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Anxiety in the Noticing and Production of L2 Forms: A Study of Beginning Learners of Arabic

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Anxiety in the Noticing and Production of L2 Forms: A Study of Beginning Learners of Arabic

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Dedication

To my family

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Anxiety in the Noticing and Production of L2 Forms: A Study of Beginning Learners of Arabic

Lama Nassif, Ph.D.

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Supervisor: Elaine Horwitz

This study investigated the relationship between anxiety and the noticing and integration of language forms in the learning of a less commonly taught language: Arabic. The study was motivated by the need to understand why some learners notice and integrate language forms in their second language speech better than others. Simultaneously, the study sought to understand the mechanisms through which anxiety interferes with second language speech processes.

The study included a sample of 80 beginning-level learners of Arabic. The participants were assigned to two treatment conditions, Input and Output. The participants' language anxiety was measured by the Foreign Language Classroom Anxiety Scale (Horwitz, Horwitz, & Cope, 1986), and their state anxiety during the noticing and production tasks was measured by the Cognitive Interference Questionnaire (Sarason, 1978). In the treatment session, the Output group participants provided an oral description of a picture story, listened to, read, and underlined an Arabic speaker's description, and re-described the pictures. The Input group participants answered pre-text

exposure questions, listened to, read, and underlined the description, and answered post-text exposure questions. An immediate oral production posttest was administered at the end of the treatment session, and a delayed posttest was administered two weeks later. Interviews were conducted following the delayed posttest.

The results showed that the noticing and integration of language forms were influenced by the type of anxiety and the nature of the forms. While language anxiety positively predicted learner noticing and integration of the language forms, state anxiety negatively predicted them. Syntactic and discourse level forms deemed more salient and of higher communicative value were more amenable to anxiety effects. No differential anxiety influences on learner noticing were detected across the Input and Output conditions. Pedagogical implications are offered in light of these findings.

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Chapter 1: Introduction

In a world of ever increasing cross-cultural communication, second language (L2) production becomes increasingly important in establishing bridges of communication in interpersonal, academic, and professional encounters. From a second language acquisition (SLA) standpoint, L2 production, i.e. spoken and written output, has been proposed as a mechanism to promote L2 development (Swain, 1985, 1995, 1998, 2000). This proposal remains a controversial issue, however. Advocates of the *Input Hypothesis* (Krashen, 1982, 1985) specify input as the sole mechanism driving L2 acquisition, and output as a mere generator of *comprehensible input*. Output, it has also been argued, develops L2 production abilities only, while input promotes both comprehension and production development (VanPatten, 1996; VanPatten & Cadierno, 1993). Swain (1985, 1995, 1998, 2000), on the other hand, contends that output creates new linguistic knowledge through the noticing of novel linguistic features, testing hypotheses about new language forms, and reflection on L2 production. While the role of output in L2 acquisition has not been established beyond doubt, there is empirical evidence to suggest a positive output role in promoting the noticing and acquisition of L2 form (Adams, 2003; Hanaoka, 2007; Hanaoka & Izumi, 2012; Izumi, 2002; Kang, 2010; Khatib & Alizadeh, 2012; Mennim, 2007; Qi & Lapkin, 2001; V. Russell, 2014; Sakai, 2004; Santos, Lopez-Serrano, & Manchon, 2010; Soleimani, Ketabi, & Talebinejad, 2008; Z. Song, 2010; M. J. Song & Suh, 2008; Swain & Lapkin, 1995; Uggen, 2012; Vickers & Ene, 2006).

This wave of interest in L2 output research has been accompanied by a preoccupation with emphasis on successful L2 production among L2 practitioners. Language programs across the globe hold successful L2 production as an instructional goal and a criterion of program success, and numerous language teachers and learners view L2 speaking and writing as a beneficial factor in developing L2 proficiency. It, thus, becomes of theoretical and pedagogical importance to study L2 production and investigate its related processes.

One L2 production process to which output researchers have given special attention is *noticing* (Schmidt, 1990, 1993, 1994, 1995). Hypothesized as an output-generated process (Swain, 1985, 1995, 1998, 2000), noticing has been proposed as a mechanism mediating L2 input and intake (Schmidt, 1990, 1993, 1994, 1995, 2001), and, thus, facilitating form integration (i.e. productive L2 knowledge). While no agreement exists in SLA on the sufficiency of noticing in L2 acquisition, more agreement exists on its facilitative role in L2 development (Doughty, 2001; Doughty & Williams, 1998; R. Ellis, 1995, 1996; Gass, 1997; Gass & Mackey, 2006; Long, 1996; Long & Robinson, 1998; Mackey, 2006b; Mackey, Gass, & McDonough, 2000; McDonough & Mackey, 2006; Philp, 2003; Robinson, 1995, 1997; Schmidt, 1990, 1993, 1994, 1995, 2001; Schmidt & Frota, 1986; Sharwood Smith, 1991, 1993; Sheen, 2008; Swain, 1985, 1995, 1998, 2000).

While noticing at written L2 output has been considerably studied in output-induced noticing research, only a few studies investigated noticing at spoken L2 output. L2 speech is considered by many as a benchmark for L2 competence. Its "immediate"

nature with no planning time is believed to mirror successful L2 learning. Teacher comments on learners' varied levels of L2 speech and their inability to put their knowledge of L2 form into oral production are not uncommon, raising questions as to learners' differential success in the noticing and integration of target L2 form in L2 speech.

Foreign language anxiety (Horwitz, Horwitz, & Cope, 1986), also known as *language anxiety*, has long been known in L2 research and pedagogical practice for interfering with L2 speech. Language anxiety was reported to interfere with the content of oral production (Steinberg & Horwitz, 1986), the complexification of speech across tasks of increasing complexity (Y. Kim & Tracy-Ventura, 2011; Robinson, 2007), encoding, processing, and retrieval processes (MacIntyre & Gardner, 1994b), and form integration and repairs in modified oral output following teacher recasts (Sheen, 2008). It would, therefore, seem that anxiety interfered with the type of noticing needed for successful task performance and learning from L2 instruction in these studies. Accordingly, an investigation exploring how anxiety associates with the noticing and integration of L2 form at L2 oral production contributes to an understanding of what differentiates the noticing of language form among L2 learners while simultaneously studying how anxiety interferes with L2 development processes. The current study pursues this endeavor.

1.1 STATEMENT OF THE PROBLEM

1.1.1 Noticing at L2 Production

Of the functions associated with L2 production, noticing has been considered of particular importance. Situated within a broader cognitive psychology-based framework stipulating the general necessity of attention in learning (Baars, 1997a; DeKeyser, 2003; Jiménez, 2003; Logan, 1988; Paradis, 2009), noticing has been conceptualized as an attentional construct involving the "conscious registration" of occurrences in language input (Schmidt, 1995). In promoting L2 learners' noticing, output, spoken and written, has been proposed as a noticing-triggering mechanism. Along the lines of Schmidt and Frota's (1986) *noticing the gap* principle and in congruence with the *Noticing Hypothesis* (Schmidt, 1990, 1993, 1994, 1995), Swain's (1985, 1995, 1998, 2000) *Comprehensible Output Hypothesis* proposes that output pushes learners from semantic to syntactic processing, triggering conscious attention to interlanguage limitations (i.e. noticing the gap) and to relevant target features in subsequent input (i.e. noticing). These processes are believed to lead to output modifications involving target forms, viewed as a facilitative L2 acquisitional process (Long, 1996; Mackey, 2007; McDonough & Mackey, 2006; Sheen, 2008).

The 19-year empirical investigations of output-induced noticing in the context of monologic L2 production, largely focusing on L2 written production, have been built on the proposals of the Comprehensible Output Hypothesis. These studies have generally reported positive results, but offered some mixed findings as well. In investigations with a pre-determined language focus, the findings are mixed. The studies reported output

gains in promoting L2 noticing and acquisition (Izumi, 2002; Kang, 2010; Khatib & Alizadeh, 2012; V. Russell, 2014; Soleimani et al., 2008; Z. Song, 2010; Uggen, 2012; Vickers & Ene, 2006), partial gains (Leeser, 2008; M. J. Song & Suh, 2008), or no specific gains (Izumi & Bigelow, 2000; Izumi, Bigelow, Fujiwara, & Fearnow, 1999). On the other hand, in investigations with a self-initiated language focus, output effects have been more uniformly positive (Adams, 2003; Griffin, 2005; Hanaoka, 2007; Hanaoka & Izumi, 2012; Mennim, 2007; Qi & Lapkin, 2001; Sakai, 2004; Santos et al., 2010; Swain & Lapkin, 1995).

Individual variations in learner noticing and acquisition results at L2 production have been reported (e.g. Izumi & Bigelow, 2000; Izumi et al., 1999). These findings suggest congruence with the "idiosyncratic constraints of each particular participant's knowledge" (Anderson, 2010, p. 167) and resonate with noticing as a subjective, private experience (Schmidt, 1990, 1995). Yet, there have not been considerable attempts made to investigate the sources of variation in learner noticing, and why some learners notice and integrate L2 forms better than others, especially in the context of L2 speech among beginning-level learners and in the learning of less commonly taught languages. Only minimal attention has also been given as to how affective variables interact with learner noticing in the context of L2 learning. No specific investigations of how learner noticing associates with anxiety, a variable long known for interfering with L2 speech, have been made either. The current study aims to address these questions to better understand learner noticing in order to help maximize the acquisitional potentials of L2 production.

1.1.2 Foreign Language Anxiety

Much research has shown that foreign language anxiety (Horwitz et al., 1986) can impact L2 achievement (Aida, 1994; Cheng, Horwitz, & Schallert, 1999; Elkhafaifi, 2005; Horwitz, 1986, 2001; S. Kim, 2009; Saito & Samimy, 1996; Saito, Horwitz, & Garza, 1999; Sellers, 2000; Young, 1986; Zhao, Dynia, & Guo, 2013). It has also been reported that foreign language anxiety has effects on learner behavior (Gregersen, 2003; Gregersen & Horwitz, 2002) learner motivation (S. Kim, 2009), willingness to communicate in the L2 and self-rated L2 proficiency (Lui & Jackson, 2008), and learner perceptions of L2 learning and achievement (Yan & Horwitz, 2008). Most interestingly, specific anxieties have been documented. Stage-specific anxieties (MacIntyre & Gardner, 1994b; Robinson, 2007) have been identified at input, processing, and output stages (Tobias, 1986). Skill-specific anxieties independent from but related to foreign language anxiety have also been found to negatively influence specific skill performance, including reading anxiety (Saito et al., 1999; Sellers, 2000; Zhao et al., 2013), writing anxiety (Cheng et al., 1999), and listening anxiety (Elkhafaifi, 2005). More than any other skill, however, L2 speaking has been viewed as particularly anxiety-provoking (Cheng et al., 1999; Elkhafaifi; 2005; Frantzen & Magnan, 2005; Horwitz, 1996, 2001; Horwitz et al., 1986; S. Kim, 2009; Y. Kim & Tracy-Ventura, 2011; Kitano, 2001; Koch & Terrell, 1991; MacIntyre, 1995a; MacIntyre & Gardner, 1994b; Price, 1991; Sheen, 2008; Steinberg & Horwitz, 1986; Yan & Horwitz, 2008; Young, 1986, 1990).

Nevertheless, research on L2 speaking anxiety, as is the case with anxiety research in general, has been mostly of a retrospective nature and largely focused on

learner self-reports. These limitations suggest that experimental investigations tapping the mechanisms through which anxiety associates with L2 speech and speech related processes would be very useful. One exception to the retrospective approach is Steinberg and Horwitz (1986). They found a qualitative difference in the content of learners' oral descriptions of pictures: high-anxiety participants described visual stimuli in a less interpretive and more objective manner than their low-anxiety counterparts. They did not, however, investigate how anxiety interfered with the processes of L2 speech production leading to the speech content differences.

Studies seeking to address this question remain very few but offer interesting possibilities for further investigations. MacIntyre and Gardner (1989) found that anxiety interfered with the learning and production of L2 French vocabulary. MacIntyre and Gardner (1994b) reported "subtle" and "pervasive" anxiety effects across input, processing, and output stages, suggesting anxiety interference with encoding, processing, and retrieval processes. Other studies have similarly suggested negative anxiety effects on cognitive processing at L2 speech production, and suggested a possible anxiety influence on noticing (Y. Kim & Tracy-Ventura, 2011; Robinson, 2007; Sheen, 2008). In Sheen (2008), the efficacy of teacher recasts was mediated by language anxiety. Low-anxiety participants' showed an increase in form integration and repairs in modified oral output compared to high-anxiety participants. Sheen suggests that modified output can be seen as "evidence for learner noticing and noticing the gap" (p. 862), with which anxiety was reported to interfere. This result indicates that anxiety interfered with learner noticing of L2 form, a finding on which the current study builds.

1.1.3 Rationale for the Current Study

The current study investigated how learner noticing and anxiety associate in the context of L2 learning. It aimed to contribute to a better understanding of learner noticing and anxiety while addressing gaps in existing research. It, therefore, sought to explore why some learners notice and integrate language forms better than others to help understand the largely neglected individual variation in learner noticing in the empirical research of output-induced noticing. The study addressed this question in the under-researched domain of L2 speech among beginning-level learners, a student population that has received less attention than intermediate-level learners. Simultaneously, the study aimed to explore the mechanisms through which anxiety interacts with L2 development processes during task performance, extending beyond the largely retrospective nature of anxiety research.

The investigation proposed explores noticing and anxiety in the learning of Arabic, a less commonly taught language. Such languages have not received much attention in SLA, and have not been investigated in output-induced noticing research. Arabic as a foreign language is one specifically under-researched context, a research gap that falls short of reflecting the current increasing interest in learning Arabic. According to a report released by the Modern Language Association (2007), the number of students studying Arabic in the U.S. soared by 126.5% between 2002 and 2006, and continued to increase between 2006 and 2009 (46.3%) as reported in the 2010 release. In the latter release, Arabic was reported as the 8th most studied language at U.S. colleges and universities (the 10th in the 2007 report).

The current study, thus, offers a cognitive/affective investigation of variables at play in the L2 speech of beginning-level learners of Arabic. In so doing, it aims to contribute to the investigation of how learner variables interact in the context of L2 learning. Affective and cognitive variables have predominantly been studied independently in SLA research to date, an approach that does not fully capture the dynamicity of L2 development processes with the ongoing interaction of learner-internal and learner-external variables. Only in such investigations can we hope to attain a more comprehensive understanding of L2 development processes, and to promote a more ecologically valid approach to how foreign languages are learned and taught.

Chapter 2: Review of the Literature

This chapter will present a review of the strands of literature on which the current study is based. It begins with an introduction to the constructs of noticing and intake, on which the present study builds, and then presents a glimpse of input-generated noticing. Given the focus on L2 production in this study, a more extensive review of output-induced noticing research to date is offered next, aligning it along two major axes: pre-determined and self-determined language foci. The chapter then offers a review of foreign language anxiety research with a discussion of general language anxiety and more specific forms of anxiety.

2.1 Noticing: An Attentional Construct

A central tenet with which noticing is associated is *attention*, a construct that triggered much debate in SLA. Various conceptualizations have been proposed, offering differential views as to whether or not attention involves conscious awareness and the level of attention needed for L2 development. One conceptualization of relevance in the current study is that proposed by Schmidt (1990, 1993, 1994, 1995, 2001).

Schmidt (1990) argues that "consciousness is commonly equated with awareness" (p. 131). He proposes three "crucial" levels of awareness: 1) *perception*, involving "mental organization and the ability to create internal representations of external events," 2) *noticing*, a "private experience" involving the "conscious" registration of an event, and 3) *understanding*, involving the analysis of consciously noticed items and the "attempt to comprehend their significance [to] experience insight and understanding" (p. 132).

Schmidt contends that perception may not necessarily involve conscious awareness, but noticing and understanding do, and that it is at the level of noticing that we become consciously aware of something.

Schmidt (2001) argues that noticing is the subjective correlate of attention. He, therefore, postulates that it "can be operationally defined as availability for verbal report, subject to certain conditions" (Schmidt, 1990, p. 132). As a technical term, Schmidt (2001) equates noticing with "apperception" (Gass, 1988), "detection within selective attention" (Tomlin & Villa, 1994), and "detection plus rehearsal in short term memory" (Robinson, 1995).

As an attentional construct, Schmidt (1990) aligns his proposals with attention and information processing accounts. He argues that attention and selective attention determine what gets encoded in short term and long-term memories, and that they are bound by limited capacity memory and limited information processing (McLaughlin et al., 1983). Schmidt's arguments resonate with the position in cognitive psychology that attention bridges perception and memory, with attention determining the encoding and retrieval of events (Anderson, 2010; Chun & Turk-Browne, 2007; Jiménez, 2003). A visualization of the role of attention in Schmidt's conceptualization of language information processing is presented in Figure 2.1.

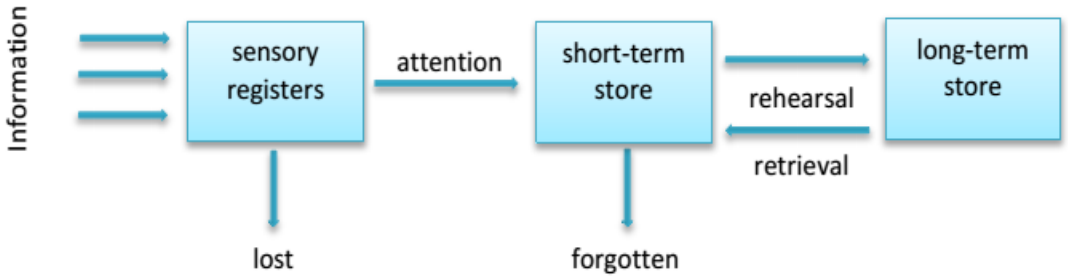


Figure 2.1. Consciousness in a multistore model of memory (Schmidt, 1990 based on Kihlstrom, 1984).

2.2 Intake: An Attentional Process/Outcome

A construct of relevance in the current study is *intake*. Corder (1967) defines intake as "what goes in" compared to *input*, "what is *available* for going in" (p. 165). Sharwood Smith (1993) defines intake as the "part of input that has actually been processed by the learner and turned into knowledge of some kind" (p. 167). Similarly, VanPatten (1996) defines intake as "the subset of filtered input that serves as the data for accommodation by the developing system" (p. 10). Chaudron (1985), on the other hand, proposes a conceptualization according to which intake is viewed as a process with a set of L2 acquisition strategies rather than a product. He, thus, defines intake as "the mediating process between the target language available to learners as input and the learners' internalized set of L2 rules and strategies for second language development" (p. 1). In output-induced noticing research, intake has typically been operationalized by immediate and delayed form integration (e.g. Izumi & Bigelow, 2000; Izumi et al., 1999), a premise on which the current study builds.

2.3 THE NOTICING HYPOTHESIS

Grounded in the theoretical tenets above and in the position in cognitive psychology that there is no learning without attention (Baars, 1997a; DeKeyser, 2003; Jiménez, 2003; Paradis, 2009), Schmidt formulated his Noticing Hypothesis (Schmidt, 1990, 1993, 1994, 1995). Rejecting subliminal language learning altogether, Schmidt (1990) argues that this conscious registration of certain occurrences in the input "is the necessary and sufficient condition for converting input to intake" (p. 129), and that "what learners notice in input is what becomes intake for learning" (Schmidt, 1995, p. 20). Schmidt (1990) strongly argued for conscious awareness at the level of noticing for all instances of learning, calling "subconscious noticing" an "oxymoronic" expression. A further extension of his hypothesis was that "attention to specific stimulus attributes is necessary in order to encode information about them" (Schmidt, 1995, p. 16).

Needless to say, such a strong claim has triggered skepticism and disagreement at times. Some researchers challenged Schmidt's (1990, 1993, 1994, 1995) notion of noticing as involving conscious awareness. Tomlin and Villa (1994) proposed a model of three interrelated attentional constructs (*alertness, orientation, and detection*). They defined alertness as "an overall general readiness to deal with incoming stimuli or data" (p. 190), and orientation as the "specific aligning of attention" ("orienting") on a stimulus" (p. 191). Detection is defined as "the cognitive registration of sensory stimuli," the "process that selects, or engages, a particular and specific bit of information" (p. 192). In this model, detection, the proposed mechanism for converting input to intake, is dissociated from awareness. Simard and Wong (2001), however, cast doubt on Tomlin

and Villa's model. They argue that this model is "appealing" to research from cognitive psychology and neuroscience rather than generalizable to SLA, which deals with higher-order level tasks involving the processing of language data. Simard and Wong also note that both alertness and orientation play crucial roles in SLA, and cast doubt on the conclusion that detection without awareness is possible in SLA.

Truscott (1998) also voiced strong criticism of the Noticing Hypothesis. Truscott argued for a lack of research support for strong claims about attention, awareness, and learning connections. He contended that conscious noticing only contributes to metalinguistic knowledge rather than L2 competence (also see Paradis, 2009), and further claimed that learners only need to be aware of the input globally rather than specifically. Addressing a less severe criticism, Gass (1997, 1999) argued that while attention is important in SLA, it is not essential for all L2 learning. She makes a case for possible incidental learning even in the absence of input as "a by-product of focused attention on one aspect" (Gass, 1999, p. 324).

2.4 CONSTRAINTS ON NOTICING

While there has been no agreement in SLA on the necessity of noticing in L2 acquisition, more agreement exists on its facilitative role in L2 development (Doughty, 2001; Doughty & Williams, 1998; R. Ellis, 1995, 1996; Gass, 1997; Gass & Mackey, 2006; Long, 1996; Long & Robinson, 1998; Mackey, 2006b; Mackey et al. 2000; McDonough & Mackey, 2006; Philp, 2003; Schmidt, 1990, 1993, 1994, 1995; Schmidt & Frota, 1986; Sharwood Smith, 1993; Sheen, 2008). Nevertheless, noticing is not

guaranteed by exposure to L2 input alone, and several constraints have been discussed. Some learner-internal variables include limitations on memory and processing capacity (Schmidt, 1990), the developmental level of the learner (Philp, 2003), skill level (Mackey & Philp, 1998; Philp, 2003; Schmidt, 1990), working memory (Dai, 2013; Mackey & Sachs, 2011; Philp, 2003), and L2 proficiency (Dai, 2013; Hanaoka, 2007; Qi & Lapkin, 2001). Other leaner-external variables include the perceptual salience of target language forms (Schmidt, 1990; Schmidt & Frota, 1986), form frequency (Gass, 1997; N. C. Ellis, 2002a, 2002b; Schmidt, 1990), task demands (Schmidt, 1990), type of instruction (Lyster & Mori, 2006), and linguistic domains (Mackey et al., 2000).

Investigations of affective variables as potential constraints on noticing remain scarce in SLA research, a limitation that the current study addresses. One investigation that sought to address this limitation while not investigating the noticing-acquisition association is that of S. Takahashi (2005). Takahashi investigated Japanese EFL learners' noticing of pragmalinguistic features in relation to two individual difference variables: motivation and proficiency. She focused on six types of L2 pragmalinguistic features in request discourse under an implicit input condition. The participants engaged in noticing the gap, native speaker-nonnative speaker interaction tasks, and completed motivation and retrospective awareness questionnaires. The study reported differential learner noticing contingent on the relevance of the forms in achieving more effective L2 communication. Three motivation factors out of nine subscales were also reported as related to the awareness of four pragmalinguistic features: intrinsic motivation, attitudes to the target language community, and a good teacher-student relationship. Accordingly,

Takahashi concluded that "motivation is a manifold cognitive construct, which is closely related to attention and awareness in processing L2 input" (p. 111).

Another relevant study in the context of Arabic L2 acquisition is that of Al-Khalil (2011). Al-Khalil studied whether components of L2 motivation significantly relate to the noticing of recasts among forty-four intermediate learners of Arabic in task-based interaction. The participants completed a motivation questionnaire, took part in six task-based oral interaction activities with a native speaker interlocutor, and did stimulated-recall sessions. L2 motivation predicted learner noticing of feedback in oral interaction. In addition, attitudes toward the L2 community significantly predicted noticing, a finding in line with S. Takahashi (2005) above. The construct of integrative motivation as whole also predicted task-specific noticing.

The two studies above investigated learner noticing in relation to L2 motivation. No studies thus far, however, have investigated learner noticing of L2 forms as associated with anxiety, an endeavor that the current study pursues. While S. Takahashi (2005) investigated the association between learner noticing and class and test anxieties, only three items reflecting these anxieties are included, with an overall focus on L2 motivation.

2.5 Input-generated Noticing

The role of attention in L2 development has triggered a wave of interest in the past three decades. Research studies focusing on input-generated noticing have typically incorporated some type of pedagogical intervention aimed at facilitating learners'

noticing of the target forms by making the input "salient" to the learners. While not excluding the possibility of implicit acquisition, Sharwood Smith (1981) argued that raising consciousness of the formal properties of the target language may aid L2 acquisition (also see Rutherfod & Sharwood Smith, 1985). Sharwood Smith (1991) alternatively proposed the term *input enhancement*, defining it as "the process by which language input becomes salient to the learner" (p. 118). Sharwood Smith noted that this process "can come about a result of deliberate manipulation" or as "the natural outcome of some internal learning strategy" (p. 118). He further explained that input enhancement "focuses on the operation that is carried out on the linguistic material and not on the internal mental processes of the learner" as *consciousness raising* indicates, for "what is made salient by the teacher may not be perceived as salient by the learner" (p. 120). Sharwood Smith cautions that even when a "signal" in the input may be noticed, it may not affect L2 development (also see VanPatten, 1985).

Input enhancement interventions, roughly subsumed under *Focus on Form* (Doughty & Williams, 1998; Long, 1991; Long & Robinson, 1998), involve various techniques aimed at directing learners' attention to form with varying degrees of explicitness in meaning-based classrooms. Two relevant implicit Focus on Form techniques in the current study are *input flood* and *textual enhancement*. Input flood involves flooding the input with the form that we want learners to notice (Wong, 2005) on the basis of the premise that the more frequent a form appears in input, the more likely it is to be noticed by learners (Gass, 1997; Schmidt, 1990). No form highlighting or explicit instruction is provided, making input flood one of the least "obtrusive" Focus on

Form techniques (Doughty & Williams, 1998). Early empirical investigations of input flood reported acquisition gains (Trahey & White, 1993; Williams & Evans, 1998), especially when combined with explicit form instruction (Williams & Evans, 1998).

Another relevant implicit Focus on Form technique is textual enhancement. Textual enhancement refers to using typographical cues (e.g. bolding, underlining) to draw learners' attention to the form(s) of focus (Wong, 2005). Along the lines of findings from Williams and Evans (1998) above, Wong suggests incorporating "structured input activities" to better enhance learners' noticing of target forms, as is the case in the current study. Research on textual enhancement has reported mixed findings. The studies have reported significant textual enhancement effects on form noticing and/or acquisition (e.g., Doughty, 1991; Jourdenais, Ota, Stauffer, Boyson, & Doughty, 1995; Lee, 2007; Shook, 1994), partial effects (Alanen, 1995; Izumi, 2002; Leow, 1997a, 2001; Overstreet, 1998; White, 1998), or no effects (Leow et al., 2003; Lyddon, 2011; V. Russell, 2014; Wong, 2003).

One relevant key finding of textual enhancement research pertains to the nature of the target form: noticing and acquisition gains are reportedly mediated by target form characteristics, including the *perceptual salience* and *communicative value* of the form. Salience is characterized as a "psychological" and a "physical" property (N.C. Ellis, 2006c) involving the "perceived strength of stimuli" (N. C. Ellis & Collins, 2009). Several form salience parameters have been determined, including frequency (Gass, 1997; Schmidt, 1990), linguistic form type (Greenslade, Bouden, & Sanz, 1999; N. C. Ellis, 2006c), and communicative value (Leow et al., 2003) or "meaningfulness" (Osgood

& Hoosain, 1974). Empirically, Leow et al. investigated the noticing and intake gains of textual enhancement as combined with input flood, reporting significant benefits in the noticing of the more salient form (Spanish present perfect) over the less salient one (Spanish present subjunctive).

Another relevant finding of textual enhancement research pertains to the communicative value of the target form. VanPatten (2002) defined communicative value as "the meaning that a form contributes to overall sentence meaning and is based on two features: [+/–inherent semantic value] and [+/–redundancy]" (p. 759). VanPatten (1985, 1996, 2002, 2004) argues that learners attend to and process more meaningful forms before less meaningful ones, and prioritizes communicative value over form frequency (VanPatten, 1985). In his model of *Input Processing* (1996, 2002, 2004), he argues that a form's communicative value is diminished if meaning can be retrieved from other items in the sentence (e.g. content lexical items).

Empirically, some studies have reported better form noticing when the form was considered of higher communicative value (Doughty, 1991; Jourdenais et al., 1995; Lee, 2007; Park & Nassif, 2013; Shook, 1994, 1999). Similarly, Wong (2003) studied the effects of textual enhancement on a form with very low or no communicative value, and reported no specific gains in learners' form acquisition. Wong suggested that as these forms do not contribute to the referential meaning of a sentence or utterance, they are the most difficult to acquire.

In reviewing input-generated noticing studies, some questions arise. One question pertains to the potential influence of input anxiety (see Krashen's *Affective Filter*

Hypothesis, 1982, 1985) on learner noticing and intake during the processing of L2 input. A second question relates to whether anxiety differentially interacts with the noticing of L2 forms given the contingency of learner noticing on the forms' salience and communicative value. In addition, L2 production is hypothesized as "a priming device for consciousness raising for the learners" (Izumi, 2003, p. 168) beyond what input alone could offer (Swain, 1985, 1995, 1998, 2000). Learner noticing via input exposure alone compared to noticing following output production is, therefore, another question to consider. These are questions that the current study addresses.

2.6 OUTPUT-INDUCED NOTICING

2.6.1 Output as a Noticing Triggering Mechanism

Challenging Krashen's (1982, 1985) Comprehensible Input Hypothesis while not contesting the importance of input, Swain (1985, 1995, 1998, 2000) proposed the Comprehensible Output Hypothesis, the Output Hypothesis, henceforth. Swain and her colleagues' work with immersion students attending content-based French instruction in Canadian schools led her to question the argument that comprehensible input is the sole prerequisite for L2 acquisition. Swain (1985) observed that immersion students achieved advanced comprehension abilities but less developed speaking and writing skills, and attributed these observations to the classroom instruction focusing on comprehension abilities. Swain (1995, 1998, 2000) proposed three functions of output: 1) noticing, 2) hypothesis testing, and 3) reflection, of which the first function, noticing, is the focus of the current study.

Swain (1995) argues that output "pushes learners to process language more deeply (with more mental effort) than does input" (p. 126). Resonating with Schmidt and Frota's (1986) noticing the gap principle, Swain (1995) contends that "under some circumstances, the activity of producing the target language may prompt second language learners to consciously recognize some of their linguistic problems; it may bring to their attention something they need to discover about their L2" (pp. 125-126). This process triggers "an analysis of incoming data, that is, a syntactic analysis of input" (Swain & Lapkin, 1995, p. 375) and, as a result, syntactic accuracy. Reminiscent of Schmidt's Noticing Hypothesis, Swain assumes conscious self-recognition of interlanguage shortcomings, prompting conscious selective attention (i.e. noticing) to relevant language features in subsequent language exposure.

In a review of a decade of research on comprehensible output, Shehadeh (2002) argued that no definitive conclusions could be made about the role of output in L2 learning due to the largely "descriptive" nature of research in this regard, a conclusion that could be challenged in light of more recent empirical findings. Shehadeh proposed an "acquisitional agenda" in two directions. The first direction involves investigating the effect of modified output on L2 learning, exploring the direction of modifications, the specific type of linguistic modifications learners produce, and the effect of frequency of modified output on L2 learning. The second direction involves the function of output as a process in L2 learning triggering syntactic processing, noticing, hypothesis testing, and metalinguistic talk. Some of these directions were addressed in subsequent research, reporting various output gains in the noticing and acquisition of L2 forms.

2.6.2 Output as a Trigger of Noticing in L2 Interaction

The arguments outlined thus far have triggered a wave of research. One prominent research paradigm centered on output production in the context of L2 interaction (i.e. dialogic production). This paradigm involves the interaction of native-nonnative or nonnative speakers, providing the learners with feedback seen as a trigger of noticing and subsequent L2 development, as proposed by the *Interaction Hypothesis* (Long, 1981, 1983a, 1996). The major premise underlying this hypothesis is that "negotiation of meaning, and especially negotiation work that triggers interactional adjustments by the NS or more competent interlocutor facilitates acquisition because it connects input, internal learner capabilities, particularly selective attention, and output in productive ways" (Long, 1996, pp. 451-452).

The output generated by the teacher or a more capable peer, therefore, functions as input providing the learners with *positive* or *negative grammatical evidence* (Sharwood Smith, 1991). This evidence functions as *corrective feedback* hypothesized as a trigger of learner noticing of target-like or non-target-like L2 forms, a process stipulated as facilitative of L2 form acquisition (Chen, 2013; Doughty & Varela, 1998; Goo, 2012; Iwashita, 2003; Leeman, 2003; Lyster & Ranta, 1997; Mackey, 1999; Mackey & Oliver, 2002; Mackey & Philp, 1998; McDonough, 2005; J. Russell & Spada, 2006; Shekary & Tahririan, 2006; Swain & Lapkin, 2002). Some studies reported differences in learner noticing as mediated by the characteristics of the corrective feedback provided, such as feedback type (Ammar & Spada, 2006; Lyster & Mori, 2006), the degree of explicitness/implicitness (Sheen, 2006), the length and number of changes in the recast

(Egi, 2007a), and the instructional context (Sheen, 2004). An interesting line of inquiry in interaction studies has explored learner perceptions of feedback. Some studies have reported mismatches between learner interpretations and the intended focus of the feedback as mediated by the feedback characteristics (Egi, 2007a) and the linguistic domains of focus (Mackey et al., 2000; Mackey et al., 2007).

2.6.3 Output as a Trigger of Noticing in Monologic L2 Production

Other output studies investigated noticing in the context of monologic L2 production, as is the case in the current study. Learners: 1) produced output, 2) read or listened to input in the form of native speaker models or target-like reformulations of learner production, and 3) produced modified output. This experimental sequence builds on the Output Hypothesis, the proposals of which were first empirically investigated by Swain and Lapkin (1995). Swain and Lapkin reported a positive output role in promoting L2 form noticing. Nineteen years later, SLA research still contemplates the role of output-induced noticing in L2 acquisition, given some mixed findings from earlier studies, as I report next. In my presentation of research findings, I will highlight the noticing-intake connection, an aspect on which the present study builds.

2.6.3.1 Output-induced Noticing with a Pre-determined Language Focus

In reviewing output-induced noticing research with a pre-determined language focus, inconclusive findings emerge. The studies have reported output-induced noticing gains (Izumi, 2002; Kang, 2010; Khatib & Alizadeh, 2012; V. Russell, 2014; Soleimani et al., 2008; Z. Song, 2010; Uggen, 2012; Vickers & Ene, 2006), partial gains (Leeser,

2008; M. J. Song & Suh, 2008), or no specific gains (Izumi & Bigelow, 2000; Izumi et al., 1999). Nevertheless, a closer look at the methodologies and results raises issues that merit a re-examination of these conclusions.

