Original Research

Meaning-Making through Gesticulations in the Story-Telling Enterprise: An Exploratory Case Study of One Iranian Child

Iranian Evolutionary and Educational Psychology Journal
September 2019: 162-178

DOI: 10.29252/ieepj.1.3.162
http://ieepj.hormozgan.ac.ir

S. Mohammad Ali Soozandehfar*

Abstract: This investigation is an exploratory study of one participant as an endeavor to appraise children in the integration of gesture and speech into one another to create co-speech gestures, i.e. gesticulations (McNeill, 2005) while telling a story in their native language. This study adopts a case study approach in order to obtain a more in-depth understanding of how meaning is mediated during a child's story-telling in the mother tongue. In this vein, as a discourse analysis, concentrating on Hodge and Kress's (1988) theoretical framework, which associates and mingles semiotics with teaching contexts, this investigation dissects the co-speech gestures in the 6-year-old Kiamehr's story-telling while wielding McNeill's (2005) scheme or Kendon's (2004) Continuum with four categories of *iconic*, *metaphoric*, *deictic*, and *beat* gesticulations as its analytical tool. Results exhibited how the creation of gesticulation by a child entails a sort of mediation between what is in the mind of the child and what is expressed to the audience, and how this mediation of gesticulations facilitates and clarifies the meaning in the child's story-telling process, so that the audience can better comprehend the child's intentions or stories. The findings have some implications for language teachers and researchers to understand the dialectic relationship of oral speech, and gesture in language during children's story-telling process, and include some pedagogical implications to apply this knowledge into practice in the classroom.

Keywords: Gesture, Co-speech Gesture, Gesticulation, Meaning-making, Story-telling

[DOR: 20.1001.1.25884395.2019.1.3.2.5]
[DOI: 10.29252/ieepj.1.3.162]

Introduction

Narrating a story orally often embroils children in applying visual-spatial imagery to create/remember the events in a story (Rubin & Rubin, 1995). Oral story-tellers often utilize a variety of verbal and non-verbal means to convey their stories effectively, such as prosody and co-speech gestures (Scheub, 1977). Co-speech gestures may supply a variety of functions in story-telling, including helping the story-teller approach language for speaking (Krauss, Chen, & Gottesman, 2000), particularly with concepts that are difficult (Kita, 2000). One research indicated a powerful connection between the rate of co-speech gestures and the application of imagery in adults' oral narratives (Smithson & Nicoladis 2013). Children's linguistic tools for telling stories improve dramatically in terms of length, coherence, and complexity between the ages of 4 and 10 years (e.g., Berman & Slobin, 1994). Children's use of imagery also changes over that age span, with memory capacity of imagery increasing and becoming more dynamic (Vecchi, Phillips, & Cornoldi, 2001). Children might become increasingly reliant on gestures as a strategy or as the complexity of their narratives increases. Gesture is found in all cultures that have been observed, and it occurs across a wide range of tasks and ages (Feyereisen & de Lannoy, 1991; McNeill, 1992). Gesture might be nothing more than hand waving, reflecting an outpouring of excess energy or a bid for the listener's attention. However, recent research has shown that the gestures speakers spontaneously produce when they talk can

*Assistant Professor in TEFL, Department of Teaching English as a Foreign Language (TEFL), Faculty of Humanities, University of Hormozgan, Bandar- Abbas, Iran
Email: soozandehfar@hormozgan.ac.ir

reflect substantive ideas relevant to the task at hand (Goldin-Meadow, in press; Kendon, 1980; McNeill, 1992). There are times, however, when speakers use their hands to convey information that is *not* found in their speech. For instance, a child might highlight "height" through speech but "width" through gesture; so the child has produced a gesture–speech mismatch (Church & Goldin-Meadow, 1986). A gesture is a case of non-verbal communication in which visible bodily actions communicate particular messages, either in place of speech or together and in parallel with spoken words. Gestures include movement of the hands, face, or other parts of the body. Gestures differ from physical non-verbal communication that does not communicate specific messages, such as purely expressive displays, proxemics, or displays of joint attention. Gestures allow individuals to communicate a variety of feelings and thoughts, from contempt and hostility to approval and affection, often together with body language in addition to words when they speak. Gesture processing takes place in areas of the brain such as Broca's and Wernicke's areas, which are used by speech and sign language.

There are different viewpoints on gestures studied throughout the centuries. The ancient Quintilian (A.D. 95) studied in his Institution Oratoria how gesture may be used in rhetorical discourse. Another broad study of gesture was published by John Bulwer in 1644. Bulwer analyzed dozens of gestures and provided a guide on how to use gestures to increase eloquence and clarity for public speaking. Andrea De Jorio published an extensive account of gestural expression in 1832. Today, one of the most prominent researchers in the field of gesture research is Adam Kendon (2004). He has investigated many aspects of gestures, including their role in communication, conventionalization of gesture, integration of gesture and speech, and the evolution of language. Other prominent researchers in this field include Susan Goldin-Meadow and David McNeill. Susan Goldin-Meadow (2003) has intensively investigated the role of gesture in problem solving in children. David McNeill (1992, 2006) has developed a broad theory about how gesture and speech are part of a single thought process. In McNeill's (2005) term, 'gesticulation,' as a semiotic mode, is a motion that embodies a meaning relatable to the accompanying speech. Gesticulation is by far the most frequent type of gesture in daily use and it covers many variants and usages. It is made chiefly with the arms and hands but is not restricted to these body parts – the head can take over as a kind of third hand if the anatomical hands are immobilized or otherwise engaged, and the legs and feet too can move in a gesture mode (Krauss *et al.*, 2000, Alibali, Kita, & Young, 2000). Gesticulations combine both 'universal' and language-specific features. Speakers of every language studied thus far produce them, and the gesticulations for the same events in a cartoon stimulus show clear similarities across these languages. Yet, there are also striking differences which are traceable to characteristics of the languages the gestures are co-occurring with, in particular whether the language is, in Leonard Talmy's typology (Talmy, 2000), S-type or V-type (see McNeill & Duncan, 2000). Gesture space is oriented in terms of absolute compass direction by speakers of Guugu Yimithirr (an Aboriginal language with obligatory absolute orientation in its verb morphology) and also speakers of Tzotzil (a Mayan language that lacks the lexical precision of directional reference as seen in Guugu Yimithirr, but whose mode of living promotes exact spatial orientation, which is then embodied in gestures; see Haviland, 2000) (Cited in McNeill, 2005).

