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RECASTS AND SECOND LANGUAGE DEVELOPMENT

Beyond Negative Evidence

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Recasts have figured prominently in recent SLA research, with studies documenting significant advantages for learners exposed to this type of negative feedback. Although some researchers have suggested that such findings imply a beneficial role for negative evidence (i.e., information regarding the impossibility of certain utterances in the language being learned), the source of these benefits has not been explored directly, as multiple variables are conflated in recasts. Specifically, recasts not only offer implicit negative evidence, but they also provide positive evidence. Moreover, recasts are believed to make this positive evidence especially salient. In the present study, 74 learners of L2 Spanish engaged in communicative interaction with the researcher in one of the following conditions: (a) recasts (i.e., negative evidence and enhanced salience of positive evidence), (b) negative evidence, (c) enhanced salience of positive evidence, and (d) unenhanced positive evidence (control). Only the recast and enhanced-salience groups performed significantly better than the control group on posttreatment measures, which suggests that the utility of recasts is derived at least in part from enhanced salience of positive evidence and that the implicit negative evidence they seem to provide may not be a crucial factor.

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Two interrelated problems that are of crucial importance in SLA theory and research are determining which types of linguistic input can be utilized in language acquisition, and identifying the ways in which participation in communicative interaction can promote language development. On one hand, researchers influenced by Chomsky's (1965) claim that humans are endowed with a biologically determined capacity to learn language have used logical models of language learnability to argue that negative evidence, defined as information regarding the impossibility of certain linguistic structures in the language being acquired, is irrelevant to first language (L1) acquisition. Instead, researchers espousing this view have maintained that innate linguistic constraints allow language development to progress solely on the basis of exposure to positive evidence, or exemplars of possible utterances (present in all grammatical speech). This argument has been extended from L1 to second language (L2) research by SLA researchers investigating the nature of the linguistic knowledge learners have at the outset of SLA, and whether this knowledge derives from a set of innate linguistic constraints referred to as Universal Grammar (UG). On the other hand, SLA researchers studying the effects of the linguistic environment on learners' cognitive processes have conducted both observational and experimental studies of conversational interaction between nonnative speakers (NNSs) and either native speakers (NSs) or other NNSs to explore the ways in which such interaction may contribute to SLA. This research has identified various discourse features typical of NS-NNS interaction, many of which are also well documented in adult-child L1 interaction, and has documented developmental benefits for participation in such interaction (e.g., Doughty, 1994; Gass, Mackey, & Pica, 1998; Long, 1983; Mackey, 1999; Pica, 1992, 1996; Pica, Young, & Doughty, 1987; Polio & Gass, 1998; Sato, 1986). Interaction research has begun to explore the effects of specific interactional features on L2 development and has found that various types of negative feedback seem to promote linguistic development (e.g., Long, Inagaki, & Ortega, 1998; Mackey & Philp, 1998; Muranoi, 2000). Thus, these two lines of investigation—that is, research on usable input types and studies of interaction—converge around the issue of identifying the effects of feedback and negative evidence on linguistic development. In particular, these two research domains have come together in the study of recasts, a type of feedback that has been documented in NS-NS and NS-NNS (as well as NNS-NNS) interaction. Recasts are targetlike reformulations of ungrammatical utterances that maintain the central meaning of the original utterance (Long, 1996; Nelson, 1981), as in the adult response to the child's ungrammatical utterance in (1).

(1) Child: *That be monkey.*
Adult: *That is a monkey.* (Bohannon & Stanowicz, 1988, p. 685)

Given that discussions of recasts are related to various lines of investigation, a comprehensive understanding of their benefits requires consideration of negative evidence, salience, and interaction research.

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BACKGROUND

Negative Evidence

Although L1 and L2 acquisition clearly differ in important ways, the theoretical arguments and empirical findings regarding negative evidence and recasts have been quite similar in the two research domains, with a significant portion of the debate hinging on whether recasts should be considered negative evidence. Empirical findings that children are rarely provided with explicit information regarding the ungrammaticality of their ill-formed L1 utterances (e.g., Brown & Hanlon, 1970) once seemed to clinch nativist arguments regarding the irrelevance of negative evidence, given the universal success of language acquisition. Because acquisition was seen as an "equation with two unknowns" in which the right side of the equation, grammar, must be arrived at through the sum of input and innate knowledge, the less that could be attributed to the input, the greater must be the contribution of the linguistic endowment (Bohannon, MacWhinney, & Snow, 1990, p. 222). This logic provides the foundation for the argument that negative evidence cannot play a significant role in L1 acquisition unless it is shown to be (a) available to all children, (b) usable, (c) used, and (d) necessary (Pinker, 1989).

Subsequent findings that adults often respond to child errors with clarification requests and recasts raised the possibility that the definition of negative evidence had been too narrow (e.g., Bohannon & Stanowicz, 1988; Demetras, Post, & Snow, 1986; Hirsh-Pasek, Treiman, & Schneiderman, 1984). Specifically, some L1 researchers suggested that a reformulation immediately following an error implies that the child's original utterance was unacceptable and thus should be considered implicit negative evidence. This suggestion was bolstered by findings that adults reformulate ungrammatical utterances more often than grammatical ones and that children repeat recasts more often than noncorrective reformulations (Bohannon & Stanowicz; Demetras et al.; Farrar, 1992; Furrow, Baillie, McLaren, & Moore, 1993; Hirsh-Pasek et al.). Counterarguments emphasized that such feedback is unreliable, inconsistently provided, and difficult to interpret, and thus that, even if available, negative evidence is not usable (e.g., Grimshaw & Pinker, 1989; Marcus, 1993). Nonetheless, both observational and experimental L1 research documented developmental benefits for children exposed to recasts, at least for certain verb morphology (Baker & Nelson, 1984; Farrar, 1990, 1992; Saxton, 1997; Saxton, Kulcsar, Marshall, & Rupra, 1998), which in turn led to even greater interest in recasts. However, the significance of these findings for the role of negative evidence is difficult to interpret and has been at the center of heated debate. Part of the difficulty lies in the fact that recasts not only provide implicit information regarding the unacceptability of the original utterance (negative evidence that may or may not be usable), but they also provide a target reformulation and thus simultaneously offer positive evidence (Grimshaw & Pinker; Pinker, 1984). Therefore, even empirical data showing benefits for learners exposed to recasts do not demonstrate the usefulness of negative evi-

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dence per se, as the observed advantages could be the result of the positive evidence.