Some of the most influential output-induced noticing research to date comes from the pioneering work of Izumi and colleagues (Izumi & Bigelow, 2000; Izumi et al., 1999). The results of these early studies imparted a skeptical outlook on the role of output in promoting the noticing of L2 form. Izumi et al. and its replication study, Izumi and Bigelow, investigated whether output would promote the noticing and acquisition of the hypothetical conditional in English. In an elaborate research methodology inspiring subsequent output-induced noticing studies, Izumi et al. included a pretest, two treatment phases with an experimental group (output) and a control group (input), and two posttests over a period of one month. For the experimental group, phase 1 included two rounds of exposure to input, each followed by a text reconstruction task. Phase 2 had the same sequence, but involved an essay writing rather than a text reconstruction task. For the control group, phase 1 included two rounds of exposure to input, each followed by comprehension questions. Phase 2 involved writing an essay on an unrelated topic, input exposure, and comprehension questions. Noticing was operationalized by underlining words or parts of words in the input needed for subsequent reproduction or comprehension. Acquisition was operationalized by the production of the target form in the second text-reconstruction, essay writing, and posttests. The replication study had a similar design, but manipulated one different variable: the order of the treatment phases.

In the original study, phase 1 involved a text reconstruction task and phase 2 an essay writing task. The reverse order of the phases was used in the replication study.

Both studies had partial noticing and acquisition gains. However, as the experimental and control groups in both studies were not found to differ in their noticing of the target form, the researchers concluded that there were no unique output-induced noticing effects. Some learners were shown to have been involved in the deeper-level phenomenon of understanding with increased attention and processing (see Schmidt, 1990, 1995), correlating with a higher level of accuracy of target feature production. Brief reports from interviews with select participants displayed individual variation in noticing (e.g. form vs. meaning and organization). This learner variation did not match the pre-determined form focus of the studies, masking output effects with only target-form related noticing considered in data analysis.

In a laboratory study controlling for previous knowledge of the target form and incidental form processing in the input condition, Izumi (2002) reported a significant positive output role in promoting the noticing and acquisition of relativization in English. Izumi investigated output alongside textual enhancement in a five group design (four experimental groups and one control group) along two treatment conditions: +/–output and +/–textual enhancement. Izumi reported positive textual enhancement gains in form noticing rather than form acquisition, and superior learner performance when combining output with textual enhancement. In addition, all four experimental groups showed increased noticing from the first to the second input exposure, but the output-input conditions had higher instances of noticing, uptake, and text comprehension compared to

input-only conditions. In line with the Noticing Hypothesis, noticing gains correlated with intake gains, a result that seems to have been enhanced by the combination of pushed output and input exposure.

In a recent replication of Izumi (2002), V. Russell (2014) investigated noticing in the acquisition of L2 Spanish. Russell investigated a form that she considered more salient than Izumi's relativization in English: the future tense expressed by the third person singular bound inflectional morpheme *á* added to the infinitive form of the verb. Russell's findings corroborated those of Izumi; output promoted the learners' noticing and acquisition of the target form, while input enhancement only enhanced form noticing. Text comprehension gains were also reported in the output-input conditions.

Other output-induced noticing research with a pre-determined language focus reported only partial gains. Drawing on the work of Izumi and colleagues, M. J. Song and Suh (2008), conducted in an EFL Korean setting, studied task type in relation to L2 noticing and acquisition. The study used picture-cued and text-reconstruction tasks over three treatment sessions and included a pretest and a posttest, following a design similar to that of Izumi and colleagues (see above). While no differences were shown in noticing gains from the first to the second input exposure, the output groups outperformed the control group in the total amount of noticing as measured by text underlines, and in form acquisition as measured by the production posttest. Accordingly, the researchers only report partial noticing and acquisition gains. Nevertheless, they concur that "it seems plausible to reason that the greater total amount of noticing of the two output groups may have played a role in mediating input and learning" (p. 307). They, therefore, argue that

their study seems to have "lent support to the favorable effects of attention and noticing on L2 learning" (p. 307). No output task effect was reported in acquisition, but the picture-cued task was more facilitative of noticing.

Similarly, while integrating the modality of aural input, Leeser (2008) investigated whether pushed output during a multi-stage reconstruction task promotes learners' noticing and development of L2 Spanish past tense morphology. Leeser reported only partial output-induced gains, as did M. J. Song and Suh (2008) above. The output group showed more noticing of nouns and total number of words, and a small-scale noticing of imperfect words. This group also had an increased rate of attempted uses of past tense forms and a decrease in non-target like forms from the pretest to the posttest. The observed advantage for the output group in target-like and interlanguage forms was not statistically confirmed, however. Despite his conservative interpretations, Leeser supported a noticing account. He remarked that "if noticing is indeed a prerequisite for L2 development," it follows that the output group's consistent increase in the post-treatment writing task "suggests that some kind of noticing of tense-aspect forms took place for these learners, even if it was not evident in their notes" (p. 211). In addition, it could be argued that Leeser's methodology might have masked clearer gains in the output group; explicitly drawing learners' attention to past tense morphology in the pretest writing task and the pre-treatment grammatical review of the form might have triggered comparable noticing in the input and output groups.

Clearer significant output gains come from other recent studies. Vickers and Ene (2006) and Kang (2010) provided further empirical support to the noticing-intake

connection and the noticing function of the Output Hypothesis. In the former study, learners' noticing of their past hypothetical conditional-related problems and exposure to a typographically enhanced text resulted in gains in both immediate and delayed incorporations of target forms. Similarly, Kang reported that output production promoted conscious noticing of forms-related linguistic problems. This production triggered a solution-search by the participants as they compared their production with a native speaker model, and led to form incorporation. While both groups reported conscious noticing and intake, it was the more focal attention prompted by the note-taking treatment which seemed to have promoted a deeper level of processing and more form integration, in line with Schmidt's (1990, 1995) notion of understanding.

In a recent replication of Izumi and Bigelow (2000), Uggen (2012) investigated the noticing function of output with a focus on insights from think-aloud protocols. Uggen manipulated the complexity of the target form as a study variable: the past hypothetical-conditional (the more complex structure) vs. the present hypothetical-conditional (the less complex structure). The study reported positive output effects on noticing and learning, and an effect for the complexity of the target structure. The more complex structure prompted more attention to form and learning gains as the past hypothetical conditional group showed the largest gains from the pretest to posttest 1. Stimulated recall results showed that 86% of think-aloud episodes showed noticing, even if not directly related to the target structures, reminiscent of learner-created salience (Sharwood Smith, 1991, 1993).

In addition to M. J. Song and Suh (2008) reported above, other studies have been conducted in an EFL setting. Soleimani et al. (2008) investigated learner noticing and learning of rhetorical structures used in contrast paragraphs in English. They compared an "output-first-then-input activities" condition to a "preemptive input" condition. In the latter condition, the participants received explicit explanation of paragraphs of contrast followed by output production. The study reported significant output gains in promoting the noticing of rhetorical structures. The output groups showed significant superior noticing and acquisition of the forms than the control instruction group, and had less individual variation in noticing. These findings prompted the researchers to conclude that "output-first-then-input activities" were "much more effective" than pre-emptive input activities.

Another EFL study, Z. Song (2010), explored the role of output in the noticing and acquisition of lexical phrases. The study employed a classic pretest-treatment-posttest experimental design, and involved a typical output-induced noticing research design. Output production was restricted to sentence translation, however. The study reported superior noticing and immediate uptake in the output group; this group showed a significant improvement in the accurate usage of the forms from the first to the second production in the treatment session, and in form acquisition as measured by the posttest.

In another EFL study reminiscent of M. J. Song and Suh (2008), Khatib and Alizadeh (2012) investigated the effects of using two types of output tasks (picture-cued writing and text-reconstruction) on the noticing and acquisition of the past tense in English. The study employed the same experimental grouping and sequence as that of

Song and Suh, but involved listening to the model input and note taking rather than reading and underlining, a non-typical mode of input exposure in output-induced noticing studies (see Leeser, 2008, however). The study provided a pattern of findings contradicting that of Song and Suh. First, a clearer support for the noticing function of output was reported, as the output groups outperformed the control group in form noticing and acquisition. However, given the lack of a second round of input exposure following the first output task, it is not possible to judge noticing gains as compared to Song and Suh, who did not report such gains from the first to the second input exposure round. Second, the text reconstruction task promoted a higher level of noticing (picture-cued task in Song and Suh), while no task type effects were reported in acquisition results.

While presenting some mixed output-induced noticing findings, all of the studies in this section collectively offer insights in line with Schmidt's (1990, 1993, 1994, 1995) proposal of conscious noticing serving as a mechanism for converting input to intake. More consistently positive results are reported in the next section, presenting findings from output-induced noticing research with a self-initiated language focus.

2.6.3.2 Output-induced Noticing with a Self-initiated Language Focus

A clearer case of support for the noticing function of the Output Hypothesis and, more broadly, the Noticing Hypothesis, comes from the studies focusing on output-induced noticing with a self-initiated language focus. While more in congruence with the original premise of noticing as a subjective, private experience (Schmidt, 1990, 1995)

and Sharwood Smith's (1991, 1993) notion of learner-created salience, this line of inquiry has received less attention than that of the studies with a pre-determined language focus. In a pioneering study, Swain and Lapkin (1995) investigated whether young adolescent learners notice their linguistic problems during L2 French writing and the processes such noticing triggers. The possibility of syntactic analyses carried out to solve these problems was also investigated as operationalized by think-aloud protocols. The learners autonomously noticed gaps in their linguistic knowledge while producing output, engaging in syntactic analysis and thought processes reflected in their self-editing of writing following the production task. While it could be argued that successful error correction does not necessarily mean intake, a clear study limitation, it could still be observed that learners were consciously and selectively attending to specific aspects of their production as mirrored in their verbalized thoughts. Another result of interest was that conscious knowledge of rules was associated with more accuracy; most proficient learners applied rules with greater accuracy, relying more on the conscious application of rules than on "what makes sense," an observation reminiscent of understanding (Schmidt, 1990, 1995).

Based on Swain and Lapkin (1995), Griffin (2005) investigated output-induced noticing and acquisition at four levels of L2 proficiency in ten intermediate to advanced ESL learners. Griffin followed similar procedures to those in Swain and Lapkin, but used a more extended treatment spanning a period of six weeks with three essay writing and think-aloud sessions. All of the participants were reported to have noticed gaps in their L2 knowledge as they engaged in essay writing and simultaneously verbalized their

thoughts. Eight participants also had increased noticing across the sessions, with lexis, spelling, and grammar being the focus of learner noticing (lexis was most noticed). Noticing, however, was not shown to be necessary for L2 development in writing; only one significant correlation between noticing and L2 development in writing was noted. L2 fluency, lexical density, and grammatical complexity were reported to have increased across the sessions as well.

More supportive evidence for output-induced noticing gains comes from Qi and Lapkin (2001). Drawing on Swain and Lapkin (1995), Qi and Lapkin investigated the role of output in promoting noticing and learning in two L2 learners' at different proficiency levels. The study explored the aspects of language noticed when writing and comparing writing with reformulated versions. In line with the Noticing Hypothesis and the noticing function of the Output Hypothesis, conscious noticing in the composing stage triggered the noticing of relevant information in the comparison with reformulations stage. The quality of noticing in the composing and reformulation stages also directly influenced the final written product. A proficiency level effect on the quality of form noticing and subsequent incorporation was reported as well. While the study involved a think-aloud protocol and immediate retrospective interviews, more substantial reporting from these measures would have been helpful to better understand the two participants' noticing.

Sachs (2003) replicated Qi and Lapkin (2001), but investigated the differential effects of reformulated versions of learner writing with explicit error corrections. The study reported an association between noticing and error correction (in line with the

findings from Qi and Lapkin). Nevertheless, no long-term effects of noticing were reported; "occasionally," the participants did not incorporate corrections despite having displayed understanding of these corrections as shown in their verbalizations. The participants in the explicit error corrections condition made the most accurate revisions, and showed "the most evidence of noticing" (p. 90).

Results from Qi and Lapkin were also corroborated in Hanaoka (2007) and in Hanaoka and Izumi (2012). In a study conducted in an EFL setting, Hanaoka investigated the language features learners notice as they write in the L2 and then compare their writing to native-speaker models. The noticing-intake connection was confirmed; the participants incorporated 92% of the input-provided solutions in their first revision, and retained 40% of them in the delayed revision two months later. The features noticed during the composing stage were incorporated significantly more frequently in the immediate and delayed revisions. Hanaoka and Izumi reported similar facilitative output results, with comparable learner noticing and uptake for both overt and covert problems. In line with previous research findings (R. Ellis, Basturkmen, Loewen, 2001; Griffin, 2005; Hanaoka, 2007; Mackey et al., 2000; Mackey et al., 2007; Swain & Lapkin, 1995; Williams, 2001), the participants' noticing was mostly lexical.

While note-taking was used to tap learners' thought processes in Hanaoka (2007) and Hanaoka and Izumi (2012), and retrospective interviews in Qi and Lapkin (2001), no substantial references to the participants' comments were made. One study that attempted to address this limitation is Adams (2003). This study of five intermediate L2 Spanish classes explored whether learners notice and incorporate L2 forms as they compare their

output to native speaker-reformulations, and whether such noticing leads to more form incorporation than task repetition alone. The influence of stimulated recall + noticing on the incorporation of reformulations versus noticing alone was also investigated. Discussions of reformulated writing facilitated learners' noticing of the gaps in their writing, and positively influenced their subsequent writing. The noticing groups also outperformed the control group in the incorporation of more target-like forms on the posttest (noticing-intake connection). Of all the groups, however, it was the group in the noticing and stimulated recall condition that integrated the most target-like reformulations.

Further output-induced noticing support comes from Sakai (2004), one of the few studies investigating noticing at oral production. Sampling 16 first-year students at a Japanese university, Sakai explored if recasts and models promoted differential noticing of errors and differential learning effects. Both recasts and models promoted learner noticing of gaps in existing knowledge, but recasts were found to be more effective in enhancing noticing. Production was reported to lead to the conscious noticing of linguistic problems, and noticing the gap through feedback was shown to contribute to repairs more than noticing the hole, supporting the noticing-intake correlation as well.

M. J. Song and Suh (2008) and Khatib and Alizadeh (2012), reported above, explored output task type as a study variable. Yoshimura (2006) investigated the effects of the foreknowledge of output tasks on language processing, focusing on an EFL setting. The foreknowledge of output tasks was explored in relation to differences in reading behavior, text comprehension, and noticing L2 form. The study involved pre-reading

instructions, text reading, and three post-reading tasks for three groups (text memorization, text retelling, and reading for visualization). A self-report of reading behavior, a true/false comprehension check test, and a verb production test in a fill-in-the blank form depending on the same experimental text followed. The results showed that differential reading behavior was spurred by the foreknowledge of different output tasks, which promoted noticing as well. It was also reported that memorization directed more attention to form while retelling directed more attention to content. Some study limitations should be noted here, including the indecisive direct effect of manipulating foreknowledge on actual reading behavior and the blurry distinction between reading for memorization, reading for retelling, and reading for visualization given the possible interaction in the types of reading behaviors they elicit.

In another EFL study, Mennim (2007) investigated the noticing of L2 form in the under-researched monologic oral production of the L2. The study was conducted in an upper-level academic presentation course for first-year students at a Japanese university, and focused on two students. The data were collected from three student presentations and several conscious noticing exercises carried out over the course of an academic year. The study reported improvements in the accuracy of use of a non-count noun self-chosen by the participants, which Mennim attributed to the participants' noticing of the noun usage. However, while having the advantage of detecting long-term acquisition, the study's time span over an academic year makes it extremely hard to make conclusions as to L2 gains arising solely from target form class work. The focus on two students and the use of one word limit the generalizability of the study findings as well.

The output-induced noticing studies reported thus far collectively point to a conscious noticing mechanism in converting input to intake subsequently emerging in form integration, a tenet on which the current study builds. Taken together, these studies point to some limitations. The studies placed a predominant focus on written output (with the exception of Mennim, 2007; Sakai, 2004), and largely focused on L2 English acquisition (with the exceptions of Adams, 2003; Leeser, 2008; V. Russell, 2014; Swain & Lapkin, 1995). No studies have investigated noticing in the learning of less commonly taught languages either. Most importantly, individual variations in noticing results have been reported (e.g. Izumi & Bigelow, 2000, Izumi et al., 1999) but not adequately addressed, raising individual difference accounts. The current study sought to address these gaps. The construct of interest proposed as an individual difference variable that could potentially explain this noticing variation among learners is anxiety, to which I turn next.

2.7 Foreign Language Anxiety

2.7.1 Introduction

According to Horwitz et al. (1986), anxiety is the "subjective feeling of tension, apprehension, nervousness, and worry associated with an arousal of the autonomic nervous system" (p. 125). General anxiety has predominated research on emotions in educational research for decades (Meyer & Turner, 2002; Pekrun, Goetz, Titz, & Perry, 2002; Pekrun, Elliot, & Maier, 2006; Schutz & Lanehart, 2002), and has simultaneously generated interest in SLA research. At first, the findings were mixed, with conflicting

findings on the role of anxiety in L2 achievement. The introduction of the construct of foreign language anxiety by Horwitz et al. (1986), however, marked a milestone in anxiety research, streamlining conflicting conceptualizations, measurements, and research findings. In this section, I will present an overview of foreign language anxiety research to date. I will begin with three conceptualizations of relevance to the current study and then touch upon some of the most significant landmarks of anxiety research.

2.7.2 Conceptualizations of Anxiety: Facilitating/Debilitating Anxiety

Since the 1960s, anxiety has attracted attention in L2 acquisition research (Horwitz, 2001). The studies focused on how anxiety correlates with overall L2 achievement, and the findings were mixed, sometimes within the same study. Chastain (1975), for instance, studied the relationship between test anxiety and course grades in three language programs: German and Spanish (traditional method), and French (audiolingual and traditional method classes). While a significant negative correlation between anxiety and course grades was observed in the French audiolingual class, higher levels of anxiety correlated with better grades in the other classes. In fact, anxiety was a significant predictor of learning success in the Spanish class. Chastain concluded that some test concern is "a plus" while excessive anxiety "can produce negative results" (p. 160).

One early distinction in general anxiety research that signaled a shift toward the understanding of the complexity of the anxiety construct was: *facilitating/debilitating anxiety* (Alpert & Haber, 1960). Kleinmann (1977) was one of the earliest studies to

investigate these anxiety types in relation to L2 behavior. Kleinmann studied learner avoidance of the use of difficult English structures in L2 oral production. These structures were deemed challenging per contrastive analysis predictions (i.e. divergence from native language syntax). Focusing on the use of infinitive complements, direct object pronouns, passives, and present progressives, Kleinmann reported correlations between facilitating anxiety and the production of challenging English structures; the participants with facilitating anxiety used structures that were avoided by their peers (e.g. infinitive complements and direct object pronouns in the Spanish sample and passives in the Arabic sample). Anxiety did not correlate with the use of the structures that were not avoided by the group.

In his seminal review paper, Scovel (1978) called earlier research findings "mixed" and "confusing," and anxiety a "neither a simple nor well-understood psychological construct." Calling for a reexamination of anxiety as a cluster of affective states influenced by learner-internal and learner-external factors rather than a "simple, unitary construct," Scovel attributed the mixed results to the different conceptualizations and measurements of anxiety. Scovel considered Chastain and Kleinmann as steps in the right direction, especially with the latter distinguishing between facilitating and debilitating anxiety and investigating their correlations with L2 learning behavior.

2.7.3 Conceptualizations of Anxiety: State/Trait Anxiety

According to Scovel (1978), "some researchers feel that momentary anxiety should be distinguished from a more permanent predisposition to be anxious, and that this

dichotomy would help to account for some of the conflicting results of previous anxiety studies" (p. 21). Accordingly, another early distinction in general anxiety research is: *state/trait anxiety*. Spielberger (1983) refers to trait anxiety as "relatively stable individual differences in anxiety-proneness" (p. 1), with the individual being likely to become anxious in any situation. On the other hand, state anxiety was defined as "apprehension experienced at a particular moment in time" (MacIntyre & Gardner, 1991a, p. 90). Spielberger suggests that increased levels of trait anxiety are associated with an increase of state anxiety, reporting a moderately strong correlation (approximately r = .60) usually found between state and trait anxiety. Accordingly, MacIntyre and Gardner (1989) argue that state and trait anxiety are "not qualitatively different" (p. 267).

One early state anxiety investigation of interest is MacIntyre and Gardner (1989). The study investigated the influence of anxiety on the learning and production of vocabulary among 104 learners of L2 French. Of all the general anxiety measures, state anxiety as measured by the State Anxiety Scale (Spielberger, 1983) was the one found to significantly negatively correlate with learning and production (the correlations were in the low range, however). The researchers suggest that, given the type of correlations attained, state anxiety was more likely a consequence rather than a cause of poor performance.

The state/trait anxiety distinction lost momentum with the research direction toward situation-specific anxiety. This type of anxiety was conceptualized as trait anxiety "limited to a given context," and was welcomed as a construct that would better assess

learners' sources of anxiety (MacIntyre & Gardner, 1991a). One particular type of situation-specific anxiety is foreign language anxiety (Horwitz et al., 1986), to which I turn next.

2.7.4 Conceptualizations of Anxiety: Foreign Language Anxiety

Horwitz et al. (1986) introduced the construct of foreign language anxiety. Related to communication apprehension, test anxiety, and fear of negative evaluation, Horwitz et al. conceptualized foreign language anxiety not as "simply the combination of these fears transferred to foreign language learning," rather as "situation-specific anxiety" which is "a distinct complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process" (p. 128). This anxiety was attributed to the perceived gap between the "true self as known to the language learner" (p. 128) and the more limited L2 self (Horwitz et al., 1986; Horwitz, 1996, 2000, 2001).

The introduction of foreign language anxiety, language anxiety, henceforth, marked a milestone in anxiety research, streamlining conflicting conceptualizations, measurements, and research findings. Alongside the introduction of language anxiety, Horwitz et al. (1986) presented a measurement scale, the Foreign Language Classroom Anxiety Scale (FLCAS), designed to measure the "scope" and "severity" of language anxiety. The current study employs the FLCAS in its data collection.

2.7.5 Language Anxiety and L2 Achievement

The introduction of the language anxiety construct systematized L2 anxiety research. Subsequent studies generally reported negative language anxiety effects on L2 achievement as globally measured by course grades (Aida, 1994; Cheng et al., 1999; Elkhafaifi, 2005; Horwitz, 1986; S. Kim, 2009; Saito & Samimy, 1996; Saito et al., 1999; Zhao et al., 2013). These consistent results firmly placed anxiety amongst variables with a significant impact on L2 achievement (Dörnyei, 2005; MacIntyre & Gardner, 1994b). Horwitz (1986) pioneered the empirical validation of language anxiety and the FLCAS. Horwitz investigated anxiety in relation to L2 achievement across a wide range of learners (300) in introductory undergraduate French and Spanish language classes, reporting negative correlations with final course grades.

Some subsequent studies sought to investigate language anxiety-L2 achievement correlations among learners of non-Western languages. Aida (1994) investigated language anxiety among second-year students of Japanese, reporting a negative anxiety-final course grade correlation. The study provided support for two components of language anxiety: speech anxiety and fear of negative evaluation. Confirming the reliability of the FLCAS, Aida noted that it may tap "persistent" trait anxiety in the L2 classroom rather than state anxiety. Gender and course type effects were reported as well, with females and learners in the required classes scoring higher on anxiety than males and learners in elective classes, respectively.

Investigating anxiety in the learning of Japanese as well, Saito and Samimy (1996) investigated anxiety and language achievement across three different instructional

levels: beginning, intermediate, and advanced. Language class anxiety significantly predicted performance at the intermediate and advanced levels, while year in college was a better predictor for beginning students. Moreover, language class risk-taking and final grades moderately correlated with language class anxiety across the three instructional levels. Saito and Samimy interpreted their results in light of debilitating anxiety effects, corroborating earlier anxiety studies with less commonly taught languages (see Aida, 1994 above).

In a review of anxiety studies, Horwitz (2001) reported results further supporting negative anxiety influences on L2 achievement. Horwitz reviewed studies investigating different target languages in a number of instructional contexts. In so doing, she highlighted emerging sources of language anxiety such as oral performance, first language (L1) linguistic skills, cultural differences, particular classroom tasks (e.g. difficult and lengthy assignments, tests), teacher related factors (e.g. attitude, behavior, beliefs, expectations), and learner-related variables (e.g. beliefs, expectations, fear of negative evaluation). In addition, Horwitz reported some skill-specific anxiety studies as investigations of constructs related to but distinct from language anxiety. In a more recent review of 44 milestones of anxiety research to date (Horwitz, 2010), Horwitz summarized studies investigating anxiety and L2 development across various target languages, instructional contexts, language skills, and learner variables.

Given the findings of consistent negative language anxiety correlations with L2 achievement, researchers have sought to explore sources of anxiety. Young (1991) proposed a framework for classifying and researching anxiety. It included: 1) personal

and interpersonal anxieties, 2) learner beliefs about language learning, 3) instructor beliefs about language teaching, 4) instructor-learner interactions, 5) classroom procedures, and 6) language testing. Accordingly, insights on reducing anxiety in the L2 classroom have been offered (Horwitz & Young, 1991; Young, 1990, 1999).

Contrary to the consistent negative anxiety-L2 achievement findings, however, a few studies have reported facilitating language anxiety effects. Spielmann and Radnofsky (2001) reported positive effects of tension (their preferred term) on the quality of the L2 learning experience as evaluated by learners' perceptions of these experiences. In their ethnographic investigation of 30 L2 French learners (beginners and false beginners) at a well-known, highly demanding, full immersion summer program, Spielmann and Radnofsky report *euphoric* or *dysphoric tension* in relation to a situation depending on the individual and the circumstances. Learners' perceived opportunities to reinvent themselves successfully in the L2 induced euphoric cognitive tension influencing their perceptions of the L2 learning experience. To the participants, attaining linguistic or communicative L2 proficiency was of less importance than the satisfactory development of the L2 self, an endeavor that they deemed contingent on the instructional method and the curriculum which provide "the best possible balance" of cognitive and affective euphoric tension. "Challenging but meaningful assignments rewarded the students with the possibility of exerting greater control over the building of their new French-language personality" (p. 269), the researchers note. In another investigation, Marcos-Llina´s and Garau (2009) studied language anxiety and L2 proficiency in 134 first, second, and third year college learners of Spanish (elementary, intermediate, and advanced). The

researchers reported that language anxiety did not negatively correlate with the participants' achievement, and concluded that some level of tension is facilitative in the study of a foreign language.

2.7.6 Language Anxiety and Learner Variables

While early language studies have mainly investigated correlations with overall L2 achievement, language anxiety research has shifted toward more specific investigations of anxiety in relation to learner variables, some of which have been conducted in EFL contexts. One of the earliest studies to investigate language anxiety in relation to learner variables is Bailey, Daley, and Onwuegbuzie (1999). In a study of 146 students in first and second semesters of French and Spanish studies, Bailey et al. confirmed language anxiety as a distinct form of anxiety, and reported two learning style variables predicting it: responsibility and peer-orientation. Lui and Jackson (2008) investigated the relationship between language anxiety and the willingness to communicate, and how both variables relate to learners' self-rated EFL proficiency and access to English. The study reported a moderate positive correlation between unwillingness to communicate and language anxiety; each variable predicted the other, and both correlated with self-rated EFL proficiency and access to English. The FLCAS results also demonstrated that more than one-third of the participants experienced language anxiety, with reported fears of negative evaluation and apprehension about tests and public speaking, a predominant speaking-related result in language anxiety research.

In another study in an EFL context, S. Kim (2009) explored the influences of language anxiety and type of motivational goal orientation across two different instructional contexts, a reading course and a conversation course. 59 female undergraduates enrolled in a summer English class in South Korea were included in the study. Anxiety negatively associated with performance in both classroom contexts. The participants experienced more anxiety in conversation classes, corroborating predominant results on oral production as a particularly anxiety-provoking skill (Cheng et al., 1999; Frantzen & Magnan, 2005; Horwitz, 2001; Horwitz et al., 1986; Kitano, 2001; Koch & Terrell, 1991; Lui & Jackson, 2008; Price, 1991; Sheen, 2008; Steinberg & Horwitz, 1986; Yan & Horwitz, 2008; Young, 1986, 1990). Anxiety negatively predicted motivation as well. Interestingly, course repeaters experienced lower anxiety than first-timers, prompting Kim to propose anxiety-mitigating effects of prior experience and task familiarity. Kim postulated a bidirectional relationship: prior experience and task familiarity influenced anxiety, which, in turn, influenced performance. Subsequently, performance was found to affect anxiety levels in later learning tasks. This familiarity account raises memory issues. Memory from past experiences guides what to be attended to in incoming stimuli (Chun & Turk-Browne, 2007), proposing an association between memory, a cognitive construct, and language anxiety, an affective construct, in a bidirectional relationship, an issue of relevance in the current study.

Other studies have sought to investigate how anxiety interacts with other learner variables in a qualitative line of inquiry. An early qualitative investigation was Price (1991), which explored learners' perceptions of what it is like to be an anxious student in

an L2 class. Price interviewed 10 students with high anxiety levels, probing their reactions to L2 classes. In line with the pervasive speaking anxiety reported in other studies, the participants' greatest source of anxiety was "having to speak the target language in front of their peers" (p. 105). Of particular note is that the third source of anxiety was the participants' frustration with their inability to communicate effectively despite their perceptions of being "intelligent adults." This finding resonates with Horwitz and colleagues' notion of the disparity between the true self, the L1 self, and the more restricted L2 self (Horwitz et al., 1986; Horwitz, 1996, 2000, 2001).

More recent qualitative studies also investigated anxiety in relation to other learner variables. Gregersen and Horwitz (2002) reported a link between anxiety and learners' sense of perfectionism. Anxious students displayed a high-standard-low-productivity connection, and were more hesitant to comment on their oral performance. They also tended to notice and overreact to errors. Similarly, Gregersen (2003) reported that anxious learners made more errors, corrected themselves more often, recognized fewer errors in a stimulated recall situation, overestimated the number of errors that they made, and resorted to their native language more frequently. In line with MacIntyre and Gardner (1989, 1994b), Gregersen suggested that "high levels of anxiety may hinder students' ability to produce previously learned material" (p. 28). In addition, in her report of the interviews with the highly anxious participants, she supports earlier arguments from MacIntyre and Gardner (1989), based on the work of Tobias (1986), on anxiety interfering with task performance through deprecatory cognition.

In another qualitative study, Yan and Horwitz (2008) generated a model of how anxiety interacts with other learner and situational variables. Probing the perceptions of 532 students at a university in China, the results suggested a rich set of interrelationships between anxiety and learner variables such as comparison with peers, learning strategies, and language interest and motivation. This link to motivation indicates that, in line with previous studies (e.g. Lalonde & Gardner, 1984), reducing anxiety might also boost motivation for language learning.

One interesting result in Yan and Horwitz (2008) on learners' accounts of how anxiety influenced their achievement, especially in listening and speaking, was reports of being able to "hear more" when they were not anxious. Such remarks resonate with research findings on anxiety having a cognitive interference effect on encoding and processing at the input and processing stages (Eysenck, 1976; MacIntyre, 1995a, 1995b; MacIntyre & Gardner, 1994b; Tobias, 1986). Some participants also reported that when they were not anxious, they were able to speak more easily, resonating with the accounts on anxiety interfering with retrieval at the output stage (Eysenck, 1976; MacIntyre, 1995a, 1995b; MacIntyre & Gardner, 1994b; Tobias, 1986).

Other studies similarly investigated learners' perceptions of self-related and other-related sources of anxiety. Anxiety-provoking variables included low perceived scholastic and foreign language competence and low perceived intellectual ability (Bailey, Onwuegbuzie, & Daley, 2000), fear of negative evaluation and lower self-perceived speaking ability (Kitano, 2001), oral performance and boredom (Frantzen & Magnan, 2005), and the lack of grammatical accuracy, classmates' perceived ability, and

the need for additional grammar teaching (Ewald, 2007). Ewald reported a "key role" for the teacher in "producing and relieving anxiety" (p. 122), a finding also reported in Frantzen and Magnan (2005).

2.7.7 Specific L2 Anxieties

2.7.7.1 Introduction

"Anxiety may vary among second language students," as some students "may be prone to suffer from anxiety in any second language class, whereas some may be particularly susceptible to anxiety in a situation in which a certain language skill is emphasized" (Cheng et al., 1999, p. 421). Other learners may be susceptible to stage-specific anxieties at input, processing, or output stages (MacIntyre & Gardner, 1994b; Robinson, 2007; Tobias, 1986). This line of inquiry emerged as the state/trait anxiety research lost momentum, and language anxiety research shifted toward the investigation of situation-specific anxieties (MacIntyre & Gardner, 1991a). MacIntyre and Gardner noted that such investigations can offer more to the understanding of anxiety, with the advantage of "clearly delineating the situation of interest for the respondent" (p. 91). Moreover, studies of situation-specific anxieties can better capture learner reactions to the L2 learning experiences in a multitude of instructional, contextual, and cultural settings. Considering the affective-cognitive variables with which situation-specific anxieties interact, this line of inquiry can also better tap more subtle and complex situated anxiety influences on L2 processing and production, resonating with a call long made by Horwitz and colleagues (Horwitz, 2001; Horwitz et al., 1986; Steinberg & Horwitz, 1986).

2.7.7.2 Comprehension Skill Anxieties: Input and Processing Anxieties

Some of the most promising studies are those investigating skill-specific anxieties. Anxieties related to comprehension skills, reading and listening, resonate with anxieties at the input and processing stages (see stage-specific anxieties section below). In a pioneering study, Saito et al. (1999) introduced L2 reading anxiety. The study reported the existence of a specific L2 reading anxiety as a phenomenon "related to" but "distinct from" general language anxiety. Negative effects of both anxieties on L2 achievement as measured by final course grades were reported. It was also noted that the students who scored high on general language anxiety also tended to have higher L2 reading anxiety and vice versa. Interestingly, as the participants' perceived difficulty of L2 reading increased, so did their levels of reading anxiety, raising issues of script-specific anxiety (see Elkhafaifi, 2005; Zhao et al., 2013).

Similar negative reading anxiety associations with reading performance were reported in subsequent studies. Sellers (2000) studied reading anxiety among 89 participants at different levels of Spanish. Sellers reported that highly-anxious participants tended to recall less passage content and fewer main ideas than did low-anxiety participants. Results from the Cognitive Interference Questionnaire (Sarason, 1978), employed in the current study (the CIQ, henceforth), also showed that highly anxious participants experienced more off-task thoughts. Similarly, Zhao et al. (2013) reported reading anxiety among 114 learners of Chinese at a U.S. university. Reading anxiety had a moderate negative correlation with reading performance for elementary I and intermediate-level participants. Experience with China was a significant predictor of

reading anxiety as well; the participants who had been to China had higher levels of reading anxiety. In line with Saito et al. (1999), the unfamiliar scripts of Chinese characters were often reported by the participants as the most frustrating aspect of reading Chinese.