Preceding Investigations

A large number of investigations have studied gesture from different aspects (Gullberg & McCafferty, 2008; Kendon, 2004). Several of these studies have focused on the processes by which language learners use gesture when learning and communicating in the L2 (McCafferty, 1998; McCafferty and Ahmed, 2000; McCafferty, 2008; Roebuck & Wagner, 2004). McCafferty (2004) stated that the physical and metaphoric movement proved crucial to successful communication. Another research indicated that deictic and iconic gestures are pervasive in children's speech. Children produce deictic gestures before they begin to talk (Bates, 1976; Butcher and Goldin-Meadow, 2000), and shortly thereafter (usually by 18 months), they produce iconic gestures along with their speech (Bates *et al.,* 1979; Masur, 1983; Morford and Goldin-Meadow, 1992; Iverson *et al.,* 1994; Butcher and Goldin-Meadow, 2000). Moreover, throughout childhood, deictic and iconic gestures become more complex and frequent (Jancovic *et al.,* 1975; McNeill, 1992), and children produce them in a number of different contexts: with friends (Azmitia & Perlmutter, 1989) Church and Ayman-Nolley, 1995), family (Bates, 1976), and teachers (Fernandez *et al.,* 1996). In other studies, it was found that children also use gestures while talking about a number of different topics: giving directions

[DOR: 20.1001.1.25884395.2019.1.3.2.5]
[DOI: 10.29252/ieepj.1.3.162]

(Iverson and Goldin-Meadow, 1997), and explaining concepts (Church and Goldin-Meadow, 1986; Perry *et al.,* 1988, 1992). Several studies suggest that the gestures children produce while speaking reveal much more about what they are thinking than does their speech alone (Church and Goldin-Meadow, 1986; Perry *et al.,* 1988; 1992; Alibali and Goldin-Meadow, 1993; Goldin-Meadow *et al.,* 1993; Church *et al.,* 1995; Garber, 1997; Alibali, 1999; Church, 1999; Goldin-Meadow, 2000).

Lazaraton (2004) found that the ESL teacher used gestures extensively during vocabulary explanations, including a high level of iconics and metaphorics to illustrate the meaning of words. Also, Lee's (2008) findings call for a better understanding of how the integration of graphics and gestures in private speech (Wertsch, 1979) interact in second language acquisition. Gullberg's (2008) findings support the idea that gesture simultaneously mediates cognition and meaning (p. 203). Kita (2000) proposed that "spatio-motoric thinking as a representational gesture (e.g., iconics) can be applied to the virtual environment that is internally created as imagery. Representational gestures are actions in the virtual environment" (Kita, 2000: p.165). Sime (2008) found that learners seemed to be particularly interested in gestures that in some way supported their learning, particularly when meaning was vague. In another gesture study edited by McCafferty and Stam (2008), Kida (2008) investigated the role of gesture and visual information in improving comprehension in the L2.

All in all, the literature on gesture emphasizes the central and crucial nature of gesture in negotiating meaning. In fact, the study of gesture provides a window into cognition (McNeill, 1992, 2005; McNeill & Duncan, 2000), and this insight into cognition has the potential to inform teachers on the types of problems L1 learners are having in various contexts, along with understanding other difficulties students are having with learning a second language as well (see also Stam, 2008). With regard to the growing body of research on gesture and second languages (see McCafferty and Gullberg, 2008), the present study addresses the gap in the literature on how gesture works to form a functional semiotic system during a child's story-telling process in the L1 context of Iran. In other words, no studies in the realm of L1 could be found that directly investigated how gestures and speech work together to create meaning during the children's story-telling process in L1.

Theoretical Framework

According to Hodge and Kress (1988), semiotics [including gestures] not only assists learners to make meaning, but also encourages the language teachers to play a critical role in the classroom. Since semiotics is the combination of signs and symbols to communicate the information, the students and the teachers utilize a number of signs, some of which are iconic and some are symbolic. Thus, it can be said that, semiotics is a fundamental issue to be regarded in language teaching pedagogy, because it benefits the individual to develop his cognitive facilities at all levels of perception. Moreover, semiotics not only does offer different ways of teaching, but also broadens the scope of language teaching by offering tools to consider for visual communication in a given teaching context.

Objective of the Study

The primary focus for this paper is on specific segments from the 6-year-old Kiamehr's telling and presentation of a story in which moments of meaning in the speech/gesture stream were created through a reorganization of semiotic resources. These moments occurred when meaning became a challenge for Kiamehr to express, or when one salient part of the semiotic system of speech and gesture needed to be supported through an emphasis on using another part. In other words, the overall purpose of the study is to inform teachers of language and literacy about how children can position a variety of gestures and sign systems available in the L1 environment and use these signs to mediate meaning. Particularly, the focus of the study is on how children integrated the sign system of gesture and speech to make meaning across very short spans of time. In fact, this study illustrated how gesture can be helpful during children's story-telling activity while investigating a 6-year-old Iranian child, Kiamehr. In other words, the following question was answered in this investigation:

How does gesture interact with Kiamehr's oral presentation of a story, i.e. story-telling, to make meaning?

Material and Methods

The research design of the present investigation involves a case study approach in order to obtain an in-depth understanding of how meaning is mediated during a child's story-telling in the mother tongue.

[DOR: 20.1001.1.25884395.2019.1.3.2.5]
[DOI: 10.29252/ieepj.1.3.162]

Context: The present study has been conducted in the context of Shiraz, a city in Iran, whose first language is Persian. The time of data collection was in the evening when the child's mind was almost ready for story-telling, which was a special time for him to do that usually every other day.

Participants: Since the present study can be considered as a sort of case study, the participant consists in a child whose name is Kiamehr who is at the age of 6. This case was told in advance that his story-telling was going to be observed or video recorded. However, nobody was informed in the context about the researcher's focus on their use of gestures. This exemplar was selected due to the representativeness and richness of his presentation of gesticulations and the wide variety of gestures applied in his story-telling which is repeated every other day. In fact, this exemplar was selected and consulted on by the expert in the field.

Materials and Instruments: An exemplar part of Kiamehr's story-telling extracted from his common story, which he himself called it as "The hundred-meter creature," was used which was recorded and photographed by a camera to pinpoint the gesticulations used during the story-telling process. The story was conveniently sampled since it was the only story that the child knew and was interested in.

Data Collection Procedure: Regarding the data collected for the present investigation, in the first session, the camera was located at the corner of the dining room, where Kiamehr always tells the same story to his grandmother, video-recording the entire story-telling activity. In the second session, when Kiamehr was telling the same story, the same camera was applied in order to photograph some conspicuous and typical co-speech gestures in the story-telling process. Also, some field notes were used to be on the safe side. This 6-year-old child was selected as an exemplar case for transcription and analysis of his gesticulations in the story-telling process.

Data Analysis Procedure: In the present research, the major emphasis is on the selected segments of data, i.e. the exemplar child's utterances which was chosen out of a 26-minute story-telling. These segments were purposely selected to illustrate moments of signification, and to answer the research question. For this study, this exemplar segment was viewed as episodes of meaning microgenesis. This developmental approach is derived from Cole (1996), Vygotsky, (1978, 1986), Wertsch (1985, 1991), Wells (1999), and Werner (1978). During the transcription and analysis processes, the concept of the psychological predicate and the utterance were applied to illustrate the ending of an utterance and the beginning of a new one in the analysis. That is, as the background context of meaning seemed to change and the child visibly shifted to another speech/gesture moment, one utterance ended and another one began. From a gestural perspective, this visible change was generally determined by the hands and arms in a position to begin a new gesture or in a resting position. In other words, one gesture phrase ends and another begins (McNeill, 2005; Kendon, 2004). The recognition of these kinds of permeable boundaries can reveal tensions among different types of semiotic resources and a type of catharsis as these tensions in the discourse are resolved (Robbins, 2003, p. 33). With regard to the analysis, the focus was on a salient reorganization of semiotic factors, and the area around the stroke as a part of the gesture/speech stream. The next section gives more information about the transcription and gesture coding procedures as well as the frameworks based on which these processes have been done. Therefore, the present study has utilized the following framework, presented in the next section, for the analysis of the child's gesticulations in the selected segments.

