they were role-playing. The conversations lasted 5-10 minutes.

For the third role-playing exercise the participants went to a university department (e.g., philosophy, history, sociology, etc.) to talk to the secretary about course selection. See Appendix A for a list of the departments the participants were sent to visit. The participants were told to say that they were trying to choose an elective that corresponded with some of their interests. They assumed their false identity and tried not to arouse suspicion that they were not the person that they portrayed. The conversations lasted 5-10 minutes and the participants were instructed to convey as much information about their false identity as possible.

Second in-lab session. The participants returned to the lab four to seven days after the first in-lab session. The procedures were similar to those used in the first in-lab session. They re-read the story they created during the first session and adopted their false identity. They completed a similar checklist to the one that was given in the first session. Appendix A contains a copy of this checklist. Electrodes were affixed and instructions to minimize EEG artifacts were given. While attaching the electrodes, the experimenter conversed with the participants. This allowed the participant to role-play their false identity. Then they completed the False Identity Imagined Post Role-Play ERP recognition task. The participants responded using their false identity. The same 320 statements used in the first in-lab session were presented again. Following this recognition task, the participants resumed their real identity and completed the Post-Test ERP recognition task. After this recognition task they were asked to recall the stimulus words that were presented to them and complete a series of questionnaires including the Depression, Anger-Hostility, and Psychotic Symptoms subscales of the Symptom Checklist 90, the Eysenck Personality Questionnaire, and several post-experimental questions. Appendix A contains a copy of these questionnaires. Finally the participants were debriefed about the use of a confederate during the second role-playing exercise.

Materials

Dissociative Experiences Scale. Participants were screened into high and low groups on the bases of their responses to the DES (Bernstein & Putnam, 1986). The authors defined dissociation as derealization, depersonalization, and disturbances of identity, memory, emotion, and cognition. Sub-clinical levels of these symptoms can be found throughout the general population.

The DES consisted of 28 items. Subjects are asked to indicate the percentage of the time that each item happens to them. Support for the reliability and validity of the scale was provided by the authors (Bernstein & Putnam, 1986) and a meta-analysis (van Ijzendoorn & Schuengel, 1996). The DES had good internal consistency (i.e., mean Cronbach's alpha = .93), stability across time (i.e., test-retest reliabilities of r = .93), and validity. The DES is moderately to strongly correlated with other measures of dissociation, weakly correlated with increased age and hypnotizability, but not significantly related to gender, level of education, or social desirability (van Ijzendoorn & Schuengel, 1996). It is weakly related with neuroticism, but not related to any of the other big five personality traits (De Silva & Ward, 1993). DES scores are also strongly related to increased general distress, anxiety, anger-hostility, and depression (van Ijzendoorn & Schuengel, 1996).

Several authors have investigated the factor structure of the DES. Schwartz, Frischholz, Bennett, Braun, and Saushs (1991) administered the DES to a small group of patients with dissociative disorders (n=39). They found evidence for three factors: an amnesia factor that accounted for 39.2% of the variance, an absorption factor that accounted for 11.4% of the variance, and a derealization-depersonalization factor that accounted for 7.2% of the variance. Carlson and colleagues (1990) and Ross, Joshi, and Currie (1991) found the same three factors. Other studies, using undergraduates, found different numbers of factors, but they generally agree on the presence of an amnesia, absorption, and depersonalization factor (Ray & Faith, 1995; Ray, June, Turaj, & Lundy, 1992).

The Symptom Checklist 90 (SCL-90). Participants completed the Depression, Anger-Hostility, and Psychotic Symptoms scales of the SCL-90 (Derotgotis et al., 1973) at the conclusion of the study. This is a self-report clinical rating scale that is designed to assess the severity of psychological disturbances experienced during the previous seven days. The items are rated on a 5-point scale (0 = not at all, to 4 = extremely). Individuals who score high the

Depression scale often report low mood, loss of pleasure, and sadness. High scores on the Anger-Hostility scale are associated with irritability, frustration, and temper outbursts. Those who score high on the Psychotic Symptoms scale report social alienation and distorted thought processes.

The Eysenck Personality Questionnaire (EPQ). The participants also completed the EPQ (Eysenck & Eysenck, 1975) at the end of the study. This is a self-report scale that measures Introversion-Extraversion, Neuroticism, Toughmindedness, and there is a Lie scale. Reliabilities range from moderate to high for these scales. The items are rated true or false. High scores on the Introversion-Extroversion are characteristic of individuals who are described as gregarious, outgoing, and risk-takers. Those who score high on the Neuroticism scale are often described as anxious, tense, liable, and are troubled by interpersonal difficulties. High scores on the Toughmindedness are associated with insensitivity, hostility, and risk-taking. Those that score high scores on the Lie scale are rated as having a need for social approval and as being defensive.

ERP recording materials. ERPs were recorded during stimulus presentation using silver chloride disposable electrodes. The areas where the electrodes were placed were cleaned to remove oil and dead skin using rubbing alcohol, a facial cleaning solution, and a small wooden stick. This did not hurt the participants or break their skin. The electrodes were held in place with an adhesive water-soluble gel or surgical tape that comes off easily.

The electrodes were place on the scalp at the Fz (i.e., frontal), Cz (i.e., central), and Pz (i.e., parietal) sites according to the International 10-20 system (Jasper, 1958). A reference electrode was placed on the mastoid and facial electrodes were placed above and below the right eye and to the outside of each eye to record blinks. A ground electrode was placed on the forehead. The electroencephalograph (EEG) amplifier was an eight-channel Nihon Kohden Multipurpose Polygraph, model number VC-85. Impedance was measured with a model F-EZM5 electrode impedance meter, produced by Grass. Electrode impedance did not exceed 5 KΩ.

The stimuli consisted of visually presented statements. The INSTEP software program (version 3.3), on an IBM compatible computer, was used to present the stimuli and record the EEG data. The participants viewed the stimuli at a distance of approximately 46 cm. Each word was centred in the middle of the computer screen. Stimuli presentation began after a 2000 ms pre-stimulus delay.

The ERPs elicited by each stimulus were recorded and stored on disk for off-line analysis. The data consisted of ERP amplitude at the Pz, Cz, and Fz electrode sites obtained during the Identity Manipulation Tasks. Data were acquired continuously at a 256 Hz sampling rate. The data were filtered on-line with a high frequency filter (i.e., a notch filter) set at 60 Hz. ERP artifacts were corrected using an algorithm operating in the time and frequency domain. The data were later reconstructed into discrete 900 ms trials. Each trial began 100 ms before stimulus onset (i.e., the pre-stimulus baseline) and continued for 1000 ms following it. The data were sorted off-line into three categories (i.e., False IS, Real IS, and Irrelevant IS) and averaged using INSTEP. Average waveforms for each Identity Stimulus category during each of the four Identity Manipulation Tasks were calculated for each subject. These averages were then filtered off-line (i.e. the filter was set at 3 dB = 10 and 12 dB = 12).

Data were quantified using a data point averaging method. The data were averaged into 25 ms time blocks. All data points within each of the three 25 ms time intervals were averaged relative to the pre-stimulus baseline. The average waveforms for all the participants were combined to produce grand average waveforms. As is the custom in neurophysiological research, the amplitude of the waveforms was plotted such that negativity at the scalp relative to the reference is shown as an upward deflection (Picton, Lins, & Scherg, 1995). Figure 1 displays the grand average ERP waveforms between 0 ms and 749 ms for the Fz, Cz, and Pz sites[1].

Data Analysis

Trials in which correct detections were made were statistically analyzed. Preliminary analyses indicated that the ERP data were normally distributed between 300 ms and 700 ms. SPSS 9.0 (1999) was used to calculate all analyses of variance (ANOVAs). Greenhouse-Geisser ANOVAs were calculated to compensate for the sphericity of the data, a common concern with repeated designs. For the research questions involving P300, three 25 ms time blocks between 300 ms and 374 ms were examined. This time window was determined based on an inspection of the grand average waveform. Data for the DES measures were handled in a sequential fashion. First, the DES total score was analyzed. Then the Absorption, Depersonalization, and Amnesia factors were considered individually in separate analyses. The first three ANOVAs showed

[1] The four pilot study participants were not included in the waveforms because their ERPs were recorded using a different configuration. The waveforms show only minor variations from the means obtained when all participants are combined. Means and standard deviations for all participants are reported in Appendix C.

similar statistical patterns and are summarized in Appendix C (i.e., Tables C1, C2, and C3 respectively). The fourth ANOVA, involving the Amnesia analysis, differed from the first three in that the Amnesia factor interacted with the three types of identity stimuli and the four identity manipulation tasks. Table C4 summarizes this ANOVA.

The first four research questions were examined with an overall 2 (DES Amnesia Groups[2]) x 3 (Stimulus Types) x 4 (Identity Manipulation Tasks) x 3 (Time Blocks) x 3 (Electrode Sites) mixed ANOVA. The fifth research question was analyzed with a 2 (Extra False Identity Enactment groups) x 3 (Stimulus Types) x 4 (Identity Manipulation Tasks) x 3 (Time Blocks) x 3 (Electrode Sites) mixed ANOVA. While the mixed ANOVAs included the three recording sites, prior research has shown that P300 is largest at the Pz site (Picton, 1992; Polich & Kok, 1995). Post-hoc tests were therefore calculated using Pz ERPs. Green, Salkind, and Akey (2000) advised the use of paired t-tests to investigate significant within-group main effects or interactions and Holm's sequential Bonferroni method to control for Type I errors associated with the calculation of multiple t-tests. An alpha level of 0.05 was used for all statistical tests.

[2] The DES Amnesia factor produced a significant interaction that was relevant to the present study. Therefore, the ANOVA summary table for this analysis was reported.

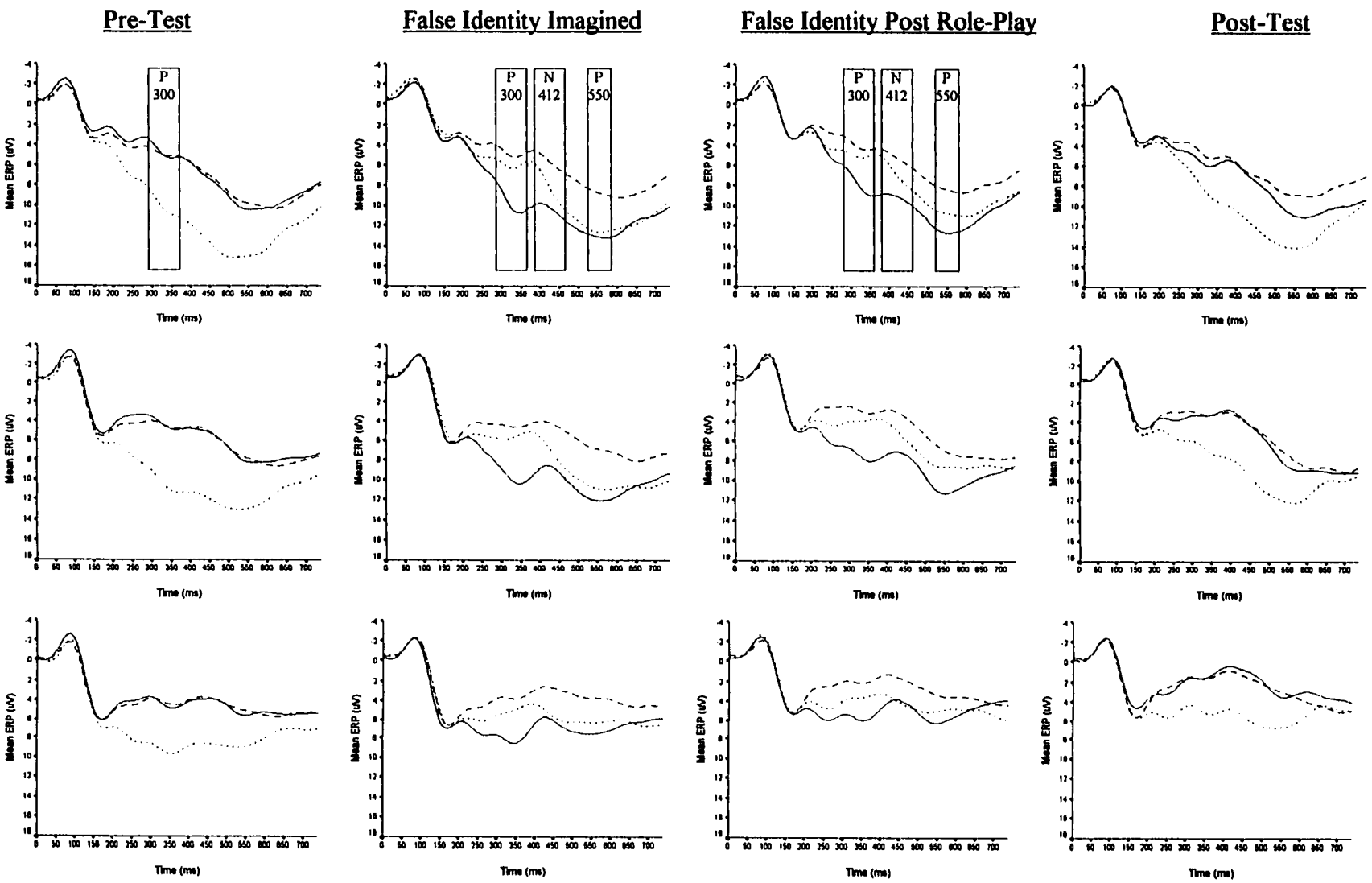

Figure 1: Grand Average ERP Waveforms for the four Identity Manipulation Tasks at Pz (1st row), Cz (2nd row), Fz (3rd row). In this and all other figures, ERPs are superimposed on the basis of the pre-stimulus zero voltage baseline.

Legend: ——— False Identity Stimuli ..... Real Identity Stimuli – – – – Irrelevant Identity Stimuli

Results

Research Question 1: P300 to Real Identity

The first research question addressed the expectation that information relevant to one's self-identity would evoke a larger P300[3] than information associated with irrelevant identities. Recall that in the Pre-Test phase of the study the participants were asked to respond one way (i.e., right button press) to stimuli relevant to their real identity and in another way (i.e., left button press) to two groups of stimuli that were not related to their identity. The average of all data between 300 ms and 374 ms in the Pre-Test section of Figure 1 displays the ERPs over the three Time Blocks in the first phase of the study. The overall analysis (summarized in Table C4) indicated that the ERPs evoked in response to the Real, False, and Irrelevant IS varied as a function of the participants' adoption of either their false or real identity ($F_{GG}(4.6, 150.0) = 52.3$, $p < .001$, $\eta^2 = .61$). Post-hoc tests confirmed the first research question, and revealed a large P300 to the Real IS. The ERPs to the Real IS were significantly larger than those elicited by the two types of Irrelevant IS. Table 3 reports the means, standard deviations, and t-tests differences among these variables.

Table 3: Mean P300, Standard Deviations, and t-test Differences at the Pre-Test Phase.

Time Block (in ms)	Real Identity		Irrelevant Identities		Irrelevant Identity that was later adopted	
	Mean	SD	Mean	SD	Mean	SD
300 to 324	10.42_a	5.99	5.26_b	4.74	5.60_b	4.77
325 to 349	11.76_a	6.14	6.27_b	5.16	6.17_b	5.12
350 to 374	12.36_a	6.06	6.70_b	5.17	6.41_b	5.31

Note. Means with different subscripts across Identity Stimuli for the same Time Block are significantly different from each other ($df = 34$; $p < .001$).

Research Question 2: P300 and the Adoption of a False Identity

The second research question held that information previously irrelevant to one's identity would produce a large P300 when participants re-conceptualized such information as an identity self-reference. Recall that participants first chose, from among the three pre-fabricated identities, one identity to assume as a false identity, and then were tasked to deny information about their

[3] Appendix D contains a discussion of the factors that influence P300 amplitude in the present study.

real identity. The data between 300 ms and 374 ms in the False Identity Imagined section of Figure 1 illustrates the participants' ERPs that were evoked in response to the Real, False, and Irrelevant IS. The overall analysis (summarized in Table C4) indicated that the ERPs evoked in response to the three types of Identity Stimuli varied as a function of the four Identity Manipulation Tasks ($F_{GG}(4.6, 150.0) = 52.3$, $p < .001$, $\eta^2 = .61$). Post-hoc tests confirmed the second research question by revealing that P300 amplitude to the False IS was significantly larger than to the Real and Irrelevant IS. There was no significant difference between the Real and Irrelevant IS P300s. Table 4 reports the means, standard deviations, and t-tests differences among these variables.

The second research question was further evaluated by comparing the participants' P300 when assuming a false identity with their P300 to the same stimuli obtained at the Pre-Test. The data between 300 ms and 374 ms in the Pre-Test and False Identity Imagined sections of Figure 1 illustrate the participants' P300s. Post-hoc tests, that followed the significant two-way interaction reported in the above paragraph, confirmed the second research question by indicating a significantly larger False IS P300 for the False Identity Imagined phase than for the Pre-Test phase. Moreover, the P300 evoked in response to the Real IS was significantly smaller in this False Identity Imagined phase compared with the Pre-Test. For the Irrelevant IS there was no significant difference in P300s between the Pre-Test and the False Identity Imagined phase. Table 4 reports the means, standard deviations, and t-tests differences among these variables.

Research Question 3: P300 and the Adoption of a False Identity Post Role-Play

Prior to testing the third research question, the P300s evoked in response to each of the three types of identity stimuli at the False Identity Post Role-Play phase were examined. Recall that after the external role-playing exercises the participants returned to the lab, were asked to assume their false identity, and were asked to identify those stimuli that described them in their false identity. The data between 300 ms and 374 ms in the Post Role-Play section of Figure 1 illustrates the P300s evoked in response to the Real, False, and Irrelevant IS at that time. The overall analysis (summarized in Table C4) indicated that the ERPs evoked in response to the Identity Stimuli varied as a function of the Identity Manipulation Tasks ($F_{GG}(4.6, 150.0) = 52.3$, $p < .001$, $\eta^2 = .61$). The pattern of results obtained following role-playing was the same as the results obtained when the participants first imagined their false identity. Post-hoc tests confirmed

that after role-playing the P300 elicited in response to the False IS was significantly larger than those evoked in response to the Real and Irrelevant IS. The Real and Irrelevant IS P300s were not significantly different from each other. Table 5 reports the means, standard deviations, and t-tests differences among these variables.

The third research question was properly examined by contrasting the P300 evoked after role-playing with the P300 evoked when the false identity was first imagined. The data between 300 ms and 374 ms in the False Identity Imagined and the False Identity Post Role-Play sections of Figure 1 depict the participants' P300s. Post-hoc tests, that followed the significant two-way interaction reported in the above paragraph, not only failed to confirm the third research question but found an effect in the opposite direction predicted. They revealed that False and Irrelevant IS P300s were significantly smaller when participants imagined their false identity after role-playing than when they imagined their false identity for the first time. The P300 evoked in response to the Real IS did not significantly change from the Imagined phase to the Post Role-Play phase. Table 5 reports the means, standard deviations, and t-tests differences among these variables.

Research Question 4: DES and P300 Associated with the Adoption of a False Identity

The fourth research question predicted that, when asked to assume a false identity, the participants' P300 mean evoked in response to the false identity information would vary as a direct function of their scores on the DES. The DES total scores, the DES Absorption factor, and the DES Depersonalization factor each failed to be implicated in a significant three-way interaction with the three Identity Stimuli and the four Identity Manipulation Tasks. These ANOVAs are summarized in Appendix C (i.e., Tables C1, C2, and C3 respectively).

Table 4: Mean P300, Standard Deviations, and t-test Differences Between P300 at Pre-Test and when the False Identity was first Imagined.

Time Block (in ms)	Pre-Test						False Identity Imagined					
	Real Identity		False Identity		Irrelevant Identity		Real Identity		False Identity		Irrelevant Identity	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
300 to 324	10.42_a	5.99	5.26_{bc}	4.74	5.60_{bc}	4.77	6.73_c	4.84	10.42_a	5.26	5.97_c	4.74
325 to 349	11.76_a	6.14	6.27_{bc}	5.16	6.17_{bc}	5.12	7.07_c	5.10	11.83_a	5.82	6.51_c	5.01
350 to 374	12.36_a	6.06	6.70_{bc}	5.17	6.41_{bc}	5.31	6.69_c	5.18	11.75_a	5.89	6.28_c	4.85

Note. Means with different subscripts across Identity Stimuli for the same Time Block are significantly different from each other ($df = 34$; $p < .001$).

Table 5: Mean P300, Standard Deviations, and t-test Differences Between P300 at False Identity when First Imagined and False Identity when Imagined after Role playing.

Time Block (in ms)	False Identity Imagined						False Identity Post Role-Play					
	Real Identity		False Identity		Irrelevant Identity		Real Identity		False Identity		Irrelevant Identity	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
300 to 324	6.73_{ac}	4.84	10.42_{b}	5.26	5.97_{a}	4.74	5.54_{ad}	6.15	8.07_{c}	5.68	4.54_{d}	4.95
325 to 349	7.07_{ac}	5.10	11.83_{b}	5.82	6.51_{a}	5.01	5.80_{ad}	6.19	9.51_{c}	6.17	5.19_{d}	5.29
350 to 374	6.69_{ac}	5.18	11.75_{b}	5.89	6.28_{a}	4.85	5.60_{ad}	5.94	10.09_{c}	6.12	5.22_{d}	5.22

Note. Means with different subscripts across Identity Stimuli for the same Time Block are significantly different from each other ($df = 34$; $p < .01$).

The overall ANOVA reported in Table C4, however, indicated that there was a significant interaction between the high and low scoring participants on Factor 1 of the DES, Amnesia, and the three Stimulus Types with the four Identity Manipulation Tasks ($F_{GG}(4.6, 150.0) = 2.5$, $p < .05$, $\eta^2 = .07$). Figure 2 shows the ERP waveforms for the high and low Amnesia groups. An inspection of these waveforms suggested that P300 amplitude to the Real IS, but not the False IS, varied as a function of Amnesia scores. Post-hoc tests showed that, for the low Amnesia group, P300s to the Real and Irrelevant IS did not significantly differ from each other. This was the case both when subjects imagined their false identity for the first time and after role-playing. For the high Amnesia group, however, the P300 evoked by the Real IS was significantly larger than the P300 evoked by the Irrelevant IS in both instances, i. e., when participants first imagined their false identity and after role-playing. Table 6 reports the means, standard deviations, and t-tests differences among these variables.

Table 6: Mean P300 and Standard Deviations at the False Identity Imagined and False Identity Post Role-Play Phases for the High and Low Amnesia Groups.

Identity Manipulation Task	Real Identity		False Identity		Irrelevant Identity	
	Mean	SD	Mean	SD	Mean	SD
Low Amnesia Group (df = 15)						
False Identity Imagined	5.59_a	3.67	11.27_b	3.18	6.15_a	3.65
False Identity Post Role-Play	5.09_a	5.13	8.81_b	5.79	5.47_a	4.84
High Amnesia Group (df = 18)						
False Identity Imagined	8.31_a	5.87	12.30_b	7.42	6.82_c	6.01
False Identity Post Role-Play	6.39_a	7.05	10.09_b	6.57	4.95_c	5.77

Note. Means with different subscripts across Identity Stimuli are significantly different from each other ($p < .05$; 325 ms to 349 ms[4]).

[4] The results at 300 ms – 324 ms, 325 ms – 349 ms, and 350 ms – 374 ms were statistically identical except for the lack of significant difference between the Real and False IS at 300 ms – 324 ms. The two subsequent 25 ms blocks showed a difference between the Real and False IS P300 means. This indicated that P300, which varies in latency, started at 325 ms. Therefore the 325 ms – 349 ms Time Block was reported.

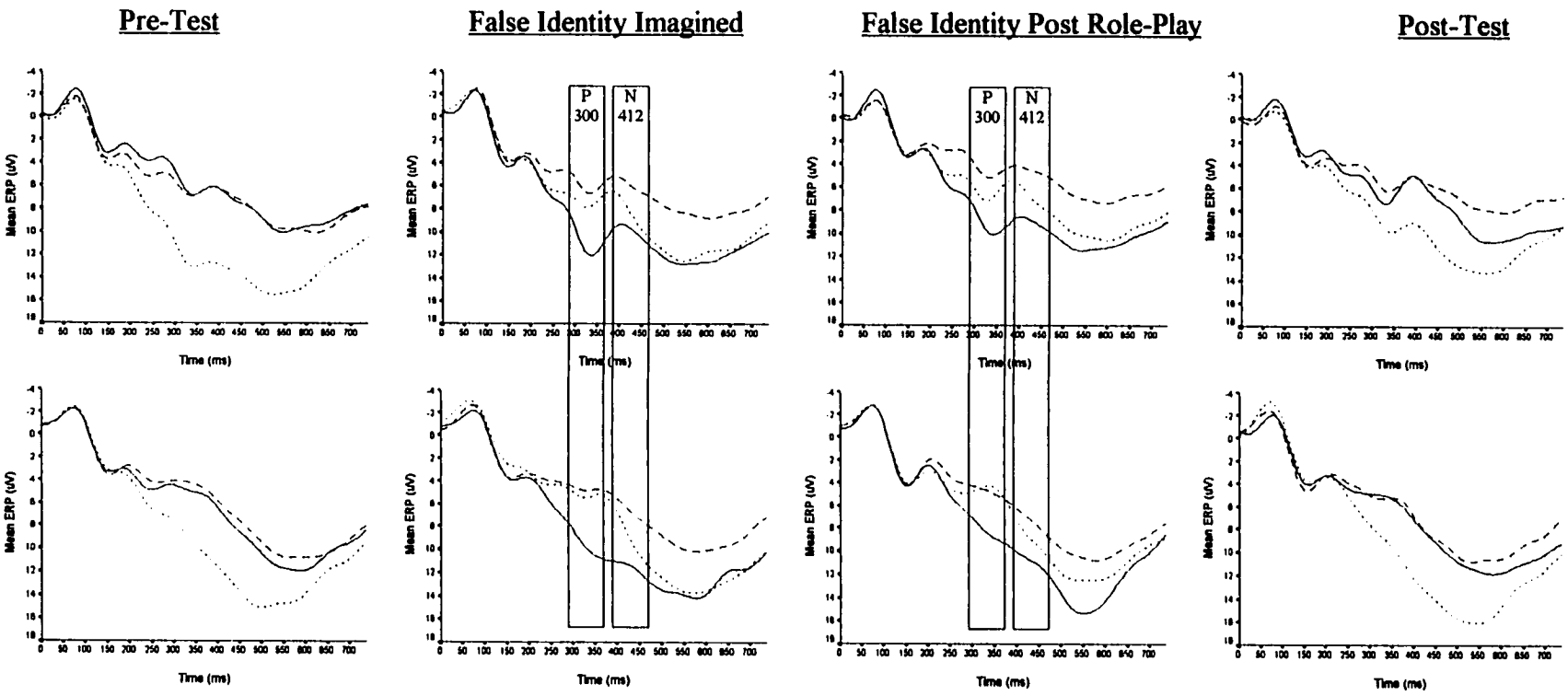

Figure 2: Grand Average ERPs for the High (1st row) and Low (2nd row) Amnesia Groups (Pz Site)
Legend: ——— False Identity Stimuli ..... Real Identity Stimuli – – – – Irrelevant Identity Stimuli

Personality and emotional factors associated with the Amnesia groups. The 35 participants' Amnesia scores correlated positively with their average DES scores ($r(35) = .84$, $p < .001$). There was a non-significant trend suggesting that, when subjects sought to reproduce the list of identity stimuli at the conclusion of the study, the high Amnesia group recalled fewer Real IS words than the low Amnesia group ($F(1,29) = 3.7$, $p = .06$). There was no difference between the two Amnesia groups on their recall of the False IS ($F(1,29) = .5$, ns) and Irrelevant IS words ($F(1,29) = .7$, ns). Further analysis indicated that the Amnesia scores correlated negatively with the participants' recall of the Real IS words ($r(31) = -.39$, $p < .03$), and negatively with the Irrelevant IS words ($r(31) = -.49$, $p < .01$), but was not correlated with their recall of the False IS words ($r(31) = -.14$, ns). The high Amnesia group indicated higher levels of Extraversion and Anger-Hostility than the low Amnesia group. The High and Low Amnesia groups did not significantly differ on self-reported levels of Neuroticism, Psychotic Symptoms, Depressive Symptoms, Toughmindedness, or the tendency to present oneself in a good light. Table 7 reports the means, standard deviations, and t-test differences between these variables.