In a study of language anxiety and listening anxiety in another less commonly taught language, Arabic, the language of focus in the current study, Elkhafaifi (2005) explored L2 listening anxiety as a distinct phenomenon, and whether it correlated with general language anxiety and L2 achievement. Elkhafaifi reported survey results from 233 students in Arabic programs at six U.S. universities. A moderate negative correlation between listening anxiety and listening comprehension grades and a negative moderate correlation with final course grades were found. Learners with higher levels of language anxiety tended to have higher levels of listening anxiety as well. In line with Saito et al. (1999) and Zhao et al. (2013), Elkhafaifi postulates a role for unfamiliar writing and phonological systems and foreign cultural context in inducing greater anxiety in the learning of less commonly taught languages. A small but significant negative correlation between anxiety and year in school also emerged, with freshmen participants being more anxious than the more advanced participants, a result corroborating findings in Saito and Samimy (1996).

It could be argued that these findings of specific language anxiety at the exposure to and processing of L2 input resonate with Krashen's (1982, 1985) Affective Filter Hypothesi*s* within his *Monitor Model*. Krashen prioritized input as the sole mechanism driving L2 acquisition, and hypothesized that the acquirer needs to be "open" to the input

in order to fully utilize the comprehensible input received for language acquisition. Krashen postulated that this condition is attained when the affective filter, a mental block, is down. When the affective filter is up, however, i.e. when the acquirer is "unmotivated, lacking in self-confidence, or anxious" (Krashen's, 1985, p.3), he/she may understand what they hear and read, but the input will not reach the language acquisition device. Notwithstanding the criticisms that the Monitor Model generated, Krashen could be considered one of the first SLA researchers to postulate a cognitive-affective association in L2 development.

2.7.7.3 Production Skill Anxieties: Output Anxiety

Anxieties related to production skills, writing and speaking, resonate with anxiety at the output stage (see stage-specific anxieties section below). In a skill-specific anxiety study, Cheng et al. (1999) investigated general language anxiety and writing anxiety in relation to L2 speaking and writing achievement. 433 Taiwanese English majors in speaking and writing classes at four universities in Taiwan participated in this study. The results showed general language anxiety and L2 writing anxiety as two "related" but "relatively distinguishable" anxieties. Writing anxiety had small but significant negative correlations with English speaking and writing achievement as measured by speaking and writing course grades. Of particular note was the consistent association between the participants' low self-confidence and anxiety. Low self-confidence in speaking and writing in English were also the strongest predictors of speaking and writing course grades, respectively.

The skill-specific anxieties reported above have not been abundantly researched compared to general language anxiety, especially in the learning of less commonly taught languages (Elkhafaifi, 2005). However, speaking anxiety has attracted most attention, as speaking has often been reported as a particularly anxiety-provoking skill (see above). Such a conclusion prompted Saito et al. (1999) to conclude that language anxiety is "most clearly associated with the oral aspects of language use: listening and speaking" (p. 202). Accordingly, Aida (1994) argues that language anxiety measures such as the FLCAS are primarily measures of speaking anxiety.

Taken together, most language anxiety studies do not investigate the more subtle anxiety influences on L2 speech processes. Steinberg and Horwitz (1986) provided a unique perspective into such effects. The study investigated the effects of "environmentally induced anxiety" on the content of oral production of 20 Spanish-speaking, low-intermediate level young adults enrolled in an intensive ESL program. The study reported a qualitative difference in the content of learners' oral descriptions of pictures; high-anxious participants described visual stimuli in a less interpretive and more objective way than their low-anxiety counterparts. This finding prompted the researchers to conclude that students are less likely to provide subjective messages within a "stressful," "non-supportive environment." The results, therefore, pointed to reported student comfort and readiness for oral expression within a "supportive atmosphere."

2.7.7.4 Stage-specific (Input, Processing, and Output) Anxieties: Influences on Cognitive Processes

More attention to the experience of L2 learning rather than the "simple prediction of its success" (Horwitz, 2001) started to emerge. Some of the skill-specific studies reported above investigated learner perceptions of L2 performance, suggesting a link between a cognitive construct, perceptions, and skill-specific anxieties, a finding of relevance in the present study. Saito et al. (1999) reported reading anxiety induced by learner perceptions of L2 reading difficulty. Cheng et al. (1999) also reported that writing and speaking anxieties interacted with L2 self-confidence (also see MacIntyre, Clement, Dörnyei, & Noels, 1998). These skill-specific anxieties and their cognitive correlates (self-perceptions) resonate with anxieties invoked by cognitive processes at the encoding and processing stages (reading and listening) and the retrieval stages (speaking and writing) in the L2 learning process. Accordingly, *input*, *processing*, and *output* anxieties have been introduced, viewed as a distinction that helps better understand the anxiety-L2 achievement connection (Bailey et al., 2000).

Tobias (1986) proposed a model for general anxiety at input, processing, and output stages. MacIntyre and Gardner (1989) pioneered an empirical investigation of this model in L2 learning. The study reported an L2-specific *communicative anxiety* that negatively influenced the learning of L2 French vocabulary over five vocabulary introduction trials. It also impacted the production of learned vocabulary in a subsequent test and a free recall task. Anxiety effects were significant in both oral and written productions.

In a continuation of MacIntyre and Gardner (1989), MacIntyre and Gardner (1994b) investigated L2 development as constrained by language anxiety at the input, processing, and output stages. In this study, MacIntyre and Gardner provided a more elaborate conceptualization of input, processing, and output anxieties, and used three scales to assess anxiety levels at each of these stages. They defined input anxiety as "apprehension experienced when taking in information in the second language" (289). Processing anxiety was defined as "apprehension experienced when learning and thinking in the second language," and output anxiety as "apprehension experienced when speaking or writing in the second language" (p. 289).

MacIntyre and Gardner (1994b) examined relationships between L1 and L2 stage-specific tasks and stage-specific anxieties in 97 L2 French learners. Language anxiety was found to correlate with measures of performance in the L2, and significant correlations were obtained between the three stage-specific anxiety scales and stage-specific tasks, especially at the output stage. Two of the three input stage tasks also correlated with input anxiety, prompting the researchers to argue that a smaller number of verbal statements go into the processing stage in high-anxiety learners.

Other interesting stage-specific results were reported as well. At the processing stage, the results suggested anxiety interference with encoding and recall processes; anxious students took more time to study the words and to complete the first test, but still scored lower than their more relaxed counterparts. On the second test, however, anxious students took more time to study the words but not to complete the test, and their scores did not fall behind those of the more relaxed participants. These results resonate with

accounts of anxious students being able to compensate for detrimental anxiety effects by extra efforts (Eysenck, 1976; Horwitz et al., 1986; MacIntyre, 1995a, 1995b; Tobias, 1986). At the output stage, the anxious participants produced shorter descriptions and provided fewer ideas.

Other studies investigating oral output anxiety and cognitive processes reported negative anxiety effects as well. In a validation of his *Cognition Hypothesis* (Robinson, 2001a, 2005), Robinson (2007) explored whether tasks requiring complex reasoning about the intentions of others will result in more syntactically complex L2 speech production. The study also explored whether anxiety at input, processing, and output stages interacts with the learners' complexification of L2 speech. The study included 42 Japanese L1 university learners, and used Gardner and MacIntyre's (1994b) input, processing, and output anxiety scales. The participants engaged in three dyadic narrative tasks at simple, medium, and complex levels of intentional reasoning demands. While the findings did not support the hypothesis that more cognitively complex versions of tasks promote more complex L2 production, they showed negative correlations between output anxiety and the use of complex syntax; low-anxiety participants produced more complex speech than their high-anxiety counterparts, and increasingly so across the simple to complex task versions.

In another investigation of the Cognition Hypothesis, Y. Kim and Tracy-Ventura (2011) explored task complexity and anxiety and their interactions in the development of past tense morphology in oral output production during task-based learner-learner interaction. 28 adult EFL students at beginner to high intermediate levels at a large

private university in South Korea participated in the study. Unlike Robinson (2007) above, the study showed that increasing the cognitive demands of tasks in learner-learner interaction resulted in more complex speech. In line with Robinson, however, anxiety effects were reported; the low-anxiety participants outperformed the high-anxiety ones across all task versions on both posttests. No statistically significant interaction effect was found for task complexity and language anxiety on either posttest.

In another investigation of stage-specific anxieties, and in what could be considered the closest investigation of anxiety in relation to noticing, Sheen (2008) studied the effects of anxiety on learner use of corrective feedback. Sheen focused on oral production and the development of articles following teacher recasts. The study included a sample of 45 ESL learners at a community college in the U.S. The participants were divided into four groups per two conditions: high/low anxiety and +/–recasts. The participants read a story, discussed it in groups of four, presented it to the class, individually received teacher recasts with the whole class attending, and took immediate and delayed posttests. Similar to the studies above, anxiety was found to exert negative effects. The low-anxiety/recast group outperformed all of the others on immediate and delayed posttests. This group also had superior form integration in their modified output and repairs, showing better noticing and integration of feedback. The high-anxiety groups, on the other hand, showed no differences regardless of the recast treatment. Thus, in line with Robinson (2007) and Y. Kim and Tracy-Ventura (2011), anxiety seems to have interfered with gains from the experimental treatment. Sheen explained her results

in light of student noticing, with the low-anxiety participants showing better noticing of the target form as presented in teacher recasts.

While all of the stage-specific anxiety studies above only draw on noticing accounts in explaining their results without investigating noticing as a study variable, a closer look at their results shows that the increased integration of the target forms would not have been possible without the learners having noticed the target features. Such noticing is expected through the input provided or through learner-learner interactions in the course of the experimental treatments, and learner noticing in these sessions seems to have been mediated by language anxiety. Accordingly, Sheen (2008) suggests that "language anxiety can inhibit learners' capacity to notice recasts and to produce modified output" (p. 846). This conclusion then merits the investigation of the anxiety-noticing association especially in oral L2 production given the consistent findings of negative anxiety interferences at this particular stage. The next section presents a theoretical rationale for a joint noticing-anxiety investigation.

2.8 Noticing and Anxiety: A Theoretical Outlook

The literature on general anxiety and language anxiety suggests that anxiety could mediate cognitive processes. According to MacIntyre and Gardnder (1994b), "a good deal of research has suggested that anxiety causes cognitive interference in performing specific tasks" (p. 285). The question, thus, arises as to how anxiety, an affective construct, might interfere with noticing, a cognitive construct. A potential answer lies in the construct of attention. As a construct "nearly isomorphic with attention" (Schmidt,

1995), it follows that noticing is constrained by limitations on information processing capacity (Schmidt, 1990, 1995). Given these limitations and the need for selective attention for encoding in short-term and long-term memories (Anderson, 2010; Atkinson & Schiffrin, 1968; Chun & Turke-Browne, 2007; Schmidt, 1990, 1995), divided attention detracts some attentional resources from the task at hand (Eysenck, 1976; MacIntyre, 1995a, 1995b; Pekrun et al., 2002; Sarason, 1984; Tobias, 1986). This division of attention is where anxiety potentially plays a mediating role.

Anxiety, including general and language anxiety, has been postulated to detract from attentional resources. Anxiety, it has been argued, divides attention between task-relevant demands and other self-related or other-related variables. Such variables include "task-irrelevant cognitions" (Sarason, 1984) such as "worry," the cognitive part of anxiety (Dörnyei, 2005) and "negative self-evaluations" (MacIntyre, 1995a, 1995b). It is, hence, assumed that a part of the information processing capacity of highly anxious learners is absorbed by anxiety-related cognition, resulting in negative effects on performance (Eysenck, 1976; MacIntyre, 1995a, 1995b; MacIntyre & Gardner, 1994b; Sarason, 1978, 1984; Tobias, 1986). Anxiety-related cognition becomes particularly detrimental in anxiety-inducing situations such as tests (Sarason, 1984), classroom tasks of perceived difficulty (Tobias, 1986) and anxiety-provoking language skills (see skill-specific anxieties section above). Speaking in the L2 is a particularly anxiety-provoking skill, as has been profusely documented (see above), and is, therefore, expected to induce higher levels of anxiety detracting from the attention directed to the task at hand.

The theoretical tenets above could also be concluded from the empirical results presented thus far. In Robinson (2007) and Y. Kim and Tracy-Ventura (2011), L2 output anxiety was shown to mediate the complexity of speech across treatment groups. In both studies, the learners were expected to notice gaps in their interlanguage as they were pushed toward syntacticization with higher cognitive task demands, prompting the noticing of relevant features in the course of learner-learner interaction. The increased complexity in the subsequent production of the target forms would not have been possible without some sort of noticing, which seems to have been mediated by anxiety effects. Similarly, Sheen (2008) reported anxiety interference with modified output and repairs following teacher recasts; high-anxiety participants were less able to notice the feedback provided than their low-anxiety counterparts, hindering their target-form integration in subsequent oral production.

While the bulk of SLA research reports detrimental anxiety effects, a few studies investigating general anxiety have suggested a facilitating anxiety effect, the cognitive correlates of which remain to be explored. Early general anxiety results from Kleinmann (1977) distinguish between facilitating and debilitating anxiety, reporting correlations between facilitating anxiety and the L2 production of challenging English structures. Chastain (1975) concluded that some test concern is "a plus" while excessive anxiety "can produce negative results" (p. 160). Such a conclusion is reminiscent of the Yerkes and Dodson law (1908), according to which some level of physiological or mental arousal increases performance. Some level of anxiety is then expected to facilitate performance. Spielmann and Radnofsky (2001) reported a positive language anxiety

effect, describing it as euphoric cognitive and affective tension. Learners' perceived opportunities to reinvent themselves successfully in the L2 induced euphoric cognitive tension that influenced their perceptions of the L2 learning experience. Marcos-Llina´s and Garau (2009) also found that language anxiety did not interfere with L2 proficiency, and suggested that "some level of language anxiety may not be as negative and debilitative as traditionally believed" (p. 105).

With these findings in mind, it becomes of interest to investigate how anxiety associates with cognitive functioning at L2 processing and speech production, exploring whether it exerts a debilitating or facilitating role in learner noticing. The current study investigated this noticing-anxiety association among beginning-level learners of L2 Arabic in the context of L2 speech. In light of the theoretical proposals and empirical research findings presented thus far, the current study addresses the research questions below. These questions were particularly guided by the Noticing Hypothesis (Schmidt, 1990, 1993, 1994, 1995) and the noticing function of the Output Hypothesis (Swain. 1985, 1995, 2000).

2.9 Research Questions and Hypotheses

In light of the foregoing review and the questions posed throughout, the current study examines the noticing and intake of L2 form. Noticing and intake are operationalized by learners' conscious awareness of language forms at L2 oral production and input exposure. The following research questions guided the study:

1. Does anxiety influence the noticing of linguistic form in input subsequent to oral output production?
2. Does anxiety differentially associate with noticing across different language forms?
3. Does anxiety influence the integration of the linguistic form in output subsequent to input exposure?
4. Does anxiety differentially associate with noticing under Input and Output conditions?

Accordingly, the study proposes the following Hypotheses:

Hypothesis 1: During input exposure, high-anxiety participants will show less noticing of linguistic form than will low-anxiety participants.

Hypothesis 2: The noticing of more salient forms will be more susceptible to anxiety effects than the noticing of less salient forms.

Hypothesis 3: High-anxiety participants will show less integration of the linguistic form than will low-anxiety participants on immediate and delayed posttests.

Hypothesis 4: Output participants will be more prone to anxiety effects than will Input participants.

Chapter 3: Research Methods

3.1 PARTICIPANTS

The participants ($N = 80$) were L2 learners of Arabic as a foreign language at a major Arabic program at a large university in the United States (41 males and 39 females). The participants were assigned into two groups: Input ($n = 40$) and Output ($n = 40$). The participants' self-identified L1s included English, Urdu, Spanish, Japanese, Korean, Arabic, and Farsi (Figure 3.1), but many who identified an L1 other than English also spoke English from birth. The participants were of typical university age, and were studying a variety of majors (e.g. Middle Eastern studies, international relations, international business, English, engineering, history, pre-med).

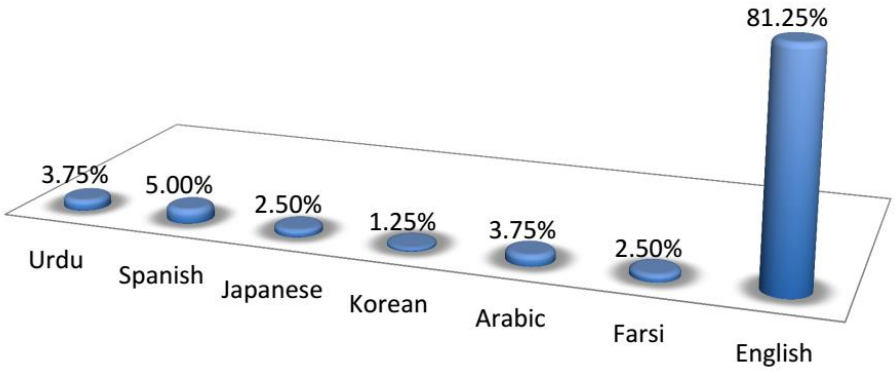


Figure 3.1. The participants' L1s.

The participants were enrolled in six sections of Intensive Arabic I, a six-credit course offered in the fall semester. The vast majority of the students were true beginning learners of Arabic with no previous instruction (Figure 3.2). 19 participants (23.75%),

however, had Arabic speaking family members. This did not necessarily involve speaking in Arabic at home, and only three participants (3.75%) considered Arabic their L1 (Figure 3.1). These 19 participants did not only include students of Arab heritage, but also some from Islamic backgrounds who are not usually exposed to colloquial Arabic, i.e. the variety of focus in the current study. The 80 participants were a part of a somewhat larger sample ($N = 109$). Data from 29 students were excluded due to unsuccessful recording of production, participation in the pilot study, or because they did not sign the consent form required by the Institutional Review Board Office at the university.

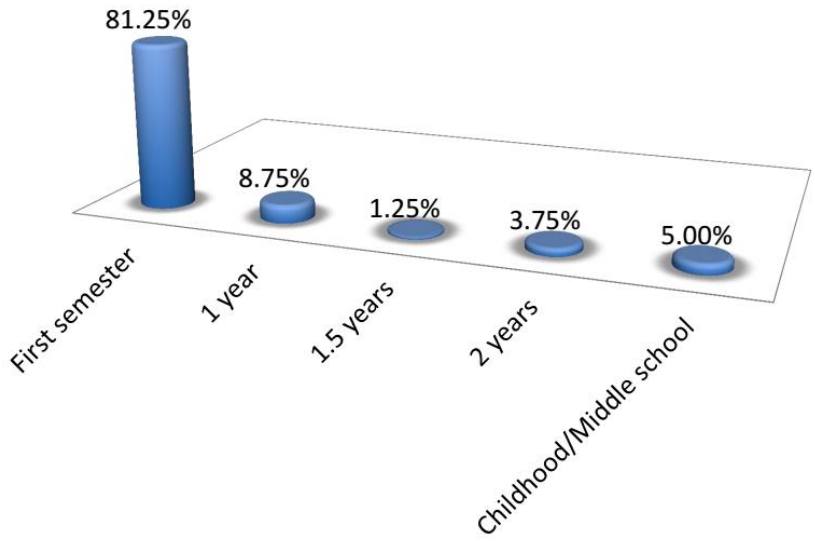


Figure 3.2. The participants' formal instruction in Arabic.

Designed in an integrated-skills format, the course builds competence in Modern Standard Arabic (MSA) and colloquial Arabic, emphasizing fluent functional usage, accuracy, and the understanding of Arab culture. Of the varieties introduced, the course

places a heavier focus on colloquial Arabic given the novice level proficiency expectations of successful communication in basic social interactions, a novel course feature to which the majority of incoming students with previous formal instruction experiences have not been previously introduced. Five sections focused on the *Shaami* (Levantine) variety of colloquial Arabic, and the sixth focused on the *MaSri* (Egyptian) variety. Each class met five times a week, with sessions ranging from 50 to 75 minutes of instruction.

All the sections were guided by the same syllabus and course objectives, and used the same textbook: *Al-kitaab fii ta'allum al-'arabiyya: A textbook for beginning Arabic, 3rd ed.* (Brustad, Al-Batal, & Al-Tonsi, 2011) involving training in MSA, Levantine Arabic, and Egyptian Arabic. The sections also shared the same daily schedule of activities and assignments, and took the same exams. The six course instructors, two of whom are the researcher and the research assistant of the current study, met on a weekly basis to discuss class issues and to ensure the coherence of course work across the sections. They were also informed of this research on multiple occasions prior to the experimental treatment.

3.2 TARGET FORMS

The main target form selected for the current study was the future tense in Arabic. This form was chosen because: 1) it was not formally introduced to the participants prior to the study, and 2) the form was scheduled to be taught in the second semester of Arabic study, reducing the confounding possibility of participant exposure to the form prior to

posttest 2. Two other novel features necessitated by the story line in the Arabic speaker's description were "time telling" and "time connectors." Both features were not formally introduced to the participants prior to the study either. Apart from one instance of time connectors, *ba'd haik* (see below), all of the features were common in both Levantine and Egyptian Arabic. A brief description of these forms is provided below with examples in Levantine Arabic.

3.2.1 The Future Tense

The future tense form in Levantine and Egyptian Arabic employed in this study is a morphosyntactic feature composed of one letter *Ha* (هـ) attached to the conjugated verb stem. The formation and use of the future tense is shown below.

a. بكرة الصبح حإشرب قهوة.

*bukra eS-SebeH **Ha**ishrab ahwe.*

Tomorrow morning-ADV I-SBJ will drink-V coffee-OBJ

=Tomorrow morning, I will drink coffee.

As seen in example (a), the future marker *Ha* (هـ) is added as a prefix to the conjugated verb stem *ishrab* (إشرب, "I drink") to form the future tense *Haisharb* (حاشرب, "I will drink"). The same prefix *Ha* is added to all present tense verb conjugations across person. Given its structure, the future tense marker هـ could be considered less salient than the two other target forms in the current study (time telling and time connectors), as to be elaborated on in the Discussion chapter.

3.2.2 Time Telling

Time telling in Levantine and Egyptian Arabic is a syntactic feature composed of two words *saa'a* (ساعة, "hour") and the specific number referring to the hour. The formation and use of time telling together with the future tense is shown below.

b. حشوف أصحابي بالقهوة الساعة ستة.

Hashuuf aSHaabi bil ahwe ***es-saa'a sitte****.*

I-SBJ will see-V my friends-OBJ in the cafe-PP at 6-PP

=I will see my friends in the café at 6.

As seen in example (b), time is expressed through the word *saa'a* (ساعة, "hour") and number *sitte* (ستة, "six"). In expressing time, the word *saa'a* is always definite in Levantine and Egyptian Arabic (thus the addition of *es*[1], "the"), and is followed by an indefinite number. The time telling phrase could be used in the beginning or end of a sentence. Given its structure, time telling could be considered more salient than the main target feature in the current study (the future tense marker), as to be elaborated on in the Discussion chapter.

3.2.3 Time Connectors

Two time connectors were used in the Arabic speaker's description in this study: *ba'dain* (Levantine and Egyptian Arabic) and *ba'd haik* (Levantine Arabic). Both cohesive devices could roughly express the same meanings: "afterwards," "after that,"

[1] The typical definite article in Arabic *al* (the) is changed to *es* in this sentence. When the letter following *al* belongs to a group of letters called "sun letters," the *l* in *al* is dropped, and the sun letter (*s* here) is doubled in pronunciation (*es-saa'a*). *e* is a variant of *a* in *al* that is usually dropped in the flow of speech.

"then," or "next." These forms are used in the beginning of a sentence (or a phrase in the case of ellipsis) to signal a temporal order of events, and could sometimes be used alongside the connector *wa* (و "and"). The formation and use of both connectors with the future tense is shown below.

c. حروح مع أصحابي على مطعم جديد، وبعد هيك حإرجع عالبيت.

*HaruuH ma' aSHaabi 'la maT'am jdiid w **ba'd haik** Hairja' 'albait.*

I-SBJ will go-V with my friends-PP to a new restaurant-PP and-CONJ after that-ADV I-SBJ will go back-V to home-PP

=I will go with my friends to a new restaurant, and after that, I will go back home.

d. حشوف الأخبار بالتلفزيون وبعدين حنام.

*Hashuuf el-akhbaar bittilifizion w **ba'dain** Hanaam.*

I-SBJ will watch-V the news-OBJ on TV-PP and-CONJ then-ADV I-SBJ will sleep-V

=I will watch the news on TV, and then I will go to sleep.

As seen in examples (c) and (d), the connectors *ba'dain* (بعدين "afterwards") and *ba'd haik* (بعد هيك "after that") are used in the beginning of the sentences to establish a temporal order of events. Therefore, these connectors are considered a discourse rather than a sentence-level feature. These connectors could also mark the beginning of a full sentence without the use of the connector *wa* (و "and"). Given their structure, these time connectors could be considered more salient than the main target feature in the current study (the future tense marker), as to be elaborated on in the Discussion chapter.

3.3 Operationalization of Noticing

This study taps noticing as conceptualized by Schmidt (1990, 1993, 1994, 1995), i.e. involving conscious awareness. Accordingly, noticing was measured in two ways: 1) verbal reports, and 2) text underlining. Verbal reports have been the standard method in attention studies (Egi, 2008), and Schmidt (1990) operationalized noticing as "availability for verbal report, subject to certain conditions" (p. 132).

In the current study, verbal reports were obtained through a reflection questionnaire immediately following the experimental treatment in phase 1 and interviews in phase 2. Despite limitations, verbal reports reflect learners' cognitive processes (Egi, 2008; Janssen, van Waes, & van den Bergh, 1996; Mackey & Gass, 2005; Swarts, Flower, & Hayes, 1984). As a form of self-report, verbal reports elicit information about the participants' perceptions which might not be available from production data alone (Mackey & Gass, 2005). In addition, as noticing is, by definition, a subjective, private experience (Schmidt, 1990, 1995), insights on the differential aspects of the noticing process could be attained by paying close attention to what the learners have to say about their noticing experiences.

Text underlining was used as another measure of noticing in this study. Underlining relevant linguistic forms has been profusely employed as an operationalization of noticing involving at least a minimum level of awareness (e.g. Izumi, 2002; Izumi & Bigelow, 2000; Izumi et al., 1999; Leeser, 2008; Park, 2011; M. J. Song & Suh, 2008). In line with previous research, the participants were asked to underline the words or parts of words that they feel would be particularly necessary for

their subsequent production (the Output condition) or comprehension (the Input condition), along the lines of Izumi and Bigelow (2000) and Izumi et al. (1999). Figure 3.3 presents an overview of the study procedures, and a detailed discussion of these procedures follows.

3.4 RESEARCH DESIGN

The current study investigates the noticing function of output. In line with Schmidt's notion of noticing (1990, 1993, 1994, 1995), Schmidt and Frota's (1986) noticing the gap principle, and the noticing function of Swain's Output Hypothesis (1985, 1995, 1998, 2000), the study investigated: 1) noticing the gap in interlanguage at the stage of output production, 2) noticing relevant language features in subsequent input, and 3) the integration of linguistic form in output subsequent to input exposure. The study also operated under the framework that learner noticing of specific target features could be generated by increasing the salience of the input (Sharwood Smith, 1991, 1993). The technique of focus in presenting the target form in this study, the future tense, was input flood, i.e. "flooding the input with the form in focus" (Williams, 2005, p. 151).

The study employed an experimental treatment with a posttest design. A pretest was not included as the participants had no prior knowledge of the target forms, as confirmed by the participants and course instructors. While there were heritage learners of Levantine origins included in the learner sample, they displayed knowledge of a different more common future form (رح, "will"), as shown in the study findings.

The participants were also deemed to be at a similar proficiency level based on: 1) enrollment in beginning Arabic I, 2) midterm oral proficiency grades, and 3) teacher ratings of overall L2 Arabic abilities. Random assignment of the participants to the Input and Output treatment conditions (see Experimental Treatment section) also ensured a fair distribution of L2 Arabic abilities. It simultaneously ensured a fair distribution of heritage students, with an average of three heritage students per section. Still, L2 achievement based on teacher ratings and end of course exams were studied as a control variable to tease out pure anxiety effects. The experimental sequence of the study was carried over a period of 2 weeks, with a total of approximately 2 hours (Table 3.1). The study included two phases preceded by a pilot study in weeks 9 and 10 of the semester. Phase 1 was carried out in week 13, and phase 2 in week 15.

Table 3.1

Experimental sequence

Phase & week in the semester	Procedure
*Pilot study (weeks 9-10)	• Time varied depending on the participants' task completion.
Phase 1 (language lab), week 13	Orientation and training **(10 minutes)** • Research purpose • Underlining training • Recording of description training
	Treatment **(50 minutes)** • Oral description of pictures/Answering comprehension questions • Listening to, reading, and underlining a model text • Re-description of pictures/Answering comprehension questions
	Immediate posttest **(10 minutes)**
	Questionnaires **(15-20 mins)** • A reflection questionnaire • The CIQ • The FLCAS • A background questionnaire
Phase 2 (end-of-course interviews), week 15	Delayed posttest **(10 minutes)**
	Interviews **(5-10 minutes)**

*Pilot study explained below

3.5 EXPERIMENTAL TREATMENT

Figure 3.3 presents an overview of the study procedures, and a discussion of these procedures follows.

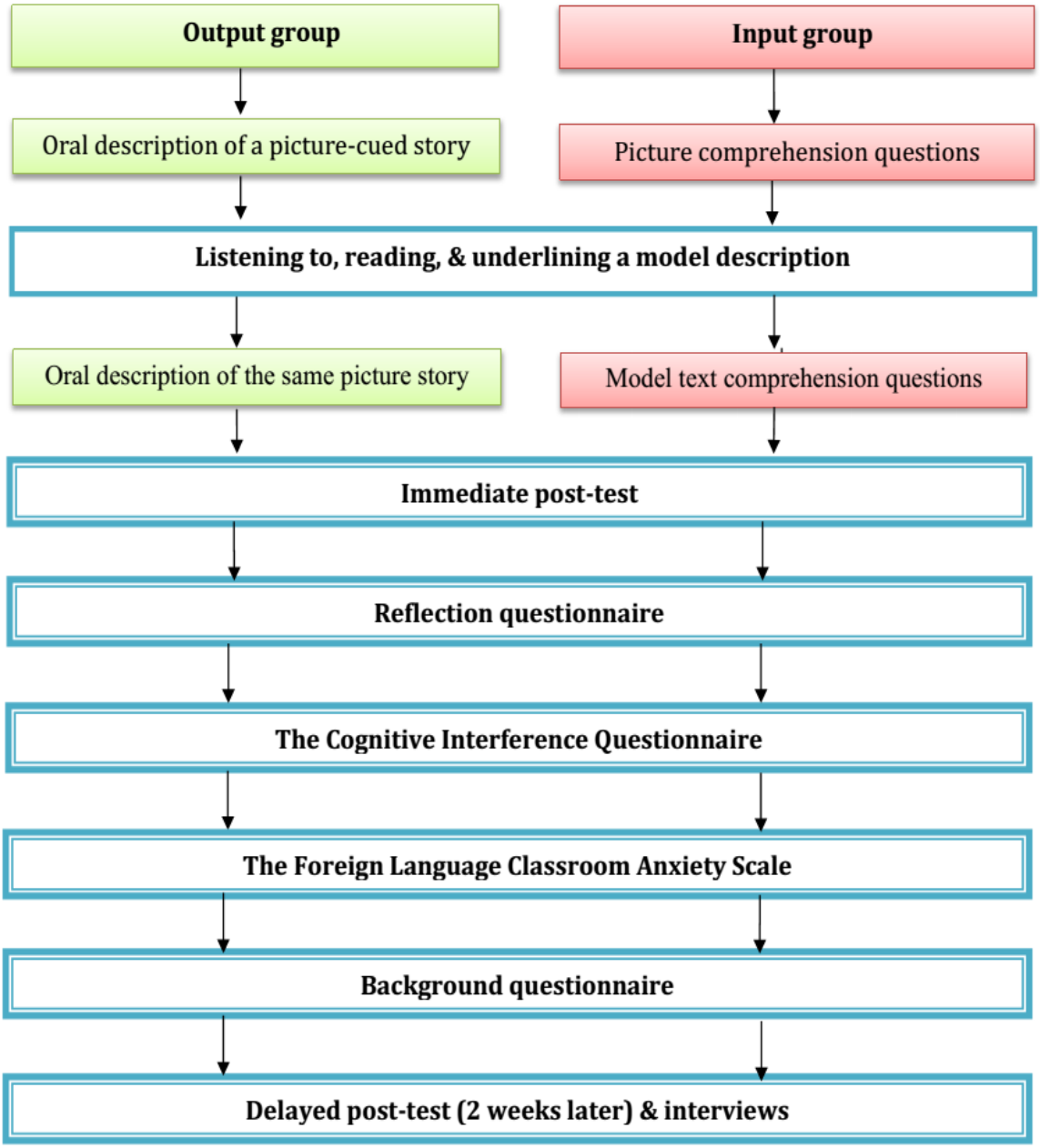


Figure 3.3. Study procedures.

3.6 STUDY PROCEDURES

3.6.1 Pilot Study

A pilot study was carried out prior to the experimental treatment to ensure the clarity and reliability of the experimental tasks, receive feedback for task improvement, and estimate the time needed for task completion. A sample of the target student population, excluded from the data analysis of the ultimate study, was recruited and completed the tasks in the output and input treatment conditions. Four language professors were also asked to provide descriptions of the picture story to ensure task clarity.

3.6.2 Phase 1: Lab Session – Day 1 of the study (Week 13)

This phase of the study involved the following procedures.

3.6.2.1 Preparation, Group Assignment, and Orientation

A. A research assistant, an Intensive Arabic I course instructor, participated in the data collection. The researcher and the research assistant met several times prior to the lab session to discuss the objectives and procedures of the study and to ensure the uniformity of task execution across the groups.
B. Each section of Arabic I was randomly assigned to one of two treatment conditions: Output or Input. Three sections were assigned to the Output treatment (n = 40), and three to the Input treatment (n = 40). Table 3.2 presents an overview of section assignment and session timeline.

Table 3.2

An overview of section assignment and lab session timeline

Section	Section 1	Section 2	Section 3	Section 4	Section 5	Section 6
Session Time	8:00-9:30am	9:30am-11:00am	11:00am-12:30pm	2:00-3:30pm	2:00-3:30pm	3:30-5:00pm
Treatment	**Input**	**Output**	**Output**	**Input**	**Input**	**Output**
No. of participants	13	10	13	16	12	16

C. The students in each section met in a language lab during their regular class session time. The six class sessions spanned a period from 8:00am to 5:00pm on the same day. In each session, the course instructor, the course teaching assistant, the researcher, and the research assistant were present in the lab. The course instructors had informed the students of this special session, and started the class by reiterating that the students were going to complete language and reflection tasks as part of their regular classroom instruction, and also as part of a research study that aims at better understanding their L2 Arabic acquisition processes. The researcher, then, took over. She informed the students of the type of tasks to be completed in the session (listening, reading and underlining, oral description, and comprehension checks) and initiated the training. The instructors and teaching assistants left the sessions before the administration of the questionnaires.

