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How does diagnostic context moderate counselor hypothesis testing strategies?

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HOW DOES DIAGNOSTIC CONTEXT
MODERATE COUNSELOR HYPOTHESIS
TESTING STRATEGIES?

by

Nadia T. D’Iuso

A Dissertation
Submitted to the University at Albany, State University of New York
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Doctor of Philosophy

School of Education
Division of Counseling Psychology
2011
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Abstract

This study sought to replicate and extend the work done by Ellis, Brody and Speranza (1998) and Speranza (2001) by examining how counselor trainees differentially use three hypothesis testing strategies (i.e., confirmatory, disconfirmatory, and unbiased) to test and develop their diagnosis within three diagnostic contexts (i.e., the clinical data presented to trainees). The study’s hypotheses were the following: (1) as predicted by Speranza (2001), the diagnostic context would affect the differential use of the hypothesis testing strategies by trainees; (2) identical to Speranza (2001), trainees would use a greater number of the disconfirmatory hypothesis testing strategy when compared to the confirmatory and the unbiased hypothesis testing strategy to test the diagnosis of primary insomnia (explicit diagnostic context); (3) additionally, trainees would use the confirmatory hypothesis testing strategy with greater frequency when compared to the disconfirmatory and the unbiased hypothesis testing strategy to test and develop their own diagnosis with the Diagnostic and Statistical Manual, DSM-IV-TR, criteria present (semi-explicit); and (4), trainees were predicted to use the unbiased hypothesis testing strategy with greater frequency to develop a diagnosis without the DSM-IV-TR criteria present (partially-explicit diagnostic context).

Counselor trainees (N = 99) were contacted through various academic listservs and provided with the link to the online study on psychdata.com. Participants were also randomly assigned to one of the three diagnostic contexts. Results partly supported Speranza (2001) as participants used a disconfirmatory hypothesis testing strategy when compared to the unbiased hypothesis testing strategy in the explicit diagnostic context. Further, a new finding was added to the mix as the confirmatory hypothesis testing
strategy was used with greater frequency than the disconfirmatory hypothesis testing strategy in the partially-explicit diagnostic context. These findings have implications for theory, future research, and practice, as the diagnostic context may affect how trainees integrate the three hypothesis testing strategies during the different phases of the assessment process. The differential use of the three hypothesis testing strategies can further affect the accuracy with which the client’s diagnosis matches their current symptoms and by extension their overall prognosis.
Chapter I

Statement of the Problem

One of the main functions of clinical work is to assess and accurately diagnose the clients’ presenting problem (Strohmer, Haase, Biggs, & Keller, 1982). This process may involve gathering clinical data, generating a working hypothesis or diagnosis, and collecting additional information to compare it to the initial diagnosis for revisions to be made (Strohmer et al., 1982). The overall goal is to diagnose the client’s problem accurately and to design and implement an effective treatment plan (Speranza, 2001).

As counseling trainees gather clinical information, they may use different hypothesis testing strategies to help organize and perhaps challenge their initial diagnosis about the client (Strohmer & Shivy, 1994; Swann & Giuliano, 1978). Hypothesis testing strategies are questions that trainees develop to help gather different types of data (Strohmer et al., 1982). Specifically, three hypothesis testing strategies: a confirmatory strategy (i.e., asking a series of questions to confirm the diagnosis), a disconfirmatory strategy (i.e., developing questions to challenge the original diagnosis), and an unbiased strategy (i.e., asking questions that can elicit information that either confirms or disconfirms the diagnosis; Klayman & Wong Ha, 1987; Snyder & Campbell, 1980; Speranza, 2001). The evidence to date about which of the three strategies trainees primarily use to accurately diagnose the client’s presenting problem is equivocal. The research has identified important factors that can affect the hypothesis testing strategies used (e.g., the testing of a clinical diagnosis versus a hypothesis about a client’s personality traits) and the training level of participants (i.e., whether they are undergraduate students or counselor trainees; Haverkamp, 1993; Speranza, 2001;
Strohmer & Shivy, 1994. The literature, however, has not yet provided a coherent empirical or theoretical framework that can explain the reasoning behind the selection of the hypothesis testing strategies and the differential effectiveness of these strategies when developing and testing a diagnosis (Speranza, 2001).

Additionally, this lack of consensus may have training implications, as supervisors are left to rely on unconfirmed theories that may or may not lead to their trainees developing the skills needed to diagnose their client’s symptoms accurately. This skill deficiency can lead to a greater likelihood of misdiagnosis, the premature termination by clients, and to the overall deterioration of clinical services offered, as trainees may be trying to confirm a diagnosis that does not meet their clients’ symptoms (Speranza, 2001). The primary purpose of this study was to identify the type of hypothesis testing strategies trainees use to test and develop their diagnosis. The focus will be on trainees as opposed to practicing therapists as the training implications related to the differential use of these strategies are of primary interest. For example, understanding how trainees use the hypothesis testing strategies can help supervisors strengthen their diagnostic skills and the overall quality of services they provide to clients. Additionally, there is a paucity of research to date that assesses the differential use of hypothesis testing strategies with counseling trainees, (e.g., Strohmer & Shivy, 1994; Strohmer et al., 1982), relying instead on undergraduate psychology students who may not have the training they need to effectively assess clinical symptoms. As a result, the research may not represent the type of strategy trainees typically use when testing and developing their diagnosis.
Clinical Judgments

To place this study within a larger theoretical framework, it is important to note that hypothesis testing strategies are a tool that trainees use in making clinical judgments. Pepinsky and Pepinsky (1954) developed a model to describe the clinical judgment process (Strohmer et al., 1982; Weiner, 1975). Specifically, counseling trainees observe their client’s behaviors and make initial diagnoses and predictions about the client’s prognosis. These hypotheses are mediated and influenced by inferences about the client’s present functioning (e.g., how well the client is coping with environmental stressors) and inferences concerning the antecedents or causes of the presenting problem (Strohmer et al., 1982; Weiner, 1975).

What underlies the formation of clinical judgments may be explained by attribution theory, as proposed by social psychologists (Strohmer et al., 1982). Attribution theory refers to how people make causal inferences to understand better another person’s behavior, to predict that person’s subsequent behaviors, and to guide the observer’s personal responses to this behavior (Strohmer et al., 1982; Weiner, 1975). In clinical contexts, the causal inferences that trainees make can have implications for how they conceptualize a client, the development of a treatment plan, and the client’s expected prognosis.

Strohmer et al. (1982) proposed a restricted model that is consistent with Pepinsky and Pepinsky (1954) and that also ties in attribution theory. This model asserts that the judgments that counselors make are based heavily on inferences regarding the client’s ability to function and the causes (e.g., external versus internal) for their present distress. These inferences can be drawn from observations regarding potential
disabilities, the client’s personal traits or characteristics, and the client’s potential to achieve desired therapeutic goals. These observations therefore are a way of beginning the information gathering process that guides the development of a diagnosis. Additionally, as trainees make their initial observations to form their diagnoses, they may differentially use three hypothesis testing strategies to help them through the assessment process.

**Hypothesis Testing Strategies**

Counseling trainees generally use three hypothesis testing strategies to gather information about their clients and to test the accuracy of their diagnoses: a confirmatory hypothesis testing strategy, a disconfirmatory hypothesis testing strategy, and an unbiased hypothesis testing strategy (Hayden, 1987; Speranza, 2001). These strategies involve asking open and closed-ended questions to elicit different types of client information. When using the confirmatory hypothesis testing strategy, trainees gather information to confirm their diagnoses (Hayden, 1987; Speranza, 2001; Trope & Bassok, 1982). For example, to test the diagnosis that the client is experiencing primary hypersomnia, the trainee may ask questions that center on the disorder’s symptoms (e.g., excessive sleepiness) such as: “How often do you experience the need to take prolonged naps?” and “How have your daytime sleep episodes affected other areas of your life” (Speranza, 2001).

In several earlier studies, researchers examined the use of a confirmatory hypothesis testing strategy in social contexts (Snyder & Campbell 1980; Snyder & Swann, 1978). Specifically, undergraduate students were asked to test a hypothesis about a client’s personality traits (e.g., that the client was an extravert). For example, Snyder
and Swann (1978) asked participants to test the hypothesis that a client was either an extravert or an introvert. Results emphasized that participants tended to choose questions that confirmed the hypothesis they were asked to test. Similarly, Snyder and Campbell (1980) investigated whether asking participants to test hypotheses that incorporated both introverted and extraverted traits would affect the selected hypothesis testing strategy. The results suggested that the manner in which the hypothesis was posed (i.e., including attributes that either confirmed or disconfirmed the hypothesis) did not affect participants’ choice of hypothesis testing strategy in that the confirmatory strategy was used more frequently than the unbiased and the disconfirmatory hypothesis testing strategies.

These earlier studies showed that undergraduate students used a confirmatory hypothesis testing strategy to test the personality traits of their fictitious clients. These results, however, cannot be generalized to counseling trainees who are assessing clinical symptoms to develop a diagnosis.

Subsequent investigations examined the use of the confirmatory hypothesis testing strategy when testing and developing diagnoses. For example, Haverkamp (1993) assessed the differential use of hypothesis testing strategies by asking counseling trainees to identify the client’s presenting problem and to generate questions to test their identification of the problem. Haverkamp postulated that a stronger assessment of the trainees’ thought processes would be reflected in the questions they generated to test their initial conceptualization. Results of this study suggested a greater use of confirmatory hypothesis testing questions versus disconfirmatory or unbiased hypothesis testing questions by participants to test their inferences. Trainees are therefore likely to use their
initial inferences regarding the client’s symptoms to guide their future judgments about the client’s presenting problem, discounting information that may lead to an alternative conceptualization. The exclusive use of a confirmatory hypothesis testing strategy can increase the likelihood of an erroneous assessment and diagnosis of the client’s symptoms (Speranza, 2001; Strohmer et al., 1991; Strohmer & Chiodo, 1985).

In contrast, the unbiased hypothesis testing strategy helps trainees gather information that could either confirm or disconfirm the diagnosis (Speranza, 2001; Strohmer & Chido, 1984; Strohmer & Newman, 1983). For example, to test the diagnosis of primary hypersomnia, the clinician may develop the following questions: “How would you describe your recent sleep patterns?” as well as “What are the factors affecting your sleep patterns” (Speranza, 2001). These questions do not lead the client to provide information in the direction of the given diagnosis. Additionally, Strohmer and Newman (1983) argued that an unbiased hypothesis testing strategy should be used when testing hypotheses. The unbiased hypothesis testing strategy has been described as an effective method for processing clinical information because the counselor develops questions and elicits information that can either confirm or disconfirm the hypothesis. As a result, the diagnosis generated is more likely to accurately represent the client’s symptoms (Speranza, 2001).

