Combining Input- and Output-Based Instruction in Second Language Learning

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ABSTRACT

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The view of some theorists in the field of SLA is that comprehension practice is essential for establishing strong form-meaning links in the underlying linguistic system and that language production will invariably result from these representations, entailing that output need not be the focus of grammar instruction (VanPatten, 2004). Others hold that language production is a skill which must be developed separate from comprehension (DeKeyser, 1997) and that output can actually directly contribute to the grammar learning process (Swain, 1985; 1995). These opposing views have resulted in several studies contrasting the effects of comprehension and production practice for the initial learning of different language features (e.g., VanPatten & Cadierno, 1993; DeKeyser & Sokalski, 1996). However, Shintani, Li, & Ellis' (2013) meta-analysis on the relative benefits of comprehension and production practice concluded that both are effective in promoting the development of receptive and productive abilities. The question has thus moved beyond which type of practice is more beneficial for acquisition to how the benefits of each type of practice can be exploited in different learning contexts. Of particular interest is the potential of combining comprehension and production practice in an instructional sequence. Based on theories of skill acquisition (DeKeyser, 2007), the output hypothesis (Swain, 1985; Izumi, 2003) and attention (Gass, 1997), as well as the results of prior research (Tanaka, 1999, 2001; Izumi, 2002), the present study hypothesized that combining the two types practice would lead to learning gains over an instructional sequence, and that alternating the two practice types would be more effective than delaying production for the development of both receptive and productive grammar knowledge. Fourteen12-15 year old Japanese learners of English received instruction on the regular simple past (e.g., walk*ed*, clean*ed*) in four one-hour lessons. The delayed group (n=7) received two session of comprehension practice followed by two sessions of production practice; the alternating group (n=7) received alternating comprehension and production practice sessions. In a time series design, gains in perception and production of the –ed past were measured at three points in time. Repeated measures ANOVAs demonstrated that both groups improved significantly over the course of the treatment and that both early and delayed production practice were equally effective (no interaction between Time and Group). The results thus point to the benefits of using both comprehension and production practice to

promote the learning of second language grammar. The discussion of the findings includes pedagogical implications as well as research design modifications for future investigations of optimal combinations of input-based and output-based instruction to best benefit L2 grammar acquisition.

Key words: input-based practice, output-based practice, comprehension practice, production practice, receptive and productive knowledge, combined practice, skill acquisition theory, output hypothesis, L2 learning/teaching, simple past acquisition, instructed SLA.

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Contribution of Authors

As first author for the included manuscript, George Fredrik Smith was mainly responsible for the conceptualization, development, data collection, analysis, and writing of the study with the support of Dr. Laura Collins, who provided guidance and feedback throughout the various stages. During the process, George Fredrik Smith developed several drafts and redrafts of the manuscript, with Dr. Collins supplying extensive feedback on organization and content, as well as rewording some passages. The manuscript's conception and content was developed by George Fredrik Smith, which is reflected in his status as first author.

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Chapter One

The field of SLA has witnessed many dichotomies concerning which aspects of form-focused instruction are most beneficial for language acquisition. Among these are explicit vs. implicit instruction (Norris & Ortega, 2000), incidental vs. intentional learning (Schmidt, 1990), and input- vs. output-based accounts of language acquisition (Shintani, Li, & Ellis, 2013). The latter has existed in the field since the early 1980s, and continues to be a point of debate among researchers. It is without argument that input is essential for language learning: it is the "*sine qua non*" of acquisition (Gass & Mackey, 2007, p.177). It is thought to serve a variety of roles in the acquisition process: a parameter triggering function according to UG-theorists (e.g., White, 2007), raw data for the development of underlying mental representation of language (e.g., Larsen-Freeman, 1997), and a critical component of interaction-driven acquisition (e.g., Long, 1991; 1996). What is less agreed upon is the role that output plays, with some researchers advocating for a strong, more direct role (DeKeyser, 1997; Swain, 1985, 1995), some advocating for a weaker, supporting role (VanPatten, 2004), and others arguing against the need for output practice at all (Krashen, 1983). However, in light of recent evidence regarding the efficacy of both input- and output-based instructional intervention for the development of grammatical ability (Shintani et al., 2013), and intervention studies showing positive effects of mixing input- and output-based practice (e.g., Tanaka, 1999,2001; Izumi, 2002), the present thesis sought to extend research on this traditional dichotomy (i.e., input vs. output) to a relatively unexplored dimension: *when* and *what kinds* of input- and output-based instruction can be introduced to optimally benefit grammatical development. This chapter presents a detailed overview of the theoretical roles that input and output play in promoting language development as well as empirical evidence attesting to these claims; a summary of the efficacy of input- and output-

based grammar teaching methods; a review of theoretical and empirical work on potential "combined" (that is, maximizing the benefits of each type of instruction) approaches to grammar practice; and finally, some insight into the current research and how it will contribute to the gaps in the extant literature.

The Roles of Input and Output in SLA

Given its importance in driving acquisition, there has been an abundance of research on the roles of input and the linguistic environment in language learning. One early theory that had considerable influence on second language (L2) pedagogy was Krashen's (1982) Monitor Model, a set of five hypotheses thought to account for Second Language Acquisition. Among these are the *Acquisition-Learning Hypothesis*, which distinguishes knowing "about" the language from "knowing" the language subconsciously (i.e., explicit vs. implicit knowledge), the latter thought to be the only way to acquire language; the *Natural Order Hypothesis*, which states that learners acquire grammatical structures in a fixed order; the *Monitor Hypothesis,* which holds that language production will emerge naturally as the result of acquired language competence; the *Affective Filter Hypothesis*, which states that learners must have sufficient motivation and willingness to acquire and engage with the language; and the *Input Hypothesis* (IH), which holds that acquisition is a direct consequence of exposure to comprehensible input; that is, language which is understood via the help of contextual information or the guidance of an interlocutor. Acquisition is thought to occur when input is comprehended at a level beyond learners' current stage in the natural order (i.e., $i+1$), given sufficient motivation and willingness to learn. The model has two corollaries: (1) that output production is not necessary for acquisition, and will emerge as a result of building language competence (i.e., Monitor Hypothesis); and (2) that specific language forms do not require any special attention, with the idea that incidental

exposure to grammatical structures alone via $i + 1$ is sufficient for language development to occur.

A number of instructional approaches have given priority to input and exposure over production, including the Natural Approach (Krashen & Terrell, 1983), Total Physical Response (Asher, 1977), and Input Flood (Trahey & White, 1993), as well as Canadian language immersion programs (e.g., Swain & Lapkin, 1982). Krashen (1984) lauded the latter in particular for being excellent examples of how plentiful exposure to comprehensible input can lead to high levels of language competence. However, it was precisely observations of the shortcomings of students in these immersion programs (high levels of fluency, but persistent accuracy problems in production) which led Swain (1985) to consider that input alone may not be enough, proposing the Comprehensible Output Hypothesis (OH). The deficiencies of the input-alone account were also pointed out by Sharwood-Smith (1986), who made a distinction between input that leads to acquisition, and that which is merely comprehended: often due to the abundance of contextual information, it is adequate for learners to rely on top-down processing strategies whereby they derive meaning alone from input for comprehension, rather than bottom-up strategies, whereby they assign meaning to and become aware of forms. The latter type of processing is thought to be encouraged via learner output and provide a greater contribution to acquisition.

In a series of studies, Swain (1985, 1995, 1998) noticed that learners in French immersion programs had relatively high levels of fluency, but low accuracy in their language production. She attributed this to a lack of sustained language production (in some cases, as little as 15% of utterances were more than one clause long; Swain & Lapkin, 1995), concluding that there may be a need for meaningful production in order to improve the accurate use of language.

Such a conclusion was also reached by Lightbown, Halter, White, and Horst (2002), who in a six-year longitudinal investigation of francophone New Brunswick L2 English students showed that groups receiving extensive comprehension practice alone via graded picture book reading started to experience shortcomings in their language abilities over time (particularly in written production) as well as decreasing learning motivation due to a desire to actually *use* the language, despite gaining some proficiency with comprehending the language. The Comprehensible Output Hypothesis (Swain, 1985) originally held that language production complemented the shortcomings of comprehension-only approaches in the following ways: (1) encouraging the development of automaticity in language use; (2) a shift from semantic to syntactic processing, which allows learners to notice the gap between their current interlanguage and target language; (3) allowance for hypothesis testing and the consolidation of interlanguage knowledge; and (4) opportunities for feedback, which can lead to an eventual restructuring of incomplete interlanguage systems. Skehan (1998) expanded the model of the OH to include two additional components: (5) the development of learners' discourse skills; and (6) the creation of a "personal voice", guiding learners to talk about topics which are of interest to them, encouraging further output. Of these functions, R. Ellis (2003) argued that some may be more indirect in their contribution to acquisition, while others may contribute more directly. For example, when output is used to help learners better attend to the input via corrective feedback on production errors, it can be seen as indirectly contributing to language acquisition, since attention to the input is key, not language production. Likewise, testing out hypotheses about the language can help consolidate interlanguage knowledge, but does not actually build it.

On the other hand, R. Ellis (2003) also argued that output can have a more direct contribution to language acquisition. Two functions which are specifically thought to do this are

the shift from semantic to syntactic processing, and the automatization of language knowledge. The syntactic shift in the mind of the learner is thought to occur in the following manner. First, by virtue of producing language, learners will inevitably notice some shortcomings in their production; in a sense, learners come to notice a "gap" between current language ability and the target language. This deficiency in their own linguistic resources instills a need in the learner to search the input for the resources to fill the gap and improve their knowledge. In essence, production enables the learner to not only focus on deriving meaning from input, but to focus on grammatical form as well – something which may not occur if output is not attempted (Sharwood-Smith, 1986). Empirical work on collaborative talk such as Swain & Lapkin (1995) and Kowal & Swain (1997), as well as work by Izumi (2003) provide support for output's function of promoting a syntactic shift in the mind of the learner. The process of automatization is also thought to be supportive of output's direct contribution to language. Automatization of knowledge entails a long process of sustained practice using the language over time, which will eventually free up learners' cognitive resources and allow them to focus on other aspects of language. In addition, Skill Acquisition Theory (DeKeyser, 2007) predicts that the transfer of automatized knowledge across domains (that is, receptive and productive knowledge) is incredibly difficult; in others words, processing input and comprehension is a separate function from producing output. In this sense, output contributes directly to acquisition because it helps learners to develop comprehensive language abilities which may not be possible via comprehension-based practice alone (DeKeyser & Sokalski, 1996; DeKeyser, 1997).

In addition to the Input and Output Hypotheses, another notable theory contributing to our understanding of the relative benefits of input and output in SLA is Input Processing, developed by Bill VanPatten (1991). At the core of this theory is the belief that learners possess

limited cognitive capacity when attending to input, and that various aspects of the input are constantly competing for these limited cognitive resources. Input Processing theory contains number of core principles, presented briefly as follows: (1) a preference for processing meaning over form, i.e., content words over function words, lexical over grammatical items; (2) a preference for processing forms with greater rather than less communicative value; (3) a preference for assigning the thematic role of "agent" to the first noun of a sentence; and (4) a preference for processing sentence initial items before sentence final items, and finally sentence medial items (VanPatten, 2004). According to the Input Processing model (Figure 1), input which learners are exposed to has the potential to become intake, and under the right conditions become integrated into the developing system.

Figure 1. Input Processing Model (VanPatten & Cadierno, 1993, p.226).

Traditional grammar teaching (presentation of explicit grammatical rules followed by a series of mechanical, meaningful, and communicative drills) is generally thought to target language form at point III, engaging learners in focused practice after they have already seemingly developed grammatical knowledge. The criticism of this type of instruction, however, lies in the idea that learners may not have appropriately internalized the language forms needed for practice, and output production of this kind would be of very little use and continue to be error-ridden. VanPatten and colleagues (e.g., VanPatten & Cadierno, 1993; Cadierno, 1995; Lee & VanPatten, 1995) instead advocate for focused instruction at point I of the model, to change certain default input processing strategies learners have (i.e., the IP principles) and make them more efficient

language processors. This is known as Processing Instruction (PI), and consists of three main steps:

1. Providing learners with some explicit information regarding the construction of a grammatical form, as well as information on how the form relates in some way to its meaning;
2. Informing learners of the obstructing processing strategies associated with the given grammatical form (e.g., the first noun strategy for Spanish clitic object pronouns: *La sigue el senor* [Her - follows - the - man/ *The man follows her*]);
3. Engaging learners in structured input activities, which force learners to correctly process the target form for meaning in a series of referential (one correct answer based on a referent) and affective (flexible answer based on personal opinion or belief; still requires processing for meaning) activities (VanPatten, 2004).

During PI, learners are not expected to produce output (although it may occur incidentally in the form of private speech or otherwise); in fact, it is thought that forcing them to produce early on interferes with their ability to effectively process input, thus leading to imperfect interlanguage systems. VanPatten (2004) instead emphasizes that output should be delayed until after language competence has been developed and certain grammatical forms have been internalized. Even then, however, he attributes only supporting roles to output in terms of the development of grammar knowledge: modifying future input for more efficient processing, and managing task demands. It is important to point out, however, certain limitations of PI as an instructional intervention. For one, it was originally designed to tackle certain syntactic-based processing challenges in Spanish (e.g., clitic object pronouns, VanPatten & Cadierno, 1993); although research has demonstrated positive of effects for PI in a number of languages and features (Benati, 2001, for the Italian future tense; VanPatten & Wong, 2004, for the French causative; Benati, 2005, for the English simple past), it is by no means a universal theory of grammar

processing, as not all grammar features across languages conform to the principles laid out by Input Processing theory. Additionally, PI only accounts for meaning-based challenges associated with certain features, and does not consider other challenges which may pose a problem processing language as well. For example, the English simple-past has a relatively straight forward form meaning connection (addition of –ed to a regular verb = past) whose processing is hindered by frequent collocations with temporal adverbs (e.g., Yesterday). However, it is also aurally difficult to perceive because it often occurs in challenging phonetic environments (Bell, Trofimovich, & Collins, 2015; Collins, White, Trofimovich, Cardoso, & Horst, 2012a), an issue unaddressed by PI. Thus, it is important to view comprehension practice from a flexible angle, and not overly rely on PI as a "one solves all" approach to grammar teaching; rather, it should be considered as one approach among many aiming to develop learners' ability to comprehend language.

Input- and Output-based Approaches to Grammar Teaching: A Comparison

A number of instructional approaches have been developed and compared to determine which kind of practice- comprehension practice (CP) or production practice (PP) - is superior in promoting grammar acquisition. Comprehension practice has been operationalized in a number of ways in this body of literature, including via text comprehension/extension activities (Gass & Torres, 2005; Izumi, 2002), input-based tasks (Shintani, 2012), and extensive reading/listening programs (Lightbown, 1992). However, the vast majority of studies comparing CP and PP have used the aforementioned approach of Processing Instruction (Lee &VanPatten, 1995), focused practice which aims to alter learners' default processing strategies to effectively set up the internalization of language forms. In the same body of literature, the operationalization of PP - practice activities which require learners to produce the target grammatical form - has varied to a

considerably greater degree. Among the many instructional techniques found in the literature are traditional output practice (explicit explanation of a grammar point followed by mechanical, decontextualized production practice) (VanPatten & Cadierno, 1993; DeKeyser & Sokalski, 1996; Allen, 2000), Meaningful Output Instruction (Farley, 2001; 2004; Benati, 2005; Morgan-Short & Bowden, 2006), dictogloss tasks[1] (Wajnryb, 1990; Swain & Lapkin, 1998; Qin, 2008; Uludag & VanPatten, 2012), interaction tasks (Gass & Torres, 2005) and other task-based approaches (Toth, 2006).

