

## By the Way, Children Don't Know By

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### 1. Introduction

Not only do (English-speaking) children have difficulty with passives, but they have much greater difficulty with passives involving “psychological” verbs (1) compared to passives with “actional” verbs (2), a finding confirmed in every study crossing voice and verb type (Maratsos, Fox, Becker, & Chalkley, 1985; Sudhalter and Braine, 1985; Gordon & Chafetz, 1990; Fox & Grodzinsky, 1998; Hirsch & Wexler, 2004a; Hirsch & Wexler, 2006; Hirsch & Hartman, 2006).

(1) The boy was loved / seen / remembered by the girl.

(2) The boy was kissed / kicked / held by the girl.

An early attempt to synthesize much of the data concerning children's early passives was the *A-Chain Deficit Hypothesis (ACDH)* of Borer & Wexler (1987). According to ACDH, children's difficulties with passives stem from their inability to form the A(rgument)-chain between the underlying object and subject position. Without this chain, children have no syntactic means to assign the correct thematic-role to the displaced object. Young children's inability to represent A-chains is hypothesized to be genetically determined, with the biological (i.e. neural) structures mediating A-chains developing only sometime after age five.

While ACDH accounts for children's general difficulties with verbal passives, it does not directly address the asymmetry in comprehension between actional and psychological passives. Borer and Wexler hypothesized that even with ACDH, children nonetheless attempt some syntactic parse for passives. Their idea was that children analyze what for adults are verbal passives as (homophonous) adjectival passives, with the latter not containing the crucial A-chain. They note that actional

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verbs tend to make better adjectival passives than (stative) psychological verbs, so that the adjectival strategy only yields a representation for actional passives.<sup>1</sup>

While the originally postulated syntactic deficit (i.e. total lack of A-chains) may be too strong, several variant theories have been offered, each basically keeping the central tenet of the original proposal, that children's early grammar lacks the syntactic means to represent passives due to biological immaturity: External Argument Requirement Hypothesis (Babyonyshev, Ganger, Pesetsky, & Wexler, 2001), Universal Phase Requirement (Wexler, 2004) and Canonical Alignment Hypothesis (Hyams, Ntelitheos, & Manorohanta, submitted). All such accounts maintain some adjectival strategy to account for the interaction of voice and verb type such that psychological passives are worse for children than actional passives.

In support of some of these theories is that they straightforwardly account for problems with other constructions involving similar syntactic dependencies, such as raising constructions involving the verb *seem* (Hirsch & Wexler, 2004b; Hirsch & Wexler, 2005; the latter demonstrating within-subject problems for both passives and raising) and unaccusatives (Miyamoto, Wexler, Aikawa, & Miyagawa, 1999; Babyonyshev et al., 2001; Lee & Wexler, 2001; Ito & Wexler, 2002).

## 2. Challenges for Maturation/Grammatical Theories

Fox & Grodzinsky (1998) raise three purported empirical problems for ACDH, from which they conclude that children do not have a problem representing passives *per se*. First, the authors cite other studies claiming that in certain languages children do demonstrate early knowledge of passives, such as Sesotho (Demuth, 1989) and Inuktitut (Allen & Crago, 1996). If, as Fox and Grodzinsky assume, these languages involve passives containing A-chains, then children should be equally delayed in comprehending passives in such languages. Their second criticism involves Spanish post-verbal passives. While post-verbal passives do not involve overt movement, children have just as much difficulty with post-verbal passives as they do with pre-verbal passives (Pierce, 1992).

Neither of these first two criticisms, however, constitutes a serious challenge to the maturation/grammatical theories. With respect to the cross-linguistic data, all studies purporting to demonstrate early acquisition of passives are based solely on natural production studies, never comprehension studies, the latter constituting in this case a far clearer and stronger form of evidence for demonstrating linguistic competence. In particular, for every claim of early competence for passive, there is serious controversy as to whether the language actually demonstrates early knowledge of the passive (see Crawford, 2005 for striking evidence supporting universal passive delay). In every language in which actual experiments have been conducted, constituting many languages from diverse language families, children have been shown to have difficulties comprehending passives: German (Bartke, 2004), Dutch (Verrips, 1996), Spanish (Pierce, 1992), (Brazilian) Portuguese (Gabriel, 2001), Russian (Babyonyshev & Brun, 2003), Serbian (Djurkovic, 2005),

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<sup>1</sup> We return to evidence supporting an adjectival analysis of children's early passives in Section 6.

Greek (Terzi & Wexler, 2002), Japanese (Sugisaki, 1998), and (Mandarin) Chinese (Chang, 1986). Until similar experimental studies demonstrate early acquisition of verbal passive in some language, the experimental evidence strongly supports universal passive delay. As for the case of post-verbal passives in Spanish, while they do not involve surface movement, a covert A-chain (or in Minimalist terms, a long-distance Agree relation) exists between the object and higher tense position. The grammatical theories in the literature are not constrained only to cases of overt movement, and they predict difficulties even for the relevant covert dependencies (see Babyonyshev et al., 2001 for evidence that this is empirically correct).

The third issue raised by Fox and Grodzinsky does, however, prove problematic for many of the maturation/grammatical theories. They (correctly) point out that any grammatical account making use of an adjectival strategy predicts that children should have difficulty comprehending truncated (i.e. without a *by*-phrase) psychological passives, since they contain an A-chain and should not make good adjectival passives due to their stativity. They then offer empirical evidence that a subgroup of the children they examined comprehend truncated psychological passives. Fox and Grodzinsky take this finding, along with children's difficulties with full (i.e. with a *by*-phrase) psychological passives to indicate that children *can* represent passives, but that children at this age (3-5 years) are unable to transmit the theta-role of the external argument to the *by*-phrase.