To test the use of the unbiased strategy, Strohmer and Newman (1983) expanded Snyder and Campbell’s (1980) study by proposing that participants used a confirmatory hypothesis testing strategy because they were not given unbiased questions from which to choose. Strohmer and Newman’s results supported this hypothesis as undergraduate students, when provided with unbiased information, tended to use the unbiased
hypothesis testing strategy to test the hypothesis that the client was either extraverted or introverted. The nature of the information provided to participants (i.e., confirmatory, disconfirmatory, or unbiased) can therefore affect the hypothesis testing strategy that they selected.

Finally, the disconfirmatory hypothesis testing strategy is used to gather information that can rule out a diagnosis and, by extension, support an alternative diagnosis (Ellis et al., 1998; Hayden, 1987; Speranza, 2001). For example, to test the diagnosis of primary hypersomnia, the clinician may develop questions whose answers could challenge a clinical diagnosis. These questions may include: “Are you presently abusing any substances that can be affecting your sleep patterns?” and “How often are you able to stay awake and active throughout the day” (Speranza, 2001).

There are few studies that specifically examined the conditions under which therapist trainees use the disconfirmatory hypothesis testing strategy. Ellis, Brody, and Speranza (1998) and Speranza (2001) were the only researchers who found that trainees used a disconfirmatory hypothesis testing strategy when testing a diagnosis of primary insomnia. A key difference between their study and those of their predecessors may account for this unique finding. Specifically, Ellis et al. and Speranza asked counseling trainees and professional counselors to test a diagnosis of primary insomnia from the Diagnostic and Statistical Manual of Mental Disorders IV, text revision (DSM-IV-TR) rather than a non-clinical hypothesis. Additionally, Speranza developed the construct of diagnostic context to help explain the differential use of the hypothesis testing strategies. The diagnostic context refers to the clinical information provided to trainees (e.g., the
DSM-IV-TR criteria for their diagnosis) and their task (e.g., testing and/or developing a clinical diagnosis).

In the final analysis, these earlier studies (e.g., Snyder & Campbell 1980; Snyder & Swann, 1978; Strohmer et al., 1990; Strohmer & Newman, 1983) assessed the differential use of hypothesis testing strategies with non-clinical hypotheses. Testing hypotheses about a client’s personality traits, however, does not simulate the task of counseling trainees. Further, Haverkamp (1993) asked participants to identify a presenting problem as opposed to a clinical diagnosis, the latter being most representative of trainees’ central task. Arguably there is a paucity of empirical research for the type of hypothesis testing strategies typically used by trainees when working with clients. Additionally, the role of the diagnostic context on the differential use of these strategies has not been tested since it was first proposed by Speranza (2001).

Manipulating Diagnostic Context

Speranza (2001) suggested that the diagnostic context represented a continuum where the implicit diagnostic context included the earlier studies (e.g., Snyder & Campbell 1980; Snyder & Swann, 1978; Strohmer et al., 1990; Strohmer & Newman, 1983) that asked participants to assess personality traits based on non-clinical data (e.g., the lack of DSM-IV criteria) whereas the explicit diagnostic context asked participant trainees to test for a DSM-IV diagnosis with the relevant DSM-IV criteria present (e.g., Ellis et al., 1998). The explicit diagnostic context is therefore a more accurate representation of the task of clinical trainees.

Speranza (2001) therefore compared an implicit and an explicit diagnostic context to assess whether the context affected the hypothesis testing strategies selected by
trainees. In the implicit diagnostic context, participants were asked to test the diagnosis of primary insomnia after reading a clinical vignette. Participants in this condition were given descriptors of both primary insomnia and primary hypersomnia in lay terms (e.g., persons diagnosed with insomnia feel sleepy throughout the day despite the adequate sleep they may be receiving at night). Participants were therefore not given any of the DSM-IV-TR criteria nor the rule out criteria related to primary insomnia (Speranza, 2001). In the explicit diagnostic context, participants were asked to complete a similar task, however, they were provided with the DSM-IV-TR criteria for both primary insomnia and primary hypersomnia. Speranza postulated that, similar to Ellis et al. (1998), the rule out criteria of the DSM-IV-TR would encourage trainees to use a disconfirmatory hypothesis testing strategy. Additionally, in the implicit diagnostic context, participants were more likely to use an unbiased hypothesis testing strategy as trainees may need to explore the client’s symptoms to test the diagnosis (Speranza, 2001; Strohmer et al., 1982).

The results supported previous studies, in as much as participants in the implicit diagnostic context developed significantly more unbiased questions than confirmatory or disconfirmatory hypothesis testing questions. Additionally, participants in the explicit diagnostic context generated a greater proportion of disconfirmatory questions when compared to unbiased and confirmatory hypothesis testing questions, consistent with Ellis et al. findings.

Speranza (2001) therefore provided a framework for understanding how therapist trainees use hypothesis testing strategies when testing a diagnosis. Specifically, the exclusionary criteria of the DSM-IV-TR within the explicit diagnostic context may have
helped trainees test their diagnoses by challenging alternative diagnoses. Speranza further argued that the disconfirmatory hypothesis testing strategy can help trainees arrive at a more accurate diagnosis. By contrast, the unbiased hypothesis testing strategy used in the implicit diagnostic context provided a way for therapist trainees to gather additional information to develop and test their initial inferences. The exclusive use of the unbiased hypothesis testing strategy, however, did not allow trainees to rule out possible diagnoses, limiting its effectiveness.

Additionally, integrating the diagnostic context in the present study can have important training implications for supervisees. Specifically, supervisors can help their supervisees more effectively develop disconfirmatory questions to sort through the data they have collected and to accurately conceptualize a client’s presenting problem. Further, supervisors may work together with their supervisees to understand the diagnostic criteria, comparing them to the client’s symptoms. Similarly, the supervisor may also encourage supervisees to explore the client’s presenting problem by developing unbiased questions, most especially throughout the intake process (Speranza, 2001). Integrating the diagnostic context with the hypothesis testing strategies therefore can help supervisors effectively intervene (e.g., the supervisor may respond by offering a number of diagnoses the supervisee can test), thereby helping their trainees to gain clinical competencies.

The Present Study

The manipulation of the diagnostic context to assess for the differential use of the hypothesis testing strategies has been shown to affect the type of hypothesis testing strategy selected by trainees to test a diagnosis (Ellis et al., 1998; Speranza, 2001). The
element that has yet to be tested and is arguably an important piece to represent the therapeutic setting is how trainees develop diagnoses. Specifically, trainees may not always be given a diagnosis to test, most especially, advanced trainees, who have the assessment skills needed to develop a diagnosis (Bernard & Goodyear, 2004). Therefore, the results from previous studies (e.g., Ellis et al., 1998; Speranza, 2001) may not accurately represent the experience of all trainees. As a result, it seemed important to combine the manipulation of the diagnostic context and the experimental task (i.e., testing versus generating a diagnosis) to assess trainees’ differential use of the hypothesis testing strategies.

For the purposes of the present study, the explicit context from Speranza (2001) represented a continuum, consisting of three diagnostic contexts: the explicit diagnostic context, the semi-explicit diagnostic context, and the partially-explicit diagnostic context. Starting with the explicit diagnostic context, this condition was a direct replication of what was presented in Ellis et al. (1998) and Speranza because it more closely simulated the actual counseling setting when compared to the implicit diagnostic context. In the semi-explicit diagnostic context, participants were provided with the DSM-IV-TR criteria for primary insomnia and primary hypersomnia and asked to generate their own diagnosis for the client. The partially-explicit diagnostic context was perhaps most representative of the counseling setting, as participants were asked to generate their own diagnosis without being given the DSM-IV-TR criteria for primary insomnia and primary hypersomnia. This third condition asked participants to use the clinical vignette to develop and test their diagnosis.
In essence, what differentiated these three diagnostic contexts is the inclusion of the DSM-IV-TR criteria coupled with the task (i.e., the generation versus the testing of a given diagnosis). The question guiding the investigation was: Are there differences in the hypothesis testing strategies that trainees use when they generate their own diagnosis in an explicit diagnostic context versus when they test a specific diagnosis in the semi-explicit and in the partially-explicit diagnostic contexts?

**Hypotheses**

Three hypotheses were tested: (1) as a replication of Ellis et al. (1998), and Speranza (2001), the diagnostic context would affect the differential use of the hypothesis testing strategies by trainees; (2) participants in the explicit diagnostic context would use a greater number of disconfirmatory hypothesis testing questions to either confirmatory and unbiased hypothesis testing questions; (3) in line with the findings of Haverkamp (1993), it was hypothesized that asking participants to develop a diagnosis would lead to a greater number of confirmatory hypothesis testing questions as compared to disconfirmatory and unbiased hypothesis testing questions in the semi-explicit diagnostic context; (4) finally, an unbiased hypothesis testing strategy would be used over a disconfirmatory and a confirmatory hypothesis testing strategy in the partially-explicit diagnostic context. Specifically, it is hypothesized that without being prompted by the DSM-IV-TR criteria, participants would be likely to explore the client’s symptoms using an unbiased hypothesis testing strategy. In essence, similar to Speranza (2001), this study examined how the diagnostic context moderates the differential use of hypothesis testing strategies by counseling trainees.
Chapter II
Method

Participants

Power analyses. The sample size for this study was selected to attain a power of at least 90% for the test statistics (Haase, Ellis, & Ladany, 1989; Murphy & Myers, 2004; Speranza, 2001). To calculate the priori power for this study, different sample sizes were used (e.g., \( N = 102 \)) with a large population effect size of \( (\rho^2 = .14) \) to maximize statistical significance (Haase, et al., 1989). The estimated priori power was then calculated using a statistical power program (Hasse, n.d.) that allows for the specification of the effect size \( (\rho^2) \), alpha level \( (\alpha) \) and degrees of freedom for the hypothesis, \( (df_h) \) and for the error \( (df_e) \), in this study. Based on this program, the estimated power was .98, with a \( \alpha = .05 \), an effect size of \( (\rho^2 = .14) \) and \( N = 102 \) (Haase, et al., 1989; Murphy & Myers, 2004; Speranza, 2001).

One hundred and two participants were originally sampled for this study, but three participants were not included in the final analyses as they did not follow the instructions (i.e., the number of questions developed was more than 20 or fewer than 10). Power was therefore re-calculated for the test of hypotheses (i.e., the interaction between diagnostic context and the hypothesis testing strategies), and was found to be .95 with \( N = 99 \).