Analytical Framework: To make the data analyzable, Kiamehr's major co-speech gestures in the video were transcribed. The transcription and the analysis in this study were performed on the basis of Levy and McNeill's (2005) framework, proposing a classification scheme with four categories: *iconic*, *metaphoric*, *deictic*, and *beat*. All are gesticulations or speech-framed gestures on Kendon's (2004) Continuum. The following are the descriptions of these categories according to McNeill (2005):

Iconic: Such gestures present images of concrete entities and/or actions. For example, appearing to grasp and bend back something while saying "and he bends it way back." The gesture, as a referential symbol, functions via its formal and structural resemblance to event or objects.

Metaphoric: Gestures are not limited to depictions of concrete events. They can also picture abstract content, in effect, imagining the unimageable. In a metaphoric gesture, an abstract meaning is presented as if it had form and/or occupied space. For example, a speaker appears to be holding an object, as if presenting it,

[DOR: 20.1001.1.25884395.2019.1.3.2.5]
[DOI: 10.29252/ieepj.1.3.162]

yet the meaning is not presenting an object but an 'idea' or 'memory' or some other abstract 'object' (for examples, see McNeill 1992, Cienki 1998). This is a gestural version of the 'conduit' metaphor that appears in expressions like "he packed a lot into that lecture", where the lecture is presented as a container and the message as its contents (Lakoff & Johnson, 1980). Recent work on metaphoric gestures has greatly expanded the subject. Cornelia Müller (2004) has developed a new theory of metaphor as a dynamic process (whereby 'sleeping' metaphors are 'awakened' in context) in which metaphoric gestures play an essential part. Parrill & Sweetser (in press) have developed a new theoretical account based on 'mental spaces blending theory'. Metaphoric gestures often indicate that the accompanying speech is meta- rather than object-level – for example, saying "the next scene of the cartoon" and making a conduit cup of meaning gesture (iconic gestures, in contrast, favor the object level).

Deictic: The prototypical deictic gesture is an extended 'index' finger, but almost any extensible body part or held object can be used. Indeed, some cultures prescribe deixis with the lips (Enfield, 2001). Deixis entails locating entities and actions in space vis-à-vis a reference point, which Bühler called the origo (Bühler 1982, Haviland, 2000). Much of the pointing we see in adult conversation and storytelling is not pointing at physically present objects or locations but is abstract pointing, which Bühler referred to as *deixis at phantasma*. The emergence of abstract pointing is a milestone in children's development. In striking contrast to concrete pointing, which appears before the first birthday and is one of the initiating events of language acquisition, abstract pointing is not much in evidence before the age of 12 and is one of the concluding events (McNeill, 1992).

Beats: so called because the hand appears to beating time. Other allusions to the musical analogy use the term 'baton' (Efron, 1941). As forms, beats are mere flicks of the hand(s) up and down or back and forth, zeroing in rhythmically on the prosodic peaks of speech. This rhythmicity has made beats seem purely speech-related. However, they also have discourse functionality, signaling the temporal locus of something the speaker feels to be important with respect to the larger context. One can think of a beat as gestural yellow highlighter.

Results

In this section, several exemplar Kiamehr's utterances along with his gestures are transcribed. The following are his exemplar utterances as well as the significant gestures he applied while uttering them. The exemplar co-speech gestures have also been illustrated by a representative picture of Kiamehr performing the very gesticulation. Each gesticulation has been presented in one page for the sake of clarity.

Gesticulation 1:

... تو که اندازه ی... یه مورچه ی تازه به دنیا اومده هستی ...

[to ke andazeye… ye morcheye taze be donya umade hasti]

[DOR: 20.1001.1.25884395.2019.1.3.2.5]
[DOI: 10.29252/ieepj.1.3.162]

… you are as small as… a newly-born ant…

While saying this utterance, with his left hand, Kiamehr is showing an iconic gesture for the word "ant" indicating the smallness of the object in his story which is compared to a newly-born ant. He is standing about two feet from his grandmother in the corner of the room. He is walking enthusiastically with his right hand holding a red comb as if he is a narrator. Most of the left side and front of his body face the audience, i.e. his grandmother. This position of himself to the audience makes a situation in which he alternates from looking at the red comb in his hand to looking at the audience. At the word "اندازه" (=size, as small as), he pauses to take a look at his index finger (deictic gesture) by which he is going to make an iconic gesture for a very small ant at the word "مورچه" (=ant). On "هستی" (=you are), he moves his left hand from the top and drops it to his side after completing the word (beat gesture). When saying "تازه به دنیا اومده" (=newly born), Kiamehr raises his left hand as if he is grapping an object (metaphoric), i.e. the abstract notion of "newly-born" in addition to "ant."

Gesticulation 2:

از پشت کوه یه سایه دراومد... به مساحت یه استان... بیش از مساحت یه استان... یه سایه اومد همه جا رو پوشوند...

[az posht –e- kuh ye saaye darumad… be masaahate ye ostaan… bish az masaahate ye ostaan… ye saaye umad hamejaa ro pushund…]

A shade came up from behind the mountain… as large as a province area… more than a province area… a shade came and covered everywhere…

On "از پشت کوه" (=from behind the mountain), Kiamehr's left hand rises suddenly (beat), with his index finger open toward the ceiling (deictic). On "مساحت" (=area), his left hand faces the floor, palm down, fingers straight, as if he is showing his cut nails (metaphoric), his hands making a very slight twisting beats as he says "در اومد" (=came up) his palms facing the wall. As it is illustrated in the above picture, on "همه جا رو پوشوند" (=covered everywhere), while his left hand begins to move towards the floor, along with his fingers stretched (deictic, metaphoric), Kiamehr starts turning his left hand with his palm toward the floor so as to show the act of covering (iconic, metaphoric). When he is finished with the utterance, his hands rises to the same general shape. It is important here to note a shift between an emphasis on gesture as more informative than the oral speech at the peak of the gesture.

Gesticulation 3:

یه خرس که پاش دقیقاً اندازه ی این جاپا بود... پاشو گذاشت تو جاپا رد شد...
[… ye xers ke paash daghighan andaazeye in jaapaa bud … paasho gozaasht tu jaapaa rad shod…]
… a bear whose feet were of the same size as the footprints … put its feet into the footprint and passed…

Immediately, Kiamehr turns from his grandmother to his left foot after completing the previous utterances (beat). After 2 or 3 seconds of looking directly at his left foot, he raises his left foot suddenly (beat) and drops it down immediately (beat) in order to show the utterance "پاشو گذاشت تو جاپا" (=put its feet into the footprint) (iconic). Immediately after that, he utters "رد شد" (=passed) which is along with another iconic gesture shown in the picture on the right. Through this iconic gesture, he begins to circle his left hand around with the finger tips pointed down (deictic), as if his right hand is a bear which is doing the action of passing the way (metaphoric).