Echoing nativist claims regarding child L1 acquisition, some researchers who posit that SLA is governed by UG have argued that positive evidence is the primary catalyst, if not the sole catalyst, of change in adult L2 competence (e.g., Beck, Schwartz, & Eubank, 1995; Schwartz, 1993). Nonetheless, there are multiple opinions on the role of negative evidence even among researchers investigating SLA from a UG perspective. Some UG researchers adopt positions quite similar to those espoused by L1 researchers and thus argue against any role for negative evidence (e.g., Beck & Eubank, 1991; Beck et al.; Schwartz; Schwartz & Gubala-Ryzak, 1992). However, others have suggested that negative evidence might be required if learners are to acquire certain L1-L2 contrasts in which the L2 permits a subset of structures allowable in the L1 (Trahey & White, 1993; White, 1989, 1991; for discussion, see Lightbown, 1998; Long, 1996). Given the lack of universal success of SLA (Bley-Vroman, 1990), the (un)availability of negative evidence has different implications for logical arguments regarding innate linguistic constraints. Whereas L1 acquisition is seen as an equation with two unknowns, SLA can be considered an equation with three unknowns: The characteristics of both input and innate knowledge are unclear, as is the nature of the L2 system (the right side of the equation). As a result, even a complete lack of negative evidence in the L2 linguistic environment would not constitute proof of an innate contribution, as most L2 learners do not seem to develop nativelike grammar. Thus, in SLA, unavailability is a less compelling argument against a role for negative evidence than in L1 acquisition.

Additional arguments against a role for negative evidence are based on the two-fold difficulty of interpreting and using negative feedback. The learner presumably must first recognize the corrective intent of such feedback (see Carroll, 1995, for an in-depth discussion of this issue). Next, assuming that the learner recognizes that the recast is not simply another (optional) way of expressing the same meaning (Long, 1996), she must identify the source of the error—the "blame assignment problem" (Pinker, 1989, p. 12). Although the challenges associated with investigating learners' attentional processes are well known (see, e.g., Leow, 1998; Schmidt, 1995; Simard & Wong, 2001; Truscott, 1998), some researchers have suggested that implicit feedback often seems to go unnoticed by learners. For example, in their analyses of learner response to negative feedback in L2 classrooms, Lyster and Ranta found that the most common feedback type, recasts, rarely resulted in uptake, or learner acknowledgment of correction (Lyster, 1998; Lyster & Ranta, 1997). In a study that employed a stimulated recall procedure to access learners' interpretation of interactional feedback, Mackey, Gass, and McDonough (2000) found that learners often failed to notice recasts provided in response to morphosyntactic errors. Of course, as these researchers recognized, neither uptake nor self-reports can provide a complete picture of learners' attentional processes or interpretation of L2 input. Moreover, it is possible that learners need not no-

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tice negative evidence at the level of awareness for it to have a beneficial effect on the developing L2 system. In other words, negative evidence theoretically could be beneficial without learners acknowledging it in any way or even consciously interpreting it as such. For these reasons, research that utilizes developmental measures to assess the effects of exposure to negative evidence is crucial.

Although a number of studies have explored the effects of feedback on L2 development or included feedback in experimental treatments, in many cases negative evidence was not isolated as an independent variable. Instead, negative evidence was conflated with other variables such as explicit instruction. For example, in a series of studies conducted by Herron and Tomasello comparing the effects of negative feedback and models (Herron & Tomasello, 1988; Tomasello & Herron, 1988, 1989), learners in the feedback groups were provided metalinguistic grammar explanations (and in one case, production opportunities) not afforded to learners in the control groups (see Beck & Eubank, 1991, for a critique of these studies; Tomasello & Herron, 1991, for a response; and Long, 1996, for a discussion). Similarly, classroom research on focus on form (Long, 1991), form-focused instruction (Spada, 1997), and processing instruction (VanPatten, 1996) has investigated negative feedback in conjunction with other instructional techniques, such as explicit grammar instruction, textual enhancement, and various other activities designed to promote attention to form (e.g., Day & Shapson, 1991; Doughty & Varela, 1998; Leeman, Arteagoitia, Fridman, & Doughty, 1995; Trahey & White, 1993; VanPatten & Cadierno, 1993; VanPatten & Sanz, 1995; White, 1991; Williams & Evans, 1998). Even studies that investigated the isolated effects of recasts (e.g., Long et al., 1998; Mackey & Philp, 1998) do not provide unambiguous data regarding the role of negative evidence, as they were designed to answer other research questions. Thus, whereas numerous studies have investigated various aspects of feedback, there have not been studies that isolated negative evidence as an independent variable. Given the importance of determining the effects of negative evidence for theoretical concerns regarding the types of input utilized in language acquisition, this is an important area for continued research.

Salience

Although perceptual salience has been notoriously difficult to define, psycholinguistic definitions tend to concur that it is based on "particular characteristics that seem to make an item more visually or auditorily prominent than another" (Dulay, Burt, & Krashen, 1982, p. 33). Factors that are frequently hypothesized to play a role in determining salience include phonetic substance, stress, pitch, word position, and utterance position (Brown, 1973; Slobin, 1973). Segments that are sonorous, stressed, or realized with high pitch are said to be particularly salient. Further, the beginnings and ends of words and utterances seem to be particularly salient positions, and free morphemes are hypothesized to be inherently more salient than bound morphemes. Other

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factors that are closely tied to salience are frequency, grammatical complexity, semantic complexity, and communicative value (Bardovi-Harlig, 1987; Brown; Gass, 1980; Goldschneider & DeKeyser, 2001; Harley, 1993, 1998; Larsen-Freeman & Long, 1991; VanPatten, 1989, 1996).

Of course, researchers who posit a role for salience in linguistic development do not suggest that all salient forms are attended to by learners nor that learners attend only to perceptually salient forms, as attention is presumed to depend on a wide range of factors including task conditions, learner readiness, and individual idiosyncrasies (Loschky & Bley-Vroman, 1993; Robinson, 2001; Skehan, 1996; VanPatten, 1989, 1996). Nonetheless, there is some empirical evidence that salient forms are more likely to be attended to by learners, as stress and utterance position seem to affect learners' perceptions of L2 input (Barcroft & VanPatten, 1997; Kim, 1995; Rosa & O'Neill, 1998). In terms of development, salience and salience-related factors have been proposed as an explanation of morpheme acquisition orders (Brown, 1973; Dulay & Burt, 1978; Goldschneider & DeKeyser, 2001; Slobin, 1973). Further, the notion that highly salient forms will be acquired before nonsalient forms is consistent with current thinking regarding the role of attention. If forms must be attended to before they can be acquired, as is now widely maintained, then it stands to reason that forms that are more visually or auditorily prominent, with all else being equal, stand a better chance of being attended to and acquired.

