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MODELS, ATTENTION, AND AWARENESS IN SLA

A Response to Simard and Wong's "Alertness, Orientation, and Detection: The Conceptualization of Attentional Functions in SLA" (SSLA, 23, 103–124)

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Simard and Wong (2001) raise serious concerns about the theoretical and empirical (Leow, 1998b) aspects of Tomlin and Villa's (1994) model, which postulates a fine-grained analysis of attention for SLA and the prediction that awareness at the level of detection is not crucial for further processing of second or foreign language (L2) data. According to Simard and Wong, Tomlin and Villa's frequently cited model has provided the "theoretical motivation for recent studies of input enhancement and especially of textual enhancement in SLA" (p. 104), an impact that needs to be viewed with caution (p. 105). To motivate their critique of Tomlin and Villa's model, the authors repeatedly question the validity of basing their model on "findings from the research contexts of psychology and neuroscience" (p. 105) and, in turn, put forward suggestions for a model of attention that they claim would better reflect the complex nature of SLA as well as suggestions for "new" research orientations relating to attention and awareness in SLA.

I argue that (a) Simard and Wong's claim that Tomlin and Villa's model has had an important impact on the theoretical motivation for subsequent SLA research is inaccurate; (b) Simard and Wong have not provided any empirical evidence to clearly falsify Tomlin and Villa's model; (c) their rejection of attentional findings from cognitive psychology and neuroscience as applicable to

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the field of SLA is somewhat inconsistent in light of the empirical sources for the kind of model they themselves suggest; (d) such a model lacks the required criteria for a good theory; and (e) their proposed new research orientations are not, for the most part, really innovative.

THE IMPACT OF TOMLIN AND VILLA'S MODEL

Simard and Wong's claim that the impact of Tomlin and Villa's (1994) frequently cited model is "evident" (p. 104) in the SLA field is inaccurate and potentially misleading. Of the four published studies cited to support this erroneous claim, two (Alanen, 1995, and Jourdenais, Ota, Stauffer, Boyson, & Doughty, 1995) were theoretically based on Schmidt's (1990) noticing hypothesis. The other two studies (Leeman, Arteagoitia, Fridman, & Doughty, 1995, and White, 1998) claimed to have used Tomlin and Villa as their theoretical foundation (White also used Hulstijn, 1989), but they both discussed findings in the context of Schmidt's noticing hypothesis. Regarding frequency of citations, Tomlin and Villa's model is usually contextualized theoretically with Schmidt's noticing hypothesis in relation to the issue of awareness at the level of detection or noticing.

Underscoring the problems in Simard and Wong's review, at least three recent studies on textual enhancement in SLA (Izumi, 1999; Jourdenais, 1998; Leow, 2001) have situated their studies within the framework of Schmidt's noticing hypothesis, a fourth (Overstreet, 1998) appears to have employed VanPatten's (1996) set of principles of input strategies for its motivation, and a fifth (Leow, 1997b) was not specific about its theoretical underpinning. Arguably, Schmidt's noticing hypothesis has had a stronger impact on SLA research than Tomlin and Villa's (1994) model.

To conclude, Simard and Wong are neither accurate in their portrayal of the impact of Tomlin and Villa's model on subsequent textual enhancement studies in SLA nor on the overall SLA field addressing the role of attention (and awareness).

TOMLIN AND VILLA'S FINE-GRAINED ANALYSIS OF ATTENTION

To underscore the inadequacy and prematurity of Tomlin and Villa's (1994) model for SLA, Simard and Wong argue that the original studies on attention in cognitive psychology and neuroscience upon which Tomlin and Villa based their model were inadequate due to (a) a non-SLA focus, (b) the fact that orientation was limited to visual locations, and (c) an inability to empirically support the three attentional functions (alertness, orientation, and detection) performing in isolation. To support the infelicities of Tomlin and Villa's fine-grained analysis of attention in SLA, Simard and Wong cite a personal communication with Posner (November 11 & 12, 1998), who is reported to have stated that "particularly in higher order level tasks that involve processing language data, all three functions of attention are usually activated at the

same time" (p. 110). However, Simard and Wong have provided no empirical evidence (either in neuroscience, psychology, or SLA) that contradicts Tomlin and Villa's predictions about the fine-grained analysis of their model. Consequently, Simard and Wong are, at this point, incorrect to claim that Tomlin and Villa's fine-grained analysis is "probably premature" (p. 109). Additional empirical research is required to support or refute Tomlin and Villa's fine-grained analysis.

Simard and Wong also critique my study (Leow, 1998b) that, according to the authors, "contributed to making Tomlin and Villa a pivotal work of the attention literature in SLA" (p. 105). This statement is misleading, given that all of my subsequent attentional studies (Leow, 1997a, 1998a, 2000, 2001) deriving from this very 1998b study are theoretically motivated by Schmidt's noticing hypothesis.

I also disagree with Simard and Wong's argument, based on an unpublished manuscript (Wong & Simard, 1999), that my italicized verb infinitives oriented all participants' attention to the "target verbs" (p. 113). First of all, a careful review of the literature on textual enhancement demonstrates that the literature does not clearly support the assumption that enhanced input draws learners' attention in a special way when compared to unenhanced input (see Leow, 2001). Second, orientation in my study was based on the so-called irregular verb forms, which were obviously different from the italicized infinitive forms of the verbs. Consequently, Simard and Wong's suggestion that all participants' attention was oriented to the targeted verbs (read infinitives) is of little significance in relation to the purpose of the study.