The results of comparative studies using these various operationalizations of CP and PP have been mixed, with some showing promising results for using production practice to develop both receptive and grammatical knowledge (e.g., Toth, 2006; Allen, 2000), some demonstrating the superiority of comprehension practice for developing both types of knowledge (e.g., VanPatten & Cadierno, 1993; Uludag & VanPatten, 2012), and others showing equivalency of the two types of practice (Farley, 2001; Erlam, Loewen, & Philp, 2009; Rassaei, 2012). In total, there have been more than 30 studies (Shintani, Li, & Ellis, 2013) contrasting the relative benefits of comprehension and production practice, a testimony to how extensively this area has been investigated in the field of SLA. Given the mixed results of these comparative studies however, it could be argued that continuing to investigate the two types of practice in order to determine which should predominate in grammar teaching may not be the best avenue to pursue, especially since both input and output are prevalent in language classrooms. Thus, uniquely focusing on one approach or the other may be unfruitful; rather, the next avenue of research should be to determine how comprehension/production practice can differentially benefit

[1] Dictogloss tasks generally involve collaborative text reconstructions, where learners are first exposed to a text and then asked individually or in groups to reconstruct it as accurately as possible.

grammatical development, and how the unique benefits of each can be exploited during instruction for optimal grammar learning.

Arguably one of the best ways to determine the overall effects of a type of instruction is through the technique of meta-analysis: the synthesis of findings from a variety of studies on the same topic. One such meta-analysis in the domain of comprehension vs. production practice is Shintani, Li, and Ellis (2013). An analysis of 35 experiments in 30 studies on the benefits of comprehension vs. production practice showed large effects for both types of instruction in the development of both receptive and productive abilities. Furthermore, the analysis concluded that each may be relatively effective for a different aspect of grammatical development. Specifically, input-based instruction (i.e., comprehension practice) is useful for developing initial grammar knowledge, but diminishes in effect over time, since it does not encourage the same level of interlanguage analysis afforded by output. Likewise, output does not lead to the direct creation of an interlanguage system, but may directly develop the ability to use the language, refine control over partially developed knowledge, and engage language processing mechanisms which may be difficult to activate through exposure to input alone (Izumi, 2003). Given that both input and output have distinct advantages in the development of language ability, it is intriguing to consider how instruction could exploit the advantages of the two practice modalities in combination to most optimally benefit acquisition.

Combining Comprehension and Production Practice: A Theoretical Approach

How the two types of practice can be integrated has not been the focus of much empirical research, but has nevertheless been considered theoretically by a number of researchers. Broadly, there are two positions: (1) delay production, prioritizing comprehension practice; and (2)

alternate comprehension and production practice. While the first perspective does acknowledge the need to eventually develop production abilities for real world communication (VanPatten & Cadierno, 1993; VanPatten, 2004; Lee & VanPatten, 2003), it also predicts that production is a consequence of, rather than a contributor to, the language acquisition process. According to this perspective, focus on output in instruction may not be necessary, and if at all should be relegated to assisting the further processing of input or for monitoring/editing language knowledge (Krashen, 1985). In this supporting role, focus on output would occur subsequent to input to ensure that sufficient language competence is first attained - that is, production would be *delayed*. Research in the field of attention also partially supports this position. It has been acknowledged that attention to and awareness of certain target language forms is essential for their intake, and eventual L2 development via integration and restructuring (Schmidt, 1990, 1995; Robinson, 1995; Skehan, 1998). Given the belief that learners possess limited attentional capacity, and that at the early stages of learning, form and meaning often compete for learners' attention (Foster & Skehan, 1996), introducing the need for production at such a critical stage may place an additional cognitive burden on learners, making the recognition and intake of grammatical forms even more difficult than it is already. This account provides additional theoretical support for delaying production until proper form-meaning connections have been established, allowing for attentional control over forms in the input to be established before moving on to other aspects of language (VanPatten, 2002).

In contrast, the second perspective holds that introducing production early (i.e., in alternation) may actually support the processes involved in grammar acquisition. First, the meaningful production of language with an interlocutor (i.e., interaction) is viewed by Gass (1997) as promoting awareness and noticing of grammatical forms. Specifically, interaction is

thought to be helpful for drawing learners' attention to unknown or underdeveloped areas of language through the process of negotiation for meaning/form. In this sense, output production is seen as an attention focusing device, whereby learners are shifted into a more language-focused state and become better able to perceive/process grammatical forms in subsequent input. This is similar to the concept of "noticing the gap", where by virtue of language production, learners become aware of the shortcomings in their language abilities, and take the first steps towards engaging in a search for the linguistic resources necessary to resolve their knowledge problem. It is this search that tunes learners into a more internal syntactic mode, developing deeper awareness of forms and rules rather than meaning at the surface level (Swain, 1998). According to Izumi (2003) and supportive of Gass (1997), this "syntactic mode" drives learner-internal noticing processes, where through cognitive comparisons between their interlanguage and the target language, learners consciously choose what to pay attention to in future input. It is thought that once learners are able to strengthen their knowledge of the grammatical form in follow-up input sessions, their processing resources will be freed up to begin the process of knowledge automatization and fluency development. It is thus these two organizations of practice - delay or alternate - to which we turn our attention in seeking empirical motivation for the present study.

Research Combining Comprehension and Production Practice

While research combining input- and output-based instructional approaches has been scarce, there are a few studies of this nature, each focusing on a different area of practice combination. Tanaka (1999, 2001) was among the first researchers to recognize the unique roles of comprehension and production practice, and investigate whether they could complement each other for promoting grammatical development. Recognizing that structured comprehension practice is useful for attending to and establishing initial form-meaning connections of target

structures contained in input, and that production practice may be useful for reinforcing knowledge of target structures via the process of automatization, Tanaka compared groups of high school and junior college students receiving comprehension practice alone; production practice alone; or a mix of both with comprehension practice preceding the production practice. Using a pre/post/delayed posttest design, Tanaka showed that for both complex (relative clauses; 1999) and simple (psychological verbs; 2001) English grammar forms, the mixed practice groups performed as well as comprehension groups on comprehension measures of language, and as well as production groups on production measures of language. The implications of these results is that combining different types of practice can be effective for developing comprehensive (i.e., receptive and productive) language ability, and that striking a balance between the two may be key for developing effective grammar practice activities. Tanaka speculated on the potential synergy offered by such a combinatory approach, but his studies were not designed to investigate precisely *how* the types of knowledge gained from the comprehension and production practice interacted; in other words, it remained an empirical question how opportunities to produce output actually affected input processing and vice versa.

Work by Izumi and colleagues (Izumi et al., 1999; Izumi & Bigelow, 2000), on the other hand, specifically set out to investigate the synergies between input and output practice. They investigated whether output via writing tasks had any effects on the noticing of follow-up input (i.e., the alternating condition) and on the development of their receptive and productive language abilities compared to a group receiving comprehension practice alone. Results showed that while adult ESL learners who had the opportunity to produce output did not improve in terms of noticing, they nevertheless demonstrated greater use and recognition of the target grammatical form (hypothetical past conditional) compared to the group receiving input alone. In

a partial replication, Izumi (2002) investigated whether visually enhanced input in combination with mixed comprehension/production practice activities would influence noticing and the accurate production of a target form (English relativization). Using a design similar to the previous studies, he corroborated his previous results: while noticing seemed to have been unaffected by the alternation of output and input, the opportunity to produce output nevertheless led to the greatest gains in terms of grammatical development (visual enhancement was shown to have no additive effects on noticing or learning). Izumi claimed that the results of these studies supported certain beneficial functions of output production, notably that the production practice allowed learners to make cognitive comparisons between the target language and their interlanguage, pushing them to develop their IL forms to become more targetlike. In terms of why no noticing occurred in any of the studies, despite being theoretically motivated, Izumi argued that noticing is not a unitary phenomenon, and can be divided into two separate processes: learner-internal and learner-external noticing processes. The noticing measures used in his study may have been better designed to capture the external noticing processes. However, these external processes are not as strongly tied to grammatical development as internal ones; in order for development to occur, Izumi claimed that learners need to be able to make internally-driven cognitive comparisons between their current interlanguage and the target language. Once this comparison occurs, they will be more readily able to attend to future input and identify the gaps which they have noticed, further developing their interlanguage - one possible explanation of why the "mixed" practice groups demonstrated improved performance, but no noticing. Replications of this study by Hanaoka (2007) and Leeser (2008) confirmed the benefits of alternating input and output tasks for written development, but showed that overwhelmingly, vocabulary was noticed more than grammatical form.

Another study investigating the potential synergy between different types of practice was Gass & Torres (2005), which explored the relationship between output via interaction and input processing in the learning of Spanish gender agreement and the copula *estar*. Using a pre/post/delayed post design, Gass & Torres investigated four groups of university-level learners receiving: (1) input practice only; (2) interaction only (using jigsaw and information gap tasks); (3) input followed by interaction; and (4) interaction followed by input. The authors hypothesized that (4) would be the most effective instructional sequence since the interaction session might serve as a "priming device that readies learners to utilize follow-up input" (p.8), enabling learners to better process and attend to follow up input, positively influencing their L2 development. Results of an acceptability judgment (receptive knowledge) and translation task (productive knowledge) demonstrated that both combination groups outperformed the input-alone or interaction-alone groups, and that the interaction-first group showed the greatest improvement in their knowledge and use of the target forms. The authors attributed these results to the idea that the focused attentional state brought about by interaction is highly beneficial for attending to syntax as it occurs in the input, especially as complexity increases and learners become unable to rely on their own internal resources.

In order to better understand the potential synergies between CP and PP lessons, it is important to consider what kind of research design should be adopted. The ideal design for such an investigation would be one which provides instructional sessions in well-spaced intervals with comparable group sizes. One example of such a design is Kirk (2013), who combined PI and meaning-based output instruction for high school level L1 English learners acquiring the Spanish subjunctive and infinitive. The instructional sequences featured in the study (three groups receiving three separate lessons consisting of: PI-only; PI→PI→O; PI→O→PI) seem to be ideal

for investigating not only whether practice combination can lead to grammar gains, but also how the types of practice can interact across lessons to best benefit development. Results showed that though all groups improved significantly from pre- to post-test, there were no significant differences between any of the groups, indicating that the provision of practice alone was the factor driving language development. In addition, the way the statistical analyses were conducted and reporting of the results means that the study needs to be interpreted with caution. Although the reported results indicated no difference for treatment type, it is difficult to interpret the findings of the study as they did not provide the necessary information on main and interaction effects, p-values, or indicate whether the groups were equivalent at the outset. Though this made it difficult to draw any firm conclusions from between-group comparison results, it was nevertheless an inspiration for the design of the present study.

To summarize, the results of the research on practice combination seem to be favorable on the whole, with results showing the effectiveness of mixed practice for the development of written production (Izumi, 2002), oral production (Tanaka, 1999, 2001) as well as receptive knowledge (Gass & Torres, 2005). It is less clear, however, precisely how the two types of practice can interact across a given instructional sequence, and in what order they should be provided. For example, while both Izumi (2002) and Gass & Torres (2005) showed that "alternating" practice modality (providing output before input sessions) is more effective than receiving one type of practice alone, Tanaka (1999, 2001) showed that "delaying" production practice (i.e., comprehension first) could also be effective. Furthermore, the results of Kirk (2013) seem to suggest that it makes little difference in what order practice sessions occur. These ambiguous results regarding the ordering of practice thus require further investigation to shed light on the question of whether output can have an effect on the processing of follow-up input

(that is, approaching input processing with a more form-oriented mindset, and easier noticing of grammar features; the “alternating” option); or whether some grammatical competence should first be established before engaging learners in automatization-promoting production activities (the "delayed" option). It is important to note, however, that the design adopted by previous studies (pre/post/delayed posttest) makes it difficult to pinpoint how each type of practice benefits different kinds of knowledge at any point in the instructional sequence. Alternative design options which better capture learning progress, not only the end product of learning, should thus be considered when designing research to capture the potential unique interactions between comprehension and production practice sessions. One option for this would be a time series design, which entails the administering of assessment measures at multiple points throughout the treatment. Applied to studies using a combination of practice, a time series design can allow not only observation of a treatment's overall effects over time (as it still permits comparison between pre- and post-test), but also allows for the measurement of change in performance immediately after receiving a given type of practice; and for consideration of how this performance differs based on what was received in previous sessions.

The format of this thesis is manuscript-based: the following chapter presents a stand-alone research paper considering how different types of practice can be best organized for promoting grammatical development through a time series design. It is hypothesized, as will be seen, that combining practice will be effective overall in promoting the development of receptive and productive grammar abilities; and that providing practice sessions in alternation will be more effective for both kinds of grammar abilities than delaying production practice, due to the effects output production will have on processing input in the subsequent treatment session. The final chapter considers the findings of the present study within a broader scope, and discusses

numerous contributions and directions for future research. It is strongly hoped that this research will serve as a reference point and motivation for future research designed to move beyond the input/output dichotomy; research that will examine the benefits to learning provided by each type of practice across a range of contexts and a variety of conditions.

Chapter Two

In second language teaching research, the differential effects of comprehension and production practice on the development of second language (L2) grammar have been widely investigated, with studies spanning nearly two decades. These studies have typically been contrastive in nature, attempting to demonstrate the superiority of one type of practice over the other. Advocates for comprehension practice, notably input processing (IP) theorists (e.g., VanPatten, 1991; VanPatten & Cadierno, 1993; Lee & VanPatten, 1995), hold that the introduction of production practice at the early stages of grammar learning may not be necessary, and may in fact be counter-productive, as comprehension practice alone may be sufficient for developing the L2 knowledge required for production. Advocates for production practice (Swain, 1985; DeKeyser, 2007; Toth, 2006; Izumi, 2003) maintain that input alone may be insufficient for promoting the more sophisticated, form-based processing that is thought to be beneficial for acquisition, and that learners may need production practice to develop efficient production skills due to the highly skill-specific nature of automatized knowledge (DeKeyser, 1997). Shintani, Li, and Ellis (2013) sought to shed some light on the relative benefits of each type of practice in promoting grammatical development via a meta-analysis of 35 experiments comparing comprehension and production practice. Results revealed that while both types of practice have large effects on the development of both receptive and productive grammar knowledge, comprehension practice may be more effective for features which are entirely new to learners, and production practice may be more effective for developing control over partially internalized forms. One interpretation of these results is rather than continuing to conduct investigations into which modality of practice (i.e., comprehension or production) is more beneficial for grammar learning overall, it would be more fruitful to consider the relative strengths of each type of

practice and attempt to combine them within a given instructional sequence in order to promote acquisition in a more time efficient manner. The present paper reports on a study which builds on past research demonstrating the efficacy of mixing different kinds of practice (Tanaka, 1999, 2001). The current research aims to determine the optimal organization of lessons involving CP and PP in order to best promote both receptive and productive grammar development. The literature review begins with a brief overview of the roles of comprehension and production in SLA followed by a synthesis of research in which the two practice modalities have been compared. It concludes with a summary of the small body of work investigating combinations of comprehension and production practice, identifying the issues that lead to the present study's research questions and predictions.