Table 7: Means, Standard Deviations, and t-test Differences in Recall of Identity Stimulus Words and in Personality Measures for the High and Low Amnesia Groups.

Personality Measure	Low Amnesia ($df = 15$)		High Amnesia ($df = 18$)	
	Mean	SD	Mean	SD
Recall of 20 Real IS	19.9_a	0.3	19.6_a	0.5
Recall of 20 False IS	19.6_a	0.5	19.8_a	0.4
Recall of 40 Irrelevant IS	30.2_a	5.7	28.6_a	5.4
EPQ -- Introversion-Extraversion	13.5_a	5.0	16.6_b	2.7
EPQ -- Neuroticism	11.1_a	4.6	10.3_a	4.4
EPQ -- Toughmindedness	5.9_a	3.0	6.5_a	3.3
EPQ -- Lie scale	7.0_a	2.3	7.4_a	2.9
SCL -- Anger-Hostility	2.6_a	2.4	5.5_b	4.0
SCL -- Psychotic Symptoms	3.8_a	6.3	5.1_a	6.4
SCL -- Depressive Symptoms	9.0_a	7.0	8.2_a	6.9

Note. Means with different subscripts across Amnesia groups are significantly different from each other ($p < .05$).

Thus, in summary, the instructions for adopting a new identity and for ignoring one's real identity succeeded in evoking a recognizable P300 to the false identity while at the same time reducing the amplitude of a previously obtained P300 to one's real identity. After role-playing, there was an unexpected decline in the P300 to the false identity. The participants' attempts to adopt the false identity were not influenced by their predisposition to dissociate in general, but did vary as a function of one of its sub-elements -- the tendency to report amnesia type failures in

memory -- Amnesia. When instructed to assume their false identity and not respond to their real identity, those who endorsed low levels of Amnesia showed a reduced P300 to their real identity, whereas those who scored high on Amnesia showed an elevated P300 to their real identity.

Research Question 5: Extra False Identity Enactment and P300 Associated with the Adoption of a False Identity

Following an examination of all post-experimental data an Extra False Identity Enactment variable was derived. One post-experimental question asked, "Did your imaginary role ever come up at times other than when you were doing one of the role-playing exercises (e.g., to practice it, or in another situation)? How many times: _____. Please describe one example." An examination of responses to this question identified 16 participants who provided a response to the question together with an example. The examples were analyzed for their content. They were found to be represented by two distinct types of examples: (1) descriptions that referred to the unexpected or spontaneous enactment of their false identity, and (2) descriptions that referred to planned rehearsals or to the deliberate practice of their false identity.

Four respondents reported that they found themselves unexpectedly or spontaneously enacting their false identity outside of the role-plays (i.e., the Spontaneous Enactment group). Twelve respondents described their extra false identity enactment as arising from a planned or goal-oriented rehearsal (i.e., the Planned Rehearsal group). The examples provided by these two groups are reproduced in Table 8.

The relationship between Extra False Identity Enactment and P300 amplitude when assuming a false identity was examined with a 2 (Extra False Identity Enactment groups) x 3 (Stimulus Types) x 4 (Identity Manipulation Tasks) x 3 (Time Blocks) x 3 (Electrode Sites) mixed ANOVA. There was a significant three-way interaction between the Stimulus Types, the Identity Manipulation Tasks, and the Extra False Identity Enactment groups ($F_{GG}(3.78, 52.9) = 3.26$, $p < .05$, $\eta^2 = .19$). Table C5 summarizes this ANOVA. Figure 3 illustrates the ERP waveforms for this three-way interaction.

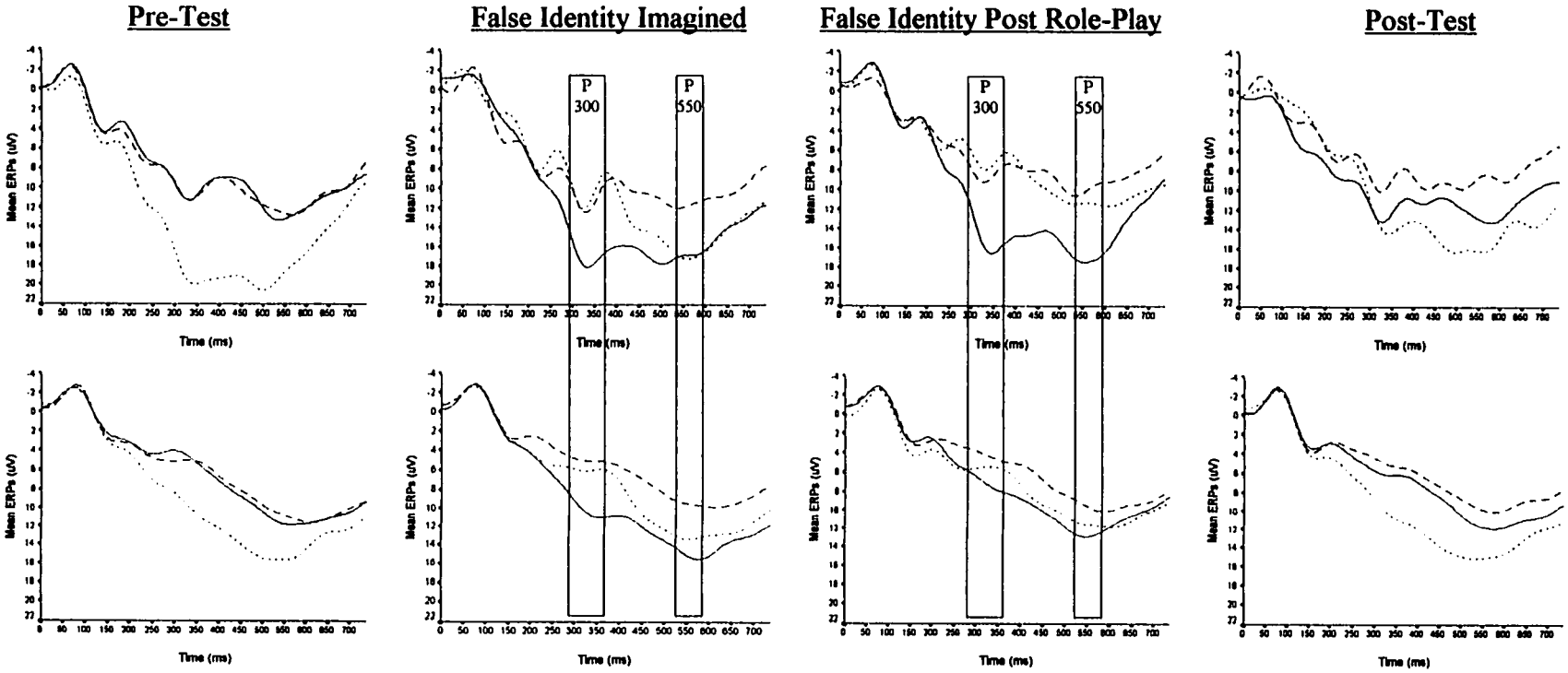

Figure 3: Grand Average ERP Waveforms for the Spontaneous Enactment (1st row), Planned Rehearsal (2nd row), and No Rehearsal groups (3rd row; Pz site).

Legend: ——— False Identity Stimuli ..... Real Identity Stimuli – – – – Irrelevant Identity Stimuli

Table 8: Examples given by the two Extra False Identity Enactment Groups.

Spontaneous Enactment Group (n = 4)

1. I was talking to myself while walking down an empty street home. I just started talking to myself as Frank.
2. I was telling my parents about it, and I just described myself in terms of Mack, my role
3. I was making a phone call and I had a really hard time not adopting the role of Frank Mutch.
4. Over the Internet. When chatting with a female over ICQ who was down in Texas. I used the persona for over 2 hours.

Planned Rehearsal Group (n = 12)

1. I was just pretending for practice with some of my friends
2. To practice, I called my brother and pretended to be my imaginary role.
3. I went over in my head before speaking with the individual who I had to talk to during the scenarios.
4. I would try practicing my British accent and a few lines I intended to say in the interview.
5. I was practicing it at home with my sister.
6. I practiced with my roommates.
7. Before my meeting with Sarah, I told one of my friends to treat me like Frank during breakfast.
8. I practiced a fake British accent and asked my room-mate what he thought of if.
9. I thought about how I should act on my way home from the first lab.
10. While I was practicing, with friends in a class
11. Phone call to Canada Bar Association after # was given by Family Services. Person gave me every detail and offered a meeting to discuss ways to help society etc. As lawyer. I don't know that he was enthralled with Frank's personality so much as the rare opportunity to find a law student interested in helping.
12. A bit of research on Holland to help get into character

The focus of this analysis was on P300 amplitude for the Extra Role-Play participants, in the context of role-plays undertaken after the False Identity Imagined phase. Consequently, the P300 recorded in the Post Role-play Phase was contrasted with the P300 from the Imagined phase. The data between 300 ms and 374 ms in the Imagined and the Post Role-Play sections of Figure 3 capture the P300s for the Extra False Identity Enactment groups.

Difference scores were calculated to minimize the number of post-hoc tests calculated and to contrast the magnitude of the differences between the False and Real IS P300s. There was no significant difference in the magnitude of the disparity between the False and Real IS P300s for the two groups when the false identity was first imagined. After role-playing, however, the P300s disparity between the False and Real IS was significantly larger for the Spontaneous group than for the Planned Rehearsal group; with the Spontaneous Enactment group producing a larger P300 to their false identity in the Post Role-Play phase. Table 9 reports the means, standard deviations, and t-tests differences among these variables.

Table 9: Mean P300 Difference (FIS-RIS) Scores, Standard Deviations, and t-test Differences at the Phases 2 and 3 Grouped According to Extra False Identity Enactment

Identity Manipulation Task	Planned Rehearsal (df = 11)		Spontaneous Enactment (df = 3)	
	Mean	SD	Mean	SD
False Identity Imagined (FIS-RIS)	4.6_a	2.9	6.3_a	2.3
False Identity Post Role-Play (FIS-RIS)	2.0_a	3.6	8.1_b	5.1

Note. Means with different subscripts across Extra False Identity Enactment groups are significantly different from each other ($p < .01$; 325 ms to 349[5] ms).

Personality and emotional factors in the Extra False Identity Enactment groups. To explore the nature of the differences among the two Extra False Identity Enactment groups, their scores on the EPQ and SCL scales, and on the behavioural report measures were contrasted. A series of independent t-tests indicated that the Spontaneous Enactment group obtained significantly higher levels of Neuroticism, reported experiencing higher levels of Psychotic Symptoms, a stronger tendency to present themselves in a good light, and were rated by a confederate as less anxious during the role-play than the Planned Rehearsal group. Inspection of the confederates' ratings revealed that half (i.e., 2 out of 4) of those who spontaneously enacted their false identity were rated as showing no anxiety whatsoever.

There were no significant differences between the two Extra False Identity Enactment groups on self-reported Extraversion, Toughmindedness, Depressive Symptoms, or Anger-Hostility. There were also no differences between the two groups on the confederate rated degree of deviation from the false identity, number of false identity characteristics brought up by the subjects during their role-play, or on any of the self-report measures. Table 10 reports the means, standard deviations, and t-tests differences among these variables.

In summary, a small group of individuals reported the unplanned and spontaneous enactment of their false identity in a situation that they encountered outside of the experiment. A second group reported that they planned to deliberately rehearse their false identity to improve their ability to portray it. When instructed to adopt their false identity and deny their real identity, both of the extra identity enactment groups showed a larger P300 to their false identity than to their real identity. However, after role-playing the P300 to the false identity was larger for those

[5] The results at 300 ms – 324 ms did not significantly differ for the Planned Rehearsal and Spontaneous Enactment groups. Significant differences between the two groups were apparent during the 325 ms – 349 ms and 350 ms – 374 ms segments. This indicated that P300, which varies in latency, started at 325 ms. Therefore the 325 ms – 349 ms Time Block was reported.

who spontaneously adopted their false identity than for those who planned to deliberately rehearse it. While the Spontaneous Enactment group was rated by the confederates as showing little or no anxiety during the role-plays, these same subjects reported the highest Neuroticism scores. Those who spontaneously enacted their false identity also rated themselves as showing more Psychotic Symptoms, than those who planned to rehearse their false identity.

Table 10: Means, Standard Deviations, and t-test Differences for Personality Measures Grouped according to Extra False Identity Enactment

Personality and Behavioural Report Measures	Planned Rehearsal (df = 11)		Spontaneous Enactment (df = 3)	
	Mean	SD	Mean	SD
EPQ -- Neuroticism	11.2_a	3.8	17.7_b	3.1
EPQ -- Introversion-Extraversion	16.0_a	3.7	13.0_a	6.2
EPQ -- Toughmindedness	6.2_a	3.3	5.0_a	2.6
EPQ -- Lie scale	5.8_a	2.3	9.3_b	2.3
SCL -- Psychotic Symptoms	2.8_a	4.9	14.3_b	9.7
SCL -- Depressive Symptoms	9.2_a	7.0	17.3_a	6.8
SCL -- Hostility	3.4_a	3.8	6.0_a	2.6
Confederate Rated (CR) number of traits mentioned in role-play	8.0_a	2.1	6.5_a	1.3
CR anxiety during role-play	41.8_a	29.6	12.5_b	15.0
CR deviation from identity during role-play	33.6_a	31.4	30.0_a	13.5
Subjectively Rated (SR) fun during role-play	72.5_a	18.2	70.0_a	11.5
SR looked forward to role-play	71.7_a	23.6	67.5_a	15.0
SR felt like a different person during role-play	60.8_a	21.9	65.0_a	12.9
SR mental imaged of identity during role-play	76.7_a	15.0	70.0_a	14.1
SR focused attention on false identity during role-play	80.0_a	14.1	75.0_a	5.8
SR awareness of real identity but unaffected by it during role-play	82.5_a	19.1	80.0_a	14.1

Note. Means with different subscripts across the Extra False Identity Enactment groups are significantly different from each other ($p < .05$).

Other Measures Associated with P300 Evoked by False Identity Information

The possibility that a P300 evoked in response to false, real, and irrelevant identity information might be related to the EPQ scales, the SCL scales, and the behavioural report measures was examined in a series of 3 (Stimulus Types) x 4 (Identity Manipulation Tasks) x 3 (Time Blocks) x 3 (Electrode Sites) x 2 (personality or behavioural report measure) mixed ANOVAs. Other than the Extra False Identity Enactment variable, discussed above, none of the personality or behavioural report measures showed a significant interaction with the three

Stimulus Types and four Identity Manipulation Tasks. Summaries of the ANOVAs for these measures are reported in Appendix E.

Late Negativities Associated with the Adoption of a False Identity

Another focused analysis addressed the possibility that a Late Negativity, believed to be indicative of the effort required to assume a false identity, suppress a real identity, and then return to a pre-manipulation cognitive state, might be observed. Inspection of the grand average waveforms in Figure 1 indicated that the Late Negativity peaked between 400 and 425 and from this point on the term N412 will be used to signify this component. The presence of the N412 component was examined with a 3 (Stimulus Types) x 4 (Identity Manipulation Tasks) x 4 (Time Blocks) x 3 (Electrode Sites) mixed ANOVA. The four Time Blocks were selected that corresponded with the plateau of the P300 and the N412 to facilitate a peak to peak comparison (i.e., between 325 ms and 424 ms). Table C6 summarizes this ANOVA.

The significant three-way interaction, reported in Table C6, between the Time Blocks, the Stimulus Types, and the Identity Manipulation Tasks suggested the presence of N412 ($F_{GG}(4.8, 162.6) = 2.86$, $p < .05$, $\eta^2 = .08$). The data between 400 and 424 in the Imagined and the Post Role-Play sections of Figure 1 illustrate the participants' N412s. Post-hoc tests that contrasted the P300 and N412 peaks showed a significant N412 associated with the False IS when first imagined, but not after role-playing. There was no N412 evoked in response to the Irrelevant IS or the Real IS when they first imagined their false identity or after role-playing. Table 11 reports the means, standard deviations, and t-tests differences among these variables. In summary, it appears as if the cognitive effort to carry out the counterfactual task asked of subjects is larger for making false information more meaningful than for pretending that factual information is not.

DES and N412. The influence of the DES on the N412 component was explored. The interest was in whether N412 evoked when assuming a false identity varied as a function of DES scores. A 2 (DES groups) x 3 (Stimulus Types) x 2 (Identity Manipulation Tasks) x 2 (Time Blocks) x 3 (Electrode Sites) mixed ANOVA was calculated. In this and subsequent N412 analyses the 325 ms to 349 ms segment (i.e., the P300 plateau) was contrasted with the 400 ms to 424 ms segment (i.e., the N412 plateau) to facilitate a peak to peak comparison. This analysis focused on N412 at the Imagined and Post Role-Play phases. Table C7 summarizes this analysis.

Table 11: Means, Standard Deviations, and t-test Differences for N412s

Identity Manipulation Task	350 ms to 374 ms		375 ms to 399 ms	
	Mean	SD	Mean	SD
False Identity				
False Identity Imagined	11.75_a	5.89	11.09_b	5.86
False Identity Post Role-Play	10.09_a	6.12	9.99_a	5.85
Real Identity				
False Identity Imagined	6.69_a	5.18	6.71_a	5.02
False Identity Post Role-Play	5.60_a	5.94	5.88_a	5.95
Irrelevant Identity				
False Identity Imagined	6.28_a	4.85	6.02_a	4.50
False Identity Post Role-Play	5.22_a	5.22	5.19_a	4.81

Note. Means with different subscripts across Time Blocks are significantly different from each other ($df = 34$; $p < .03$).

The significant four-way interaction, reported in Table C7, indicated that ERPs varied as a function of the DES, the two Time Blocks, the three Identity Stimuli, and the two manipulations ($F_{GG}(1.8, 60.9) = 3.09$, $p < .05$, $\eta^2 = .11$). To distinguish N412 in these and subsequent post-hoc tests, a peak-to-peak comparison or difference score was calculated as follows:

D′ = (325 ms to 349 ms segment) – (400 ms to 424 ms segment)

A positive score suggests the presence of N412, whereas a zero or negative value suggests a minimal or absent N412. The D′ of the False IS N412 was significantly larger for the high DES group than for the low DES group at the Imagined phase. After role-playing, the False IS D′ for the two DES groups were not significantly different. For the Real IS, the D′ for the two DES groups were not significantly different from each other or were positive at the Imagined and Post Role-Play phases. Table 12 reports the means, standard deviations, and independent t-tests differences among these variables. The significant decrease in ERP amplitude from the 325 ms to 349 ms segment ($M = 12.2$, $SD = 7.1$) to the 400 ms to 424 ms segment ($M = 10.0$, $SD = 6.3$) confirmed the presence of an N412 to the False IS for the high DES group when their false identity was first imagined ($t(17) = 3.2$, $p < .006$).

In addition to the DES, the influence of Amnesia, Absorption, and Depersonalization on N412 when adopting a false identity was examined. The ANOVA reported above was repeated with each of the three DES factors separately. Amnesia and Absorption, but not

Depersonalization were implicated in significant interactions. These ANOVAs are summarized in Tables C8, C9, and C10 respectively.

Table 12: Means Difference Scores, Standard Deviations, and t-test Differences for N412s and DES Groups at the Imagined and Post Role-Play Phases

Identity Manipulation Task	Low DES (df = 15)		High DES (df = 18)	
	Mean	SD	Mean	SD
False Identity				
False Identity Imagined	-0.8_a	3.6	$+2.2_b$	2.9
False Identity Post Role-Play	-1.1	3.3	+0.2	2.6
Real Identity				
False Identity Imagined	-1.6	3.8	-0.1	2.5
False Identity Post Role-Play	-2.2	4.1	-0.2	3.1

Note. Means with different subscripts across DES groups are significantly different from each other ($p = .01$).

There was a significant interaction (Table C8) of the Amnesia groups, the Time Blocks, and the two Identity Manipulation Tasks ($F_{GG}(1.0, 33.0) = 4.48$, $p < .05$, $\eta^2 = .12$). The data between 400 ms and 424 ms in the Imagined and Post Role-Play N412 sections of Figure 2 capture the N412. The pattern of post-hoc test results for the Amnesia groups was similar to the results obtained for the DES groups. The False IS D′ for the high Amnesia group was significantly larger than for the low Amnesia group at the Imagined phase. After role-playing, the False IS D′ for the two Amnesia groups were not significantly different. For the Real IS, the D′ for the two Amnesia groups were negative or close to zero indicating that an N412 was not present at the Imagined and Post Role-Play phases. Table 13 reports the means, standard deviations, and independent t-tests differences among these variables. The presence of an N412 to the False IS when the false identity was first imagined by the high Amnesia group was confirmed by a significant decrease in ERP amplitude from the 325 ms to 349 ms segment ($M = 12.3$, $SD = 7.4$) to the 400 ms to 424 ms segment ($M = 10.3$, $SD = 6.9$; $t(18) = 2.8$, $p = .01$).

Absorption interacted with the Time Blocks, the Identity Stimuli, and the Electrode Sites (Table C9; $F_{GG}(3.3, 108.8) = 3.2$, $p < .05$, $\eta^2 = .09$). The pattern of post-hoc tests for the Absorption and DES groups were similar. The high Absorption group's D′ to the False IS was significantly larger than the low Absorption group's at the Imagined phase. After role-playing, the False IS D′ for the two Absorption groups were not significantly different. For the Real IS,

the D′ for the two Absorption groups were negative or close to zero indicating that an N412 was not present at the Imagined and Post Role-Play phases. Table 14 reports the means, standard deviations, and independent t-tests differences among these variables. The presence of an N412 to the False IS by the high Absorption group was confirmed by a significant decrease in ERP amplitude from the 325 ms to 349 ms segment (M = 12.4, SD = 7.2) to the 400 ms to 424 ms segment (M = 10.2, SD = 6.5) when the false identity was first imagined ($t(17) = 3.1$, $p < .007$).

Table 13: Means Difference Scores, Standard Deviations, and t-test Differences for N412s and Amnesia Groups at the Imagined and Post Role-Play Phases

Identity Manipulation Task	Low Amnesia (df = 15)		High Amnesia (df = 18)	
	Mean	SD	Mean	SD
False Identity				
False Identity Imagined	-0.7_a	3.4	$+2.0_b$	3.2
False Identity Post Role-Play	-1.6	3.1	+0.5	2.6
Real Identity				
Real Identity Imagined	-2.3	3.7	+0.4	2.2
Real Identity Post Role-Play	-2.7	4.1	+0.1	2.7

Note. Means with different subscripts across Amnesia groups are significantly different from each other ($p < .02$).

Table 14: Means Difference Scores, Standard Deviations, and t-test Differences for N412s and Absorption Groups at the Imagined and Post Role-Play Phases

Identity Manipulation Task	Low Absorption (df = 16)		High Absorption (df = 17)	
	Mean	SD	Mean	SD
False Identity				
False Identity Imagined	-0.7_a	3.6	$+2.2_b$	3.0
False Identity Post Role-Play	-1.2_a	3.2	$+0.2_a$	2.6
Real Identity				
False Identity Imagined	-1.8_a	3.7	$+0.1_a$	2.5
False Identity Post Role-Play	-2.2_a	4.1	-0.1_a	3.1

Note. Means with different subscripts across Absorption groups are significantly different from each other ($p < .02$).

In summary, an N412 was observed for the false, but not the real or irrelevant identity when the participants first imagined their false identity. After role-playing, N412s were not observed for any of the identity stimuli. The presence of N412 varied as a function of predisposition to show dissociation, amnesia, and absorption. Those who scored high on these three measures showed an N412 to their false identity when they imagined it, but not after role-

playing. None of the three high scoring DES groups showed an N412 to their real identity. Those who scored low on the three measures did not show an N412 to their false or real identity.