This logic forms part of the theoretical rationale for instructional treatments designed to increase learner attention to form (e.g., Doughty & Varela, 1998; Leeman et al., 1995; Williams & Evans, 1998). Although these studies found advantages associated with a combination of techniques designed to promote noticing, there is also a small body of research that has investigated the independent effects of enhancing the perceptual salience of L2 forms (Alanen, 1995; Jourdenais, Ota, Stauffer, Boyson, & Doughty, 1995; Leow, 1997; Overstreet, 1998; Robinson, 1996; Shook, 1994) by comparing the effects of exposure to "unenhanced" printed input and "enhanced" printed input in which specific forms were made visually more salient via the manipulation of typographical features such as font size and color. Some of these studies attempted to measure the effect of enhancement on learner noticing (e.g., Jourdenais et al.; Leow), whereas others assessed development (e.g., Alanen; Robinson; White, 1998), and the specific forms investigated varied from study to study. There is also a fair amount of variation in the results of this research: In some cases, enhancements seemed to promote greater noticing or development, at least for treatment items (e.g., Alanen; Jourdenais et al.; Robinson; Shook); in others, exposure to both enhanced and unenhanced texts was associated with pretest-posttest gains (e.g., Leow; White); in still others, there were no documented gains in either group (e.g., Overstreet). Although the results of this research are far from conclusive, they tentatively indicate that textual enhancement of written materials can promote learners' noticing of target forms in reading passages, particularly when the target forms are

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nonsalient.[1] To the best of my knowledge, the effects of artificially enhancing the salience of forms in oral input have not been investigated.

Interaction

The increased focus on the role of attention and noticing in SLA is also reflected in recent interaction research exploring the effects of the linguistic environment on the learner's cognitive processes (e.g., Gass, 1997; Long, 1996). Following on the heels of Krashen's (1977) input hypothesis, which maintained that exposure to communicative input in a setting that promotes comprehension and reduces anxiety is the sole requirement for SLA, Long (1983) hypothesized that input, although necessary, is insufficient for L2 development. Long argued that, in addition to input, participation in interaction is also required. His initial version of the interaction hypothesis purported that interaction promotes development by facilitating comprehension, which in turn fosters development. However, Long's (1996) reformulation suggests that the benefits of interaction are multifaceted. Indeed, current thinking is that participation in interaction is beneficial because it leads to the negotiation of meaning, provides exposure to negative feedback, offers opportunities for modified production, and helps learners segment the linguistic input (Gass; Long, 1996; Pica, 1992, 1994; Swain, 1985, 1995).[2] This change of emphasis from comprehension to the cognitive processes associated with linguistic development is also reflected in empirical studies of interaction. Whereas early research focused on describing interactional features (e.g., Hatch, 1978; Long, 1981) and on investigating the effect of interaction on comprehension (e.g., Pica et al., 1987), more recent research has investigated the effects of interaction on L2 development (e.g., Ellis & He, 1999; Ellis, Tanaka, & Yamazaki, 1994; Gass & Varonis, 1994; Loschky, 1994; Mackey, 1999; Polio & Gass, 1998). Various measures of development have been used to compare the linguistic ability of learners who participate in interaction to those who do not, with many studies using a pretest-posttest design. Results showed benefits for participation in interaction, either in terms of lexical acquisition (Ellis & He; Ellis et al.; Loschky), improved NS comprehension of subsequent production (Gass & Varonis; Polio & Gass), or the use of forms associated with more advanced developmental stages (Mackey). This research is important in that it provides evidence of a direct relationship between interaction and development. However, because of the multiplicity of interactional features, these studies cannot tell us specifically which interactional features are beneficial nor in what ways.

Observational studies of NNSs interacting with other NNSs or with NSs can offer insights regarding the various ways in which feedback is provided as well as the ways in which learners respond to different types of feedback. There is now clear evidence that NNSs modify their production in response to various types of signals from their interlocutors and that they often incorporate corrections into their subsequent turns (Gass & Varonis, 1989; Lyster,

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1998; Lyster & Ranta, 1997; Mackey, Oliver, & Leeman, in press; Oliver, 1995, 2000; Pica, 1992, 1994, 1996; Pica, Holliday, Lewis, & Morgenthaler, 1989). However, the lack of developmental measures in these studies (e.g., pre- and post-tests) makes it difficult to establish a direct relationship between any specific discourse structure and acquisition. Moreover, when interactional features are analyzed only in terms of immediate NNS responses, any delayed effects of feedback cannot be observed (Gass, 1997; Mackey, 1999; Mackey & Philp, 1998).

Experimental research on specific interactional features and feedback types, in contrast with observational studies, makes it possible to investigate the isolated effects of individual features, such as recasts and clarification requests, on L2 development. Findings from experimental and quasi-experimental studies of recasts have suggested that this type of interactional feedback can have beneficial effects on learner performance on subsequent L2 tasks (Doughty & Varela, 1998; Long et al., 1998; Mackey & Philp, 1998). These studies represent an important contribution to the understanding of SLA in that they isolate specific discourse structures that promote L2 development and thus provide insights as to the benefits of interaction as well as feedback. However, as I discuss in the next section, L2 findings that exposure to recasts can promote development do not have clear implications vis-à-vis the role of negative evidence.

Recasts, Negative Evidence, and Enhanced Salience

As was previously discussed, recasts have been central in debates regarding the role of negative evidence in language acquisition. Although recasts are frequently classified as implicit negative evidence (e.g., Bohannon et al., 1990; Long, in press, as cited in Long & Robinson, 1998), they also provide positive evidence, making it difficult to ascertain the source of any benefits they may provide (Grimshaw & Pinker, 1989; Long, 1996; Pinker, 1984, 1989). For this reason, some recent research has controlled for exposure to positive evidence by comparing the effects of models (positive evidence) and recasts (positive and negative evidence). In the L1 arena, Saxton and colleagues found that exposure to recasts was more effective than exposure to models for learning irregular English past-tense forms (Saxton, 1997; Saxton et al., 1998), whereas Farrar (1990) found correlations between exposure to recasts in child-directed speech and subsequent use, at least for certain bound morphemes. In L2 research, Long et al. (1998) found greater production of the targeted Spanish adverb placement (i.e., SVAO order) by learners exposed to recasts than by learners exposed to models. At first glance, these studies appear to identify negative evidence as the source of developmental benefits afforded by recasts, given the similar quantities of positive evidence provided in all groups. However, it seems that there may be at least one other variable that was not controlled for and that may account for the differences between groups. In particular, recasts may not only provide positive and negative evidence, but

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they may also enhance the salience of target forms, which could also be responsible for the observed benefits.