Roles of Input and Output in SLA

It is generally agreed upon that input is a critical component of second language acquisition, given that it is the raw data which learners are exposed to and must operate on in some way in order to develop language competence. The critical role of input in driving SLA has been recognized in a number of theories calling for its primacy in language learning, notably Krashen's Input Hypothesis (Krashen, 1985), which holds that exposure to an abundance of comprehensible input is sufficient for acquisition to occur; and Input Processing theory (VanPatten, 1991), which argues that acquisition is a consequence of appropriately and effectively processing the input for grammatical form, avoiding certain default processing strategies which may hinder the ability to attend to grammar. However, what remains more contentious is the extent to which output production can contribute to acquisition. On the one hand, the aforementioned input-based theories ascribe minor roles to output, arguing against the idea that “using a form in one's output is a direct path to language acquisition” (VanPatten, 2004,

p. 27), or that speaking results from acquisition, and does not contribute to its cause at all (Krashen, 1985). Other theorists, however, ascribe more direct roles for output in promoting acquisition. Swain's (1985) comprehensible output hypothesis originally outlined a number of functions output has in promoting language learning which have been subsequently expanded upon, examined, and validated by a number of researchers (e.g., Swain, 1995; Gass, 1997; Skehan, 1998; R. Ellis, 2003; Izumi, 2003). From this perspective, the main contribution of output to SLA is the kind of processing it promotes. Specifically, output enables learners to move from semantic-based processing (where the overall focus is on deriving meaning from input) to syntactic-based processing (where learners come to focus on grammatical forms and the meanings they entail) by allowing them to notice the shortcomings (i.e., gaps) in their own production, and search for the linguistic resources necessary to overcome these shortcomings. In addition, according to certain psycholinguistic models of processing, such as Anderson's (1983) ACT model, practice producing the language will eventually free up the cognitive resources needed for attending to other aspects of language via the process of automatization. Such automatized knowledge is believed to be highly skill-specific and not easily transferrable to other domains (i.e., comprehension) (DeKeyser, 2007). In this sense, output contributes to acquisition in that it directly develops language production abilities, which may not be possible through comprehension alone. It would seem then, that there is a case for not only using input, but also output in order to promote learning of different kinds. Theorizing within the input-output debate has resulted in a large body of literature contrasting the relative benefits of input- and output-based practice for grammar acquisition, which will be reviewed below.

Comprehension and Production Practice in L2 Grammar Learning

In the comparative practice grammar literature, comprehension practice (CP) and production practice (PP) have often been administered in parallel in order to determine which is superior for developing grammatical knowledge. The two types of practice have been operationalized in a number of ways: via text comprehension/extension activities (Gass & Torres, 2005; Izumi, 2002), input-based tasks (Shintani, 2012), extensive reading/listening programs (Lightbown, 1992), and processing instruction (VanPatten & Cadierno, 1993) for CP; and traditional output practice (explicit explanation of a grammar point followed by mechanical and decontextualized production practice) (VanPatten & Cadierno, 1993; DeKeyser & Sokalski, 1996; Allen, 2000), Meaningful Output Instruction (MOI) (Farley, 2001; 2004; Benati, 2005; Morgan-Short & Bowden, 2006), dictogloss tasks (Wajnryb, 1990; Qin, 2008; Uludag&VanPatten, 2012), interaction tasks (Gass & Torres, 2005) and other task-based approaches (Toth, 2006) for PP. The results of comparative studies using these various operationalizations of CP and PP have been mixed, with some showing superior results for using production practice to develop both receptive and grammatical knowledge (e.g., Toth, 2006; Allen, 2000), some demonstrating the superiority of comprehension practice for developing both types of knowledge (e.g., VanPatten & Cadierno, 1993; Uludag & VanPatten, 2012), others showing equivalency of the two types of practice (Farley, 2001; Erlam, Loewen, & Philp, 2009; Rassaei, 2012), and yet others demonstrating skill-specific effects depending on the type of practice (DeKeyser & Sokalski, 1996). A meta-analysis of 30 of these comparative studies by Shintani, Li, and Ellis (2013) showed that while both types of practice contribute to grammar learning with large effects, they may do so in different ways. Specifically, comprehension practice may be effective for developing initial representations of grammar, but production

practice may be necessary for refining control over partially internalized forms. The implication of these results is that rather than continuing to investigate the two types of practice dichotomously, future research should focus on how instruction can be designed to take advantage of the benefits of each type of practice, specifically how they can be exploited and combined within an instructional sequence in order to best benefit L2 development. One additional issue which should be noted, however, is the prevalent use of PI as the main form of CP in this body of literature. Though PI has shown to be highly effective for the development of both receptive and productive grammar knowledge (Shintani, 2015), it remains limited in the number of grammatical features and languages it can be applied to, as well as in what *aspects* of these features it can actually improve. Specifically, the present study targeted the development of English regular past *-ed*, which does present a processing problem of redundancy (due to the high collocation of temporal adverbs with the form, e.g., *Yesterday* I walk*ed* the dog), but has other form-based challenges as well which remain unaddressed by PI (i.e., difficulty perceiving the form; Collins et al., 2012a, 2012b). The present study was thus an attempt to move beyond the overwhelming use of PI as the CP of choice and explored another type of comprehension practice (focused listening tasks) which targeted a different kind of structural challenge.

Combining Comprehension and Production Practice

In contrast to the comparative studies, the potential efficacy of combining comprehension and production practice has not received much research attention. In a set of studies, Tanaka (1999, 2001) investigated the relative benefits of each type of practice for both complex (relative clauses; 1999) and simple (psychological verbs; 2001) grammar structures in English. Drawing from the results of previous research indicating that comprehension practice is useful for attending to and establishing initial form-meaning connections of target structures contained in

input (VanPatten & Cadierno, 1993), and that production practice may be useful for reinforcing knowledge of target structures via the process of automatization (DeKeyser & Sokalski, 1996), Tanaka compared Japanese university-level EFL learners receiving comprehension practice alone; production practice alone; or a mix of both. On aural comprehension and verbal production tests, it was shown that for both features, mixed practice groups performed equally well as comprehension- or production-alone groups on comprehension and production tasks, respectively, indicating that combining different types of practice may be more effective than unitarily providing either type. Further evidence for the efficacy of combined practice was demonstrated by Gass & Torres (2005), which explored the relationship between input and interaction for learners acquiring Spanish gender agreement and the copula *estar*. Gass and Torres (2005) compared four groups receiving (1) input practice only; (2) interaction only (using jigsaw and information gap tasks); (3) input followed by interaction; and (4) interaction followed by input. Results of an acceptability judgment (receptive knowledge) and translation task (productive knowledge) demonstrated that both combination groups outperformed the input-alone or interaction-alone groups, and that the interaction-first group showed the greatest improvement in their knowledge and use of the target forms, providing further evidence that combining different practice activities is more effective than either type alone. While both Tanaka's studies and Gass & Torres' indicated that mixing practice may be more beneficial than providing either type alone, none was designed to investigate why this might have been the case. Though Tanaka (2001) pointed to the comprehensive benefits (i.e., development of both receptive and productive knowledge) of using CP and PP in explaining his results, and Gass & Torres (2005) pointed to the beneficial effect interaction has on the processing of subsequent

input in explaining theirs, the measurements did not capture how input and output *actually* interacted across the practice activities.

The interaction between output production and input processing was investigated by Izumi and colleagues (Izumi et al., 1999; Izumi & Bigelow, 2000), who examined the noticing function of output by comparing groups of adult ESL learners receiving alternating input and output sessions to those receiving input alone. Results showed that while learners who had the opportunity to produce output did not improve in terms of noticing, they nevertheless demonstrated greater use and recognition of the target grammatical form (hypothetical past conditional) compared to the group receiving input alone. Follow up research by Izumi (2002) investigated whether visually enhanced input in combination with output could facilitate the noticing of follow up input compared to a group receiving input only. He corroborated his previous results: while noticing seemed to have been unaffected by the alternation of output and input, the opportunity to produce output nevertheless aided in grammatical development compared to no output; visual enhancement was shown to have no additive effects on noticing or learning.

In order to further understand the interaction between CP and PP lessons, it is important to consider what kind of research design should be adopted. One potentially informative design is one in which instructional sessions under different conditions occur in well-spaced intervals with comparable group sizes. One example of such a design is Kirk (2013), who investigated three combinations of PI and meaning-based output instruction for high school level L1 English learners acquiring the Spanish subjunctive and infinitive. Each group received three lessons in one of three formats: PI-only; PI→PI→O; PI→O→PI). This design has the potential to inform our understanding of not only the ideal practice combination at the end of the three lessons (the

end product), but also how knowledge develops within groups in the different conditions across time (the process). Although the reported results indicated significant improvement for all three groups, with no difference for treatment type, the findings need to be interpreted with caution, as important information related to the analyses was not provided. This includes the full statistics on main and interaction effects and p-values and also whether the groups were equivalent at the outset.

To summarize, the results of the research on practice combination seem to be favorable on the whole, with results showing the effectiveness of mixed practice for the development of written receptive and productive knowledge (Izumi, 2002), oral/aural abilities (Tanaka, 1999, 2001) as well as explicit grammar knowledge (Gass & Torres, 2005). However, it remains an empirical question precisely how combining the different types of practice actually benefits development. On the one hand, it has been hypothesized that output facilitates the processing of subsequent input through the phenomenon of "syntactic priming" (Gass, 1997) and enhanced noticing ability at an internal level (Izumi et al., 1999; Izumi & Bigelow, 2000; Izumi, 2002). On the other hand, mixed practice has been considered to be effective because it allows for the processing and use of grammatical form in different contexts, and promotes the simultaneous development of both comprehension and production abilities (Tanaka, 1999, 2001). Though it has been suggested that sequencing practice activities in such a way that production practice precedes comprehension practice (e.g., Gass & Torres, 2005; Izumi, 2002) may beneficial for learning, there is tentative evidence that it makes little difference in what order practice sessions occur (Kirk, 2013). Furthermore, it has not been adequately explored whether mixing comprehension and production practice across an extended instructional sequence (as in Kirk, 2013 over 3 lessons; or Izumi, 2002 over 6 lessons) can be equally effective as providing it in the

span of one or two lessons (as in Tanaka, 1999; 2000; Gass & Torres, 2005). In addition, the pre/post/delayed posttest designs of the existing research makes it difficult to pinpoint (1) how each type of practice benefits different kinds of knowledge (i.e., receptive and productive knowledge) throughout an instructional sequence; and (2) how practice sessions can *interact* with each other in developing different language skills. An alternative design that can capture both the learning process, and the end product of practice combinations is a time series design, which tests learners periodically over the course of a sustained treatment sequence. This procedure allows for the examination of overall instructional effects and, crucially, the carry-over effects of practice; that is, how performance after any given lesson in an instructional sequence changes based on the type(s) of practice experienced up to that point..

The present study was undertaken to address the following issues: (1) the efficacy of mixed practice across a more sustained instructional sequence than has been examined to date; and (2) the relative effects of production and comprehension practice for developing both receptive and productive knowledge over time, using a time series design based on theories of how the different practice modalities might best synergize. Regarding the latter, two options were entertained: (a) delaying production practice until after a certain degree of language competence has been built up through comprehension practice; and (b) alternating comprehension and production practice lessons to take advantage of the potential synergies offered by mixed practice (e.g., improved processing of subsequent input, and alleviation of the processing burden, allowing for skill-specific automatization). In sum, the overall goal of the present study was not to compare and contrast the relative effects of comprehension and production practice, but rather to examine whether and which configuration of practice

combination would be (most) effective in promoting the development of both receptive and productive grammar knowledge.

Research Questions & Hypotheses

The three research questions and hypotheses were:

RQ1: Can introducing output and input in combination be effective for the acquisition of morpho-syntax both receptively (perception ability) and productively (controlled & spontaneous oral production)?

H1: Combining CP and PP will lead to improved perception and production abilities.

RQ2: Are there any differential effects of alternating versus delaying CP and PP in developing receptive knowledge (perception) of a grammatical form?

H2: Alternating CP and PP will be superior to delaying PP for the development of receptive knowledge (perception).

RQ3: Are there any differential effects of alternating versus delaying CP and PP in developing oral production abilities of a grammatical form?

H3: Alternating CP and PP will be superior to delaying PP for the development of productive knowledge.

Hypothesis One is based on the results of previous ordering research demonstrating overall learning gains for both CP/PP and mixed practice (e.g., Shintani et al., 2013; Tanaka, 1999, 2001), as well as research demonstrating the effectiveness of focused grammar instruction in general (Norris & Ortega, 2000). While both configurations should be effective in developing both receptive and productive knowledge, they may differ is the trajectory of learning displayed,

due to the different types of practice received at each point in the instructional sequence. If in fact output pushes learners into a more syntactic processing state and allow them to focus more on language form (in the case of the present study, the ability to perceive the target feature), then superior gains in productive and perceptive ability for the alternating condition will most likely manifest themselves after the comprehension-based lesson subsequent to the production-based lesson. On the contrary, the delayed group is expected to demonstrate skill-specific improvement: perform well in perception after receiving CP, and improve in production when receiving PP. According to these trajectories, for the second and third hypotheses, it is predicted that in terms of overall learning, the alternating group will outperform the delayed group in terms of both receptive and productive knowledge by the end of the project. This improvement will be due to the potentially beneficial effect production practice has on the processing of subsequent input; that is, it "pushes" learners towards more form-based processing, allowing for the knowledge automatization process to begin, and potentially allows for increased awareness and attention to form in the input.

Methodology

Participants

Twenty-seven Japanese EFL learners were recruited at a private language school in rural Shizuoka Prefecture, Japan. The students ranged in age from 12-15 years old and came for weekly one-hour lessons involving reading, speaking and listening activities. These extra-curricular lessons aimed to improve general language skills and did not focus on the teaching of specific grammatical features. In their regular public school English classes, which met 2 times each week, instruction was grammar focused. Interviews and discussions with the head of the

private language institute as well as with parents of the participants confirmed that students' exposure to English was limited to their regular classes and the private lessons at the institute. All students had previously received some instruction in their regular school English classes on the target form (English simple past *-ed*), as mandated in the Japanese public school English curriculum (beginning at approximately 12 years of age during the first year of Middle School Grade). This consisted of explicit explanation of the form's construction, followed by decontextualized practice activities (involving a mix of verb ending conversion activities, gap fills, and translation tasks). Their explicit knowledge of the past tense was confirmed by the results of a grammaticality judgment test at the onset of the study, the results of which are reported below. However, they had had little experience in aurally perceiving or using the form for communicative purposes. Accordingly, we classified the participants as "early" stage learners.