Simard and Wong are also erroneous to report several times that my 1998b study attempted to provide empirical support for Tomlin and Villa's (1994) model. That study was only focused on the fine-grained analysis of attention as proposed by Tomlin and Villa in relation to the coarse-grained SLA approach and did not address the issue of awareness at the level of detection in that study (see Leow, 1998b, p. 155, note 4).

Finally, it is only after all the major aspects of a model have been subjected to thorough empirical testing that one can reasonably claim with some conviction that its predictions are robust or weak.

THE ISSUE OF AWARENESS IN TOMLIN AND VILLA'S MODEL

Simard and Wong's critique of the empirical sources upon which Tomlin and Villa (1994) relied to motivate the dissociation between awareness and learning in their model basically reviews previous statements made about the inappropriateness of the sources (e.g., Robinson, 1995; Schmidt, 1995).

SIMARD AND WONG'S SUGGESTIONS FOR A MODEL OF ATTENTION IN SLA

Simard and Wong's suggestions for a model of attention that they claim would better reflect the complex nature of SLA represent the weakest aspect of their

article, in my opinion, particularly given their critique of the Tomlin and Villa (1994) model as almost premature in terms of the cognitive psychology and neuroscience sources cited to motivate their (Tomlin and Villa's) model and the potential difficulty (and perhaps the impossibility) of operationalizing its own claims (p. 117). Simard and Wong write that

> [A] model of attention that more accurately reflects the complex nature of SLA is one in which awareness and attentional functions are viewed as being present in graded amounts, and whose degree of activation is influenced by the interaction among task type, linguistic items, individual differences (such as processing capacity), and by any other concurrent cognitive activity competing for processing resources. (p. 119)

First of all, Simard and Wong are clearly motivating an interactive aspect of the three attentional functions based on a personal communication with Posner (November 11 & 12, 1998). No empirical evidence is provided to support this perspective. Second, as previously noted, Simard and Wong have repeatedly critiqued the validity of basing SLA attentional research on the findings of cognitive psychology and neuroscience due to different experimental conditions and tasks. It is therefore all the more surprising to see that the authors have not consistently applied the tenets of their own critique given that their suggestions draw on studies from the same non-SLA disciplines to support various aspects (e.g., task types, graded amounts of attention and awareness) of their proposal (e.g., Farah, 1992; Gati & Ben-Shakhar, 1990; Kanwisher, Driver, & Machado, 1995; Tipper, Weaver, Jerreat, & Burak, 1994). Third, a model of this kind lacks both explicitness and explanatory power because it incorporates variables that are both specific (task type, linguistic item, and individual differences) and less specific ("any other concurrent cognitive activity competing for processing resources" [p. 119] and "other factors" [p. 119]). It also lacks coherence and consistency because it fails to describe the relationships between the multiplicity of components. The motivation for the selection of variables also does not appear to be robustly supported by the studies cited.

Simard and Wong repeatedly underscore the thorny issue of operationalizing and measuring the construct of awareness in SLA. It is disappointing that, in light of the model they are suggesting, which puts forward an even finer-grained definition of attention and awareness in addition to potential interactions with several variables, they do not address this very important methodological issue.

In conclusion, like Tomlin and Villa's (1994) model, the kind of model Simard and Wong suggest for research on attention in SLA is easily critiqued for lacking robust empirical evidence in support of its claims and also for lacking important tenets of a good theory.

NEW ORIENTATIONS FOR FUTURE RESEARCH

Even taking into account the year of submission (1999), much of the research agenda Simard and Wong propose has already been addressed by prior or ongoing research. The only exception is their suggestion to address a multiplic-

ity of variables in relation to differential amounts of attention and awareness in SLA. How this strand of research will be operationalized and measured remains to be seen.

CONCLUSION

The issues of attention and awareness in SLA are clearly fruitful areas of research, perhaps owing to the assumed centrality of attention in all aspects of adult language learning. In my opinion, the challenge ahead is to create robust research designs that can provide even further insights into the roles of attention and awareness in SLA, the very area that Simard and Wong fail to address in their article. Currently, several studies are addressing the methodological limitations inherently involved in operationalizing and measuring the constructs of attention and awareness in SLA (see Leow, 1999, for a discussion of methodological issues in this line of investigation). These studies have employed concurrent (e.g., think-aloud protocols) as well as online or retrospective (e.g., stimulated recalls) data elicitation procedures to obtain information relating to the roles of attention, awareness, or both, in adult language learning (e.g., Alanen, 1995; Leow, 1997a, 1998a, 1998b, 2000, 2001; Mackey, Gass, & McDonough, 2000; Rosa & O'Neill, 1999; Rott, 1999). The logical extension of such research that needs to be addressed concerns the validity of the data elicitation procedures, namely, the issues of "reactivity" and "veridicality" in SLA methodology. Reactivity—that is, the act of thinking aloud potentially affecting changes in learners' cognitive processes while performing the task—concerns the use of concurrent data elicitation procedures such as think-aloud protocols used to probe learners' cognitive processes while interacting with L2 data. On the other hand, veridicality—that is, whether retrospective verbal reports accurately reflect cognitive processes employed while interacting with L2 data—concerns studies that employ, for example, stimulated recall procedures, where memory decay or double input-exposure are variables that need to be considered.

Other areas of future research on the roles of attention and awareness include the issue of saliency of targeted forms, the spontaneity of tasks, and a more articulated theory for the role of awareness—for example, whether awareness is deployed upon encountering discrete L2 items or whether this deployment results from a more general state of awareness (Leow, 2000, p. 573).

Finally, I hope that this response facilitates further theory construction and empirical research on the roles of attention and awareness in SLA, goals that Simard and Wong clearly share.

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