Sampling demographics. As for participants demographics, 79.8% of the sample were women and 20.2% were men with an average age of 28 (\( M = 28.82; SD = 1.02 \)). Further, 85.0% of the participants reported being Caucasian, 1.0% African
American, 6.0% Asian/Pacific Islander, 2.0% Hispanic/Latino, 1.0% were Middle Eastern and 4.0% reported “other” (e.g., identifying as multiracial, black/white Native American, Indo-Caribbean) in response to this question. Finally, one participant did not respond to this question.

**Sampling characteristics.** Participants were trainees enrolled in graduate training programs in clinical psychology, counseling psychology, school psychology, school counseling, child/adolescent psychology, health psychology, rehabilitation counseling, mental health counseling, community counseling, social work, and marriage/family counseling. Counselor participants were sampled from a heterogeneous population to ensure that the hypothesis testing strategies were being used in a variety of ways by graduate trainees from different training modalities. As a result, the findings regarding the differential use of these strategies may be applicable to trainees from many different clinical backgrounds.

The inclusion criteria were that all participants were graduate students that had taken a minimum of one abnormal psychology class to ensure they had the prerequisite knowledge regarding different diagnoses. Counselor participants were presently working with clients or at a minimum had completed their first clinical practicum recently (e.g., within the past academic year).

Demographic information was obtained from a questionnaire (Appendix A). Further, all demographic information related to participants current degrees, clinical training, and practicum training are presented in Table 1. The questionnaire used for this study closely resembled the one used by Speranza (2001) but revisions were made to make the questionnaire applicable to trainees. Participants were asked their age,
race/ethnicity, gender, as well as their current and past degrees completed, if applicable.
Participants were asked questions about their present and past practicum/internship 

experiences (e.g., college counseling centers, hospital settings), their current field of 

study, theoretical orientation, as well as their experience in using the DSM-IV (e.g., the 

number of clients to whom they have assigned a diagnosis using the DSM-IV) and if 

applicable, their certification and licensure status. Further, supervision experience was 

also assessed, with questions pertaining to the years/months of supervision received thus 

far and the hours of clinical supervision received on a weekly basis.

The sample for this study consisted of 99 volunteer graduate students, 83.9% of 

whom were pursuing doctoral training (i.e., 75.8% were completing a PhD, and 8.1% 

were completing a PsyD), and 9.1% of participants were completing an 

MA/MSW/MS/Education. A small percentage (i.e., 7.0%) acknowledged not pursuing a 

degree or “other” (e.g., a certificate of advanced study or CAS in school psychology). 

All, regardless of their degree, had taken course work related to assessment and diagnosis 

(M = 2.44; SD = 1.40). Further, participants were in counseling psychology, in clinical 

psychology, in mental health counseling, and in school psychology. Additionally, 

participants reported being in school counseling, in community counseling, and in 

family/marriage therapy and a small percentage of participants reported “other” (e.g., 

pursuing combined degrees in counseling psychology and school psychology as well as 

counseling psychology and clinical psychology). Finally, one participant did not respond 

to this question (see Table 1).

On average, 66.0% of participants felt confident in their ability to diagnose 

clinical problems and very few participants (i.e., 5.0%) had no experience in developing
DSM-IV diagnoses for their clients. All five participants who reported no clinical experience in developing diagnoses were in the partially-explicit diagnostic context. On average, though, counselor participants did have the opportunity to develop clinical diagnoses ($M = 36.19$, $SD = 73.71$, $Mdn = 15.0$) for their clients.

As for practicum training, participants were working in a variety of settings (e.g., in a college counseling center, in a university based training center, and in a primary/secondary school setting). A number of participants were completing a practicum in community mental health settings and a small percentage of participants were working in a hospital setting. A small percentage of participants were also completing their practicum in a forensic/prison setting and 16.0\% reported “other” types of sites (e.g., children’s hospital outpatient psychiatry, consortiums, non-profit organizations, and a combination of hospital and university based sites). Additionally, 13 participants within the sample did not respond to this question (see Table 1).

Regarding, clinical training, 30\% of participants were completing an advanced practicum, while a small number of participants were completing a doctoral or master-level internship. Further, a small percentage of the sample was in the process of completing their first practicum, a doctoral pre-practicum, or completing a post-masters practicum. Approximately, 18.0\% of the sample reported having “other” forms of training (e.g., they had just completed their practicum, masters or doctoral internships, and were pursuing additional clinical work). Additionally, 13 participants did not complete this question (see Table 1).

Also, participants had seen a number of clients and had accrued clinical hours ($M = 98.47$, $SD = 245.67$, $Mdn = 32.5$) and received weekly supervision for their clinical
work ($M = 4.01; SD = 2.54$). Participants also reported working within different theoretical orientations, specifically, 4.0% identified as behavioral, 23.0% as cognitive behavioral, 20.0% as eclectic, 14.0% as humanistic/existential, 20.0% as interpersonal, and 15.0% reported being systemic/psychodynamic and psychoanalytic, while the remaining 4.0% of the sample responded “other.” A small number of trainees were also certified and licensed at the time of the study, but the majority of the counselor participants was never certified (60.0%) or licensed (59.0%). Similarly, in regards to licensure, 11 participants reported this status did not apply to them and 15 participants did not answer to this question. Counselor participants, however, did accrue a high number of total clinical hours despite their licensure/certification status ($M = 202.78; SD = 279.36; Mdn = 75.5$).

Table 1.

*Frequencies of the Demographical Variables related to Clinical Training*  

<table>
<thead>
<tr>
<th>Variable</th>
<th>% of sample</th>
</tr>
</thead>
<tbody>
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<td>Present Field</td>
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</tr>
<tr>
<td>Counseling Psychology</td>
<td>64</td>
</tr>
<tr>
<td>Clinical Psychology</td>
<td>15</td>
</tr>
<tr>
<td>School Psychology</td>
<td>6</td>
</tr>
<tr>
<td>School Counseling</td>
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</tr>
<tr>
<td>Mental Health Counseling</td>
<td>4</td>
</tr>
<tr>
<td>Community Counseling</td>
<td>1</td>
</tr>
<tr>
<td>Marriage/Family Therapy</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
</tbody>
</table>
**Table 1.**

*Frequencies of the Demographic Variables related to Clinical Training*

<table>
<thead>
<tr>
<th>Variable</th>
<th>% of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Practicum Training</strong></td>
<td></td>
</tr>
<tr>
<td>College Counseling Center</td>
<td>20</td>
</tr>
<tr>
<td>Veterans Administration Hospital</td>
<td>2</td>
</tr>
<tr>
<td>University Based Training Center</td>
<td>11</td>
</tr>
<tr>
<td>Primary/Secondary School</td>
<td>2</td>
</tr>
<tr>
<td>Private Practice</td>
<td>3</td>
</tr>
<tr>
<td>Substance Abuse Facility</td>
<td>1</td>
</tr>
<tr>
<td>Forensic/Prison</td>
<td>1</td>
</tr>
<tr>
<td>Academic/Teaching</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>16</td>
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<tr>
<td><strong>Clinical Training</strong></td>
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<tr>
<td>Master’s Internship</td>
<td>9</td>
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<tr>
<td>Post-Master’s</td>
<td>3</td>
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<tr>
<td>Doctoral Pre-Practicum</td>
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<tr>
<td>First Practicum</td>
<td>8</td>
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<tr>
<td>Advanced Practicum</td>
<td>30</td>
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<tr>
<td>Doctoral Internship</td>
<td>11</td>
</tr>
<tr>
<td>Other</td>
<td>18</td>
</tr>
</tbody>
</table>

(continued)

**Design**

This study consisted of a 3 X 3 repeated measures factorial design with one dependent variable. The dependent variable was the number of questions classified as one of the three hypothesis testing strategies (i.e., confirmatory hypothesis testing questions, disconfirmatory hypothesis testing questions, and unbiased hypothesis testing
questions) generated by participants. Participants were randomly assigned to the explicit ($n = 38$), the semi-explicit ($n = 30$), and the partially-explicit ($n = 31$) diagnostic contexts.

There were two independent variables for this study: diagnostic context and hypothesis testing strategy. Diagnostic context was operationalized in three conditions: explicit diagnostic context, semi-explicit diagnostic context, and partially-explicit diagnostic context.

**Diagnostic Context**

**Explicit diagnostic context.** Identical to Ellis et al. (1998) and Speranza (2001) participants in the explicit diagnostic context were presented with a clinical vignette of a client seeking therapy to remedy symptoms that were affecting her current functioning (see Appendix B for the full description). Participants were informed that several possible explanations might explain the client’s symptoms, with a possible hypothesis being that the client was suffering from primary insomnia. Participants were then presented with the DSM-IV criteria for both primary insomnia and primary hypersomnia (Speranza, 2001). Participants were instructed to test the diagnosis of primary insomnia by formulating a minimum of 10 interview questions and a maximum of 20 interview questions. The explicit diagnostic context was a replication of the explicit condition used by Ellis et al. and Speranza.

**Semi-explicit diagnostic context.** Participants were presented with the same vignette as those in the explicit diagnostic context (see Appendix C for the full description) but were asked to develop a DSM-IV diagnosis to explain the client’s symptoms. That is, the clinical vignette described symptoms that could potentially lead to a diagnosis of primary insomnia and primary hypersomnia. Additionally, participants
were provided with the DSM-IV criteria for both primary insomnia and primary hypersomnia. Participants in this condition, however, were asked to give a DSM-IV diagnosis to explain the client’s symptoms. Participants were also instructed to generate at least 10 interview questions and a maximum of 20 interview questions to test their diagnosis for the client (Ellis et al., 1998; Speranza, 2001).

**Partially-explicit diagnostic context.** Participants in this condition were presented with the same vignette as those in the other two diagnostic contexts (see Appendix D for the full description). The DSM-IV criteria for primary insomnia and primary hypersomnia, however, were not provided. Participants were asked to formulate a DSM-IV diagnosis for the client and to generate a minimum of 10 interview questions and a maximum of 20 interview questions to test their diagnosis (Ellis, et al., 1998; Speranza, 2001).

**Hypothesis Testing Strategies.** The three hypothesis testing strategies were the second and repeated independent variable. The confirmatory hypothesis testing strategy reflected questions participants developed to gather information to support their diagnosis. The disconfirmatory hypothesis testing strategy was represented by questions developed to challenge the diagnosis. Finally, the unbiased hypothesis testing strategy worked toward exploring the potential symptoms, minus confirming or disconfirming the clinical diagnosis developed or being tested (Speranza, 2001; Strohmer et al., 1982).

The dependent variable for this study was the number of questions each participant generated within the three diagnostic contexts. The rating procedure outlined below will create the dependent variable.
**Case Materials.** The materials for this study included a letter introducing participants to the task and the clinical vignette of a fictitious client. Participants received the following directions: “Assume that you will be the counselor or therapist for this client and that the following information was given to you in an intake” (Ellis, et al., 1998; Speranza, 2001). Participants read the following brief clinical vignette and received these instructions:

“Linda reports that she feels ‘tired all the time.’ She states that she has been trying to determine the cause of her tiredness and has become frustrated at her inability to figure it out. Now Linda has decided to investigate any potential ‘psychological components to feeling exhausted’” (Speranza, 2001, p. 59).