Additional Positivities Associated with the Adoption of a False Identity

P300 research suggests that additional Late Positivity may be observed for tasks that require more than one decision. Inspection of the waveforms in Figure 1 suggested the presence of an additional Late Positivity at approximately 550 ms. Thus, this additional Late Positivity will be termed P550, and the 550 ms to the 574 ms segment were used in analyses. Appendix F contains a discussion of the meaning of P550 in the present study.

A 3 (Stimulus Types) x 4 (Identity Manipulation Tasks) x 3 (Electrode Sites) mixed ANOVA was calculated. Table C11 summarizes this ANOVA. There was significant interaction between the three types of identity stimuli and the four Identity Manipulation Tasks ($F_{GG}(4.6, 156.0) = 20.16$, $p < .05$, $\eta^2 = .37$). Post-hoc tests for the P550 results were similar to the P300 findings in that the False IS evoked a P550 that was significantly larger than the Irrelevant IS P550 at the Imagined and the Post Role-Play phase. The P550 findings differed from the P300 findings in that the P550 to the Real IS was significantly larger than the Irrelevant IS P550 at both phases. The P550 to the False and Real IS were not significantly different from each other when the false identity was first imagined. After role-playing, however, the P550 to the Real IS was significantly less pronounced than it had been in the previous phase, and this accounted for the significant difference between the False and Real IS means obtained at Post Role-Play. Table 15 reports the means, standard deviations, and t-tests differences among these variables.

Table 15: Mean P550, Standard Deviations, and t-test Differences between False Identity when First Imagined and False Identity when Imagined after Role playing

Time Block (in ms)	False Identity Imagined						False Identity Post Role-Play					
	Real Identity		False Identity		Irrelevant Identity		Real Identity		False Identity		Irrelevant Identity	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
550 to 574	13.35_{a}	5.48	14.40_{a}	5.99	9.69_{bc}	4.23	11.25_{c}	5.16	13.59_{a}	5.75	8.90_{bd}	4.42

Note. Means with different subscripts across Identity Stimuli are significantly different from each other ($df = 34$; $p < .05$).

The influence of DES scores and Extra False Identity Enactment on the P550s evoked when assuming a false identity was examined. A 2 (DES groups) x 3 (Stimulus Types) x 2 (Identity Manipulation Tasks) x 3 (Electrode Sites) mixed ANOVA was calculated. To focus on the participants' attempts to adopt the false identity, only the Imagined and Post Role-Play phases were examined. Neither the DES Total nor each of its three factors (i.e., Amnesia, Absorption, or Depersonalization) were implicated in any significant interaction. These ANOVAs are summarized in Tables C12, C13, C14, and C15 respectively. The Extra False Identity Enactment groups were, however, implicated in a significant interaction. Table C15 summarizes the ANOVA for Extra False Identity Enactment.

There was a significant interaction (Table C15) for the two Extra False Identity Enactment groups with the three types of Identity Stimuli and the two Identity Manipulation Tasks ($F_{GG}(1.8, 68.1) = 4.38$, $p < .05$, $\eta^2 = .24$). The data between 550 ms and 574 ms in the Imagined and Post Role-Play P550 sections of Figure 3 captures the P550. The interest was in contrasting the False and Real IS P550s for the two Extra False Identity Enactment groups. For this, and to minimize the number of post-hoc tests, difference scores between the False and Real IS P550s were calculated. Not unexpectedly, post-hoc tests indicated that at the False Identity Imagined phase there was no significant disparity between the P550 difference scores for the Spontaneous Enactment group ($M = .3$, $SD = 1.3$) and the Planned Rehearsal group ($M = 1.3$, $SD = 3.7$; $t(14) = 1.1$, ns). After role-playing, however, the P550 to the False IS was more pronounced for the Spontaneous Enactment group, and this was represented in the significantly larger difference score for the Spontaneous Enactment group ($M = 6.1$, $SD = 2.7$) compared with the Planned Rehearsal group ($M = 1.3$, $SD = 3.7$; $t(14) = 2.4$, $p = .03$).

In summary, the P550 findings differed from the P300 findings. When the participants adopted their false identity they were instructed to deny their real identity, and they seemed able to do this, as was indicated by a suppressed P300 to their real identity. However, they did not continue to suppress their response to their real identity as was evidenced by their pronounced P550s to it. After role-playing, the P550 to the real identity generally declined, but this was not uniform as it varied as a function of the participants' extra false identity enactment. After role-playing, those who spontaneously enacted their false identity showed a larger P550 to their false identity than did those who planned to rehearse their false identity.

Attention and Recall

To determine if the participants paid differential attention to the False and Real IS their recall of the identity stimuli was tested. At the conclusion of the study the participants recalled the same number of stimuli associated with their false identity (M = 19.7, SD = .54) as with their real identity (M = 19.7, SD = .64; $t(30)$ = .37, ns).

Discussion

This is not the first time autobiographical information has been associated with a large P300 (Ellwanger et al., 1996; 1997; Folmer & Yingling, 1997; Muller & Kutas, 1996; Pratt, 1995). However, it is the first time irrelevant identity information, previously incapable of evoking a sizeable P300, was found to result in a large P300 after 20 minutes of "cogitation". Moreover, the same 20-minute cogitation was able to diminish a previously well-established P300 to autobiographical information to the point where it resembled that evoked by irrelevant identity information.

How are we to interpret these findings? Two heuristic strategies may unite the findings. First, although a study of the cognitive events behind these neurophysiological reversals was not the object of the present investigation, the cognitive tasks asked of subjects were arranged to be similar to those that undercover officers perform when they dissimulate their identity for a living. We may obtain some insights from an examination of these real life dissimulations. Second, the literature on identity and self-constructions and its related research on information processing may provide a useful model for representing cognitive processes that underlie these neurophysiological changes.

Adopting a New Identity

The participants' adoption of a new identity may be related to their memorization of the false identity elements. However, Ellwanger and colleagues (1996) showed that individuals produce a larger P300 to autobiographical information than to memorized words, and it may be that in the present research a process other than memorization accounted for the large P300 to the list of 20 false identity elements. A fundamental aspect of the cognitive procedure in the present study is the one described as "self-referencing". The participants were explicitly asked to adopt the false identity and see its elements as referring to one's self, that is, to assume it described them. Though other studies may not have asked individuals to "adopt a new identity", several studies have shown the powerful influence of self-referencing on recall. A recent meta-analytic study, conducted by Symons and Johnson (1997), showed that self-referencing produced superior recall compared to semantic or other-referencing tasks. The impact of self-referencing on P300 was demonstrated with autobiographical words presented in a visual (Ellwanger, Rosenfeld, & Sweet, 1997; Pratt, 1995) and an auditory

(Muller & Kutas, 1996) format. Elsewhere, Folmer and Yingling (1997) presented individuals with their own name and the names of others. They found that a larger P300 was evoked by one's own name compared with that evoked by the names of others.

A related aspect of the present study's self-referencing procedure was asking participants to select one of three possible false identities to assume, and spend 20 minutes composing a story based on the 20 false identity elements. Could it be that these procedures helped the participants learn the list of 20 false identity elements better and that this contributed to the results? It is interesting to note that undercover officers are often tasked with constructing a "legend" (a fictitious past) into which their new claims of identity are to be cast (Girodo, 1998; Jacobs, 1997; 1993; 1992a; 1992b; Marx, 1988). And, before being released onto the criminal milieu they are tested on their ability to reproduce and defend these identity elements in the context of their new autobiography.

Ahn, Brewer, and Mooney (1992) showed that individuals could generate a new schema on the basis of limited information. After reading a story once the participants showed evidence of schema formation as indicated by their answers to true-false questions and the creation of an abstract description of the story. In the present study, aside from the task of creating a story out of the elements provided, reading it out loud to the experimenter might also have facilitated schema organization and established greater meaningfulness for the elements of their chosen identity. Malle and Horowitz (1995) studied the influence of schema integration on the processing of information among undergraduates. They concluded that consistent self-descriptions, indexed through self-ratings of personality constructs (e.g., extraversion, nervousness, etc.), were associated with strong, but not weak, interconnections among elements of a self-schema. In the present study, the task of writing a story and delivering it in public is consistent with the establishment of strong interconnections among the false identity elements.

The magnitude of the P300 evoked by the false identity words may have been influenced by instructions that participants "focus their attention on a mental image of their false identity." In other research that did not employ autobiographical stimuli, similar instructions were shown to influence the size of P300. For example, when DePascalis (1994) had hypnotized individuals "visualize" an imaginary cardboard circle that would supposedly

block their perception of a flash of light. These subjects showed a smaller P300 to the flash of light compared with the P300 obtained from an "unobstructed" view.

A false identity "schema". The notion that a self identity schema serves both as a mental structure and a means for processing information may find support from the P550 response to false identity information, and from a parallel line of research. Recall that Muller-Gass and colleagues (2000) found a second P300 associated with the processing of information in a multi-stage decision task. In that study participants were asked to indicate the gender of French nouns. A single P300 was shown when they were given the gender indefinite articles (i.e., un or une). When they were given the superordinate gender category to which these examples belong (i.e., masculine or feminine) they showed two P300s. The authors attributed this to the cognitive activity of converting the masculine or feminine concepts to the corresponding article. Muller-Gass and colleagues concluded that the second P300 pointed to the presence of a superordinate construct (concept) for noun gender decisions. In the present study, the ERPs evoked to the false identity showed a large late positivity (i.e., P550). This P550 is similar to Muller-Gass and colleagues' second P300-type component. Conceivably, participants in the present study decided first, that the stimulus described them, and second, that the stimulus was indeed an exemplar of their newly created concept of self-identity. For example, the first P300 reflects the decision "My date of birth is (new date of birth) ..." followed by a second appraisal that such information indexes a false identity. Consistent with Muller-Gass and colleagues' (2000) finding that the second P300 reflected the presence of a superordinate construct, the second P300 in the present study would suggest the presence of a superordinate construct (i.e., an identity construct).

In summary, the combination of instructions to choose a false identity, write a story about it, and focus attention on an identity mental image resulted in a larger P300 to the false identity. This is best accounted for by the development of a self-referenced false identity schema that participants adopted as the working schema. While this may be similar to what undercover officers do when they adopt a new identity, this does not explain how, at the same time participants in the present study, also came to show a diminished P300 to their real identity.

Denying One's Real Identity

Undercover officers are tasked to deny their real identity when they approach suspected criminals. Failure to be convincing in this task can lead to job failure or personal danger. What cognitive tasks allow them, and participants in the present study, to carry out this key aspect of their dissimulation? In a series of studies, Ellwanger and colleagues (1996; 1997; 1998) asked individuals to simulate amnesia for autobiographical information. Despite the participants' attempts to not show a P300 to self-identity information, they were unable to prevent a P300 to it. A vital difference between these studies and the present study is that in the present study the participants were given an alternative identity to assume. This dual task mirrors the activities of undercover officers.

The mere denial of one's identity appears insufficient to diminish P300. It may be that individuals need an alternative persona to assume if they are to successfully deny their real identity. However, there are indications that participants in the present study were not completely successful at denying the real identity.

Can a real identity schema be fully suppressed? When the participants first adopted their false identity, their real identity also evoked a small P300 and a large P550. The small P300 suggests that the participants denied the false identity elements and did not see them as meaningful. However, when they moved to the second stage of the two-stage process, which was indexed by P550, the superordinate "identity schema" was still seen as meaningful. Markus and Wurf (1987) suggest that core schemata associated with the real identity remain chronically active. For example, Higgins and colleagues (1982) concluded on the basis of students' recall of stories that a core set of self-schema are constantly active and influence recall. In the present study the participants were initially able to deny the exemplars of their real identity, but the real identity schema or construct remained. This might be similar to the following "Miss and Mrs." illustration. Consider a woman who takes on her husband's last name in marriage and whose name is now prefixed with Mrs. This last name becomes a signifier of her new identity - - a new identity which requires that she must, at the same time, set aside the individual elements that defined her as a single and eligible woman. While doing so may create a new "self" and suppress the meaningfulness of exemplars of her past self, it may leave the superordinate identity concept "Miss" intact until it finds itself disabused in time.

Dissociation and the Adoption of a False Identity

A major manipulation of the study was the selection of participants based on their DES scores. None of the analyses indicated that the DES was implicated in any reliable manner with ERP results or with any of the self-reports or confederate reports. Only the analysis involving one of the DES' sub scales - - Amnesia was significantly related to P300.

Amnesia and denying a real identity. Amnesia[6] influenced the participants' success in denying their real identity. It was expected that individuals who are naturally "amnesic" for their own autobiographical information would find it easier to deny the recognition of real identity words. Contrary to expectations it was the high, not the low, Amnesia participants that showed a large P300 to their real identity. This counterintuitive finding cannot be adequately explained. Can it be that the high Amnesia participants' poor organization or integration of real identity information made it more difficult for them to distinguish their false from their real identity? Alternatively, the high Amnesia participants may not have suppressed their real identity because a false identity schema was not sufficiently organized to succeed in "displacing" the dominant real identity. There is insufficient evidence to corroborate these explanations, and further investigation of the influence of amnesia is needed.

Role-Playing a False Identity

Theories of identity development suggest that social interaction is an essential component in the construction of identity (Beals, 1998; Markus & Wurf, 1987; Schwalbe & Mason-Schrock, 1996). Yardley-Matwiejczuk (1997) emphasized the importance of spontaneous unscripted role-plays that engage the individual for producing changes in behaviour and attitudes. Furthermore, role-plays have been an essential component in applied

[6] The term amnesia has a pathological connotation that is not applicable to the undergraduate population used in the present study. The participants endorsed items suggesting that they found it difficult to recall autobiographical information from the recent and distant past. For example, they reported that they "have the experience of finding themselves dressed in clothes that they don't remember putting on" (Bernstein & Putnam, 1986, p. 733). They also reported that they "have the experience of finding a new thing among their belongings that they do not remember buying" (Bernstein & Putnam, 1986, p. 733). Amnesia, assessed by items such as these, was not related to pathological traits, including neuroticism, psychoticism, or depression, and was not associated with toughmindedness, or the tendency to present oneself in a good light, but was related to a decreased recall of autobiographical information. Individuals who scored high on this scale also reported increased hostility or frustration and were more extroverted. The forgetfulness that they endorsed most likely reflects problems encoding, processing, or recalling autobiographical information.

fields. They are used in undercover officers' training to adopt a false identity (Girodo, 1998). Role-plays or "psychodrama" are also used in psychotherapy to alter and shape behaviour and personality (Corsini, 1966; Greenberg, 1974; Moreno, 1946).

The role-plays were expected to enhance P300 to the participants' false identity. However, when they returned to the lab after role-playing they showed a smaller P300 to their newly acquired identity than they had the first time they were tested. Davis and Unruh (1981) showed that the frequency of schema use influenced the recall of schema-related information. In the present study, the fact that the false identity schema was used so infrequently after the first testing that it began to lose its ability to organize information may also be an explanation. However, this interpretation does not find support given the absence of a P300 difference among those who role-played frequently compared with those who role-played less frequently.

At first, the elements of the fabricated identity were historical but entirely imagined: they had never actually transpired in the lives of participants. They created a new identity "woven out of imagined whole cloth". Reality, in the form of enacting one's imagined self with real people, adds a new dimension and changes phenomenologically what had been previously the private domain of a cognitive construction. Viewed in this light it may not be too surprising to find that P300 to the new identity after reality testing was not going to be the same as when it was only imagined. This line of thinking finds support, not from differences in the amount of role-playing completed, but from the two groups of participants who reported different types of Extra False Identity Enactments.

False Identity Enactment and ERPs. Recall that two groups of participants enacted their false identity outside of the requirements of the instructions provided to them. One group reported that they planned to rehearse their false identity to improve their ability to enact it. These individuals indicated that they wanted to improve their dramaturgical or acting skill and looked to external events to provide them with opportunities to do so. They wanted to appear more believable to observers, and to accomplish this they tailored their false identity display to the demands of the situation. When they returned to the lab, the original false identity words would evoke a smaller P300 conceivably for the reasons alluded to above.

The second group reported an "unwilled or spontaneous" enactment of their false identity[7]. For this Spontaneous group, it is unclear what aspects, if any, of the external situation cued their false identity presentation. These participants who Spontaneously enacted their false identity continued to show a large P300 to their false identity after role-playing. Recall the descriptions of the spontaneous enactments provided by subjects: none referred to an external objective or personal goal - - these enactments are described as "just happening." This suggests that those who spontaneously enacted their false identity were less focused on the external demands of the situation (e.g., convincing a stranger that they were the false identity). For these subjects then, it appears as if this kind of endogenous identity enactment resembles more the identity process when it was first cognitively assembled - - one distanced from a reality orientation.

But there is more. For these four participants the higher order concept of a "new identity", one to which false identity words are but exemplars, appears to have been strengthened by the enactment of a false identity over the five days. Their larger P550 to their false identity after role-playing points to a noteworthy neurophysiological effect - - one similar in size to their preceding P300. The superordinate construct "new identity" appears to have been strengthened by whatever endogenous events uniquely accounts for a spontaneous enactment.

Those who engaged in spontaneous and unplanned role-plays show a personality profile that sets them apart from their counterparts. They were more neurotic, but did not appear anxious during role-plays. They showed psychotic tendencies (i.e., social alienation and distorted thought processes). The anecdotal cases of Bennett (Commonwealth of Virginia vs. Bennett, 1997), an undercover agent who attempted to murder another FBI agent, and Air Force Lt. Clifton James (1954), who impersonated General Montgomery, point to a link between spontaneous adoption of an identity and identity disruptions. High neuroticism scores in undercover agent have previously been linked to misconduct, psychological stress, disciplinary and supervisory problems and job dissatisfaction. The present findings add another indicator of psychological disruption to the list. Individuals with high neuroticism scores evidenced a neurophysiological response following role-playing that was

[7] Due to the small sample size of the Spontaneous Enactment group (i.e., n=4), the results must be considered tentative and exploratory until they can be confirmed with a larger sample

characteristic of an inability to suspend or separate past imaginings from their current ego state. From a practical point of view, Girodo's (1997) assessment centre approach to managing risks in undercover work screens out high neuroticism scores among applicants for undercover work. In terms of theory, however, there is a need to explore further what it may be about neuroticism or any accompanying co-morbidity that makes the role-playing a false identity potentially iatrogenic. Also, there is a need to further study the extent to which the unique neurophysiological response to false identity role-playing among high neuroticism scorers may be an indicator of a predisposition to identity disruptions.

N412s Associated with Adopting a False Identity

In the present study, the participants successfully denied their real identity, but also showed a late negativity (i.e., N412) to their false identity. The N412 to false identity when they first imagined it conceivably arose because the cognitive task of adopting a false identity was new to them and required some effort. After role-playing the participants no longer showed an N412 to their false identity, and the opportunity to practice the enactment of their false identity might account for this.

Limitations of the Current Study

There are several limitations to the current study. It used only male university students and thus it could be argued that the results may not apply to women or to older persons. Though folk psychology suggests that most individuals should be able to successfully adopt a false identity, further investigation is needed to confirm this at a neurophysiological level.

In the present study there was limited control over the role-playing exercises. The participants could have not been accurate about the number of role-plays they engaged in. This concern was partly addressed through the use of a confederate in one role-playing exercise. The confederate attempted to make the role-play realistic, and ensured that they completed at least one role-play. Other methods for monitoring or structuring the role-plays were considered, however, Yardley-Matwiejczuk (1997) suggests that role-plays have the strongest impact when they are realistic and unscripted. Therefore, other techniques to monitor the role-plays were discarded because they would have made the role-plays less spontaneous and realistic.

Future Areas of Research

There are several new questions prompted by the present study. For example, what are the key aspects of the procedures that facilitated the adoption of a false identity and a denial of the real identity? The direct manipulation of tasks, such as the writing of a story, focusing attention on an image of the false identity, and the denial of the real identity, would help to determine the "active ingredients" of the procedures. The use of trained actors tasked to assume a new identity under various methods of dissimulation (e.g., method acting) would help clarify what might be essential cognitive features that underlie ERP changes.

Subsequent research could examine the long-term impact of adopting a false identity. Relative to other studies, such as Girodo and colleagues' (in preparation) report on 50 role-play activities, the present study employed few role-plays (i.e., 3). Anecdotal reports and observational studies (Farkas, 1986; Girodo, 1991a; 1991b; 1991c) of undercover officers have documented the negative impact of extended role-plays on identity, and on physical and emotional health. In a context that is less stressful than undercover work, the increased use of either the cognitive or behavioural tasks could lead to a stronger and more elaborate false identity. Might the effects of dissociative tendencies become more evident in a long-term dissimulation study?

It would be unethical to ask participants to adopt a new identity for extended periods of time. However, a naturalistic study of undercover officers or individuals seeking psychotherapy could shed light on the effects of adopting a new identity. Research with undercover officers suggests that long-term role-play is associated with a risk for identity disruptions (Farkas, 1986; Girodo et al., in preparation; U.S. Department of Justice, 1978). However, these studies have not examined role-playing outside of the stressful undercover environment. Individuals seeking psychotherapy desire to change aspects of their personality or cognition. For example, most individual with depression have negative self-schema that they seek to change through therapy. Further investigation of these two groups could help to clarify the long-term effects of using cognitive tasks or role-plays to adopt a new identity.

Finally, P300 may have clinical and diagnostic applications. It could be useful in the diagnosis and monitoring of a range of psychopathologies. For example, it would be well suited to the diagnosis and assessment of treatment for DID. P300 could also be used to monitor schema-focused cognitive treatments of disorders such as depression, anxiety,

obsessive-compulsive disorder, and personality disorders.

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Appendix A: Personality Questionnaires

Dissociative Experiences Scale

Interesting Experiences

I consent to complete the following questionnaire that asks about biographical information and some of the imaginative and interesting experiences I have had.

_____	_____	_____
Name (print)	Signature	Date

Instructions

The following questions ask about experiences you may have in your daily life. We are interested in how often you have these experiences. It is important, however, that your answers show how often these experiences happen to you when you are not under the influence of alcohol or drugs. To answer the questions, please determine to what degree the experience described in the question applies to you on a scale from 0 to 100 % and write it on the bank provided at the end of each question.

0% 100 %

1. Some people have the experience of driving a car and suddenly realizing that they don't remember what has happened during all or part of the trip. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

2. Some people find that sometimes they are listening to someone talk and they suddenly realize that they did not hear part of what was just said. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

3. Some people have the experience of finding themselves in a place and having no idea how they got there. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

4. Some people have the experience of finding themselves dressed in clothes that they don't remember putting on. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

5. Some people have the experience of finding a new thing among their belongings that they do not remember buying. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

6. Some people find that they are approached by people that they do not know who call them by another name or insist that they have met them before. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

7. Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

8. Some people are told that they sometimes do not recognize friends or family members. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: .

9. Some people find that they have no memory for some important events in their lives (for example, a wedding or graduation). On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

10. Some people have the experience of being accused of lying when they do not think that they have lied. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

11. Some people have the experience of looking in a mirror and not recognizing themselves. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

12. Some people sometimes have the experience of feeling that other people, objects, and the world around them are not real. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

13. Some people sometimes have the experience of feeling that their body does not seem to belong to them. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

14. Some people have the experience of sometimes remembering a past event so vividly that they feel as if they were reliving that event. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

15. Some people have the experience of not being sure whether things they remember happening really did happen or whether they just dreamed them. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

16. Some people have the experience of being in a familiar place but finding it strange and unfamiliar. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

17. Some people find that when they are watching television or a movie that they become so absorbed in the story that they are unaware of other events happening around them. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

18. Some people find that they become so involved in fantasy or daydreams that it feels as though it were really happening to them. On a scale from 1 to 100 indicate what

percentage of the time **this happens to you**: _____.

19. Some people find that they are able to ignore pain. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

20. Some people find that they sometimes sit staring off into space, thinking of nothing, and are not aware of the passage of time. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

21. Some people sometimes find that when they are alone they talk out loud to themselves. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: ____.

22. Some people find that in one situation they may act so differently compared with another situation that they feel almost as if they were two different people. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

23. Some people find that in certain situations they are able to do things with amazing ease and spontaneity that would usually be difficult for them (for example, sports, work, social situations, etc.). On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

24. Some people sometimes find that they cannot remember whether they have done something or have just thought about doing that thing (for example, not knowing whether they have just mailed a letter or have just thought about mailing it). On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

25. Some people find evidence that they have forgotten about important things that have happened to them. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

26. Some people sometimes find writings, drawings, or notes among their belongings that they must have done but cannot remember doing. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

27. Some people sometimes find that they hear voices inside their head that tell them to do things or that comment on things that they are doing. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

28. Some people sometimes feel as if they are looking at the world through a fog so that people and objects appear far away or unclear. On a scale from 1 to 100 indicate what percentage of the time **this happens to you**: _____.

DID Factor Groupings

Amnesia: item # 3, item # 4, item # 5, item # 6, item # 8, item # 9, item # 10, item # 25, item # 26

Absorption: item # 2, item # 14, item # 15, item # 16, item # 17, item # 18, item # 20, item # 22, item # 23

Depersonalization: item # 7, item # 11, item # 12, item # 13, item # 27, item # 28

Symptom Checklist 90

Below is a list of events that sometime occur with people. Please write a number on the line at the end of the statement that best describes how much that has bothered or distressed you during the past even days including today. Use the following codes.