In fact, numerous researchers have suggested that recasts can affect the salience of linguistic forms (e.g., Farrar, 1990; Long, 1996; Long et al., 1998; Nelson, 1987; Saxton, 1997). Specifically, they proposed that when two utterances that differ slightly are juxtaposed, the salience of the different element is enhanced. In the case of recasts, the juxtaposition of the recast and learner utterance may highlight whichever target forms appear in the reformulation but were missing from the nontarget original, especially in the case of forms with low salience, such as bound morphemes. As Farrar noted, "recasts may be particularly effective in isolating a morpheme as a distinct lexical unit, since they immediately provide a contrast to the preceding utterance missing that morpheme, making it perceptually more salient" (p. 621).

This enhanced salience could then promote development in at least two ways. Previous accounts have suggested that the enhanced salience leads the learner to compare the target form with the one she just produced, a comparison presumably promoted by the juxtaposition of the forms and by the fact that the meaning of the target form is clear (Farrar, 1990, 1992; Long et al., 1998; Nelson, 1987; Saxton, 1997). These accounts explicitly or implicitly attribute a role to negative evidence, as this juxtaposition and the resultant enhanced salience are hypothesized to promote a comparison between the structure produced by the learner and the structure contained in the recast, which results in a rejection of the former in favor of the latter. A second possibility is that no such comparison or rejection is required. Like the first explanation, this account posits that juxtaposition may enhance the salience of the target form and promote learner noticing. However, rather than promoting a rejection of the nontarget form, enhanced salience may simply increase the chances that the target form is attended to and incorporated into the developing grammar. Although it does not rule out a role for negative evidence, this account suggests that enhanced salience may offer benefits in and of itself, a suggestion that is consistent with recent theoretical and empirical research on the role of salience and noticing in SLA previously discussed. If enhanced salience can provide benefits even without negative evidence, then there are two possible sources of the benefits associated with exposure to recasts as well as two important differences between recasts and models. Empirical comparisons of recasts to models have not taken this possibility into account, and thus they have controlled for positive evidence but not for enhanced salience.

In summary, the role of negative feedback has been central in both theoretical discussions of the types of input required for language acquisition and empirical investigations of communicative interaction. On the basis of logical argumentation, nativists have argued that negative evidence cannot play a significant role in language acquisition, whereas researchers investigating interaction have suggested that one important benefit of interaction may be the negative feedback that is often provided. In light of the seemingly contradic-

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tory nature of these claims, there is a need to build on the still-limited research base that has documented benefits for recasts and also to attempt to answer the crucial question of how recasts may promote L2 development. Because recasts provide both negative evidence and positive evidence in a way that may make positive evidence especially salient, it is essential to control for both of these independent features in empirical research.

With these goals in mind, the present study investigated the effects of four different types of interactional input on the L2 development of Spanish noun-adjective agreement. Negative evidence and enhanced salience of positive evidence were experimentally isolated to address the following research questions:

1. Does exposure to input with *recasts* (i.e., negative evidence and enhanced salience of positive evidence) lead to greater L2 development than exposure to input with unenhanced positive evidence?
2. Does exposure to input with *negative evidence* (without enhanced salience of positive evidence) lead to greater L2 development than exposure to input with unenhanced positive evidence?
3. Does exposure to input with *enhanced salience of positive evidence* (without negative evidence) lead to greater L2 development than exposure to input with unenhanced positive evidence?
4. If exposure to *recasts* leads to greater L2 development than exposure to input with unenhanced positive evidence, can these benefits be attributed to either *negative evidence* or *enhanced salience of positive evidence*?

METHOD

Participants

The 74 participants in this study were volunteers recruited from first-year undergraduate Spanish courses at a private, mid-Atlantic university and were L1 speakers of English. The choice of participants was motivated by the fact that learners at this level have relatively low proficiency but have generally acquired enough Spanish to allow them to participate in task-based interaction. The participants, 38 males and 36 females, were randomly assigned to four treatment groups: recast, negative evidence, enhanced salience, and control.

Target Structure

The criteria for the choice of target structure in the present study were motivated on theoretical, methodological, and pedagogical grounds. On all counts, it was decided that the ideal structure would have low perceptual salience and limited communicative value and be likely to go unacquired by classroom learners despite its frequency in the L2 input—three characteristics that are in all probability related. This combination of characteristics was considered ideal: (a) to isolate perceptual salience as an experimental variable and differentiate between the enhanced salience and control groups in this regard; (b)

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to allow for successful task completion by participants in the groups that were not exposed to negative evidence of any kind; and (c) to increase the pedagogical relevance of the results by investigating one type of form likely to go unacquired by learners exposed to purely communicative input (see Harley, 1989, 1998; Pica, 1994; Terrell, Baycroft, & Perrone, 1987; VanPatten, 1989). Noun-adjective agreement was selected as the target structure because it is realized via bound unstressed morphemes, it has extremely limited communicative value, and previous research had found that agreement is often unacquired by classroom learners of Romance languages, despite its high frequency in the input (e.g., Fernández-García, 1999; Finnemann, 1992; Harley, 1998; Hayer, 1997).

Spanish has a binary gender system in which nouns are either masculine or feminine. Although the grammatical gender of animate nouns almost always corresponds to semantic gender, the gender of inanimate nouns is arbitrary.[3] All determiners and adjectives must agree in gender and number with the noun modified, as shown in (2) and (3).

(2) a. *el libro pequeño* (masculine)
"the small book"
b. *la mesa pequeña* (feminine)
"the small table"

(3) a. *los libros pequeños* (masculine)
"the small books"
b. *las mesas pequeñas* (feminine)
"the small tables"

Materials

Testing Tasks. The study employed a pretest/posttest/second-posttest design in which the three tests consisted of oral picture-difference tasks that participants completed individually (rather than in dyads, as is often the case with such tasks). Participants were given two digitally altered photographs and asked to find as many differences as they could. In each of the three versions of the task, nondistractor items consisted of discrepancies in the color, number, or placement of various brightly colored objects. Thus, the task created a communicative need to use noun-adjective agreement as participants described the differences between the pictures, as can be seen in (4) and (5).[4]

(4) *En A la silla es amarilla pero en B la silla es roja.*
"In A the chair is yellow but in B the chair is red."

(5) *En A los libros son blancos y en B los libros son amarillos.*
"In A the books are white and in B the books are yellow."

Each version included 32 target items that were balanced in terms of gender and number. The pretest was administered immediately prior to treat-

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ment, the first posttest immediately following treatment, and the second posttest approximately 1 week later.

Treatment Tasks. Participants met individually with the researcher for treatment sessions in which they worked together to complete an object-placement task and a catalog-shopping task. Both of these treatment tasks were information-gap activities that created a communicative need to use noun-adjective agreement, thus maintaining an overall focus on meaning while simultaneously creating obligatory contexts for the target structure. Rather than two-way information-gap tasks in which interlocutors share information at any time during the activity, the treatment tasks in the present study consisted of two phases during each of which only one interlocutor provided information. The first phase required participants to produce the target structure, whereas the second phase required them to act on the basis of the information provided by the researcher.