Target Grammatical Form: English Past Tense *-ed*

English simple past *-ed* (and its allomorphs) was chosen as the target grammatical feature for a number of reasons. First, it is a relatively simple feature in terms of its high visual salience in texts and a relatively straightforward form-meaning connection (Spada & Tomita, 2010). It also shares similarities with how the past tense is constructed in the learners' L1 (Japanese), as both languages use morphological inflection to indicate pastness:

> **English:** I watch*ed* (regular simple past marker) that movie last night
>
> **Japanese:** Kinou-no-yoru, sono eiga-o mi-*ta* (informal past marker)
> Yesterday-of-evening, that movie-direct object marker see-past
> (Adapted from Collins, 2004, p.256).

The similarity in the how the forms are realized in the two languages may allow L1 Japanese learners to develop declarative knowledge of the English regular past with relative ease. In addition, the English regular past is introduced fairly early in the Japanese English curriculum (first year of junior high school), making it suitable for investigation with the participants recruited for the study. There are two main learning challenges for this form. The first relates to the difficulty in establishing the form-meaning connection associated with the feature (that the morpheme *–ed* = past tense), mainly due to an overreliance on highly collocated temporal adverbs to infer meaning (e.g., *Yesterday, Last night*) (VanPatten, 2004; Bell, Trofimovich, & Collins, 2015); temporal adverbs are common in Japanese as well, though knowledge of this is not expected to transfer over to the L2 given that L1 grammar knowledge is highly implicit in nature (N. Ellis, 2008). It is particularly intriguing to consider the second and perhaps more unique challenge with learning regular past *–ed:* the difficulty in aurally perceiving the form as it occurs in 3 allomorphs: /t/, /d/, and /ed/. Collins, White, Trofimovich, Cardoso, and Horst (2009) performed a corpus analysis of elementary level instructional talk in intensive ESL classes, showing that verbs taking past tense *-ed* tend to be used much less frequently than irregular past forms, and that when they are, they are frequently used in perceptually non-salient contexts. Bell et al. (2015) further confirmed the difficulties L2 learners have perceiving the form, suggesting that the perception problem should not be neglected when designing focused instruction on simple past *-ed*. Collins, Trofimovich, and Bell (2012) targeted this perception problem specifically with adolescent French ESL learners. Using focused listening tasks, Collins et al. demonstrated that these learners could effectively improve their ability to hear the form, but that the instruction had limited effects on their ability to produce the form. To my knowledge, there is no empirical evidence suggesting that such perceptual difficulties occur in Japanese, indicating

that this challenge would be a pertinent target for focused instruction for this specific learner population. In addition, the present study attempted to move beyond the classification of PI as the predominant form of CP and to target features with other learning challenges. It was thus with this research in mind that the comprehension and production practice activities used in the study were designed.

Design

A time series design was chosen for two reasons. First, such a design allowed for close investigation into how each lesson in the instructional sequence affected different aspects of L2 development over time. In addition, the design also allowed each group to act as its own control, as linear improvement could be measured over time to ensure the effects of instruction. Participants were first separated into two groups: the delayed group, which received two one-hour lessons of comprehension practice followed by two one-hour lessons of production practice; and the alternating group, which received the four lessons of comprehension and production practice in alternation. Group assignment was semi-random in nature: while initially both groups were completely randomized, a few participants (n=3) were shifted from one group to the other in order to ensure that the age range between the two groups as well as level of schooling was equivalent. Four assessment tasks were administered over a period of 30 minutes before the instruction at Time 1, and immediately after at Times 2-4. Testing at Time 1 was done prior to the instructional treatment to establish baseline performance data but was not done after the first instructional treatment that day, given that both groups received the same practice lesson

(comprehension) during that first lesson.. Figure 2 summarizes the design.

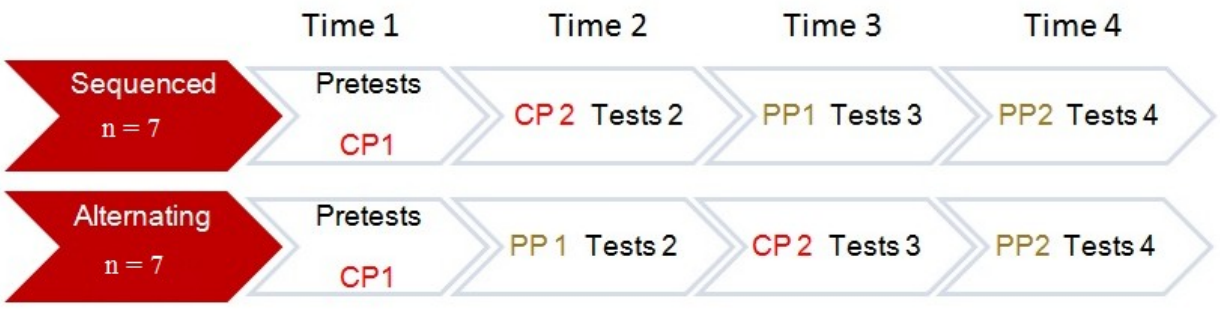

Figure 2. Study Design for Comprehension Practice (CP) and Production Practice (PP).

Instructional Materials

All classes were taught by the first author. Two form-focused instructional packets for teaching English past tense *-ed* were created: one for comprehension practice and one for production practice. Participants all received the same practice activities over the course of the project, merely differing in *when* they received them. Both practice types could be considered as planned focus on form, which targets a pre-selected grammatical item (English regular past *–ed*) in meaning-focused activities (R. Ellis, 2001). However, unlike other planned FonF research involving CP and PP, no explicit information or rules were provided during the instruction. This was done to avoid having learners perceive the activities as heavily rule-based, which is typical of Japanese public school classes; and to avoid having the activities break down into mechanical grammar practice involving the regurgitation of a formal rule. Rather than being overtly asked to articulate a rule, the learners were guided to realize the correct use and perception of the form through a series of inductive activities (R. Ellis, 2003) and two different techniques to draw attention to form: form-focused listening for CP and explicit corrective feedback for PP (both explained below). Overall, the CP and PP lessons merely differed in what the focus of the lesson

was: on comprehending or producing. For both treatment conditions, the vocabulary needed for the task was reviewed with the students at the beginning of each lesson to make sure there were no misunderstandings which could interfere with their processing. Table 1 gives an overview of the different groups as well as the practice activities they received each day.

Table 1. Overview of treatment materials.

	Day 1	Day 2	Day 3	Day 4
Delayed Group	CP* 1 1. Pre-task (Story 1) 2. Listening for meaning 1 3. Listening for form 1	CP 2 1. Pre-task (Story 2) 2. Listening for meaning 2 3. Listening for form 2	PP 1 1. Whole-class oral activity 1 2. Paired oral activity 1	PP 2 1. Whole-class oral activity 2 2. Paired oral activity 2
Alternating Group	CP 1 1. Pre-task (Story 1) 2. Listening for meaning 1 3. Listening for form 1	PP* 1 1. Whole-class oral activity 1 2. Paired oral activity 1	CP 2 1. Pre-task (Story 2) 2. Listening for meaning 2 3. Listening for form 2	PP 2 1. Whole-class oral activity 2 2. Paired oral activity 2
	*CP = comprehension practice; PP = production practice			

Comprehension practice. Materials for the comprehension practice sessions were adapted from Collins et al. (2012b). Each session, a recording of one short (approximately 300-word) story was played. Each story contained 8-10 regular past forms of common telic[2] verbs, and 3-4 distractors. The procedure of the practice sessions was a three-step process. First, the learners engaged in a pre-listening discussion task focused on the theme of the story (e.g., celebrating birthdays, visiting the doctor's office). They then listened to the story once for meaning, and

[2] Telic verbs refer to those which have an inherent end point. Research has shown that they are marked for past more consistently than non-telics; restricting the practice to these verb types only controlled for possible verb type effects.

answered a set of comprehension questions as a group. In the final step, they engaged in a form-focused listening task. Students were given a written version of the story in which word pairs were numbered and underlined (8-9 containing a regular past form and 5 distractor pairs). Word pairs were used rather than individual past tense verbs to provide practice on the aspects of the phonetic environment that contribute to perceptual difficulty, specifically to train learners to detect non-salient occurrences of the past in a variety of contexts (Collins et al., 2012b; Bell et al., 2015). Students listened to the story and indicated whether the word pairs were the same as what they heard or different. For the latter, they wrote down in the space above the item what they believed the correct word(s) was (were). There were three possibilities: both words in the pair were right, only one was, or neither was. An example of this activity is provided below. Item 9 was a distractor; item 10 a target item.

> The bird cost [9]fifty thousand dollars! "Fifty thousand dollars?" her husband [10]said while he grabbed his wife's arm, "Maybe we should find another present."
>
> Learners heard: 9. "fifty thousand"; 10, "repeated as".

Each story was played twice: first at a slowed down speed (~75%), and second at normal speed. After the second listening, the students compared responses in small groups. The teacher then provided the correct answers orally and in writing on the board, allowing time for learners to incorporate this feedback onto their handouts. The two stories used in the study as well as the form-focused activity can be found in Appendix A.

Production Practice. The production practice involved two activities designed to encourage meaningful, learner-generated use of the form, drawing on Loschky and Bley-Vroman's (1993) task-grammar framework. Both were developed for the study and pilot tested with ESL learners

at a Canadian university and judged to be age and learner appropriate by the students' regular teacher. The first activity was a whole-class task designed to elicit multiple uses of the target form. Two pictures were presented to the class: one which contained eight characters in different outfits, and one which depicted a scene (e.g., backyard, living room). Each scene contained eight completed actions (e.g., hamburgers on a plate next to a sizzling grill; a bucket adjacent to clean, shiny windows) linked to the appearance of each of the characters (e.g., a man in a chef's outfit holding a spatula = grilled the hamburgers; a woman in overalls holding a sponge = washed the windows). First, the vocabulary items required to complete the tasks (i.e., necessary verbs and objects) were reviewed. An example was then provided on how to complete the task using an irregular verb distractor in the scene ("break"). Next, the class proceeded with the activity in the following manner: (1) the researcher called on the students one-by-one to choose a character and tell the class what they did in the scene; (2) the learner's utterance was recast in the correct form with emphatic stress placed on the verb ending (e.g., the man cookED the hamburgers) for the group to chorally repeat, and the verb was written on the board in past tense; (3) each student was then asked in turn to provide the same sentence as the one just recast, with form-focused individual feedback given in the form of elicitations or prompts (a form of feedback thought to help learners "enhance control over already the already internalized form" (Lyster, 2004, p. 406)). This pattern was repeated until all eight characters had been described. Next, the teacher wrote down eight verbs with similar meaning (e.g., cook-grill) in a random order next to the list present on the board. The students were then asked to perform an abridged version of the activity they just engaged in, one-by-one choosing one of the new vocabulary items and attempting to create a sentence linking one of the characters with something in the scene (e.g., the man grilled

the hamburgers). Feedback was provided once again in the form of prompts. The activity continued until all eight new verbs had been correctly used.

The second production activity was a paired information gap task. First, learners were shown a picture of a person's room containing 10 objects that hinted at the activities the person had engaged in over the weekend. Vocabulary for the objects and the actions associated with them were reviewed using flash cards (e.g., soccer-play). Then each student was given one of two versions of the same picture with 4 objects removed, and were asked to write on a worksheet what they thought the person did over the weekend. Students with different versions were then paired up, took turns reading each of their sentences out loud, and added any different activities to their individual list to make a complete list of all 10 activities. Responses were reviewed with the whole class at the end of the activity. Sample materials for both output tasks can be found in Appendix B.

Assessment Measures

There were four assessment measures. Two measured receptive knowledge (a perception task; an untimed, written grammaticality judgment task) and two measured productive ability (a spontaneous picture description; a guided oral narrative). Three were used for the main analysis (perception, guided & spontaneous production) while the GJT was used to confirm that learners had some initial explicit knowledge of the form at the onset of the project, and that this knowledge was similar across the two treatment groups. Samples of the assessment measures can be found in Appendices C-F. As shown in Figure 1, the pre-tests (GJT, Perception Task, Guided and Spontaneous Oral Production tasks) were delivered before the instructional treatment in the first week; Tests 2-4 (Perception Task, Guided and Spontaneous Oral Production tasks) were delivered immediately after instruction in the 2nd, 3rd, and 4th weeks (see Figure 1). Each

instructional session lasted approximately one hour, followed by approximately 30 minutes of testing.

Perception Task. Four versions of an interpretation task found in Benati, Lee, and Houghton (2008) were adapted for the study. In this task, learners were aurally presented (one reading) with both past (n=12) and non-past (n=8) statements, and indicated on a response sheet whether the events occurred last week, or occur in general. The 12 past tense statements were created using verbs containing two of each past tense allomorph (/t/, /d/, and /ed/), each in an easier and harder to perceive phonetic contexts (determined by the phonological properties of the subsequent word (e.g., I play*ed* the guitar for hard /d/; I call*ed* his mother for easy /d/; difficulty in the first example is due to the deletion of /d/ in rapid speech, making it perceived as "I play the guitar"). Importantly, no temporal adverbs were used to clue learners in to the correct answer, forcing the learners to pay attention to the form to make their decision. The non-past sentences contained 8 verbs per version, all in first person present. Versions differed only in terms of the sentences and verbs used; all contained the same amount of easy and difficult to hear contexts.

Grammaticality Judgment Task. To evaluate learners' explicit knowledge of past tense *–ed* at the start of the project, a 14-item untimed, paper-based grammaticality judgment task was adapted from Marsden & Chen (2011). Ten items required judgment for the target regular past structure, and four requiring judgment for the simple present. The tasks were balanced for both grammatical and ungrammatical sentences. Students were asked to evaluate each of the 14 items on a scale of -2 to +2, with -/+ 2 being definitely (in)correct, -1/+1 probably (in)correct, and 0 being don't know"

Guided Oral Production. Three10-frame picture narratives, adapted from Collins et al. (2012b), were used to elicit regular past tense. One was used at Times 1 and 4, the others at Times 2 and 3. This ordering was chosen to have a direct measure of overall improvement from Time 1 to 4 on the same task. Under each picture the base form of a regular (target) or irregular (distractor) verb was provided. Students had 2 minutes to mentally prepare their narrative, and were then individually audio-recorded telling the story, incorporating the provided words. The responses were coded for past tense accuracy.

Spontaneous Oral Production. To measure spontaneous oral production, three versions of an information gap picture description task was adapted from Collins et al. (2012b), designed as a guessing game. One picture showed a room in a state of mess, while three other pictures showed different versions of the room partially cleaned up. The learners took turns choosing one of the cleaned up room pictures and describing how they had cleaned it up using at least 5 sentences, the prompt "Yesterday, I...", and verb cues provided in their base form. Their partner then had to guess which picture of the three pictures was chosen based on the description. There were three versions of the task: one depicting a messy room, which was used at Times 1 and 4; one depicting a messy kitchen (Time 2); and one depicting a messy classroom (Time 3). This task was performed twice per pair, with learners exchanging roles the second time. It was individually audio-recorded and coded for past tense accuracy.

Scoring. For the perception test, one point was awarded for each correct answer for a total of 20 points. Both the target and distractor items were coded for accuracy, given that the ability to correctly perceive the target form intrinsically involved being able to perceive when it was not present as well. For the grammaticality judgment task, one point was awarded for each successful judgment of sentences containing the target for a total of 10 points. For the production

tasks, scoring was based on the correct suppliance of the past tense *-ed* in obligatory contexts, reported in raw scores. Ratings for the production tasks were then re-coded by an applied linguistics graduate student at a Canadian university, showing high inter rater agreement (r=.85 and .89 for the spontaneous and controlled production tasks, respectively.)