0 = not at all, 1 = a little bit, 2 = moderately, 3 = quite a bit, 4 = extremely

1.	Loss of sexual interest or pleasure.	**0 1 2 3 4**
2.	The idea that someone else can control your thoughts.	**0 1 2 3 4**
3.	Feeling easily annoyed or irritated.	**0 1 2 3 4**
4.	Feeling low in energy or slowed down.	**0 1 2 3 4**
5.	Thoughts of ending your life.	**0 1 2 3 4**
6.	Hearing voices that other people do not hear.	**0 1 2 3 4**
7.	Crying easily.	**0 1 2 3 4**
8.	Feeling of being trapped or caught.	**0 1 2 3 4**
9.	Temper outbursts you could not control.	**0 1 2 3 4**
10.	Blaming yourself for things.	**0 1 2 3 4**
11.	Feeling lonely.	**0 1 2 3 4**
12.	Feeling blue.	**0 1 2 3 4**
13.	Worrying too much about things.	**0 1 2 3 4**
14.	Feeling no interest in things.	**0 1 2 3 4**
15.	Other people being aware of your private thoughts.	**0 1 2 3 4**
16.	Feeling hopeless about the future.	**0 1 2 3 4**
17.	Having thoughts that are not your own.	**0 1 2 3 4**
18.	Having urges to beat, injure or harm someone.	**0 1 2 3 4**
19.	Having urges to break or smash things.	**0 1 2 3 4**
20.	Feeling everything is an effort.	**0 1 2 3 4**
21.	Getting into frequent arguments.	**0 1 2 3 4**
22.	Feeling lonely even when you are with people.	**0 1 2 3 4**
23.	Feelings worthless.	**0 1 2 3 4**
24.	Shouting or throwing things.	**0 1 2 3 4**
25.	Having thoughts about sex that bother you a lot.	**0 1 2 3 4**
26.	The idea that you should be punished for your sins	**0 1 2 3 4**
27.	The idea that something is seriously wrong with your body.	**0 1 2 3 4**
28.	Never feeling close to another person.	**0 1 2 3 4**
29.	The idea that something is wrong with your mind.	**0 1 2 3 4**

Eysenck Personality Questionnaire

Circle either the Yes or No.

1.	Do you have different hobbies?	**No**	**Yes**
2.	Do you stop to think things over before doing anything?	**No**	**Yes**
3.	Does you mood often go up and down?	**No**	**Yes**
4.	Have you ever taken the praise for something you knew someone else had really done?	**No**	**Yes**
5.	Are you a talkative person?	**No**	**Yes**
6.	Would being in debt worry you?	**No**	**Yes**
7.	Do you ever feel just miserable for no reason?	**No**	**Yes**
8.	Were you ever greedy by helping yourself to more than your share of anything?	**No**	**Yes**
9.	Do you lock up your house carefully at night?	**No**	**Yes**
10.	Are you rather lively?	**No**	**Yes**
11.	Would it upset you a lot to see a child or an animal suffer?	**No**	**Yes**
12.	Do you often worry about things you should not have said or done?	**No**	**Yes**
13.	If you say you will do something, do you always keep your promise no matter how inconvenient it might be?	**No**	**Yes**
14.	Can you usually let yourself go and enjoy yourself at a lively party?	**No**	**Yes**
15.	Are you an irritable person?	**No**	**Yes**
16.	Have you ever blamed someone for doing something you knew was really your fault?	**No**	**Yes**
17.	Do you enjoy meeting new people?	**No**	**Yes**
18.	Do you believe insurance plans are a good idea?	**No**	**Yes**
19.	Are your feelings easily hurt?	**No**	**Yes**
20.	Are all your habits good and desirable ones?	**No**	**Yes**
21.	Do you tend to keep in the background on social occasions?	**No**	**Yes**
22.	Would you take drugs which may have strange or dangerous effects?	**No**	**Yes**
23.	Do you often feel fed up?	**No**	**Yes**
24.	Have you ever taken anything (even a pin or button) that belonged to someone else?	**No**	**Yes**
25.	Do you like going out a lot?	**No**	**Yes**
26.	Do you enjoy hurting people you love?	**No**	**Yes**
27.	Are you often troubled by feelings of guilt?	**No**	**Yes**
28.	Do you sometimes talk about things you know nothing about?	**No**	**Yes**
29.	Do you prefer reading to meeting people?	**No**	**Yes**
30.	Do you have enemies who want to harm you?	**No**	**Yes**
31.	Would you call yourself a nervous person?	**No**	**Yes**
32.	Do you have many friends?	**No**	**Yes**
33.	Do you enjoy practical jokes that can sometimes really hurt people?	**No**	**Yes**
34.	Are you a worrier?	**No**	**Yes**
35.	As a child did you do as you were told immediately and without grumbling?	**No**	**Yes**
36.	Would you call yourself happy-go-lucky?	**No**	**Yes**

37.	Do good manners and cleanliness matter much to you?	**No**	**Yes**
38.	Do you worry about awful things that might happen?	**No**	**Yes**
39.	Have you ever broken or lost something belonging to someone else?	**No**	**Yes**
40.	Do you usually take the initiative in making new friends?	**No**	**Yes**
41.	Would you call yourself tense or highly strung?	**No**	**Yes**
42.	Are you mostly quiet when you are with other people?	**No**	**Yes**
43.	Do you think marriage is old-fashioned and should be done away with?	**No**	**Yes**
44.	Do you sometimes boast a little?	**No**	**Yes**
45.	Can you easily get some life into a rather dull party?	**No**	**Yes**
46.	Do people who drive carefully annoy you?	**No**	**Yes**
47.	Do you worry about your health?	**No**	**Yes**
48.	Have you ever said anything bad or nasty about anyone?	**No**	**Yes**
49.	Do you like telling jokes and funny stories to your friends?	**No**	**Yes**
50.	Do most things taste the same to you?	**No**	**Yes**
51.	As a child did you ever talk back to your parents?	**No**	**Yes**
52.	Do you like mixing with people?	**No**	**Yes**
53.	Does it worry you if you know there are mistakes in your work?	**No**	**Yes**
54.	Do you suffer from sleeplessness?	**No**	**Yes**
55.	Do you always wash before a meal?	**No**	**Yes**
56.	Do you nearly always have a ready answer when people talk to you?	**No**	**Yes**
57.	Do you like to arrive at appointments in plenty of time?	**No**	**Yes**
58.	Have you often felt listless and tire for no reason?	**No**	**Yes**
59.	Have you ever cheated at a game?	**No**	**Yes**
60.	Do you like doing things in which you have to act quickly?	**No**	**Yes**
61.	Is (or was) your mother a good woman?	**No**	**Yes**
62.	Do you often feel life is very dull?	**No**	**Yes**
63.	Have you ever taken advantage of someone?	**No**	**Yes**
64.	Do you often take on more activities than you have time for?	**No**	**Yes**
65.	Are there several people who keep trying to avoid you?	**No**	**Yes**
66.	Do you worry a lot about your looks?	**No**	**Yes**
67.	Do you think people spend too much time safeguarding their future with savings and insurance?	**No**	**Yes**
68.	Have you ever wished that you were dead?	**No**	**Yes**
69.	Would you dodge paying taxes if you were sure you could never be found out?	**No**	**Yes**
70.	Can you get a party going?	**No**	**Yes**
71.	Do you try not to be rude to people?	**No**	**Yes**
72.	Do you worry too long after an embarrassing experience?	**No**	**Yes**
73.	Have you ever insisted on having your own way?	**No**	**Yes**
74.	When you catch a train do you often arrive at the last minute?	**No**	**Yes**
75.	Do you suffer from nerves?	**No**	**Yes**
76.	Do your friendships break up easily without it being your fault?	**No**	**Yes**
77.	Do you often feel lonely?	**No**	**Yes**
78.	Do you always practice what you preach?	**No**	**Yes**
79.	Do you sometimes like teasing animals?	**No**	**Yes**
80.	Are you easily hurt when people find fault with you or the work you do?	**No**	**Yes**

81.	Have you ever been late for an appointment or work?	**No**	**Yes**
82.	Do you like plenty of bustle and excitement about you?	**No**	**Yes**
83.	Would you like other people to be afraid of you?	**No**	**Yes**
84.	Are you sometimes bubbling over with energy and sometimes very sluggish?	**No**	**Yes**
85.	Do you sometimes put off until tomorrow what you ought to do today?	**No**	**Yes**
86.	Do other people think of you as being very lively?	**No**	**Yes**
87.	Do other people tell you a lot of lies?	**No**	**Yes**
88.	Are you touchy about some things?	**No**	**Yes**
89.	Are you always willing to admit it when you have mad a mistake?	**No**	**Yes**
90.	Would you feel very sorry for an animal caught in a trap?	**No**	**Yes**

EPQ Factor Groupings

Neuroticism: item # 3, item # 7, item # 12, item # 15, item # 19, item # 23, item # 27, item # 31, item # 34, item # 38, item # 41, item # 47, item # 54, item # 58, item # 62, item # 66, item # 68, item # 72, item # 75, item # 77, item # 80, item # 84, item # 88

Introversion-Extroversion: item # 1, item # 5, item # 10, item # 14, item # 17, item # 21, item # 25, item # 29, item # 32, item # 36, item # 40, item # 42, item # 45, item # 49, item # 53, item # 56, item # 60, item # 64, item # 70, item # 82, item # 86

Toughmindedness: item # 2, item # 6, item # 9, item # 11, item # 18, item # 22, item # 26, item # 30, item # 33, item # 37, item # 43, item # 46, item # 50, item # 53, item # 57, item # 61, item # 65, item # 67, item # 71, item # 74, item # 76, item # 79, item # 83, item # 87, item # 90

Lie scale: item # 4, item # 8, item # 13, item # 16, item # 20, item # 24, item # 28, item # 35, item # 39, item # 44, item # 48, item # 51, item # 55, item # 59, item # 63, item # 69, item # 73, item # 78, item # 81, item # 85, item # 89

First Questionnaire

Please circle one:

What hand do you write with?	Right	Left
Do you have any allergies?	No	Yes, what: _____
Do you suffer from seizures?	No	Yes
Are you taking any medication?	No	Yes, what: _____

Checklist

Please read this list carefully and circle the one from each group that best applies to you or describes you.

I am	*Insert subject's trait*	**I graduated from**	*Insert subject's trait*
	25		Kennedy High
	26		King's Collegiate
	28		Lowlands General
I am a citizen of	*Insert subject's trait*	**I like to listen to**	blues
	England		classical
	Holland		jazz
	USA		*Insert subject's trait*
I can be a little	callous	**I like to read**	Ian Flemming
	conceited		National Geographic
	Insert subject's trait		Popular Mechanics
	suspicious		*Insert subject's trait*
I enjoy	*Insert subject's trait*	**I like to watch**	Discovery channel
	chess		NYPD Blue
	debating		*Insert subject's trait*
	sailing		Wild Kingdom
I enjoy	flying	**I major in**	Engineering
	Insert subject's trait		*Insert subject's trait*
	fencing		Pre-Law
	scuba diving		Pre-Med

I personally admire	Dr. Bethune
	John Glenn
	Joyce Milgaard
	Insert subject's trait
I want to be a famous	aeronautical engineer
	cardiologist
	judge
	Insert subject's trait
I was born in	1970
	1972
	1974
	Insert subject's trait
I was born in	Amsterdam
	Houston
	London
	Insert subject's trait
I was born on	Apr 23
	Insert subject's trait
	Jul 14
	Oct
I worked for	Parole and Probation
	Spar Aerospace
	Insert subject's trait
	the Red Cross
I wrote a paper on	biotechnology
	black holes
	Insert subject's trait
	war crimes
My friends call me	Bill
	Frank
	Insert subject's trait
	Mack
My last name is	Dowell
	Insert subject's trait
	Mutch
	Ramey
My personality is	*Insert subject's trait*
	cold
	distant
	warm

Research Participant Consent Form

I, _____, consent to participate in a study that will involve some brief imaginative role-related exercises and the recording of my brain's electrical activity in response to words presented on a computer screen. I understand that electrodes will be used to record the electrical activity of my brain. To attach these electrodes the appropriate areas on my head will be gently rubbed to remove oil and any dead cells. When needed, my hair will be parted and a wooden stick or blunt needle will be used to remove oil and any dead skin cells. This will not break my skin. The electrodes will be attached with a small dab of water-soluble gel and surgical tape. The gel can be easily removed with a moist cotton ball and this procedure will leave no visible traces.

I understand that there is no danger or risk to my health or self-esteem in this study. All procedures have been extensively pre-tested and they have been used routinely for many years in this and other laboratories. The experiment will involve two sessions that together last about a total of 4 - 4.5 hours.

I understand that my participation in this study is entirely voluntary. I may withdraw from the study at any time during either session, even after signing this form, without jeopardy or penalty of any kind. Any information about me that is collected during this study will be kept strictly confidential and if the results are published I will not be identified in any way.

Trevor Deck, the principal investigator, can be reached at 562-5800 ext. 4304 or in room 416a Montpetit Hall.

_____	_____	_____
Name (print)	Signature	Date

I have explained the nature of the study to the participant and believe that he/she has understood it.

_____	_____	_____
Name (print)	Signature	Date

Verbal Instructions for Participants

Recruiting Phone Call

Hello, this is Trevor Deck. I am the graduate student that came to your psychology class and asked you some questions a few weeks ago. You indicated that you might be willing to participate in my study. Many other people indicated that they would be interested in participating. I selected several people at random, including you. If you take the opportunity to participate you would come in twice to perform some recognition tasks that look at how you process information about yourself. I would be using an EEG and several electrodes to record your mental activity during these tasks. Before the second time you come in you would engage in some interesting daily experiences. They would be like acting, where you be asked to assume a role. For participating in the study you would be placed in a draw for two prizes of $100.

I would like to make an appointment for you to come in so I can tell you more about the study. At that point you can decide if you want to participate fully. Would you be interested?

Would you be available for a 2 hr session early next week?

In order to prepare for our first meeting, let me ask you a few questions.

<Ask 20 questions to obtain self-related stimuli words>

<Use list of 10 personality traits.>

<Bring your glasses.>

Do you have any question? If you need to reach me call 562-5800 ext. 4304. When you come to the lab you go to room 416 in Montpetit Hall. Enter through the main doors, turn left and go around the corner to the elevator and go to the top floor. It is the fourth floor. Turn left out of the elevator and go down the hall to room 416 and just walk in, I will be waiting.

First In-Lab Session

Description of study. To begin I will tell you what you can expect today. First I will explain the study in full and ask you if you want to participate. If you decide to continue, you will complete a brief questionnaire, then you will respond to sentences on a computer screen while I record you mental activity. You will also engage in some interesting imaginative activities. All of this should take about two and a half hours.

I am asking you to participate in a study that will examine the use of imaginative strategies and role-playing on attempts to assume a role. This study will involve some brief imaginative role-related exercises. Today you will ask you to complete two recognition tasks where you look at a computer screen and respond to sentences. While you are doing this I will record some of your naturally occurring mental activity with an EEG. In order to make these recordings I will clean a few small areas on your head and attach seven recording electrodes. To get the best possible recording I will remove oil and any dead skin cells with rubbing alcohol, a cleaning solution, and a small wooden stick. This won't hurt and I shouldn't break your skin. The electrodes will be held in place with an adhesive gel or surgical tape that comes off easily.

Before you leave today I will ask you take part in some exercises that require the use of your imagination. After you leave, you will be asked to try some role-playing exercises. After several days you will come back and we will repeat the recognition tasks and EEG recordings. You can withdraw from the study at any time even if you choose to continue right now. Any questions? Don't hesitate to ask questions at any time. Now I will ask you to read this consent form, which summarizes what I just told you, and sign it if you are willing to participate in the study.

<Fill out biographical questionnaire, and checklist of 80 stimulus words>

Pre-test: Real identity recognition task. **<Attach electrodes>**

During the recognition task you will see statements displayed on a computer screen. These statements will be presented one word at a time. They will be like the phrases you saw earlier. Some of the phrases will describe you and some won't. It is important that you focus on the ones that describe you. Think about your traits and interests that stand out the most, the ones that describe you the best. Keep in mind who it is and what it is you are. This is important and it will be clear why later.

This is an example of what the statements will be like:

"My (blank screen) favourite (blank screen) colour (blank screen) is (blank screen) Blue".

When you see the final word in the statement I want you to indicate if the statement is correct or incorrect. If it is correct press the right button. If it is incorrect press the left button. I want you to focus on this task and try to do it as quickly as possible. When the words are on the screen please do not move or shift any part of your body including your head, eyes, arms, or legs, and refrain from blinking. These types of movements will produce artifacts that distort the recordings I am making. You can move after you have responded. You will also get several short breaks to move, or you can press this button if you want to stop to blink, stretch, or move. The statements may be repeated more than once. We will start with five practice trials.

<Complete real identity recognition task and record ERPs>

<Move to a separate room for cognitive identity rehearsal and present video instructions>

Cognitive identity rehearsal: Assuming a role. Now comes the interesting part of the study. I am going to ask you choose an imaginary role to act-out. This will take about 20 minutes. It is an important part of the study and we have worked on it for a long time. Several well-published researchers have helped me develop it. I want you to think about what it would be like to be someone else. This would be like method acting. You would have to create an image of this new role and focus all your attention on it. Think of this as a challenge that should be fun and exciting, but requires a lot of concentration, imagination and all of your attention. You have the choice of three roles that you saw earlier. They include an engineering, a Pre-Law student, and a Pre-Medicine student. Which one seems like the most interesting, the most fun, and the easiest for you to use your imagination to assume?

So, do any of the three roles that Dr. Girodo described sound interesting to you.

<Subject chooses a new identity from list>

This is an important part of the study. I want you to start thinking about what it would be like to be this person. In order to help you become more comfortable with this role I want you to use your imagination to create a short story about this person. I will give you some details to help you. The story should be written in the first person, as if you are describing yourself, and should include information about (Assumed Identity Name)'s history, current life situation, and future goals. I want you to write a story with more details than the one I read to you. You should use your imagination to add information about (Assumed Identity Name's) likes, dislikes, bad habits, bad habits, current living situation, important relationships, and social activities. This is an example of what an earlier participant wrote about the identity they were assuming.

<Read example story to subject >

I want you to write something similar.

<Participant writes story about assumed identity>

<Participant reads story about assumed identity >

That sounds great. I think you have done it. You have really captured that role. You have really used your imagination to develop the role, and now I want you to picture it in mind and focus on it. From now until I call you by your other name I want you to be (Assumed Identity Name). Many people with your type of imagination can keep the (Assumed Identity Name) role so well that it looks convincing when someone is looking at you or at the recordings I am making. It will help you if you can push aside your old identity. If you can manage to focus your attention on being (Assumed Identity Name) and do it well, we won't be able to tell that you are not (Assumed Identity Name). Have fun with this.

Adopted identity recognition task. Now you will repeat the recognition task (Assumed Identity Name). During the task it is important that you focus on the sentences that describe you. Think about your traits and interests that stand out the most, the ones that describe you the best. Keep in mind who it is and what it is you are. When you see the last word press the right button if the statement is correct and the left button if it is not correct. You are not to move while the words are being displayed. You may press this button if you want to stop to move. You will get a break periodically. The statements will be repeated more than once.

<Complete adopted identity recognition task and record ERPs>

<Remove electrodes>

Role Play Activities

<Move to separate room for instructions for role-playing presented by videotape>

Over the next few days I want you to take part in three acting or role-playing exercises, preferably one per day. They should last a minimum of five minutes. In each role-playing exercise you will be asked to assume your new identity and interact with a stranger. This will take a little bit of preparation. You should re-read the story you wrote and get yourself psyched up before you try the exercise. One role-playing will involve talking to another person who will be participating in the study. In these exercises you are allowed to do anything provided it is not illegal, or socially unacceptable.

The first role-playing exercise. The first role-playing exercise will consist of a phone call. Tomorrow I want you to assume your new identity and make a call to (an organization associated with the identity). You are to ask to talk to someone about what it takes to become a (Assumed Identity's future occupation, e.g., a doctor). Tell them you have just moved here and want to know how long it takes to become a doctor in Canada and what are the best schools. Try to give them as much information as possible about your new identity. It is more important to give them information about yourself than to find out information about courses. It is also important that you don't let them know that you are pretending. The must believe that you are (Assumed Identity Name) at all times. The whole conversation should last 5-10 minutes. Do you have any questions?

The second role-playing exercise. For the second role-playing exercise you will meet

with someone from the study. Her name is (Confederate). It is very important that she does not suspect that you are pretending to be (Assumed Identity Name). She must believe that you are really (Assumed Identity Name). She might ask you a few questions, but it is up to you to tell her about yourself. Part of her role in the study is to try to determine which participants are role-playing. The whole conversation should last 5-10 minutes. You will meet her (time and location to be arranged at this time).

The third role-playing exercise. For the third role-playing exercise you will visit a department to talk with the secretary about courses. You will assume your new identity and try not to arouse any suspicion that you are not (Assumed Identity Name). You will say that you are trying to choose an elective that corresponds with some of you personal interest. Tell the secretary that you don't have time to talk with someone else and only want the information that she can provide. Just ask for a timetable. Remember, your goal is to talk about yourself, it is not as important to find out about courses. Your conversation should last 5-10 minutes and you should try to convey as much information about yourself as possible.

If you run into any problems during these exercises just leave them. Tell them that you have to leave for a meeting with a friend.

Now lets set up some times when you would like to do each of these role-playing exercises.

<Schedule times for the three role-playing exercises>

Second In-Lab Session

Review experiences during role-playing.

<Participant reads story>

<Give subject checklist of 80 stimulus words>

Post role-play recognition task. Give the participants instructions for repeating the recognition task.

<Attach electrodes>

(Assumed Identity Name), you will see statements displayed on the screen. It is important that you focus on the sentences that describe you. Think about your traits and interests that stand out the most, the ones that describe you the best. Keep in mind who it is and what it is you are. When the words are displayed please focus on them and avoid moving any part of your body including your head, eyes, arms or legs, and refrain from blinking. You should press the right button if the statement is correct and the left button if it is not correct. You may move after you have responded. You can also press this button if you want to stop to move. You will get a break after every 40 statements. The statements may be repeated more than once.

A person with your imaginative abilities should have no problem with this exercise. Just remember to focus your attention. Once you have successfully don this you have the possibility of being one of the two people selected at random to receive $100. ... OK? Have fun with this.

<Complete role-playing recognition task and record ERPs>

Real identity resumed recognition task. Ask them to resume their real identity and complete the recognition task.

<Complete real identity resumed recognition task and record ERPs>
<Remove electrodes>

Recall Test. Before we finish I want to see how many of the words you have seen that you can recall. Write down as many of the words as you can.

<Give the memory test and post-experiment inquiry>

Debriefing. Thank you for participating in the study. Do you have any questions? As you may remember, at the beginning of the study we told you that we are interested in the influence of imagination and role-playing on the brain activity of individuals that assume a role. The brain activity I recorded is called event-related potentials. This activity occurs when you recognize something important, like information related to yourself or information related to the role you assumed. We are pleased that you were able to follow the instructions and complete the exercises effectively.

There is an interesting part to the study. It concerns the role-playing you did. The person you meet for the second role-playing exercise was one of the researchers. Their job was to help you role-play, draw out some of the characteristics of the role, and give us an idea of how you were doing. We hid the fact that she was one of the researchers because we wanted the situation to feel realistic and authentic. Do you think that was fair?

<Wait for participant's response and address any concerns they have. If they do not think the use of a confederate was fair then it will be explained to them that we wanted to monitor their progress and ensure there were no problems in a manner that did not influence them or make them feel as if they were be scrutinized or evaluated while role-playing.>

If you want a copy of the results you can pick a summary after July 30, 2000, at 416A Montpetit Hall, University of Ottawa, or leave you address and I will mail it to you when it is ready.

Locations for First Role-Playing Exercise

Engineer	Lawyer	Medicine
· Ass. of Consulting Engineers of Canada	· Canadian Bar Association	· Association of Canadian Medical Colleges
· Canadian Academy of Engineering	· Canadian Counsel on International Law	· Canadian Association of Emergency Physicians
· Canadian Counsel of Professional Engineers	· Canadian Inst. for Advanced Legal Studies	· Canadian Medical Association
· Canadian Society for Mechanical Engineering	· Canadian Lawyers Ass. for Int. Human Rights	· Canadian Pediatric Society
· Engineering Institute of Canada	· Carleton County Law Association	· Federation of Medical Licensing Authorities
· Canada Safety Council	· Canada Safety Council	· Canadian Child Care Federation
· Canadian Construction Association	· Canadian Child Care Federation	· Canadian Diabetes Association
· Canadian Home Builders Association	· Family Services Canada	· Canadian Public Health Association
· Electric Vehicle Association of Canada	· National Educational Ass. of disabled Students	· Canadian Red Cross
· Mining Association of Canada	· Patent and Trademark Institute of Canada	· Cancer Research Society
· Mining Works for Canada		· Stroke Association
· Ottawa-Carleton Home builders Association		· Community Health Promotion

Departments that the Participants Visited for the Third Role-Playing Exercise

1. Administration
2. Biochemistry
3. Biology
4. Chemistry
5. Criminology
6. English:
7. Geography
8. History
9. Leisure Studies
10. Mathematics
11. Medieval Studies
12. Music
13. Philosophy
14. Physics
15. Political Science
16. Sociology
17. Theatre
18. Translation
19. Visual Arts

Example Stories for Participants and Paragraphs Describing Assumed Roles

Example Story:

My name is Eric Johnson. I was born June 2, 1969, in Barrie, Canada. I am 30 years old. I graduated from Hilltop high school, where I was an avid runner and loved to play soccer. My greatest athletic achievement was when our high school soccer team went to the provincial championship and won it all. While I was in high school I really enjoyed biology and science classes. During the summer I was lucky enough to get a job working for Health Canada. I did public education one summer and helped in a research lab the next.

When I came to the University of Ottawa, I enrolled in Biology. At first I wasn't sure if I could handle it, but now I am really glad I went with my first passion. Through my studies I have come to admire the pioneering research of James Watson and Francis Crick. In 1953, they announced to the patrons of a pub in Cambridge, "We have discovered the secret of life." What they had discovered was the double helix of DNA, composed of four nucleotide bases that fit together in specific pairs: adenine with thymine, and guanine with cytosine. I am currently writing a paper on genetic cloning. This is a topic that really interests me. I hope to eventually get a job as a genetic researcher.

When I am not at school I like to listen to rock and roll music. To relax I read a magazine called American Scientist or watch the Nature of Things on TV. I have a couple of friends, but they sometimes tell me that I am a little boring. This may be because my personality is slightly introverted.

Information on the Pre-Medicine Role

My name is **Bill Dowell**. I was born in on **October 2, 1978**. I am **21**, but moved from **London, England** where I was born. Before I moved, I went to **King's Collegiate**. In high school I enjoyed **sailing** and **scuba diving**. I first seriously considered moving to Canada while I was working for the **Red Cross**.