Procedures

Data Collection. Both testing and treatment were carried out individually for each participant. Pretests, treatment, and immediate posttests were administered in a single session lasting approximately 1 hour. After completing a consent form, participants performed several distractor tasks, some of which they did independently and some of which involved interaction with the researcher, and then completed the pretest that was presented as another activity. After the treatment tasks (approximately 20 minutes), participants completed the immediate posttest. When participants returned a week later, they engaged in another distractor task with the researcher and completed the second posttest. Finally, all participants completed a short, debriefing questionnaire with questions regarding their perception of the activities, the interaction with the researcher, and whether feedback was provided.

Treatment. As was described in the "Materials" section, the first part of each treatment task required learners to provide directions to the researcher. In the recast group, the researcher reformulated all ungrammatical production of noun-adjective agreement. In (6), the learner's utterance is ungrammatical because the adjective *rojo* "red" does not agree with the feminine noun *taza* "cup." The researcher's response signals comprehension and provides a targetlike reformulation of the learner's original meaning.

(6) Recast group
NNS: *En la mesa hay una taza *rojo.*
"On the table there's a *red cup."
R: *Um hmm, una taza roja. ¿Qué más?*
"Um hmm, a red cup. What else?"

Thus, participants in the recast group were provided with implicit negative evidence regarding the unacceptability of their nontarget utterances in a way

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that also enhanced the salience of positive evidence. The recast was not stressed or emphasized, and care was taken to be consistent in the delivery among participants.[5]

Participants in the negative evidence group were also provided with implicit negative evidence contingent on ungrammatical noun-adjective agreement. As in the recast group, this negative evidence was designed to inform participants of the unacceptability of the original utterance implicitly and to indicate the specific source of the problem. However, it differed from recasts in that it did not contain a reformulation of the target form, as shown in (7), and thus did not enhance the salience of target forms.

(7) Negative evidence group
NNS: *En la mesa hay una taza *rojo.*
"On the table there's a *red cup."
R: *Um hmm, pero tú dijiste 'una taza *rojo.' ¿Qué más?*
"Um hmm, but you said 'a *red cup.' What else?"

In contrast to the recast and negative evidence groups, the third and fourth groups (enhanced salience and control) did not receive any feedback on noun-adjective agreement. Thus, the response to nontarget production in these two groups was as shown in (8).

(8) Enhanced salience and control groups
NNS: *En la mesa hay una taza *rojo.*
"On the table there's a *red cup."
R: *Um hmm, ¿Qué más*
"Um hmm. What else?"

Following Long et al. (1998), learners in all groups were prompted to go on to the next object through the use of the question *¿Qué más?* "What else?" to avoid the production of modified output (see [6]–[8]). No feedback was provided on any other forms in any group.

In the second part of each task, learners had to act on the basis of the researcher's directions. Thus, in this part of the task learners in all groups were exposed to positive evidence. However, in the enhanced salience group stress and intonation were used to enhance the salience of the target form. To maintain consistency with the recast group, only the salience of the adjective ending was enhanced, as in (9).

(9) R: *La manzana rojA está en la mesa.*
"The red apple is on the table."

Learners in all other groups were exposed to unenhanced input, as in (10).

(10) R: *La manzana roja está en la mesa.*
"The red apple is on the table."

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Consistency across Groups. A number of steps were taken to control for factors that were not the specific target of investigation but that otherwise could have affected the results. For example, learners in all groups were provided with comparable opportunities for production, and the possible effects of modified production were controlled for by providing all learners with a prompt to go on to the next item, as was described in the "Treatment" section. The quantity of positive evidence to which learners were exposed was also carefully controlled. Specifically, to ensure that participants in the recast group were not exposed to a greater number of positive exemplars than participants in other groups, a careful tally of the number of recasts provided was maintained, and this number was subtracted from the input that the researcher provided to this group during the second part of each task. Similarly, it was noted that in the recast group, the salience of target forms was enhanced only in response to nontarget utterances, and thus the number of enhanced exemplars to which each participant was exposed depended on the number of ungrammatical utterances produced by that individual. This was also the case for the provision of negative evidence in both the recast and negative evidence groups. Therefore, in the enhanced salience group, rather than enhancing the salience of all target forms, a tally was maintained of the number of nontarget exemplars of noun-adjective agreement produced by each participant during the first part of each task. The number and type of exemplars in which salience was enhanced (in the second part of each task) was then matched to the number of errors in the first part of the task.

Care was also taken to operationalize the negative evidence and enhanced salience treatments in such a way that these constructs were comparable in all relevant groups. For this reason, to maintain consistency with the recast treatment, the negative evidence provided to participants in the negative evidence group was implicit, and it signaled the exact location of the original deficiency without providing any metalinguistic or grammar explanation. A means of enhancing perceptual salience that would be equivalent to recasts was also sought. Although there are a number of factors that can make a form more prominent than another (as previously described), in recasts it is the juxtaposition of the reformulation and the nontarget original that enhances perceptual salience (Farrar, 1990; Long, 1996; Long et al., 1998; Nelson, 1987; Saxton, 1997). However, this juxtaposition is also what conveys negative evidence status on recasts, as the reformulation may imply the unacceptability of the original utterance (Farrar, 1992; Nelson; Saxton). Thus, the only way to provide positive evidence with salience enhanced via juxtaposition is by providing a recast. Clearly, this was not a treatment option for the enhanced salience group, given that it would eliminate treatment differences between groups.

Providing an identical type of enhanced salience to the recast and enhanced salience groups also would have conflated the two variables that the present study sought to disentangle. Thus, it was important to devise a comparable means of enhancing the salience of positive evidence provided to the

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Table 1. Variables in treatment groups

Type	Variables	Groups			
		Recasts	Negative evidence	Enhanced salience	Control
Independent	Negative evidence	+	+	–	–
	Enhanced salience of target forms	+	–	+	–
Controlled	Positive evidence	+	+	+	+
	Production opportunities	+	+	+	+

enhanced salience group. It immediately became clear that it was not possible, nor desirable, to manipulate certain salience-related factors, such as whether noun-adjective agreement was realized through free or bound morphemes, nor could the phonetic substance, syllabicity, or sonority be modified. The use of stress and intonation was chosen as the most appropriate means by which to enhance the salience of agreement morphemes in the enhanced salience group because, like juxtaposition, the manipulation of these features provided an implicit means of enhancing perceptual salience. In both groups, then, perceptual salience was enhanced, whereas the other aspects of salience, such as frequency, communicative value, and task conditions, were tightly controlled for in experimental treatments and were consistent across groups. In sum, the research methodology employed here allowed negative evidence and enhanced salience to be isolated and manipulated as independent variables in the four treatment conditions while other crucial factors remained constant (see Table 1).