**Manipulation checks.** All participants were asked to complete a series of questions which assessed whether they understood the instructions to the study (e.g. Ellis et al., (1998); Speranza, (2001). The questions for participants in the explicit diagnostic contest were the following: “To what extent did you specifically consider alternative diagnoses when generating your interview questions? To what extent did you explicitly attempt to rule-out alternative diagnoses when generating your interview questions? To what extent are you familiar with the diagnoses of primary insomnia and primary hypersomnia? To what extent were you able to adopt the role of counselor/therapist when testing the diagnosis and generating the interview questions?” Additionally, participants in the semi-explicit diagnostic context and the explicit diagnostic context responded to the following question: “To what extent did you specifically consider the DSM-IV diagnostic criteria provided when generating your interview questions?” Lastly, participants in the semi-explicit diagnostic context and the partially-explicit diagnostic
context answered three additional questions: “What diagnosis did you test for this client? To what extent did you refer to the DSM-IV statistical manual when developing the interview questions? To what extent did you refer to the DSM-IV statistical manual when generating the diagnosis?” (see Appendix E for the full description). Responses to all these questions were rated on a Likert-type 5 point scale (i.e., from “not at all” to “totally”) to assess the degree to which participants used different sources of data (e.g., the DSM-IV criteria provided and the information from the clinical vignette) to generate/test their diagnosis (Speranza, 2001).

Additionally, the analysis of the manipulation check items helped determine whether participants understood the nature of the task, described within the explicit (i.e., testing a diagnosis), semi-explicit, and the partially-explicit diagnostic context (i.e., developing and testing a diagnosis) and followed the instructions. It was expected that participants would not differ in the extent to which they completed tasks shared across the three diagnostic contexts (i.e., in considering alternative diagnoses; ruling-out these diagnoses, in their familiarity with the diagnoses of primary insomnia and primary hypersomnia, and in adopting the role of a counselor/or therapist). Participants in the semi-explicit and the partially-explicit diagnostic context were also not expected to differ in their use of the DSM-IV statistical manual when developing their interview questions. Specifically, participants were expected to answer similarly within the three diagnostic contexts, as these tasks were identical and not assessing the differential use of the hypothesis testing strategies. Significant differences in therapist participants’ responses may have suggested that the instructions were not communicated in an effective way across the diagnostic contexts.
Procedure

Volunteers were contacted through various academic listservs (e.g., Division 17 listserv, University at Albany counseling, clinical, and school psychology program listservs, McGill’s University counseling psychology listserv) and were provided with the link to the online study on psychdata.com. Participants were informed that their responses would be kept anonymous throughout the data gathering and analysis process. They were also asked to read a cover letter introducing them to the nature of the study and its related tasks (see Appendix F for the full description). Upon accessing the study, participants were randomly assigned to one of the three diagnostic contexts by the computer programs (i.e., psychdata.com): the explicit diagnostic context, the semi-explicit diagnostic context, and the partially-explicit diagnostic context. Instructions to participants included an overview of their tasks as an interviewer, the clinical vignette, and either the diagnosis to test and the related DSM-IV criteria (explicit diagnostic context); instructions to generate their own diagnosis with the DSM-IV criteria (semi-explicit diagnostic context); or to develop a diagnosis without the DSM-IV criteria (partially-explicit diagnostic context). All participants were asked to generate a minimum of 10 interview questions and a maximum of 20 interview questions. Once participants had developed their interview questions, they were asked to complete the demographic questionnaire followed by the manipulation.

Raters. The raters for this study were two doctoral counseling psychology students trained to identify the different hypothesis testing strategies (i.e., the confirmatory strategy, the disconfirmatory strategy, and the unbiased strategy). As was done in previous studies (Speranza, 2001; Strohmer & Chiodo, 1984; Strohmer &
Newman 1983), an irrelevant category was used for responses that did not fit into the three hypothesis testing strategies. This category was then dropped from the major analyses. To classify the interview questions generated by participants, the definitions pertaining to the confirmatory, the disconfirmatory, and the unbiased hypothesis testing strategy used by Speranza (2001), Strohmer and Chiodo (1984), and Strohmer and Newman (1983) was adopted.

The principal investigator received training in the rating of the interview questions by the co-creator of the training manual (Ellis, 2001). The training consisted of rating a series of practice questions taken from Speranza (2001) until interrater agreement between the investigator and the co-creator were at highly acceptable levels (e.g., 90% agreement). The principal investigator was primarily responsible for the training of the raters for this investigation. The training of the raters directly replicated the training program used by these same authors as their procedure also established an interrater agreement of 90% (see Appendix G for the full description).

Specifically, raters were unaware of the goal of the study and completed their ratings independently. The initial training session consisted of reading the instructions that pertained to the primary task and the opportunity to practice classifying a series of questions, using the definitions of the hypothesis testing strategies as a group. Additionally, the raters had the chance to give and receive feedback from each other and from a trained rater (i.e., the investigator) about their classifications. The raters then met to discuss their ratings of the practice questions until interrater agreement (tabulated by summing the consensus ratings, dividing this sum by the total number of ratings, and then multiplying this quotient by 100 to attain a percentage) reached at least 90% (Speranza,
Additional meetings were held to discuss questions, concerns, and to prevent rater drift (e.g., verifying ratings as they were being completed).

**Interrater agreement.** The overall interrater agreement was 99% across all participants and 91% across the two raters for each participant (Speranza, 2001). In addition, to ensure that one of the raters was not overly affecting the consensus ratings, interrater reliability was tabulated between each of the raters and the consensus ratings for the individual questions (Speranza, 2001). Results demonstrated high interrater agreement for each of the raters with the consensus ratings (i.e., 97.7%, $SD = .01$ and 98.1%, $SD = .01$). These results also demonstrated that both raters agreed with each other regarding the final ratings to a highly acceptable level. As a final step, kappa coefficients were calculated to ensure that raters’ agreement with consensus ratings was not a function of chance or error (Speranza, 2001; Vogt, 2005). These results showed highly acceptable levels of agreement with consensus ratings for each of the two raters: $K = .971, p \leq .01$ and $K = .958, p \leq .01$, respectively.
Chapter III

Results

Preliminary analyses

**Randomization.** A series of analyses was conducted to rule out potential confounds to the major analyses. These tests were conducted on the demographic variables (e.g., age, gender, race, clinical training and experiences), to ensure that the diagnostic conditions did not differ significantly regarding these features.

A series of analyses (Cramer's $v$) was used to assess possible groups differences based on these variables. The per comparison Type 1 error rate was set at .05 ($\alpha_{pc} = .05$) to ensure that statistical power was maximized. Further, $\bar{\rho}^2$ represented the shrunken effect size for the analyses (Haase et al., 1989; Speranza, 2001). The shrunken effect size needed to be .05 or greater to be considered non-trivial. Any significant test that had a trivial effect size was labeled as non-substantive and was treated as a non-significant finding.

These preliminary analyses revealed no significant difference on participants’ race, Cramer’s $v \leq .21$, $p \geq .56$, $\bar{\rho}^2 s \leq .001$ or gender by diagnostic contexts, Cramer’s $v \leq .26$, $p \leq .03$, $\bar{\rho}^2 s \leq .004$. As for participants’ educational background, no significant differences were found in the degree being pursued, highest degree attained, or number of graduate courses taken in assessment and diagnosis, Cramer’s $v s \leq .28$, $ps \geq .06$, $\bar{\rho}^2 s \leq .001$ across the three diagnostic contexts. As for clinical training, participants did not differ in type of practicum training sites, their level of clinical training (e.g., a masters or doctoral level internship), number of clients to which they assigned a diagnosis, certification or professional licensure status, the clinical supervision received on a weekly
basis, their theoretical orientation, and their confidence in assigning a diagnosis to their clients, Cramer’s $v \leq .72, ps \geq .11, \bar{\rho}^2 \leq .001$. In short, these tests showed that the randomization process was successful as participants did not differ according to the demographic variables across the three diagnostic contexts.

**Test of assumptions.** A series of tests were conducted to ensure that the basic statistical assumptions were not violated for a repeated measures analysis of variance (ANOVA). Two of the three statistical assumptions were met, as the data were normally distributed and the Mauchley Sphericity test was not violated ($w = .94, p \geq .06$; Jaccard & Ackerman, 1985; Tabachnick & Fidell, 2007). The test of equality of covariance matrices for the three dependent variables (i.e., confirmatory, $F(2, 20,203) = 8.49, p \leq .002$; disconfirmatory, $F(2, 20,203) = 4.61, p \leq .01$; and unbiased hypothesis testing strategies, $F(2, 20,203) = .06, p \geq .93$) demonstrated that the variance in the dependent variable for the confirmatory and the disconfirmatory hypothesis testing strategies was not equal across the three diagnostic contexts (Tabachnick & Fidell, 2007). Examination of the cell sizes (i.e., between the explicit, $n = 38$; the semi-explicit, $n = 30$; and the partially-explicit condition, $n = 31$), however, revealed that the subsample within each of the three diagnostic contexts were relatively equal, i.e., within a ratio of 4 to 1 or less when comparing the largest (explicit) to the smallest (partially-explicit) diagnostic contexts (Tabachnick & Fidell, 2001). As a result, the possibility of an inflated Type I error rate that can be associated with larger group variances (i.e., within a ratio of 9:1) was minimized. To ensure that the major analyses were not affected, however, the data for the confirmatory ($M = 50.00, SD = 28.43$) and the disconfirmatory hypothesis testing strategies ($M = 50.00, SD = 28.39$) were converted into ranks (i.e., the Puri-Sen rank
procedure), which remedied the violation of the homogeneity of variance assumption in the data (Puri & Sen, 1971; Tabachnick & Fidell, 2001). In essence, all assumptions salient to the repeated measures ANOVA were met, minimizing the likelihood that these findings are based on error variance (i.e., Type I error).

**Manipulation checks.** At the outset, a series of one-way ANOVAs was used to test whether participants understood the nature of the task within the three diagnostic contexts. It was expected that no significant differences would be found in participants’ responses to questions that were common to all three diagnostic conditions. Specifically, participants were expected to respond similarly across the three diagnostic contexts (i.e., the extent to which they considered alternative diagnoses, their use of the DSM-IV criteria, their familiarity with the diagnosis of primary insomnia, and the extent to which they assumed the role of a therapist). Significant differences in participant responses would mean that they did not understand the instructions or the nature of the task.