Gesticulation 4:

... دایناسوره به خرسه گفت ... حالا نشونت میدم (با فریاد بلند)

[... daaynaasore be xerse goft ... haalaa neshunet midam (baa faryaade boland)]

... the dinosaur told the bear... I will show you now (with a loud scream)

He suddenly turns back to the audience and moves his hands wildly above with palms down (beat), his right hand higher than his left as he shouts, "حالا نشونت میدم," (=I will show you now; fight) as if grasping the

[DOR: 20.1001.1.25884395.2019.1.3.2.5]
[DOI: 10.29252/ieepj.1.3.162]

bear (iconic, metaphoric). He makes a distinctive shift (beat) from looking at the audience to addressing the imaginative bear. He also takes out his tongue (beat) as if he is going to kill and eat the bear (iconic, metaphoric); in fact, he is imitating the wild role of a dinosaur (iconic). Suddenly, he comes back to his normal position of hands as he continues the narration (beat; also metaphoric: to show the end of this utterance).

Gesticulation 5:

خرسه نفسش بریده بود... با اینکه بی جون شده بود... پاشو محکم گذاشت روی دایناسوره و خودشو نجات داد

[xerse nafasesh boride bud… baa inke bijun shode bud… paasho mohkam gozaasht ruye daaynaasore-o-xodesho nejaat daad]
the bear got short of breath… although it was too tired… it put its feet on the dinosaur firmly and saved its life...

In this utterance, he is also paying the role of the bear (iconic, metaphoric). While uttering "خرسه نفسش بریده بود," (=the bear got short of breath), his hands hesitate just a moment on the downward stroke (beat). In fact, each word is marked by slight, perceptible beats by his hands and arms in this utterance. On "خودشو نجات داد" (=saved its life), both his hands make a beat towards the ceiling with fingers curled in the form of firm fists, both hands angled toward the ceiling, his back bent backward as if pulling something (iconic, metaphoric).

Gesticulation 6:

همینکه آتش نشانی اومد... یهو یه چیز دیگه هم گفت «بومب» منفجر شد

[haminke aatash neshaani umad… yeho ye chize dige ham gof bumm monfajer shod]
as soon as the firefighter came… suddenly another thing exploded with a sound of "Boom"

At "آتش نشانی اومد" (=the firefighter came), his left hand is rising to turn gently back and forth (beat), as if he tries to show a distance, in which his hand moves from left to right (metaphoric). On "یه چیز دیگه" (=another

[DOR: 20.1001.1.25884395.2019.1.3.2.5]
[DOI: 10.29252/ieepj.1.3.162]

thing), just his right hand becomes curled and palm-up, as if holding something as well as taking it a little down (iconic, metaphoric). Now, he makes himself ready for the next beat and iconic gesture of explosion by bending his whole body down as if he wants to sit on a chair. But, before sitting, suddenly through a little jump (beat), his both hands rise up rapidly and in a symmetric way as he utters the sound "بومب" (=sound of Boom) so as to show a huge explosion (iconic, beat). Since he keeps his fingers so firm, straight, and open, this might also be regarded as a deictic gesture.

Gesticulation 7:

اونم خرسه رو هُل داد و انداخت رو زمین... خرسه رو حسابی زخمی کرد...

[unam xersaro hol daado andaaxt ru zamin… xersaro hesaabi zaxmi kard…]
it pushed the bear and threw it down onto the ground… it wildly injured the bear…

On "هُل داد" (=pushed), he is straightening his fingers (deictic) and bending a little backward as if making himself ready for a strong push (beat, iconic). As he is uttering "انداخت رو زمین" (threw it down onto the ground), he seems to mark the result of the previous utterance (metaphoric), and prepares his hands curled downward with his palms curled down and his fingers tips pointing down so as to show the bear falling down as a result of the push (iconic, beat). Such iconic-like beats are parts of a continuous, fluid motion of his arms and hands marking the space in front of him. Finally, on "حسابی زخمی کرد" (=wildly injured it), his right hand, with the red comb in it, starts a sharp movement towards the audience, focusing specially on the strength of the injury (beat, iconic, to some extent metaphoric).

Gesticulation 8:

... سرش رو به زور فشار داد پایین...

[DOR: 20.1001.1.25884395.2019.1.3.2.5]
[DOI: 10.29252/ieepj.1.3.162]

[…saresh ro bezur feshaar daad paayin…]

…it pushed down its head by force…

At the end of the utterance "فشار داد پایین" (=pushed down), Kiamehr simultaneously begins to make a somehow closed hand with his fingers of his left hand curled and his palm down so as to show the act of taking its head in his hand (iconic), and at the same time stretching his right hand and its fingers (deictic) with his palm down again as if pushing down something (iconic). In other words, the above picture obviously illustrates two different functions of taking the head in the hand (iconic) and pushing it down (iconic) performed simultaneously by Kiamehr's creative hands to satisfy his utterance; i.e. his left hand is taking the head and his right hand is pushing it down at the same time. What makes it more interesting is the fact that not only are these two gestures of the two hands performed at the same time, but also the very utterance of "سرش رو به زور فشار داد پایین" (=it pushed down its head by force) is at the peak of the gestures at the right time.

Discussion

According to the present research, beat, iconic, and deictic gestures are pervasive in children's speech. This is in line with the finding that children produce deictic gestures before they begin to talk (Bates, 1976; Butcher and Goldin-Meadow, 2000), and shortly thereafter (usually by 18 months), they produce beat and iconic gestures along with their speech (Bates *et al.,* 1979; Masur, 1983; Morford and Goldin-Meadow, 1992; Iverson *et al.,* 1994; Butcher and Goldin-Meadow, 2000). Moreover, the current study confirm, to some extent, that throughout childhood, deictic and iconic gestures become more complex and frequent (Jancovic *et al.,* 1975; McNeill, 1992), and children produce them in a number of different contexts: with friends (Azmitia & Perlmutter, 1989)Church and Ayman-Nolley, 1995), family (Bates, 1976), and teachers (Fernandez *et al.,* 1996). The whole findings of this investigation corroborate the belief that children also use gestures while talking about a number of different topics: telling stories (McNeill, 1992), giving directions (Iverson and Goldin-Meadow, 1997), and explaining concepts (Church and Goldin-Meadow, 1986; Perry *et al.,* 1988, 1992).

According to the gesticulations in the current study, it is indicated that children build a system of functions (see Luria, 1979) in the form of a regulatory space, and each component of the system is in interaction with other parts of the system in a network fashion so as to mediate meaning (McCafferty, 2004; McNeill, 1992; McCafferty, 2002). Based on McCafferty (1998; 2004) and Unger (2007), beat gestures were obtrusive when children were having difficulty making meaning. In a similar vein, Kiamehr's gestures are also related to Lazaraton (2004), who found large numbers of iconic gestures in the respective research. McCafferty and Gullberg (2008) also report extensive use of representational gestures in many studies which is in line with the current research in which Kiamehr had intended to show some concepts by his hands; this is exactly the same as iconic or some types of metaphoric gestures.