Transcription, Coding, and Scoring. All 222 tests (three tests for each of the 74 participants) were transcribed by the researcher. To ensure the reliability of the transcription, 10% of the tests (22) were randomly chosen and transcribed by a second person, with intertranscriber reliability of 95.4%. To facilitate the coding and analysis of the over 9,800 occurrences of targeted test items, a relational database was programmed in which each occurrence of a targeted noun and adjective constituted one record. For each record, determiner-noun and noun-adjective agreement were coded as separate categories, with number and gender coded independently. Approximately 25% of the data was coded by a second person, with interrater reliability calculated at 99.9% (2,497 of the 2,500 records).

Because previous studies have found that number and gender agreement may not be acquired simultaneously in either L1 or L2 Spanish (Boyd, 1975; Ervin-Tripp, 1974; Finnemann, 1992; Hayer, 1997), independent scores were calculated for number and gender agreement of adjectives. Data analysis revealed that the overwhelming tendency of learners in all groups was to overuse the masculine singular form. Thus, adjective agreement with feminine and plural nouns was considered to be the most reliable reflection of the learners'

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Table 2. Descriptive statistics and results of ANOVA for gender agreement

	Recast		Negative evidence		Enhanced salience		Control		ANOVA
Test	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*
Pretest	15.16	28.13	6.71	10.47	14.89	20.17	7.44	14.50	1.022
Posttest	57.40	35.95	49.92	44.31	72.45	28.08	18.65	24.18	8.321*
Posttest 2	56.78	39.74	43.36	41.26	70.55	31.61	26.20	35.14	4.817*

Note. The *n* for the recast, negative evidence, and enhanced salience groups was 18 for all tests; the *n* for the control group was 19 for all tests.
*$p < .05$.

Table 3. Descriptive statistics and results of ANOVA for number agreement

	Recast		Negative evidence		Enhanced salience		Control		ANOVA
Test	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*
Pretest	40.67	31.45	31.77	35.02	40.03	40.34	17.97	20.51	1.469
Posttest	86.96	15.27	68.22	40.22	80.38	25.82	39.97	35.07	6.519*
Posttest 2	79.95	27.31	63.57	40.98	82.51	23.69	37.78	36.12	5.875*

Note. The *n* for the recast and control groups was 14 for all tests, the *n* for the negative evidence group was 17, and the *n* for the enhanced salience group was 18.
*$p < .05$.

agreement system, following Harley (1998) and Finnemann. For this reason, masculine nouns were excluded from the calculation of gender-agreement scores, and singular nouns were excluded from the calculation of number-agreement scores. Also excluded from gender-agreement scores were utterances containing adjectives that do not have distinct feminine and masculine forms as well as those in which the noun appeared with a nontarget determiner.[6] Because the number of obligatory contexts varied among participants, all scores were calculated as ratios of target agreement to obligatory contexts.

Data Analysis. To assess the relative effects of the four treatment conditions, one-way analyses of variance (ANOVA) were performed on gender and number scores from each test. When these ANOVAs revealed significant between-group differences, Scheffé post hoc procedures were carried out to locate the source of differences.

Results

Summaries of gender- and number-agreement scores on the three tests are presented in Tables 2 and 3, respectively.[7] The ANOVAs performed on pretest

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Table 4. Scheffé multiple comparisons among groups for gender and number scores

Test	Gender comparison	*p*	Number comparison	*p*
Posttest				
	Recast = negative evidence	.93	Recast = negative evidence	.43
	Recast = enhanced salience	.62	Recast = enhanced salience	.95
	Recast > control	.01	Recast > control	.00
	Negative evidence = recast	.93	Negative evidence = recast	.43
	Negative evidence = enhanced salience	.27	Negative evidence = enhanced salience	.72
	Negative evidence = control	.06	Negative evidence = control	.10
	Enhanced salience = recast	.62	Enhanced salience = recast	.95
	Enhanced salience = negative evidence	.27	Enhanced salience = negative evidence	.72
	Enhanced salience > control	.00	Enhanced salience > control	.01
Posttest 2				
	Recast = negative evidence	.76	Recast = negative evidence	.59
	Recast = enhanced salience	.74	Recast = enhanced salience	.99
	Recast = control	.11	Recast > control	.01
	Negative evidence = recast	.76	Negative evidence = recast	.59
	Negative evidence = enhanced salience	.20	Negative evidence = enhanced salience	.41
	Negative evidence = control	.58	Negative evidence = control	.20
	Enhanced salience = recast	.74	Enhanced salience = recast	.99
	Enhanced salience = negative evidence	.20	Enhanced salience = negative evidence	.41
	Enhanced salience > control	.01	Enhanced salience > control	.00

scores revealed no significant differences among groups for gender or number agreement at the outset of the study, which suggested that posttreatment differences were not the result of differences in prior knowledge of the structure. Mean gender-agreement scores for all groups were higher on the posttests than the pretests with little difference in scores on the two posttests. Number-agreement scores were higher than gender scores but followed generally the same pattern, with all groups performing better on posttreatment measures.

Because the ANOVAs conducted on pretest scores revealed no significant differences among groups (see Tables 2 and 3), it was possible to assess whether the four treatment conditions led to different learning outcomes by comparing the groups' posttreatment scores. These ANOVAs revealed significant differences among groups on the first and second posttests for both gender and number agreement. Scheffé post hoc analyses carried out to locate the source of these differences indicated that on the immediate posttest the recast and enhanced salience groups' gender- and number-agreement scores were significantly higher than the control group's scores (see Table 4). In contrast, there were no significant posttreatment differences between the nega-

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tive evidence and control groups,[8] nor were significant posttreatment differences found among the recast, enhanced salience, and negative evidence groups on either number or gender agreement. Scheffé post hoc analyses of the second posttest generally maintained this pattern, with the sole exception that for gender agreement only the enhanced salience group's scores were significantly higher than the control group's scores. However, for number agreement, both the recast and enhanced salience groups significantly outperformed the control group, whereas there were no significant differences between the negative evidence group and the control group. No other statistically significant contrasts were found.

In sum, only the recast and enhanced salience groups significantly outperformed the control group on any posttreatment measures (despite the lack of significant differences on the pretest). In fact, the recast and enhanced salience groups' performance was superior to that of the control group on all four posttreatment measures except the second-posttest gender-agreement scores, in which only the enhanced salience group significantly outperformed the control group. At no point did the negative evidence group perform significantly better than the control group. Thus, significant advantages were found for exposure to recasts and to enhanced salience but not for exposure to negative evidence, and the benefits of exposure to enhanced salience were equivalent to those associated with exposure to recasts.