Participant Inclusion Criteria. The results of the GJT at Time 1 were used to confirm that all participants had some receptive knowledge of the simple past (all scored at least 30%, mean 55% with a range between 30-95%). In addition, participants had to demonstrate some room for improvement in the realm of perception, scoring less than 75% on the perception test at Time 1 (mean 40.1 %, with a range between 0-75%); this resulted in the exclusion of data from 4 participants. Finally, all learners included for analysis had to be present for all treatment and testing sessions; 9 participants did not meet this criterion. These inclusion criteria resulted in a final N of 14: 7 in the delayed and 7 in the alternating group.

Statistical Analyses

Independent t-tests at Time 1 (pre-test) confirmed no statistically significant differences between groups on any of the measures (See Table 2 for descriptive statistics): perception, $t(12) = .51$, $p = .619$), GJT, $t(12) = -.12$, $p = .906$, controlled production $t(12) = -1.08$, $p = .300$), and spontaneous production, $t(6) = 1.00$, $p = .356$. To investigate students' learning process over time under the two conditions, four repeated measures ANOVAs examined effects of Time (RQ1) and Time x Group interaction (RQs 2 & 3). Despite the small sample size of the study, Mauchly's tests for each repeated measures ANOVA revealed that the sphericity assumption had not been violated and that repeated measures ANOVAs were appropriate to conduct. Due to the nature of the design and use of four separate assessments, the Bonferroni correction was applied to alpha

of .05 for the overall study, giving an adjusted alpha of .0125for each separate repeated measures ANOVA.

Results

Research Question 1

The first research question asked whether combining comprehension and production practice would lead to an increase in both receptive and productive knowledge. The repeated measures ANOVA revealed significant main effects for Time for the combined means of both groups on the perception ($F(3, 36) = 16.087$, $p < .001$) and the guided narrative production ($F(3, 36) = 9.546$, $p < .001$) tests with large effects ($\eta^2 = .573$ for perception; $\eta^2 = .561$ for production). The spontaneous production task was not analyzed because so few tokens of past were produced. Table 2 shows the descriptive statistics for both groups' performance.

Table 2. Descriptive Statistics

		Time 1		Time 2		Time 3		Time 4	
Measure	Group	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*
Perception (/20)	Delayed	8.43	4.76	13.42	4.50	13.57	3.55	13.43	4.31
	Alternating	7.43	2.07	10.71	3.64	14.00	4.43	13.28	3.64
GJT (/10)	Delayed	5.43	2.15	-	-	-	-	-	-
	Alternating	5.57	2.30	-	-	-	-	-	-
Guided Narrative (Raw Score)	Delayed	.86	1.21	1.29	1.11	4.00	3.00	3.57	1.81
	Alternating	1.71	1.70	2.86	3.24	3.57	2.99	4.29	1.25
Spontaneous Production (Raw Score)	Delayed	.14	.38	.57	.53	.71	.95	1.14	1.21
	Alternating	0.00	0.00	1.14	1.07	.43	.53	.43	.53

Figures 3 and 4 show the plots for both the perception and guided narrative tasks using combined means of the two groups.

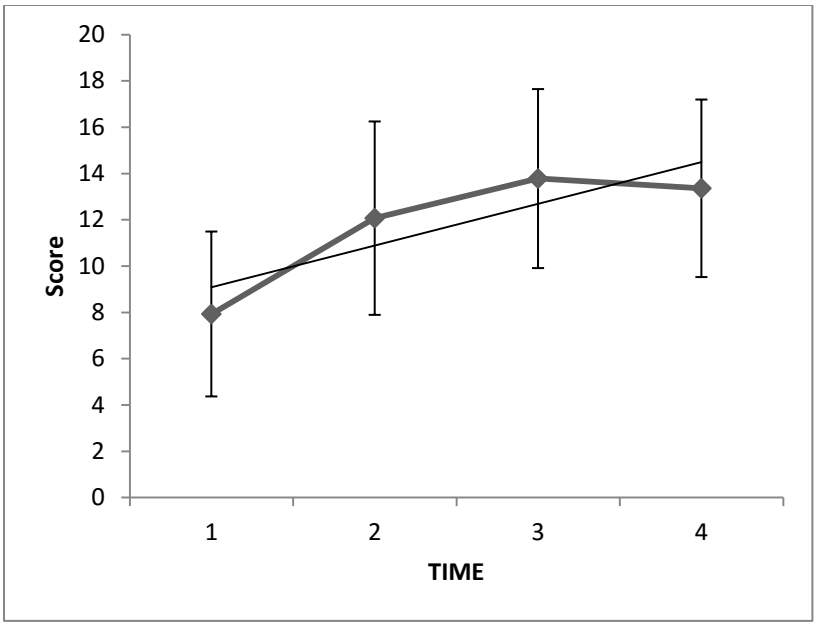

Figure 3. Repeated measures ANOVA results for perception

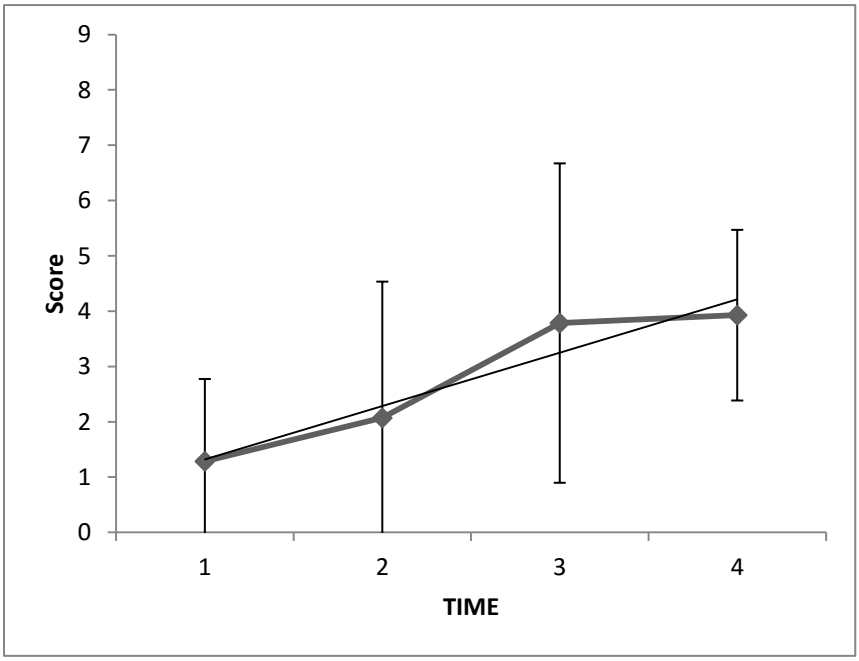

Figure 4. Repeated measures ANOVA results for production.

For both perception ($y = 1.8x + 7.285$; $R^2 = 0.756$) and production ($y = 1.05x + 0.428$; $R^2 = 0.904$), linear trendlines indicate that the mean scores consistently increased at each point in the

time series. These results represent a partial confirmation of the first hypothesis: combining CP and PP led to an increase in perception ability, but only led to an increase in controlled (not spontaneous) productive ability over time.

Research Questions 2 and 3

The latter two research questions asked which combination of comprehension and production practice, delayed or alternating, would be superior for the development of receptive and productive knowledge. The hypotheses predicted that the alternating group would significantly outperform the delayed group on both measures. Although no specific hypotheses were entertained for development at time 2 and 3, it was anticipated that the learning trajectories could differ depending on the combination of comprehension/production practice the group experienced. Figures 5 and 6 show the plots for the delayed and alternating groups for both perception and guided production tasks. Although the learning trajectories revealed in these plots at Times 2 and 3 appear different, the repeated measures ANOVAs revealed no significant Time x Group interactions on any of the assessment measures (perception ($F(3, 36) = 1.057$, $p = .379$); grammaticality judgment ($F(3, 36) = .395$, $p = .758$); guided production ($F(3, 36) = .395$, $p = .758$). Therefore the hypotheses were not supported.

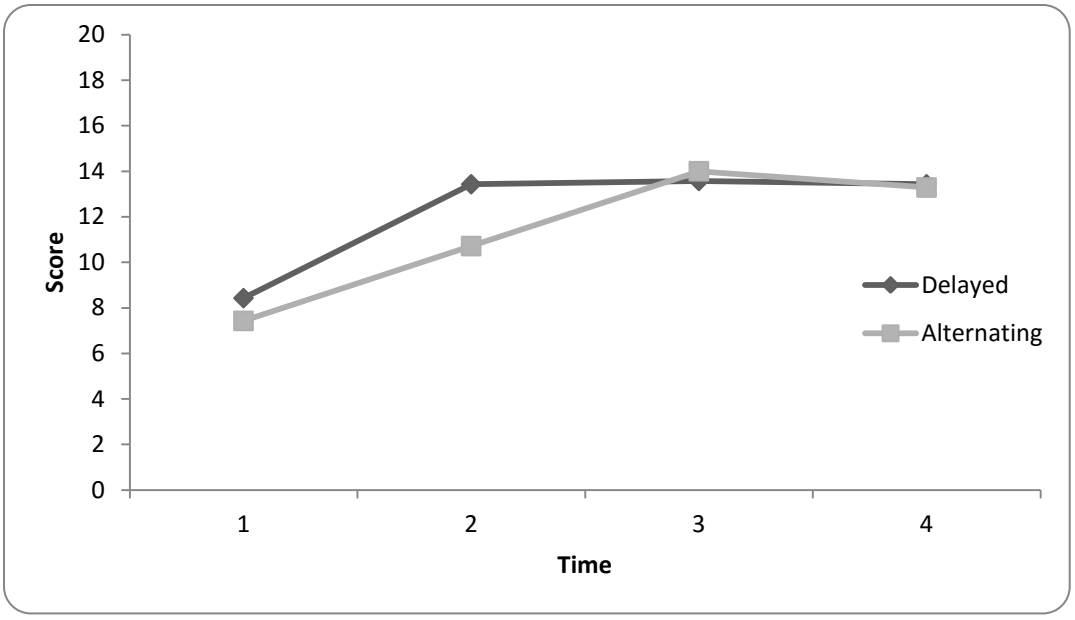

Figure 5. Repeated measures ANOVA for perception: delayed vs. alternating

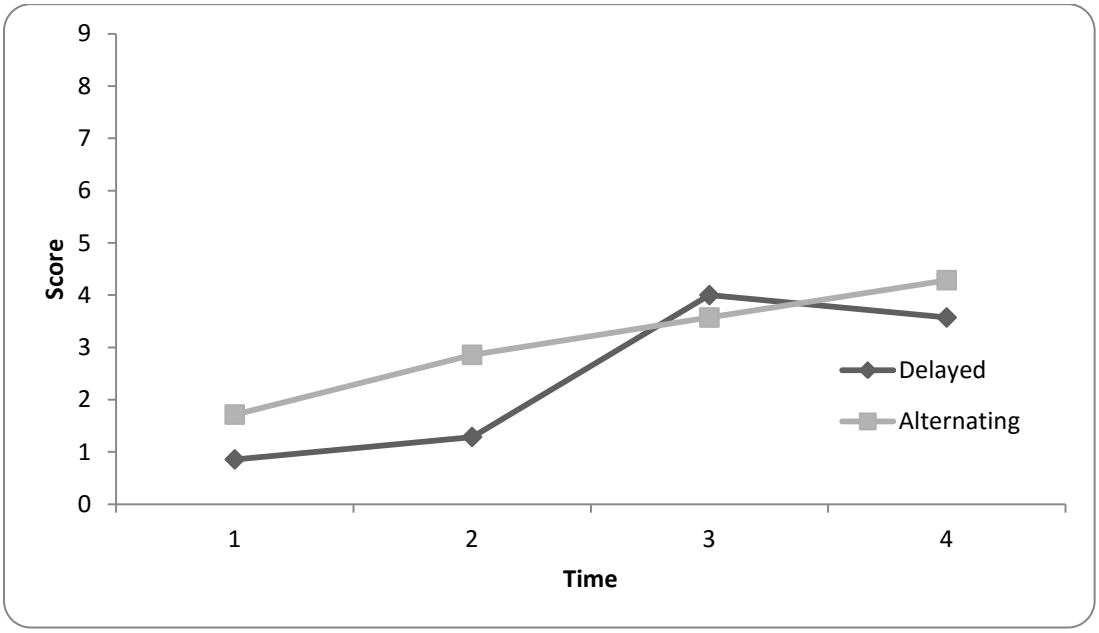

Figure 6. Repeated measures ANOVA for guided production: delayed vs. alternating

While there were no significant differences between the two groups for perception or production, it is nevertheless intriguing to consider whether there were any patterns in performance at the individual level based on age, schooling, or initial performance levels. However, individual performance as a function of any of these variables did not reveal any discernable patterns for any measure; thus, the proceeding discussion will focus on an interpretation of the results at the group level.

Discussion

The present study investigated the potential of combining comprehension and production practice for the development of English simple past *-ed*. One group received sequential concentrations of comprehension and production practice sessions, while the other group received alternating practice. The results showed that both groups improved over time in both perception and guided oral production, and did so steadily over the course of the four practice sessions. In addition, eta-squared calculations (effect size for repeated-measures ANOVAs) revealed that a large amount of variance in the ANOVAs for these two measures could be explained by the factor of Time, indicating that participants improved over the course of the instruction, and did so do to a considerable extent. However, it was also shown that this improvement occurred irrespective of whether production practice was delayed or offered in alternation with perception practice. This, combined with the large effects, indicates that at least for the learners in this study, the provision of practice itself was the most important factor driving grammatical development. The results represent a partial confirmation of the first hypothesis, which predicted significant improvement by combined practice groups (the improvement in oral production was restricted to guided production only, not extending to the

measure of spontaneous use of regular past tense), and a rejection of the second and third hypotheses predicting superior performance for the alternating group.

The fact that a combination of practice proved to be effective in developing learners' receptive and productive grammatical abilities is consistent with previous research involving other forms (e.g., relativization in English; Tanaka, 1999; Izumi, 2002; grammatical gender and copula *estar* in Spanish; Gass & Torres, 2005; Spanish infinitive/subjunctive; Kirk, 2013) with other populations of learners, and with studies showing large effects overall for comprehension/production practice in general (Shintani et al., 2013). One finding in need of explanation is the lack of improvement on spontaneous use of the regular simple past. In guessing the correct messy room picture, students appeared to give primacy to meaning and task completion, and rarely produced a past form. Comparatively, the guided narrative (which produced statistically significant results) was self-paced, individualized, and well-structured – learners were provided the context (i.e., picture) in which to use the verb provided and ample time to complete the task. It was also much closer to the type of production practice experienced during the treatment than the spontaneous production task was. In both the whole-class and student pair phase of the PP, learners were given ample time, resources, and context to produce the form. Thus, their improvement on the guided production task could be seen as reflective of the theory of transfer appropriate processing, which holds that performance be greatest when the conditions of recall/production match the conditions of learning (Morris, Bransford, & Franks, 1977; Segalowitz & Lightbown, 1999). Lack of control over the form's production could also indicate that learners were undergoing the process of knowledge proceduralization (transfer of knowledge that to knowledge how) but had yet to enter into the stage of automatization (DeKeyser, 2007). More sustained production practice using freer, less guided tasks (such as

having learners discuss their own weekend activities) provided after the instructional intervention may have jumpstarted the automatization process and led to eventual improvement in spontaneous production. Similarly, the result reflects research results showing that learners develop speaking ability first at a controlled, and then a spontaneous level (Major, 2008; Collins et al., 2012b).