In the sample gesticulations, Kiamehr conspicuously focuses on the abstract dimension of "مورچه" (=ant), i.e. the state of being newly-born, by using iconic representational gestures in a metaphorical space, when he mentions "تازه به دنیا اومده" (=newly-born). The way these iconics and metaphorics act as deictic displays for the audience, as well as looking at the body parts to be gestured is important to notice. Technically speaking, Kiamehr symbolizes the smallness notion by indicating a specific facet of "مورچه" (=ant) through the positioning of his hands in relation to his body and his distance to and type of look at the audience while making an iconic move. These types of movements manifest the type of the movement for the audience and for him; then he clearly and unconsciously pays special attention to this facet to settle the concept of smallness or size during other utterances in this segment. In this way, Kiamehr is making a similar reference point as in McCafferty (2002, 2004), and returns to this point as a part of the ongoing discourse. Making or creating a reference point to characterize a specific type of concept clearly demonstrates one of the definitions of microgenesis from Wertsch (1985): "the unfolding of an individual perceptual or conceptual act," and is exactly in line with Hodge and Kress' (1988) view that semiotics assists learners to make meaning.

According to the gesticulations observed, this genesis of meaning could be noticed by utilzing the stroke as a reference point, around which other semiotic resources are constituted, especially during moments

when one part of this semiotic system began to break up and another part of the system compensated. By closely observing this genesis of meaning one can notice how children are creating deictic displays to share attention on a specific idea from the story they are narrating. In other words, the Kiamehr is intending for the audience to understand a major piece of information from the story narrated, through the application of abstract and concrete iconic, metaphoric, and beat gestures to create deictics. This is exactly the issue that the current investigation aims to accentuate: since what McNeill calls "gesticulation" is the combination of signs, speech, and gestures to communicate the meaning in children's first language development, the students and the teachers in L1 as well as L2 could utilize a number of signs and gesticulations, some of which are iconic and some are symbolic, so as to benefit the children or individuals to better develop their cognitive facilities at all levels of perception, and as a result, to offer different ways of teaching and broaden the scope of language teaching by suggesting tools to consider for visual and gestural communication in a given teaching context. Therefore, as Hodge and Kress (1988) have already implied, semiotics is not only a meaning mediator for the children or language learners, but also encourages the language teachers to play a critical role in the L1 and L2 classrooms.

A more profound interpretation of what children is symbolizing and what they are visualizing when they build gestures can also be regarded and observed when assessing the current investigation in light of Kita's (2000) belief, stated in the literature, that "spatio-motoric thinking can be applied to the virtual environment that is internally created as imagery; representational gestures are regarded as actions in the virtual environment" (p. 165). This view seems particularly useful to examine how children utilize representational gestures as semiotic factors during story-telling and how investigating gestures as semiotic resources can reveal what material from the story-telling process is prominent in the minds of the children. In other words, teachers and learners can better understand how children visualize the content of a story. As six-year-old Kiamehr in the current research created semiotic systems, he generated gestures and gesticulations that represented how he was gestating or forming concepts and words mentally, including what seemed to be the most important information from the story he was telling.

Kiamehr seemed to take himself into account as a part of the virtual environment to show the locations of words or phrases he utilized in his story-telling process. In this respect, Kiamehr communicated the gestation of "سرش رو فشار داد" (=pushed its head) by applying left-hand spinning gestures in the physical space in front of him for the audience to better perceive his gestated concept, i.e. taking the head; which supported by his utterance exactly put at the right time while he keeps on swirling his left-hand fingers in a circle. While recognizing a sort of pairing or alliance between his utterance and the gesture he performed, Kiamehr simultaneously organized another gesture and speech, or gesticulation, i.e. making use of his right hand with his fingers stretched and his palm down, expressing, as Kita (2000) said, another "action in the virtual environment" (165) so as to illustrate the second part of his utterance, i.e. "فشار داد" (=pushed). This can be in line with several studies in the literature suggesting that the gestures children produce while speaking reveal much more about what they are thinking than does their speech alone (Church and Goldin-Meadow, 1986; Perry *et al.,* 1988; 1992; (Martha W Alibali & GoldinMeadow, 1993) Goldin-Meadow *et al.,* 1993; Church *et al.,* 1995; Garber, 1997; (M.W. Alibali, 1999)Church, 1999; Goldin-Meadow, 2000).

In this subtle instant, the audience's perception of Kiamehr's whole gesticulation is changed and completed. The nuances of the story-telling process can be recognized by taking this kind of approach to the analysis of gesticulations, i.e. the analysis of gesticulation reveals as well as deepens the process characteristics of story-telling in the children's use and gestation of the words, phrases, or utterances in general in their first language and their attempts to accentuate their concepts in mostly the iconic type of a firm beat so as to make their particular meanings.

Therefore, how children's organization, timing, sequencing, configuration, and integration of gesture and speech, or gesticulation create moments of shared thinking (see *joint attentional scenes* in Tomasello, 1999; 2003) is what stands out in the focus of this investigation. Mostly, the iconic and beat gestures become superb, spectacular, and noticeable reference points in the way these gesture facets protrude to build a deictic representation; that is, the iconic and beat gestures settle language and meaning so as to simultaneously attend the child and the audience to specific concepts, meanings, and interpretations from the story-telling process. The children are actively and powerfully controling the audience in symbolization and signification. It should

[DOR: 20.1001.1.25884395.2019.1.3.2.5]
[DOI: 10.29252/ieepj.1.3.162]

be noted that six-year-old Kiamehr in this research utilized a familiar and recognized iconic gesture from the environmental gestures use by the people around, i.e. the opening and closing of the arms to show the sound of "بومب" (=Boomb). Actually, this gesticulation from Kiamehr's story-telling in this research obviously illustrated the general theme of "انفجار" (=explosion), which would supply a reference point to show what might be important information to include at the peak of an utterance. In fact, the iconic and beat gestures applied in this data conspicuously explicated how Kiamehr was bringing his original and imaginative story to life for the audience; how the interaction and integration of speech and gestures, or what McNeill calls "gesticulations," mediate to represent and communicate the meaning that the audience utilizes to develop their cognitive inference at all levels of perception during the listening process, and consequently, to interpret these gesticulations and improve their understanding of the whole story by applying tools for visual and gestural interaction in that given informal context. Therefore, on the basis of what Hodge and Kress (1988) have suggested in the theoretical framework of the current investigation, semiotics and, in terms of this research, "gesticulations" can not only be regarded as mediators of meaning-making for the children, but also as valuable facilitators for the audience or comprehenders to apply them properly, so as to have a crucial role in these meaning-making, inferential, and interpretive processes.