Participant responses were rated on a Likert type scale where a 1 = not at all and 5 = totally, in terms of their completion of the following tasks. First, participants within the explicit, the semi-explicit, and the partially-explicit diagnostic context did not differ in the extent to which they considered alternative diagnoses when generating the interview questions, $F(2, 96) = 1.98, p \geq .14, \tilde{\rho}^2 = .02$. Second, no significant differences were found in the extent to which participants ruled out alternative diagnoses, $F(2, 96) = .74, p \geq .48, \tilde{\rho}^2 = .0001$ in the explicit, the semi-explicit, and the partially-explicit diagnostic contexts. Third, no significant differences were found in participants’ familiarity with the diagnoses of primary insomnia and primary hypersomnia, $F(2, 96) = .66, p \geq .52, \tilde{\rho}^2 = .0001$ or in their ability to adopt the role of counselor/therapist, $F(2, 96)$
= 1.07, \( p \geq .35, \rho^2 = .0001 \) across the three diagnostic contexts. Also, there were no significant differences in participants’ use of the DSM-IV-TR statistical manual when generating the interview questions, \( F(1, 61) = 2.61, p \geq .11, \rho^2 = .03 \) and when developing the diagnoses in the semi-explicit and the partially-explicit diagnostic context, \( F(1, 61) = .634, p \geq .64, \rho^2 = .01 \). In essence, the results of the manipulation check analyses showed that participants understood the nature of the various tasks represented by the three diagnostic contexts.

Table 2.

Manipulation Check Responses by Diagnostic Context

<table>
<thead>
<tr>
<th>Manipulation Checks</th>
<th>Diagnostic Context</th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Explicit</td>
<td>Semi-Explicit</td>
<td>Partially-Explicit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( M )</td>
<td>( SD )</td>
<td>( M )</td>
<td>( SD )</td>
</tr>
<tr>
<td>Considered Alternative Diagnoses</td>
<td>3.83</td>
<td>1.03</td>
<td>3.94</td>
<td>0.89</td>
</tr>
<tr>
<td>Ruled Out Alternative Diagnoses</td>
<td>3.68</td>
<td>1.10</td>
<td>3.76</td>
<td>1.00</td>
</tr>
<tr>
<td>Familiarity with Diagnoses</td>
<td>2.61</td>
<td>0.99</td>
<td>2.35</td>
<td>1.01</td>
</tr>
<tr>
<td>Adopt Role of Counselor</td>
<td>4.00</td>
<td>0.96</td>
<td>4.03</td>
<td>0.67</td>
</tr>
<tr>
<td>DSM-IV Interview Questions</td>
<td>1.88</td>
<td>0.97</td>
<td>2.32</td>
<td>1.38</td>
</tr>
<tr>
<td>DSM IV Diagnosis</td>
<td>1.95</td>
<td>1.02</td>
<td>2.03</td>
<td>1.21</td>
</tr>
</tbody>
</table>
Major Analyses

To test the study’s hypotheses, a 3 (Hypothesis Testing Strategy: confirmatory, disconfirmatory, and unbiased) X 3 (Diagnostic Context: explicit, semi-explicit, partially-explicit) repeated measures ANOVA was conducted. Specific paired comparisons were then used to test each hypothesis. These comparisons were repeated measure tests on the differential use of the hypothesis testing strategies (i.e., the repeated measure factor) within each diagnostic context (MWITHIN tests). Finally, the means and standard deviations related to the paired comparison tests for each of the three hypotheses are displayed in Table 5.

The first hypothesis was that participants in the explicit diagnostic context would develop more disconfirmatory hypothesis testing questions than either confirmatory or unbiased hypothesis testing questions. To test this hypothesis, two paired comparison tests were conducted to examine possible differences between the disconfirmatory hypothesis testing strategy and the confirmatory and the unbiased strategies (Speranza, 2001). The results for the first paired comparison (i.e., the frequency of disconfirmatory versus confirmatory strategies) showed no significant differences between the two strategies, $F(1, 96) = .02, p \geq .89, \bar{\rho}^2 = .0001$ in the explicit diagnostic context. The second paired comparison, examining differences between the disconfirmatory and the unbiased hypothesis testing strategy, violated the Mauchley Sphericity test ($w = .90, p \leq .006$). This violation necessitated the Puri-Sen rank transformation to correct for the possibility of an inflated Type I error rate (i.e., the probability of erroneously rejecting the null hypothesis) (Puri & Sen, 1971; Speranza, 2001). Following this transformation of the data, the second comparison was found to be significant, $F(1, 96) = 6.95, p \leq .01$. 
.05, $\hat{\rho}^2 = .06$ in the explicit diagnostic context. Inspection of the means showed that participants used the disconfirmatory hypothesis testing strategy more so than the unbiased hypothesis testing strategy, partially confirming the first hypothesis.

A final note, the means and standard deviations for the comparisons made between the disconfirmatory ($M = 58.43$, $SD = 27.39$) and the unbiased hypothesis testing strategy ($M = 39.83$, $SD = 27.04$) differ from those presented in Table 3. due to the Puri-Sen rank transformation (Puri & Sen, 1971). The transformed data for this comparison (i.e., between the disconfirmatory and the unbiased hypothesis testing strategies) can be interpreted similarly to the non-transformed data for the remaining paired comparison tests (i.e., for the second and third hypotheses).

The second hypothesis predicted that participants would develop more confirmatory hypothesis testing questions than disconfirmatory or unbiased hypothesis testing questions in the semi-explicit diagnostic context. This hypothesis was tested with two paired comparisons to assess possible differences between the confirmatory hypothesis testing strategy and the disconfirmatory and the unbiased strategies (Haverkamp, 1993). The first paired comparison (between the confirmatory and the disconfirmatory hypothesis testing strategy) showed no significant differences between these two strategies, $F(1, 96) = .35, p \geq .56, \hat{\rho}^2 = .0001$. Second, no significant differences were found in the second comparison (i.e., between the confirmatory and the unbiased hypothesis testing strategy), $F(1, 96) = 1.17, p \geq .28, \hat{\rho}^2 = .001$ in the semi-explicit diagnostic context. A significant difference, however, was found between the confirmatory and the disconfirmatory hypothesis testing strategy in the partially-explicit diagnostic context $F(1, 96) = 14.67, p \leq .05, \hat{\rho}^2 = .12$. Specifically, participants used the
confirmatory hypothesis testing strategy with greater frequency when developing their diagnoses in the partially-explicit diagnostic context. Therefore, the second hypothesis was not supported by these findings.

The third hypothesis predicted that participants in the partially-explicit diagnostic context would develop more unbiased hypothesis testing questions than either disconfirmatory or confirmatory hypothesis testing questions. Similarly, two paired comparisons were also used to test this hypothesis. The first comparison, contrasting the unbiased hypothesis testing strategy ($M = 53.55$, $SD = 29.4$) with the disconfirmatory hypothesis testing strategy ($M = 39.05$, $SD = 25.48$), revealed no significant differences, $F(1, 96) = 3.44, p \geq .06, \eta^2 = .03$. The second paired comparison test also showed no significant difference between the unbiased hypothesis testing strategy and the confirmatory hypothesis testing strategy, $F(1, 96) = .63, p \geq .43, \eta^2 = .0001$ in the partially-explicit diagnostic context. Although, the third hypothesis was not supported according to the study’s predictions, a new finding was introduced into the mix that will be explored in the next chapter, i.e., the use of the confirmatory hypothesis testing strategy in the partially-explicit diagnostic context.
Table 3.

*Frequencies of Questions by Hypothesis Testing Strategy and Diagnostic Context.*

<table>
<thead>
<tr>
<th>Diagnostic Context</th>
<th>Hypothesis Testing Strategy</th>
<th>Confirmatory</th>
<th>Disconfirmatory</th>
<th>Unbiased</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Explicit</td>
<td>4.45 (a)</td>
<td>1.72</td>
<td>4.53 (a)</td>
<td>2.60</td>
</tr>
<tr>
<td>Semi-explicit</td>
<td>3.83 (a)</td>
<td>2.60</td>
<td>4.23</td>
<td>3.04</td>
</tr>
<tr>
<td>Partially-explicit</td>
<td>5.39 (b)</td>
<td>3.57</td>
<td>2.84 (b)</td>
<td>1.72</td>
</tr>
</tbody>
</table>

*Note.* Explicit n=38; Semi-explicit, n=30; and the Partially-explicit, n=31. Values with the same superscript differed significantly, p ≤ .05.
Chapter IV
Discussion

The purpose of the present study was to replicate and extend Speranza (2001) by asking participants to test a diagnosis of primary insomnia in the explicit diagnostic context and to develop their own diagnosis in the semi explicit and in the partially-explicit diagnostic context. The findings, however, partly confirmed Ellis et al. (1998) and Speranza (2001) while challenging the predictions made for the semi-explicit and the partially-explicit diagnostic context. Specifically, the disconfirmatory hypothesis testing strategy was used with greater frequency when compared to the unbiased hypothesis testing strategy in the explicit diagnostic context. The confirmatory hypothesis testing strategy, however, was used with greater frequency when compared to the diconfirmatory hypothesis testing strategy in the partially-explicit diagnostic context as opposed to the semi-explicit diagnostic context. It may be important to therefore consider the study’s limitations and strengths before examining these discrepancies further.

Limitations

There are a number of limitations to the present study. First, differences in the sample composition between Speranza (2001) and this study may have accounted for the disparate findings in the explicit diagnostic context. Specifically, unlike the present investigation, which focused exclusively on trainees, Speranza included 26 professional counselors in her sample. Future research may therefore need to replicate the present study by focusing on both therapist and trainees or solely on therapists to identify possible differences in the use of the hypothesis testing strategies when testing and developing diagnoses in an explicit diagnostic context.
A second limitation may be indicative of the randomization process not being entirely effective. Specifically, a small percentage (i.e., 5%) of the sample reported having no experience in using the DSM-IV-TR in developing their diagnoses. Further, these five participants were all within the partially-explicit diagnostic context. As a result, a potential confound is introduced into the analyses, as participants in the partially-explicit diagnostic context may have differed in their effectiveness and confidence in using the DSM-IV-TR criteria. In essence, these participants may not have had the knowledge to effectively integrate the DSM-IV criteria when developing their diagnosis, relying instead on the confirmatory hypothesis testing strategy to complete their task within the partially-explicit diagnostic context.