When I moved here I tried to adjust to the cultural differences. I found that I liked to listen to **Jazz**, read **National Geographic**, and watch a TV program called **Wild Kingdom**. Part of the reason I moved to Canada was to go to university. When I started at the University of Ottawa I enrolled in **Pre-Med** classes. Through my studies I learned about **Dr. Bethune**, a famous Canadian doctor. I greatly admire his accomplishments. I also enjoyed writing a paper on **biotechnology**. When I finish university I hope to become a famous **cardiologist**. The friends I have made in Canada tell me that I am **warm**, but that I can be a little **conceited**.

Note: In 1890, **Norman Bethune** was born in Gravenhurst, Ontario. He went to the University of Toronto, where his education was interrupted when he enlisted as a stretcher-bearer in World War I. He received his M.D. in 1916. Dr. Bethune's impact on medicine can be categorized into three distinct areas. He wrote extensively on the development of new surgical instruments, helping to establish a body of work that would be an essential reference for any surgeon. In 1938, while living in China, he proposed a universal health care system for Canada. Although the suggestion was not readily accepted, Bethune's good works abroad and compelling recommendations would eventually find a place in the Canadian medical system. And finally, Bethune is probably most remembered as being the first to introduce the mobile blood bank to the battlefield, where he performed countless blood transfusions in the midst of heavy fighting. A doctor to the very end, Bethune died of blood poisoning in 1939,

while ministering to a Chinese Army. Canada remembers Bethune as a medical genius; China reveres him as a saint.

Information on the Pre-Law Role

My name is **Frank Mutch.** I was born on **April 23, 1977.** I am **22,** but moved from **Amsterdam, Holland** where I was born. Before I moved, I went to **Lowlands General**. In high school I enjoyed **fencing** and **debating**. I first seriously considered moving to Canada while I was working for **Parole and Probation**.

When I moved here I tried to adjust to the cultural differences. I found that I liked to listen to **Classical**, read **Ian Flemming's** novels, and watch a TV program called **NYPD Blue**. Part of the reason I moved to Canada was to go to university. When I started at the University of Ottawa I enrolled in **Pre-Law** classes. Through my studies I learned about **Joyce Milgaard**, a woman who lobbied for the release of her innocent son. I greatly admire her accomplishments. I also enjoyed writing a paper on **war crimes**. When I finish university I hope to become a famous **judge**. The friends I have made in Canada tell me that I am **distant** and a little **suspicious**.

Note: **Joyce Milgaard**, of Peterborough, Ont., persevered for more than two decades in her monumental, often lonely struggle to clear her son, David, of a wrongful murder conviction. He spent almost 23 years in prison after he was wrongfully convicted of the 1969 murder of a Saskatoon nursing assistant. It was because of the intensive detective work and ferocious advocacy by Joyce Milgaard--including buttonholing then-Prime Minister Brian Mulroney in September 1991--that David is free. In 1985, her insistence on devoting nearly all her time and money to trying to exonerate David forced her to leave her job as a property manager and sell her $200,000 interest in eight rental holdings. In April 1992, the Supreme Court of Canada overturned his conviction, and he was released from jail. Then, DNA tests exonerated him. Yet at 67, she is youthful, vigorous and quick to laugh. She also finds time to volunteer for the Toronto-based Association in Defence of the Wrongly Convicted, of which she is a director.

Information on the Engineering Role

My name is **Mack Ramey**. I was born on **July 14, 1976**. I am **23,** but moved from **Houston, USA** where I was born. Before I moved, I went to **Kennedy High**. In high school I enjoyed **flying** an airplane and **chess**. I first seriously considered moving to Canada while I was working for **Spar Aerospace**.

When I moved here I tried to adjust to the cultural differences. I found that I liked to listen to the **Blues**, read **Popular Mechanics**, and watch the **Discovery channel**. Part of the reason I moved to Canada was to go to university. When I started at the University of Ottawa I enrolled in **Engineering** classes. Through my studies I learned about **John Glenn**, a famous astronaut and senator. I greatly admire his accomplishments. I also enjoyed writing a paper on **black holes**. When I finish university I hope to become a famous **aeronautical engineer**. The friends I have made in Canada tell me that I am **cold** and a little **callous**.

Note: Senator **John Glenn**, 77, has become the oldest person to travel in space aboard Shuttle Discovery. Glenn, born July 18, 1921, in Cambridge, Ohio, was the first American astronaut to orbit the Earth on February 20, 1962. His mission, aboard Friendship 7, lasted only three orbits and 4 hours 55 minutes, but was one of the most important

milestones in the development of the U.S. space program. Glenn recently ended his tenure as a four-term U.S. Senator from Ohio.

Instructions for Role-Playing Activities

Pre-Medicine Role

Over the next few days I want you to take part in three acting or role-playing exercises, preferably one per day. They should last a minimum of five minutes. In each role-playing exercise you will be asked to assume your new role and interact with a stranger. **In these exercises you are allowed to do anything provided it is not illegal, or socially unacceptable.**

The first role-playing exercise. The first role-playing exercise will consist of a phone call. I want you to assume you new role and make a call to the location listed below. You are to ask to talk to someone about what it takes to become a **doctor**. Tell them you have just moved here and want to know how long it takes to become a doctor in Canada and what are the best schools. Try to give them as much information about your new role as possible. It is important that you don't let them know that you are acting. They must believe that you are **Bill Dowell** at all times.

The second role-playing exercise. For the second role-playing exercise you will meet with someone from the study. You are to tell her about your past, current situation, and future goals. It is very important that she does not suspect that you are acting. She must believe that you are **Bill Dowell**. She might ask you a few questions, but it is up to you to tell her about yourself. Part of her role in the study is to try to determine which participants are role-playing. You will meet her at the location listed below.

The third role-playing exercise. For the third role-playing exercise you will visit a department and talk to the secretary about courses you are thinking of taking. You will assume your role and try not to arouse any suspicion that you are not **Bill Dowell**. You will say that you are trying to choose an elective that corresponds with some of you personal interests. Tell the secretary that you don't have time to talk with someone else and only want the information that she can provide. You should try to convey as much information about yourself as possible. Remember, your goal is to talk about yourself, it is not as important to find out about courses.

If you run into any problems during these exercises, just leave them. Tell them that you have to leave for a meeting with a friend.

Schedule for Role-Playing exercises

1st role-playing exercise: _____

2nd role-playing exercise: _____

3rd role-playing exercise: _____

If you have any questions or concerns call Trevor at 562-5800 ext. 4304 or ext. 4825.

Engineering Role

Over the next few days I want you to take part in three acting or role-playing exercises, preferably one per day. They should last a minimum of five minutes. In each role-playing exercise you will be asked to assume your new role and interact with a stranger. **In these exercises you are allowed to do anything provided it is not illegal, or socially unacceptable.**

The first role-playing exercise. The first role-playing exercise will consist of a phone call. I want you to assume you new role and make a call to the location listed below. You are to ask to talk to someone about what it takes to become an **engineer**. Tell them you have just moved here and want to know how long it takes to become an **engineer** in Canada and what are the best schools. Try to give them as much information about your new role as possible. It is important that you don't let them know that you are acting. They must believe that you are **Mack Ramey** at all times.

The second role-playing exercise. For the second role-playing exercise you will meet with someone from the study. You are to tell her about your past, current situation, and future goals. It is very important that she does not suspect that you are acting. She must believe that you are **Mack Ramey**. She might ask you a few questions, but it is up to you to tell her about yourself. Part of her role in the study is to try to determine which participants are role-playing. You will meet her at the location listed below.

The third role-playing exercise. For the third role-playing exercise you will visit a department and talk to the secretary about courses you are thinking of taking. You will assume your role and try not to arouse any suspicion that you are not **Mack Ramey**. You will say that you are trying to choose an elective that corresponds with some of you personal interests. Tell the secretary that you don't have time to talk with someone else and only want the information that she can provide. You should try to convey as much information about yourself as possible. Remember, your goal is to talk about yourself, it is not as important to find out about courses.

If you run into any problems during these exercises, just leave them. Tell them that you have to leave for a meeting with a friend.

Schedule for Role-Playing exercises

1st role-playing exercise: _____

2nd role-playing exercise: _____

3rd role-playing exercise: _____

If you have any questions or concerns call Trevor at 562-5800 ext. 4304 or ext. 4825.

Lawyer Role

Over the next few days I want you to take part in three acting or role-playing exercises, preferably one per day. They should last a minimum of five minutes. In each role-playing exercise you will be asked to assume your new role and interact with a stranger. **In these exercises you are allowed to do anything provided it is not illegal, or socially unacceptable.**

The first role-playing exercise. The first role-playing exercise will consist of a phone call. I want you to assume you new role and make a call to the location listed below. You are to ask to talk to someone about what it takes to become an **lawyer**. Tell them you have just moved here and want to know how long it takes to become an **lawyer** in Canada and what are the best schools. Try to give them as much information about your new role as possible. It is important that you don't let them know that you are acting. They must believe that you are **Frank Mutch** at all times.

The second role-playing exercise. For the second role-playing exercise you will meet with someone from the study. You are to tell her about your past, current situation, and future goals. It is very important that she does not suspect that you are acting. She must believe that you are **Frank Mutch**. She might ask you a few questions, but it is up to you to tell her about yourself. Part of her role in the study is to try to determine which participants are role-playing. You will meet her at the location listed below.

The third role-playing exercise. For the third role-playing exercise you will visit a department and talk to the secretary about courses you are thinking of taking. You will assume your role and try not to arouse any suspicion that you are not **Frank Mutch**. You will say that you are trying to choose an elective that corresponds with some of you personal interests. Tell the secretary that you don't have time to talk with someone else and only want the information that she can provide. You should try to convey as much information about yourself as possible. Remember, your goal is to talk about yourself, it is not as important to find out about courses.

If you run into any problems during these exercises, just leave them. Tell them that you have to leave for a meeting with a friend.

Schedule for Role-Playing exercises

1st role-playing exercise: _____

2nd role-playing exercise: _____

3rd role-playing exercise: _____

If you have any questions or concerns call Trevor at 562-5800 ext. 4304 or ext. 4825.

Second Session Checklist

Please read this list carefully and circle the one from each group that best applies to you or describes you.

I am	*Insert subject's trait*	**I like to read**	Ian Flemming
	25		National Geographic
	26		Popular Mechanics
	28		*Insert subject's trait*
I am a citizen of	*Insert subject's trait*	**I like to watch**	Discovery channel
	England		NYPD Blue
	Holland		*Insert subject's trait*
	USA		Wild Kingdom
I can be a little	callous	**I major in**	Engineering
	conceited		*Insert subject's trait*
	Insert subject's trait		Pre-Law
	suspicious		Pre-Med
I enjoy	*Insert subject's trait*	**I personally admire**	Dr. Bethune
	chess		John Glenn
	debating		Joyce Milgaard
	sailing		*Insert subject's trait*
I enjoy	flying	**I want to be a famous**	aeronautical engineer
	Insert subject's trait		cardiologist
	fencing		judge
	scuba diving		*Insert subject's trait*
I graduated from	*Insert subject's trait*	**I was born in**	1970
	Kennedy High		1972
	King's Collegiate		1974
	Lowlands General		*Insert subject's trait*
I like to listen to	blues	**I was born in**	Amsterdam
	classical		Houston
	jazz		London
	Insert subject's trait		*Insert subject's trait*

I was born on	Apr 23 *Insert subject's trait* Jul 14 Oct 2	**My friends call me**	Bill Frank *Insert subject's trait* Mack
I worked for	Parole and Probation Spar Aerospace *Insert subject's trait* the Red Cross	**My last name is**	Dowell *Insert subject's trait* Mutch Ramey
I wrote a paper on	biotechnology black holes *Insert subject's trait* war crimes	**My personality is**	*Insert subject's trait* cold distant warm

Post-Study Checklist

Name: _____ **Date:** _____

Please fill in the blanks with the words you saw in the recognition tasks.

1. My friends call me _____
2. My last name is _____
3. I was born in _____
4. I was born on _____
5. I am _____
6. I was born in _____
7. I am a citizen of _____
8. I graduated from _____
9. I worked for _____
10. I enjoy _____

11. I enjoy _____

12. I like to listen to _____

13. I like to read _____

14. I like to watch _____

15. I major in _____

16. I wrote a paper on _____

17. I personally admire _____

18. I want to be a famous _____

19. I can be a little _____

20. My personality is _____

Please answer the following questions.

1. I found the role-playing exercises fun and interesting.

Not at all									**Very Much**
10	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**

2. I looked forward to trying the role-playing exercises.

Not at all									**Very Much**
10	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**

3. During the role-playing exercises it felt as though I became a different person.

Not at all									**Very Much**
10	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**

4. I had a clear image in my mind of the person I was role-playing.

Not at all									**Very Much**
10	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**

5. During the role-playing exercises, I was able to focus all of my attention on my new role.

Not at all									**Very Much**
10	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**

6. During the role-playing exercises I was aware of my real identity, but it did not affect my responses.

Not at all									**Very Much**
10	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**

7. Do you have any recommendations to improve the study? _____
   _____
   _____

8. Are there any things you would suggest eliminating or changing in the study?_____
   _____
   _____

9. Did you find any part of the study stressful? _____
   _____
   _____

10. Did your imaginary role ever come up at times other than when you were doing one of the role-playing exercise (e.g., to practice it, or in another situation)? How many times: ___.
    Please describe one example: _____
    _____
    _____

Confederate's Rating Form

Stimulus Words for Pre-Medicine Role

Date of Meeting: _____ Time of Meeting: _____

Please check off any of the following information that was mentioned by the participant.

1. First name: Bill	
2. Last name: Dowell	
3. Year of Birth: 1978	
4. Month and date of Birth: October 2	
5. Age: 21	
6. Location of Birth: London	
7. Citizenship: England	
8. High school: King's Collegiate	
9. Past employer: the Red Cross	
10. Hobby: sailing	
11. Hobby: scuba diving	
12. Favourite music: jazz	
13. Favourite form of literature: National Geographic	
14. Favourite TV show: Wild Kingdom	
15. Major: Pre-Medicine	
16. I wrote a paper on: biotechnology	
17. A person they admire: Dr. Bethune	
18. Future Job: cardiologist	
19. Personality Trait: conceited	
20. Personality Trait: warm	

	Not at all										**Very Much**
1. Was the participant anxious?	**0**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
2. Did they deviate from their assumed role?	**0**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**

You may ask them a question about any of the information listed above.

Stimulus Words for Law Role

Date of Meeting: _____ Time of Meeting: _____

Please check off any of the following information that was mentioned by the participant.

1. First name: Frank	
2. Last name: Mutch	
3. Year of Birth: 1977	
4. Month and date of Birth: April 23	
5. Age: 22	
6. Location of Birth: Amsterdam	
7. Citizenship: Holland	
8. High school: Lowlands General	
9. Past employer: Parole and Probation	
10. Hobby: fencing	
11. Hobby: debating	
12. Favourite music: classical	
13. Favourite form of literature: Ian Flemming	
14. Favourite TV show: NYPD Blue	
15. Major: Pre-Law	
16. I wrote a paper on: war crimes	
17. A person they admire: Joyce Milgaard	
18. Future Job: judge	
19. Personality Trait: suspicious	
20. Personality Trait: distant	

	Not at all										**Very Much**
1. Was the participant anxious?	**0**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
2. Did they deviate from their assumed role?	**0**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**

You may ask the participant questions about any of the information listed above.

Stimulus Words for Engineering Role

Date of Meeting: _____ Time of Meeting: _____

Please check off any of the following information that was mentioned by the participant.

1. First name: Mack	
2. Last name: Ramey	
3. Year of Birth: 1976	
4. Month and date of Birth: July 14	
5. Age: 23	
6. Location of Birth: Houston	
7. Citizenship: USA	
8. High school: Kennedy High	
9. Past employer: Spar Aerospace	
10. Hobby: flying	
11. Hobby: chess	
12. Favourite music: the blues	
13. Favourite form of literature: popular mechanics	
14. Favourite TV show: Discovery channel	
15. Major: Engineering	
16. I wrote a paper on: black holes	
17. A person they admire: John Glenn	
18. Future Job: aeronautical engineer	
19. Personality Trait: callous	
20. Personality Trait: cold	

	Not at all									Very
	Much									
1. Was the participant anxious?	**0**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
2. Did they deviate from their assumed role?	**0**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**

You may ask the participant questions about any of the information listed above.

Appendix B: Additional Tables

Table B1: Mean P300s and Standard Deviations for the False Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.26	1.13	-.50	1.02	-.36	1.48	-.15	1.33
25	-1.08	1.58	-1.07	1.18	-.94	2.21	-.67	1.68
50	-2.19	2.19	-1.96	1.77	-2.09	2.68	-1.66	2.33
75	-1.81	2.81	-1.43	2.07	-2.03	2.96	-1.45	2.97
100	.63	3.07	1.14	2.82	.35	3.16	.80	3.20
125	2.83	3.63	3.48	3.61	2.86	3.53	3.10	3.45
150	3.04	3.49	3.87	3.38	3.21	3.54	3.50	3.43
175	2.67	2.98	3.61	3.14	2.55	3.75	2.98	3.15
200	3.40	3.14	4.45	3.55	3.14	4.26	3.22	3.43
225	4.44	3.84	5.92	4.22	4.77	4.41	4.06	3.64
250	4.53	4.55	7.09	4.82	5.94	4.59	4.64	3.99
275	4.50	4.81	8.54	5.22	6.80	5.10	5.31	4.65
300	5.26	4.74	10.42	5.53	8.07	5.68	6.21	5.41
325	6.27	5.16	11.83	5.82	9.51	6.17	6.63	5.72
350	6.70	5.17	11.75	5.89	10.09	6.12	6.25	5.58
375	6.95	5.00	11.09	5.86	9.99	5.85	6.12	5.62
400	7.59	5.04	11.06	5.73	9.97	5.86	6.80	5.90
425	8.29	5.18	11.66	5.63	10.24	5.96	7.64	6.01
450	8.93	5.31	12.41	5.96	10.77	5.84	8.31	6.08
475	9.68	5.27	13.10	6.30	11.61	5.66	9.06	6.12
500	10.61	5.08	13.74	6.14	12.62	5.63	10.07	6.00
525	11.32	5.05	14.22	5.94	13.40	5.71	10.95	5.84
550	11.52	5.21	14.40	5.99	13.59	5.75	11.33	5.75
575	11.33	5.20	14.22	5.90	13.28	5.42	11.33	5.56
600	10.90	4.69	13.70	5.48	12.64	4.80	11.07	5.19
625	10.34	4.28	13.02	5.03	11.85	4.20	10.69	4.89
650	9.76	4.23	12.47	4.81	11.10	3.92	10.37	4.67
675	9.24	4.31	12.09	4.60	10.54	3.95	10.16	4.42
700	8.59	4.31	11.57	4.30	9.86	3.86	9.85	4.19
725	7.91	4.13	10.93	4.11	9.05	3.53	9.38	3.92

Table B2: Mean P300s and Standard Deviations for the Irrelevant Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.46	.88	-.49	.93	-.56	1.12	-.05	1.23
25	-.95	1.33	-1.14	1.18	-.98	1.67	-.55	1.82
50	-1.91	1.80	-2.21	1.57	-1.80	2.21	-1.38	2.45
75	-1.69	2.03	-1.99	2.14	-1.59	2.56	-1.13	2.60
100	.61	2.49	.52	3.07	.57	2.91	1.06	2.71
125	2.92	2.99	3.21	3.79	2.86	3.38	3.44	2.90
150	3.32	3.04	3.83	3.52	3.17	3.46	4.01	2.86
175	2.96	3.18	3.27	2.95	2.33	3.57	3.39	3.08
200	3.61	3.39	3.43	3.22	2.12	3.87	3.27	3.59
225	4.76	3.57	4.26	3.61	2.67	3.92	3.75	3.61
250	5.15	3.91	4.75	3.96	3.16	4.05	4.03	3.77
275	5.18	4.41	5.19	4.42	3.71	4.51	4.42	4.37
300	5.60	4.77	5.97	4.74	4.54	4.95	5.25	4.69
325	6.17	5.12	6.51	5.01	5.19	5.29	5.92	4.77
350	6.41	5.31	6.28	4.85	5.22	5.22	5.90	4.77
375	6.58	5.09	6.02	4.50	5.19	4.81	5.97	4.85
400	6.97	4.66	6.39	4.32	5.53	4.63	6.67	4.90
425	7.50	4.63	7.04	4.38	6.06	4.69	7.35	4.90
450	8.24	4.92	7.69	4.66	6.73	4.82	7.70	4.88
475	9.14	4.96	8.36	4.93	7.51	4.90	8.12	4.96
500	9.92	4.71	9.06	4.89	8.23	4.65	8.86	4.95
525	10.38	4.55	9.53	4.59	8.69	4.42	9.39	4.84
550	10.56	4.50	9.69	4.23	8.90	4.42	9.47	4.72
575	10.64	4.17	9.74	3.87	8.94	4.38	9.40	4.56
600	10.58	3.61	9.65	3.58	8.71	4.07	9.25	4.34
625	10.27	3.47	9.33	3.49	8.30	3.77	8.79	4.01
650	9.75	3.73	8.91	3.53	7.99	3.73	8.22	3.64
675	9.15	3.91	8.51	3.52	7.81	3.71	7.88	3.40
700	8.46	3.73	7.90	3.43	7.37	3.44	7.59	3.36
725	7.83	3.50	7.20	3.34	6.67	3.24	7.11	3.45

Table B3: Mean P300s and Standard Deviations for the Real Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.30	1.58	-.94	1.21	-.20	1.96	-.38	1.14
25	-.62	1.75	-1.62	1.56	-.72	2.12	-.81	1.85
50	-1.53	1.96	-2.28	2.04	-1.85	2.20	-1.49	2.52
75	-1.40	2.09	-1.83	2.25	-1.78	2.28	-1.32	2.58
100	.85	2.67	.28	2.75	.55	2.78	.58	2.57
125	3.32	3.23	2.46	3.44	3.02	3.60	2.94	3.07
150	4.06	3.05	3.26	3.62	3.46	3.61	3.90	3.45
175	4.13	3.35	3.48	3.12	2.87	3.53	3.71	3.33
200	5.28	4.04	4.35	3.43	3.14	3.96	3.92	3.54
225	6.97	4.66	5.32	4.06	4.07	4.55	4.85	3.91
250	8.04	5.02	5.65	4.55	4.62	4.86	5.90	4.35
275	9.03	5.49	6.01	4.78	5.00	5.55	7.04	4.95
300	10.42	5.99	6.73	4.84	5.54	6.15	8.39	5.39
325	11.76	6.14	7.07	5.10	5.80	6.19	9.67	5.77
350	12.36	6.06	6.69	5.18	5.60	5.94	10.32	5.82
375	12.72	5.87	6.71	5.02	5.88	5.95	10.69	5.85
400	13.34	5.62	7.89	4.99	6.96	6.22	11.30	5.89
425	14.10	5.32	9.54	5.23	8.12	6.44	12.13	6.01
450	15.01	5.07	11.01	5.61	9.04	6.43	13.07	6.17
475	15.85	4.91	11.99	5.85	9.83	6.23	13.87	6.12
500	16.30	4.68	12.69	5.70	10.58	5.77	14.42	5.86
525	16.32	4.43	13.20	5.54	11.07	5.32	14.71	5.64
550	16.11	4.30	13.35	5.48	11.25	5.16	14.77	5.38
575	15.58	4.22	13.15	5.30	11.30	5.07	14.52	4.94
600	14.65	4.15	12.78	4.99	11.15	4.84	13.86	4.52
625	13.56	4.07	12.43	4.76	10.67	4.60	12.92	4.18
650	12.75	3.82	12.08	4.72	10.07	4.37	12.11	3.82
675	12.21	3.49	11.63	4.76	9.63	4.00	11.53	3.62
700	11.45	3.33	10.85	4.77	9.22	3.51	10.81	3.51
725	10.54	3.39	9.91	4.65	8.69	3.19	10.02	3.31

Table B4: No Rehearsal group Mean P300s and Standard Deviations for the False Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.19	1.29	-.30	1.17	.14	1.12	-.27	1.40
25	-1.20	1.74	-.90	1.24	-.82	1.04	-.64	1.69
50	-2.82	2.12	-1.99	1.53	-2.43	1.11	-1.83	1.70
75	-2.71	2.41	-1.15	1.94	-2.19	1.95	-1.80	2.05
100	.10	2.91	2.24	3.18	.90	2.72	.68	2.55
125	2.66	4.13	4.72	4.21	3.69	3.41	3.16	3.36
150	2.57	3.59	4.17	3.79	3.61	3.41	3.36	3.53
175	1.66	2.86	3.07	3.18	2.52	3.44	2.71	2.78
200	2.11	2.58	3.92	3.33	3.13	3.78	3.17	2.52
225	3.06	3.34	5.67	4.31	5.03	3.73	4.03	3.10
250	3.04	4.23	6.54	4.94	6.26	4.04	4.01	3.96
275	3.28	4.65	7.45	5.00	6.98	4.70	3.99	4.36
300	4.61	4.79	9.19	4.91	8.14	4.94	4.75	4.88
325	5.66	5.86	10.76	5.22	9.41	4.82	5.32	5.22
350	5.19	5.67	10.86	5.74	9.76	4.57	4.81	5.08
375	4.52	4.90	10.28	5.98	9.50	4.80	4.35	5.13
400	4.98	5.12	10.31	6.23	9.51	5.32	5.13	5.89
425	5.88	5.40	10.92	6.50	9.88	5.54	6.47	6.40
450	6.55	5.53	11.74	7.17	10.52	5.47	7.51	6.66
475	7.35	5.51	12.52	7.65	11.40	5.34	8.20	6.88
500	8.60	5.48	13.07	7.64	12.22	5.32	9.13	6.93
525	9.53	5.54	13.09	7.59	12.59	5.26	10.13	6.64
550	9.61	5.41	12.69	7.63	12.59	5.21	10.58	6.24
575	9.26	4.91	12.22	7.38	12.58	4.99	10.50	5.80
600	8.95	4.10	11.81	6.70	12.42	4.64	10.17	5.22
625	8.54	3.77	11.27	5.97	11.74	4.23	9.84	4.42
650	7.83	3.40	10.64	5.55	10.78	3.75	9.66	3.90
675	7.12	2.84	10.19	5.31	10.11	3.41	9.72	3.92
700	6.61	2.56	9.81	5.01	9.60	3.20	9.81	4.07
725	6.35	2.48	9.40	4.82	8.98	3.07	9.62	3.83