Conclusion

In the denouement, the culmination of the present investigation is twofold. The first facet is concerned with how gesture and speech concatenate and integrate into one another, so as to create and forge what McNeill (2005) calls "gesticulation" in the process of a child's story-telling in L1. In fact, the children's creative formation of gesticulation entails a sort of mediation and accommodation in what the children intend to express. This mediation and accommodation performed between what is in the mind of the child and what is expressed to the audience. The more the mediation of gesticulations facilitates and clarifies the meaning in the child's story-telling process, the better the audience can infer, understand, and interpret the child's intentions or stories. And this is exactly the second critical facet that this research accentuated.

Gesticulation, as a reference point, includes noticing how semiotic elements are generated and mediated as utterances, as a part of larger systems of utterances and semiotic resources, in order to consciously develop the children at home and the school in the use of gestures and gesticulations so as to enable them to be better meaning-makers, interpreters, criticizers, and expressers. In other words, teachers of language and literacy at all levels can develop the children's ability to specify what information they are noticing and decide what to include in their stories and also other types of interpretation and generation of text. The study of gesture and the suggested applications for the classroom illuminate how gesture can be applied to make judgments about language and cognition and promote literacy learning across a wide variety of contexts. Therefore, this study might be beneficial for researchers as well as curriculum developers to take children's gestation of gesticulations into account and take some fundamental steps in developing some frameworks based on which teachers can boost children's potential skills in the creation of gesticulations.

Pedagogical Implications: A meticulous observation of teachers and students interacting in the classroom will divulge this fact to men of education that gestures are as pervasive as blackboards, desks, and lesson plans. Since gesture is so prevalent in this environment, it is important to consider what role these gesticulations play in educational situations involving teaching and learning. One crucial implication can be the powerful role that gesture production involves which guide children as well as adults to show their cognitive capacity when communicating about conceptual problems (Goldin-Meadow *et al.,* 2001; Cook and Goldin-Meadow, 2006).

Another implication deals with the fact that gestures influence how information is exchanged between teachers and students during learning sessions. For example, Goldin-Meadow and Sandhofer (1999) observed natural adult–child interactions and discovered that adults often incorporated children's deictic and iconic gestures into what they thought that children had verbally explained (about Piagetian conservation problems) in their speech. This has obvious educational implications.

Given that gestures play a role in teaching and learning, teachers should be able to take advantage of gesture – their own and children's gestures – in the classroom. For example, Pozzer-Ardenghi and Roth (2007) have recently studied teacher–student interactions during high school biology lessons and found that for many concepts, hand gestures provided additional clarifying input for students. They reasoned that hand gestures

[DOR: 20.1001.1.25884395.2019.1.3.2.5]
[DOI: 10.29252/ieepj.1.3.162]

and other visual aids might help students who are struggling with advanced concepts that are not easily represented and taught through speech alone. Indeed, when teaching first-grade children about basic mathematical concepts (i.e. counting numbers of objects), teachers frequently use nonverbal behaviors such as pointing, counting on fingers, circling objects with the finger, etc. (Flevares and Perry, 2001). Interestingly, this visual clarification occurs more frequently when students appear confused.

Moreover, this increased visual instruction often occurs in the absence of increased verbal clarification. In other words, teachers specifically use things like gestures to target students who struggle with mathematical concepts which can be a useful implication. Furthermore, teachers can also use gestures to help struggling learners in other domains as well. For example, when second language learners grapple with aspects of a new language, teachers can use gesture to help with these problems. In fact, in a recent literature review on the role of gesture in second language learning, Gullberg (2006) outlined several reasons why hand gestures may be a crucial tool in helping struggling learners master a new language. For example, she argues that visually rich gestures, such as iconic gestures, serve as ideal input to beginning learners of a second language.

Taking these points into account, this study intends to present some practical implications in the realm of EFL context. The goals of the classroom applications evolving from the gesture research can be intended to prompt the students to:

1) Create a variety of representations on inexpensive poster paper, such as main idea statements, quoted phrases, graphic organizers, collages, etc. that entails specific gestures of gesticulations to be utilized as part of the reading and telling stories, reader response, summarizing stories, and story writing process;

2) Use inexpensive flip-video cameras to record oral explanations of the relationships between main ideas and supporting details illustrated by gesticulations, including thesis statements and main points of stories, summarized readings, film, music, and other media presentations;

3) View videos with an emphasis on prompting students to notice the relationships between deictic types of gestures (pointing) and transition words to explain relationships and mediation of meanings;

4) Write formal explanations of the relationships of supporting detail presented by gesticulations and gestures to main ideas and thesis statements;

5) Move back and forth across phases in this entire series of applications, emphasizing the deictic types of gestures and words used to express relationships, particularly the representations and explanation between supporting details, main idea statements, thesis statements, and narration of stories or other texts.

6) Teachers and students of language and literacy at all levels can develop their ability to specify what information they are noticing and decide what to include in their presentations and other types of interpretation and generation of text.

7) Teachers and students can utilize gesture as a reference point, which includes noticing how semiotic elements are generated and mediated as utterances that are a part of larger systems of utterances and semiotic resources.

8) The investigation on gesture and the suggested applications for the classroom illuminate how gesture can be applied to make judgments about language and cognition and promote literacy learning across a wide variety of EFL contexts.

Of course, these suggestions for integrating gesture study in the classroom are still evolving. Additional extensions of using gesture in the classroom deals with guiding students into identifying metaphoric gestures in moments of speech and comparing these to metaphors expressed in different types of readings and other media (e.g. movies, or digital games) which are so difficult to be done for children. All in all, access to cameras and methods for giving video to students are the crucial challenges to integrating the study of gestures and speech into different literacy/language learning contexts. However, despite the challenges, the potential benefits are ultimately only restricted by the imagination and institutional, curriculum, and cultural constraints. By having teachers and students use gesture as a reference point around which to inventory semiotic resources, which includes noticing how these resources are created and evident as utterances that are a part of larger systems of utterances and semiotic resources, teachers and students of language and literacy at all levels can develop their ability to determine what information they are noticing and decide what to include in their presentations, stories, and other types of interpretation and creation of text. The study of gesture and the suggested applications for the classroom demonstrate how gesture can be used to make judgments about language and cognition and

[DOR: 20.1001.1.25884395.2019.1.3.2.5]
[DOI: 10.29252/ieepj.1.3.162]

enhance literacy learning across a wide variety of contexts.

Hints to Future Investigations: In addition to these varied avenues for future research, there still remain a number of other important research questions. For example, to what extent are hand gestures processed similarly or differently than other actions made with the hand (e.g. reaching behaviors, physical manipulations of objects, pantomimes, etc.)? How are gestures different in one's native language compared to a second (or third, or fourth . . .) language? Are there different neural mechanisms involved in gesture production compared to gesture comprehension? Finally, now that the evidence strongly favors the view that gesture and speech are indeed an integrated system, what exactly is the nature of this system: is it propositional, imagistic, spatial, motoric, or some combination of these?

Limitations of the Study: As in all research there were several limitations to this study. There is a limitation with regard to the inclusion of just one exemplar participant, a six-year-old child. Despite utilizing an objective analytical framework to the data, the findings are ultimately subjective to some extent. In addition, generalizability of the findings is also limited. To counter a variety of limitations, data interpreted for the present paper are displayed for readers to make their own judgments about the verifiability of the findings.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

Alibali, M. W. (1999). How children change their minds: Strategy change can be gradual or abrupt. *Developmental psychology, 35*(1), 127.