3.6.2.2 Methodology Training

This stage involved text underlining and sound file recording training.

A. To clarify the underlining procedure, the researcher modeled the underlining activity for each section using a familiar passage from the class textbook that did not contain any of the target forms. The participants were also familiar with text underlining during input processing from regular class work. The passage was displayed on a screen to ensure clarity. The participants were asked to underline the words or parts of words that they feel would be particularly necessary for their subsequent production (Output group) or comprehension (Input group).
B. The researcher provided training and modeling of recording and saving sound files using Audacity software downloaded on the lab computers. The training was provided at this stage to avoid disruption during the experimental treatment, and to ensure the accurate usage of the recording software.

3.6.2.3 Setting the Physical Space for the Experimental Treatment

A. To maximize student space and provide a quieter environment, the researcher divided each section into two groups, assigning them to two adjacent language labs. Group 1 was assigned to lab 1 under the supervision of the researcher, and group 2 was assigned to lab 2 under the supervision of the research assistant. Both groups underwent the same treatment condition assigned to the section (Output or Input). Given class scheduling, two class times coincided (2:00-3:30pm), and thus could not be divided. However, the Input treatment to which both sections were assigned

reduced the number of required recordings (immediate posttest recording only). The labs were separated by a mirror wall, providing the researcher and the research assistant with a view of the other lab, which helped ensure the uniformity of task execution.

B. Once the groups were settled, the researcher and the research assistant started the experimental treatment in their respective labs.

3.6.2.4 Experimental Treatment

A. The researcher and the research assistant distributed Output or Input student packets, depending on the experimental treatment assignment of the section. The packets provided an idea about the research objectives and noted the type of the tasks to be completed (listening, reading and underlining, oral description, and comprehension checks). No reference was made to noticing, however; rather, the students were informed that the listening, reading, and speaking tasks would help them narrate in Arabic using the vocabulary and structures that they had learned in the course thus far. It was also explained that the questionnaires at the end of the session are meant to help the Arabic program get a better sense of their L2 Arabic learning processes.

B. The students were asked not to leaf through the packets; rather, they were guided through one task at a time, as outlined in Figure 3.3. Each task was assigned a fixed time, with the researcher and the research assistant announcing the beginning and end of every task. Each task had written instructions, presented in the student packets and displayed on a screen. The instructions also signaled the type of activity to expect

next. The researcher and the research assistant gave the students a fixed time to read task instructions first, and then provided an explanation to ensure the clarity and uniformity of task execution.

3.6.2.5 Output Treatment

The Output treatment involved the following procedures.

A. The participants were given three minutes to view the picture story (Appendix A), and were then asked to provide a monologic oral description using a headphone set. They were asked to focus on: 1) the picture elements, 2) the events shown, and 3) what they imagine to be taking place in the pictures (Steinberg & Horwitz, 1986). The participants were not directed to use a particular kind of account (e.g. first person or third person) nor to employ any specific structures; rather, they were given the freedom to describe the pictures as they see fit, using whatever structures and vocabulary items that they deem necessary for adequate picture description. The participants were encouraged to produce as much information as possible, and to go beyond the picture contents to hypothesize about the main character's thoughts and affective states and the reasons behind them.

B. The participants listened once to an Arabic speaker's description of the same picture story (Appendix B) played through the lab's loudspeakers. The description was recorded by a native speaking professor of Levantine Arabic (a co-author of the course textbook), and was read at natural speed. Listening to the model description prior to reading it provided a transition from the oral production mode to the reading

mode, and provided more enhancement of the text with the combination of the two modalities.

C. The participants silently read and underlined the Arabic speaker's description of the picture story, following the underlining instructions outlined above. According to Johnson (1988), cited in Qi and Lapkin (2001), and in line with Swain's (1985, 1995, 1998, 2000) noticing function of the output:

> exposing learners to the target behavior after the event — rather than providing a model beforehand — has greater psychological validity, in that the learners are predisposed to look out for (and notice) those features of the modeled behavior that they themselves had found problematic in the initial trial run (or first draft). (p. 283)

D. The participants were then asked to provide a second monologic oral description of the picture story using a headphone set. Again, they were asked to focus on the picture elements, the events shown, and what they imagine to be taking place in the pictures with no specific reference to any structures, vocabulary items, or time frames.

E. The participants took the immediate posttest (Appendix D), involving a monologic oral production using a headphone set in response to a prompt with six questions serving as triggers for specific propositional content. The participants were given five minutes for planning time, and were asked to address all of the prompt questions. In line with the previous descriptions, the participants were not instructed to use any specific structures, vocabulary items, or time frames.

F. The participants were asked to complete four questionnaires online (Appendices E to H) designed through Qualtrics software. Each page displayed the full questionnaire. The questionnaires were arranged as follows (also see Figure 3.3): 1) the reflection questionnaire, providing close temporal proximity to the experimental treatment to counter memory loss (Mackey & Gass, 2005) and better tap the participants' thoughts, 2) the CIQ, 3) the FLCAS, and 4) a background questionnaire. In so doing, the students reflected on their noticing and learning without having been primed toward the anxiety variable investigated in the study until the very end of the experimental session. The background questionnaire (Appendix H) involved demographic information.

G. The questionnaires were administered online to elicit more extended responses, and had the "forced response" feature to ensure that the participants would address all of the questions.

3.6.2.6 Input Treatment

The Input treatment involved the following procedures.

A. The participants were given three minutes to view the picture story, and then were asked to answer a set of written pre-input exposure, multiple choice comprehension questions (Appendix C) probing their understanding of the events as presented in the pictures. The participants marked their answers on the student packets.

B. Following the same procedures of the Output treatment, the participants listened to and then silently read and underlined the Arabic speaker's description of the picture

story. However, the participants were asked to underline the text parts that they deemed necessary for text comprehension rather than production.

C. The participants answered a set of written post-input exposure, multiple choice comprehension questions (Appendix C) addressing details from the model description. The participants marked their answers on the student packets.

D. The participants took the same immediate posttest administered in the Output group, and the same procedures noted above were followed.

E. The participants were asked to complete the four questionnaires online, following the same order outlined in the Output treatment. The reflection questionnaire and parts of the CIQ, however, were modified to reflect the Input-specific tasks.

3.6.2.7 Post-experimental Treatment

Following the experimental treatment, the students were asked to sign the consent form attached to the student packets if they felt comfortable having their responses to the language tasks and questionnaires analyzed by the researcher, and if they were also willing to proceed further with the study. The students, therefore, were able make an informed decision about their study participation.

3.6.3 Phase 2: Delayed Posttest – Day 2 of the study (Week 15)

This phase of the study involved the procedures explained below.

A. Two weeks later, the participants individually took the same posttest administered in the treatment session as part of their end-of-course interview to detect the acquisition of the linguistic forms. The interview was divided into two parts: 1) graded course-

related part covering topics introduced in the course, and 2) ungraded research-related part including the posttest and two reflection questions raised to probe the students' follow-up thoughts and to ensure that they were not exposed to target forms in the two week time gap. These questions were:

1. What Arabic vocabulary, grammar, etc. do you remember learning from the session we did in the lab two weeks ago?
2. Did you read about these vocabulary items and structures on your own or learn about them in class since then?

B. The course instructors and teaching assistants carried out the delayed posttest and the interviews. To ensure uniformity, the procedures were explained to them in a weekly meeting, and detailed task steps and times were e-mailed to them in advance.

C. The Input and Output groups followed the same delayed posttest and interview procedures.

D. The researcher interviewed a sample of 30 participants (15 from the Input group and 15 from the Output group). She administered the same posttest procedures, but carried out more extended interviews with the participants. These interviews aimed at supplementing insights form the reflection questionnaire while providing the context for the participants' follow-up thoughts and clarifications.

3.7 INSTRUMENTS

3.7.1 Picture-cued Story

A picture-cued story specifically designed for this study (Appendix A) was used as the main prompt. Six pictures showed a numbered sequence of events depicting a person's upcoming weekend activities arranged chronologically. The participants were directed to the future time frame through the first picture showing a person overwhelmed with work in his office. A speech bubble reads in Arabic: "Thank God, the weekend is tomorrow!"

The picture story was inspired by the topics on the course schedule and the sequencing of the course content. The students had been introduced to the present tense needed to form the future tense, and had acquired vocabulary that would enable them to describe daily activities. Nonetheless, they had not yet been introduced to the future tense, nor had they been familiarized with the description of a daily routine at the discourse level. In so doing, the picture story created a venue for the participants to notice gaps in their interlanguage resources, for which solutions could be attained from the Arabic speaker's model description, in line with the hypothesized noticing function of the Output Hypothesis (Swain, 1985, 1995, 1998, 2000).

The choice of a picture story as the main task of the study was inspired by previous research. Picture stories are widely used in output-induced noticing research (e.g. Hanaoka, 2007; Hanaoka & Izumi, 2012; Khatib & Alizadeh, 2012; Qi & Lapkin, 2001; M. J. Song & Suh, 2008), and the picture-cued task has been investigated as a study variable (Khatib & Alizadeh, 2012; M. J. Song & Suh, 2008). M. J. Song and Suh

(2008) reported a positive noticing-triggering role for the picture-cued task. A picture story also provides the opportunity for free production while simultaneously controlling the propositional content (Hanaoka, 2007; Qi & Lapkin, 2001; M. J. Song & Suh, 2008). As they do not provide "verbal data," pictures prompt an "output-only" condition while providing a degree of content control (Qi & Lapkin, 2001). The control of the propositional content in this study simultaneously involved control of the expected grammatical structure (future tense), striking a balance between a pre-determined and a self-initiated language focus.

3.7.2 Arabic Speaker's Model Description of the Picture-cued Story

A 183-word paragraph (Appendix B) provided a model description of the picture story. The description did not only provide details on the picture activities, but also hypothesized about the cognitive and affective states of the main character and the reasons behind them, as the Output participants were required to do in their own descriptions. The paragraph was composed by the researcher, a native speaker of Levantine Arabic and an Intensive Arabic I instructor, and was reviewed by two native speaking professors, including a co-author of the course textbook. This procedure was followed to ensure language accuracy, language level suitability, and the accessibility of the text and the questions to the target student population.

The text was flooded with 12 instances of the target form (future tense). In line with input flood principles, the target structure was not highlighted, and the participants were not told to pay attention to the form (Wong, 2005). Also included in the text were

four instances of time telling and six instances of two time connectors (three each), which the participants were not taught formally prior to the experimental treatment.

Given the students' course training, the description was mostly written in the Levantine variety of Arabic, with numerous aspects coinciding with MSA and Egyptian Arabic. While one out of the six Arabic I sections focused on Egyptian Arabic, the students were not expected to have text processing difficulties. This conclusion was confirmed by the findings of the pilot study and the ultimate study; the Egyptian group participants achieved a comparable level of noticing and form integration to that of their Levantine groups' counterparts. The Levantine and Egyptian varieties share common words and structures, and part of the students' training in this course rested on the on-going exposure to different varieties of Arabic, with MSA, Levantine, and Egyptian being the ones introduced in the textbook.

Providing the Arabic speaker's model following the productive task is a common measure in output-induced noticing research (e.g. Hanakao, 2007; Hanaoka & Izumi, 2012; Izumi & Bigelow, 2000; Izumi et al., 1999; Kang, 2010). It provides the learners with a model text through which they could search for solutions to the interlanguage limitations noticed at L2 production, as hypothesized in the noticing function of the Output Hypothesis (Swain, 1985, 1995, 1998, 2000). This method was preferred to another frequent method, reformulations of student productions (e.g. Adams, 2003; Griffin, 2005; Qi & Lapkin, 2001; Santos et al., 2010), given time constraints.

3.7.3 Comprehension Questions

Multiple-choice comprehension questions (Appendix C) in two sets, pre-input exposure (seven questions) and post- input exposure (seven questions), were used to probe the participants' comprehension. The pre-input exposure set involved questions referring to the main character's thoughts, activities, and whereabouts at different times of the day, for which no verbal data were needed. The post-input exposure questions, on the other hand, involved questions assessing the participants' comprehension of the model description. The pre-exposure questions did not involve input with the target forms to avoid incidentally drawing learners' attention to the forms (see Izumi, 2002) in a way that would interfere with the output treatment. Post-exposure questions, however, involved target form instances given previous form exposure in the model description. The questions were reviewed by an Arabic professor, a co-author of the course textbook, to ensure clarity and suitability of language level.

3.7.4 Posttest Prompt

Inspired by the theme of the picture story, a "Your Upcoming Weekend" prompt (Appendix D) was developed as an immediate and delayed posttest for the study. The prompt provided a smooth transition from a hypothetical situation (picture story) to a real life situation in which the participants would narrate personal experiences within a context requiring the use of the target form. To help guide the participants with specific prompts, six questions were included, requiring details on weekend activities at different times of the day (e.g. "What are you going to do in the morning?" "What time?").

3.7.5 Reflection Questionnaire

A set of open-ended questions (Appendix E) were designed to tap the participants' thoughts on their noticing and form integration in a verbal report manner. The questions did not include reference to the word noticing; rather, they provided the participants with the freedom to express their thought processes as they deem relevant. The questions, however, elicited specific information on Arabic vocabulary, grammar, and features noticed and integrated, and made specific references to the study tasks such as: "Were there Arabic vocabulary, grammar, etc. that you didn't know when you were planning your first picture description but would have been helpful?" "What Arabic vocabulary, grammar, etc. did you learn from listening to the paragraph?" "What Arabic vocabulary, grammar, etc. did you learn from reading the paragraph?" The question "Is there anything else that you can tell us about completing any of these tasks?" served as a trigger for the participants' final thoughts.

3.7.6 The CIQ

This instrument (Appendix F) was adapted from Sarason's (1978) Cognitive Interference Questionnaire to tap learners' thoughts during task performance. The CIQ provided a more "here" and "now" measure of anxiety (MacIntyre & Gardner, 1991a), i.e. state anxiety, compared to a measure of general language anxiety. The CIQ has three components. **Component 1** (CIQ 1, henceforth) includes 11 items each requiring a response on a 5-point Likert scale ranging from 1 (never) to 5 (very often) on the frequency at which a person's task performance is interrupted by disruptive thoughts.

Sample items include “I thought about how poorly I was doing,” “I thought about the difficulty of the tasks,” and “I thought about my level of ability.” **Component 2** (CIQ 2, henceforth) involves a 7-point Likert scale ranging from 1 (Not at all) to 7 (very much) representing the degree to which the participants felt that their minds wandered while performing the tasks. **Component 3** (CIQ 3, henceforth) involves a 7-point Likert scale ranging from 1 (Not at all) to 7 (very much) representing the degree to which the participants were anxious during task performance. The CIQ 2 and the CIQ 3 were adapted to include the specific tasks in the study, and, thus, Output and Input CIQ versions were created.

3.7.7 The FLCAS

The FLCAS (Appendix G) was introduced by Horwitz et al. (1986). Designed to measure the “scope” and “severity” of language anxiety as well as learners’ reactions and concerns related to the foreign language classroom, the FLCAS is one of the most widely-used anxiety measurement scales in anxiety research (Dörnyei, 2005; Ortega, 2009), and has been considered a reliable and valid measure of language anxiety (Marcos-Llina´s & Garau, 2009). Reliability coefficients above .93 were consistently reported in language anxiety studies (Elkhafaifi, 2005; Frantzen & Magnan, 2005; Marcos-Llina´s & Garau, 2009; Sellers, 2000; Zhao et al., 2013).

Modified versions of the FLCAS continue to serve as the basis for studies tapping specific-skill anxieties such as the Foreign Language Reading Anxiety Scale (Saito et al., 1999) and the Foreign Language Listening Anxiety Scale (Elkhafaifi, 2005). The FLCAS

has been found to have a strong predictive ability of L2 speaking anxiety (Cheng et al., 1999), corroborating the argument the it is mainly a measure of speaking anxiety (Aida, 1994).

The FLCAS includes 33 items expressing reactions to the foreign language classroom. Each item requires a response on a 5-point Likert scale ranging from 1 (Strongly agree) to 5 (Strongly disagree). Some L2 speaking-related items include: "I feel very self-conscious about speaking Arabic in front of other students," "I always feel that the other students speak Arabic better than I do," and "I get nervous and confused when I am speaking in my Arabic class." Some items involve positive and negative versions of the same statement to ensure the construct validity of the scale (e.g. "I would probably feel comfortable around native speakers of Arabic" and "I would not be nervous speaking in Arabic with native speakers"). Other items probe various reactions toward similar situations (e.g. "I tremble when I know that I'm going to be called on in my Arabic class," "I start to panic when I have to speak without preparation in the Arabic class," and "I get nervous when the Arabic class teacher asks questions which I haven't prepared in advance"). Since the current study investigated Arabic as a foreign language, changes were made to the FLCAS wherever necessary ("e.g. "foreign language" to "Arabic," as shown in the sample items above). Combined, the CIQ and the FLCAS tap anxiety "as a dynamic system of variables that interact at a given moment in time" (Gregersen, MacIntyre, & Meza, 2014, p. 576), involving state anxiety and a situation-specific anxiety, respectively.

3.7.8 Interviews

Interviews were conducted with a selected number of the participants (n = 30), with 15 participants from the Output group and 15 from the Input group. The interview questions tapped the participants' thoughts and reflections on their noticing and learning during the various stages of the experimental treatment. In line with the reflection questionnaire, the interview questions were open-ended, giving the participants the freedom to express themselves and their thought processes in any way they see fit while also eliciting specific information on the Arabic vocabulary, grammar, etc. that they noticed and integrated. This time, however, the word "noticing" was mentioned to trigger explicit reflection as this was the last procedure in the study. Points from the participants' responses to the reflection questionnaire also served as interview prompts.

3.8 Data Analysis

3.8.1 FLCAS Scoring

Each participant had one language anxiety score as measured by the FLCAS. The 24 items worded in the anxious direction were scored in a straightforward manner with higher numbers reflecting higher levels of anxiety. The nine items worded in the non-anxious direction were reverse scored so that higher numbers would also reflect higher levels of anxiety. The total sum of scores for each participant was calculated and divided by the total number of items (33). The actual range of mean scores in this learner sample was 1.91 to 4.58 (M = 3.1 out of 5, SD = .7).

The participants were then classified as having "high anxiety," "moderate anxiety," or "low anxiety." The participants with an individual mean score that is one or more standard deviation above the total mean were classified as having "high anxiety" (all mean scores above 3.7 for this learner sample), and those with a mean score one or more standard deviation below the total mean were classified as having "low anxiety" (all mean scores below 2.5). This procedure identifies participants within the actual range of scores and enables the comparison with other learner populations (Sellers, 2000). The scoring of the FLCAS was carried out twice to ensure reliability. Table 3.3 below displays an overview of the score ranges and the participants' language anxiety and state anxiety levels as measured by the FLCAS and the CIQ.

Table: 3.3

The score ranges and the participants' language anxiety and state anxiety levels as measured by the FLCAS and the CIQ

	Range of scores in the sample	Low anxiety	Moderate anxiety	High anxiety
FLCAS	1.91 to 4.58	1.91-2.49	2.5-3.69	3.7-4.58
No. of participants		11 (13.75%)	55 (68.75%)	14 (17.5%)
CIQ aggregate score	3.9 to 17.53	3.9-6.19	6.2-10.79	10.8-17.53
No. of participants		11(13.75%)	57 (71.25%)	12 (15%)

3.8.2 CIQ scoring

Each participant had four state anxiety scores as measured by the CIQ: 1) total score, 2) CIQ component 1 score (11 items on a scale of 1-5), 3) CIQ component 2 score (5 items on a scale of 1-7), and 4) CIQ component 3 score (5 items on a scale of 1-7). Separate CIQ component scoring was first carried out following Sarason (1978). The total sum of scores for each component was calculated for every participant, and then divided by each component's total number of items. Once the three mean scores of the components were attained for each participant, a total sum state anxiety score out of 19 (total sum of component averages) was calculated for every participant to reflect a total state anxiety level. The actual range of scores in this learner sample was 3.9 to 17.53 (M = 7.99, SD = 2.2).

Based on the total sum of the mean scores of every participant, the participants were then classified as having "high anxiety," "moderate anxiety," or "low anxiety" (see Table 3.3 above). The participants with an individual mean score on the CIQ that is one or more standard deviation above the total mean were classified as having "high anxiety" (all mean scores above 10.8 for this learner sample), and those with a mean score one or more standard deviation below the mean were classified as having "low anxiety" (all mean scores below 6.2). The scoring of the CIQ was carried out twice to ensure reliability.

3.8.3 Categorization of Language Features

In accordance with Schmidt's (1990, 1995) premise of noticing as a "subjective experience," and in light of theoretical and empirical SLA results stipulating that learner-generated noticing may not match that intended by the teacher or the researcher (R. Ellis et al., 2001; Han, Park, & Combs, 2008; Hanaoka, 2007; Long & Robinson, 1998; Sharwood Smith, 1991, 1993), all aspects of learner noticing were considered in data analysis. In addition to the main target form of the study, the future tense, other noticed novel features included time telling, connectors, and new lexical items. The noticed features were classified into four categories: 1) syntax, 2) morphosyntax, 2) lexis, and 4) cohesion. Frequencies of the participants' noticed and integrated features were counted. This study reports on the most noticed language features.

3.8.4 Statistical Analysis

3.8.4.1 Variable Scoring

Data analysis involved a series of ordinal logistic regression analyses. In light of the research questions, noticing and form integration variables were created. Four noticing variables (total noticing, future tense noticing, time telling noticing, and connector noticing) were created. Eight integration variables were also created: Posttest 1 (total integration, future tense integration, time telling integration, and connector integration), and posttest 2 (total integration, future tense integration, time telling integration, and connector integration). Ordinal logistic regression has a discriminant function, allowing for the prediction of how a predictor variable associates with an

outcome variable across different levels of the outcome (Strand & Cadwallader, 2012). This statistical procedure was, therefore, followed in the current study to predict how anxiety associates with noticing at three levels: 1) low noticing, 2) medium noticing, and 3) high noticing. Table 3.4 below displays the noticing and integration variables (outcome variables) as well as the ranked noticing categories created in ordinal logistic regression.

Table: 3.4

Noticing and integration variables and the ranked categories in ordinal logistic regression

Noticing	Integration at Posttest 1	Integration at Posttest 2	Categorization in ordinal regression
1. Total noticing	1. Total integration	1. Total integration	Level 1: Low noticing
			Level 2. Medium noticing
2. Future tense	2. Future tense	2. Future tense	Level 3. High noticing
3. Time telling	3. Time telling	3. Time telling	Level 1: Low integration
			Level 2: Medium integration
4. Connectors	4. Connectors	4. Connectors	Level 3: High integration

Given the complexity of determining what learners noticed or not based solely on text underlining (underlining the whole phrase or idea unit for meaning was a confounding variable), each noticing variable consisted of a composite value out of 100 obtained by calculating two components (50 points each): 1) "text underlines," and 2) "reporting." The noticing percentage of "text underlines" was calculated by dividing the number of text underlines of a language feature by the total number of instances of the

feature in the text (see Izumi & Bigelow, 2000; Izumi et al., 1999) and multiplying it by 50. "Reporting," on the other hand, relied on learner reporting of noticed and integrated features in the reflection questionnaire and the interviews. This component included three categories: 1) no reporting, 2) partial reporting, and 3) full reporting. These categories were ordered as 1, 2, 3, with values of 0, 25, and 50, respectively. A higher grade reflected a higher level of noticing. Table 3.5 below displays the score break-up of a sample variable: future tense noticing. The scoring of integration variables was straightforward; one point was assigned for each instance of integration of a target form. Therefore, the more the integrations, indicating a level of awareness of target features, the higher the grade.

The total noticing variable was scored by calculating the average of all three noticing variables (future tense noticing, time telling noticing, and connector noticing). This method offered an aggregate representation of noticing for each participant, which would better tap self-generated noticing. The same procedure was followed in scoring the total integration variables at posttests 1 and 2.

A second research assistant was recruited at the data analysis phase of the study. The researcher and the research assistant separately scored 25% of student productions at posttests, reaching an inter-rater reliability percentage of 97%. The research assistant had also transcribed the student productions and interviews, and all were double-checked for accuracy by the researcher.

Table: 3.5

Sample scoring of a composite noticing variable

Future tense noticing (100%)	
Text underlines (50%)	**Reporting (50%)**
• Number of underlined instances in the text/12 (total number of future instances in the model text) • X 50	1. Future tense not reported (0) 2. Future tense reported with no meaning (25) 3. Future tense reported with meaning (50)

3.8.4.2 Statistical Procedures

Ordinal logistic regressions were carried out in the current study using SPSS software. Ordinal regression was chosen as the appropriate statistical procedure rather than linear regression as the scores on most of the outcome variables were not normally distributed. Ordinal regression models take advantage of the ordinality on the outcome variables to build parsimonious models summarizing relationships between the predictor variable(s) and the outcome (Strand & Cadwallader, 2012). The categories of ordinal regression were small, medium, and high to reflect the level of noticing and form integration on 12 outcome variables (see Table 3.4 above). Given the number of regressions carried out, the probability level of statistical significance was set at $p < .025$.

The participants' noticing was compared across the Input and Output groups and across the language features noticed. Form integration, also considered a sign of noticing per the theoretical tenets presented earlier in the chapter, was compared at both posttests

and across the groups and the language features noticed as well. The noticing and integration variables served as the outcome variables, and the FLCAS, the CIQ, the Group (Input or Output), and L2 achievement as the predictor variables.

Chapter 4: Results

This chapter presents the findings of the study. It begins with the presentation of some introductory results needed to understand the noticing and form integration findings. These include descriptive statistics, the anxiety-cognition association, anxiety and L2 achievement as a control variable, the language features most noticed, and the noticing-form integration connection. It next presents the results in response to the research questions across each of the noticing and form integration variables, and ends with additional findings from quantitative and qualitative data. The fourth research question investigating differential anxiety predictions under the Input and Output conditions will be discussed alongside the three other research questions.

4.1 Introductory Results

4.1.1 Descriptive Statistics

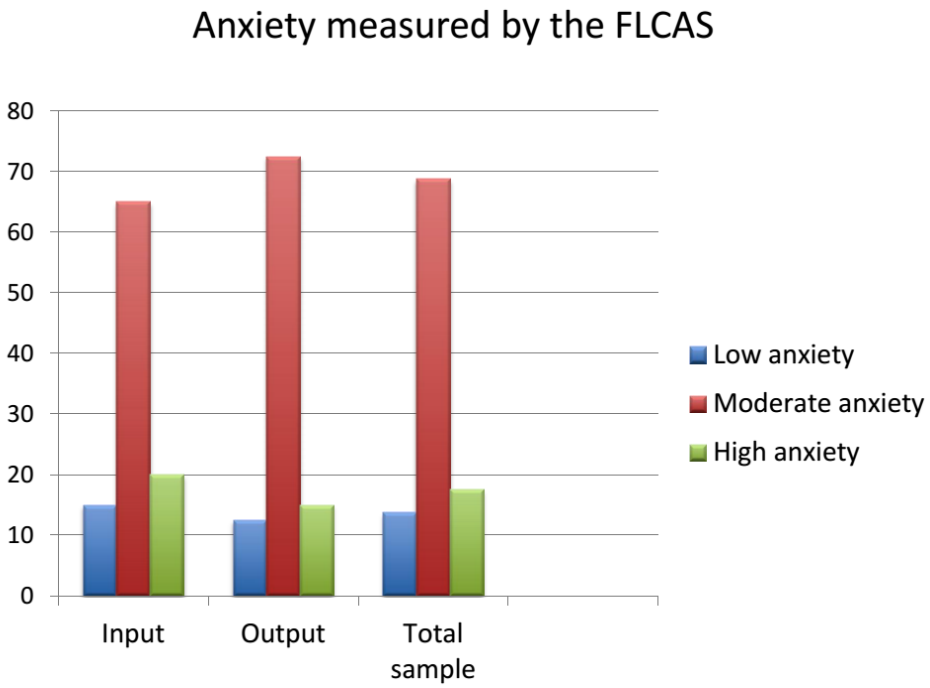
Table 4.1 presents the descriptive statistics of the FLCAS and the components of CIQ.

Table 4.1

Descriptive statistics of the FLCAS and the CIQ

			Input (n = 40)		Output (n = 40)		Total sample (N = 80)	
	Scale	*Score range*	*M*	*SD*	*M*	*SD*	*M*	*SD*
FLCAS	1-5	1.91-4.58	3.1	.7	3.1	.6	3.1	.63
CIQ – 1	1-5	1.45-4.73	2.6	.5	2.9	.7	2.7	.61
CIQ – 2	1-7	1-5.8	2.7	1.1	2.9	1	2.8	1
CIQ – 3	1-7	1-7	2.7	1.3	3.2	1.3	3	1.3
CIQ aggregate score	1-19	3.9-17.53	7.99	2.2	8.97	2.4	8.5	2.3

It could be seen from the values above that none of the means on any of the anxiety measures was in the "high" or "low" ranges; rather, all were in the moderate range. Small standard deviations across the measures could also be noted. These results apply across the Input and Output groups, suggesting comparability of the scores across the two treatment conditions, and a predominance of moderate level anxieties across the entire sample (Figure 4.1). While some differences between the Input and Output groups could be observed (e.g. the higher number of high-anxiety participants on the FLCAS in the Input group as shown in Figure 4.1), a series of *t*-tests confirmed that the Input and Output groups did not significantly differ on any of the predictor variables. The FLCAS and the CIQ also showed comparability in the make-up of anxiety levels, despite slight observed differences (e.g. the higher rate of moderate anxiety on the CIQ and the higher rate of high anxiety on the FLCAS in the entire sample).



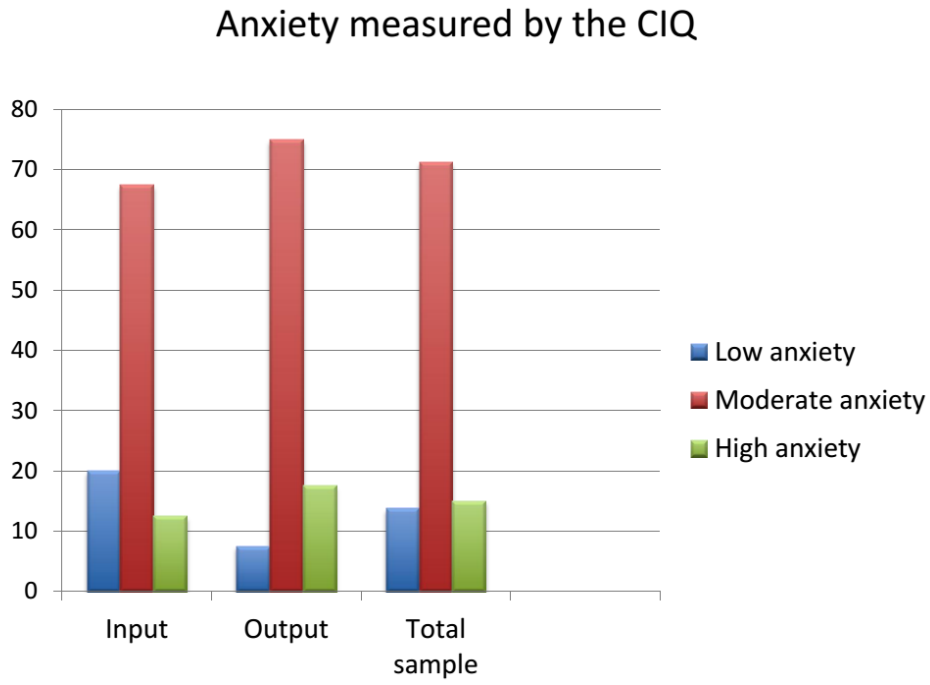


Figure 4.1. Levels of anxiety as measured by the FLCAS and the CIQ.

4.1.2 Anxiety and Task Cognition Connection

This study is premised on an anxiety-cognition association (Eysenck, 1976; MacIntyre, 1995a, 1995b; MacIntyre & Gardner, 1989, 1994b; Sarason, 1978, 1984; Tobias, 1986). The assumption underlying the research questions is that anxiety is linked to cognitive functioning through disruptive off-task cognition that would lead to observed task performance effects. A set of correlations (Table 4.2) confirmed the anxiety off-task cognition link, despite the low to medium size of the correlations. Disruptive off-task thoughts measured by the CIQ 1 and off-task focus measured by the CIQ 2 positively correlated ($r = .226$, $p < .05$), and both positively correlated with state anxiety measured by the CIQ 3 ($r = .548$, $p < .01$ with the CIQ 1; $r = .391$, $p < .01$ with the CIQ 2). Thus, the higher the state anxiety level, the more off-task cognition experienced during task performance and vice versa. These correlations point to anxiety-cognition associations, and confirm the CIQ as a measure of state anxiety with relevant components assessing off-task cognition during task performance. Accordingly, the study, henceforth, will present results in relation to the FLCAS as a measure of language anxiety and the CIQ total as a measure of state anxiety experienced during task performance.

Table 4.2

Correlation matrix of language anxiety (the FLCAS) and state anxiety (the CIQ)

	FLCAS	CIQ 1	CIQ 2	CIQ 3
CIQ 3	-.486**	.548**	.391**	1
	.000	.000	.000	.000
	80	80	80	80
FLCAS	1	-.379**	-.108	-.486**
	.000	.000	.338	.000
	80	80	80	80
CIQ 1	-.379**	1	.226*	.548**
	.000	.000	.000	
	80	80	80	

* p < .05. ** p < .01.

It should also be noted that language anxiety as measured by the FLCAS had significant low to moderate negative correlations with the CIQ total (r = -.426, p < .01), the CIQ 1 (r = -.379, p < .01), and the CIQ 3 (r = -.486, p < .01), but did not correlate significantly with the CIQ 2 (r = -.108, p = .338). Thus, the more language anxiety increased, the more state anxiety decreased, a particularly interesting finding on which the rest of the study will elaborate.

4.1.3 Anxiety and L2 Achievement

Given the difficulty of assessing pure anxiety effects without considering variations in learners' L2 achievement levels, L2 achievement was included as a control variable in this study. Table 4.3 presents the correlation matrix of the FLCAS, the CIQ,

and L2 achievement. Of the two anxiety measures, only the FLCAS positively correlated with L2 achievement ($r = .304$, $p < .01$). The positive direction of the correlation suggests that the higher the level of L2 achievement, the more language anxiety experienced, and vice versa, a particularly interesting result that goes against the bulk of anxiety research to date. Such a finding could be difficult to interpret unless language anxiety is redefined in this study as "alertness" or "euphoric cognitive tension" (Spielamann and Radnofsky, 2001), as to be seen in the remainder of the results below. While state anxiety correlated negatively with L2 achievement ($r = -.102$), a finding more in line with anxiety literature, it did not reach statistical significance.

Table 4.3

Correlation matrix of the FLCAS, the CIQ, and L2 achievement

	FLCAS	CIQ total
L2 achievement	.304**	-.102
	.000	.370
	80	80

** $p < .01$.

4.1.4 Language Features Noticed

Table 4.4 presents the mean percentages, ranges, and standard deviations of the participants' most noticed language features (the future tense, time telling, and time connectors). In reporting the results of this study, only features to which the participants had not been formally introduced in the course are presented to assess the noticing and

intake of novel L2 forms. The intended target feature was the future tense, with 12 form instances in the Arabic speaker's model. The participants also noticed time telling (four form instances) and time connectors (six instances of two connectors).