Table B5: No Rehearsal group Mean P300s and Standard Deviations for the Irrelevant Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.31	.81	-.36	1.01	-.22	.96	-.16	.79
25	-.39	1.20	-1.15	1.01	-.39	1.66	-.40	1.29
50	-1.26	1.55	-2.18	1.25	-1.34	2.22	-1.39	1.61
75	-1.20	1.58	-1.52	1.98	-1.11	2.21	-1.38	1.47
100	.96	2.28	1.39	3.09	1.46	2.40	.99	2.09
125	3.14	3.37	3.87	4.11	3.77	3.64	3.71	3.36
150	3.36	3.39	3.86	3.73	3.45	4.19	4.14	3.79
175	2.90	3.37	2.98	2.96	2.12	3.87	3.07	3.29
200	3.37	3.27	3.29	2.89	1.99	3.48	2.66	3.12
225	4.04	3.46	4.22	3.07	2.65	3.31	3.11	3.20
250	3.89	4.03	4.39	3.62	2.88	4.10	3.28	4.23
275	3.84	4.56	4.43	3.74	3.34	4.72	3.45	4.90
300	4.58	4.77	5.11	3.36	4.37	4.38	4.18	4.61
325	5.48	5.12	5.69	3.64	4.98	3.89	4.85	4.41
350	5.92	5.46	5.50	3.79	4.70	3.73	4.82	4.54
375	6.25	5.45	5.40	3.84	4.65	4.05	4.87	5.14
400	6.65	5.17	6.07	4.31	5.31	4.57	5.64	5.67
425	6.91	5.36	6.87	4.89	5.96	4.93	6.50	5.74
450	7.37	5.79	7.43	5.45	6.52	5.30	7.07	5.61
475	8.32	5.81	7.94	5.81	7.23	5.57	7.64	5.62
500	9.37	5.59	8.57	5.76	7.82	5.38	8.41	5.66
525	9.83	5.69	8.97	5.55	7.97	5.06	8.88	5.37
550	9.72	5.99	9.06	5.28	8.01	5.01	8.88	4.89
575	9.62	5.71	9.05	4.97	8.24	4.86	8.78	4.68
600	9.85	4.99	8.94	4.64	8.16	4.19	8.71	4.72
625	10.02	4.75	8.53	4.36	7.51	3.39	8.30	4.46
650	9.66	5.14	8.02	4.12	6.95	3.10	7.63	3.79
675	8.93	5.40	7.63	4.08	6.82	3.04	7.24	3.40
700	8.21	5.01	7.14	4.21	6.59	3.00	7.17	3.70
725	7.75	4.37	6.48	4.14	5.96	2.74	7.00	4.14

Table B6: No Rehearsal group Mean P300s and Standard Deviations for the Real Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	.12	1.82	-.67	1.16	-.52	1.43	-.34	1.26
25	-.40	1.92	-1.51	1.05	-.77	1.10	-.80	1.40
50	-1.31	2.11	-2.47	.91	-1.53	1.40	-1.56	1.91
75	-.99	2.13	-1.84	1.09	-1.17	1.76	-1.35	1.83
100	1.29	2.14	1.04	2.45	1.19	1.79	.67	2.07
125	3.50	2.98	3.61	3.62	3.20	3.52	2.97	3.38
150	4.00	3.12	3.70	3.44	3.09	3.46	3.70	4.18
175	4.18	3.90	2.88	2.97	2.52	3.20	3.42	3.69
200	5.69	4.43	3.57	3.28	3.28	3.59	3.78	2.73
225	7.44	4.82	5.34	4.50	4.49	3.60	4.82	2.97
250	8.10	5.10	6.16	5.03	4.99	3.78	5.66	4.18
275	8.73	4.99	6.08	4.68	5.55	5.02	6.35	4.96
300	10.18	4.78	6.23	4.09	6.40	5.97	7.25	4.47
325	11.63	4.59	6.63	4.52	6.62	5.55	8.20	4.53
350	12.08	4.50	6.68	4.85	6.19	4.56	8.76	5.02
375	12.37	4.78	6.77	4.63	6.52	4.44	9.31	5.94
400	13.34	5.45	7.69	5.04	7.80	5.19	10.26	6.55
425	14.49	5.70	9.29	5.64	8.96	5.91	11.35	6.76
450	15.43	5.78	11.01	6.26	9.84	6.38	12.35	6.90
475	16.07	5.64	12.11	6.39	10.73	6.58	13.06	7.22
500	16.43	5.28	12.61	6.15	11.46	6.25	13.53	7.42
525	16.48	5.10	12.90	6.18	11.72	5.69	13.79	7.39
550	16.29	5.15	13.06	6.28	11.75	5.50	13.75	6.97
575	15.81	5.12	12.95	6.03	11.75	5.53	13.26	6.13
600	14.99	4.96	12.55	5.57	11.44	5.49	12.26	5.25
625	13.97	4.72	12.11	5.28	10.65	5.23	11.03	4.49
650	13.04	4.38	11.82	5.06	9.87	4.68	10.13	3.93
675	12.33	4.05	11.51	4.93	9.49	4.12	9.70	3.71
700	11.62	3.85	10.83	5.02	9.18	3.58	9.13	3.53
725	11.01	3.77	9.97	5.07	8.59	3.00	8.26	2.85

Table B7: Planned Rehearsal group Mean P300s and Standard Deviations for the False Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.58	.82	-.42	.84	-.84	1.39	-.15	1.03
25	-1.39	1.38	-1.35	1.18	-1.53	2.51	-.92	1.65
50	-2.26	2.34	-2.51	2.09	-2.54	3.52	-2.32	3.01
75	-2.11	3.17	-2.37	2.01	-2.46	4.15	-2.49	3.90
100	-.47	2.77	-.36	2.11	-.33	3.63	-.30	3.62
125	1.50	2.62	1.96	2.58	2.08	2.97	2.40	2.94
150	2.56	3.35	3.24	2.88	2.78	3.48	3.41	2.94
175	2.92	3.27	3.83	3.26	2.45	4.48	3.10	3.43
200	3.49	3.31	4.72	3.73	2.91	5.26	3.09	3.83
225	4.16	3.05	5.85	4.21	4.22	5.04	3.78	3.46
250	4.32	3.15	6.99	4.90	5.29	4.99	4.61	3.66
275	4.09	3.27	8.29	5.41	5.97	5.54	5.35	4.51
300	4.11	3.29	9.59	5.58	6.65	6.03	5.92	5.07
325	4.69	3.72	10.62	5.67	7.43	6.55	6.18	5.19
350	5.58	4.01	10.98	5.68	7.98	6.50	6.20	5.29
375	6.54	3.80	10.87	5.35	8.39	5.66	6.52	5.18
400	7.46	3.60	10.88	4.83	8.92	5.07	7.18	4.78
425	8.21	3.78	11.34	4.58	9.52	5.14	7.85	4.84
450	8.94	4.21	12.23	4.90	10.24	5.45	8.61	5.49
475	9.73	4.34	13.09	5.36	11.08	5.59	9.58	5.57
500	10.66	4.18	13.77	5.29	12.01	5.73	10.63	5.02
525	11.45	4.35	14.48	5.06	12.76	6.24	11.42	5.09
550	11.78	4.99	15.18	5.03	12.91	6.63	11.79	5.72
575	11.81	5.47	15.49	4.91	12.44	6.34	11.88	6.01
600	11.68	5.20	15.05	4.50	11.70	5.55	11.66	5.90
625	11.41	4.73	14.21	4.15	11.03	4.94	11.24	5.96
650	11.07	4.72	13.58	4.03	10.51	4.94	10.91	5.95
675	10.78	4.99	13.29	3.92	10.09	5.25	10.72	5.55
700	10.31	5.07	12.80	3.61	9.53	5.29	10.27	4.98
725	9.57	4.78	12.08	3.19	8.81	4.88	9.54	4.59

Table B8: Planned Rehearsal group Mean P300s and Standard Deviations for the Irrelevant Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.40	.71	-.83	.70	-.99	1.38	-.25	1.31
25	-1.14	1.19	-1.60	1.46	-1.72	2.09	-.88	2.24
50	-2.30	1.81	-2.55	2.30	-2.46	2.77	-2.13	3.14
75	-2.43	2.12	-2.50	2.51	-2.36	3.36	-2.26	3.11
100	-.55	2.01	-.66	2.09	-.64	3.08	-.05	2.50
125	1.87	2.50	1.69	2.66	1.79	2.68	2.76	2.52
150	3.03	3.08	2.77	3.34	3.11	2.97	3.75	2.63
175	3.20	3.38	2.64	3.17	3.01	3.89	3.21	3.42
200	3.63	3.76	2.59	3.11	2.65	4.50	2.86	3.99
225	4.41	3.56	3.13	3.21	2.81	4.06	3.23	3.71
250	4.94	3.70	3.89	3.81	3.26	3.73	3.70	3.52
275	5.11	4.01	4.52	4.31	3.61	4.04	4.13	3.82
300	5.10	4.14	4.92	4.53	3.93	4.63	4.64	4.04
325	5.06	4.35	5.10	4.76	4.41	5.30	5.13	4.07
350	5.28	4.32	5.14	4.79	4.84	5.53	5.37	4.28
375	6.01	3.91	5.33	4.33	5.07	4.74	5.65	4.35
400	6.94	3.64	5.80	3.86	5.35	3.72	6.20	3.90
425	7.63	3.88	6.37	3.88	5.97	3.40	6.82	3.74
450	8.27	4.38	7.07	4.32	6.97	3.68	7.47	4.20
475	9.06	4.57	7.86	4.71	7.85	4.03	8.13	4.64
500	9.87	4.46	8.64	4.69	8.45	3.95	8.82	4.61
525	10.45	4.15	9.21	4.46	9.03	3.99	9.44	4.48
550	10.84	3.68	9.51	4.14	9.63	4.36	9.85	4.55
575	11.27	3.07	9.71	3.76	10.03	4.65	10.01	4.63
600	11.56	2.60	9.84	3.55	9.96	4.62	9.76	4.58
625	11.46	2.54	9.81	3.60	9.60	4.72	9.22	4.40
650	11.01	2.72	9.55	3.74	9.37	4.91	8.82	4.03
675	10.50	2.84	9.11	3.71	9.24	4.67	8.72	3.58
700	9.94	2.83	8.46	3.46	8.79	3.97	8.49	3.42
725	9.41	2.91	7.85	3.28	8.11	3.58	7.89	3.29

Table B9: Planned Rehearsal group Mean P300s and Standard Deviations for the Real Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.79	1.53	-.89	.99	.07	2.75	-.75	.99
25	-1.14	1.82	-1.57	1.50	-.77	2.93	-1.30	2.22
50	-2.21	1.90	-2.37	2.37	-2.08	2.88	-2.17	3.05
75	-2.51	2.05	-2.24	2.77	-2.07	2.81	-2.09	3.06
100	-.64	2.26	-.52	2.27	.25	2.88	.05	2.97
125	2.05	2.72	1.70	2.17	3.10	3.05	2.93	2.72
150	3.48	2.98	3.11	2.53	4.22	3.15	4.35	2.65
175	3.93	3.37	3.81	3.04	3.88	3.20	4.40	3.27
200	4.92	4.02	4.63	3.51	3.90	3.48	4.69	3.81
225	6.37	4.34	5.33	3.94	4.79	3.99	5.65	3.99
250	7.36	4.95	5.58	4.37	5.57	3.95	6.74	4.33
275	7.97	5.63	5.73	4.73	5.69	4.12	7.88	5.18
300	8.75	5.96	5.96	5.10	5.52	4.41	9.12	6.06
325	9.89	5.94	6.02	5.49	5.45	5.02	10.31	6.41
350	10.94	5.90	5.91	5.71	5.65	5.50	11.02	6.20
375	11.78	5.70	6.36	5.41	6.44	5.32	11.53	5.71
400	12.52	5.14	7.74	4.76	7.71	4.60	12.25	5.22
425	13.27	4.60	9.42	4.66	8.80	4.28	13.09	4.93
450	14.19	4.26	10.87	5.30	9.50	4.34	13.95	4.91
475	15.02	4.03	11.80	6.10	10.05	4.35	14.60	4.74
500	15.49	3.72	12.53	6.34	10.77	4.17	14.98	4.31
525	15.65	3.45	13.16	6.00	11.37	4.30	15.15	4.23
550	15.64	3.52	13.43	5.52	11.59	4.50	15.13	4.36
575	15.28	3.75	13.27	5.14	11.71	4.56	14.92	4.53
600	14.37	3.81	13.03	4.98	11.81	4.60	14.49	4.42
625	13.30	3.80	12.91	5.03	11.59	4.86	13.77	4.05
650	12.71	3.79	12.72	5.20	10.99	4.90	12.90	3.70
675	12.55	3.64	12.24	5.28	10.42	4.39	12.24	3.69
700	12.11	3.46	11.35	5.12	9.92	3.64	11.80	3.76
725	11.28	3.39	10.41	4.76	9.37	3.29	11.41	3.43

Table B10: Spontaneous Enactment group Mean P300s and Standard Deviations for the False Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.28	.56	-1.17	1.15	-.85	2.95	.61	1.32
25	-1.25	1.59	-1.28	1.33	-1.49	3.68	.60	.98
50	-2.29	2.39	-1.49	1.52	-2.53	2.51	.38	2.32
75	-1.32	2.98	-.91	2.32	-2.11	2.22	1.07	3.27
100	1.82	3.85	.87	2.92	.75	4.05	3.18	4.54
125	3.99	3.19	2.76	3.30	3.26	4.82	5.26	3.83
150	3.74	3.16	4.11	3.50	3.22	4.58	6.10	2.01
175	3.46	3.51	5.69	3.02	2.81	4.82	6.63	1.52
200	5.04	4.36	7.89	2.78	4.64	4.94	7.89	2.77
225	6.88	5.31	9.49	3.55	7.29	5.16	8.81	4.74
250	7.57	5.32	10.78	4.71	8.62	4.93	9.01	5.60
275	8.53	6.20	13.34	6.46	10.10	5.71	10.15	6.32
300	10.19	6.71	16.38	8.05	13.04	7.41	12.15	7.77
325	11.09	6.78	17.96	8.73	15.90	8.10	12.93	8.24
350	10.30	6.22	17.40	8.18	16.30	7.35	11.78	7.48
375	9.23	5.90	16.37	7.09	15.26	6.95	10.87	7.60
400	8.90	5.62	15.94	6.37	14.75	7.55	11.10	8.41
425	8.97	5.67	15.95	6.24	14.66	8.06	11.19	8.50
450	9.46	5.33	16.50	6.50	14.33	7.95	10.78	7.94
475	10.76	5.30	17.43	6.70	14.47	7.53	10.84	7.65
500	12.37	5.20	17.75	6.35	15.65	7.10	11.55	7.75
525	13.19	5.05	17.28	5.99	16.95	6.44	12.29	7.64
550	13.05	5.13	16.94	5.80	17.45	5.67	12.88	7.20
575	12.52	5.01	16.84	5.49	17.19	4.93	13.20	6.43
600	11.85	4.42	16.17	5.40	16.20	4.36	12.74	5.39
625	11.11	4.03	14.91	5.79	14.49	3.83	11.65	4.59
650	10.58	4.22	13.97	5.86	12.74	3.52	10.66	3.84
675	10.23	4.47	13.42	4.80	11.60	3.38	9.98	3.72
700	9.58	4.66	12.60	3.17	10.52	3.04	9.39	4.63
725	8.83	4.97	11.83	2.40	9.30	2.48	9.12	4.88

Table B11: Spontaneous Enactment group Mean P300s and Standard Deviations for the Irrelevant Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.41	1.50	.11	1.06	-.40	1.32	.05	1.19
25	-1.38	1.81	-.43	.74	-.58	.79	-1.27	1.51
50	-2.20	2.15	-1.85	.48	-1.16	.81	-1.31	1.72
75	-.96	2.39	-1.40	1.46	-.82	2.13	.48	2.84
100	2.12	3.82	1.93	3.45	1.13	3.98	2.47	5.32
125	4.15	3.34	4.81	2.42	2.77	3.53	3.05	3.73
150	4.20	2.34	5.26	.77	2.78	3.13	3.17	2.24
175	4.41	3.54	5.65	2.41	2.70	4.06	4.41	3.71
200	6.01	4.64	7.57	3.73	3.87	5.03	6.35	4.38
225	7.41	5.81	8.73	4.83	5.16	6.31	6.87	5.31
250	7.74	6.27	8.17	5.19	5.70	5.82	6.34	5.16
275	8.49	7.37	8.73	6.69	6.72	6.27	7.24	6.55
300	10.05	8.32	10.99	7.99	8.37	8.05	9.21	7.96
325	11.10	8.67	12.19	8.22	9.09	9.15	9.72	8.23
350	10.53	8.59	10.79	7.55	8.19	8.69	8.37	7.13
375	9.37	8.07	9.19	6.89	7.43	7.88	7.89	5.94
400	8.98	7.17	9.32	6.27	7.72	7.72	9.02	6.08
425	9.49	6.36	10.09	5.81	8.05	7.20	9.71	6.50
450	10.40	6.13	10.42	5.55	8.01	5.83	9.35	5.83
475	11.24	6.20	10.66	5.49	8.47	4.93	9.27	5.16
500	11.84	5.91	11.33	5.10	9.72	4.75	9.69	4.95
525	12.30	5.42	11.90	4.11	10.52	4.17	9.37	4.44
550	12.64	4.98	11.85	3.20	10.21	3.17	8.56	3.43
575	12.60	4.29	11.42	2.47	9.52	2.59	8.47	2.90
600	11.87	3.38	11.05	1.76	9.20	2.97	8.97	2.48
625	10.85	2.81	10.83	1.23	9.01	2.38	8.73	1.72
650	10.32	2.59	10.59	1.20	8.57	.43	7.76	1.60
675	10.16	2.23	10.06	1.05	8.06	1.25	6.98	2.58
700	9.36	1.88	9.00	1.37	7.43	1.14	6.30	2.08
725	7.87	2.49	7.96	2.06	6.59	2.39	5.62	1.78

Table B12: Mean Spontaneous Enactment group P300s and Standard Deviations for the Real Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	.07	1.96	-.80	1.31	-.45	2.35	.36	.68
25	-.29	1.83	-1.82	3.35	-1.23	3.57	-.18	1.84
50	-1.11	.95	-1.73	4.20	-2.37	3.89	-.34	1.81
75	-.06	1.41	-.05	3.19	-1.83	3.69	.13	1.62
100	3.15	4.24	1.82	3.53	.78	4.65	.84	2.26
125	5.27	4.16	2.36	2.48	2.70	5.66	1.50	.70
150	5.30	1.75	2.81	6.54	2.76	6.10	2.59	3.30
175	6.04	2.04	4.93	4.65	3.12	6.32	4.28	3.04
200	8.90	3.22	7.59	2.22	4.89	6.72	5.90	4.64
225	11.41	4.69	7.68	3.88	5.88	8.11	6.43	6.57
250	12.56	5.74	6.39	5.61	5.13	9.32	6.90	7.01
275	14.55	8.04	7.72	7.68	5.13	10.95	9.02	7.13
300	17.52	9.76	10.81	7.48	6.71	11.96	12.06	8.04
325	19.60	10.24	11.63	7.17	7.80	11.37	14.07	8.88
350	19.78	9.67	9.54	6.83	7.05	10.04	14.05	8.53
375	19.44	8.69	8.77	6.44	6.36	9.62	13.30	7.88
400	19.26	7.73	10.94	5.88	7.21	9.78	13.11	7.81
425	19.05	6.84	13.30	5.98	8.55	9.27	13.70	8.31
450	19.30	5.97	14.27	5.79	9.50	8.12	14.94	8.76
475	20.16	5.64	14.61	5.48	10.25	7.39	16.02	8.21
500	20.44	5.86	15.54	4.91	11.02	6.79	16.24	7.24
525	19.57	6.05	16.68	4.66	11.37	5.63	16.10	6.42
550	18.48	5.70	17.22	4.68	11.30	4.77	16.21	5.98
575	17.54	5.05	17.06	4.15	11.36	4.49	15.87	5.47
600	16.43	5.01	16.33	3.49	11.56	3.96	14.46	5.19
625	15.07	5.26	15.19	3.90	11.39	3.34	13.19	4.96
650	13.85	4.50	13.96	5.05	10.84	4.27	13.21	4.14
675	12.71	3.13	13.07	5.54	10.31	4.59	13.58	3.83
700	11.16	2.38	12.29	5.36	9.86	4.11	12.97	3.48
725	9.81	2.59	11.53	5.13	9.55	3.66	11.74	3.29

Table B13: Low Amnesia group Mean P300s and Standard Deviations for the False Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.47	1.20	-.54	1.18	-.60	1.51	-.27	1.29
25	-1.24	1.67	-1.19	1.43	-1.08	2.70	-.66	1.94
50	-2.20	2.59	-1.85	2.16	-2.14	3.59	-1.55	3.09
75	-1.51	3.56	-1.12	2.40	-2.14	3.88	-1.42	3.90
100	1.30	3.69	1.30	2.75	.27	3.64	.79	3.54
125	3.65	3.95	3.48	3.33	3.16	3.67	3.33	3.67
150	3.76	3.69	3.93	2.98	3.79	3.63	4.01	3.78
175	3.25	3.10	3.58	2.68	2.82	4.24	3.35	3.82
200	4.04	3.44	4.02	2.85	2.77	5.08	3.20	4.23
225	5.29	3.82	5.36	2.78	4.19	4.91	3.94	4.40
250	5.41	3.73	6.89	2.94	5.65	4.51	4.68	4.57
275	5.10	3.42	8.49	2.89	6.62	4.55	5.13	4.60
300	5.47	3.35	10.06	2.85	7.61	5.04	5.44	4.98
325	6.24	4.32	11.27	3.18	8.81	5.79	5.59	5.35
350	6.79	4.35	11.64	3.34	9.70	5.85	5.74	5.48
375	7.50	3.96	11.70	3.53	10.18	5.42	6.44	5.60
400	8.56	3.88	12.01	3.90	10.39	5.43	7.51	5.82
425	9.38	4.19	12.52	4.21	10.51	5.74	8.22	5.91
450	9.95	4.84	13.15	4.82	10.95	5.76	8.75	6.24
475	10.76	5.12	13.85	5.43	12.00	5.69	9.50	6.61
500	11.92	4.80	14.54	5.65	13.33	5.78	10.41	6.54
525	12.79	4.78	14.99	5.90	14.27	6.06	11.03	6.29
550	13.02	5.44	15.12	6.21	14.53	6.28	11.26	6.28
575	12.92	5.77	14.88	6.14	14.17	5.93	11.27	6.32
600	12.50	5.12	14.17	5.70	13.24	5.23	11.10	6.07
625	11.63	4.51	13.23	5.28	12.06	4.66	10.85	5.84
650	10.67	4.49	12.51	5.04	11.09	4.61	10.68	5.68
675	10.08	4.62	12.12	4.76	10.41	4.81	10.52	5.28
700	9.51	4.63	11.58	4.44	9.49	4.75	10.06	4.69
725	8.71	4.61	10.81	4.29	8.39	4.34	9.33	4.06

Table B14: Low Amnesia group Mean P300s and Standard Deviations for the Irrelevant Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.70	1.16	-.57	1.06	-.90	1.39	-.51	1.31
25	-1.23	1.45	-1.42	1.43	-1.42	1.93	-1.15	1.98
50	-2.04	1.98	-2.43	2.02	-2.21	2.61	-1.90	3.00
75	-1.71	2.45	-1.89	2.47	-2.03	3.13	-1.42	3.39
100	.60	2.98	.91	3.11	.27	3.34	1.02	3.25
125	3.03	3.27	3.71	3.78	3.15	3.40	3.67	3.14
150	3.57	3.09	4.27	3.48	4.01	3.00	4.44	2.96
175	3.02	3.21	3.41	2.97	2.96	3.58	3.80	3.29
200	3.25	3.38	3.10	3.47	2.15	4.43	3.45	4.08
225	4.32	3.27	3.84	3.63	2.70	4.34	3.85	4.10
250	5.02	3.14	4.83	3.38	3.76	3.77	4.36	3.76
275	5.11	3.14	5.63	3.11	4.52	3.58	4.89	3.84
300	5.07	3.06	6.10	3.26	5.03	4.10	5.47	4.24
325	5.28	3.29	6.15	3.65	5.47	4.84	5.70	4.41
350	5.86	3.55	6.03	3.39	5.73	4.87	5.60	4.12
375	6.68	3.50	6.40	3.20	5.99	4.32	6.15	4.15
400	7.32	3.46	7.19	3.37	6.43	4.28	7.46	4.39
425	7.73	3.99	7.82	3.72	7.03	4.50	8.38	4.63
450	8.44	4.63	8.30	4.28	7.89	4.66	8.68	4.75
475	9.51	4.65	8.93	4.72	8.85	4.83	9.12	4.93
500	10.38	4.45	9.75	4.56	9.61	4.50	10.03	4.86
525	10.70	4.55	10.35	4.05	10.03	4.12	10.65	4.68
550	10.73	4.74	10.48	3.88	10.18	4.22	10.65	4.59
575	10.79	4.34	10.26	3.79	10.15	4.37	10.43	4.36
600	10.79	3.43	9.89	3.43	9.88	4.13	10.11	3.90
625	10.42	3.03	9.49	3.25	9.45	3.95	9.45	3.65
650	9.73	3.42	9.04	3.52	9.09	4.03	8.79	3.66
675	9.03	3.89	8.46	3.63	8.80	3.97	8.53	3.55
700	8.31	3.86	7.62	3.47	8.25	3.44	8.26	3.25
725	7.64	3.60	6.90	3.36	7.49	3.29	7.57	3.16