Third, it was difficult to assess whether trainees used the DSM-IV-TR criteria or relied on their memory of the criteria for the diagnosis they developed in the semi-explicit and in the partially-explicit diagnostic context. Also, the instructions to the task in the semi-explicit and in the partially-explicit diagnostic contexts did not require participants to refer to the DSM-IV-TR criteria. The use of the DSM-IV-TR, however, may affect the hypothesis testing strategy selected by trainees. For example, Ellis et al. (1998) found that the rule-out criteria of the DSM-IV-TR (e.g., a listing of symptoms that may challenge the initial diagnosis) may have encouraged participants to use the disconfirmatory hypothesis testing strategy as participants considered alternative diagnoses to test. It is therefore possible that the use of the confirmatory hypothesis testing strategy in the partially-explicit diagnostic context reflected the source of information participants use to develop their diagnosis as opposed to the task itself. Future research may therefore need to address this limitation by providing more explicit
instructions regarding the use of the DSM-IV-TR criteria within the three diagnostic contexts.

A final limitation is the extent to which the procedures may not be closely tied to clinical practice. Specifically, as noted by Speranza (2001), a number of features brought into question the degree to which the diagnostic contexts represent an actual counseling session. One important feature is personal rapport with the client, as therapists often complete the initial intake assessment while interacting with their clients (Shadish et al., 2002; Speranza, 2001). These interactions can potentially affect the types of hypothesis testing strategies used, as trainees may have varying levels of data depending on the client’s level of disclosure. Some research suggests that diagnoses are based on the initial inferences of the client’s symptoms and are generally formulated within the first five minutes of the diagnostic interview (Herran et al., 2001; Sladeczek et al., 2006). The diagnostic contexts may therefore represent what trainees encounter following their introduction to the client’s presenting problem (e.g., his or her most pertinent symptoms) with the tools at their disposal (e.g., the DSM-IV criteria) for the diagnoses being tested.

**Strengths**

There were several strengths to the design that warrant mention. First, the rating procedure used to classify the hypothesis testing questions was well established and closely replicated the one used by Snyder and Strohmer (1994) and Speranza (2001). Interrater agreement was also calculated in similar ways (i.e., for each participant and across participants), ensuring that the data was effectively classified as one of the three hypothesis testing strategies (Speranza, 2001). To emphasize this notion further, raters maintained highly acceptable levels of interrater agreement throughout the rating process.
(e.g., $K = .971$, $p \leq .01$ and $K = .958\%$, $p \leq .01$), indicating that the data represented the hypothesis testing strategies used by trainees.

Second, the diagnostic context and the hypothesis testing strategies replicated previous research, increasing the reliability of the study’s findings (Shadish et al., 2002). For example, the distinctions made between the confirmatory, the disconfirmatory, and the unbiased hypothesis testing strategies had been used by Ellis et al. (1998) and Speranza (2001) among others (e.g., Strohmer & Chiodo, 1984; Strohmer & Newman, 1983). The reliability with which these definitions were implemented within the present study increases the likelihood that the data were capturing the relation between the hypothesis testing strategies and the diagnostic contexts (Shadish et al., 2002).

Additionally, the explicit diagnostic context served as an important starting point to the development of an explicit diagnostic continuum, addressing limitations cited by Speranza (2001) (i.e., by testing the differential use of the hypothesis testing strategies when developing a diagnosis). Manipulation checks also emphasized that participants understood the nature and the instructions to the task. This study therefore successfully replicated Speranza (2001)’s design while simultaneously identifying a new variable to test (i.e., the diagnostic continuum) within a theoretical framework.

Third, the present hypotheses reflect past theorizing (i.e., Ellis et al., 1998; Haverkamp, 1993; Speranza, 2001; Strohmer et al., 1990), increasing the overall validity of the hypotheses (Wampold, 1990). Specifically, the three hypotheses were clearly stated, identifying the variables to test (e.g., the hypothesis testing strategies) and the expected relations between the use of the strategies within the diagnostic contexts developed (Wampold, Davis, & Good, 1990). Further, the statistical analyses matched
the study’s hypotheses, as paired comparison tests assessed the specific relations between the hypothesis testing strategies in each of the diagnostic contexts. The inferences made regarding the study’s main findings may therefore reflect the effective testing of this study’s hypotheses (Wampold et al., 1990). In the final analysis, the present investigation reflects programmatic research, as it builds on the theories proposed by Speranza (2001) and earlier researchers (e.g., Snyder & Swann, 1978; Snyder & Campbell, 1980) to understand the purpose and use of the hypothesis testing strategies.

Finally, participants were randomly selected from heterogeneous training programs with different levels of training (e.g., master, doctoral, and post-doctoral fellows), practicum sites (e.g., hospital, school, and community mental health), and fields of study (e.g., counseling, school, and clinical psychology), enhancing the overall generalizability of the results (Keppel & Wickens, 2004; Maxwell, 2005; Shadish, Cook, & Campbell, 2002). Further, preliminary analyses showed no significant differences related to any of the demographic data collected across the three diagnostic contexts. The personal and professional characteristics of participants were therefore not expected to influence the data (e.g., by introducing a potential confound to the results).

**Major Findings**

The first major finding is the interaction between the diagnostic context and the hypothesis testing strategies, which confirms Ellis et al. (1998) and Speranza (2001) theory that the nature of the task (i.e., testing as opposed to developing a diagnosis), coupled with the information presented to trainees (e.g., the DSM-IV-TR criteria) can affect the type of questions trainees develop during the assessment process.
The second major findings also partly confirmed Ellis et al. (1998) and Speranza (2001) as the disconfirmatory hypothesis testing strategy was used with greater frequency than the unbiased hypothesis testing strategy within the explicit diagnostic context. Unlike Speranza (2001), however, the number of disconfirmatory hypothesis testing questions developed to test the diagnosis of primary insomnia did not differ significantly from the number of confirmatory hypothesis testing questions listed by counseling trainees.

As for the third major finding, participants in the partially-explicit diagnostic context used a confirmatory hypothesis testing strategy when they were asked to formulate their own diagnosis as opposed to the predicted unbiased hypothesis testing strategy in the partially-explicit diagnostic context. Finally, there was no support for the second hypothesis which predicted that trainees would primarily use a confirmatory hypothesis testing strategy in the semi-explicit diagnostic context. In short, the findings partly supported the first hypothesis while disconfirming the second and third hypotheses.

At the outset, the significant interaction between the diagnostic context and the hypothesis testing strategies helps to reinforce the theory proposed by Speranza (2001). Specifically, the type of clinical information provided to trainees (e.g., the diagnostic criteria and the inclusion of an alternative diagnosis to test) can affect the differential use of the three strategies. Future researchers may therefore broaden the notion of the diagnostic context by including different types of information that may also be salient to the use of the three strategies. For example, for the present investigation, the diagnoses of primary insomnia and primary hypersomnia were used to replicate Speranza (2001)’s implicit and explicit diagnostic context. Speranza (2001) used these two diagnoses as
they are less common and therefore would encourage participants to consider their
diagnostic criteria. It may be of interest, however, to assess whether testing well known
diagnoses such as mood, anxiety, and eating disorders will also influence the information
participants use to test these diagnoses. Also, the nature of the clinical vignette can be
changed to include information relevant to later phases of the assessment process (e.g.,
the inclusion of symptomatic changes or potential comorbid symptoms) to further assess
the differential use of these strategies with different types of clinical information
available to trainees.

Regarding the second major finding (i.e., the partial support of the
disconfirmatory hypothesis testing strategy within the explicit diagnostic context), an
important difference in sample size between Speranza (2001) and the present
investigation may have affected these findings. Specifically, a closer look at her explicit
diagnostic context revealed a larger sample ($n = 67$) in comparison to the present
investigation ($n = 38$). These differences in sample size may have affected the frequency
of the disconfirmatory hypothesis testing questions developed in this study’s explicit
diagnostic context. As a result, collecting additional data may help to raise the number of
participants, providing a more stringent test of the differential use of the disconfirmatory
hypothesis testing strategy within the explicit diagnostic context.

As for the third finding, i.e., the greater use of the confirmatory hypothesis testing
when compared to the disconfirmatory strategy in the partially-explicit diagnostic
context, though not hypothesized, leads to the consideration of clinical judgment as it
relates to diagnosis (Pepinsky & Pepinsky, 1954; Strohmer et al., 1982). That is, when
classifying symptoms according to the DSM-IV classification, trainees and practicing
psychologists alike often rely on their knowledge about the different diagnoses coupled with their experiences in working with clients who have presented with similar symptoms. Through these clinical experiences, trainees develop prototypes (i.e., key defining features associated with specific diagnoses that reflect their client’s symptoms; Zeldow, 2009). When working with uncertain categories (e.g., clinical symptoms minus a testable diagnosis) in the partially-explicit diagnostic context, counselor trainees may be more likely to develop questions that fit their understanding of the diagnosis based on these clinical experiences (Hayes, et al., 2008; Zeldow, 2009). Therefore, the vividness of the information presented in the clinical vignette (e.g., a presentation of the client’s symptoms) coupled with the lack of a testable diagnosis or DSM-IV criteria, may have prompted trainees to confirm the first diagnosis they believed matched with the symptoms presented (Hayes, Hsiang, & Chen, 2008; Zeldow, 2009).

The fourth finding was non significant differences in the use of the three hypothesis testing strategies within the semi-explicit diagnostic context. As reported by Fagley (1985), non-significant findings are interpretable based on the reported high power of the overall analyses (i.e., .95). One possible interpretation of these results is that the theorizing behind the use of the confirmatory hypothesis testing strategy may not reflect how trainees truly develop their diagnoses in the semi-explicit diagnostic context. Specifically, a closer look at the means in Table 3 indicated that the unbiased hypothesis testing strategy was used with greater frequency \((M = 5.36, SD = 2.94)\) than either the confirmatory \((M = 3.83, SD = 2.60)\) or the disconfirmatory hypothesis testing strategies \((M = 4.23, SD = 3.03)\) in the semi-explicit diagnostic context. A smaller cell size \((n = 30)\), however, may have affected the testing of this assumption as the semi-explicit
diagnostic context had the fewest participants as compared to the explicit \((n = 38)\) and the partially-explicit diagnostic contexts \((n = 31)\).

**Implications**

In essence, these findings support the interaction between the diagnostic context and the three hypothesis testing strategies by trainees. The partial support of one of the study’s hypotheses in the explicit diagnostic context, however, suggested that the type of hypothesis testing strategy primarily used in the semi and in the partially-explicit diagnostic context did not support two of the study’s predictions. As a result, a number of implications to theory, future research, and practice are discussed.

**Implications for theory.** At the outset, the interaction between the diagnostic context and the hypothesis testing strategies supports the notion that the diagnostic context is an important factor to consider when trainees are in the process of developing and testing their diagnoses. Additionally, the explicit diagnostic context used in the present investigation replicated Ellis et al. (1998) and Speranza (2001), but the results showed disparate findings. This discrepancy may point to additional features that affect the relationship between the explicit diagnostic context and the disconfirmatory hypothesis testing strategy.