Table 4.4

Mean percentages, ranges, and standard deviations of the participants' noticing

	Input (n = 40)			Output (n = 40)			Total sample (N = 80)		
	Range	*M*	*SD*	*Range*	*M*	*SD*	*Range*	*M*	*SD*
Total noticing	0-73.6*	24.6	23.4	0-69	26.1	20.1	0-73.6	25.4	21.7
Future tense noticing	0-100	23.8	27.2	0-75	22.6	19.9	0-100	23.2	23.7
Time telling noticing	0-100	32.2	35.4	0-100	30.6	31.5	0-100	31.4	33.1
Connector noticing	0-100	17.9	30.1	0-100	25.6	29.2	0-100	21.8	29.7

* All values are out of 100%.

It could be seen from the means in Table 4.4 above that the participants' mean percentages of individual feature noticing ranged from about 18% to about 32% of the total percentages of instances of novel language features. The feature most noticed in the entire sample was time telling, i.e. a syntactic feature (31.4%), while the least noticed was connectors (21.8%), i.e. a cohesion feature. At the group level, however, the future tense was the feature least noticed in the Output group (22.6%), while connectors were the least noticed in the Input group (17.9%). The Output group had a higher mean of noticing of connectors (25.6%), but the difference was not statistically significant, and

comparable means were detected across the groups. The participants' mean noticing percentages across the groups and the entire sample is charted in Figure 4.2 below.

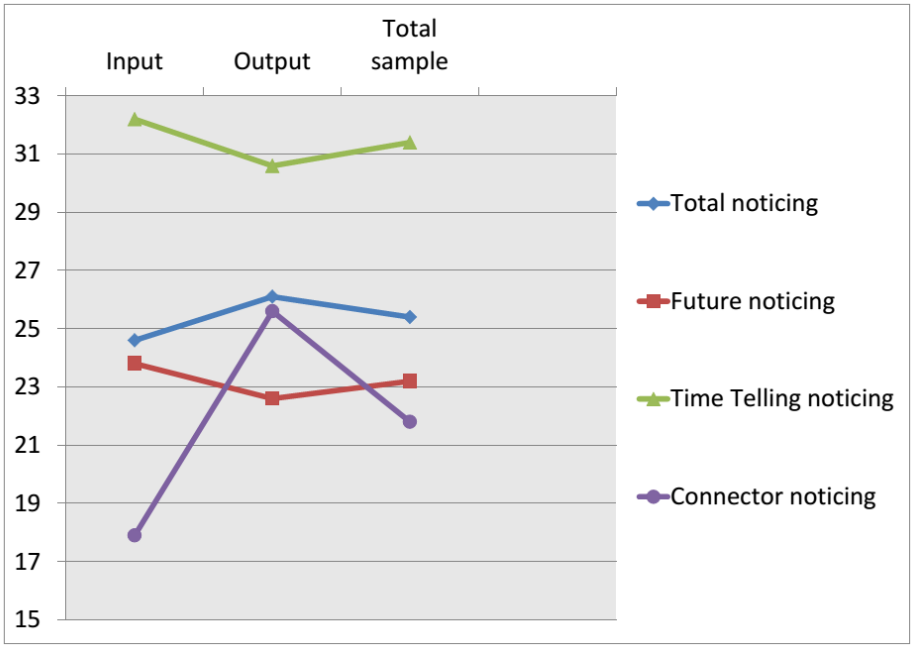


Figure 4.2. A visual display of the participants' mean noticing percentages.

Of particular note are the large standard deviations across all of the features noticed. The noticing of time telling and connectors in the total sample had a standard deviation of 33.1 and 29.7, respectively, with 42.5% of the participants scoring zeroes in the noticing of time telling and 52.5% scoring zeroes in connector noticing (see Figure 4.3 below). These deviations suggest considerable dispersion of percentages, and, thus, learner noticing variations across all of the features, in line with the original premise of noticing as a subjective, private experience (Schmidt, 1990, 1995). They also point to the necessity of using non-parametric statistics in data analysis, as has been done in the

current study. Also of note is that, compared to the total sample, only a few participants scored at the higher end of the ranges, and numerous zero scores could be noticed across all of the features. Figure 4.3 presents the noticing percentages of the features in the entire sample.

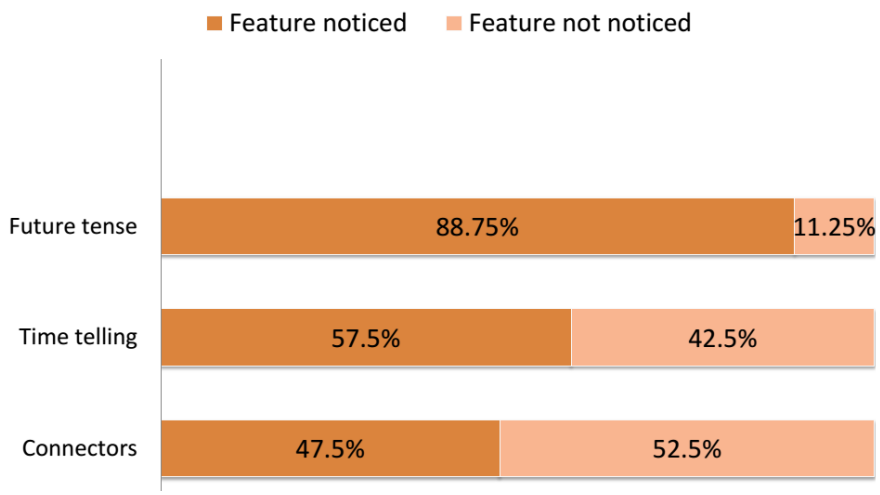


Figure 4.3. The noticing percentages of the features in the entire sample.

4.1.5 Language Features Integrated

4.1.5.1 Posttest 1

Table 4.5 presents the mean scores, ranges, and standard deviations of the participants' integration of noticed forms (the future tense, time telling, and connectors) on posttest 1.

Table 4.5

Mean scores, ranges, and standard deviations of the participants' form integration on posttest 1

	Input (n = 40)			Output (n = 40)			Total sample (N = 80)		
	Range	*M*	*SD*	*Range*	*M*	*SD*	*Range*	*M*	*SD*
Total integration	0-10*	1.65	2.6	0-43	3.5	7.57	0-43	2.58	5.7
Future tense integration	0-7	.48	1.71	0-20	1.63	4.04	0-20	1.05	3.14
Time telling integration	0-4	.95	1.3	0-13	1.13	2.35	0-13	1.04	1.89
Connector integration	0-4	.23	.77	0-10	.75	1.84	0-10	.49	1.42

* Each instance of form integration is worth 1 point.

It could be seen from the means in Table 4.5 above that the participants' form integration means on individual forms ranged from .23 to 1.63 points (M = 2.58 on total integration in the entire sample). The future tense and time telling were the features most integrated in the entire sample, and connectors the least integrated, with means of 1.05, 1.04, and .49, respectively. Time telling, the feature with the highest mean percentage of noticing (Table 4.4), had almost the same integration mean as that of the future tense (1.04 and 1.05, respectively). On the group level, the Output group had higher means on all of the integration variables than the Input group, with the clearest difference being in the integration of the future tense (.48 in the Input group and 1.63 in the Output group). These differences did not reach statistical significance, however. The participants' mean integration scores across the groups and the entire sample is charted in Figure 4.4 below.

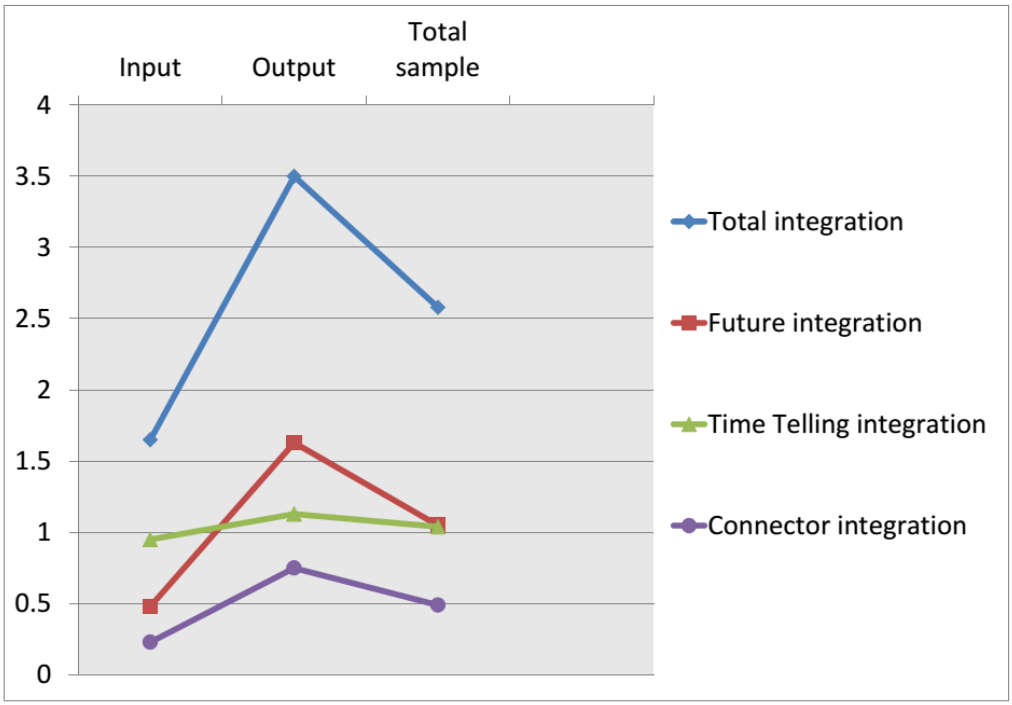


Figure 4.4. A visual display of the participants' mean integration scores on posttest 1.

In line with the noticing results, large standard deviations across all of the features could be noticed compared to the means, suggesting considerable variations in learner form integration. Similar to the noticing results as well, only a few participants scored at the higher end of the ranges, and numerous zero scores could be noticed across the features. Figure 4.5 presents the integration percentages of the features on posttest 1 in the entire sample.

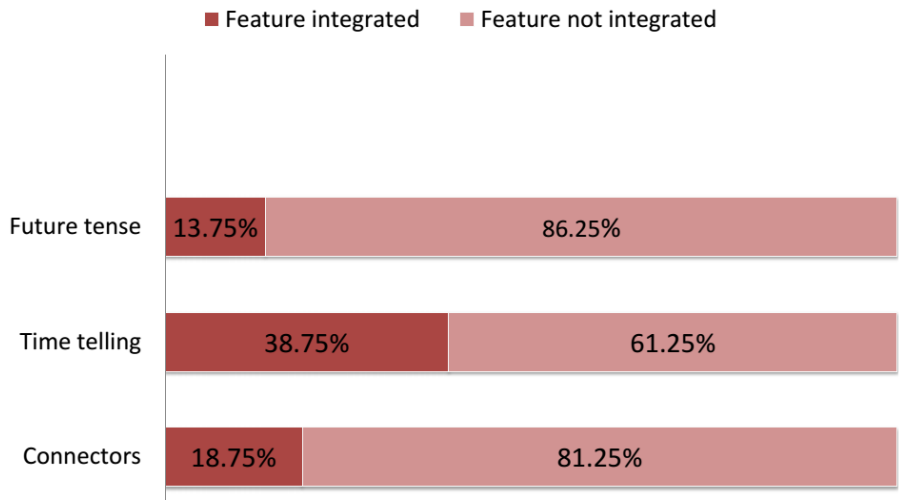


Figure 4.5. The integration percentages of the features on posttest 1 in the entire sample.

4.1.5.2 Posttest 2

Table 4.6 presents the mean scores, ranges, and standard deviations of the participants' integration of noticed forms on posttest 2.

Table 4.6

Mean scores, ranges, and standard deviations of the participants' form integration on posttest 2

	Input (n = 40)			Output (n = 40)			Total sample (N = 80)		
	Range	*M*	*SD*	*Range*	*M*	*SD*	*Range*	*M*	*SD*
Total integration	0-17*	1.83	3.27	0-14	2.95	4.18	0-17	2.39	3.77
Future tense integration	0-13	.6	2.26	0-12	1.1	2.81	0-13	.85	2.55
Time telling integration	0-4	.9	1.32	0-5	1.1	1.5	0-5	1	1.41
Connector integration	0-5	.33	.92	0-6	.75	1.53	0-6	.54	1.27

* Each instance of form integration is worth 1 point.

It could be seen from Table 4.6 above that the participants' form integration means on posttest 2 were comparable to those on posttest 1 (especially in the Input group), with only minimal increases (e.g. connector integration in the entire sample, .49 to .54) or minimal drops (e.g. total integration in the entire sample, 2.58 to 2.39). The clearest drop could be observed in the future tense, dropping from 1.63 to 1.1 in the Output group, and from 1.05 to .85 in the entire sample. Time telling was the feature most integrated in the entire sample, in line with the results from noticing and from integration on posttest 1 (time telling had almost the same integration mean score on posttest 1 in the entire sample as that of the future tense, with 1.04 for the former and 1.05 for the latter). On the group level, the Output group had higher means on all of the integration variables than the Input group, as was the case in posttest 1, but the differences were more minimal than those on posttest 1, and did not reach statistical significance. Figure 4.6 presents the mean integration scores across the groups and the entire sample on posttest 2.

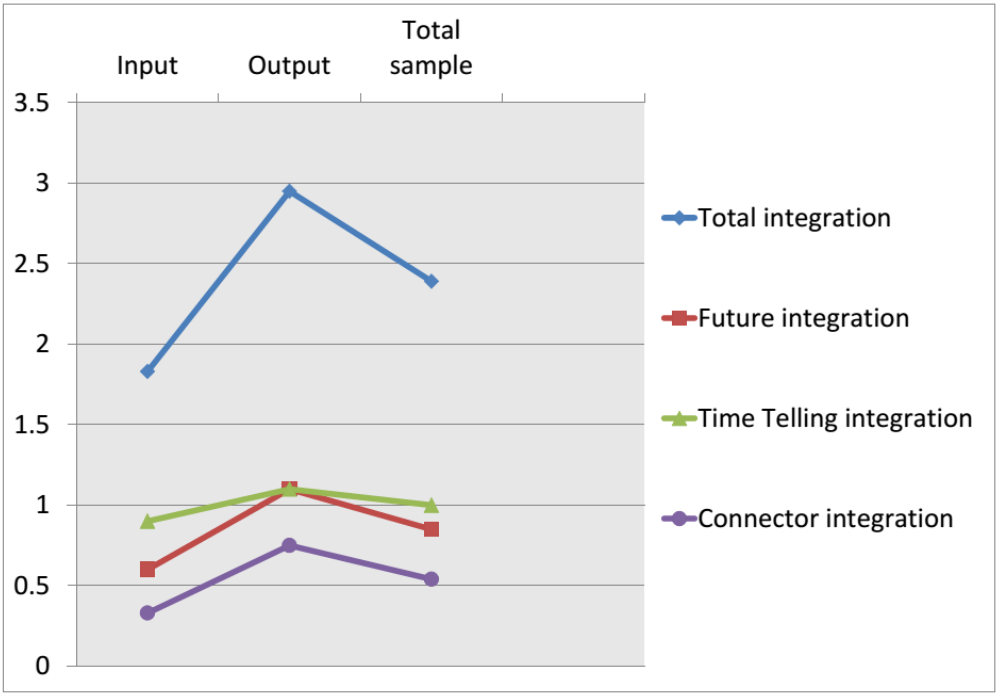


Figure 4.6. A visual display of the participants' mean integration scores on posttest 2.

Large standard deviations across all of the features compared to the means could still be observed. In line with noticing and posttest 1 results, only a few participants scored at the higher end of the ranges, and numerous zero scores could be noticed across the features. Figure 4.7 presents the integration percentages of the features on posttest 2 in the entire sample.

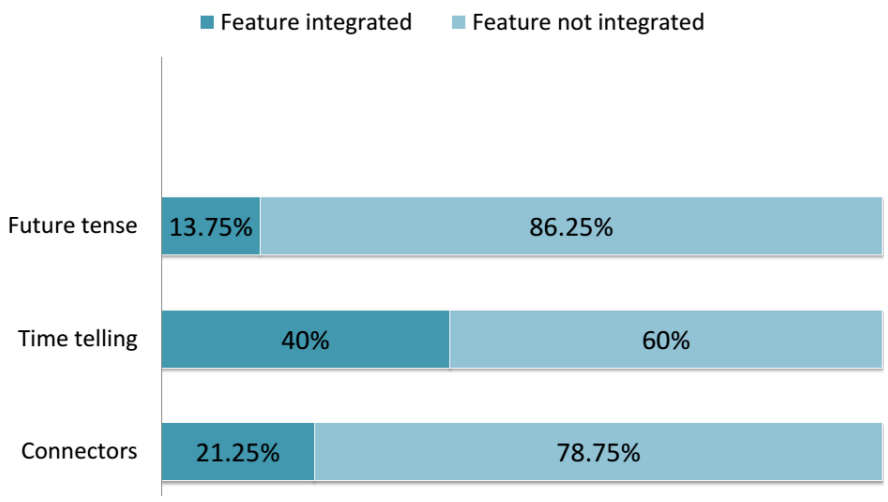


Figure 4.7. The integration percentages of the features on posttest 2 in the entire sample.

4.1.6 Noticing and Form Integration Connection

The current study is premised on a positive noticing-form integration association per the original proposals of the Noticing Hypothesis (Schmidt, 1990, 1993, 1994, 1995) and the Output Hypothesis (Swain, 1985, 1995, 1998, 2000). This association was the foundation on which many output-induced noticing studies were built (Adams, 2003; Hanaoka, 2007; Hanaoka & Izumi, 2012; Izumi, 2002; Izumi & Biglow, 2000; Izumi et al., 1999; Kang, 2010; Leeser, 2008; Qi & Lapkin, 2001; Sakai, 2004; Sheen, 2008; M. J. Song & Suh, 2008; Uggen, 2012; Vickers & Ene, 2006). The underlying assumption in these studies was that if a form is successfully noticed, it will appear in learners' subsequent production, for noticing is what mediates input and intake (Schmidt, 1990, 1993, 1994 1995). Thus, as noted earlier, intake was operationalized by form integration in this study.

A set of correlations (Tables 4.7 and 4.8) confirmed the positive noticing-form integration link. When form noticing increased, so did form integration. While the correlations were mostly in the moderate range, they were all significant at $p < .01$. Of particular note is that total noticing positively correlated with total integration on posttest 1 ($r = .475$, $p < .01$) and on posttest 2 ($r = .527$, $p < .01$) despite the two week time gap between the posttests. The posttests positively correlated with each other as well ($r = .611$, $p < .01$). Similarly, the noticing of each feature positively correlated with its integration on both posttests, and all of the correlations were significant at $p < .01$ (Table 4.8).

Table 4.7

Correlation matrix of total noticing and total form integration

	Total noticing	Total integration on posttest 1	Total integration on posttest 2
Total noticing	1	.475**	.527**
	.000	.000	.000
	80	80	80
Total integration on posttest 1	.475**	1	.611**
	.000	.000	.000
	80	80	80

** $p < .01$.

As expected given the time gap between the posttests, the size of the correlations between form noticing and form integration dropped from posttest 1 to posttest 2 (Future tense: $r = .472$ to $r = .369$; Time telling: $r = .518$ to $r = .491$). Interestingly, however, the size of the correlation between connector noticing and connector integration increased (r

= .312 to r = .541), a finding in line with the result of the total noticing-total integration correlation (r = .475 to r = .527) as shown in Table 4.7 above.

Table 4.8

Correlation matrix of the noticing and integration of the features

	Noticing of the feature	Integration of the feature on posttest 1	Integration of the feature on posttest 2
Future tense noticing	1	.472**	.369**
	.000	.000	.000
	80	80	80
Time telling noticing	1	.518**	.491**
	.000	.000	.000
	80	80	80
Connector noticing	1	.312**	.541**
	.000	.000	.000
	80	80	80

** p < .01

4.2 Findings of Research Questions

Figure 4.8 provides a visual representation of the general findings of the first three research questions investigating the association between anxiety and the noticing and integration of language form across different features (The arrows indicate significant predictions, and the figures show the odds ratios obtained from the ordinal logistic regressions). A discussion of the findings of these three research questions follows. The fourth research question investigating differential anxiety predictions under the Input and Output conditions will be discussed alongside the other three research questions.

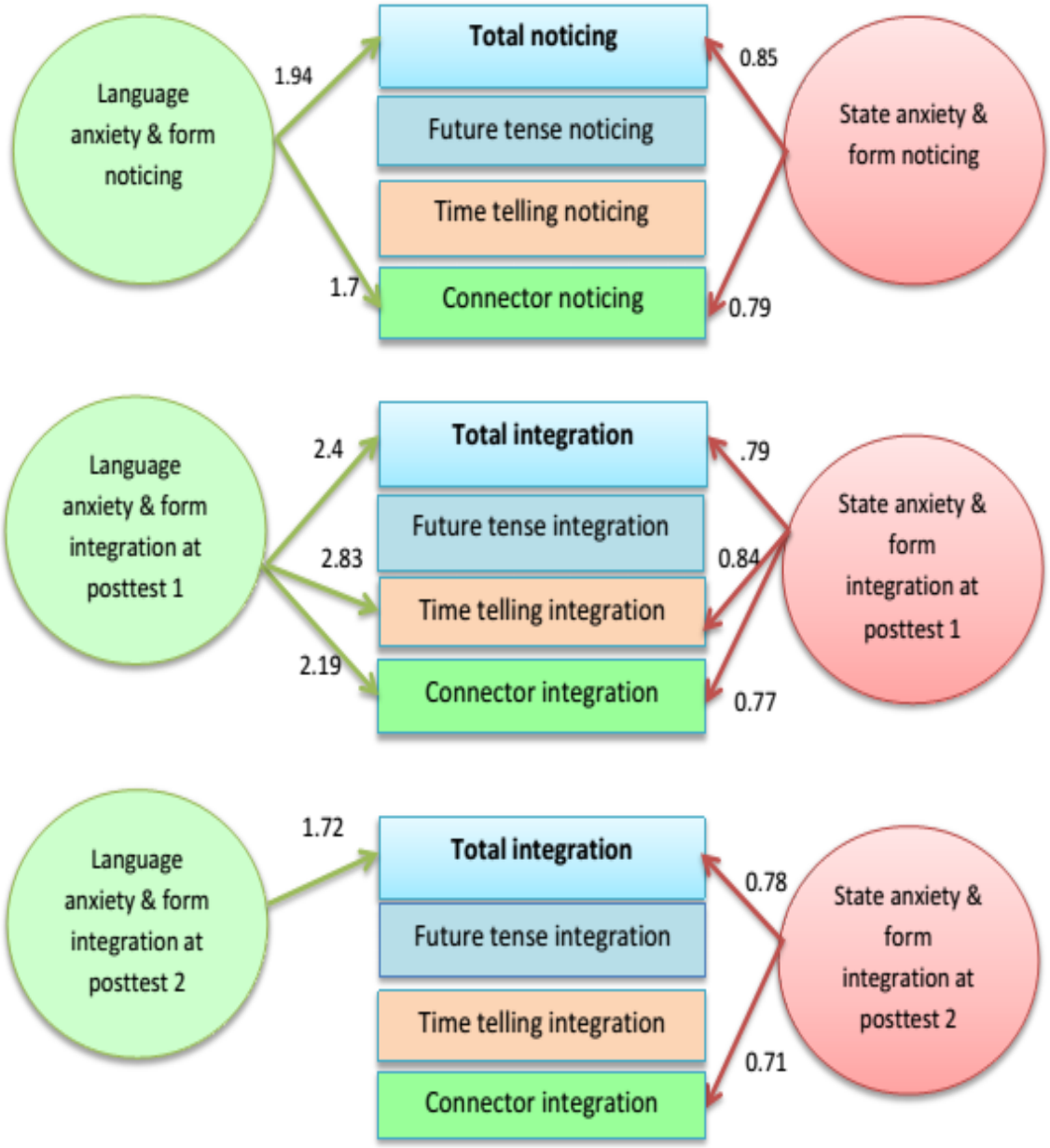


Figure 4.8. A visual representation of the findings of the first three research questions.

4.2.1 Research Question 1: Anxiety and Total Noticing

Tables 4.9 and 4.10 present results from ordinal logistic regression in response to the first research question investigating the anxiety-noticing association. Given the multicollinearity problem arising from the significant correlations between the FLCAS and the CIQ, and having had several continuous variables in these regression models, including the CIQ alongside the FLCAS resulted in models that failed to meet the assumption of proportional odds, a key assumption in ordinal logistic regression (Kleinbaum & Klein, 2010; Strand & Cadwallader, 2012). Separating the FLCAS and the CIQ resulted in better model fits that met the required assumptions. Therefore, the results throughout the remainder of this chapter will be presented in one separate model for each variable, one including the FLCAS, L2 achievement, and the Group (Input or Output), and the other including the CIQ, L2 achievement, and the Group. While the FLCAS and L2 achievement also correlated, reducing the predictive power of the models, including L2 achievement as a control variable was needed to better assess pure anxiety effects.

Table 4.9

Anxiety on the FLCAS and total noticing

	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	22.32	.000**	.282	
	Estimate	*OR*	*Wald*	*Sig.*
FLCAS	.663	1.94	8.159	.004**
L2 achievement	.063	1.07	8.055	.005**
Group	.241	1.27	.765	.382

** p < .01.

The results in Table 4.9 above display a significant positive association between total noticing and language anxiety as measured by the FLCAS. The entire regression model was significant at $p < .001$ and the pesudo R^2 shows that the variables collectively explain 28.2% of the variance in the prediction of total noticing. For every unit increase in the FLCAS, total noticing was predicted to increase by about 2 units. This finding suggests that after controlling for L2 achievement and the Group, the participants who tended to have higher language anxiety were more likely to score higher on the total noticing of language form. Excluding the Group and L2 achievement, anxiety explained 17.4% of the variance in total noticing prediction. The two unit increase in noticing might seem too small against a scale of percentages, but the participants' mean noticing percentages were clustered in a number of units given the number of instances of each language form in the model text. The Group was not statistically significant, and no significant interaction effects were detected across the variables. Anxiety predictions were, thus, consistent across the Input and Output groups, and, as a result, the fourth research hypothesis was not supported.

Comparable results were attained when the FLCAS was replaced by the CIQ in the regression model (Table 4.10). The entire model was significant at $p < .001$ and the variables collectively explained 25.5% of the variance in the prediction of total noticing. Of particular note is that the magnitude and direction of anxiety on the CIQ differed from that on the FLCAS. For every unit increase in the CIQ, total noticing was predicted to decrease by less than 1 unit. Accordingly, after controlling for L2 achievement and the Group, the participants who tended to have higher state anxiety were more likely to score

lower on total noticing of language form, suggesting variations in anxiety effects across anxiety types. In line with the FLCAS model, the Group was not statistically significant, but significant interaction effects between L2 achievement and the group at all levels of noticing were detected ($p < .01$). This finding suggests a variation in the way L2 achievement predicts noticing in this sample.

Table 4.10

Anxiety on the CIQ and total noticing

	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	19.898	.000**	.255	
	Estimate	*OR*	*Wald*	*Sig.*
CIQ	-.161	0.85	5.550	.018*
L2 achievement	.069	1.07	10.570	.001**
Group	.125	1.13	.199	.656

* p < .025. ** p < .01.

In light of the results above, the first research hypothesis stipulating an association between learner noticing and anxiety was supported. However, this association was more complex than predicted. Language anxiety seemed to increase rather than interfere with the probability of noticing language form. State anxiety, on the other hand, was negatively associated with noticing; the higher the state anxiety, the lower the probability to notice language form. On a group level, no significant Input/Output differences were observed, a result that does not corroborate the proposals of the Output Hypothesis.

4.2.2 Research Question 2: Anxiety and Noticing across Language Forms

4.2.2.1 Anxiety and the Noticing of the Future Tense (Morphosyntax)

The second research question investigated the anxiety-noticing association across different language forms. Table 4.11 presents results on the relation between both anxiety measures and the noticing of the future tense, a morphosyntactic feature deemed to be less salient than the other features in the current study. The first research hypothesis was not supported here, while the second one was, as to be explained in the Discussion section. No significant predictions were detected on either anxiety measure, and of all the variables, only L2 achievement approached statistical significance at $p < .05$ in the FLCAS model and reached statistical significance in the CIQ model at $p < .025$. Both models minimally explained the variance in the prediction of future tense noticing (6.6% in the FLCAS model and 8.6% in the CIQ model), and neither model was statistically significant. Regression models with only the FLCAS or the CIQ in the model together with the Group did not gain statistical significance either. Interestingly, both the FLCAS and the CIQ had a positive association with noticing, but the lack of statistical significance reduces the concern with this finding.

Table 4.11

Anxiety on the FLCAS and the CIQ and the noticing of the future tense

	FLCAS			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	4.782	.188	.066	
	Estimate	*OR*	*Wald*	*Sig.*
FLCAS	.000	1	.000	.999
L2 achievement	.036	1.037	4.202	.040
Group	-.010	0.99	.002	.968
	CIQ			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	6.301	.098	.086	
	Estimate	*OR*	*Wald*	*Sig.*
CIQ	.070	1.072	1.474	.225
L2 achievement	.039	1.0397	5.153	.023*
Group	.065	1.067	.060	.806

* $p < .025$.

4.2.2.2 Anxiety and the Noticing of Time Telling (Syntax)

Table 4.12 presents results on the relation between anxiety and the noticing of time telling, a syntactic feature deemed to be more salient than the future tense marker. Similar to the noticing of the future tense, the first research hypothesis was not confirmed, but the second one was. No significant effects were detected on either anxiety measure, even though FLCAS approached statistical significance at $p = .056$. L2 achievement was the only significant variable in both models ($p < .001$), but significantly interacted with the group. Both the FLCAS and the CIQ models were statistically significant, however ($p < .001$), explaining 33.1 % and 31.9% of the variance in the prediction of time telling noticing, respectively. As expected, when entered into the

regression model with the Group only, the FLCAS gained statistical significance at p < .025, and no interaction effects were observed. This result suggests consistent language anxiety predictions across both groups and contradicts the fourth research hypothesis. The CIQ and the Group model (without L2 achievement) only approached statistical significance at p = .058. In line with total noticing results, the FLCAS had a positive association with noticing, while the CIQ had a negative association.

Table 4.12

Anxiety on the FLCAS and the CIQ and the noticing of time telling

	FLCAS			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	26.647	.000**	.331	
	Estimate	*OR*	*Wald*	*Sig.*
FLCAS	.469	1.6	3.656	.056
L2 achievement	.093	1.1	14.542	.000**
Group	.054	1.1	.034	.853
	CIQ			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	25.476	.000**	.319	
	Estimate	*OR*	*Wald*	*Sig.*
CIQ	-.106	0.90	2.432	.119
L2 achievement	.099	1.11	16.999	.000**
Group	-.092	0.91	.095	.758

** p < .01.

4.2.2.3 Anxiety and the Noticing of Connectors (Cohesion)

Table 4.13 presents results on the relation between anxiety and the noticing of connectors, a feature deemed to be more salient than the future tense. The first research hypothesis was confirmed, with significant anxiety-noticing connections, and so was the second one. After controlling for L2 achievement and the Group, a significant FLCAS anxiety-connector noticing association was observed at $p < .025$. An increase in every unit of the FLCAS, predicted an increase of noticing by about 1.75 units, a consistent finding across the Input and Output groups with no significant interaction effects. Thus, the participants who tended to have higher language anxiety were more likely to score higher on the noticing of connectors regardless of group membership, countering the predictions of the fourth research hypothesis. The Output group seemed to have superior noticing compared to the Input group, and approached statistical significance for the first time ($p = .058$). Together, the variables accounted for 17.1% of the noticing prediction variance.

The explanatory percentage of the FLCAS model increased to 25.3% in the CIQ model, with both the Group and anxiety on the CIQ significantly predicting the noticing of connectors at $p < .01$. The negative CIQ-noticing association was corroborated, and with every unit increase in the CIQ, noticing was predicted to decrease by about .8 of a unit. On the group level, the participants in the Output group were almost twice more likely to notice connectors than were Input group participants. No interaction effects were observed, and, therefore, state anxiety predictions were consistent across the Input and Output groups.

Table 4.13

Anxiety on the FLCAS and the CIQ and the noticing of connectors

FLCAS				
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	12.860	.005**	.171	
	Estimate	*OR*	*Wald*	*Sig.*
FLCAS	.530	1.7	5.315	.021*
L2 achievement	.023	1.02	1.572	.210
Group	-.516	0.6	3.590	.058
CIQ				
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	19.852	.000**	.253	
	Estimate	*OR*	*Wald*	*Sig.*
CIQ	-.236	0.79	11.038	.001**
L2 achievement	.029	1.03	2.627	.105
Group	-.761	0.47	6.977	.008**

* p < .025. ** p < .01.

To summarize, the results in this section addressed the association of anxiety and the noticing of language form in input subsequent to language production. Language anxiety as measured by the FLCAS positively associated with total noticing and the noticing of connectors, while state anxiety on the CIQ negatively associated with these same variables, suggesting that noticing specific language features was susceptible to anxiety predictions of both types. Differential anxiety predictions of noticing were detected across different language forms, but were consistent across the treatment conditions (Input or Output).

4.3 Research Question 3: Anxiety and Form Integration

4.3.1 Anxiety and Total Form Integration

Table 4.14 presents results addressing the third research question on the relation between anxiety and intake of language form as evidenced by form integration at posttest 1 (immediate posttest) and posttest 2 (delayed posttest). The third research hypothesis proposed in the study stipulated an association between learner anxiety and form integration. In line with the anxiety-noticing results, this hypothesis was supported, but also proved more complex than predicted at the outset of the study.

On posttest 1, language anxiety measured on the FLCAS was a better predictor of the total integration of language form than L2 achievement ($p < .001$), a consistent finding with no interaction with the Group. For every unit increase in the FLCAS, total form integration was predicted to increase by about 2.5 units, a significant increase given that each instance of form integration was allotted 1 point in data analysis. Hence, the participants who tended to have higher language anxiety were more likely to integrate language forms on posttest 1. Similar predictions were also observed at posttest 2. Anxiety-form integration association reached statistical significance at $p < .025$, and form integration was predicted to increase by about 1.75 units with every unit increase in the FLCAS.

Table 4.14

Anxiety on the FLCAS and total form integration on posttests 1 and 2

Posttest 1				
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	23.542	.000**	.292	
	Estimate	*OR*	*Wald*	*Sig.*
FLCAS	.873	2.4	13.298	.000**
L2 achievement	.042	1.05	4.128	.042
Group	-.171	0.84	.387	.534
Posttest 2				
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	20.393	.000**	.257	
	Estimate	*OR*	*Wald*	*Sig.*
FLCAS	.540	1.72	5.667	.017*
L2 achievement	.058	1.06	7.625	.006**
Group	-.213	0.81	.626	.429

* p < .025. ** p < .01.