Regarding the second and third research questions, the initial hypothesis was that the alternating practice group would outperform the delayed production group in both perception and productive knowledge due to the unique benefits offered by this type of combination: after an initial comprehension session, through production learners could notice the weaknesses in their own interlanguage(s) (Swain, 1985), search for solutions to these weaknesses in the follow-up input session (Gass, 1997), and use the last production session to consolidate their knowledge. However, the results indicated a lack of significant differences between the alternating and delayed groups: both were equally effective in developing perception and productive use of the form. One explanation for these findings may have to do with the small sample size (reduced because of the participation criteria outlined earlier) and the considerable variance in the participants' scores, which may have made it difficult to detect any significant differences. Another explanation may have been the one-week delay between each practice session, which is substantially longer than that in previous studies on practice combination (same lesson for Tanaka, 1999, 2001; 1-2 days for Izumi, 2002; 1-day for Gass & Torres, 2005, and Kirk, 2013). Any carry-over effects from prior practice sessions may have diminished over the course of the week, making it difficult to confirm our hypotheses about synergy across comprehension and production sessions. Indeed, Lightbown (2014) and Hawkins (1978) point to the difficulty in reactivating language knowledge when the time between instructional sessions is relatively long,

due to the fact that virtually all engagement with the L2 ends at the door of the classroom. In sum, while the results of the current study show promise for the combination of practice over an instructional sequence, a few key limitations, namely the small sample size and interval length between lessons, mean that the results should be interpreted with a degree of caution. Future research investigating the interactions between comprehension and production practice sessions is needed in order to conclusively reveal precisely how and why mixed practice is effective in promoting grammatical development.

It should be acknowledged that despite some of the aforementioned limitations, combining practice was overall effective in developing perception and controlled production abilities. It seems worth speculating, thus, how this improvement may have occurred depending on when the different kinds of practice were received. Both the delayed and alternating groups demonstrated visually different learning trajectories which we believe to be worthy of closer inspection. Recall the two graphs for perception and production presented in the results section (Figures 5 & 6). Looking at these graphs, it is apparent how closely the change in the mean scores reflects the hypotheses of Skill Acquisition theory, at least in supporting the notion that the learning in this study was skill specific (see DeKeyser & Sokalski, 1996). More specifically, it can be observed that on the perception task (Figure 4) at Time 1, both groups performed similarly. At Time 2 however, the delayed group (which received a second session of perception practice) seems to have improved more than the alternating group (which received production practice). On the guided production task (Figure 5), both groups also had similar means scores at Time 1, but showed differences in their mean scores at Time 2 (in favor of the alternating group, which received production practice production). By Times 3 and 4 however, the scores converged for both perception and production. Interesting to note however, is that for both

perception and production, the alternating group seemed to improve steadily over time, whereas the delayed group demonstrated more drastic improvement, especially from Time 2 to 3 for production. This may indicate that providing alternating practice compared to delayed practice results in the gradual, steady acquisition of comprehensive language ability, whereas delaying it only leads to skill specific improvement. Due to this gradual improvement, no specific claims regarding the interaction between output and input processing (i.e., performance at Time 3 in the alternating group) could be made. Although no Time x Group interaction was found, the learning trajectories point to potential trends that merit exploration in future research with a larger sample size; such an improvement may also allow us to capture the delayed improvement in receptive or productive knowledge as learning sets in, manifesting only after subsequent practice sessions.

Pedagogical Implications

The results of the present study have a variety of implications for grammar teaching. First, the fact that production practice and comprehension practice can be used interchangeably to promote language development is encouraging for teachers, since both types of practice are common in classrooms. Indeed, given that the emphasis in language teaching has traditionally been and continues to be production-based (see R. Ellis, 2002), the results of this study are particularly reassuring for practitioners who may be hesitant to overwhelmingly focus on comprehension practice in language classrooms. That is not to say that comprehension practice does not play an important role in language development, however. In fact, as the results of the study showed, and as attested by previous research, both can and should be involved in the learning process to help develop learners' comprehensive grammar knowledge. It is just a matter of how much of each type of practice learners should receive at what stage of learning. Additionally, the findings point to the longitudinal nature of grammar acquisition - that is, a full

representation of grammar knowledge is not achievable through short-term instructional treatment alone. Indeed, as the results of the present study showed, there remained significant room for improvement in grammar knowledge, particularly in the realm of spontaneous production ability. In order to fully develop grammar ability, as well as reinforce existing knowledge, grammar forms should be revisited at various points within language program curricula. This revisiting need not take up an entire lesson, and may simply occur within unfocused language tasks, where learners are subjected to and required to use a multitude of language forms in task completion (R. Ellis, 2003).

Future Research Directions

There are a number of directions future studies can take to address some of the limitations of the present study. First, the use of intact classes with a sufficient number of participants to ensure robustness of the statistical analyses would facilitate the investigation of the potential learning trends demonstrated in the study; since lessons using intact classes occur during regular class time, students would be more likely to attend and participate in every class, given that it would be part of their regular routine. One additional advantage of using intact classes is that it enhances the ecological validity of the study, allowing better generalizations of the results to actual classroom settings. In addition, certain measures which quantify the extent to which output actually affects subsequent input processing should be adopted, for instance, measures of noticing similar to those used in Izumi (2002); or more modern measures such as eye-tracking and stimulated recall (Smith, 2012). This will allow us to substantiate our claim of carry over effects from previous practice sessions, and help us better understand learners' internal learning processes in response to varying types of practice. Finally, future studies should consider the delayed effects of different combinations of practice to see whether and how the

effects of learning persist over time. It may be the case that alternating the contexts in which a particular grammar feature is learned can lead to more gradual yet durable development of its representation compared to separating, or delaying, learning context (e.g., Bird, 2010).

Conclusion

Research on input- and output-based practice has long sought to determine which is superior and perhaps more important for the development of grammatical abilities. The present study was an attempt to move past the traditional dichotomy of input vs. output practice and introduce a new way to look at grammar instruction. By combining comprehension and production practice in two different ways, we took a first step away from the classical input vs. output debate to gain a more detailed perspective on the factors affecting successful grammar instruction. The results of this study showed that combining input and output practice was effective for grammar learning. Furthermore, the time series design adopted by the study allowed us to monitor how the learning process unfolded throughout the instructional treatment. These results will be critical in paving the way for future studies looking at how instruction can be optimized for the development of grammatical knowledge in a multitude of instructional contexts.

Chapter Three

The study presented in Chapter Two revealed several findings that inform our understanding of the relative importance and contributions of input and output to language acquisition. Primarily, the study showed that introducing production (output-based) practice in conjunction with comprehension (input-based) practice was effective in developing learners' ability to perceive the form in running speech as well as produce it in a controlled fashion. Although the lack of any significant differences between the two groups of learners (which differed only in terms of the order in which they received the two types of practice) makes it difficult to determine precisely what roles input, output, and the combination of the two play in grammar learning, this chapter nevertheless takes a broad approach to extending the interpretation of our results within the larger spectrum of input, output, and acquisition.

First, the results of the present study could be interpreted as providing counter evidence to the numerous claims by researchers against the role of output in early grammar learning. Recall that Krashen (1985) claimed that output plays no or a limited role in language learning, and that focused instruction is not necessary for language development, as learners should incidentally pick up on all aspects of a grammatical form and be able to integrate it into their developing language systems. The present study, however, showed that production practice, i.e., learner output, actually assisted in pushing learners to develop their grammar abilities no matter where it fell in the instructional sequence for what were classified as "early" stage learners (limited exposure to and control over target form). Furthermore, the fact that the learners significantly improved in their perceptual knowledge of the form also points to the need for focused, intentional learning for challenging grammatical features. This seems to be supportive of more intentional language learning theories such as the noticing hypothesis (Schmidt, 1990),

which states that in order for learning to occur, students must attend to and be conscious of particular language features in the input. Although the present study had no measure of noticing or awareness, it may have been the case that such focused instruction and output pushed them to attend to the perceptual challenges of the form, and subsequently improve their grammatical knowledge. The results of the present study also seem to be contra VanPatten (2007), who claimed that output makes less of a contribution to learning certain grammar forms because it does not alter default, hindering input processing strategies. Recall that the learners in this study began with a moderate level of explicit knowledge about simple past *–ed*; that is, they perhaps had some knowledge about how to construct the form and the rule, but that it was *partial* in nature. By VanPatten's account, output comes as a result of the firm representation of a form in a learner's developing system; actual use of the target form is not helpful unless it directly develops this representation via facilitating its processing. However, the learners in the present study improved in perception despite being provided with opportunities for output practice, and improved in *production* as well. The results are thus perhaps more in line with Skill Acquisition Theory, which predicts the skill specific conversion of declarative explicit knowledge into procedural implicit knowledge, which is thought to occur through focused practice over time (DeKeyser, 2007). Although there were no significant differences between the groups across times, the mean scores (see Figures 5 & 6) suggest a pattern worth investigating in future research with larger samples: that is, whether comprehension practice leads to greater immediate improvements in comprehension, and production practice leads to greater immediate improvement in production.

The results also support a more multi-dimensional view of grammar rather than a simple one which labels grammar knowledge as consisting of knowledge of form-meaning connections

alone. According to Larsen-Freeman (2001), a grammatical representation can be sub-divided into 3 components: form, meaning, and use. The form component refers to the various morphosyntactic, lexical, phonemic, and graphemic patterns associated with the form. With past tense *–ed*, the form component would contain information on the 3 allomorphs /t/, /d/, and /ed/ such as how they appear in written form and their phonemic representations. The meaning component contains information about the semantic value a form carries. In the case of simple past *–ed*, this would be an indication of past tense. Finally, the use component contains information on when or why a form should be used in a particular situation. For simple past *–ed*, this would be knowing to the form when expressing a definitive action at some point in the past, compared to using the present perfect (indefinite). The present study targeted the *form*-based challenge of past tense *-ed*, and did so effectively. This has not been the case in much research on input vs. output-based instruction, which has primarily targeted the meaning challenge (e.g., Benati, 2005; Benati, Lee, & Houghton, 2008). In this sense, the study provides evidence for considering more than one aspect of grammatical form in designing instruction, and perhaps provides another intriguing direction for input and output-based research: does the difficulty of a form vs. meaning-based challenge moderate the effectiveness of input- or output-based instruction?

In addition, the results of the present study and the distinction between different kinds of receptive knowledge support the conceptualization of comprehension practice as being more than just Processing Instruction. Indeed, the GJT and perception test were distinct in both the kinds of knowledge they designed to measure, and in how the participants performed on them. Thus, the present study can be offered as evidence that comprehension practice should take into account a number of challenges depending on the grammatical feature, and appropriately design

varied lessons to address these challenges. With English regular past-*ed*, the perception challenge could be one explanation for the lack of differences between the delayed and alternating groups. Given that Japanese EFL grammar teaching usually targets explicit structural knowledge of grammatical forms (Riley, 2008) using decontextualized language teaching methods which only promote knowledge about language (e.g., grammar translation and audiolingual method), it is unlikely that students had prior experience working on their perceptual or productive abilities. Thus, it may have been the case that for these "early" learners, any instruction at all which focused on these underdeveloped skills, regardless of the sequencing, would have been effective for developing receptive and productive knowledge of the form. In this sense, the present study contributes to our understanding of focused listening tasks and their effect on the acquisition of a particularly challenging grammatical feature (i.e., past tense *–ed*). Indeed, regardless of how the perception and production practice sessions were organized, learners seemed to improve gradually over time in terms of both receptive (perception) and productive knowledge. The results of this study thus provide an additional reference and set of materials for researchers exploring this form's acquisition in more detail, and for teachers seeking to help their learners overcome the unique challenges that this form presents.

The results of the present study also have practical implications for grammar teaching. While the abundance of comparative empirical research on comprehension and production practice has shown that both are effective for grammar learning, the ecological validity of the classroom materials used in some of these studies is questionable. Specifically, it may not be realistic to unitarily use one type of practice or another in actual classroom practices, as most classrooms and language programs engage learners in both comprehension and production activities. The findings of the current study speak to another practical dimension of language

teaching: classroom expectations. On the one hand, teachers expect students to produce during classroom activities, as it is the main indication of learning and development, and the standard by which they evaluate the success of their lessons (Ellis & Shintani, 2014). On the other hand, the goal of many language programs and in fact language learners is to equip learners with the skills necessary to achieve a variety of goals, many of which intrinsically involve language production (e.g., desire to interact with foreigners, get a job in a foreign country; Gardner & Lambert, 1972). Thus, that including production practice is effective, especially in early language instruction, is certainly reassuring for language teachers and learners alike, who have become acclimated to the prevalence of production practice in language instruction. Care must be taken not to overwhelmingly focus on one type of practice or the other, however. The results of the present study cannot speak to the efficacy of one type of practice provided alone, only that combining them can be effective for acquiring perception and production abilities for a specific grammatical form; in other words, while it is encouraging that production practice can be introduced for such early learners, comprehension practice should by no means be neglected.

The study also affirmed the benefits of using Time Series designs to investigate learning trends over time. First and foremost, such a design made visible the progress made by learners over time in learning different aspects of a grammatical feature. This was evidenced by the linear improvement, as well as the lack of interaction effect between the two groups, indicating that one type of practice was not better than the other. Secondly, potential differences in learning trajectories that may be revealed with a larger sample size would not be captured using a traditional pre/post/delayed post-test design. This once again highlights the particular benefits of the design; that is, it allows for an investigation of the process as well as the product of overall learning. Though as mentioned in Chapter Two, the one-week interval between lessons may have

made it difficult to detect significant differences between groups even with a larger sample size, it perhaps better reflects the actual state of EFL teaching across the globe, including at the university level. For example, in the Quebec EFL/ESL context, English instruction during the first six years is typically only 1 hour per week. Similarly, university-level foreign language courses can vary in their frequency, to as little as 1-2 hours per week. Such "drip-feed" instruction places immense pressure on teachers to use the lesson time as efficiently as possible to promote a variety of language skills. That the EFL learners in the present study were able to develop both their perception and productive abilities in this context is encouraging for teachers looking to optimize grammar instruction under strict time pressure.