Specifically, as reported by Speranza (2001), there may be questions regarding whether the explicit diagnostic context represents how trainees actually test diagnoses in clinical practice. For example, trainees have the ability to interact with their clients and to establish rapport, which can affect the type of information disclosed (Speranza, 2001). Further, counseling trainees are often responsible for their diagnoses; and their accountability to clients and to their supervisors may also affect how they test diagnoses.
As a result, the explicit diagnostic context may not entirely simulate the counseling experience for trainees (Speranza, 2001).

As for the third major finding (i.e., participants used a confirmatory hypothesis testing strategy as opposed to an unbiased hypothesis testing strategy in the partially-explicit diagnostic context) it does not support how these strategies have been used in past studies. To help understand this finding, consider that earlier studies (e.g., Strohmer & Newman, 1983) described the unbiased hypothesis testing strategy as a way of gathering information where trainees can neither confirm nor disconfirm a given diagnosis. While Haverkamp (1993) and Strohmer et al. (1990) proposed that the confirmatory hypothesis testing strategy may help trainees sort through clinical information to test or develop a diagnosis during the assessment of clinical symptoms. It is therefore possible to infer that the unbiased hypothesis testing strategy may not be as helpful to trainees in meeting the demands of the partially-explicit diagnostic context when compared to the confirmatory hypothesis testing strategy (Speranza, 2001). As a result, trainees may prefer the confirmatory hypothesis testing strategy to complete the task of developing a diagnosis in the partially-explicit diagnostic context.

**Implications for research.** The integration of the diagnostic context is still in its early stages with only two studies to date, i.e., Speranza (2001) and the present investigation. It may be important to replicate the proposed explicit diagnostic continuum, improving on the limitations (e.g., addressing the unequal sample size within the three contexts by collecting more participants). Future research can also include Speranza (2001) implicit context to this diagnostic continuum to assess whether it changes the differential use of the hypothesis testing strategies. The implicit diagnostic
context closely resembled the present investigation’s partially-explicit diagnostic context, except that participants in the implicit diagnostic context were asked to test a diagnosis of primary insomnia as opposed to developing their own diagnosis (i.e., the partially-explicit diagnostic context). Additionally, participants in the implicit diagnostic context were given general descriptors of symptoms related to primary insomnia and primary hypersomnia. As a result, the inclusion of the implicit diagnostic context can help to further assess whether the presentation of the DSM-IV criteria to trainees (e.g., in lay person terms when compared to its original form) can affect their use of the hypothesis testing strategies.

Additionally, Speranza (2001) found that the unbiased hypothesis testing strategy \( M = 4.00, SD = 2.29 \) was used with greater frequency in the implicit diagnostic context as compared to the confirmatory hypothesis testing strategy \( M = 3.24, SD = 2.21 \). It may be interesting to therefore assess whether adding this diagnostic context to the present study will affect the findings in any way (e.g., whether participants will continue to use the unbiased hypothesis testing strategy with greater frequency in the implicit diagnostic context when compared to the semi-explicit and the partially explicit diagnostic context).

**Implications for practice.** Considering the importance of assessment and diagnosis in clients’ prognosis, trainees learning to use these three hypothesis testing strategies can have significant implications for their development as effective therapists. For example, during the initial stages of the assessment, supervisors can work with their supervisees toward challenging their inferences by providing them with a number of different diagnoses to test (explicit diagnostic context). Additionally, the partially-

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explicit diagnostic context may resemble what trainees receive as information by their clients (i.e., a general description of their symptoms in lay person terms). Supervisors can therefore be mindful of the potential pull their trainees may experience in using the confirmatory hypothesis testing strategy to develop a diagnosis. Further, they can work with their supervisees to develop unbiased hypothesis testing questions, while simultaneously challenging their initial diagnosis, to arrive at a more accurate assessment of the presenting problem.

**Future Directions**

To summarize, this study sought to replicate and extend Speranza (2001) by proposing an explicit diagnostic continuum to assess the differential use of the hypothesis testing strategies by trainees. The findings, however, did not completely support previous studies (e.g., Ellis et al., 1998; Speranza, 2001) and the predictions made for the semi-explicit and the partially-explicit diagnostic contexts. What remains an important finding, however, is the interaction between diagnostic context and the hypothesis testing strategies.

Future research can therefore address the limitations discussed by increasing the sample size of the three diagnostic contexts to make them comparable to Speranza (2001). Further, it may be important to assess whether different features (e.g., therapist accountability to their clients and their supervisors) can be included to more closely simulate how therapist trainees use these hypothesis testing strategy during the assessment process.

In the final analysis, as the research continues to develop regarding these important diagnostic tools (e.g., by informing the theoretical framework in place by past
studies) supervisors can work with their supervisees to gain mastery in developing all three types of hypothesis testing questions to test and develop diagnoses with varying levels of clinical data available to them.
References


Appendix A

Demographic Questionnaire

Please respond to all of the following questions. Your responses will remain anonymous and only group statistics will be reported. Thank you!

1) What is Your Age

2) What is Your Gender
   (a) Male
   (b) Female

3) What is Your Race/Ethnicity
   (a) African-American
   (b) Asian
   (c) Native-American
   (d) Caucasian
   (e) Hispanic/Latino(a)
   (f) Biracial (please specify)
   (g) Other (please specify)

4) What is the Highest Academic Degree You Have Obtained Thus Far?
   (a) PhD
   (b) PsyD
   (c) CAS/PD
   (d) MS/MA
   (e) BS/BA
   (f) Other (please specify)
5) What is Your Current Degree Program?
   (a) PhD
   (b) PsyD
   (c) CAS/PD
   (d) MS/MA
   (e) BS/BA
   (f) Other (please specify)

6) What Year are You in Your Graduate Program
   (a) 1
   (b) 2
   (c) 3
   (d) 4
   (e) 5
   (f) Other (please specify)

7) What is Your Field of Study?
   (a) Counseling Psychology
   (b) Clinical Psychology
   (c) School Psychology
   (d) Community Counseling
   (e) Marriage/Family Counseling
   (f) Rehabilitation Counseling
   (g) Other (please specify)
8) How Many Graduate Courses Have You Completed?

9) If Applicable, Please Specify any Additional Training in Psychopathology and in Using the DSM-IV? If not Applicable, Please Indicate so (N/A).

10) How would you rate your self-efficacy in using the DSM-IV (0 being not at all to 100 being totally competent?)

10) What is Your Current Training or Employment Level?
   (1) Pre-Practicum
   (2) First Practicum
   (3) Advanced Practicum
   (4) Field Placement
   (5) Masters Internship
   (6) Post-Masters
   (7) Doctoral Internship
   (8) Other (please specify)

11) What is Your Current Clinical Setting?
   (1) College Counseling Center
   (2) VA Hospital
   (3) Public Hospital
   (4) Private Hospital
   (5) Community Mental health Center
(6) University-Based Training Center

(7) Elementary/Secondary School

(8) Private Practice

(9) Substance Abuse Clinic

(10) Other (please specify)

11) Are you licensed? If so, In What Speciality

12) What is Your Total Supervised Therapy/Counseling Experience?

13) Approximately, How Many Clients Have You Seen?
   (a) Individual
   (b) Group
   (c) Family/Couples

14) Approximately, How Many Total Hours of Therapy Have You Conducted?
   (a) Individual
   (b) Group
   (c) Family/Couples
Appendix B

Explicit Diagnostic Context

Assume that you will be the counselor/therapist for this client and that the following information was given to you in an intake report.

Linda reports that she feels “tired all the time.” She states that she has been trying to determine the cause of her tiredness and has become frustrated at her inability to figure it out. Now Linda has decided to investigate any potential “psychological components to my feeling exhausted.”

There may be several possible explanations or tentative diagnoses about Linda’s presenting problem. Some possible explanations or diagnoses about Linda are that she is experiencing symptoms of insomnia or hypersomnia. Below are the DSM-IV criteria for these diagnoses.

**Primary Insomnia**

The predominant complaint of people with primary insomnia is difficulty initiating or maintaining sleep or of nonrestorative sleep (sleep that is apparently adequate in amount, but leaves the person feeling unrested). The sleep disturbance (or associated daytime fatigue/sleepiness) must persist for at least one month and must cause clinically significant distress or impairment in social, occupational, or other important areas of functioning. The disturbance in sleep does not occur exclusively during the course of another Sleep Disorder (e.g., Narcolepsy, Parasomnia, Breathing-Related Sleep Disorder) or mental disorder (e.g., Major Depressive Disorder, Generalized Anxiety Disorder, a delirium), and is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.
Primary Hypersomnia

The primary complaint of people with Primary Hypersomnia is excessive sleepiness as evidenced by either prolonged sleep episodes or by daytime sleep episodes occurring almost daily. This excessive sleepiness must persist for at least one month and must be sufficiently severe to cause clinically significant distress or impairment in social, occupational, or other important areas of functioning. The excessive sleepiness does not occur exclusively during the course of another Sleep Disorder (e.g., Narcolepsy, Parasomnia, Breathing-Related Sleep Disorder) or mental disorder (e.g., Major Depressive Disorder, Generalized Anxiety Disorder, a delirium), and is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.

Assume that you will be interviewing Linda shortly. During the interview, we would like you to test the diagnosis that this client is experiencing Primary insomnia. As you know, good counseling practice requires that more specific information than that presented in the intake needs to be gathered in order to evaluate this diagnosis. Take a few minutes to think about the kinds of information you would need to know to test the truth or falsity of the Primary insomnia hypothesis for this client.

Please write down at least 10 questions that you think will best test the diagnosis that Linda is suffering from Primary insomnia.

1) 
2) 
3)
Appendix C

Semi-Explicit Diagnostic Context

Assume that you will be the counselor/therapist for this client and that the following information was given to you in an intake report.

Linda reports that she feels “tired all the time.” She states that she has been trying to determine the cause of her tiredness and has become frustrated at her inability to figure it out. Now Linda has decided to investigate any potential “psychological components to my feeling exhausted.”

There may be several possible explanations or tentative diagnoses about Linda’s presenting problem. Some possible explanations or diagnoses about Linda are that she is experiencing symptoms of insomnia or hypersomnia. Below are the DSM-IV criteria for these diagnoses.