Table B15: Low Amnesia group Mean P300s and Standard Deviations for the Real Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.59	1.74	-1.39	1.37	-.42	2.35	-.44	1.20
25	-.97	2.00	-2.11	1.79	-.94	2.57	-1.29	2.11
50	-1.88	2.31	-2.64	2.42	-1.96	2.65	-2.41	2.86
75	-1.71	2.49	-2.14	2.59	-1.90	2.62	-2.37	2.75
100	.68	3.03	-.14	2.82	.57	3.06	-.14	2.36
125	3.37	3.32	1.95	3.27	3.71	3.58	2.81	2.90
150	4.09	3.14	2.75	4.07	4.74	3.44	4.24	3.29
175	3.79	3.40	2.91	3.72	3.79	3.51	4.05	3.35
200	4.54	3.67	3.59	4.11	3.09	4.12	3.83	3.77
225	6.24	4.03	4.39	4.13	3.74	4.63	4.52	3.53
250	7.59	4.29	4.74	4.37	4.81	4.77	5.85	3.74
275	8.52	4.24	5.10	4.38	5.33	4.58	7.28	4.16
300	9.47	4.14	5.56	3.72	5.28	4.64	8.53	4.95
325	10.55	3.87	5.59	3.67	5.09	5.13	9.64	5.53
350	11.52	3.65	5.35	3.60	5.38	5.39	10.57	5.52
375	12.58	4.01	6.01	3.84	6.46	5.37	11.51	5.63
400	13.73	4.29	7.87	4.09	7.81	5.46	12.44	5.96
425	14.68	4.09	9.83	4.59	8.77	5.77	13.21	6.12
450	15.59	3.94	11.35	5.05	9.62	6.11	14.01	6.06
475	16.36	3.93	12.28	5.32	10.53	6.22	14.80	5.98
500	16.77	3.70	12.97	5.24	11.31	5.79	15.41	5.85
525	16.82	3.53	13.46	5.18	11.73	5.30	15.77	5.75
550	16.62	3.74	13.64	5.25	11.89	5.20	15.85	5.55
575	16.00	3.83	13.51	5.11	11.89	5.11	15.51	5.12
600	14.89	3.66	13.13	4.84	11.56	4.79	14.73	4.59
625	13.67	3.53	12.57	4.76	10.92	4.66	13.73	4.21
650	12.80	3.40	12.01	4.85	10.17	4.61	12.80	3.67
675	12.22	3.21	11.49	4.99	9.55	4.21	12.02	3.25
700	11.37	2.91	10.61	5.17	8.99	3.56	11.19	2.98
725	10.41	2.59	9.43	5.19	8.60	3.20	10.48	2.89

Table B16: High Amnesia group Mean P300s and Standard Deviations for the False Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.08	1.08	-.46	.89	-.17	1.46	-.05	1.38
25	-.94	1.54	-.98	.95	-.83	1.78	-.67	1.47
50	-2.17	1.86	-2.05	1.41	-2.05	1.66	-1.74	1.51
75	-2.06	2.05	-1.69	1.77	-1.93	2.01	-1.49	1.99
100	.07	2.39	1.01	2.95	.42	2.80	.81	2.99
125	2.13	3.28	3.49	3.91	2.61	3.49	2.91	3.35
150	2.44	3.29	3.82	3.77	2.72	3.49	3.08	3.15
175	2.19	2.86	3.63	3.55	2.32	3.40	2.67	2.52
200	2.86	2.84	4.81	4.09	3.44	3.55	3.24	2.71
225	3.73	3.80	6.39	5.17	5.26	4.01	4.15	2.99
250	3.79	5.12	7.27	6.05	6.18	4.76	4.61	3.56
275	3.99	5.77	8.58	6.67	6.94	5.63	5.47	4.80
300	5.08	5.74	10.73	7.13	8.47	6.27	6.86	5.79
325	6.30	5.90	12.30	7.42	10.09	6.57	7.51	6.02
350	6.62	5.90	11.85	7.50	10.42	6.47	6.69	5.78
375	6.49	5.80	10.57	7.34	9.84	6.33	5.84	5.78
400	6.77	5.83	10.26	6.92	9.62	6.32	6.21	6.05
425	7.38	5.84	10.93	6.62	10.01	6.28	7.16	6.21
450	8.07	5.66	11.79	6.84	10.63	6.06	7.95	6.10
475	8.77	5.35	12.46	7.04	11.28	5.77	8.69	5.83
500	9.51	5.17	13.06	6.60	12.03	5.59	9.79	5.68
525	10.09	5.06	13.58	6.05	12.66	5.44	10.89	5.60
550	10.26	4.79	13.79	5.90	12.80	5.31	11.40	5.44
575	9.99	4.37	13.67	5.80	12.53	4.98	11.38	5.02
600	9.55	3.95	13.31	5.41	12.14	4.49	11.04	4.48
625	9.25	3.87	12.85	4.95	11.67	3.88	10.56	4.08
650	8.99	3.95	12.44	4.75	11.11	3.36	10.10	3.76
675	8.53	4.02	12.07	4.60	10.64	3.19	9.84	3.66
700	7.82	3.99	11.55	4.30	10.18	3.02	9.66	3.83
725	7.25	3.67	11.03	4.06	9.61	2.67	9.41	3.90

Table B17: High Amnesia group Mean P300s and Standard Deviations for the Irrelevant Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.27	.51	-.42	.82	-.27	.75	.33	1.03
25	-.72	1.21	-.91	.89	-.61	1.35	-.04	1.54
50	-1.80	1.69	-2.03	1.09	-1.45	1.80	-.94	1.85
75	-1.67	1.66	-2.07	1.88	-1.23	1.98	-.89	1.75
100	.62	2.09	.19	3.08	.84	2.56	1.09	2.24
125	2.83	2.82	2.78	3.84	2.61	3.44	3.25	2.75
150	3.12	3.07	3.46	3.62	2.46	3.74	3.64	2.80
175	2.91	3.25	3.15	3.01	1.79	3.57	3.05	2.93
200	3.91	3.46	3.71	3.07	2.09	3.45	3.13	3.24
225	5.14	3.85	4.61	3.66	2.65	3.66	3.67	3.24
250	5.25	4.54	4.68	4.49	2.64	4.31	3.75	3.86
275	5.23	5.34	4.83	5.34	3.02	5.17	4.02	4.83
300	6.03	5.89	5.86	5.79	4.13	5.65	5.07	5.15
325	6.92	6.26	6.82	6.01	4.95	5.77	6.11	5.18
350	6.88	6.50	6.50	5.89	4.79	5.59	6.15	5.35
375	6.49	6.22	5.70	5.44	4.51	5.21	5.81	5.49
400	6.67	5.55	5.71	4.97	4.77	4.89	6.00	5.31
425	7.31	5.21	6.38	4.87	5.24	4.82	6.48	5.08
450	8.08	5.28	7.17	5.02	5.75	4.86	6.87	4.97
475	8.82	5.31	7.87	5.17	6.37	4.79	7.28	4.96
500	9.54	5.01	8.48	5.19	7.06	4.58	7.86	4.93
525	10.12	4.66	8.83	4.99	7.56	4.45	8.32	4.83
550	10.43	4.42	9.03	4.50	7.82	4.40	8.47	4.71
575	10.51	4.13	9.30	3.97	7.92	4.23	8.53	4.66
600	10.41	3.83	9.44	3.78	7.73	3.86	8.53	4.66
625	10.15	3.87	9.19	3.77	7.33	3.41	8.24	4.32
650	9.77	4.08	8.81	3.63	7.07	3.29	7.74	3.65
675	9.26	4.04	8.55	3.52	6.98	3.37	7.33	3.26
700	8.59	3.72	8.14	3.48	6.62	3.35	7.03	3.44
725	7.99	3.50	7.46	3.39	5.98	3.12	6.73	3.72

Table B18: High Amnesia group Mean P300s and Standard Deviations for the Real Identity

Time	Pre-Test		False Identity Imagined		False Identity Post Role-Play		Post-Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0	-.05	1.44	-.57	.93	-.02	1.61	-.32	1.11
25	-.32	1.50	-1.20	1.23	-.53	1.71	-.40	1.54
50	-1.24	1.61	-1.99	1.66	-1.76	1.81	-.71	1.93
75	-1.14	1.72	-1.57	1.95	-1.68	2.01	-.45	2.12
100	.99	2.40	.64	2.72	.53	2.61	1.19	2.65
125	3.29	3.25	2.89	3.61	2.44	3.60	3.06	3.29
150	4.04	3.06	3.69	3.25	2.38	3.48	3.60	3.65
175	4.41	3.37	3.95	2.51	2.10	3.45	3.42	3.38
200	5.91	4.32	4.99	2.67	3.17	3.94	3.99	3.43
225	7.58	5.17	6.10	3.94	4.36	4.59	5.13	4.27
250	8.42	5.65	6.42	4.67	4.46	5.05	5.95	4.91
275	9.46	6.44	6.79	5.08	4.72	6.37	6.84	5.63
300	11.22	7.21	7.71	5.53	5.77	7.31	8.27	5.86
325	12.78	7.50	8.31	5.87	6.39	7.05	9.70	6.12
350	13.08	7.55	7.82	6.07	5.79	6.51	10.12	6.20
375	12.83	7.19	7.30	5.88	5.39	6.51	9.99	6.09
400	13.00	6.65	7.91	5.74	6.26	6.86	10.35	5.80
425	13.61	6.24	9.29	5.82	7.56	7.07	11.23	5.93
450	14.53	5.93	10.73	6.17	8.55	6.81	12.28	6.32
475	15.42	5.68	11.74	6.39	9.24	6.34	13.10	6.30
500	15.90	5.44	12.47	6.19	9.97	5.83	13.59	5.89
525	15.90	5.13	12.99	5.96	10.51	5.41	13.82	5.54
550	15.68	4.78	13.11	5.80	10.71	5.21	13.86	5.22
575	15.24	4.60	12.84	5.58	10.81	5.12	13.69	4.77
600	14.44	4.61	12.49	5.22	10.81	4.98	13.12	4.45
625	13.47	4.58	12.31	4.88	10.47	4.66	12.24	4.15
650	12.71	4.23	12.15	4.74	9.98	4.29	11.53	3.94
675	12.20	3.79	11.76	4.69	9.70	3.93	11.12	3.94
700	11.51	3.72	11.06	4.53	9.41	3.55	10.50	3.96
725	10.65	4.01	10.32	4.25	8.77	3.27	9.64	3.66

Appendix C: ANOVA Summary Tables

Table C1: Summary of the Overall ANOVA for P300s and DES Total

Source	df	Mean Square	F	Eta Squared
	Between Subjects			
DES - Total	1	75.66	.04	.00
Error (DES-T)	33	2016.77		
	Within Subjects			
Electrode Site (ES)	1.43	3634.89	16.19***	.33
ES x DES-T	1.43	87.15	.39	.01
Error (ES)	47.33	224.49		
Time (T)	1.16	371.53	5.71*	.15
T x DES-T	1.16	.84	.01	.00
Error (T)	38.28	65.02		
Identity Stimuli (IS)	1.78	3251.87	67.46***	.67
IS x DES-T	1.78	31.41	.65	.02
Error (IS)	58.75	48.21		
Identity Manipulation Task (IMT)	2.26	1521.61	11.24***	.25
IMT x DES-T	2.26	19.74	.15	.00
Error (IMT)	74.45	135.37		
ES x T	1.63	20.58	2.96	.08
ES x T x DES-T	1.63	4.21	.61	.02
Error (ES x T)	53.66	6.95		
ES x IS	3.06	19.31	2.70*	.08
ES x IS x DES-T	3.06	2.86	.40	.01
Error (ES x IS)	100.96	7.14		
T x IS	2.31	11.27	3.36*	.09
T x IS x DES-T	2.31	6.26	1.87	.05
Error (T x IS)	76.30	3.35		
ES x T x IS	3.13	.69	1.48	.04
ES x T x IS x DES-T	3.13	.62	1.33	.04
Error (ES x T x IS)	103.36	.47		
ES x IMT	3.11	193.75	6.75***	.17
ES x IMT x DES-T	3.11	26.19	.91	.03
Error (ES x IMT)	102.54	28.71		
T x IMT	3.07	23.47	4.86**	.13
T x IMT x DES-T	3.07	3.03	.63	.02
Error (T x IMT)	101.30	4.83		
ES x T x IMT	4.05	.48	.56	.02
ES x T x IMT x DES-T	4.05	.62	.72	.02
Error (ES x T x IMT)	133.56	.86		
IS x IMT	4.81	2228.64	50.06***	.60
IS x IMT x DES-T	4.81	43.37	.97	.03
Error (IS x IMT)	158.63	44.52		

Table Continued

Source	df	Mean Square	F	Eta Squared
ES x IS x IMT	5.69	28.53	2.52*	.07
ES x IS x IMT x DES-T	5.69	8.36	.74	.02
Error (ES x IS x IMT)	187.91	11.34		
T x IS x IMT	5.35	36.75	9.43***	.22
T x IS x IMT x DES-T	5.35	5.04	1.29	.04
Error (T x IS x IMT)	176.40	3.90		
ES x T x IS x IMT	7.93	1.12	2.21*	.06
ES x T x IS x IMT x DES-T	7.93	.64	1.26	.04
Error (ES x T x IS x IMT)	261.58	.51		

Note. *p < .05, **p < .01, ***p < .001

Table C2: Summary of the Overall ANOVA for P300s and DES Absorption

Source	df	Mean Square	F	Eta Squared
	Between Subjects			
DES Absorption (DES-Ab)	1	253.59	.12	.00
Error (DES-Ab)	33	2011.38		
	Within Subjects			
Electrode Site (ES)	1.45	3562.01	16.29***	.33
ES x DES-Ab	1.45	179.17	.82	.02
Error (ES)	47.96	218.69		
Time (T)	1.15	375.06	5.77*	.15
T x DES-Ab	1.15	12.77	.20	.01
Error (T)	38.10	64.95		
Identity Stimuli (IS)	1.78	3263.32	66.96***	.67
IS x DES-Ab	1.78	18.04	.37	.01
Error (IS)	58.60	48.73		
Identity Manipulation Task (IMT)	2.25	1523.25	11.25***	.25
IMT x DES-Ab	2.25	24.57	.18	.01
Error (IMT)	74.38	135.35		
ES x T	1.60	21.05	3.03	.08
ES x T x DES-Ab	1.60	8.30	1.20	.03
Error (ES x T)	52.77	6.94		
ES x IS	3.05	19.30	2.66	.07
ES x IS x DES-Ab	3.05	.50	.07	.00
Error (ES x IS)	100.53	7.25		
T x IS	2.36	11.00	3.51*	.10
T x IS x DES-Ab	2.36	10.87	3.46*	.09
Error (T x IS)	77.98	3.14		
ES x T x IS	3.10	.71	1.47	.04
ES x T x IS x DES-Ab	3.10	.34	.70	.02
Error (ES x T x IS)	102.19	.48		

Table Continued

Source	df	Mean Square	F	Eta Squared
ES x IMT	3.14	191.15	6.79***	.17
ES x IMT x DES-Ab	3.14	34.04	1.21	.04
Error (ES x IMT)	103.67	28.15		
T x IMT	3.06	23.51	4.88**	.13
T x IMT x DES-Ab	3.06	4.19	.87	.03
Error (T x IMT)	100.92	4.81		
ES x T x IMT	4.01	.48	.56	.02
ES x T x IMT x DES-Ab	4.01	.79	.92	.03
Error (ES x T x IMT)	132.31	.86		
IS x IMT	4.74	2259.15	50.32***	.60
IS x IMT x DES-Ab	4.74	51.27	1.14	.03
Error (IS x IMT)	156.52	44.90		
ES x IS x IMT	5.68	28.59	2.51*	.07
ES x IS x IMT x DES-Ab	5.68	8.54	.75	.02
Error (ES x IS x IMT)	187.37	11.37		
T x IS x IMT	5.32	36.88	9.38***	.22
T x IS x IMT x DES-Ab	5.32	4.42	1.12	.03
Error (T x IS x IMT)	175.62	3.93		
ES x T x IS x IMT	8.02	1.10	2.19*	.06
ES x T x IS x IMT x DES-Ab	8.02	.64	1.27	.04
Error (ES x T x IS x IMT)	264.61	.50		

Note. *p < .05, **p < .01, ***p < .001

Table C3: Summary of the Overall ANOVA for P300s and DES Depersonalisation

Source	df	Mean Square	F	Eta Squared
	Between Subjects			
DES Depersonalisation (DES-D)	1	100.42	.05	.00
Error (DES-D)	33	2016.02		
	Within Subjects			
Electrode Site (ES)	1.45	3498.17	15.75***	.32
ES x DES-D	1.45	70.63	.32	.01
Error (ES)	47.93	222.14		
Time (T)	1.16	383.46	5.97*	.15
T x DES-D	1.16	24.62	.38	.01
Error (T)	38.33	64.20		
Identity Stimuli (IS)	1.84	3057.50	69.67***	.68
IS x DES-D	1.84	118.98	2.71	.08
Error (IS)	60.81	43.89		
Identity Manipulation Task (IMT)	2.26	1518.45	11.20***	.25
IMT x DES-D	2.26	13.26	.10	.00
Error (IMT)	74.46	135.56		

Table Continued

Source	df	Mean Square	F	Eta Squared
ES x T	1.64	19.15	2.79	.08
ES x T x DES-D	1.64	5.11	.74	.02
Error (ES x T)	54.05	6.87		
ES x IS	3.05	18.96	2.73*	.08
ES x IS x DES-D	3.05	10.45	1.51	.04
Error (ES x IS)	100.60	6.94		
T x IS	2.27	11.71	3.28*	.09
T x IS x DES-D	2.27	1.23	.34	.01
Error (T x IS)	75.03	3.57		
ES x T x IS	3.06	.77	1.64	.05
ES x T x IS x DES-D	3.06	.87	1.85	.05
Error (ES x T x IS)	101.00	.47		
ES x IMT	3.00	193.37	6.42***	.16
ES x IMT x DES-D	3.00	14.23	.47	.01
Error (ES x IMT)	99.02	30.12		
T x IMT	3.20	23.12	5.12**	.13
T x IMT x DES-D	3.20	6.72	1.49	.04
Error (T x IMT)	105.65	4.51		
ES x T x IMT	4.14	.44	.53	.02
ES x T x IMT x DES-D	4.14	.56	.67	.02
Error (ES x T x IMT)	136.64	.84		
IS x IMT	4.77	2187.36	49.68***	.60
IS x IMT x DES-D	4.77	69.62	1.58	.05
Error (IS x IMT)	157.57	44.03		
ES x IS x IMT	5.74	26.98	2.42*	.07
ES x IS x IMT x DES-D	5.74	11.34	1.02	.03
Error (ES x IS x IMT)	189.48	11.16		
T x IS x IMT	5.10	37.66	9.08***	.22
T x IS x IMT x DES-D	5.10	3.13	.75	.02
Error (T x IS x IMT)	168.29	4.15		
ES x T x IS x IMT	8.02	1.13	2.19*	.06
ES x T x IS x IMT x DES-D	8.02	.17	.33	.01
Error (ES x T x IS x IMT)	264.73	.52		

Note. *$p < .05$, **$p < .01$, ***$p < .001$

Table C4: Summary of the Overall ANOVA for P300 and Amnesia

Source	df	Mean Square	F	Eta Squared
	Between Subjects			
DES - Amnesia (DES-A)	1	889.98	.45	.01
Error (DES-A)	33	1992.10		
	Within Subjects			
Electrode Site (ES)	1.45	3644.07	16.27***	.33
ES x DES-A	1.45	26.03	.12	.00
Error (ES)	47.83	223.97		
Time (T)	1.14	362.32	5.55*	.14
T x DES-A	1.14	34.17	.52	.02
Error (T)	37.54	65.27		
Identity Stimuli (IS)	1.79	3154.11	66.13***	.67
IS x DES-A	1.79	36.15	.76	.02
Error (IS)	59.19	47.70		
Identity Manipulation Task (IMT)	2.28	1428.05	10.86***	.25
IMT x DES-A	2.28	98.58	.75	.02
Error (IMT)	75.30	131.46		
ES x T	1.64	20.52	2.99	.08
ES x T x DES-A	1.64	5.41	.79	.02
Error (ES x T)	53.99	6.87		
ES x IS	3.04	19.90	2.87*	.08
ES x IS x DES-A	3.04	11.15	1.61	.05
Error (ES x IS)	100.43	6.93		
T x IS	2.24	12.43	3.54*	.10
T x IS x DES-A	2.24	4.88	1.39	.04
Error (T x IS)	73.88	3.51		
ES x T x IS	3.10	.75	1.58	.05
ES x T x IS x DES-A	3.10	.55	1.16	.03
Error (ES x T x IS)	102.18	.47		
ES x IMT	3.05	190.04	6.44***	.16
ES x IMT x DES-A	3.05	18.10	.61	.02
Error (ES x IMT)	100.59	29.52		
T x IMT	3.11	23.55	4.85**	.13
T x IMT x DES-A	3.11	.42	.09	.00
Error (T x IMT)	102.49	4.85		
ES x T x IMT	4.04	.46	.53	.02
ES x T x IMT x DES-A	4.04	.59	.69	.02
Error (ES x T x IMT)	133.32	.86		
IS x IMT	4.55	2354.29	52.27***	.61
IS x IMT x DES-A	4.55	112.91	2.51*	.07
Error (IS x IMT)	150.03	45.04		

Table Continued

Source	df	Mean Square	F	Eta Squared
ES x IS x IMT	5.69	27.93	2.46*	.07
ES x IS x IMT x DES-A	5.69	7.69	.68	.02
Error (ES x IS x IMT)	187.75	11.37		
T x IS x IMT	5.12	38.14	9.26***	.22
T x IS x IMT x DES-A	5.12	3.62	.88	.03
Error (T x IS x IMT)	168.85	4.12		
ES x T x IS x IMT	7.94	1.11	2.15*	.06
ES x T x IS x IMT x DES-A	7.94	.32	.62	.02
Error (ES x T x IS x IMT)	261.91	.52		

Note. *p < .05, **p < .01, ***p < .001

Table C5: Summary of the ANOVA for P300 and Extra False Identity Enactment

Source	df	Mean Square	F	Eta Squared
Between Subjects				
Extra False Identity Enactment (EFIE)	1	6206.75	2.42	.15
Error (EFIE)	14	2570.42		
Within Subjects				
Electrode Site (ES)	1.35	1867.16	7.47***	.35
ES x EFIE	1.35	255.88	1.02	.07
Error (ES)	18.93	250.07		
Time (T)	1.13	84.65	1.63	.10
T x EFIE	1.13	52.18	1.01	.07
Error (T)	15.84	51.80		
Identity Stimuli (IS)	1.91	1460.53	34.27***	.71
IS x EFIE	1.91	90.02	2.11	.13
Error (IS)	26.71	42.62		
Identity Manipulation Tasks (IMT)	1.63	1369.51	7.17***	.34
IMT x EFIE	1.63	485.65	2.54	.15
Error (IMT)	22.76	190.98		
ES x T	1.47	10.50	1.16	.08
ES x T x EFIE	1.47	4.60	.51	.04
Error (ES x T)	20.62	9.02		
ES x IS	2.37	22.81	2.46	.15
ES x IS x EFIE	2.37	6.56	.71	.05
Error (ES x IS)	33.23	9.26		
T x IS	1.87	13.86	3.63*	.21
T x IS x EFIE	1.87	4.09	1.07	.07
Error (T x IS)	26.15	3.82		
ES x T x IS	2.24	.69	.93	.06
ES x T x IS x EFIE	2.24	.38	.51	.04
Error (ES x T x IS)	31.34	.75		

Table Continued

Source	df	Mean Square	F	Eta Squared
ES x IMT	2.59	153.47	5.74***	.29
ES x IMT x EFIE	2.59	25.53	.95	.06
Error (ES x IMT)	36.28	26.74		
T x IMT	2.67	12.37	2.86	.17
T x IMT x EFIE	2.67	4.32	1.00	.07
Error (T x IMT)	37.33	4.32		
ES x T x IMT	4.43	1.10	2.67*	.16
ES x T x IMT x EFIE	4.43	.37	.91	.06
Error (ES x T x IMT)	62.06	.41		
IS x IMT	3.78	1375.22	27.49***	.66
IS x IMT x EFIE	3.78	163.12	3.26*	.19
Error (IS x IMT)	52.93	50.02		
ES x IS x IMT	4.69	42.73	3.70***	.21
ES x IS x IMT x EFIE	4.69	15.13	1.31	.09
Error (ES x IS x IMT)	65.72	11.54		
T x IS x IMT	3.98	31.56	7.27***	.34
T x IS x IMT x EFIE	3.98	9.42	2.17	.13
Error (T x IS x IMT)	55.67	4.34		
ES x T x IS x IMT	5.52	1.21	2.01	.13
ES x T x IS x IMT x EFIE	5.52	.83	1.38	.09
Error (ES x T x IS x IMT)	77.29	.60		

Note. *$p < .05$, **$p < .01$, ***$p < .001$

Table C6: Summary of the ANOVA for N412s

Source	df	Mean Square	F	Eta Squared
Electrode Site (ES)	1.45	6476.72	21.40***	.39
Error (ES)	49.34	302.59		
Time (T)	1.18	41.10	.29	.01
Error (T)	40.02	143.29		
Identity Stimuli (IS)	1.70	5231.78	67.59***	.67
Error (IS)	57.67	77.41		
Identity Manipulation Task (IMT)	2.44	1831.87	11.27***	.25
Error (IMT)	83.05	162.57		
ES x T	2.27	85.98	9.90***	.23
Error (ES x T)	77.17	8.68		
ES x IS	3.26	27.84	3.45*	.09
Error (ES x IS)	110.91	8.06		
T x IS	2.80	51.32	10.09*	.23
Error (T x IS)	95.31	5.09		
ES x T x IS	3.49	2.11	2.74*	.07
Error (ES x T x IS)	118.76	.77		