Considering the Quebec context in particular brings up another interesting issue in the field of grammar teaching: the relative efficacy of distributed (practice which is spread out over an extended interval of time) vs. massed (practice of the same length which is concentrated into a shorter period of time) practice. Traditionally, distributed vs. massed practice has been conceptualized as a matter of *time* distribution. For example, studies conducted by Collins and colleagues (Collins, Halter, Lightbown & Spada, 1999; Collins & White, 2011) compared groups receiving roughly the same total amount of instruction in different concentrations - intensive groups, which received English instruction within one academic semester; and the distributed groups, which received instruction over the entire academic year. Results for both of these studies were mixed, with Collins et al. (1999) showing benefits for intensive groups (though this could have been attributed to the slightly greater number of hours these groups received compared to the distributed group), and Collins & White (2011) showing general equivalency for both massed and distributed learning groups (though superiority for intensive groups to some degree). In reviewing the issue of massed vs. distributed learning, R. Ellis (2006) pointed out that

the results of research on distributed practice warrant further examination into the effects of different learning conditions for specific grammar structures, not general measures of language alone. Bird (2010), adopting a cognitive psychology perspective, compared the effects of distributed and massed learning conditions (15-day vs. 3-day lesson interval) on adult acquisition of English syntax (difference between simple past and present perfect; and simple past and past perfect). Results showed that the massed and distributed learning groups performed equally on a 7-day retention test, but that the distributed group demonstrated superior performance on a delayed post-test (60 days). The present study could also been seen as contributing to the massed vs. spaced literature in this regard. The two learning conditions in the study - delayed and alternating - partially correspond to massed and distributed learning conditions, respectively. Though the overall instructional time received by each group was equivalent, the design of the present study could be an inspiration for future research looking to investigate whether the distribution of *content* and not *time* alone could have an effect on grammar learning. The benefits of distributing content, or learning context, are predicted by the Encoding Variability Hypothesis - a theory at the base of the massed vs. distributed learning debate which predicts that varying practice conditions will create more memory routes/traces to draw on in recognition or use (Glenburg, 1979). Though the results of the present study showed no significant for either the delayed or alternating group, it nevertheless provides a good framework for investigating the extendibility of the spacing effect, specifically as concerns content, to SLA grammar learning - something which has been called for by Lightbown (2000, 2007). Future researchers wishing to investigate this issue may want to consider the instructional design of the present study because it involved evenly-spaced instructional intervals (precisely one-week) and the systematic

recycling of a specific grammar form - both aspects highlighted by Miles (2014) as being critical for studies wishing to explore massed vs. distributed learning.

Future research on mixed practice can also be extended to areas unaddressed by the present study. Shintani et al.'s (2013) conclusions regarding the role of practice type in relation to level of knowledge/proficiency (that learners with low knowledge levels overall might benefit more from CP, and that those with moderate receptive but low productive knowledge might benefit more from PP) are one intriguing direction to consider. In order to empirically investigate this claim, research could take into account participants' knowledge levels of a given grammatical feature at the onset of the project (both receptive and productive), and assign them to various combinations of comprehension and production practice. In this way, we would be able to assess which configuration of practice combination is most appropriate for which proficiency level. For example, perhaps it is the case that less proficient learners may benefit from instruction more heavily weighted towards comprehension practice, whereas more proficient learners would benefit from more production-heavy instruction. In addition to examining the role of proficiency in determining the effectiveness of grammar practice, future research on practice combination should be compared across various learning contexts (i.e., the ESL vs. EFL setting). As previous research has pointed out, the degree of focus on form as well as task appropriateness may vary between the two contexts (for example, foreign language contexts are generally more form-focused; as such, learners may be less amenable to meaning-based or inductive instruction; Fotos, 1998). It would thus be of interest to see whether context is an additional variable moderating the effectiveness of practice combination and how the two types of practice interact across lessons. Finally, it is important to note that the results of the present study can only be generalized to the adolescent age group (12-15 years old). Future

studies should extend this line of research to other age groups, such as adults/university-level learners, to see how they react to instructional treatments involving practice combination. The issue of age and instructed SLA is one of critical importance given differences between adolescents and adults in terms of cognitive maturity (Cummins, 1979), likely differing motivation profiles, and different learning strategies (e.g., greater use of meta-cognition to analyze rules and language structures; Ortega, 2009).

Overall, care needs to be taken in extending the results of the present study beyond the context (Japanese EFL) and materials (focused, meaningful comprehension and production practice) used. It may be the case that the combination of practice was beneficial for EFL learners given that they have little exposure to the target language outside of the classroom, and thus greatly benefited from focused instruction (i.e., maximize efficiency of limited time). Learners in ESL contexts, however, may benefit differentially from different combinations of input and output-based instruction because of its availability outside of the classroom. Additionally, it may be that using other types of practice activities could influence the relative benefits of each type of practice. Though Processing Instruction was not used in the present study, it would be intriguing to see if combining PI with meaningful-output practice could complementarily develop learners' grammar abilities more than either approach alone (such as the study attempted by Kirk, 2013), particularly with learners who may have less developed meaning-based representations of the form than the participants in the present study.

To conclude, the present study sought to shed some light on the relative effectiveness of input- vs. output-based instruction in promoting the development of grammatical knowledge. On the premise that both types of instruction may make have unique contributions to make to grammar learning, the study investigated two groups of learners receiving comprehension and

production practice in two different permutations: delaying production practice until after comprehension, or alternating production and comprehension practice. The results showed large effects for both groups over time, indicating that both types of instruction combined can be effective for the development of specific kinds of grammatical knowledge (form-based perception and controlled productive knowledge). The performance of the two groups lend some support to certain theories on language acquisition (Skill Acquisition Theory, the Output Hypothesis) while providing counter evidence to the claims of others (i.e., certain aspects of the Input Hypothesis and Information Processing theory). Overall, the present study showed that combining comprehension and production practice was a suitable alternative to dichotomous input- and output-based instruction.

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APPENDIX A

Comprehension Practice Materials

Story A: Baby Food

Student Handout Side 1

Listen to the story. Then, ask the teacher if you have any questions.
Baby Food

A six-year-old boy named Alex sat in the doctor's waiting room with his mother. He watched the clock on the wall. One second, two seconds, three seconds…He counted eight seconds then stopped. He was bored. He looked around the room. He added up all of the people in the waiting room. Twelve. Then he divided all of the people into men and women. There were eight women and four men. He looked at the clock again. Waiting was no fun. He stood up and started exploring the room. He saw a pregnant woman and decided at onceto ask her some questions. He was very curious and said, "Why is your stomach so big?"

The woman laughed and responded asshe touched her stomach, "Because I'm having a baby."

Alex looked surprised and said, "Is the baby in your stomach?"

"Yes, of course!" said the woman. She invited Alex to place his hand on her stomach, "Can you feel the baby kick?" Alex felt something move inside the woman's stomach and he quickly pulled his hand away.

"But is it a good baby?" Alex asked with a confused look on his face.

"Oh, yes. I'm sure it's a really good baby," said the woman. "I am sure this baby will become a good little boy like you!" She patted a hand on Alex's head and then patted her stomach.

At this point, Alex looked very scared. He stepped back and said, "If he is such a good baby, then why did you eat him?"

Student Handout Side 2

Listen to the story again. This time, listen to see if the underlined word(s) are the same as what you here. If not, cross them out and write the correct word on top.
For example: blue glass OR b~~lue gl~~ass OR bl~~ue glas~~s OR ~~blue glass~~
Good Luck!

Baby Food

A six-year-old boy named Alex sat in the doctor's waiting room with his mother. He watched [1]the clock on the wall. One second, two seconds, three seconds…He [2]counted six seconds then stopped. He was bored. He looked around the room. He [3]counted quickly all of the people in the waiting room. Twelve. Then he [4]split all of the people into men and women. There were eight women and [5]four men. He looked at the clock again. Waiting was no fun. He stood up and [6]walked around the room. He saw a pregnant woman and [7]stopped at once to ask her some questions. He was very curious and said, "Why is your stomach so big?"

The woman laughed and [8]replied as she touched her stomach, "Because I'm having a baby."

Alex looked surprised [9]and said "Is the baby in your stomach?"

"Yes, [10]of course!" said the woman. She [11]invited him to place his hand on her stomach, "Can you feel the baby kick?" Alex felt something move inside the woman's stomach and he quickly pulled his hand away.

"But is it a good baby?" Alex asked with a confused look on his face.

"Oh, yes. I'm sure it's a really [12]good baby," said the woman. "I am sure this baby will become a good little boy like you!" She [13]patted ahand on Alex's head and then patted her stomach.

At this point, Alex looked very scared. He stepped back and said, "If he is such good baby, then why did you eat him?"

Answer Key

1. the clock (DIS) (both correct)

2. counted eight (2nd word incorrect): counted six

3. added up (both incorrect): counted quickly

4. divided all (1st word incorrect): split all

5. four men (DIS) (both correct)

6. started exploring (both incorrect): walked around

7. decided at (1st word incorrect): stopped at

8. responded as (1st word incorrect): replied as

9. and said (DIS) (both correct)

10. of course (DIS) (both correct)

11. invited Alex (2nd word incorrect): invited him

12. good baby (DIS) (both correct)

13. patted a (both correct)

Story B: Happy Birthday

Student Handout Side 1

Happy Birthday!

A rich woman wanted to send her mother a very nice birthday present. There were many nice stores on the main street. Her husband suggested a walk to shop for presents. They walked by a pet shop in Old Montreal. A beautiful red and blue bird was in the window. The woman and her husband went inside the store. The bird was singing. The song was beautiful! It could talk too, and it sang songs in French and English. The bird ended a song and immediately started another one. The woman smiled. She liked the singing bird. She picked up a treat and gave it to the bird. The bird ate it and started another song. She thought that the bird was very sweet and intelligent. The woman decided in that moment that she wanted to buy the bird.

The woman wanted to buy the bird for her mother. She found an employee. She pointed at the marvelous singing bird and said, “I would like to buy that bird, please. How much does it cost?” The employee said that it was very expensive. The bird cost fifty thousand dollars! “Fifty thousand dollars?” her husband repeated as he grabbed his wife’s arm, “Maybe we should find another present.”

The woman did not listen. She wanted to buy the bird for her mother. She opened up her purse and pulled out her credit card. She handed it to the employee and requested a special delivery. She wanted the bird to arrive the next day for her mother’s birthday.

The next day the rich woman called her mother, “Mama,” asked the woman, “do you like the bird?” “I’m eating it right now,” her mother said. “It’s delicious! Thank you so much.”

Student Handout Side 2

Listen to the story again. This time, li~~sten to~~ see if ~~the un~~derlined wo~~rd(s) are the~~ same as what you hear. Good Luck!

A rich woman wanted to send her mother a very nice birthday present. There were many nice stores on the main street. Her husband [1]suggested a walk to shop for presents. They walked by a pet shop in Old Montreal. A beautiful red and blue bird was in [2]the window. The woman and her husband went inside the store. The bird was singing. The song was beautiful! It could talk too, and it sang songs in French and English. The bird [3]finished a song and immediately started another one. The woman smiled. She liked the singing bird. She picked up a treat and gave it to the bird. The bird ate it and [4]began another song. She thought that the bird was very sweet and intelligent. The woman [5]decided at that moment that she wanted to buy the bird.

The woman wanted [6]to purchase the bird for her mother. She found an employee. She [7]walked to the marvelous singing bird and said, "I would like to buy that bird, please. [8]How much does it cost?" The employee said that it was very expensive. The bird cost [9]fifty thousand dollars! "Fifty thousand dollars?" her husband [10]said while he grabbed his wife's arm, "Maybe we should find another present."

The woman did not listen. She wanted to buy the bird for her mother. She [11]quickly opened her purse and pulled out her credit card. She [12] gave it to the employee and

[13]requested a special delivery. She wanted the bird to arrive the next day for her mother's birthday.

The next day the rich woman called her mother, "Mama," asked the woman, "[14]do you like the bird?" "I'm eating it right now," her mother said. "It's delicious! Thank you so much."

Answer Key

1. suggested a (both correct)

2. the window (DIS) (both correct)

3. ended a (1st word incorrect): finished a

4. started another (1st word incorrect): began another

5. decided in (2nd word incorrect): decided at

6. to buy (DIS) (2nd word incorrect): to purchase

7. pointed at (both incorrect): walked to

8. how much (DIS) (both correct)

9. fifty thousand (DIS) (both correct)

10. repeated as (both incorrect): said while

11. opened up (both incorrect): quickly opened

12. handed it (1st word incorrect): gave it

13. requested a (both correct)

14. do you (DIS) (both correct)

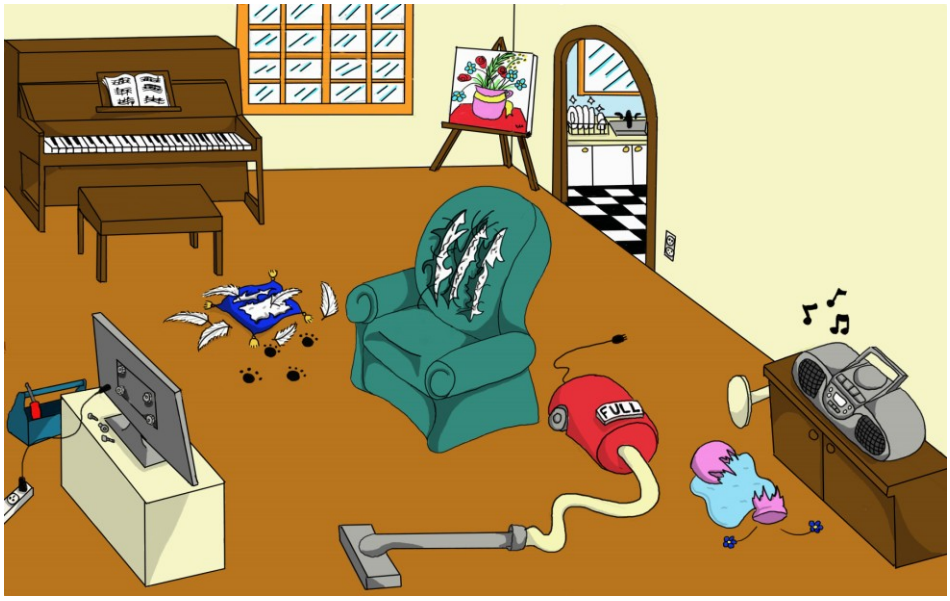
APPENDIX B

Production Practice Materials

Whole-class activity Scene Version 1

Whole-class activity Characters Version 1

Whole-class Activity Scene Version 2



Whole-class Activity Characters Version 2

Paired Information Gap Task - Handout 1

John's Weekend

Instructions

Part 1. In front of you is a picture of **John's kitchen**. In John's kitchen are many **clues**（手がかり）about what he did last weekend. Look at these **clues** and try to write down what John did over the weekend.

For example,

例え: Last weekend, John **ate a pizza.**

There are 6 other activities you can find in your picture!

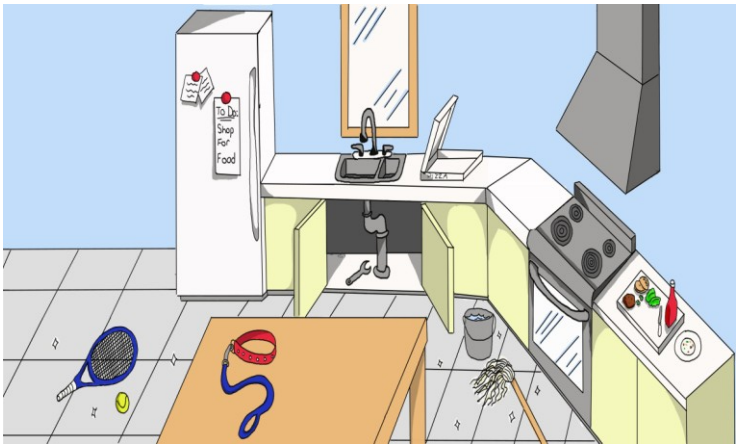
1. Last weekend, John_____
   _____
2. He_____
   _____
3. He_____
   _____
4. He_____
   _____
5. He_____
   _____
6. He_____
   _____

Part 2. Now, tell your partner what John did over the weekend. Try to find out which activities are the **same** and which are **different**. Write the activities which are different the space below.