Together, the variables accounted for 29.2% of the variance in form integration prediction at posttest 1 and for 25.7% at posttest 2. The FLCAS better predicted form integration than L2 achievement at posttest 1, while both significantly predicted form integration at posttest 2 regardless of group membership. This finding suggests that L2 achievement helps sustain the noticing gain in form intake as operationalized by form integration. The Group did not significantly predict form integration on either posttest despite an observed Output group advantage on both posttests. Corroborating the anxiety-noticing results above, anxiety on the FLCAS had a positive association with form integration, again contradicting with a negative CIQ anxiety-form integration association on both posttests (see Table 4.15 below).

Table 4.15

Anxiety on the CIQ and total form integration on posttests 1 and 2

	Posttest 1			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	21.502	.000**	.270	
	Estimate	*OR*	*Wald*	*Sig.*
CIQ	-.233	0.79	10.900	.001**
L2 achievement	.050	1.05	6.951	.008**
Group	-.307	0.74	1.201	.273
	Posttest 2			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	27.534	.000**	.333	
	Estimate	*OR*	*Wald*	*Sig.*
CIQ	-.245	0.78	11.810	.001**
L2 achievement	.068	1.07	11.073	.001**
Group	-.439	0.65	2.407	.121

** $p < .01$.

The CIQ model gained more predictive power from posttest 1 to posttest 2, with the variables in the model explaining 27% of the variance in total form integration prediction on posttest 1 and 33.3% on posttest 2. Anxiety on the CIQ significantly predicted form integration at both posttests ($p < .01$) with no interaction effects. With every unit increase in the CIQ, form integration was predicted to decrease by about .80 of a unit, a significant but smaller magnitude of prediction than that of the FLCAS (about 2.5 points on posttest 1 and about 1.75 on posttest 2; see Table 4.14 above). L2 achievement remained a significant predictor across the posttests ($p < .01$), and the Group a non-significant predictor despite an observed Output group superiority along the lines of the FLCAS model above.

4.3.2 Anxiety and the Integration of the Future Tense (Morphosyntax)

Tables 4.16 and 4.17 present results on the relation between anxiety and integration of the future tense in the FLCAS and the CIQ models. The future tense integration results resembled those of its noticing; neither language anxiety nor state anxiety predicted the integration of the future tense on posttests 1 and 2. L2 achievement, which significantly predicted the noticing of the future tense in the CIQ model, did not associate with its integration on either posttest, and only approached statistical significance at $p < .05$ on both posttests in the CIQ model. The Group remained a non-significant predictor in both models despite the observed superiority of the Output group. While none the variables individually associated significantly with the future integration prediction, the combinations of these variables reached statistical significance, all at $p < .025$ on both posttests and in both models ($p < .01$ on posttest 2 in the CIQ model, however).

Table 4.16

Anxiety on the FLCAS and integration of the future tense on posttests 1 and 2

	Posttest 1			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	9.471	.024*	.178	
	Estimate	*OR*	*Wald*	*Sig.*
FLCAS	.300	1.35	.871	.351
L2 achievement	.066	1.07	3.514	.061
Group	-.526	0.59	1.845	.174

Table 4.16 continued.

	Posttest 2			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	10.629	.014*	.199	
	Estimate	*OR*	*Wald*	*Sig.*
FLCAS	.543	1.72	2.747	.097
L2 achievement	.063	1.07	3.095	.079
Group	-.415	0.66	1.114	.291

** p < .025.

Table 4.17

Anxiety on the CIQ and integration of the future tense on posttests 1 and 2

	Posttest 1			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	10.016	.018*	.187	
	Estimate	*OR*	*Wald*	*Sig.*
CIQ	-.113	0.89	1.380	.240
L2 achievement	.069	1.07	3.983	.046
Group	-.647	0.52	2.535	.111
	Posttest 2			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	11.516	.009**	.214	
	Estimate	*OR*	*Wald*	*Sig.*
CIQ	-.189	0.83	3.307	.069
L2 achievement	.069	1.07	3.880	.049
Group	-.602	0.55	2.095	.148

* p < .025. ** p < .01.

4.3.3 Anxiety and the Integration of Time Telling (Syntax)

Table 4.18 presents results on the relation between anxiety and the integration of time telling on posttest 1 and posttest 2 in the FLCAS model. While language anxiety did not significantly predict the noticing of time telling, it significantly predicted its integration on posttest 1 ($p < .001$), but not on posttest 2. The FLCAS was a better predictor of time telling integration than L2 achievement on posttest 1, and for every unit increase in the FLCAS, time telling integration was predicted to considerably increase by about 3 units (2.83). This finding was consistent across the Input and Output groups. However, not only did the predictive power of the FLCAS decrease at posttest 2 (non-significant association with time telling integration), the entire model did; the power dropped from predicting 33.3% of the variance in time telling integration on posttest 1 to 20.4% on posttest 2. The Group remained non-significant, and no interaction effects were observed across the variables. Again, therefore, anxiety predictions were consistent across the Input and Output groups.

Table 4.18

Anxiety on the FLCAS and integration of time telling on posttests 1 and 2

	Posttest 1			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	26.381	.000**	.333	
	Estimate	*OR*	*Wald*	*Sig.*
FLCAS	1.038	2.83	16.467	.000**
L2 achievement	.044	1.05	3.709	.054
Group	.090	.09	.096	.757

Table 4.18 continued.

	Posttest 2			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	15.222	.002**	.204	
	Estimate	*OR*	*Wald*	*Sig.*
FLCAS	.167	1.18	.506	.477
L2 achievement	.074	1.08	9.468	.002**
Group	-.006	0.99	.000	.984

** p < .01.

A similar anxiety-integration association pattern could be noted in results from the CIQ model (Table 4.19 below). State anxiety significantly predicted the integration of time telling on posttest 1 (p < .025), but not on posttest 2. The magnitude of prediction was less than that of the FLCAS, however, and in line with the CIQ results thus far, the association with L2 performance was negative. For every unit increase in the CIQ, time telling integration was predicted to decrease by about .85 of a unit (.91 on posttest 2). This finding was consistent across the Input and Output groups. L2 achievement remained statistically significant at posttests 1 and 2 (p < .025 and p < .01, respectively), and the Group remained non-significant. Contrary to the FLCAS model, the predictive power of the CIQ model remained comparable, explaining 20.1% of the variance in time telling integration prediction on posttest 1 and 22% on posttest 2.

Table 4.19

Anxiety on the CIQ and integration of time telling on posttests 1 and 2

	Posttest 1			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	14.829	.002**	.201	
	Estimate	*OR*	*Wald*	*Sig.*
CIQ	-.175	0.84	6.128	.013*
L2 achievement	.050	1.05	6.056	.014*
Group	-.009	0.99	.001	.976
	Posttest 2			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	16.594	.001**	.220	
	Estimate	*OR*	*Wald*	*Sig.*
CIQ	-.096	0.91	1.981	.159
L2 achievement	.074	1.08	10.089	.001**
Group	-.113	0.89	.150	.698

* p < .025. ** p < .01.

4.3.4 Anxiety and the Integration of Connectors (Cohesion)

Table 4.20 presents results on the relation between anxiety and the integration of connectors on posttest 1 and posttest 2 in the FLCAS model. Connector integration results matched those of its noticing; the FLCAS significantly predicted connector integration on posttest 1 regardless of Input or Output group membership, and the difference between the Input and Output groups closely approached statistical significance (p = .027.). In line with total form integration and the integration of time telling, the FLCAS had a considerable magnitude of prediction. For every unit increase in the FLCAS, connector integration was predicted to increase by about 2.2 units on posttest

1. On posttest 2, however, none of the variables was statistically significant, and neither was the entire regression model.

Table 4.20

Anxiety on the FLCAS and integration of connectors on posttests 1 and 2

Posttest 1				
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	15.547	.001**	.255	
	Estimate	*OR*	*Wald*	*Sig.*
FLCAS	.781	2.19	6.382	.012*
L2 achievement	.039	1.04	1.834	.176
Group	-.835	0.43	4.882	.027
Posttest 2				
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	6.118	.106	.102	
	Estimate	*OR*	*Wald*	*Sig.*
FLCAS	.447	1.57	2.822	.093
L2 achievement	.018	1.02	.599	.439
Group	-.359	0.7	1.250	.264

* p < .025. ** p < .01.

A similar and more consistent anxiety-integration association pattern could be noted in results from the CIQ model (Table 4.21 below). State anxiety significantly predicted the integration of connectors on posttests 1 and 2 (p < .01), and consistently so across the Input and Output groups. Similar to the results from time telling and total integration, the state anxiety-connector integration association was negative. For every unit increase in the CIQ, connector integration was predicted to decrease by about .75 of a unit on both posttests across the groups. The Group reached statistical significance on

posttest 1 in this model ($p < .025$), and approached statistical significance on posttest 2 ($p = .051$). L2 achievement approached statistical significance on posttest 1 ($p = .054$), but was not significant on posttest 2. All in all, the CIQ model provided better predictive power than that of the FLCAS, explaining 28.6% of the variance in the prediction of connector integration on posttest 1 and maintaining a similar power percentage on posttest 2 (28.3%).

Table 4.21

Anxiety on the CIQ and integration of connectors on posttests 1 and 2

	Posttest 1			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	17.665	.001**	.286	
	Estimate	*OR*	*Wald*	*Sig.*
CIQ	-.266	0.77	7.27	.007**
L2 achievement	.054	1.06	3.72	.054
Group	-.985	0.37	6.13	.013*
	Posttest 2			
	Chi-Square	*Model Sig.*	*Pesudo R^2*	
	18.361	.000**	.283	
	Estimate	*OR*	*Wald*	*Sig.*
CIQ	-.339	0.71	11.86	.001**
L2 achievement	.031	1.03	1.85	.174
Group	-.709	0.49	3.80	.051

* $p < .025$. ** $p < .01$.

To summarize, the results in this section addressed the association between anxiety and the integration of L2 forms in production subsequent to the exposure to input with relevant language forms. In line with the anxiety-noticing results, and supporting the

third research hypothesis, language anxiety positively associated with total form integration on both posttests, and with the integration of connectors on posttest 1. State anxiety, on the other hand, negatively associated with these same variables, and with connector integration on posttest 2. Both variables also significantly associated with time telling integration on posttest 1 but not on posttest 2. The Output groups showed superiority of performance compared to the Input groups, but the differences were not statistically significant, with the exception of the integration of connectors on posttest 1 in both the FLCAS (approaching statistical significance at $p = .27$) and the CIQ models. Both the Input and Output groups were susceptible to similar anxiety predictions, countering the predictions of the fourth research hypothesis.

4.4 Additional Findings: Specific Effects across State Anxiety Levels

The results presented thus far highlight the association between anxiety and the noticing and integration of language forms across types of anxiety. A closer look at task performance at each anxiety level would provide a more specific idea about subtle anxiety associations. This section presents a glimpse of some aspects in which anxiety associated with task performance in light of the participants' reflections on their noticing and learning. Given the theoretical and pedagogical significance of linking individual learner variables to specific tasks (Robinson, 2005), this section presents results across anxiety levels on the CIQ, the measure of state anxiety experienced during task performance in the current study.

4.4.1 Reporting of Noticing and Learning

Figure 4.9 presents an overview of the percentages of the participants' reporting of their noticing and learning.

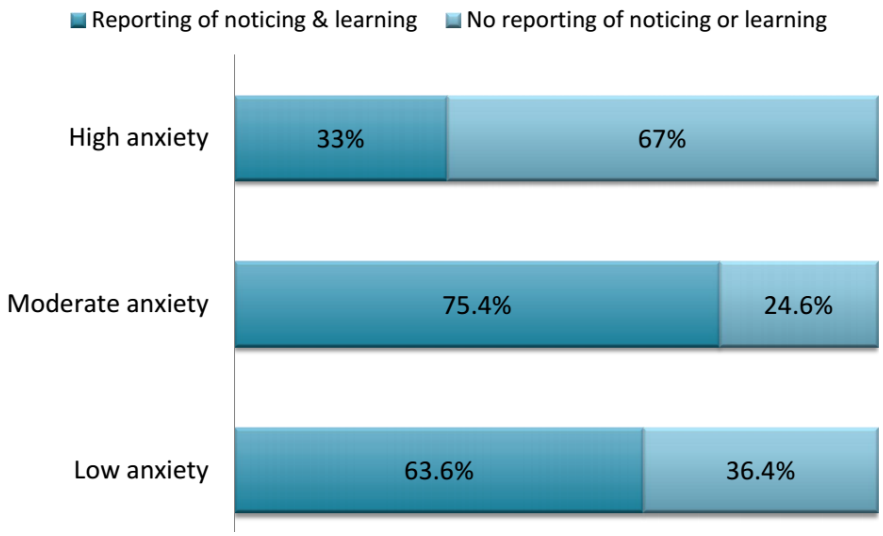


Figure 4.9. The percentages of the participants' reporting of their noticing and learning.

The "no reporting of noticing or learning" category involved the instances in which the participants did not report any language features noticed or learned in their questionnaire and interview data. High-anxiety participants had the lowest reporting percentage (33%), with only about a third of the participants reporting specific aspects of their noticing and learning. This result is consistent with the findings presented thus far, with state anxiety associating with the less likelihood to notice and integrate language form. The participants with a moderate level of anxiety had the highest reporting percentage (75.4%) followed by low-anxiety participants (63.6%). These percentages suggest an advantage for a moderate level of anxiety compared to low and high levels. If

we consider learners' awareness of the features noticed and integrated a positive L2 process, this finding then suggests that some level of anxiety has positive effects on L2 performance (Chastain, 1975; Kleinmann, 1977; Marcos-Llina´s & Garau, 2009; Spielmann & Radnofsky, 2001).

4.4.2 Mismatches of Form Noticing and Integration

Figure 4.10 presents an overview of the percentages of mismatches between reported noticing and integration. This finding involves instances where the participants integrated forms that they did not report noticing, reported noticing forms which they did not integrate, or thought that they used specific forms in their productions but did not. These instances were measured against the total number of future, time telling, and connectors noticed and/or integrated.

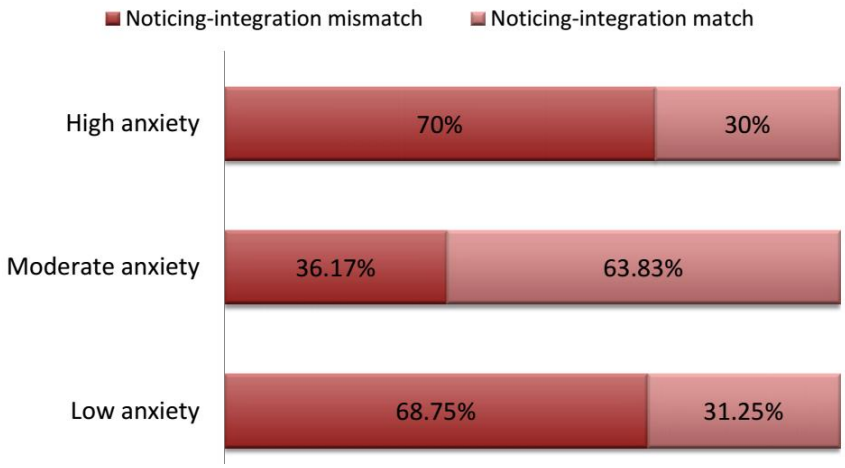


Figure 4.10. The percentages of mismatches between reported noticing and integration.

It could be seen that high-anxiety and low-anxiety participants had comparable noticing-integration mismatch percentages (70% and 68.75%, respectively). Thus, high and low levels of state anxiety were associated with lower levels of awareness of form noticing and integration, and over two thirds of the participants at these anxiety levels had noticing-integration mismatches. On the other hand, the participants with moderate anxiety had the lowest mismatch percentage (36.17%), indicating that they were the most aware of their noticed and integrated forms in this learner sample.

4.4.3 Text Underlines

Figure 4.11 presents the percentages of text underlines. This involves all of the underlines that the participants did, including underlines of idea units and previously learned features not reported in this study. Given that underlining in this study was considered to involve at least a minimum level of awareness (Izumi, 2002; Izumi & Biglow, 2000; Izumi et al., 1999; Leeser, 2008; Park, 2011; M. J. Song & Suh, 2008), text underlines were considered a reflection of learners' conscious attention to specific aspects of the input.

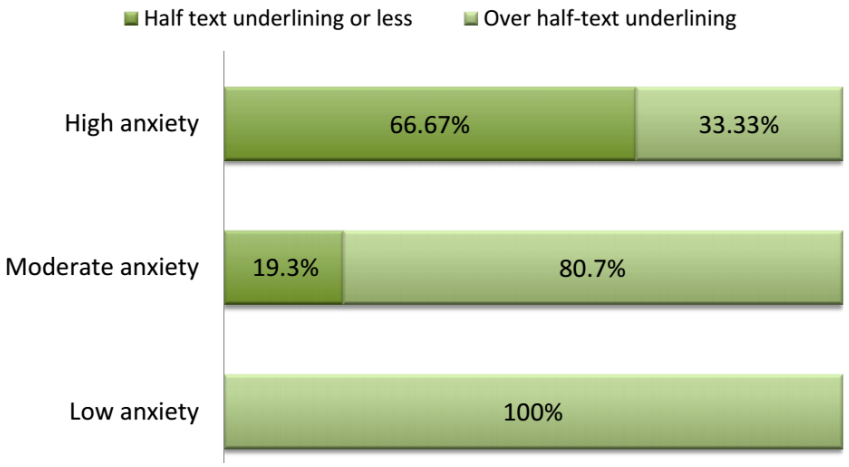


Figure 4.11. The percentages of text underlines.

In line with the findings above, anxiety associated with differences in task performance. Two thirds of high-anxiety participants (66.67%) made underlines of half or less of the model text compared to only 19.3% of moderate-anxiety participants who did that. Interestingly, none of the low-anxiety participants did half-text underlining or less, indicating that a low or moderate level of anxiety was associated with attention to a wider range of features and content items in the model text.

4.4.4 High anxiety-specific Patterns

Some interesting patterns that only high-anxiety participants displayed also emerged. For example, none of the high-anxiety participants across the Input and Output groups reported noticing connectors. None of these participants integrated the future tense either, despite the fact that two of them reported noticing it and understanding its meaning. Two other high-anxiety participants were the only learners in the data sample to report seeing a prefix attached to the verbs (i.e. the future tense marker) without any

indications of understanding the meaning of the form. High-anxiety participants were also the most prone to reporting difficulties faced during task performance in the treatment session. This is a particularly interesting finding given that the prompts of the reflection questionnaire did not orient the participants toward task difficulties; rather, they only elicited information on the language features noticed and integrated. Table 4.22 presents sample quotations made by a few high-anxiety participants.

Table 4.22

Sample comments from high-anxiety participants

Questionnaire comments
1. It was a lot very difficult for me to read the answer choices given. It might just be that I have to continue working on my Arabic reading and writing skills.
2. I focused on the words that I already knew because they stuck out to me, then the amount of things I didn't know frustrated too much for me to really learn any new words.
3. I wasn't confident enough in what I heard to use much new grammar or vocab. I tried to use some future tense.
4. I'm not very good with the listening/speaking aspects of a language because I don't remember what I hear very well. I learn by seeing things written/writing them down myself.
5. I felt the same after the reading as I did the pictures. The reading had extra information not pertaining to the pictures so it was kind of an overload and I forgot some other things that were more important.
6. Well it is kind of hard to learn new vocabulary and grammar if you don't really understand or have a translation. I was able to make out a few words but I don't believe that I learned anything new.

Anxiety reactions could be gleaned from the comments above. In each of these comments, the participants expressed some frustrations about aspects of their learning, and seemed more preoccupied with what they missed rather than what they were able to notice and learn. These participants spoke of difficulties, frustrations, lack of confidence, and of not being good with some aspects of the language, all anxiety manifestations that are not uncommonly heard among high-anxiety L2 learners. It was also interesting to see the participant in comment 5 note having an "overload" of information and forgetting some other "more important" things. Such a remark resonates with research findings on anxiety exercising cognitive interference with encoding and processing at the input and processing stages (Eysenck, 1976; MacIntyre, 1995a, 1995b; MacIntyre & Gardner, 1994b; Tobias, 1986). Also of note is that the participant in comment 3 explictly noted trying to "use some future tense." No integration of this feature was observed in her prodcution, however.

Chapter 5: Discussion

The current study investigated the relationship between anxiety and noticing. Four research questions were raised, and four research hypotheses were formulated in light of output-induced noticing and anxiety research to date. Three hypotheses were supported, but a complex pattern of results emerged. The fourth hypothesis was not supported. The current chapter presents a summary of the findings followed by a discussion aligned along the research questions and the hypotheses proposed.

5.1 Summary of Findings

This study investigated whether anxiety predicts the noticing and integration of linguistic form under Input and Output conditions. It studied noticing in input subsequent to oral output production or comprehension work, and form integration in oral production following input exposure. The study also explored whether the nature of language form mediated the association between anxiety and form noticing. A more complex pattern of results than that expected at the outset of the study emerged.

1. Anxiety predicted the noticing and integration of linguistic form. The predictions, however, varied by anxiety type, language anxiety or state anxiety. While both anxieties displayed similar patterns with the regard to the type of forms whose noticing and integration were susceptible to anxiety effects, the anxieties had differential directions of prediction.

a. Language anxiety positively predicted form noticing and integration; the higher the level of language anxiety, the more likely the participants tended to notice and incorporate language forms in production subsequent to input exposure.
b. State anxiety negatively predicted form noticing and integration; the higher the level of state anxiety, the less likely the participants tended to notice and incorporate language forms in production subsequent to input exposure.

2. Anxiety predictions of learner noticing and form integration depended on the nature of language form. More salient forms were more susceptible to anxiety predictions.
    a. Anxiety did not significantly predict the noticing and integration of the future marker (a morphosyntactic feature) despite flooding the input with this form.
    b. Anxiety did not significantly predict the noticing of time telling (a syntactic feature), but significantly predicted its incorporation in oral production.
    c. Anxiety significantly predicted the noticing and integration of time connectors (a discourse-level cohesion feature).
3. Anxiety was a better predictor of form noticing and integration than the production of output. Output is hypothesized to push learners "to process language more deeply (with more mental effort) than does input" (Swain, 1995, p.

126). Despite the observed superiority of the Output group, only at the noticing of a discourse level feature (time connectors) that output significantly predicted form noticing and integration.

5.2 Research Question 1: Anxiety and the Noticing of Language Forms

The first research question investigated whether anxiety associates with the noticing of linguistic form in input subsequent to oral output production or comprehension work. As hypothesized, anxiety significantly predicted noticing. The predictions, however, varied by the type of anxiety. Language anxiety positively predicted noticing, while state anxiety negatively predicted it. This finding is discussed in the sections below.

5.2.1 Learner Noticing and Foreign Language Anxiety

Language anxiety positively predicted the noticing of linguistic form. The participants with higher levels of language anxiety tended to be more likely to notice language forms. This result contradicts a large body of research pointing to negative anxiety effects on L2 learning and production (Y. Kim & Tracy-Ventura, 2011; MacIntyre & Gardner, 1989, 1994b; Robinson, 2007; Sheen, 2008; Steinberg & Horwitz, 1986; Young, 1986) and L2 achievement (Aida, 1994; Cheng et al., 1999; Elkhafaifi, 2005; Horwitz, 1986, 2001; S. Kim, 2009; Saito & Samimy, 1996; Saito et al.,1999; Sellers, 2000; Young, 1986; Zhao et al., 2013). This positive noticing-language anxiety association, however, could be interpreted in light of learner-specific and instruction-specific variables.

First, the participants' learning engagement might have channeled their language anxiety in a way that directed their attention to the task at hand, i.e. the noticing of language form. "Emotions serve functions of directing attention toward the object of emotion" (Pekrun et al., 2002, p. 97). While emotions, including anxiety, may interfere with task performance through task-irrelevant thinking, these very emotions may direct attention to the task at hand. As Pekrun et al. note, the "enjoyment of dealing with learning material and related experiences of flow may direct attention toward the task at hand, thus allowing for the full use of cognitive resources instead of reducing them" (pp. 97-98). Similarly, Csikszentmihalyi (2000) speaks of a "merging of action and awareness" in flow experiences (or "narrowing of consciousness," citing Maslow, 1971), involving "a centering of attention on a limited stimulus field" to the exclusion of "potentially intruding stimuli" (p. 40).

The state anxiety-off task thoughts correlation with language anxiety in the study corroborates the conclusion above. The negative correlation between language anxiety and disruptive thoughts during task performance as measured by the CIQ 1 was $r = -.379$ ($p < .01$). Thus, with higher language anxiety in this learner sample, there was a tendency for the participants to have fewer off-task thoughts.

The finding above was not anticipated. In reviewing 11 studies in the learning context, Pekrun et al. (2002) report consistent negative correlations between "positive emotions" and task-irrelevant thinking. Further, on a scale from 1 (never) to 5 (very often) rating the frequency of off-task disruptive thoughts during task performance, the majority of the participants rated low on the scale, with a mean of 2.7 and a standard

deviation of .61. On a scale from 1 (not at all) to 7 (very much) rating the degree to which the participants felt that their minds wandered during the Arabic tasks, the mean was a minimal 2.8 and the standard deviation was 1. It could then be argued that language anxiety served as a "positive emotion" in this study, associating with the reduction of disruptive thoughts by directing attention to language form rather than detracting attention away from it. Drawing on the work of Fredrickson, MacIntyre and Gregersen (2012) discuss "positive-broadening emotions" in language learning (also see Gregersen et al., 2014). They stipulate that a "positive emotion tends to broaden a person's perspective, opening the individual to absorb the language" (p. 193). Bolitho et al. (2003) suggest that teachers be sensitive to learners' affect, noting that "affective engagement" with the language has the advantage of "stimulating a fuller use of the resources of the brain. Positive attitudes, self-esteem, and motive involvement help to fire neural paths between many areas of the brain, and to achieve the mutli-dimensional representation needed for deep processing of language" (p. 256).

In addition, the physical setting of the experimental treatment session might have reduced the effects of language anxiety and promoted more focused attention to language forms. The language laboratory provided the participants with the opportunity to focus on the tasks individually with no teacher feedback expected, which might have heightened their attention to the tasks while reducing their anxiety levels. The knowledge that the tasks were employed for instruction and research purposes might have also increased the participants' attention to the tasks as well. One participant noted: "The lab actually helped. Maybe 'cause I felt like, I had to do it to the best of my ability because it's for the

use of research and that the fact that I had to do it to the best of my ability and just push myself by my own, nobody helping me, just what I know and like remember it better."

Considering learner variables also helps interpret the facilitative language anxiety findings in this study. The participants' decision to study Arabic, a language with an expected level of difficulty, at a top-notch program with rigorous course demands and expectations might have drawn a student population with higher levels of language abilities, investment, and L2 motivation. It might have also drawn students with previous successful language learning experiences. Such experiences are expected to equip learners with the "persistence" and "effort" needed for language learning (Dörnyei, 2001a) as well as the skill at managing anticipated language learning anxieties. Accordingly, it could be argued that this learner population had previous awareness of the nature of attention required for successful performance in this Arabic course, engendering readiness to overcome language anxiety while channeling it toward successful course and task performance. It could, therefore, be argued that the participants' experiences might have enhanced their "resilience," a benefit of positive emotions, providing learners with "the ability to recover from stressful situations" (MacIntyre & Gregersen, 2012, p. 209).

The anxiety level of the participants in the Arabic course might have mitigated negative language anxiety effects as well. The majority of the participants were not highly anxious (M = 3.1 out of 5, SD = .63). The participants were classified as having "high anxiety" when receiving mean scores above 3.7 on the FLCAS (one *SD* above the mean) and as having "low anxiety" when receiving mean scores below 2.5 (one *SD* below the mean). Thus, the majority of the participants (68.75%) were moderately

anxious, and only 17.5% were highly anxious. Not having a high percentage of high-anxiety participants might have restricted the range of possible anxiety effects on noticing and integration. Moreover, the high-anxiety range of points on the FLCAS (3.7 to 5) involved participants who were closer to medium rather than high anxiety; only six out of 14 high-anxiety participants scored above 4.

Further, the medium level of language anxiety might have boosted rather than interfered with the participants' readiness for active task engagement and noticing of language forms. Traditional psychological theory stipulates that performance increases with some level of physiological or mental arousal (Yerkes & Dodson, 1908). Marcos Llina´s and Garau (2009) reported a facilitating language anxiety effect in a learner sample with a similar make-up of anxiety levels as measured by the FLCAS as that in the current study; the majority of the participants in Marcos-Llina´s and Garau were moderately anxious (67.9%), and only 17.2% were highly anxious. Accordingly, Marcos-Llina´s and Garau conclude that a medium level of anxiety did not interfere with course achievement, and, therefore, "did not seem to be as debilitative as expected" (p. 104).

The specificity of high-anxiety students in the learner sample in the current study is also of particular note in interpreting the positive language anxiety-noticing association. The majority of the high-anxiety participants (64.7%) were heritage learners[2]. Thus, while these participants rated high on language anxiety, their language background might have engendered more positive than negative language anxiety effects.

[2] Heritage learners attend Arabic classes at this language program for various reasons. Some include motivational variables involving familial and cultural factors, meeting the university language requirement, or the desire to attain high grades in a language deemed easier for them than other languages.

In a study of the learning of L2 Spanish among heritage and non-heritage students, Tallon (2009) reported that heritage students had lower mean anxiety scores than those of the non-heritage students on all of the anxiety scales employed in the study. Accordingly, while it could be expected that a heritage language experience would ease language anxiety levels, as reported in Tallon, it was not the case in the current study. This finding indicates the specificity of the heritage student sample in the current study. It might, therefore, be argued that the learners in this student sample are highly invested in their learning of Arabic, citing familial and cultural reasons that place some kind of pressure on them to do well.

Other class variables may also place some pressure on heritage learners. Some heritage learners have an image of "more advanced learners" in front of peers, which might create a preoccupation with the form of their language production rather than the message alone, a finding reported among high-anxiety language learners (Gregersen, 2003; Gregersen & Horwitz, 2002). The "more advanced learners" image might have also been boosted by heritage learners' experiences in Arabic-speaking countries compared to classmates with no such experiences. Kitano (2001) reported that the participants who spent some time in Japan (the target language country) were more anxious than those who did not. Accordingly, she concludes, "because [more advanced learners] put pressure on themselves to fulfill that image, they ended up becoming more anxious in the classroom" (p. 558).

The participants' beginning level in Arabic is another variable to consider. Beginning-level language learners may not be the most anxious compared to learners at

higher levels of language proficiency. Accordingly, beginners may be less susceptible to negative language anxiety effects. Chastain (1975) reported positive anxiety-achievement correlations among beginning-level learners of French, German, and Spanish. Saito and Samimy (1996) also reported that year in college was a better predictor of language achievement than anxiety for beginning-level learners, suggesting that language anxiety becomes more important as the level of instruction increases. Similarly, in Marcos-Llina´s and Garau (2009), beginning-level participants were less anxious than advanced learners, and anxiety did not predict their course achievement. Zhao et al. (2013) reported lower reading anxiety among beginning-level learners compared to intermediate-level ones as well. This finding is surprising considering the expected difficulty of reading Chinese characters, especially in the beginning of the L2 learning experience. It could, therefore, be argued that the participants' beginning level of Arabic studies might have created a novelty effect involving more positive than negative language anxiety reactions. While this remains a hypothesis that contradicts other empirical findings on higher language anxiety among beginning-level participants (e.g. Elkhafaifi, 2005; Frantzen & Magnan, 2005), it is a variable that merits further investigation in other learner populations.

The positive language anxiety-noticing finding could be further explained by the teaching methodology adopted in the Arabic program from which the participant sample is drawn. While this fast-paced, intensive program sets a high level of course demands and performance expectations, it strikes a balance with a positive and friendly learning environment with ample teacher support promoting learners' language learning success

and L2 self-esteem. Frantzen and Magnan (2005) report reflections from 490 beginning-level learners of French and Spanish, citing the teacher as the factor most associated with a positive class atmosphere. This learning environment might have redefined language anxiety from feelings of "tension, apprehension, nervousness, and worry" (Horwitz et al., 1986, p. 125) to "attention," "alertness," "edge," "euphoric cognitive tension" (Spielamann & Radnofsky, 2001), or "facilitating anxiety" (Alpert & Haber, 1960). This learning environment might have, therefore, promoted alertness and readiness for successful task performance in a way that heightened rather than interfered with attention to language form.

It could also be argued that the teaching methodology might have created a sense of enjoyment during task engagement in the Arabic L2 classroom in a way that transformed language anxiety to a form of euphoric tension reminiscent of *flow* (M. Csikszentmihalyi, 1990, 2000). Flow is conceptualized as a "pleasurable state" involving cognitive and affective alertness and is characterized by effortless control whereby "a sense of time and emotional problems seem to disappear, and there is an exhilarating feeling of transcendence (Csikszentmihalyi, 1990, p. 1). Such a teaching methodology effect is not surprising. Chastain (1975) reported negative anxiety-course achievement correlations only in the French class adopting the audio-lingual method, contrary to the positive correlations attained in the French, German, and Spanish classes adopting the traditional method.

The collaborative learning aspect of the Arabic classes at the Arabic program of focus is another key variable to consider in explaining positive language anxiety effects.

The course syllabus, unified among the six courses from which the participant sample is drawn, explicitly notes that 75% of class work is devoted to the activation of Arabic knowledge in pair and group work. Such emphasis on collaborative work is expected to reduce language anxiety (Ewald, 2007; Kitano, 2001). Bailey et al., (1999) report that the students who preferred to work alone tended to have higher levels of language anxiety. Collaborative work could also reduce fear of negative evaluation, a language anxiety variable (Horwitz et al., 1986) associated with higher levels of anxiety (Kitano, 2001). Reid (1999) notes that students learning a foreign language "respond better in a positive classroom community" (p. 297). This collaborative atmosphere might have, therefore, created a supportive language learning environment neutralizing negative language anxiety effects, channeling them in a positive manner and directing them toward successful task performance.

The collaborative task-based nature of the instruction in the Arabic classes of focus with frequent language tasks of increasing complexity might have additionally promoted leaner readiness for attention to L2 form, as predicted in the Cognition Hypothesis (Robinson, 2001a, 2005), while reducing negative anxiety effects. Robinson suggests that within a task-based approach to language learning, increasing the cognitive demands of tasks along certain dimensions will lead to: 1) greater accuracy and complexity of L2 production, and 2) more interaction and negotiation work promoting the noticing of language forms made salient in the input. Robinson also hypothesizes that learner variables, including anxiety, will increasingly affect task performance as the tasks increase in complexity (see Robinson, 2007, for empirical support). In this learner

sample, it could be argued that the participants' constant exposure to such tasks in a collaborative manner might have stimulated an overall readiness for attention to language form while simultaneously reducing anxiety effects as deemed by the level of complexity of these tasks.