DISCUSSION

One of the goals of the present study was to investigate the effects of providing L2 learners with recasts during communicative interaction (research question 1). The fact that the recast group performed significantly better than the control group for both gender and number agreement on the immediate posttest and for number agreement on the second posttest suggests that exposure to input with recasts can promote greater L2 development than input with unenhanced positive evidence, at least for the forms, learners, and conditions investigated here. Although this finding is consistent with previous research on recasts (e.g., Long et al., 1998; Mackey & Philp, 1998), the current study extends our knowledge in that it provides empirical evidence of the beneficial effects of recasts on forms of low perceptual salience and limited communicative value. Interaction research has suggested that it is often the breakdown of communication that leads speakers (NSs and NNSs) to provide interactional feedback (Long, 1996; Pica, 1994), and previous experimental studies have found that exposure to recasts offers advantages for the development of forms with relatively high communicative value such as question forms (i.e., Mackey & Philp) or adverbs (i.e., Long et al.). The results of the current study suggest that the provision of recasts can have beneficial outcomes even when there is no communication breakdown and the forms have little semantic weight.

A second goal of the current study was to empirically explore the effects of

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negative evidence on SLA (research question 2). In this study, the negative evidence group did not outperform the control group on any of the four posttreatment measures. Thus, the present study did not find statistically significant advantages for exposure to a combination of negative evidence and unenhanced positive evidence, in comparison to exposure to unenhanced positive evidence.

At first glance, the results obtained here seem to contradict previous research that found at least short-term benefits for exposure to negative evidence (e.g., Izumi & Lakshmanan, 1998; White, 1991). However, in those studies, negative evidence was not isolated from other potentially important variables, such as metalinguistic explanation. Nor was negative evidence isolated from other variables in studies of feedback (e.g., Tomasello & Herron, 1991), form-focused instruction (e.g., Leeman et al., 1995; Spada & Lightbown, 1993), or experimental studies investigating interaction as a monolithic construct (e.g., Ellis et al., 1994; Mackey, 1999). Even previous experimental studies of recasts (e.g., Long et al., 1998; Mackey & Philp, 1998) told us little about the effects of negative evidence per se, as recasts simultaneously provide positive evidence, seemingly in a context that enhances the salience of this positive evidence.

The current study's finding that exposure to implicit negative evidence did not result in significant advantages is consistent with theoretical arguments against the utility of this input type in SLA put forward by generativist researchers (e.g., Beck et al., 1995; Schwartz, 1993; Schwartz & Gubala-Ryzak, 1992) as well as with connectionist models, which emphasize the importance of exposure to positive evidence and the concomitant strengthening of associative patterns (e.g., MacWhinney, 1987; Plunkett, 1995). However, despite the lack of significant advantages for the negative evidence group in comparison to the control group, it would be premature to rule out the possibility that exposure to negative evidence can have beneficial outcomes. First, the absence of evidence of any positive effects for an experimental variable should not be confused with evidence of absence of such effects. In other words, the failure to document benefits for negative evidence in this study does not necessarily mean that benefits do not exist. Instead, the lack of significant differences may be due to the experimental conditions themselves. Given that the negative evidence group did improve more than the control group, it is possible that a larger sample size or perhaps more prolonged treatments might have resulted in statistically significant differences between the negative evidence and control groups. Moreover, there remains a need to empirically isolate and determine the effects of different types of negative evidence as well as to explore the effects on other forms.

The third goal of this study was to investigate whether exposure to oral input containing positive evidence with enhanced salience would lead to greater developmental gains than exposure to oral input with unenhanced positive evidence (research question 3). The enhanced salience group's superior performance for both gender and number agreement on the posttest and

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second posttest in comparison to the control group suggests that artificially enhancing the salience of target forms in oral input can lead to greater learner accuracy than simply exposing learners to unenhanced positive evidence. Although similar results were obtained in some studies of enhanced salience in written input (e.g., Jourdenais et al., 1995), the present study represents a first attempt to explore whether this is the case in oral input.

The fact that the enhanced salience that led to greater learner accuracy was provided during meaning-based interaction is also noteworthy. If the advantages of the enhanced salience group can be attributed to increased learner attention to target forms—a plausible account that was not investigated directly—this would suggest that it is possible to increase learner attention to form without sacrificing a focus on meaning. Learners in the present study were engaged in communicative information-gap activities at the time the enhancement was provided. Thus, any increased attention to form was integrated within an overall focus on meaning, rather than in a separate form-focused instructional activity (see Leeman et al., 1995).

Let us turn now to the fourth goal of the present study, the exploration of how recasts promote L2 development (research question 4). Recasts have been discussed primarily in terms of negative evidence, and even those discussions of recasts that make reference to salience have implicitly or explicitly relied on negative evidence to account for the benefits associated with exposure to this feedback type (e.g., Farrar, 1990, 1992; Long et al., 1998; Nelson, 1987; Saxton, 1997). Following these researchers, I suggested that recasts enhance the salience of target forms and thus increase the likelihood that the learner will attend to those forms. However, I raised the possibility that this enhanced salience could be sufficient in and of itself to account for the benefits of recasts, regardless of whether negative evidence is provided (or interpreted as such). The results obtained here are consistent with this second possibility, and they seem to indicate that there may be no need to attribute the benefits of recasts to negative evidence. Indeed, if the benefits of recasts were due to negative evidence, the negative evidence group should have outperformed the control group, which it did not. In contrast, the benefits of recasts can be accounted for by the enhanced salience of positive evidence, given that the enhanced salience group significantly outperformed the control group on all posttreatment measures. Moreover, exposure to recasts did not offer any advantages in comparison with exposure to positive evidence with enhanced salience (without negative evidence).

It should be noted that neither the recast nor the enhanced salience group demonstrated significant advantages in comparison to the negative evidence group. Such advantages might have suggested that enhanced salience is the sole source of the benefits of recasts. Of course, this lack of significant advantages may be due to the specific conditions of the study such as length of treatment and sample size, among others. However, another possibility that should not be overlooked is that more than one feature of recasts can promote development. In other words, although the results of the current study

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suggest that negative evidence is not the crucial factor in recasts, they do not rule out the possibility that the negative evidence, or the combination of positive evidence with enhanced salience and negative evidence, may also be beneficial.