7. He also_____
   _____
8. He_____
   _____
9. He_____
   _____
10. And he_____
    _____

Paired Information Gap Task - Full Scene 1

Paired Information Gap Task - Partial Version 1a



Paired Information Gap Task - Partial Version 1b

Paired Information Gap Task - Handout 2

Kate's Weekend

Instructions

Part 1. In front of you is a picture of **Kate's bedroom**. In Kate's bedroom are many **clues**（手がかり）about what she did last weekend. Look at these **clues** and try to write down what Kate did over the weekend.

For example,

例え: Last weekend, Kate **rode her bicycle.**

There are 6 other activities you can find in your picture!

1. Last weekend, Kate_____
   _____
2. She_____
   _____
3. She_____
   _____
4. She_____
   _____
5. She_____
   _____
6. She_____
   _____

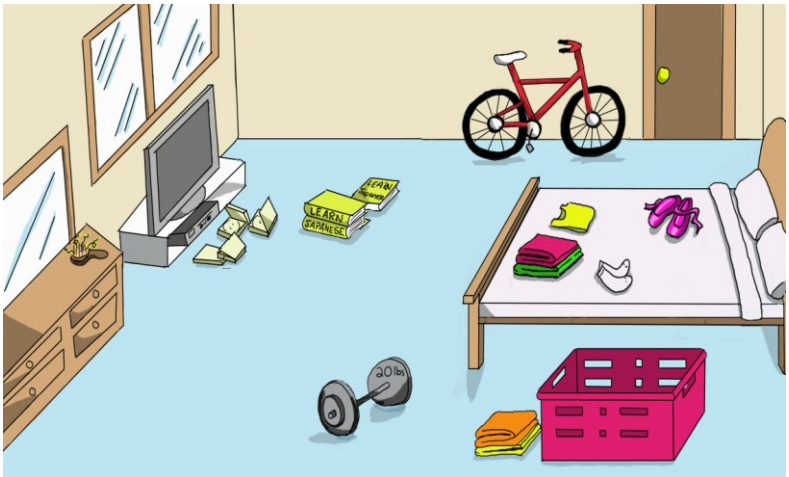
Part 2. Now, take turns telling your partner what activities Kate did over the weekend. Try to find out which activities are the same and which are different. Write the activities which are different the space below.

7. She also_____
   _____
8. She_____
   _____
9. She_____
   _____
10. And she_____
    _____

Paired Information Gap Task - Full Scene 2

Paired Information Gap Task - Partial Version 2a

Paired Information Gap Task - Partial Version 2b



APPENDIX C

Perception Task

Student Handout

Name _____ Date_____

Listen to the sentences and decide whether the action occurred last week or occur usually or right now in the present.

1. Last week □ | Right Now □ | Don't Know □	**11. Last week □ | Right Now □ | Don't Know □**
2. Last week □ | Right Now □ | Don't Know □	**12. Last week □ | Right Now □ | Don't Know □**
3. Last week □ | Right Now □ | Don't Know □	**13. Last week □ | Right Now □ | Don't Know □**
4. Last week □ | Right Now □ | Don't Know □	**14. Last week □ | Right Now □ | Don't Know □**
5. Last week □ | Right Now □ | Don't Know □	**15. Last week □ | Right Now □ | Don't Know □**
6. Last week □ | Right Now □ | Don't Know □	**16. Last week □ | Right Now □ | Don't Know □**
7. Last week □ | Right Now □ | Don't Know □	**17. Last week □ | Right Now □ | Don't Know □**
8. Last week □ | Right Now □ | Don't Know □	**18. Last week □ | Right Now □ | Don't Know □**
9. Last week □ | Right Now □ | Don't Know □	**19. Last week □ | Right Now □ | Don't Know □**
10. Last week □ | Right Now □ | Don't Know □	**20. Last week □ | Right Now □ | Don't Know □**

Sentences Heard

Time 1	Time 2
1. I **called** my mother. **Easy - /d/**	1. I **studied** English. **Easy - /d/**
2. I visit my cousin Sam.	2. I wash the windows.
3. I **talked** with Jeff. **Easy - /t/**	3. I **called** my friends. **Easy - /d/**
4. I order pizza.	4. I **danced** with my friends. **Easy /t/**
5. I **played** the guitar. **Hard - /d/**	5. I **waited** for my friend. **Easy - /ed/**
6. I **corrected** my homework. **Easy - /ed/**	6. I fix the TV.
7. I **jumped** in the lake. **Easy - /t/**	7. I **washed** the floor. **Hard /t/**
8. I study English for 4 hours.	8. I **cooked** a nice dinner. **Easy /t/**
9. I **invited** him to dinner. **Easy - /ed/**	9. I finish school at 3 o'clock.
10. I finish my homework at 9pm.	10. I listen to music.
11. I receive many presents on my birthday.	11. I **asked** the teacher for help. **Hard /t/**
12. I **opened** the door for her. **Hard - /d/**	12. I open the presents.
13. I need more time to study.	13. I **invited** my sister to the party. **Easy /ed/**
14. I **fixed** the problems. **Hard - /t/**	14. I **ended** the party early. **Hard - /ed/**
15. I **hated** the movie. **Hard - /ed/**	15. I work very hard.
16. I **danced** to the music. **Hard - /t/**	16. I **wanted** to go to the park. **Hard - /ed/**
17. I **waited** two hours for my friend. **Hard - /ed/**	17. I dance alone.
18. I **enjoyed** some pizza. **Easy - /d/**	18. I **played** the piano. **Hard - /d/**
19. I travel to America.	19. I enjoy the movie.
20. I clean my room.	20. I **learned** to ski. **Hard - /d/**
Time 3	**Time 4**
1. I **visited** my grandparents. **Easy - /ed/**	1. I **learned** English. **Easy - /d/**
2. I talk to my friends.	2. I **watered** my garden. **Easy - /d/**
3. I paint pictures.	3. I call my parents.
4. I **ordered** some food. **Easy - /d/**	4. I **shopped** for new clothes. **Easy /t/**
5. I **walked** to school. **Hard - /t/**	5. I wait for the bus.
6. I **cleaned** the kitchen. **Hard - /d/**	6. I **fixed** the roof. **Hard - /t/**
7. I study very hard.	7. I **listened** to rock music. **Hard /d/**
8. I **looked** for my cat. **Easy - /t/**	8. I **counted** the money. **Hard /ed/**
9. I **finished** the book. **Hard - /t/**	9. I ask my mother for help.
10. I receive many presents on my birthday.	10. I walk to the beach.
11. I **started** to cry. **Hard - /ed/**	11. I **watched** the movie. **Hard /t/**
12. I need a new bicycle.	12. I use my phone on the train.
13. I **exercised** for 3 hours. **Easy - /d/**	13. I **invited** him to my house. **Easy /ed/**
14. I **planted** the flowers. **Hard - /ed/**	14. I **talked** on the phone in Tokyo. **Easy - /t/**
15. I hate natto.	15. I work on Saturday.
16. I **travelled** to France. **Hard - /d/**	16. I **wanted** to go shopping. **Hard - /ed/**
17. I **asked** for directions. **Easy - /t/**	17. I clean the floor.
18. I jump into the water.	18. I **followed** the instructions. **Hard - /d/**
19. I **wanted** a present. **Easy - /ed/**	19. I talk on the phone.
20. I like baseball.	20. I **waited** for the store to open. **Easy - /ed/**

APPENDIX D

Grammaticality Judgment Task (Partially Translated from Japanese)

Version 1

(Please read the sentences and mark from -2 to +2 how correct or incorrect they are. If a sentence is incorrect, please circle or underline where you think the error is. There is only one error in each sentence, and no errors in spelling or punctuation.)

1. I called my mother last night.

(Definitely Incorrect)	(Probably Incorrect)	(I don't know)	(Probably correct)	(Definitely Correct)
-2	-1	0	+1	+2

2. I are happy.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

3. Last week, I visit my grandmother.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

4. I talked with Taro yesterday.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

5. Last weekend, my father cook hamburgers.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

6. I plays the guitar.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

7. Last week, the teacher corrected my homework.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

8. Last summer, I jumped in the lake.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

9. My father is fat.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

10. Last night, I study English for 4 hours.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

11. Last month, my cousin invited me to his birthday party.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

12. Yesterday, I finish school at 9pm.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

13. Yesterday, Kyle receive a present.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

14. He likes tennis.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

Version 2

1. That man are very tall.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

2. Yesterday, I walked my dog.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

3. Yesterday, I cleaned my room.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

4. Last week I enjoyed a festival.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

5. This morning, my father wash his new car.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

6. I playing baseball.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

7. Yesterday, Mary planted some flowers.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

8. Last weekend, I received a letter from my grandmother.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

9. Yesterday, I decided to walk to school.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

10. My mother is beautiful.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

11. My brother finish work at 11pm last night.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

12. Last night, my sister helped me with my homework.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

13. Last weekend, I dance with my friends.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

14. She likes shopping.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

Version 3

1. I finished reading my book last night.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

2. My sister likes cooking.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

3. Yesterday, I clean the windows.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

4. I start learning English last year.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

5. I like pizza.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

6. This morning (今朝), my mother bake some delicious cookies.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

7. My father fixed the roof last Tuesday.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

8. My brother are very loud.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

9. Last weekend, my mother asked me to clean my room.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

10. My cat attacked the sofa last night.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

11. Yesterday, I played the guitar for 2 hours.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

12. I finish middle school last year.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

13. I are sad.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

14. I watch a movie last night.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

Version 4

1. My sister waited 2 hours for the bus this morning (今朝).

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

2. I relax at the beach last weekend.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

3. I are late for class.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

4. I travel to America last year.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

5. Yesterday, I enjoyed eating some natto.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

6. I like swimming.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

7. I visit my grandparents two weeks ago.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい

-2	-1	0	+1	+2

8. My brother listen to the radio last night.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

9. My friend is 16 years old.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

10. Last Monday, I fixed my bicycle.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

11. Yesterday, I finished my homework.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

12. I hating cold weather.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

13. I decided to go to the mall last weekend.

ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい
-2	-1	0	+1	+2

14. John received a package yesterday afternoon.

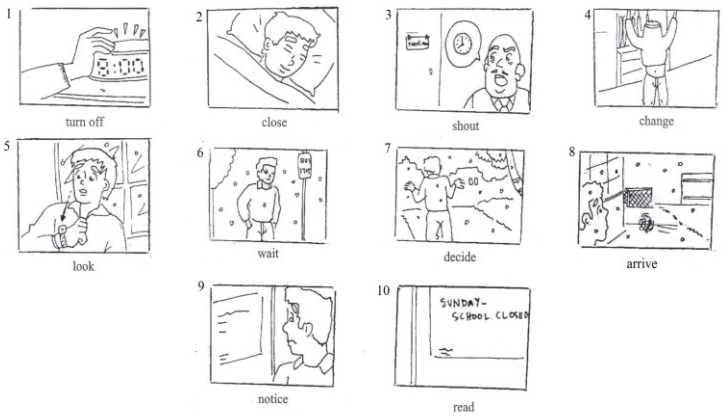
ぜったい 間違っている	たぶん 間違っている	分からない	たぶん 正しい	ぜったい 正しい

-2	-1	0	+1	+2

Appendix E

Sample of Guided Production Task

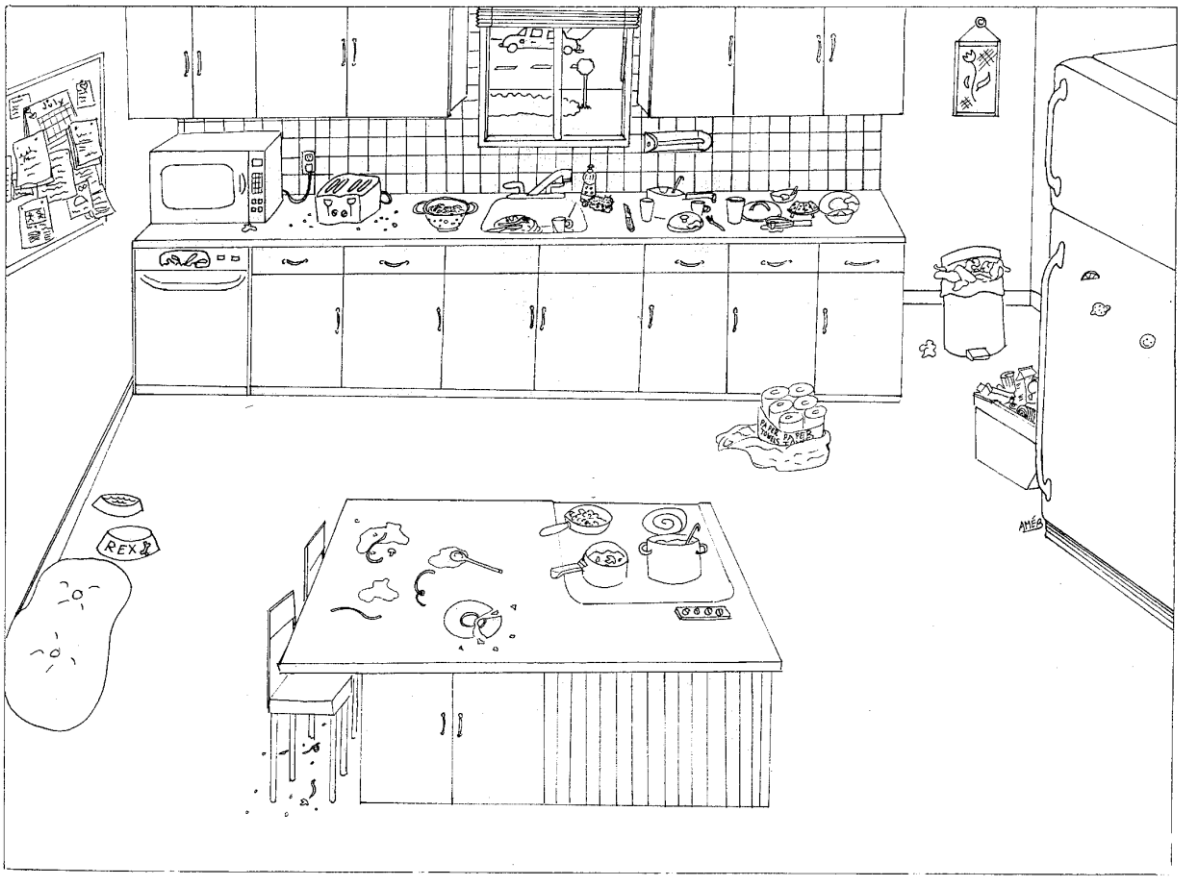
Last weekend, I.....



Appendix F

Spontaneous Production Task

Example of Messy Room



Example of Cleaned-up Room with Verb Cues