It is important to note here that the experimental treatment did not involve learner-learner interaction, the context for which the Cognition Hypothesis predictions are made. Nevertheless, the nature of the experimental tasks and the participants' task-based training are expected to provide a similar context heightening the noticing of language form along "resource-directing dimensions" (Robinson, 2001a, 2005). The main task involved the description of a series of pictures. The task required establishing connections among the pictures and hypothesizing about the main character's intentions and affective and cognitive states. This task was deemed to involve higher cognitive demands (Robinson, 2007) beyond the "here" and "now" activities that the bulk of first-semester L2 training involves. The participants' attention to language form was also expected to increase by reducing the demands along the "resources-dispersing dimensions" (Robinson, 2001a, 2005). This variable was included by providing planning time, and asking the participants to read the model text for comprehension first with no underlining before reading a second time to underline in order to avoid a dual task mode that would detract from attention to language form (Han & Peverly, 2007; Han et al., 2008; Skehan 1996; VanPatten 1996).

An additional program variable that might have eased the language anxiety of the participants in their Arabic L2 classrooms is the Arabic Program's deliberate goal of not

setting a "native speaker" expectation. Kitano (2001) notes that such an unrealistic expectation of language learners "inevitably makes them perceive their ability as insufficient and causes them anxiety" (p. 559). A message of "it is all right not to be as perfect as native speakers" (p. 559) is needed to reduce language anxiety, she also concludes. While this message is strongly highlighted in this program, a message of "superior proficiency in Arabic is possible" is simultaneously reinforced. The learners in this program are also given opportunities for exposure to highly functional non-native speakers of Arabic who do not necessarily possess native or near native proficiency. In addition, four of the six classes of focus in the current study had non-native instructors of Arabic, and five had non-native teaching assistants, a fact that sends reassuring positive messages to the learners in this program.

Supportive evidence for facilitative language anxiety in similar program and class environments comes from Spielaman and Radnofsky (2001). This study investigated a beginning-level L2 French learner population in a similarly intensive language program with high standards and expectations but with a simultaneous emphasis on a positive learning environment and collaborative learning. Learners' anxieties, preparedness for challenging tasks, and projections of functional L2 selves induced "euphoric cognitive tension" channeled toward attentiveness to the tasks at hand for successful task and course performance. Accordingly, the researchers concluded that some level of tension is facilitative in the study of a foreign language.

Some Arabic learning-specific variables might help explain facilitative language anxiety effects as well. Ebner (2012) surveyed 328 L2 learners of Arabic at four U.S.

universities, including the university where the program of focus in the current study is. Ebner solicited student responses on the most effective strategies in the study of L2 Arabic. The participants reported neither high nor low usage of any of the affective strategies, and only one strategy approached the level of high use: "actively encouraging oneself to take responsible risks with the language." Ebner interpreted this finding as an indication that the participants found little need to take steps to deal with the anxiety caused by studying Arabic, concluding that anxiety in the Arabic L2 classroom at the measured universities has somehow been lowered for the students. Similar to the current study, Ebner also attributes this finding to the communicative practices, with instructors having managed to make the Arabic L2 classroom a "welcoming location for students which allows them to focus on the learning aspect of the curriculum rather than upon dreading making mistakes in a high stress environment" (p. 105).

The positive learning environments reported in the Arabic L2 classroom in the current study and that of Ebner (2012) resonate with exhilaration findings in the learning of L2 Japanese, another less commonly taught language, reported in K. Takahashi (2001). This study investigated the prevalence of positive emotional states ("Japanese language exhilaration") experienced by 115 learners enrolled in first and third semester of L2 Japanese at the same university where the current study was conducted. Japanese language exhilaration was reported to be closely connected with the participants' daily L2 learning. Two factors were identified: "positive affect" and "positive arousal." The most frequently reported items were pride, happiness, and enjoyment/pleasure (positive affect) and excitement, alertness, and stimulation (positive arousal). These variables display

positive affective and cognitive variables at play in creating a positive exhilarating effect in the L2 classroom. Japanese language exhilaration was also reported to have a significant high correlation with the participants' motivation to continue the study of Japanese ($r = .752$, $p < .01$) and with their L2 achievement as measured by final course grades ($r = .31$, $p < .001$).

Finally, in interpreting the positive anxiety-noticing association, it is important to consider the nature of the FLCAS. A strong predictor of speaking anxiety (Aida, 1994; Cheng et al., 1999) and a measure of situation-specific anxiety, the FLCAS may not be able to capture how anxiety interacts with the noticing of language form. According to MacIntyre and Gardner (1991a), situation-specific measures of anxiety "can be seen as trait anxiety measures limited to a given context" (p. 90). This trait-like feature of the FLCAS may not have enabled it to capture immediate anxiety effects during task performance; rather it reflected an overall readiness or lack of readiness for the performance of the task at hand. Accordingly, a state measure of anxiety may better reflect how anxiety interacts with the noticing of language form on a momentary basis, a conclusion that leads to the subsequent discussion of the noticing-state anxiety association.

5.2.2 Learner Noticing and State Anxiety

The findings of the current study display significant negative correlations across the Input and Output conditions between state anxiety as measured by the CIQ and the noticing of language form in input subsequent to oral output production or comprehension work. While language anxiety seems to have increased learner alertness in a way that heightened attention to language form, state anxiety seems to have interfered with form noticing. Thus, while language noticing seems to have served as a "positive emotion," state anxiety seems to have served as a "negative emotion." As MacIntyre and Gregersen (2012) remark, "a negative emotion produces the opposite tendency [to a positive emotion], a narrowing of focus and a restriction of the range of potential language input" (p. 193), a conclusion that seems to receive support in the current study.

This negative state anxiety-noticing association is more consistent with anxiety research to date. It corroborates results from research on anxiety interference with L2 learning and production (Y. Kim & Tracy-Ventura, 2011; MacIntyre & Gardner, 1989, 1994b; Robinson, 2007; Sheen, 2008; Steinberg & Horwitz, 1986; Young, 1991). Thus, this finding could be interpreted in light of cognitive interference induced by anxiety reactions during task performance.

General anxiety and language anxiety research has pointed to anxiety interference with task performance through the dividing of attention between task relevant and task-irrelevant cognition. Anxiety is hypothesized to absorb a portion of attentional resources, diverting it away from the task at hand toward preoccupation with "worry," the cognitive

aspect of anxiety (Dörnyei, 2005). Given the basic postulate of limited capacity information processing (Anderson, 2010; McLaughlin et al., 1983), a variable that also constraints L2 noticing (Schmidt, 1990), this division of attentional resources is expected to impair task performance (Eysenck, 1976; MacIntyre, 1995a, 1995b; MacIntyre & Gardner, 1989, 1994b; Sarason, 1984; Tobias, 1986). Such off-task cognition could be self-related, as "self-deprecatory" cognition and "negative self-evaluations" (MacIntyre, 1995a) or other-related, as in anxieties arising from unfamiliar scripts and phonology (Saito et al., 1999; Zhao et al., 2013). While learners' perceptions of anxiety reactions to the new unfamiliar script and phonology of Arabic were not solicited in the current study, this possibility could be considered. The brief experience with Arabic script and phonology might have presented a challenge to some participants during input exposure and the ensuing noticing of language form. This conclusion, however, remains a hypothesis in need of further investigation.

While the studies reported above did not investigate state anxiety per se, results from MacIntyre and Gardner (1989) suggest similar negative state anxiety association with cognitive functioning. Of all the anxiety measures employed in the study, the State Anxiety Scale (Spielberger, 1983) was the only one found to significantly negatively correlate with the learning and production of L2 French vocabulary. The experimental treatment in MacIntyre and Gardner involved the learning of vocabulary items over a series of trials in which learners' noticing of the items was clearly involved, and, thus, a state anxiety-noticing association could be hypothesized here. The researchers, however, suggest, given the type of correlations attained, that it is more likely that state anxiety

was a result rather than a cause of poor performance. While it is difficult to establish either conclusion with certainty, this poses a variable that merits further investigation.

Further, as exposure to written input was the major medium through which the participants were exposed to language form in the current study, it could also be argued that state anxiety might have interfered with reading comprehension in a manner that did not heighten attention to language form. Employing both the FLCAS and the CIQ, as is the case in the current study, Sellers (2000) reported that highly anxious participants tended to recall less passage content and fewer main ideas than did low-anxiety participants. The CIQ results also indicated that highly anxious participants experienced more off-task thoughts than did low-anxiety participants. The recall of fewer main ideas from the text by highly anxious participants is particularly interesting. Sellers notes that recalling main information is "more demanding and requires more mental capacity" than do supporting details (p. 517). It is "in the processing of important information [that] participants must organize, interpret, and interrelate the information" (p. 517). Recalling main ideas may also demand a certain degree of sensitivity to the organization of the text, whereas remembering supporting details does not, she argues.

Along the lines of Sellers (2000) above, the noticing of language form during input exposure is also expected to involve mental capacity, with which anxiety may interfere. The level of state anxiety measured by the CIQ 3 significantly and positively associated with off-task thoughts ($r = .548$, $p < .01$), and negatively correlated with the FLCAS ($r = -.486$, $p < .01$). Since anxiety on the FLCAS seemed to serve a positive attention-directing role in this study, these correlations suggest that the higher the level of

state anxiety, the more disruptive thoughts experienced during task performance and the less attention-directing alertness to the task at hand. Such off-task cognition and less task alertness may detract from the attentional resources directed to the noticing of language form.

The consistently differential direction of association between the noticing of language form and language and state anxieties provides a particularly interesting finding. These anxieties provided an example of how variables within the same construct (anxiety) served as a positive emotion (language anxiety) or a negative emotion (state anxiety), and both associated with a cognitive construct, noticing, in a dynamic interplay of variables. As Gregersen et al., (2014) note, "the various impulses act in concert; it would be rare to find only one force acting on the system at a given time" (p. 576). In their study of three high-anxiety and three low-anxiety Spanish L2 learners, Gregersen et al. report the case of a learner who rated as "low anxiety" on the FLCAS but experienced "unusually high" state anxiety during her class presentation as seen in her accelerated heart rates and her high self-ratings of anxiety. This finding prompted the researchers to conclude that this result "demonstrates the value in distinguishing between state and trait anxiety" (p. 579).

In interpreting the differential direction of association between the noticing of language form and language and state anxieties, an understanding of both types of anxieties is needed. Language anxiety is a "situation-specific anxiety" that represents "self-perceptions, beliefs, feeling, and behaviors related to classroom language learning arising from the uniqueness of the language learning process" (Horwitz et al., 1986, p.

128). State anxiety, on the other hand, is "apprehension experienced at a particular moment in time" (MacIntyre & Gardner, 1991a, p. 90). As the current study investigates how anxiety associates with the noticing of language form during task performance, it could be expected that apprehension experienced during task performance might be harder to control or channel in a positive attention directing manner than an overall worry arising from the L2 learning experience. State anxiety measures may then better reflect momentary anxiety reactions, while language anxiety measures may better reflect learner reactions to the L2 learning experience. When language learning experiences are positive, a reduced level of anxiety could be expected, and when learners display a high level of control over their language learning experiences, they could channel their worries and anxieties in a positive direction. This unique pattern of results merits further investigation for a better understanding of how language anxiety and state anxiety interact with the noticing process. Such a direction resonates with a call in Gregersen et al., (2014):

> Both positive and negative emotional states, experienced from moment to moment, have important implications for the learning process, especially as learners experience transitions back and forth between positive and negative emotional trajectories. Such a notion is missing from the existing literature; the force and direction of emotional experience during second language events needs to be better understood. (576)

5.3 Research Question 2: Learner Noticing and the Nature of Language Form

The second research question investigated whether anxiety differentially associates with the noticing of different types of linguistic form in input subsequent to oral output production or comprehension work. The second hypothesis was generally supported. Anxiety predicted noticing, but the nature of the forms mediated anxiety predictions. The noticing of the more salient forms (time telling and time connectors) was more susceptible to anxiety effects than the noticing of the less salient form (the future tense), with the exception of time telling, with which anxiety did not associate (only approached statistical significance in the FLCAS model). These findings could be interpreted in light of the characteristics of these forms and the level of attention they involve.

It is well-established in SLA literature that not all linguistic forms are perceived, processed, or learned alike (N. C. Ellis, 2006c, 2008a; N. C. Ellis & Collins, 2009; Goldschneider & DeKeyser, 2001; Greenslade et al., 1999; Han & Beverley, 2007; Han et al., 2008; Spada & Tomita, 2010; VanPatten, 1990, 2002, 2004; Williams & Evans, 1998). A number of parameters have been used to describe the structural characteristics of different linguistic forms, among which are perceptual salience, communicative value, and formal complexity. It could, therefore, be argued that the level of attention and engagement with the language form determines its level of susceptibility to anxiety effects. Accordingly, if a form is not noticed, i.e. selective attentional resources are not directed to that form, anxiety as a "cognitive response" (Sarason, 1978) may not be

triggered. If, on the other hand, a particular form stimulates selective attention, anxiety may come into play either by detracting from attentional resources or by directing them to the form. In light of this hypothesis, the following sections discuss how anxiety might have interacted with the noticing of each of the forms in the current study. The discussion will depend on a structural characteristic of the forms: perceptual salience and, as a result, communicative value.

5.3.1 Learner Noticing and the Nature of Language Form: The Future Tense (Morphosyntax)

Neither language anxiety nor state anxiety predicted the noticing of the future tense, a finding that could be interpreted in light of the perceptual salience of the form. While the future tense was the pre-determined language focus of the study, with 12 instances in the model text meant to raise the participants' consciousness of the form, only 16 participants (20%) reported noticing it. This is a non-surprising finding given learner-created salience (Sharwood Smith, 1991, 1993) which may or may not match the instructor's or researcher's focus (R. Ellis et al., 2001; Han, Park, & Combs, 2008; Hanaoka, 2007; Long & Robinson, 1998; Sharwood Smith, 1991, 1993).

It could, therefore, be argued that the future marker was not salient enough to be noticed. The total instances of future noticing reported in the Results section above (88.75%) involved both underlining the form and reporting its noticing compared to only 20% of the participants who explicitly reported noticing the future marker in their reflection questionnaire and interview data. Underlining, thus, might have been

confounded by the participants' attending to the whole verb phrase or clause rather than the future prefix specifically. In fact, the participants' text underlines were all of verbs, verb phrases, and clauses, and only two participants specifically underlined the future prefix. It might then be argued that the future marker, a one-letter attached as a prefix to present tense verbs (see target form description in the Research Methods chapter), might not have been salient enough to trigger form noticing. This observation goes in line with morphosyntactic features in general being some of the least commonly noticed by language learners (Al-Surmi, 2012; Chen, 2013; Mackey et al., 2000).

In explaining the hypothesized low salience of the future marker, it could be argued that the future prefix (a grammatical morpheme) was redundant, and was, therefore, "blocked" or "overshadowed" by more salient cues in the stream of L2 input (N. C. Ellis, 2006c, 2008a; N. C. Ellis & Collins, 2009). The future time frame was established by other temporal references in the text (e.g. the content lexical item "tomorrow"). N. C. Ellis (2008a) notes that "Morphological cues to tense are nonsalient," and remarks that "Grammatical morphemes are often redundant and overshadowed by more salient lexical cues to tense or number" (p. 236). He further explains, "If a learner knows these lexical cues and has processed them, then subsequent processing of the morphological cues in these contexts affords no further information" (p. 236). In the current study, the future time frame has been established in the model text right from the beginning. The text title reads: "Tomorrow is the weekend," and there are three instances of the temporal reference "tomorrow" in the text, including two in the first line. This

observation raises the possibility that the future tense morpheme might have been overshadowed by the lexical temporal reference "tomorrow."

It was also possible for the participants to comprehend the text and to perform the subsequent task, comprehension or production, without relying on this tense marker. N. C. Ellis (2005) remarks that "a language learner might never get around to noticing low-salience cues, particularly when the interpretation accuracy afforded by the other more obvious cues does well enough for everyday communicative survival" (p. 323). This notion resonates with findings from S. Takahashi (2005) above. In this study, learner noticing was found to be contingent on the relevance of the forms to the participants' learning goals in achieving more effective L2 communication.

Empirical evidence comes from VanPatten (1990) and its replication study, Greenslade et al. (1999). The studies investigated L2 Spanish input processing in the aural mode (the former study) and the written mode (the latter study). VanPatten reported that the participants at the lower levels of L2 proficiency, as is the case with the participants in the current study, were less able to distinguish the free morpheme (the definite article *la*), i.e. a separate word, and the bound morpheme (the verb morpheme *-n*) than those at higher levels. Such a finding resonates with the notion that learners at higher levels of proficiency, usually achieved following years of practice and L2 use, can attend to L2 cues in their processing strategies in an L2-like manner (Darcy, Peperkamp, & Dupoux, 2007; Gass & Selinker, 2008; Ortega, 2009).

Greenslade et al. (1999) report that attending to the free morpheme *la* had a greater negative impact on meaning comprehension than attending to the bound

morpheme -*n*. This finding suggests that -*n* might not have been noticed as the free morpheme *la* was. Greenslade et al. argue that while both morphemes encode "relatively equal amounts of information" (-*n* number and person and *la* number and gender), "in the written mode it appears that by virtue of being attached to the verb stem, -*n* may not have been isolated and, therefore, may have been processed in combination with the semantic content of the verb" (p. 77). Along the same lines, it could be argued that the participants in the current study might have processed the bound future morpheme ـــ in combination with the semantic content of the verbs.

The discussion of form salience above resonates with the construct of communicative value and the principles in VanPatten's (1996, 2002, 2004) model of Input Processing. As communicative value could be considered a parameter of form salience (Leow et al., 2003; Osgood & Hoosain, 1974), it could be argued that in the current study, the future marker was not salient enough due to its limited communicative value in the model text. VanPatten notes that a form's communicative value is based on two features: [+/–inherent semantic value] and [+/–redundancy]. The future tense marker in the current study (ـــ) could be viewed as a +inherent semantic value. Morphemes are "usually considered to be the minimal form having a meaning" (Osgood & Hoosain, 1974, p. 168). However, ـــ is +redundancy in terms of it communicative value; the future time reference could have been attained in the text through the adverb "tomorrow," potentially reducing its communicative value. According to the Input Processing principles of "The Primacy of Content Words," "The Lexical Preference," "The Preference for Nonredundancy," and "The Meaning-Before-Nonmeaning" principles

(VanPatten, 2004), learners are inclined to channel their focal attention to meaning-bearing elements (e.g. content words) before processing elements with lower communicative value (e.g., grammatical morphemes). The participants are, therefore, more likely to rely on lexical items than on grammatical form "when both encode the same semantic information" (VanPatten, 2004, p. 14) during L2 input exposure.

The hypothesis that the participants did not prioritize the processing of the future prefix goes in line with results from textual enhancement research. Leow et al. (2003) reported significant benefits for textual enhancement in the noticing of the more salient form (Spanish present perfect) over the less salient form (Spanish present subjunctive). Forms with higher communicative value were also reported as being more successfully noticed through the enhancement of the input than forms with a lower communicative value (e.g., Alanen, 1995; Doughty, 1991; Doughty & Williams, 1998; Jourdenais et al., 1995; Shook, 1994). A study of the learning of Arabic investigating the noticing of a syntactic feature with a non-redundant form of high communicative value (the comparative) vs. a redundant morphosyntactic feature (the dual pronoun attached to present tense verbs) yielded similar results; the comparative form was more successfully noticed than the dual pronoun (Park & Nassif, 2013).

Further, in line with the learners' developmental readiness (Pienemann, 1998), the participants might have attended to their own needs (i.e. the "gap" in their existing knowledge (Schmidt & Frota, 1986) rather than to the researcher's intended focus of the study, a variable long neglected in output-induced noticing studies with a pre-determined language focus. It could be seen that a considerable number of the participants had verb

conjugation problems. This factor might have oriented their attention to the stem verbs to the exclusion of the future prefix.

Given the discussion above, the future marker might not have triggered learner noticing, and, accordingly, anxiety reactions. This conclusion is supported by results from a follow-up ordinal logistic regression. Language anxiety measured by the FLCAS and state anxiety measured by the CIQ were each entered into a separate regression model to explore the specific prediction ratios at the different thresholds of noticing (low to medium and medium to high noticing on the future noticing variable). The results showed that as the level of noticing increased, so did the anxiety prediction. With FLCAS in the regression, Wald (the equivalent of F value in the analysis of variance) increased from .047 to 2.788. The size of prediction increased from 1.2 to 2.9 units at the low to medium and medium to high noticing thresholds, respectively. It was not statistically significant, however. In the CIQ regression, Wald increased even more considerably (.140 to 5.155), reaching statistical significance at $p < .025$ (the size of prediction increased from 1.2 to 3.1). It could, therefore, be concluded that while state anxiety did not significantly predict the noticing of the future marker, the higher the level of noticing across the noticing thresholds, the more likely noticing was to be prone to anxiety predictions.

5.3.2 Learner Noticing and the Nature of Language Form: Time Telling (Syntax)

Similar to the future tense results above, neither language anxiety nor state anxiety predicted the noticing of time telling, and language anxiety only approached statistical significance at $p = .056$. Similar to the noticing of the future prefix, a different picture emerges when only language anxiety is entered into the regression equation and examined across the low to medium and medium to high noticing thresholds. Language anxiety was significant at $p < .01$. The size of prediction increased from .67 to 9.1 at the low to medium and medium to high noticing thresholds, respectively (Wald: 7.086 to 9.396), a finding that could also be explained in light of the feature's salience and communicative value. This finding was not found for state anxiety, however.

Time telling is a meaning-bearing form composed of two content words. It involves the affixation of the definite form of the word "hour" (which the participants only knew as "watch" or "clock") to an indefinite number specifying the hour (see target form description in the Research Methods chapter). It is, therefore, a form with inherent semantic value, and contributes to the referential meaning of a sentence (VanPatten, 1996, 2002). It is also more salient than a one-letter bound morpheme (the future tense prefix). Osgood and Hoosain (1974) report evidence from seven experiments investigating form perception that the "*meaningfulness of units as wholes* is the critical determinant of perceptual salience" (p. 187). Time telling in Arabic is a meaningful whole denoting time reference, i.e. a "word-like nominal compound" (Osgood & Hoosain, 1974). Osgood and Hoosain view two-word noun-phrases as two separated

wholes but syntactically function as single units, reporting a special salience for the word or word-like nominal compounds by virtue of their meaningfulness.

Time telling is also a non-redundant form; it contributes to the referential meaning of the sentence, and no other lexical items in the text used in the current study encode the same semantic information that it conveys (i.e. it is +inherent semantic value and –redundancy). It is not surprising then that it attained a comparable percentage of participant reporting compared to the future prefix (22.5% and 20%, respectively) with merely four instances of time telling in the model text. While highly frequent in the input (12 instances), the future marker ـــَ was less noticed than the less frequent but non-redundant and more salient and meaningful time telling. This finding corroborates an early proposal of Van Patten (1985), with the communicative value of the form being a better predictor of learner noticing than form frequency. VanPatten notes that "communicative value is primary; frequency of occurrence is secondary" (p. 97).

A higher level of time telling noticing than that reported by the participants could also be concluded given that time telling was the feature most integrated on both posttests (38.75% on posttest 1 and 40% on posttest 2), a non-surprising finding given that not everything learners notice is available for verbal report (Schmidt, 1990). These findings suggest that time telling triggered a level of attention at a level of processing that associated with anxiety reactions. Language anxiety was a better predictor of the noticing of time telling (approached statistical significance at $p = .056$), aligning with the discussion above on language anxiety creating a level of readiness and alertness in task performance.

One result to ponder here is that contrary to the follow-up regression results of the FLCAS, state anxiety approached significance at the low to medium noticing threshold ($p = .036$), but was not significant at the medium to high threshold. This might be explained by the structural characteristics of time telling. This feature might not have been complex enough for the participants to necessitate a deep level of processing that renders it susceptible to state anxiety effects. In her investigation of output-induced noticing across differential levels of L2 form complexity, Uggen (2012) reported that the more structurally complex form (the past hypothetical conditional) prompted more attention to form and learning gains than the less complex form (present hypothetical conditional). As time telling is not considered a highly complex feature in colloquial Arabic, it could be argued that state anxiety did not involve much worry in a way that would increase the level of anxiety across the noticing of time telling thresholds.

5.3.3 Learner Noticing and the Nature of Language Form: Connectors (Cohesion)

Of all the language forms noticed in the study, the noticing of time connectors was the most susceptible to anxiety effects. Both language anxiety and state anxiety significantly predicted the noticing of connectors, and so did the group (significant in the CIQ model and only approached significance in the FLCAS model). As independent content words providing a time sequence of events (see target form description in the Research Methods chapter), time connectors are salient forms with inherent semantic value at the discourse level. It is not surprising, therefore, that they triggered a level of anxiety that predicted noticing. In the evidence reported from seven experiments, Osgood

and Hoosain (1974) note that "the word has special salience in the perception of language," and that "the reason for this salience is the unique meaningfulness of the word (or the word-like nominal compound as a whole" (p. 168).

Given the participants' lack of previous exposure to time sequencing and their limited experience with discourse level organization prior to the current study, time connectors might have presented a particular challenge to the participants. These connectors required the participants to process the input more deeply at the discourse rather than the sentence level. This heightened need for time sequencing might have, therefore, pushed the participants to process at a deeper level with more mental capacity to organize and interpret the text information in a way that triggered anxiety reactions (see Sellers, 2000). Along the lines of the future tense and time telling noticing findings, results from a follow-up ordinal logistic regression confirmed that as the level of connector noticing increased, so did the size of language anxiety prediction (6.3 to 11.5 across the low to medium and medium to high noticing thresholds, respectively; Wald: 7.177 to 12.219).

The level of challenge and ensuing level of processing needed for the noticing of time connectors might also explain the Output group's superiority in the noticing of connectors. In line with the Output Hypothesis (Swain, 1985, 1995, 1998, 2000), the Output participants might have noticed the gap in their existing knowledge as they first described the picture story in a way that heightened their awareness of the need to temporally sequence the picture events through the use of connectors, and possibly, therefore, prompted a search for relevant forms in subsequent input.

5.4 Research Question 3: Anxiety and the Integration of Language Form

The third research question investigated the anxiety-form integration association. Both language anxiety and state anxiety significantly and more consistently predicted form integration across the forms noticed on both posttests, with only a few exceptions, as to be seen below. The general direction of prediction observed in the noticing results above was maintained in form integration; language anxiety positively predicted form integration, while state anxiety negatively predicted it.

The general assumption underpinning the design of the current study was that when learners successfully attend to language form, "learning of the attended form will occur based on the premise that attention is what mediates input and intake" (Izumi, 2002, p. 568). Accordingly, the third research question investigated whether anxiety associates with the integration of form noticed in input subsequent to oral production or comprehension work. This assumption was supported in research question 3. Total noticing positively correlated with total integration on posttests 1 and 2 (posttest 1: $r = .475$, $p < .01$; posttest 2: $r = .527$, $p < .01$), and the noticing of each feature positively correlated with its integration on both posttests.

The level of statistical significance attained in anxiety predictions of form integration confirms anxiety effects on form noticing as well. Form integration has been typically employed as an operationalization of noticing (e.g. Izumi, 2002; Izumi & Bigelow, 2000; Izumi et al., 1999), and was a correlate of noticing in this study (as noted above). In fact, form integration could be considered a more precise measurement of

noticing given the confounding variable of the phrasal and clausal underlines observed in the study compared to specific form underlines.

The clearer significant anxiety predictions in form integration compared to form noticing in the first research question could also be explained in light of the particular challenge and the level of anxiety L2 oral production involves. As has been profusely reported, L2 speech is particularly susceptible to anxiety effects (Cheng et al., 1999; Elkhafaifi; 2005; Horwitz, 1996, 2001; Horwitz et al., 1986; S. Kim, 2009; Y. Kim & Tracy-Ventura, 2011; Kitano, 2001; Koch & Terrell, 1991; MacIntyre, 1995a; Price, 1991; Sheen, 2008; Steinberg & Horwitz, 1986; Yan & Horwitz, 2008; Young, 1986, 1991). Moreover, when investigating cognition alongside anxiety, output anxiety, especially in oral production, has consistently been found to be the most pervasive form of anxiety compared to input and processing anxieties. In MacIntyre and Gardner (1994b), the output stage was the only stage in which all of the tasks correlated with anxiety. Similarly, of the three anxieties investigated (input, processing, and output), Robinson (2007) only reported negative correlations between output anxiety and the use of complex syntax in oral production, and as the complexity of the tasks increased, so did anxiety effects. In light of these findings, it could be argued that while anxiety exists at input and processing stages, it is at the production stage that anxiety effects become most evident.

These anxiety effects could be interpreted in light of attentional accounts as well. Production involves item retrieval from long-term memory (MacIntyre & Gardner, 1989, 1994b). Chun and Turk-Browne (2007) hypothesize that "memory retrieval might reflect

a form of selective attention to internal representations" (p. 177). Accordingly, significant anxiety effects at the production stage may indicate anxiety interference with the retrieval of these items (as empirically reported in MacIntyre and Gardner, 1989, 1994b). The learners, therefore, may not be able to demonstrate the level of language knowledge that they have or the forms that they notice as they engage in L2 production. Grgersen (2003) reports possible language anxiety interference with the production of previously learned materials as evidenced through the more frequent shift to L1 among more highly anxious participants. Given this potential output anxiety interference with the incorporation of the forms noticed, a specific discussion of the integration vs. the noticing of each of the current study forms is presented next, also specifying the pattern of form integration change from posttest1 to posttest 2.

5.4.1 Anxiety and the Integration of Language Form: The Future Marker

Similar to the future marker noticing results, anxiety did not significantly predict the future marker integration on either posttest. This finding could be interpreted in two ways. First, noticing results suggest that the future prefix might not have been salient enough to be noticed. A novel form not noticed is a form that will not be integrated, and when the form is not integrated in speech, anxiety is not likely to play a role here. It could also be argued that form noticing does not necessarily always equate with form integration, reminiscent of Sharwood Smith's (1991) stipulation that noticing "signals" in the input may not necessarily have consequent effects on L2 development (also see VanPatten, 1985). In addition, while noticing is a "surface level" phenomenon (Schmidt,

1995) involving "awareness at a very low level of abstraction" (Schmidt, 2001, p. 4), integration involves a higher level of processing and understanding of the form. As Schmidt (1995) puts it, form understanding is the "recognition of a general principle, rule, or pattern," and represents a "deeper level of abstraction related to (semantic, syntactic, or communicative) meaning, [i.e.] system learning" (1995, p. 29).

Moreover, in line with the form salience arguments above, it is expected that if a novel form was not salient enough to be noticed, it would not have been acquired. N. C. Ellis and Collins (2009) note that "Low salience cues tend to be less readily learned" (p. 331). They further argue, based on the Rescorla–Wagner model (1972), that "the amount of learning induced from an experience of a cue-outcome association depends crucially on the salience of the cue and the importance of the outcome" (p. 331) (also see N.C. Ellis 2006c, 2008a). In the current study, the participants were able to provide a successful outcome, describing their upcoming weekends on the posttests, while relying on the use of lexical units such as "tomorrow," "at 5pm," and "in the morning." The participants, therefore, might have successfully interpreted the future timeframe through content lexical items, and expressed the future meaning in speech production through content lexical items as well. In so doing, they might have achieved their intended communicative outcome without pursuing native-like accuracy that is "beyond their current cognitive bounds. Good enough (for the naturalistic world), but not perfect enough (for the more formal criteria of schooling)" (N. C. Ellis, 2008a, pp. 236-237). Accordingly, the production of the future tense, or lack thereof, might not have induced anxiety levels that would positively or negatively associate with form production.

Qualitative data further offer a perspective as to why the future market might not have been integrated. Comment 3 in Table 4.22 above ("I wasn't confident enough in what I heard to use much new grammar or vocab / I tried to use some future tense") points to the participant's awareness of the future tense, but lack of confidence to integrate new language features. This participant also thought that she had used the future tense, but did not. This finding suggests a noticing-integration mismatch to which anxiety might have contributed, as reported above (mismatches of 70%, 68.75%, and 36.17% among high-anxiety, low-anxiety, and moderate-anxiety participants, respectively).

5.4.2 Anxiety and the Integration of language Form: Time Telling

While no statistically significant association was established between anxiety and the noticing of time telling, both language anxiety and state anxiety significantly predicted time telling integration on posttest 1, but not on posttest 2. Similar accounts to those outlined in discussing future tense integration above could be used here as well. Speaking might have presented a challenge triggering anxiety reactions, a welcome challenge with which language anxiety positively associated, or a problematic one with which state anxiety negatively associated. In addition, while the future prefix might not have been salient enough to be noticed, time telling, a more salient form with a higher communicative value, was noticed more frequently as evidenced by this feature being the form most integrated across the groups on both posttests (38.75% on posttest 1 and 40% on posttest 2). Such increased integration through the medium of speech might have

triggered anxiety reactions, a conclusion that anxiety significance across integration thresholds displays.

In considering anxiety effects on posttest 2 time telling integration, the drop from statistical significance on posttest 1 to no significance on posttest 2 might not be a surprising finding. Posttest 2 was administered two weeks following posttest 1. While time telling integration still correlated with time telling noticing at posttest 2 (.491, $p < .01$), the task might not have been novel enough to create an anxiety effect. In addition, posttest 1 might have created a task familiarity effect, with the same prompt used in posttests 1 and 2.

5.4.3 Anxiety and the Integration of Language Forms: Connectors

Corroborating noticing results, of all the language forms integrated in the current study, the integration of time connectors was the most susceptible to anxiety and group (Input/Output) effects. Both language anxiety and state anxiety significantly predicted the noticing of connectors on both posttests, with the exception of the FLCAS not significantly predicting connector integration on posttest 2. While the integration of all of the forms triggered some levels of anxiety, connectors were non-surprisingly the language feature that had the most consistent noticing and integration susceptibility to anxiety effects. In light of the discussion above on the depth of processing, it might be argued that as these connectors might have necessitated a deeper level processing at the discourse level, a deeper level of processing was also required to produce them. Follow-up ordinal logistic regression showed an increase in the size of prediction of language

anxiety effects from the low to medium and medium to high levels of integration on both posttests.

On posttest 2, language anxiety predictions dropped from statistical significance level while state anxiety remained significant. This is not surprising given the nature of these anxieties. While the FLCAS assesses learners' overall reactions to the experience of L2 learning (language anxiety), the CIQ assesses the level of anxiety during task performance (state anxiety). In a task that required a deeper level of processing, pervasive state anxiety effects might still exist during the performance of the same task two weeks later.

5.5 Research Question 4: Anxiety and Noticing Under the Input and Output Conditions

The fourth research question investigated whether anxiety was differentially associated with the noticing of linguistic form under Input and Output conditions. It was hypothesized that the Output group participants will be more prone to anxiety effects than will Input participants based on the premise that L2 production triggers noticing a gap in existing L2 knowledge (Swain, 1985, 1995, 1998, 2000). Hanaoka (2007) offers a psycholinguistic rationale of the noticing function of the Output Hypothesis in light of the "Zeigarnik effect." He stipulates that the act of L2 production and noticing the gaps could be considered an "unfinished task." Unfinished tasks create psychological tension and, therefore, tend to be remembered better than finished ones, he argues.