Alibali, M. W., & GoldinMeadow, S. (1993). Gesture-speech mismatch and mechanisms of learning: What the hands reveal about a child′ s state of mind. *Cognitive psychology, 25*(4), 468-523.

Alibali, M. W., Flevares, L. M., & Goldin-Meadow, S. (1997). Assessing knowledge conveyed in gesture: Do teachers have the upper hand? *Journal of educational psychology, 89*(1), 183.

Alibali, M. W., Kita, S., & Young, A. J. (2000). Gesture and the process of speech production: We think, therefore we gesture. *Language and cognitive processes, 15*(6), 593-613.

Allen, L. Q. (1995). The effects of emblematic gestures on the development and access of mental representations of French expressions. *The Modern Language Journal, 79*(4), 521-529.

Armstrong, D. F. (2002). *Original signs: Gesture, sign, and the sources of language*: Gallaudet University Press.

Azmitia, M., & Perlmutter, M. (1989). Social influences on children's cognition: State of the art and future directions *Advances in child development and behavior* (Vol. 22, pp. 89-144): Elsevier.

Bakhtin, M. M. (2010). *Speech genres and other late essays*: University of Texas Press.

Ball, D. L. (1993). Halves, pieces, and twoths: Constructing and using representational contexts in teaching fractions. *Rational numbers: An integration of research*, 157-195.

Bates, E. (1976). *Language and context: The acquisition of pragmatics*: Academic Press.

Bates, E. (2014). *The emergence of symbols: Cognition and communication in infancy*: Academic Press.

Bates, E., & Dick, F. (2002). Language, gesture, and the developing brain. *Developmental Psychobiology: The Journal of the International Society for Developmental Psychobiology, 40*(3), 293-310.

Beattie, G., & Shovelton, H. (1999). Mapping the range of information contained in the iconic hand gestures that accompany spontaneous speech. *Journal of language and social psychology, 18*(4), 438-462.

Berman, L., & Slobin, D. (1994). Relating Events in Narrative: Across Linguistic Developmental Study, Hillsdale, NJ: Lowrence Erlbaum Associates. *Inc., Publishers*.

Bonda, E., Petrides, M., Ostry, D., & Evans, A. (1996). Specific involvement of human parietal systems and the amygdala in the perception of biological motion. *Journal of Neuroscience, 16*(11), 3737-3744.

Brady, N. C., Marquis, J., Fleming, K., & McLean, L. (2004). Prelinguistic predictors of language growth in

children with developmental disabilities. *Journal of Speech, Language, and Hearing Research*.
Broaders, S. C., Cook, S. W., Mitchell, Z., & Goldin-Meadow, S. (2007). Making children gesture brings out implicit knowledge and leads to learning. *Journal of Experimental Psychology: General, 136*(4), 539.
Buffington, D. M., Krantz, P. J., McClannahan, L. E., & Poulson, C. L. (1998). Procedures for teaching appropriate gestural communication skills to children with autism. *Journal of Autism and Developmental Disorders, 28*(6), 535-545.
Butcher, C. (2000). two-word speech: when hand and mouth come together. *Language and gesture, 2*, 235.
Cassell, J., McNeill, D., & McCullough, K.-E. (1999). Speech-gesture mismatches: Evidence for one underlying representation of linguistic and nonlinguistic information. *Pragmatics & cognition, 7*(1), 1-34.
Chandler, D. (2007). *Semiotics: the basics*: Routledge.
Chinn, C. A. (2006). The microgenetic method: Current work and extensions to classroom research. *Handbook of complementary methods in education research*, 439-456.
Church, R. B. (1999). Using gesture and speech to capture transitions in learning. *Cognitive Development, 14*(2), 313-342.
Church, R., & Ayman-Nolley, S. (1995). *A microgenetic analysis of peer interaction: A bi-directional explanation of learning.* Paper presented at the biennial meeting of the Society of Research in Child Develop-ment, Indianapolis.
Cook, S. W., & Goldin-Meadow, S. (2006). The role of gesture in learning: Do children use their hands to change their minds? *Journal of cognition and development, 7*(2), 211-232.
Cook, S. W., Mitchell, Z., & Goldin-Meadow, S. (2008). Gesturing makes learning last. *Cognition, 106*(2), 1047-1058.
Eco, U. (1999). Philosophy, Semiotics and the Work of Fiction: Cambridge (UK): Polity Press.
Feyereisen, P., & De Lannoy, J.-D. (1991). *Gestures and speech: Psychological investigations*: Cambridge University Press.
Flevares, L. M., & Perry, M. (2001). How many do you see? The use of nonspoken representations in first-grade mathematics lessons. *Journal of educational psychology, 93*(2), 330.
Goldin-Meadow, S. (2000). Beyond words: The importance of gesture to researchers and learners. *Child development, 71*(1), 231-239.
Goldin-Meadow, S., & Sandhofer, C. M. (1999). Gestures convey substantive information about a child's thoughts to ordinary listeners. *Developmental Science, 2*(1), 67-74.
Goldin-Meadow, S., Alibali, M. W., & Church, R. B. (1993). Transitions in concept acquisition: using the hand to read the mind. *Psychological review, 100*(2), 279.
Goldin-Meadow, S., Wein, D., & Chang, C. (1992). Assessing knowledge through gesture: Using children's hands to read their minds. *Cognition and Instruction, 9*(3), 201-219.
Gullberg, M. (2008). A helping hand? Gestures, L2 learners, and grammar. *Gesture, Second Language acquisition and Classroom research. Applied Linguistics Series*, 185-210.
Gullberg, M., & McCafferty, S. G. (2008). Introduction to gesture and SLA: Toward an integrated approach. *Studies in Second Language Acquisition, 30*(2), 133-146.
Harré, R., & Secord, P. (1972). *The explanation of human behavior.* London, UK: Oxford, Basil Blackwell.
Hodge, R. and Kress, G. (1988). *Social Semiotics*. Cornwall: Polity Press.
Huberman, M., & Miles, M. (1998). Data management and analysis methods. In N. Denzin and Y. Lincoln (Eds.), *Collecting and interpreting qualitative materials* (pp. 179-210). Thousand Oaks, CA: Sage.
Iverson, J. M., & Goldin-Meadow, S. (1997). What's communication got to do with it? Gesture in children blind from birth. *Developmental psychology, 33*(3), 453.
Iverson, J. M., Capirci, O., & Caselli, M. C. (1994). From communication to language in two modalities. *Cognitive Development, 9*(1), 23-43.
Iverson, J. M., Longobardi, E., & Caselli, M. C. (2003). Relationship between gestures and words in children with Down's syndrome and typically developing children in the early stages of communicative development. *International Journal of Language & Communication Disorders, 38*(2), 179-197.
Kendon, A. (2004). *Gesture: Visible action as utterance*: Cambridge University Press.
Kida, T. (2009). Does gesture aid discourse comprehension in the L2? *Gesture* (pp. 143-168): Routledge.