CONCLUSION

The findings reported here are highly suggestive regarding the role of attention and salience in SLA, given that the group exposed to input with enhanced salience demonstrated significant advantages over the group exposed to unenhanced input. A logical interpretation of this finding is that enhancing the salience of certain forms led learners to attend to those forms. However, because direct measures of attention were not employed, there is still a need to further investigate learners' attentional processes and to explore the relationship between attention and L2 development. Moreover, these results are consistent with recent suggestions that one of the benefits of participating in interaction is that it can help learners make more efficient use of their attentional resources (e.g., Gass, 1997; Long, 1996). It seems that some interactional features, recasts among them, can lead to greater development by highlighting specific forms in the input.

Given that another benefit of participating in interaction is hypothesized to be the opportunities it provides for output (see Swain, 1995), the present study controlled for production opportunities, which were comparable in all groups. Future studies will empirically isolate production as an independent variable, both to determine the effects of production itself and to explore whether certain characteristics of the input can lead to advantages even when learners do not have any production opportunities. There is also a need to explore whether there are effects for the order in which positive evidence and production opportunities are provided. If it turns out that it is advantageous for learners to have attempted to produce a structure before being exposed to input for that structure, it would lend support to the notion that one value of output is that it can lead learners to recognize (at some level) what they are unable to express, which may in turn lead them to attend to those forms in subsequent input. The provision of negative feedback might also lead learners to make more efficient use of the input to which they are later exposed.

It is important to recognize that the present study was undertaken in a laboratory, under conditions quite different from those found in the classroom—one place where recasts have been observed to occur. The treatments in the present study were intensive, in that tasks were designed to elicit high numbers of obligatory contexts, the feedback provided was consistent, and other nontarget forms were ignored, thus making the classroom and "real world" implications of these findings uncertain. It would clearly be imprudent to attempt to generalize to other settings and other types of learners on the basis of the present findings. Indeed, the lacuna of research on uninstructed learn-

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ers is well known, and the need to investigate the effects of treatments in a variety of settings, on a variety of forms, widely recognized.

For this reason, not only should other studies investigate the effects of various input, feedback, and interaction types on the acquisition of other morphosyntactic structures, but they must also explore the effects on additional aspects of the L2 such as phonology and lexis. Further, it is essential that future studies be undertaken in a broad range of settings with various types of learners. Nonetheless, in some cases, conducting research in a laboratory environment allows for the development of research methodologies that would be difficult to utilize in more naturalistic settings (Hulstijn, 1997). The present study is a case in point. Here, the laboratory setting made it possible to empirically disentangle variables that co-occur in a single discourse structure while simultaneously maintaining constant other variables. The fact that interactional features do not always correlate exactly with theoretically motivated categories makes this difficult, but the results of this study, which suggest that negative evidence is not a crucial factor in recasts (as had previously been assumed), suggest that it is a worthwhile endeavor. The laboratory setting made it possible to explore, and find empirical support for, the suggestion that a primary benefit of recasts is that they enhance the salience of positive evidence.

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NOTES

1. Of course, this is not meant to imply that all learners exposed to enhanced texts will notice the targeted forms nor that learners exposed to unenhanced texts will never notice the same forms. Moreover, even increased noticing does not guarantee that forms will be acquired (see Schmidt, 1995, for a discussion of what must be noticed for L2 development to progress).

2. A growing body of research has also investigated interaction from a Vygotskyan perspective, emphasizing the social and cultural nature of learning (see for example, Hall & Verplaetse, 2000; Lantolf, 2000). Researchers adopting a sociocultural approach to interaction have discussed negative feedback in terms of the opportunities it provides for scaffolding and regulation (e.g., Aljaafreh & Lantolf, 1994).

3. The vast majority of Spanish nouns are consistent with a pattern of phonological gender marking in which masculine nouns end with *-o* and feminine nouns end with *-a*, although there are some exceptions (e.g., *mano* "hand," feminine; *día* "day," masculine).

4. Participants in the present study sometimes described the differences using both predicate adjectives, as in (4) and (5), and sometimes utilized modifying adjectives, such as: *A tiene libros blancos pero B tiene libros amarillos* "A has white books but B has yellow books." This distinction was coded in all data and was not found to correlate with accuracy. The possibility that accuracy could be affected by whether nouns were realized overtly or as *pro* was also explored, but again no patterns were found.

5. Of course, the only way to be 100% consistent would be to use prerecorded input and feedback with all participants. Such a methodology was not desirable in a study of the effects of feedback in interaction.

6. Although the majority of adjectives in Spanish are overtly marked for gender, with *-o* marking masculine adjectives and *-a* marking feminine adjectives, there are numerous exceptions, such as *azul* "blue" and *grande* "big." These adjectives have the same form regardless of whether the modified noun is masculine or feminine, which makes it impossible to determine whether participants exhibited target agreement in utterances such as *la mesa es azul* "the$_{FEM}$ table$_{FEM}$ is blue$_{MASC/FEM}$."

In the case of determiners produced with nontarget gender marking, there was no way to deter-

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mine whether the noun had been lexicalized with nontarget gender or whether there was an error in noun-determiner agreement. As a result, it was impossible to assess noun-adjective agreement in these utterances, and they were excluded from analysis. One such utterance, produced by a learner in the study, serves as an illustration of this difficulty: *el mesa es rojo* "the$_{MASC}$ table$_{FEM}$ is red$_{MASC}$." The overall number of items excluded was quite small (less than 4% of the data set) and was equivalent in all groups.

An anonymous *SSLA* reviewer expressed concern that even in utterances containing determiners with target gender and nontarget adjectives (e.g., *la mesa es rojo* "the$_{FEM}$ table$_{FEM}$ is red$_{MASC}$") it is not possible to know for certain that there is a lack of noun-adjective agreement, rather than lexicalization of nontarget gender. Some previous research on the acquisition of gender agreement suggests that L1 English speakers demonstrate article-noun agreement prior to adjective-noun agreement (Fernández-García, 1999; Finnemann, 1992; Schmidt & Frota, 1986). This was also the case for number agreement in the present study. However, these findings are not conclusive, and it is well known that even nativelike behavior on the part of learners does not necessarily prove the existence of a native-like system (see Schwartz, 1993). The interpretation of nontarget determiners was not an issue for scoring number agreement, as number has a "real world" semantic referent.

7. Participants who scored 100% on the pretest for either number or gender agreement were excluded from analyses of that variable. On this basis, one participant's scores were excluded from analyses of gender agreement, and five participants' scores were excluded from analyses of number agreement. Additionally, the number-agreement scores of six participants were excluded because these participants failed to produce four analyzable tokens of number agreement. Thus, analyses of gender agreement are based on 73 participants, whereas analyses of number agreement are based on 63 participants' scores.

8. Although the difference between the negative evidence and control groups clearly approached significance for gender agreement ($p = .06$), it did not meet the field's standard alpha setting of .05.

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