Accordingly, it was hypothesized in the current study that this "tension" may increase Output participants' proneness to anxiety effects. This hypothesis was not supported, however. When anxiety was found to be a significant predictor of learner noticing and integration, no interaction effects with the Group were observed, indicating consistent anxiety predictions regardless of Output/Input group membership. This finding was also consistent across language anxiety and state anxiety.

The finding above could be interpreted by output-related factors. First, the Output condition in the current study might not have played the hypothesized role of "a priming device for consciousness raising" (Izumi, 2003, p. 168) through the noticing of a gap in existing knowledge. If no such gap is noticed, the Input and Output treatments are then expected to yield similar noticing-anxiety association results. It could also be argued that this single treatment session may not have created a clear sense of an L2 knowledge gap, i.e. an "unfinished task" for the Output group participants. More exposure, therefore, might have been needed for an Output/Input difference to emerge. Izumi (2002) notes that "it would be important to provide learners with extended opportunities to produce output and receive relevant input to ensure maximal benefit from the output-input treatment" (p. 547).

The nature of the target forms needs to be considered here as well. Many participants found ways to express the meanings needed without paying attention to target forms, as indicated in their reflection data. If these participants did not feel a pressure to notice and learn new forms, no differential levels of anxiety might then be

expected at the level of the group; rather, individual learner variables would better predict anxiety reactions here. This conclusion of individual learner vs. group L2 behavior is reminiscent of findings from Kleinmann (1977). Kleinmann studied learner avoidance of the use of target L2 English structures deemed challenging per contrastive analysis predictions. He reported that when a target structure was avoided by the L1 group, the participants with facilitating anxiety used this structure in their oral production. Thus, while a behavior was expected by the L1 group, it was individual learner variables that determined L2 form use and its association with anxiety.

It could also be argued that the Input condition created a level of input processing and, thus, form processing that was as susceptible to anxiety predictions as that in the Output condition. SLA voices that prioritize input processing over output production in L2 development (Krashen, 1982, 1985; VanPatten, 1996; VanPatten & Cadierno, 1993) still argue for a mere output role in promoting L2 production abilities. As the current study found that anxiety predictions increased with the rise in the level of form noticing, the Input condition might have created a comparable level of noticing that engendered anxiety reactions similar to those in the Output condition.

The participants' anxiety levels could also explain the consistent anxiety-noticing association across the Input/Output groups. The results showed that the majority of the participants (68.75%) had a medium level of language anxiety, which was interpreted earlier in this chapter as having had facilitative effects on the participants' form noticing and integration. It could, therefore, be argued that, regardless of group membership, the

participants directed their full attentional resources to the tasks at hand. This conclusion is indicated by the low mean of disruptive thoughts on the CIQ 1 (Input: 2.6 out of 5; Output: 2.9) and the CIQ 2 (Input: 2.7 out of 5; Output: 2.9). Under such comparable levels of attentiveness to the tasks at hand, it would be expected that the participants in both groups engaged in comparable levels of noticing, and, as a result, were susceptible to comparable anxiety effects

5.6 Pedagogical Implications

The findings of the current study offer some implications for L2 practitioners. First, the study shows patterns of anxiety findings that need to be considered in the L2 classroom. The findings suggest that some level of language anxiety may not be as debilitating as traditionally thought; rather, it could motivate language learners to do better at L2 learning and production. While this is not a call to promote language anxiety, it is a reminder that learner anxieties could be managed. The L2 learning environment is a key variable in this endeavor, ensuring more facilitative than debilitative language anxiety levels. Collaborative learning creates a supportive learning environment where debilitating anxiety is reduced (Ewald, 2007; Kitano, 2001) and where learners feel encouraged and supported. In this environment, language learners are better able to channel their anxieties in a positive manner that would allow for the full direction of attention to the tasks at hand.

The language instructor's role remains instrumental in the learning environment as well. Language learners at different levels of L2 instruction and in different foreign

language contexts cite the teacher as one of the most, if not the most associated with creating a positive classrooms atmosphere (Ewald, 2007; Frantzen & Magnan, 2005; Horwitz, 2001). MacIntyre and Gregersen (2012) suggest that teachers may "approach influencing students' emotions in at least two ways: (a) to set up conditions to provoke a reaction; and (b) to work with the cognition that modifies the emotional schema" (p. 200). Teachers could, therefore, provide stimulating, enjoyable, and positively challenging class activities within a collaborative and friendly classroom environment that promotes learners' strengths. The teachers could also provide explicit learner training and discussions that would help learners channel their emotions in a positive rather than a negative direction toward stimulating the full potential of cognitive resources.

In addition, promoting learners' self-esteem and empowering them to take control of their learning through the use of successful learning strategies is also expected to help them manage their anxieties. "Affective strategies" that help learners regulate their emotions and "social strategies" that direct them on how to learn with others (Oxford, 1990) are no less important than cognitive and metacognitive strategies that regulate the L2 learning process. Providing explicit course goals and familiarizing the students with the course methodologies also help successfully orient learners to course and program expectations in a way that helps them manage language learning-related emotions and positively gear them in the service of L2 learning experiences.

While language anxiety was found to predict some level of preparedness for task involvement, state anxiety results offer different suggestions that also merit consideration. The negative state anxiety-noticing association suggests that it might be

more difficult to control momentary feelings of anxiety that interfere with L2 learning than to control more trait-like or situation-specific anxieties. Nevertheless, the learning environment and the instructor serve a key role here as well by providing clear task expectations and reinforcing the process of learning rather than the outcome alone. Positively challenging tasks are another important variable to consider. A reasonable level of challenge could help push learners' L2 development forward. The addition of some task variables that reduce state anxiety could be helpful in this endeavor, such as planning time and learner interaction and negotiation work. Dual task modes could also be challenging for learners as they involve the division of the attention directed to the task at hand (Jiménez, 2003). Providing manageable steps where learners' attention is directed to one task at a time (e.g. reading for comprehension followed by reading for form processing) is expected to help reduce state anxiety reactions as well.

In addition, the study offers implications that could be considered in the way the instruction of language features is approached. First, the findings serve as a reminder of learner readiness (Pienemann, 1998) and learner-created salience (Sharwood Smith, 1991, 1993), and that the instructor's intended pedagogical focus may not necessarily match that of the learners (R. Ellis et al., 2001; Han, Park, & Combs, 2008; Hanaoka, 2007; Long & Robinson, 1998; Sharwood Smith, 1991, 1993). Thus, explicit instruction will help direct learners' attention to less salient language forms and those that do not seem to have the same degree of inherent communicative value as others. As Schmidt (2001) suggests, "since many features of L2 input are likely to be infrequent, non-salient, and communicatively redundant, intentionally focused attention may be a practical

(though not theoretical) necessity for successful language learning" (p. 30). Increasing the salience and frequency of a form will, therefore, enhance learners' noticing of the form.

In light of research findings from textual enhancement studies as well, L2 learners' attention might be channeled to forms of greater communicative value. This result necessitates explicit training that aims at altering the way learners process L2 input to help maximize their L2 acquisition potentials, a practice promoted by *Processing Instruction* (VanPatten & Cadierno, 1993). It is also important to note that the level of processing needed for the noticing and integration of specific language forms was predicted by anxiety. Considering anxiety, thus, helps better understand L2 production, and sends a reminder to instructors that L2 production may underestimate L2 competence.

The findings also indicate the importance of promoting learner noticing and integration of L2 form. The study showed consistent positive correlations between the noticing and integration of language forms even with no explicit form instruction, pointing to the powerful nature of learner noticing and to the necessity of capitalizing on this process in L2 instruction. The results point to a drop in form integration at posttest 2 as well, providing a reminder that long-term acquisition requires more exposure to target forms and possibly a higher level of processing, i.e. understanding (Schmidt, 1990, 1995), a process that noticing initiates. It is, therefore, necessary for teachers to provide meaningful contexts in which learners are required to constantly use language forms in a way that would help engender syntactic processing and item retrieval.

Finally, while the study did not point to specific output gains, it still showed an advantage in the noticing of a cohesion feature at the discourse level: time connectors. In the noticing of this feature, output seems to have pushed the participants to "process language deeply" and "with more mental effort" than input (Swain, 1995, p. 126). This is a finding on which instructors could capitalize by providing language tasks that promote a deeper level of processing while managing debilitating anxiety levels through task-based interaction. Within this endeavor, it is important to train learners to consider their L2 production as a learning tool which would help them identify gaps in their existing L2 knowledge (Schmidt & Frota, 1986) and heighten their awareness of relevant forms in language input (Swain, 1985, 1995, 1998, 2000). At the same time, the results send a reminder as to the importance of what learners could achieve by exposure to input and engaging in active input processing through stimulating tasks that push them beyond their comfort zones and provide a positive challenge that could promote L2 development.

5.7 Limitations and Future Research

The current study has limitations that could be addressed in future research. First, some experimental treatment issues need to be considered. The experimental treatment was carried out in a language laboratory, i.e. a more controlled setting than an intact classroom environment. While this method provided access to a larger learner sample and solved some logistic complications involved in individual learner data collection in the treatment session, it would be of ecological value to consider the investigation of noticing and anxiety as they occur in task-based, learner-learner interaction in an intact classroom

setting. The experimental treatment also involved one class session followed by a second posttest two weeks later. Hence, while learner noticing still occurred, more exposure in multiple sessions would have provided better opportunities for the noticing of language forms. Extended input and output activities would better help assess the participants' long-term acquisition. Moreover, a second round of input exposure might have better assessed the change in learner noticing as operationalized by underlining, and might have, therefore, better gauged Input and Output treatment effects on noticing, as has been done in some previous studies (e.g. Izumi, 2002; Izumi & Biglow, 2000; Izumi et al., 1999; M. J. Song & Suh, 2008).

Extended learner training than the one provided in this study is another issue to consider in future research. Specifically, more precise training in text underlining should be provided to the learners. Given the predominance of verbal and clausal rather than specific form underlines, it was difficult to assess learner noticing based on these underlines alone. The participants could, therefore, be trained to make more specific underlines that better reflect the forms that they notice. They should also be aware that a form that does not have any instances of underlining is a form that is not noticed. Reporting new learning and integrating new forms with no form underlining was not uncommon in the data.

Some data collection instrument issues should also be considered. While the study obtained qualitative data on noticing through the participants' responses to the reflection questionnaire and the interviews, it did not elicit qualitative data on anxiety. Anxiety was only quantitatively gauged through the FLCAS and the CIQ. Only when some

participants volunteered responses indicating anxiety that a few qualitative insights were obtained. A qualitative approach in addition to the scales employed would help better capture the interaction of learners' affective states and thought processes during task performance. Future studies could, therefore, consider think-aloud protocols or stimulated recalls. While these methodologies may trigger reactivity effects (Egi, 2008), they could still well reflect learner awareness and affect. The lab setting limited this option in the current study.

The addition of a couple of anxiety measures could have informed the study as well. First, a state anxiety scale could have been added at posttest 2, an aspect that the end-of-course interview setting within which posttest 2 was carried out restricted. Second, given that the study taps anxiety at the input and output stages, a scale assessing input, processing, and output anxieties should have also been used.

Another instrument issue to consider is the Arabic speaker's description. The length of the text might have forced the participants to spend a considerable amount of time on text comprehension before reading for form processing. In fact, some of the clearest gains in the study were the Output participants' integration of idea units. It would, thus, be interesting to see whether anxiety interacted with the recall and integration of idea units.

One confounding variable in the study relates to the Egyptian variety taught in one of the six classes. The remaining five classes taught Levantine Arabic, the variety used in the Arabic speaker's text. While the pilot study confirmed that the model text did not pose any comprehension problems for Egyptian variety students and the findings

showed that this group participants had comparable levels of form noticing and integration to those in the Levantine groups, future studies should still consider this variable. The need to include an equal number of Input and Output participants and to involve all first-year Arabic classes necessitated the inclusion of this group in the participant sample. The common features in Levantine and Egyptian Arabic and the participants' course training in exposure to different varieties also led to comparable Egyptian/Levantine participant performances.

Considering all of the issues above, some research directions could be considered in future investigations as well. First, the intriguing patterns of anxiety-related findings raise questions and merit further investigations across different L2 instructional levels and target languages, including less commonly taught languages, to explore whether these findings extend to other learner populations in different contexts. Particularly interesting was the positive noticing-language anxiety association. It provided an example of an emotion that seems to have played a positive role while traditionally held as having detrimental effects on L2 learning. Such a finding provides an interesting line of inquiry to pursue. MacIntyre and Gregeresen (2012) remark that "the potentially powerful effects of positive emotions have not been widely studied in second language acquisition" (p. 198). A line of inquiry investigating both "positive-broadening" and "negative-narrowing" aspects of the same emotional construct (anxiety in the current study) is no less interesting. In addition, facilitating language anxiety seems to have been reported in foreign language contexts (e.g. Chastain, 1975; Marcos-Llina´s & Garau, 2009; Spielmann & Radnofsky, 2001). It would be interesting to see if the same patterns

are replicated in ESL contexts. It might also be of interest to investigate whether the same pattern of language anxiety findings would apply in evaluative vs. neutral L2 performance situations. Replicating the study within the context of L2 writing will provide useful research insights as well.

Further, in considering the association between anxiety and the nature of target forms, it is important to investigate different language forms within the same category. For example, anxiety could be studied in relation to different syntactic features to detect whether a language domain-specific or form-specific pattern of interactions exists. Such findings would better illuminate the results of the current study.

Finally, the specific language forms in the current study should be noted as a limitation. The target form, the future tense, was chosen in accordance with the course content to ensure the participants' lack of exposure while providing the opportunity for the learning of a new form. This choice was restricted by expectations of the suitability of the level of difficulty. Time telling and connectors were forms deemed appropriate given the topic of the main task and the ecologically valid use in the content of talking about a future event. Future studies might pilot the forms more extensively to ensure that they are salient enough in a way that would better reflect learner noticing.

5.8 CONCLUSION

The current study investigated learner noticing and integration of language forms. It reported that form noticing and integration varied by the type of anxiety the learners experienced and the nature of the language forms noticed. The goal of this line of inquiry

was to offer an investigation of how learner variables interact in the context of language learning to better understand L2 acquisition processes. It, therefore, capitalized on an important process in L2 development, noticing. It attempted to offer an understanding of why some learners notice language forms better than others, and why they use the language forms they notice more than others. Simultaneously, the study sought to understand the mechanisms through which anxiety interferes with L2 development processes. In so doing, it attempted to shed light on variables that impair or facilitate L2 processing and production in a world where L2 production is the medium through which bridges of cross-cultural communication are established.

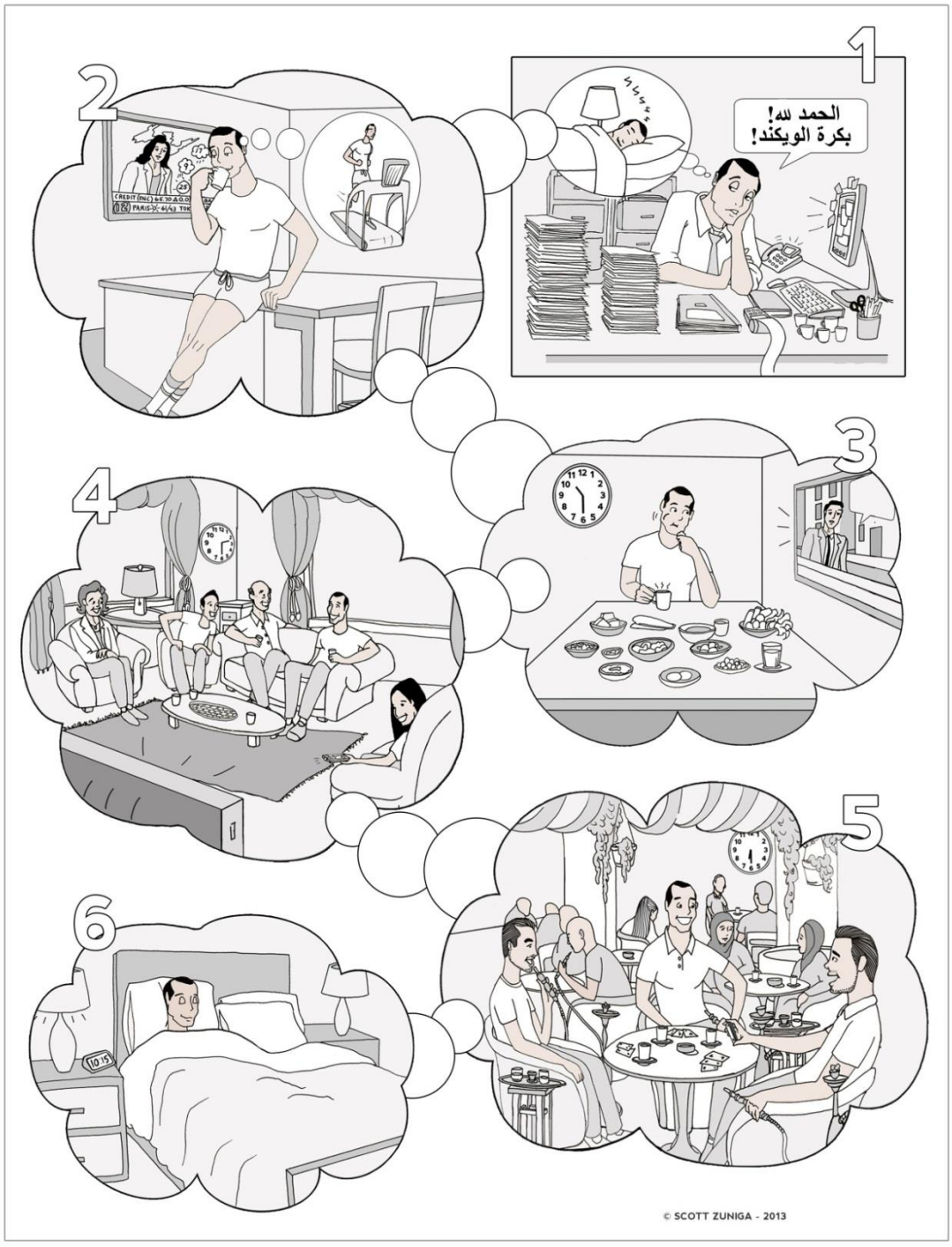
The study also sought to investigate noticing and anxiety in the context of Arabic as a foreign language. Arabic is a less commonly taught language of increasing importance, and the Arabic as a foreign language context is an intriguing environment for L2 research investigations. With the rich linguistic expression of Arabic, the script and structure that largely differ from those of the native languages of its learners, and the geographical spread of its speakers with numerous language varieties in a unique diglossic situation, Arabic research could offer numerous insights for the field of SLA.

Overall, the pattern of results attained in the study sends a message to L2 researchers and practitioners alike as to the complexity of L2 development processes, still proving elusive to decisive conclusions and are yet to be investigated to be better understood. Neither noticing nor anxiety is a unitary construct that interacts with learner affect and cognition in a consistently predictable manner. Both are complex constructs,

and teasing out their various layers helps better understand how they dynamically operate in the context of L2 learning.

Finally, the line of inquiry adopted in the current study was informed by common learner-generated patterns gleaned from SLA theory and research. The specificities of the learner population in this study, however, proved no less intriguing. The findings obtained reflect the interaction of cognitive, affective, and linguistic variables as learners engage in the process of L2 learning, which is precisely what the study sought to highlight. It is through this "intersection of linguistic and psychological [and contextual] factors" that learner behavior in a second language is determined (Kleinmann, 1977).

Appendix A: Picture Story



Appendix B: Arabic Speaker's Model of the Picture-cued Story

بكرة الويكند!

يا الله! أنا تعبان وعندي شغل كتير! بس الحمد لله، بكرة الويكند وحنام كتير!! بكرة الصبح حإشرب قهوة وشوف أخبار بالتلفزيون وحروح عالجيم. أنا بروح عالجيم أربع مرات بالأسبوع. بعد هيك حإفطر فطور كبير، ممكن الساعة عشرة ونص، وحشوف تلفزيون. أنا بحب التلفزيون كتير وبحب شوف الأخبار والأفلام وبكرة حشوف فيلم عربي جديد. بعدين حروح على بيت عيلتي الساعة تنتين ونص بعد الضهر. بابا وماما ساكنين ببيت كبير بس بيتهن بعيد عن شغلي ومنشان هيك أنا ساكن لوحدي ببيت قريب من شغلي. أنا عندي أخ وأخت وهنّ طلاب بالجامعة وساكنين ببيت العيلة. أنا كتير بحب شوف عيلتي وبحب احكي معهن عن الشغل والدراسة وعن قرايبنا كمان. ماما بتعمل أكل ممتاز وأنا بحب أكلها كتير! دائماً باكل حلويات وبشرب شاي مع عيلتي بعد الغدا. بعد هيك حشوف أصحابي بالقهوة الساعة ستة ونص. أنا بشوف أصحابي كل أسبوع بنفس القهوة وبنشرب قهوة وبندخّن أرغيلة وبنلعب ورق وبنحكي عن الشغل والدراسة والحب! صاحبي سامي عنده حبيبة جديدة! بعدين حروح مع أصحابي على مطعم جديد اسمه "يا هلا" منشان العشا، وبعد هيك حإرجع عالبيت الساعة تسعة المسا وحشوف الأخبار بالتلفزيون وبعدين حنام. يللا مع السلامة!

[3]Arabic Speaker's Model of the Picture-cued Story

Tomorrow is the Weekend!

Goodness! I'm tired and have a lot to do! Thank God, however; the weekend is tomorrow, and I'm going to sleep a lot!! Tomorrow morning I'm going to drink coffee, watch TV, and go to the gym. I go to the gym four times a week. Afterwards, I'm going to have breakfast, possibly at 10:30, and watch TV. I like TV a lot, and I like to watch the news and movies; I will watch a new Arabic movie tomorrow. Then, I will go to my family's place at 2:30 pm. Mom and dad live in a big house, but they live far away from where I work, and so I live by myself in a house close to my work. I have a brother and a sister, and they are university students. They live in my family home. I like to see my family a lot, and I like to talk to them about work, studies, and relatives. Mom makes excellent food, and I like her food a lot! After that, I will meet my friends at the café at 6:30 pm. I see them every week in the same café, and we drink coffee, smoke argiile, and play cards. We talk about work, studies, and love! My friend Sami has a new girlfriend! Later, I will go with my friends to a new restaurant called "Ya Hala" for dinner, and will go back home at 9:00 pm. I will then watch the news on TV and go to sleep.

[3] This translation is for dissertation readers. The study participants read the Arabic version of the text.

Appendix C: Comprehension Check Questions (Input)

Set 1: Pre-input Exposure

Choose the answer that you feel best represents the characters and events in the pictures.

أ. الرجل في الصورة (picture) 1
1. مريض.
2. مشغول.
3. سعيد.

ب. الرجل في الصورة 1
1. بدّه الويكند.
2. بيحب يشتغل.
3. بدّه يروح عالبيت.

ج. الرجل في الصورة 2
1. في الجيم (gym).
2. في الشغل.
3. في البيت.

د. في الساعة عشرة ونص الرجل (في الصورة 3)
1. بيروح عالجيم.
2. بيشوف تلفزيون.
3. بيحكي بالتلفون.

ه. في الساعة اتنين ونص الرجل (في الصورة 4)
1. في بيت العيلة مع عيلته.
2. في القهوة مع أصحابه.
3. في المطعم مع أصحابه.

و. في الساعة ستة ونص الرجل (في الصورة 5)
1. في بيت العيلة مع عيلته.
2. في القهوة مع أصحابه.
3. في المطعم مع أصحابه.

ز. في الساعة عشرة المسا الرجل
1. في القهوة مع أصحابه.
2. في المطعم مع أصحابه.
3. في البيت.

[4]Comprehension Check Questions (Input)
Set 1: Pre-input Exposure

Choose the answer that you feel best represents the characters and events in the pictures.

A. The man in picture 1 is
1. sick.
2. busy.
3. happy.

B. The man in picture 1
1. is looking forward to the weekend (Literally: wants the weekend).
2. likes to work.
3. wants to go home.

C. The man in picture 2 is
1. in the gym.
2. at work.
3. at home.

D. At 10:30 am, the man (in picture 3)
1. is going to the gym.
2. is watching TV.
3. is talking on the phone.

E. At 2:30 pm, the man (in picture 4)
1. is with his family in the family home.
2. is in the café with his friends.
3. is in the restaurant with his friends.

F. At 6:30 pm, the man (in picture 5)
1. is with his family in the family home.
2. is in the café with his friends.
3. is in the restaurant with his friends.

G. At 10:00 pm, the man
1. is in the café with his friends.
2. is in the restaurant with his friends.
3. is at home.

[4] This translation is for dissertation readers. The study participants read the Arabic version of the questions.

Set 2: Post-input Exposure

Based on your reading of the text, choose the answer that best represents the characters and events in the picture story.

أ. الرجل في الصورة 1
1. بدّه الويكند.
2. بيحب يشتغل.
3. بدّه يروح عالبيت.

ب. الرجل في الصورة 2 (الساعة 9 الصبح)
1. حياكل الفطور.
2. حيروح عالجيم.
3. حيشوف تلفزيون.

ج. الرجل
1. بيحب الجيم.
2. بيروح عالجيم كل يوم.
3. بيروح عالجيم بالويكند بس.

د. الرجل
1. ما بيحب الأفلام العربية.
2. بيحب يشوف الأخبار بس.
3. حيشوف فيلم جديد.

ه. الرجل
1. ساكن في بيت قريب من بيت عيلته.
2. ساكن مع عيلته.
3. ساكن في بيت قريب من شغله.

و. It seems that the man…
1. بياكل الغداء في بيت العيلة.
2. بياكل الغداء في بيته.
3. بياكل الغداء في المطعم.

ز. الرجل
1. بيشوف أصحابه كل يوم في نفس القهوة.
2. بيشوف أصحابه كل أسبوع في نفس القهوة.
3. بيشوف أصحابه كل ويكند في مطعم "يا هلا".

[5]Set 2: Post-input Exposure

Based on your reading of the text, choose the answer that best represents the characters and events in the picture story.

A. The man in picture 1
1. is looking forward to the weekend (Literally: wants the weekend).
2. likes to work.
3. wants to go home.

B. The man in picture 2 (at 9:00 am)
1. is going to have breakfast.
2. is going to the gym.
3. is going to watch TV.

C. The man
1. likes the gym.
2. goes to the gym everyday.
3. goes to the gym on the weekend only.

D. The man
1. doesn't like Arab movies.
2. only likes to watch the news.
3. is going to watch a new movie.

E. The man
1. lives in a house close to his family's.
2. lives with his family.
3. lives in a house close to his work.

F. It seems that the man
1. has lunch at his family home.
2. has lunch at home.
3. has lunch at the restaurant.

G. The man
1. meets his friends in the same café everyday.
2. meets his friends in the same café every week.
3. meets his friends in "Ya Hala" restaurant every weekend.

[5] This translation is for dissertation readers. The study participants read the Arabic version of the questions.

Appendix D: Immediate & Delayed Posttest Prompt

You have a busy weekend ahead. Describe your next weekend, addressing <u>all</u> of the following questions:

1. What are you going to do in the morning? What time?
2. What are you going to do in the afternoon? What time?
3. What are you going to do in the evening? What time?
4. Who are you going to meet?
5. Are you going to visit your family?
6. Are you going to study and do homework?

Appendix E: Reflection Questionnaire (Output)

Answer the following questions in English. Please write as much as you can to help us better understand your learning and thought processes.

First Picture Description

1. Were there Arabic vocabulary, grammar, etc. that you didn't know when you were planning your first picture description but would have been helpful in your first description?

Listening to and Reading the Model Paragraph

1. Were there Arabic vocabulary, grammar, etc. in the Arabic speaker's paragraph that you wish you had known when you were describing the picture story for the first time?
2. What Arabic vocabulary, grammar, etc. did you learn from listening to the paragraph?
3. What Arabic vocabulary, grammar, etc. did you learn from reading the paragraph?

Second Picture Description

1. Were there Arabic vocabulary, grammar, etc. from the paragraph that you felt were helpful in your second picture story description?
2. Did you use any Arabic vocabulary, grammar, etc. from the paragraph in your second picture description?

Final Thoughts

1. Is there anything else that you can tell us about completing any of these tasks?

Reflection Questionnaire (Input)

Answer the following questions in English. Please write as much as you can to help us better understand your learning and thought processes.

First Picture Viewing and Comprehension Check questions

1. Is there anything that you would like to tell us about your first picture story viewing and first comprehension check questions?

Listening to and Reading the Model Paragraph

1. What Arabic vocabulary, grammar, etc. did you learn from listening to the paragraph?
2. What Arabic vocabulary, grammar, etc. did you learn from reading the paragraph?

Second Picture Viewing and Comprehension Check questions

1. Were there Arabic vocabulary, grammar, etc. from the Arabic speaker's text that you felt were helpful in your responses to the second round of comprehension check questions?

Final Thoughts

1. Is there anything else that you can tell us about completing any of these tasks?

Appendix F: The Cognitive Interference Questionnaire (Output)

Name Date

I. We are interested in learning about the kinds of thoughts that went through your head while working on this task. The following is a list of thoughts some of which you might have had **while completing the Arabic tasks in this session**. Please indicate approximately how often each thought occurred to you by placing the appropriate numbers in the blank provided to the left.

1 = never 2 = once 3 = a few times 4 = often 5 = very often

___ 1. I thought about how poorly I was doing.

___ 2. I wondered what the experimenter would think of me.

___ 3. I thought about how I should work more carefully.

___ 4. I thought about how much time I had left.

___ 5. I thought about how others have done on these tasks.

___ 6. I thought about the difficulty of the tasks.

___ 7. I thought about my level of ability.

___ 8. I thought about the purpose of the experiment.

___ 9. I thought about how I would feel if I were told how I performed.

___ 10. I thought about how often I got confused.

___ 11. I thought about things completely unrelated to the Arabic tasks in this session.

II. Please circle the number on the following scale which best represents the degree to which you felt your mind wandered during the Arabic tasks (based on the scale below):

Not at all 1 : 2 : 3 : 4 : 5 : 6 : 7 very much

A. First picture description

B. Listening to the Arabic speaker's paragraph

C. Reading the Arabic speaker's paragraph

D. Second picture description

E. Weekend description

III. Please circle the number on the following scale which best represents your anxiety level during the tasks (based on the scale below):

Not at all 1 : 2 : 3 : 4 : 5 : 6 : 7 very much

A. First picture description:

B. Listening to the Arabic speaker's paragraph.

C. Reading the Arabic speaker's paragraph.

D. Second picture description

E. Weekend description

The Cognitive Interference Questionnaire (Input)

Name Date

I. We are interested in learning about the kinds of thoughts that went through your head while working on this task. The following is a list of thoughts some of which you might have had **while completing the Arabic tasks in this session**. Please indicate approximately how often each thought occurred to you by placing the appropriate numbers in the blank provided to the left.

1 = never 2 = once 3 = a few times 4 = often 5 = very often

___ 1. I thought about how poorly I was doing.

___ 2. I wondered what the experimenter would think of me.

___ 3. I thought about how I should work more carefully.

___ 4. I thought about how much time I had left.

___ 5. I thought about how others have done on these tasks.

___ 6. I thought about the difficulty of the tasks.

___ 7. I thought about my level of ability.

___ 8. I thought about the purpose of the experiment.

___ 9. I thought about how I would feel if I were told how I performed.

___ 10. I thought about how often I got confused.

___ 11. I thought about things completely unrelated to the Arabic tasks in this session.

II. Please circle the number on the following scale which best represents the degree to which you felt your mind wandered during the Arabic tasks (based on the scale below):

Not at all 1 : 2 : 3 : 4 : 5 : 6 : 7 very much

A. First comprehension check questions

B. Listening to the Arabic speaker's paragraph

C. Reading the Arabic speaker's paragraph

D. Second comprehension check questions

E. Weekend description

III. Please circle the number on the following scale which best represents your anxiety level during the Arabic tasks (based on the scale below):

Not at all 1 : 2 : 3 : 4 : 5 : 6 : 7 very much

A. First comprehension check questions

B. Listening to the Arabic speaker's paragraph

C. Reading the Arabic speaker's paragraph

D. Second comprehension check questions

E. Weekend description

Appendix G: The Foreign Language Classroom Anxiety Scale

We are interested in learning about your reactions to your Arabic class and to speaking in Arabic. Please rate each of the following statements on a scale from 1 (Strongly agree) to 5 (Strongly disagree).

(1) Strongly agree, (2) Agree, (3) neither agree nor disagree, (4) disagree, or (5) strongly disagree

	SA	A	N	D	SD
1. I never feel quite sure of myself when I am speaking in my Arabic class.					
2. I don't worry about making mistakes in my Arabic class.					
3. I tremble when I know that I'm going to be called on in my Arabic class.					
4. It frightens me when I don't understand what the teacher is saying in the Arabic class.					
5. It wouldn't bother me at all to take more Arabic.					
6. During the Arabic class, I find myself thinking about things that have nothing to do with the course.					
7. I keep thinking that the other students are better at Arabic than I am.					
8. I am usually at ease during tests in my Arabic class.					
9. I start to panic when I have to speak without preparation in the Arabic class.					
10. I worry about the consequences of failing my Arabic class.					
11. I don't understand why some people get so upset over Arabic classes.					
12. In the Arabic class, I can get so nervous I forget things I know.					
13. It embarrasses me to volunteer answers in my Arabic class.					
14. I would not be nervous speaking in Arabic with native speakers.					
15. I get upset when I don't understand what the teacher is correcting.					
16. Even if I am well prepared for the Arabic class, I feel anxious about it.					
17. I often feel like not going to my Arabic class.					
18. I feel confident when I speak in the Arabic class.					
19. I am afraid that my language teacher is ready to correct every mistake I make.					
20. I can feel my heart pounding when I'm going to be called on in my Arabic class.					
21. The more I study for a language test, the more confused I get.					
22. I don't feel pressure to prepare very well for the Arabic class.					
23. I always feel that the other students speak Arabic better than I do.					
24. I feel very self-conscious about speaking Arabic in front of other students.					
25. The Arabic class moves so quickly I worry about getting left behind.					
26. I feel more tense and nervous in my Arabic class than in my other classes.					

The Foreign Language Classroom Anxiety Scale Continued

	SA	A	N	D	SD
27. I get nervous and confused when I am speaking in my Arabic class.					
28. When I'm on my way to my Arabic class, I feel very sure and relaxed.					
29. I get nervous when I don't understand every word the Arabic class teacher says.					
30. I feel overwhelmed by the number of rules you have to learn to speak Arabic.					
31. I am afraid that the other students will laugh at me when I speak Arabic.					
32. I would probably feel comfortable around native speakers of Arabic.					
33. I get nervous when the Arabic class teacher asks questions which I haven't prepared in advance.					

Appendix H: Background Questionnaire

1. Gender

   a. Male
   b. Female

2. What is your UT EID? (for purposes of data coding)

3. Is English your first language?

   a. Yes
   b. Other

4. Do you have family members who speak Arabic?

   a. Yes
   b. No

5. How long have you been studying Arabic?

6. What year are you at UT?

7. What's your major?

8. Why are you learning Arabic?

9. Have you learned any other languages? For how long?

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