Kita, S. (2000). How representational gestures help speaking. *Language and gesture, 1*, 162-185.
Krauss, R. M. (1998). Why do we gesture when we speak? *Current directions in psychological science, 7*(2), 54-54.
Krauss, R. M., Chen, Y., & Gottesman, R. F. (2000). 13 Lexical gestures and lexical access: a process. *Language and gesture, 2*, 261.
Krauss, R. M., Morrel-Samuels, P., & Colasante, C. (1991). Do conversational hand gestures communicate? *Journal of Personality and Social Psychology, 61*(5), 743.
Lantolf, J. P. (2000). *Sociocultural theory and second language learning* (Vol. 78): Oxford university press.
Lazaraton, A. (2004). Gesture and speech in the vocabulary explanations of one ESL teacher: A microanalytic inquiry. *Language learning, 54*(1), 79-117.
Lee, J. (2008). Gesture and private speech in second language acquisition. *Studies in Second Language Acquisition, 30*(2), 169-190.
Luria, A. (1979). The making of mind. Cambridge. *MA: Harvard University*.
Masur, E. F. (1983). Gestural development, dual-directional signaling, and the transition to words. *Journal of Psycholinguistic Research, 12*(2), 93-109.
McCafferty, S. G. (1998). Nonverbal expression and L2 private speech. *Applied linguistics, 19*(1), 73-96.
McCafferty, S. G. (2002). Gesture and creating zones of proximal development for second language learning. *The Modern Language Journal, 86*(2), 192-203.
McCafferty, S. G. (2004). Space for cognition: Gesture and second language learning. *International Journal of Applied Linguistics, 14*(1), 148-165.
McCafferty, S. G. (2009). Material foundations for second language acquisition: Gesture, metaphor, and internalization *Gesture* (pp. 59-77): Routledge.
McCafferty, S. G., & Ahmed, M. K. (2000). The appropriation of gestures of the abstract by L2 learners. *Sociocultural theory and second language learning*, 199-218.
McCafferty, S. G., & Stam, G. (2009). *Gesture: Second language acquistion and classroom research*: Routledge.
McNeill, D. (1992). *Hand and mind: What gestures reveal about thought*: University of Chicago press.
McNeill, D. (2005). Gesture and thought. Chicago, IL, US: University of Chicago Press. http://dx. doi. org/10.7208/chicago ….
McNeill, D., & Duncan, S. (2000). Growth points in thinking-for-speaking. *Language and gesture*(1987), 141-161.
Perry, M., Church, R. B., & Goldin-Meadow, S. (1988). Transitional knowledge in the acquisition of concepts. *Cognitive Development, 3*(4), 359-400.
Piaget, J. (1967). Six psychological studies. New York, NY: Random House.
Ringham, F. (2006). Key terms in semiotics: London: Continuum.
Robbins, D. (2003). *Vygotsky's and AA Leontiev's semiotics and psycholinguistics: Applications for education, second language acquisition, and theories of language*: Westport, Conn.: Praeger Publishers.
Roebuck, R. F., & Wagner, L. C. (2004). Teaching repetition as a communicative and cognitive tool: evidence from a Spanish conversation class. *International Journal of Applied Linguistics, 14*(1), 70-89.
Rubin, H., & Rubin, I. S. (1995). Interviews as guided conversations. *Qualitative interviewing: the art of hearing data. London: Sage*, 122-144.
Saussure, F. d. (1983). Course in general linguistics, trans. *R. Harris, London: Duckworth*.
Sawyer, R. K. (2002). Unresolved tensions in sociocultural theory: Analogies with contemporary sociological debates. *Culture & Psychology, 8*(3), 283-305.
Schensul, J. J., LeCompte, M. D., Nastasi, B. K., & Borgatti, S. P. (1999). *Enhanced ethnographic methods: Audiovisual techniques, focused group interviews, and elicitation techniques*: Altamira Press Walnut Creek, CA.
Scheub, H. (1977). Body and image in oral narrative performance. *New Literary History, 8*(3), 345-367.
Sime, D. (2008). Because of her gesture, it's very easy to understand'-learners' perceptions of teachers' gestures in the foreign language class. *2008*, 127-148.
Slobin, D. I. (2003). Language and thought online: Cognitive consequences of linguistic relativity. *Language*

in mind: Advances in the study of language and thought, 157192.
Smithson, L., & Nicoladis, E. (2013). Verbal memory resources predict iconic gesture use among monolinguals and bilinguals. *Bilingualism: Language and Cognition, 16*(4), 934-944.
Stam, G. (2008). What gestures reveal about second language acquisition. *Gesture: Second Language Acquisition and Classroom Research*, 231.
Tomasello, M. (1999). The Cultural Origins of Human Cognition Cambridge MA: Harvard Univ: Press.
Tomasello, M. (2003). *Constructing a language: A usage-based theory of language acquisition.* Cambridge, MA: Harbard University Press.
Unger, J. (2007). A developmental analysis of a concept map, speech, and gesture. *Asian EFL Journal, 9*(3), 58-92.
Van Leeuwen, T. (2005). *Introducing social semiotics*: Psychology Press.
Van Leeuwen, T., & Jewitt, C. (2001). *The handbook of visual analysis*: Sage.
Van Lier, L. (2004). The semiotics and ecology of language learning. *Utbildning & Demokrati, 13*(3), 79-103.
Van Lier, L. (2014). *Interaction in the language curriculum: Awareness, autonomy and authenticity*: Routledge.
Vecchi, T., Phillips, L. H. & Cornoldi, C. (2001). Individual differences in visuo-spatial working memory. In: M. Denis, R. H. Logie, C. Cornoldi, M. de Vega, & J. Engelkamp (Eds.), *Imagery, language, and visuo-spatial thinking*. Psychology Press, Hove.
Vygotsky, L. S. (1980). *Mind in society: The development of higher psychological processes*: Harvard university press.
Vygotsky, L. S. (1986). Thought and language (A. Kozulin, trans.): Cambridge, ma: mit Press.
Wells, G. (1999). *Dialogic inquiry: Towards a socio-cultural practice and theory of education*: Cambridge University Press.
Werner, H. (1978). Microgenesis and aphasia. In S. Barten and M. Franklin (Eds.), *Deveopmental processes: Heinz Werner's selected writings Vol 2* (pp. 429-444). NY: International Universities Press, Inc.
Wertsch, J (2007). Mediation. In H. Daniels, M. Cole, & J. Wertsch (Eds.), *The Cambridge companion to Vygotsky* (178-192). New York: Cambridge University Press.
Wertsch, J. V. (1979). The regulation of human action and the given-new organization of private speech. *The development of self-regulation through private speech*, 79-98.
Wertsch, J. V. (1985). *Vygotsky and the social formation of mind*: Harvard University Press.
Wertsch, J. V. (1998). *Mind as action*: Oxford university press.
Wertsch, J. V., & Wertsch, J. V. (2009). *Voices of the mind: Sociocultural approach to mediated action*: Harvard University Press.