**Primary Insomnia**

The predominant complaint of people with Primary insomnia is difficulty initiating or maintaining sleep or of nonrestorative sleep (sleep that is apparently adequate in amount, but leaves the person feeling unrested). The sleep disturbance (or associated daytime fatigue/sleepiness) must persist for at least one month and must cause clinically significant distress or impairment in social, occupational, or other important areas of functioning. The disturbance in sleep does not occur exclusively during the course of another Sleep Disorder (e.g., Narcolepsy, Parasomnia, Breathing-Related Sleep Disorder) or mental disorder (e.g., Major Depressive Disorder, Generalized Anxiety Disorder, a delirium), and is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.
Primary Hypersomnia

The primary complaint of people with Primary Hypersomnia is excessive sleepiness as evidenced by either prolonged sleep episodes or by daytime sleep episodes occurring almost daily. This excessive sleepiness must persist for at least one month and must be sufficiently severe to cause clinically significant distress or impairment in social, occupational, or other important areas of functioning. The excessive sleepiness does not occur exclusively during the course of another Sleep Disorder (e.g., Narcolepsy, Parasomnia, Breathing-Related Sleep Disorder) or mental disorder (e.g., Major Depressive Disorder, Generalized Anxiety Disorder, a delirium), and is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.

Assume that you will be interviewing Linda shortly. During the interview, we would like you to generate a DSM-IV diagnosis to help explain Linda’s symptoms. Additionally, please ensure that it is an Axis I or an Axis II diagnosis. You may also use the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) as a reference guide. As you know, good counseling practice requires that more specific information than that presented in the intake needs to be gathered in order to evaluate this diagnosis. Take a few minutes to think about the kinds of information you would need to know to test the truth or falsity of the diagnosis that you generated for this client. Please write down at least 10 questions that you think will best test your diagnosis for Linda’s symptoms.

1)  
2)
Appendix D

Partially-Explicit Diagnostic Context

Assume that you will be the counselor/therapist for this client and that the following information was given to you in an intake report.

Linda reports that she feels “tired all the time.” She states that she has been trying to determine the cause of her tiredness and has become frustrated at her inability to figure it out. Now Linda has decided to investigate any potential “psychological components to my feeling exhausted.”

There may be several possible explanations or tentative diagnoses about Linda’s presenting problem. Assume that you will be interviewing Linda shortly. During the interview, we would like you to generate a DSM-IV diagnosis to help explain Linda’s symptoms. Additionally, please ensure that it is an Axis I or an Axis II diagnosis. You may also use the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) as a reference guide. As you know, good counseling practice requires that more specific information than that presented in the intake needs to be gathered in order to evaluate this diagnosis. Take a few minutes to think about the kinds of information you would need to know to test the truth or falsity of the diagnosis that you generated for this client.

Please write down at least 10 questions that you think will best test your diagnosis for Linda’s symptoms.

1)

2)

3)

4)
Appendix E
Manipulation Checks

Please answer the following questions only AFTER you have completed the entire questionnaire. Your responses will help us to evaluate the effectiveness of the questionnaire and to improve future research in this area. Thank you.

1) To what extent did you specifically consider alternative diagnoses when generating your interview questions?
   Not At All    Slightly    Somewhat    Mostly    Totally

2) To what extent did you explicitly attempt to rule-out alternative diagnoses when generating your interview questions?
   Not At All    Slightly    Somewhat    Mostly    Totally

3) To what extent did you specifically consider the DSM-IV diagnostic criteria provided when generating your interview questions?
   Not At All    Slightly    Somewhat    Mostly    Totally

4) To what extent are you familiar with the diagnoses of Primary insomnia and Primary Hypersomnia?
   Not At All    Slightly    Somewhat    Mostly    Totally

5) To what extent were you able to adopt the role of counselor/therapist when testing the diagnosis and generating the interview questions?
   Not At All    Slightly    Somewhat    Mostly    Totally

6) What diagnosis did you test for this client__________________?
7) To what extent did you refer to the DSM-IV statistical manual when developing the
interview questions?
Not At All  Slightly  Somewhat  Mostly  Totally

8) To what extent did you refer to the DSM-IV statistical manual when generating the
diagnosis?
Not At All  Slightly  Somewhat  Mostly  Totally
Appendix F

Office of Regulatory Research Compliance Approved IRB Consent Form for Exempt Research

**Title of Research:** Counselor hypothesis testing strategies: The use of heuristics.

**Principle Investigator:** Nadia T. D'Iuso, M.A. ED 220, Division of Counseling Psychology, University at Albany, 1400 Washington Avenue, Albany, NY 12222; Phone: (518) 364-8904, Email: nd789523@albany.edu

You are being asked to participate in a research study that has been reviewed by an Institutional Review Board. The purpose of the study, terms of your participation, as well as any expected risks and benefits, must be fully explained to you before you consent to participate in this research study.

Ø You should know that participation in this research study is entirely voluntary and confidential. Please do not put your name on any of the materials as we wish to have no way of identifying your responses.

Ø Even after you agree to participate in the research, you may decide to leave the study at any time without penalty or loss of benefits to which you may otherwise have been entitled. You should also be aware that the investigator may withdraw you from participation at his/her professional discretion.

Ø All information obtained in this study is strictly confidential unless disclosure is required by law. In addition, the Institutional Review Board, the sponsor of the study (e.g., NIH, FDA, etc.) and University or government officials responsible for monitoring this study may inspect these records.

Ø There is no more than minimal risk associated with participation in this study. Possible psychological risks are likely to be small and unlikely to occur. You may at any time discontinue participation.

Ø The potential benefits of participating in the study include giving you the opportunity to think about your clinical supervision relationship, and helping to enrich our understanding of clinical supervision relationships and ultimately the quality of training supervisors and supervisees receive.

Ø Completion of the online materials indicates your consent to participate.

If at any time you have questions regarding this research or your participation in it, you should contact the investigator, Nadia T. D'Iuso M.A., who must answer your questions.
If you have any questions concerning your rights as a research participant that have not been answered by the investigator or if you wish to report any concerns about the study, you may contact the Office of Regulatory Research Compliance at 518-442-9050 or orrc@uamail.albany.edu.

You will be given a copy of this consent form to keep.

Thank You
Appendix G

Rating Guidelines

Following are definitions with examples of the four rating categories used to rate questions generated by participants to test the diagnosis that the client is suffering from primary insomnia. Similarly, these definitions will be used to rate the questions developed to test the self-generated diagnosis (Speranza, 2001, Strohmer & Chiodo 1984, Ellis et al., 1998).

1. **CONFIRMATORY**: specifically seeking information which would confirm the diagnosis of primary insomnia or the diagnosis generated by participants. This information is identified in the DSM-IV criteria of the diagnosis being tested. Further, the DSM-IV criteria for the self-generated diagnosis will also be used to assess whether the questions developed are seeking to confirm these criteria.

   *Examples:* How often do you have trouble getting to sleep?
   - Has anyone commented on your tiredness?
   - Do you have trouble staying asleep?
   - Are you experiencing problems at work? school? in social situations? related to your tiredness?
   - How long have you had trouble falling asleep?

2. **DISCONFIRMATORY**: specifically seeking information which would disconfirm the diagnosis of primary insomnia or the self-generated diagnosis. These questions seek to establish the presence of factors identified in the DSM-IV definition of primary insomnia which rule-out the given and/or the self-generated diagnosis. Additionally, the DSM-IV criteria for the self-generated diagnosis will also be
integrated as a means of assessing whether the question developed are disconfirming the criteria. Another sleep disorder: Hypersomnia, Parasomnia (nightmare disorder, sleep terror disorder, sleepwalking disorder), Circadian Rhythm Sleep Disorder, Narcolepsy, Breathing-Related Sleep Disorder.

a. A mental disorder: Mood Disorder, Anxiety Disorder, Adjustment Disorder, SZ, Somatoform Disorder, Psychotic Disorder.

b. A general medical condition: hyperthyroidism, fibromyalgia, etc.

c. The direct physiological effects of a substance: medication, drugs, alcohol, caffeine, toxins.

Examples: Are you on any medication?
Have you ever been diagnosed as having any psychological problems?
Have you had a medical examination recently?
What has your mood been like recently?
Do you sleep during the day?
Do you work rotating shifts?
How is your sleep-wake cycle?
Do you have nightmares?
Has your work schedule changed recently?
Have you traveled a great distance recently?

3. UNBIASED: seeking information related to the diagnostic criteria in a general way.

These questions are not designed to elicit specific information either confirming or disconfirming the diagnosis of primary insomnia or the self-generated diagnosis. Similarly, the questions developed by participants to assess for the self-generated diagnosis will be compared to the DSM-IV criteria for that diagnosis.
Examples:  How many hours do you sleep each night?

        How different is this from a time before you had this problem?

        What has your sleep been like?

        Tell me about your sleep.

        How are you dealing with this problem?

        Describe a typical day.

        How does this problem affect your daily functioning?

4. IRRELEVANT: seeking information not relevant to the diagnosis of primary insomnia or the self-generated diagnosis

Examples:  How would you describe your family?

        How do you feel during the day after a good night’s sleep?

        How many hours per day do you work?

        Do you play tennis?

GENERAL EXPLANATION OF RATING SYSTEM:
The intent (confirmation, disconfirmation, and unbiased) of the clinician in phrasing a question is crucial to determining a rating. Questions which are intended to confirm or disconfirm a hypothesis unrelated to primary insomnia or to the diagnosis developed by participants are scored as irrelevant.

STEPS FOR SCORING QUESTIONS:
1. Determine the diagnosis being assessed. If the question does not relate to a diagnosis of primary insomnia or the self-generated diagnosis, then score it as irrelevant.

2. Determine if a question is attempting to confirm or disconfirm a primary insomnia diagnosis or a self-developed diagnosis by focusing on specific information contained
in the DSM-IV definition of primary insomnia or of the diagnosis generated and score it accordingly.

3. If the question is not attempting to confirm or disconfirm a diagnosis of primary insomnia or of the diagnosis developed, but rather attempting to elicit general information relevant to the respective diagnoses, then score it unbiased.

**SCORING ISSUES:**

1. The phrase “How long …” should be viewed as an unbiased method of asking questions regarding duration. However, raters need to pay attention to the focus of the question to decide on a rating. For example, “How long have you had trouble falling asleep?” should be rated as confirmatory because it seeks to elicit information to confirm a hypothesis of primary insomnia.

2. Questions which employ pronouns (e.g., this, that) will be understood as referring to the content of the previous question. For example, the question “Do you have trouble sleeping?” followed by the question “How long has this been going on?” will result in the rater interpreting the pronoun “this” in the second question as referring to “trouble sleeping.”

3. Parentheses found in questions should be ignored in completing the ratings. Information presented in the parentheses should be examined when completing the rating.

4. Clients experiencing other problems/disorders (depression, anxiety, medical problems) may have difficulty sleeping due to these problems. This is not primary insomnia and may not be related to the generated diagnosis.
Figure 1. The Interaction Between Diagnostic Context and Hypothesis Testing Strategies

Note. This figure represents the interaction between the three diagnostic contexts (explicit, semi explicit and partially explicit) and the three hypothesis testing strategies (confirmatory, disconfirmatory and unbiased) by displaying their mean frequencies.