Table Continued

Source	df	Mean Square	F	Eta Squared
ES x IMT	3.50	216.88	6.46***	.16
Error (ES x IMT)	119.03	33.56		
T x IMT	3.73	41.79	4.95***	.13
Error (T x IMT)	126.80	8.44		
ES x T x IMT	4.69	1.08	.73	.02
Error (ES x T x IMT)	159.61	1.48		
IS x IMT	4.99	3099.64	55.02***	.62
Error (IS x IMT)	169.51	56.34		
ES x IS x IMT	5.84	49.73	3.16**	.09
Error (ES x IS x IMT)	198.55	15.72		
T x IS x IMT	4.78	26.20	2.86*	.08
Error (T x IS x IMT)	162.58	9.18		
ES x T x IS x IMT	8.30	.63	.67.73	.02
Error (ES x T x IS x IMT)	282.19	.94		

Note. **p < .01, ***p < .001

Table C7: Summary of the ANOVA for N412s and DES Groups at the Imagined and Post Role-Play Phases

Source	df	Mean Square	F	Eta Squared
	Between Subjects			
DES-Total (DES-T)	1	24.01	.04	.00
Error (DES-T)	33	642.52		
	Within Subjects			
Electrode Site (ES)	1.50	1522.25	20.63***	.38
ES x DES-Total (DES-T)	1.50	44.55	.60	.02
Error (ES)	49.53	73.79		
Time (T)	1.00	1.79	.02	.00
T x DES-T	1.00	120.87	1.60	.05
Error (T)	33.00	75.66		
Identity Stimuli (IS)	1.98	2381.64	106.76***	.76
IS x DES-T	1.98	29.77	1.33	.04
Error (IS)	65.20	22.31		
Identity Manipulation Task – Imagined and Post Role-Play (IMT-I&R)	1.00	640.14	9.62***	.23
IMT-I&R x DES-T	1.00	39.97	.60	.02
Error (IMT-I&R)	33.00	66.53		
ES x T	1.79	33.96	8.67***	.21
ES x T x DES-T	1.79	16.55	4.22*	.11
Error (ES x T)	59.23	3.92		
ES x IS	2.50	48.06	6.20***	.16
ES x IS x DES-T	2.50	6.12	.79	.02
Error (ES x IS)	82.39	7.75		

Table Continued

Source	df	Mean Square	F	Eta Squared
T x IS	1.82	47.84	6.07**	.16
T x IS x DES-T	1.82	3.75	.48	.01
Error (T x IS)	59.94	7.88		
ES x T x IS	3.24	1.02	1.98	.06
ES x T x IS x DES-T	3.24	1.00	1.93	.06
Error (ES x T x IS)	106.93	.52		
ES x IMT-I&R	1.69	3.82	.26	.01
ES x IMT-I&R x DES-T	1.69	7.11	.49	.01
Error (ES x IMT-I&R)	55.79	14.52		
T x IMT-I&R	1.00	41.59	10.52***	.24
T x IMT-I&R x DES-T	1.00	1.16	.29	.01
Error (T x IMT-I&R)	33.00	3.95		
ES x T x IMT-I&R	1.93	.16	.20	.01
ES x T x IMT-I&R x DES-T	1.93	1.26	1.60	.05
Error (ES x T x IMT-I&R)	63.62	.79		
IS x IMT-I&R	1.74	9.56	.39	.01
IS x IMT-I&R x DES-T	1.74	17.81	.73	.02
Error (IS x IMT-I&R)	57.44	24.33		
ES x IS x IMT-I&R	2.69	.62	.10	.00
ES x IS x IMT-I&R x DES-T	2.69	3.94	.62	.02
Error (ES x IS x IMT-I&R)	88.72	6.34		
T x IS x IMT-I&R	1.84	5.46	1.77	.05
T x IS x IMT-I&R x DES-T	1.84	12.01	3.88*	.11
Error (T x IS x IMT-I&R)	60.86	3.09		
ES x T x IS x IMT-I&R	3.04	.05	.11	.00
ES x T x IS x IMT-I&R x DES-T	3.04	.43	1.01	.03
Error (ES x T x IS x IMT-I&R)	100.41	.43		

Note. *p < .05, **p < .01, ***p < .001

Table C8: Summary of the ANOVA for N412s and Amnesia Groups at the Imagined and Post Role-Play Phases

Source	df	Mean Square	F	Eta Squared
	Between Subjects			
DES-Amnesia (DES-Am)	1	77.57	.12	.00
Error (DES-T)	33	640.99		
	Within Subjects			
Electrode Site (ES)	1.54	1505.82	20.95***	.39
ES x DES-Amnesia (DES-Am)	1.54	37.54	.52	.02
Error (ES)	50.98	71.87		
Time (T)	1.00	.12	.00	.00
T x DES-Am	1.00	230.40	3.18	.09
Error (T)	33.00	72.35		

Table Continued

Source	df	Mean Square	F	Eta Squared
Identity Stimuli (IS)	1.96	2367.92	105.89***	.76
IS x DES-Am	1.96	33.49	1.50	.04
Error (IS)	64.74	22.36		
Identity Manipulation Task – Imagined and Post Role-Play (IMT-I&R)	1.00	606.74	9.05**	.22
IMT-I&R x DES-Am	1.00	22.43	.33	.01
Error (IMT-I&R)	33.00	67.06		
ES x T	1.78	35.96	8.74***	.21
ES x T x DES-Am	1.78	11.10	2.70	.08
Error (ES x T)	58.81	4.11		
ES x IS	2.45	48.94	6.14***	.16
ES x IS x DES-Am	2.45	3.90	.49	.01
Error (ES x IS)	80.81	7.97		
T x IS	1.76	51.75	6.70***	.17
T x IS x DES-Am	1.76	17.60	2.28	.06
Error (T x IS)	58.01	7.72		
ES x T x IS	3.02	1.17	2.06	.06
ES x T x IS x DES-Am	3.02	.65	1.15	.03
Error (ES x T x IS)	99.73	.57		
ES x IMT-I&R	1.68	3.66	.25	.01
ES x IMT-I&R x DES-Am	1.68	.15	.01	.00
Error (ES x IMT-I&R)	55.53	14.80		
T x IMT-I&R	1.00	37.44	10.66***	.24
T x IMT-I&R x DES-Am	1.00	15.72	4.48*	.12
Error (T x IMT-I&R)	33.00	3.51		
ES x T x IMT-I&R	1.98	.18	.24	.01
ES x T x IMT-I&R x DES-Am	1.98	2.08	2.80	.08
Error (ES x T x IMT-I&R)	65.34	.74		
IS x IMT-I&R	1.75	13.07	.55	.02
IS x IMT-I&R x DES-Am	1.75	28.06	1.17	.03
Error (IS x IMT-I&R)	57.71	23.90		
ES x IS x IMT-I&R	2.70	.62	.10	.00
ES x IS x IMT-I&R x DES-Am	2.70	1.31	.20	.01
Error (ES x IS x IMT-I&R)	89.11	6.39		
T x IS x IMT-I&R	1.77	5.46	1.61	.05
T x IS x IMT-I&R x DES-Am	1.77	6.81	2.00	.06
Error (T x IS x IMT-I&R)	58.27	3.40		
ES x T x IS x IMT-I&R	3.14	.06	.15	.00
ES x T x IS x IMT-I&R x DES-Am	3.14	.58	1.42	.04
Error (ES x T x IS x IMT-I&R)	103.63	.41		

Note. *$p < .05$, **$p < .01$, ***$p < .001$

Table C9: Summary of the ANOVA for N412s and Absorption Groups at the Imagined and Post Role-Play Phases

Source	df	Mean Square	F	Eta Squared
	Between Subjects			
DES-Absorption (DES-Ab)	1	3.51	.01	.00
Error (DES-T)	33	643.14		
	Within Subjects			
Electrode Site (ES)	1.53	1483.74	20.38***	.38
ES x DES-Absorption (DES-Ab)	1.53	36.19	.50	.01
Error (ES)	50.38	72.79		
Time (T)	1.00	1.60	.02	.00
T x DES-Ab	1.00	186.12	2.53	.07
Error (T)	33.00	73.69		
Identity Stimuli (IS)	1.96	2397.10	105.94***	.76
IS x DES-Ab	1.96	23.75	1.05	.03
Error (IS)	64.82	22.63		
Identity Manipulation Task – Imagined and Post Role-Play (IMT-I&R)	1.00	641.19	9.68***	.23
IMT-I&R x DES-Ab	1.00	49.67	.75	.02
Error (IMT-I&R)	33.00	66.23		
ES x T	1.78	33.97	8.13***	.20
ES x T x DES-Ab	1.78	9.49	2.27	.06
Error (ES x T)	58.65	4.18		
ES x IS	2.50	47.86	6.17***	.16
ES x IS x DES-Ab	2.50	5.00	.64	.02
Error (ES x IS)	82.66	7.76		
T x IS	1.81	48.32	6.08**	.16
T x IS x DES-Ab	1.81	2.75	.35	.01
Error (T x IS)	59.63	7.95		
ES x T x IS	3.30	1.00	2.04	.06
ES x T x IS x DES-Ab	3.30	1.56	3.19*	.09
Error (ES x T x IS)	108.83	.49		
ES x IMT-I&R	1.70	3.77	.26	.01
ES x IMT-I&R x DES-Ab	1.70	11.36	.79	.02
Error (ES x IMT-I&R)	56.03	14.33		
T x IMT-I&R	1.00	41.41	10.59***	.24
T x IMT-I&R x DES-Ab	1.00	2.49	.64	.02
Error (T x IMT-I&R)	33.00	3.91		
ES x T x IMT-I&R	1.92	.16	.21	.01
ES x T x IMT-I&R x DES-Ab	1.92	1.40	1.78	.05
Error (ES x T x IMT-I&R)	63.39	.79		
IS x IMT-I&R	1.74	9.61	.39	.01
IS x IMT-I&R x DES-Ab	1.74	16.75	.69	.02
Error (IS x IMT-I&R)	57.39	24.38		

Table Continued

Source	df	Mean Square	F	Eta Squared
ES x IS x IMT-I&R	2.69	.61	.10	.00
ES x IS x IMT-I&R x DES-Ab	2.69	4.72	.75	.02
Error (ES x IS x IMT-I&R)	88.79	6.31		
T x IS x IMT-I&R	1.80	5.74	1.75	.05
T x IS x IMT-I&R x DES-Ab	1.80	8.75	2.67	.07
Error (T x IS x IMT-I&R)	59.31	3.28		
ES x T x IS x IMT-I&R	3.05	.05	.11	.00
ES x T x IS x IMT-I&R x DES-Ab	3.05	.49	1.17	.03
Error (ES x T x IS x IMT-I&R)	100.60	.42		

Note. *p < .05, **p < .01, ***p < .001

Table C10: Summary of the ANOVA for N412s and DES Depersonalisation at the Imagined and Post Role-Play Phases

Source	df	Mean Square	F	Eta Squared
	Between Subjects			
DES Depersonalisation (DES-D)	1	2.00	.00	.00
Error (DES-D)	33	643.19		
	Within Subjects			
Electrode Site (ES)	1.54	1455.93	19.91***	.38
ES x DES-Depersonalisation (DES-)	1.54	8.19	.11	.00
Error (ES)	50.72	73.14		
Time (T)	1.00	1.76	.02	.00
T x DES-D	1.00	14.18	.18	.01
Error (T)	33.00	78.90		
Identity Stimuli (IS)	1.95	2366.92	103.12***	.76
IS x DES-D	1.95	16.87	.73	.02
Error (IS)	64.49	22.95		
Identity Manipulation Task – Imagined and Post Role-Play (IMT-I&R)	1.00	654.54	9.84***	.23
IMT-I&R x DES-D	1.00	40.54	.61	.02
Error (IMT-I&R)	33.00	66.51		
ES x T	1.79	34.85	8.32***	.20
ES x T x DES-D	1.79	8.31	1.98	.06
Error (ES x T)	58.92	4.19		
ES x IS	2.39	48.10	5.99***	.15
ES x IS x DES-D	2.39	8.51	1.06	.03
Error (ES x IS)	78.87	8.03		
T x IS	1.81	46.99	5.88**	.15
T x IS x DES-D	1.81	.45	.06	.00
Error (T x IS)	59.87	7.99		
ES x T x IS	3.09	1.13	1.98	.06
ES x T x IS x DES-D	3.09	.18	.32	.01
Error (ES x T x IS)	101.95	.57		

Table Continued

Source	df	Mean Square	F	Eta Squared
ES x IMT-I&R	1.68	3.61	.24	.01
ES x IMT-I&R x DES-D	1.68	.60	.04	.00
Error (ES x IMT-I&R)	55.49	14.80		
T x IMT-I&R	1.00	39.56	10.22***	.24
T x IMT-I&R x DES-D	1.00	3.91	1.01	.03
Error (T x IMT-I&R)	33.00	3.87		
ES x T x IMT-I&R	1.95	.17	.21	.01
ES x T x IMT-I&R x DES-D	1.95	.33	.41	.01
Error (ES x T x IMT-I&R)	64.37	.81		
IS x IMT-I&R	1.72	12.44	.50	.02
IS x IMT-I&R x DES-D	1.72	14.59	.59	.02
Error (IS x IMT-I&R)	56.91	24.65		
ES x IS x IMT-I&R	2.70	.58	.09	.00
ES x IS x IMT-I&R x DES-D	2.70	1.41	.22	.01
Error (ES x IS x IMT-I&R)	89.21	6.38		
T x IS x IMT-I&R	1.75	6.52	1.81	.05
T x IS x IMT-I&R x DES-D	1.75	1.25	.35	.01
Error (T x IS x IMT-I&R)	57.87	3.59		
ES x T x IS x IMT-I&R	3.17	.03	.08	.00
ES x T x IS x IMT-I&R x DES-D	3.17	.26	.64	.02
Error (ES x T x IS x IMT-I&R)	104.61	.41		

Note. **p < .01, ***p < .001

Table C11: Summary of the ANOVA for P550s

Source	df	Mean Square	F	Eta Squared
Electrode Site (ES)	1.73	4513.76	64.75***	.66
Error (ES)	58.91	69.71		
Identity Stimuli (IS)	1.96	1604.39	63.33***	.65
Error (IS)	66.70	25.33		
Identity Manipulation Tasks (IMT)	2.04	133.16	2.58	.07
Error (IMT)	69.40	51.68		
ES x IS	3.29	23.60	7.62***	.18
Error (ES x IS)	111.89	3.10		
ES x IMT	2.79	28.77	1.58	.04
Error (ES x IMT)	94.91	18.26		
IS x IMT	4.59	387.15	20.16***	.37
Error (IS x IMT)	156.01	19.20		
ES x IS x IMT	5.71	8.06	1.57	.04
Error (ES x IS x IMT)	194.01	5.14		

Note. ***p < .001

Table C12: Summary of the ANOVA for P550s and DES at Imagined and Post Role-Play

Source	df	Mean Square	F	Eta Squared
	Between Subjects			
DES-Total (DES-T)	1	978.20	2.94	.08
Error (DES-T)	33	333.24		
	Within Subjects			
Electrode Site (ES)	1.77	2104.32	61.51***	.65
ES x DES-T	1.77	76.76	2.24	.06
Error (ES)	58.56	34.21		
Identity Stimuli (IS)	1.95	1124.55	58.34***	.64
IS x DES-T	1.95	7.30	.38	.01
Error (IS)	64.28	19.28		
Identity Manipulation Task – Imagined & Post Role-Play (IMT-I&P)	1.00	131.86	3.11	.09
IMT-I&P x DES-T	1.00	50.51	1.19	.03
Error (IMT-I&P)	33.00	42.41		
ES x IS	2.54	18.20	4.06**	.11
ES x IS x DES-T	2.54	6.49	1.45	.04
Error (ES x IS)	83.80	4.48		
ES x IMT-I&P	1.63	6.12	.45	.01
ES x IMT-I&P x DES-T	1.63	5.99	.44	.01
Error (ES x IMT-I&P)	53.70	13.65		
IS x IMT-I&P	1.79	27.10	1.73	.05
IS x IMT-I&P x DES-T	1.79	5.16	.33	.01
Error (IS x IMT-I&P)	59.22	15.65		
ES x IS x IMT-I&P	2.48	6.52	1.38	.04
ES x IS x IMT-I&P x DES-T	2.48	.49	.10	.00
Error (ES x IS x IMT-I&P)	81.98	4.72		

Note. **$p < .01$, ***$p < .001$

Table C13: Summary of the ANOVA for P550s and Amnesia at the Imagined and Post Role-Play Phases

Source	df	Mean Square	F	Eta Squared
	Between Subjects			
DES-Amnesia (DES-Am)	1	486.67	1.40	.04
Error (DES-Am)	33	348.14		
	Within Subjects			
Electrode Site (ES)	1.83	2039.37	58.94***	.64
ES x DES-Am	1.83	29.56	.85	.03
Error (ES)	60.27	34.60		
Identity Stimuli (IS)	1.95	1112.78	57.79***	.64
IS x DES-Am	1.95	8.48	.44	.01
Error (IS)	64.24	19.25		
Identity Manipulation Task – Imagined & Post Role-Play (IMT-I&P)	1.00	128.59	2.93	.08
IMT-I&P x DES-Am	1.00	1.27	.03	.00
Error (IMT-I&P)	33.00	43.90		
ES x IS	2.55	17.66	3.86*	.10
ES x IS x DES-Am	2.55	2.92	.64	.02
Error (ES x IS)	84.09	4.58		
ES x IMT-I&P	1.60	5.13	.37	.01
ES x IMT-I&P x DES-Am	1.60	8.74	.64	.02
Error (ES x IMT-I&P)	52.95	13.77		
IS x IMT-I&P	1.82	26.70	1.73	.05
IS x IMT-I&P x DES-Am	1.82	5.04	.33	.01
Error (IS x IMT-I&P)	59.91	15.47		
ES x IS x IMT-I&P	2.48	6.75	1.43	.04
ES x IS x IMT-I&P x DES-Am	2.48	.63	.13	.00
Error (ES x IS x IMT-I&P)	81.88	4.72		

Note. *$p < .05$, ***$p < .001$

Table C14: Summary of the ANOVA for P550s and Absorption at the Imagined and Post Role-Play Phases

Source	df	Mean Square	F	Eta Squared
	Between Subjects			
DES-Absorption (DES-Ab)	1	825.47	2.44	.07
Error (DES-Ab)	33	337.87		
	Within Subjects			
Electrode Site (ES)	1.82	2036.62	60.80***	.65
ES x DES-Ab	1.82	66.99	2.00	.06
Error (ES)	60.22	33.50		
Identity Stimuli (IS)	1.95	1125.64	58.41***	.64
IS x DES-Ab	1.95	7.66	.40	.01
Error (IS)	64.27	19.27		
Identity Manipulation Task – Imagined & Post Role-Play (IMT-I&P)	1.00	133.70	3.26	.09
IMT-I&P x DES-Ab	1.00	98.16	2.40	.07
Error (IMT-I&P)	33.00	40.96		
ES x IS	2.57	18.07	4.07**	.11
ES x IS x DES-Ab	2.57	6.50	1.47	.04
Error (ES x IS)	84.67	4.44		
ES x IMT-I&P	1.64	6.19	.46	.01
ES x IMT-I&P x DES-Ab	1.64	5.61	.41	.01
Error (ES x IMT-I&P)	54.04	13.58		
IS x IMT-I&P	1.80	27.05	1.73	.05
IS x IMT-I&P x DES-Ab	1.80	4.36	.28	.01
Error (IS x IMT-I&P)	59.31	15.64		
ES x IS x IMT-I&P	2.51	6.37	1.37	.04
ES x IS x IMT-I&P x DES-Ab	2.51	2.05	.44	.01
Error (ES x IS x IMT-I&P)	82.68	4.64		

Note. **$p < .01$, ***$p < .001$

Table C15: Summary of the ANOVA for P550s and Depersonalisation at the Imagined and Post Role-Play Phases

Source	df	Mean Square	F	Eta Squared
	Between Subjects			
DES- Depersonalisation (DES-D)	1	347.48	.99	.03
Error (DES-D)	33	352.36		
	Within Subjects			
Electrode Site (ES)	1.84	2024.20	58.27***	.64
ES x DES-D	1.84	15.35	.44	.01
Error (ES)	60.77	34.74		
Identity Stimuli (IS)	1.92	1109.95	57.68***	.64
IS x DES-D	1.92	18.08	.94	.03
Error (IS)	63.33	19.24		
Identity Manipulation Task – Imagined & Post Role-Play (IMT-I&P)	1.00	132.35	3.03	.08
IMT-I&P x DES-D	1.00	9.31	.21	.01
Error (IMT-I&P)	33.00	43.65		
ES x IS	2.48	17.15	3.72*	.10
ES x IS x DES-D	2.48	6.24	1.35	.04
Error (ES x IS)	81.76	4.61		
ES x IMT-I&P	1.64	6.16	.45	.01
ES x IMT-I&P x DES-D	1.64	1.79	.13	.00
Error (ES x IMT-I&P)	54.09	13.68		
IS x IMT-I&P	1.81	25.35	1.62	.05
IS x IMT-I&P x DES-D	1.81	1.49	.10	.00
Error (IS x IMT-I&P)	59.58	15.66		
ES x IS x IMT-I&P	2.50	6.23	1.34	.04
ES x IS x IMT-I&P x DES-D	2.50	1.93	.42	.01
Error (ES x IS x IMT-I&P)	82.62	4.64		

Note. *$p < .05$, ***$p < .001$

Table C16: Summary of the ANOVA for P550s and Extra False Identity Enactment Groups at the Imagined and Post Role-Play Phases

Source	df	Mean Square	F	Eta Squared
	Between Subjects			
Extra False Identity Enactment (EFIE)	1	56.85	.22	.02
Error (EFIE)	14	261.55		
	Within Subjects			
Electrode Site (ES)	1.92	853.41	23.20***	.62
ES x EFIE	1.92	26.33	.72	.05
Error (ES)	26.87	36.78		
Identity Stimuli (IS)	1.35	774.65	38.84***	.74
IS x EFIE	1.35	25.49	1.28	.08
Error (IS)	18.88	19.95		
Identity Manipulation Task (IMT)	1.00	274.88	5.08*	.27
IMT x EFIE	1.00	36.84	.68	.05
Error (IMT)	14.00	54.08		
ES x IS	2.23	18.16	3.49*	.20
ES x IS x EFIE	2.23	6.05	1.16	.08
Error (ES x IS)	31.22	5.20		
ES x IMT	1.43	23.98	1.94	.12
ES x IMT x EFIE	1.43	2.48	.20	.01
Error (ES x IMT)	20.08	12.38		
IS x IMT	1.81	32.88	2.11	.13
IS x IMT x EFIE	1.81	68.07	4.38*	.24
Error (IS x IMT)	25.29	15.55		
ES x IS x IMT	2.61	10.66	3.79*	.21
ES x IS x IMT x EFIE	2.61	5.51	1.96	.12
Error (ES x IS x IMT)	36.60	2.82		

Note. *$p < .05$, ***$p < .001$

Appendix D: The Meaning of P300 in the Present Study

Several factors influence P300 amplitude. Chief among those that increase P300 amplitude are the decreased probability of the stimulus, the increased meaningfulness of the stimulus, and increases in the amount information transmitted by the stimulus (Duncan-Johnson & Donchin, 1977; Picton, 1992; Polich & Kok, 1995; Polich, 1993). In the present study the probability of the stimuli was controlled. When the participants were asked to respond with their real identity, the real identity stimuli occurred infrequently. Later, when the participants assumed their false identity, the false and real identity stimuli occurred with equal frequency and both were less frequent that the irrelevant identity stimuli. The meaning of the stimuli was manipulated through to the experimental tasks, and accordingly the amplitude of P300 varies primarily as a function of the meaningfulness of the identity stimuli.

Appendix E: Findings that were Not Significant

Individual Difference Variables and P300s Associated with the Adoption of a False Identity

The participants' responses on other individual difference measures were collected to identify those that influenced their attempts to adopt a false identity. An examination of three-way interactions indicated that the participants' ERPs evoked in response to the three types of identity stimuli during the four identity manipulation recognition tasks did not vary as a function of extroversion ($F_{GG}(5.1, 128.4) = .6$, ns, $\eta^2 = .02$), neuroticism ($F_{GG}(5.1, 133.5) = .9$, ns, $\eta^2 = .03$), toughmindedness ($F_{GG}(5.1, 127.3) = .65$, ns, $\eta^2 = .03$), the tendency to present oneself in a good light ($F_{GG}(4.7, 113.7) = 1.1$, ns, $\eta^2 = .04$), hostility ($F_{GG}(5.1, 142.6) = .57$, ns, $\eta^2 = .02$), depressive symptoms ($F_{GG}(5.1, 141.9) = .8$, ns, $\eta^2 = .03$), or psychotic symptoms ($F_{GG}(5.1, 142.8) = 1.1$, ns, $\eta^2 = .04$).

Appendix F: The Meaning of Late Positivities (P550) in the Present Study

The ERPs appear to show a large positivity following P550. Muller-Gass and colleagues (2000) suggest that a late positivity following P300 (i.e., P550) are associated with the processing involved in a multi-stage decision task. It is possible that in the present study, the second decision could reflect the participants' belief that they are faking a false identity rather than the conviction that they are their false identity.

The question of whether the participants believed that they were faking their false identity was addressed with the post study questions. The participants were asked to respond to the following statements. (1) During the role-playing exercises it felt as though I became a different person. (2) During the role-playing exercises, I was able to focus all of my attention on my new role. (3) During the role-playing exercises I was aware of my real identity, but it did not affect my responses. Their responses indicated that they felt like a different person, they focused all their attention on their false identity, and that their real identity did not influence them.

Further evidence that the participant were not faking their false identity comes from their ERPs. A belief that they were faking would indicate that they were processing information with their real identity rather than with their false identity. In other words, if they were processing information with their false identity they would not believe they were faking it. If the participants were faking their false identity (i.e., processing with their real identity) the false identity stimuli would evoke a P300, but not a P550. A P300 would be evoked because they would initially decide that the false identity stimuli did describe them, but they would not have produced P550s because they would subsequently decide that they were faking. In the present study the false identity stimuli evoked P300s and P550s, indicating that they did not believe they were faking their false identity.