Their basic idea is that while children are able to mediate the movement of the object to subject position, thus deducing the correct theta-role for the derived subject, children lack the mechanism to transfer the theta-role assigned to the subject in the active alternation to the *by*-phrase<sup>2</sup>. Lacking the syntactic process of thematic-transmission, children are predicted to have no difficulties with any truncated passives, but should find any full passive ungrammatical. This account requires a compensatory strategy to derive better performance on full actional passives as compared to full psychological passives. Fox and Grodzinsky hypothesize that while children are unable to deduce the thematic-role of the *by*-phrase by means of thematic-transmission, the *by*-phrase nevertheless comes to have a thematic-role. Namely, it is assigned directly by the preposition itself. While the preposition *by* in passives is semantically-vacuous, elsewhere in the grammar *by* is semantically-contentful.<sup>3</sup> English has a temporal-*by* (3) and a locative-*by* (4).

(3) We arrived *by* 5 *PM*.

(4) Mary ate *by her* *locker*.

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<sup>2</sup> Note that this theory is still a maturation theory; it just differs with respect to what is postulated to mature, in this case, thematic-transmission.

<sup>3</sup> That passive *by* is semantically-vacuous, it suffices to demonstrate that the thematic-role of the complement of the *by*-phrase is determined by the verb, not the preposition, as first noted by Jaeggli (1986):

Sophocles was kicked <i>by Euripides</i> .	(agent)
The package was sent <i>by Sophocles</i> .	(source)
The letter was received <i>by Euripides</i> .	(goal)
Sophocles is feared <i>by all students</i> .	(experiencer)

Furthermore, English also has an agent/affector-*by*, as seen in simple nominals (5a) and derived nominals (5b).

- (5) a. The book *by Stendhal*<sup>4</sup>  
b. The city's destruction *by the foreign army*<sup>5</sup>

Fox and Grodzinsky assume English-speaking children know English has a preposition *by* that assigns an agent-like theta-role independent of theta-transmission:

“[I]n nominals a *by*-phrase can receive an affector theta-role without the process of theta-transmission. From this we conclude that the complement of *by* can *always* receive an affector theta-role without theta-transmission”

Fox & Grodzinsky (1998), pg. 326

Additionally, the authors assume that when interpreting full passives, children will analyze the preposition *by*, which is semantically-vacuous in the adult grammar, as being the semantically-contentful agent-*by* that appears in nominals with *by*-phrases. This agent-*by* would thus be (coincidentally) compatible with full actional passives, wherein the *by*-phrase would receive an agent theta-role from the verb in the adult grammar, but is incompatible with full psychological passives, where the *by*-phrase should receive an experiencer theta-role from the verb, but instead receives an agent theta-role directly from the preposition. It is this clash of thematic-roles that is taken to underlie children's problems with full psychological passives.

Thus, the logic of Fox and Grodzinsky's *by*-phrase theory of passive acquisition can be summarized with three premises, from which their final conclusion is drawn. First, they assume children lack the syntactic mechanism of theta-transmission. Second, they assume children know *by* may directly assign an agent theta-role to its complement (as in nominals). Third, they assume thematic incongruity leads to chance performance. From this, they conclude that children can comprehend full actional passives, but not full psychological passives.

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<sup>4</sup> *By* in such nominals must have an agent-like (specifically *creator*) reading:

*The book by Stendhal*

- (i) Stendhal wrote the book.
- (ii) \*Stendhal received the book.
- (iii) \*Stendhal feared the book.
- (iv) \*Stendhal owned the book.

<sup>5</sup> *By*-phrases are only allowed in those derived nominals based on actional verbs:

- (i) The city's destruction (by the Visigoths)  
[cf. The city was destroyed by the Visigoths]
- (ii) The package's receipt (?by the company)  
[cf. The package was received by the company]
- (iii) The professor's fear (\*by the students)  
[cf. The professor was feared by the students]

It must be noted, however, Fox and Grodzinsky require children to know (i.e. have learned) the second premise above, namely, that their language is one where the preposition that appears in passives is phonologically identical to the agent-assigning preposition that appears, for example, in nominals. If children did not take these two prepositions to be the same, then there is no reason to expect children to substitute the semantically-contentful agent-*by* for the otherwise semantically-vacuous *by* in passives. That this mapping must be learned is evident by the fact that many languages have different prepositions in passives and agentive nominals. As noted in Grimshaw (1990), Spanish is one such language. In Spanish, the preposition *por* is used in full passives (6a), which is not the preposition used in simple nominals (6b). Instead, the preposition *de* is used with such nominals (6c).

- (6) a. Maria fue peinada por Juan.
- b. \*Un libro por Stendhal
- c. Un libro de Stendhal

### 3. Study 1: CHILDES data

Evidence for Fox and Grodzinsky's *by*-phrase theory was first sought using natural speech, both in child-produced and child-directed utterances. We searched the input to and output of 1051 English-speaking children in the CHILDES corpus for all sentences containing the preposition *by*.<sup>6</sup> This involved electronically searching through 755,454 unique child-directed utterances and 414,014 unique child-produced utterances. We began by asking whether there is any evidence that children know that English has an agent-*by*. First we searched for any examples of use or exposure to *by*-phrases in nominals (both simple and derived nominals), since such uses of *by* must be agentive. No child produces even a single nominal *by*-phrase, nor does any child hear even a single such nominal *by*-phrase. While there are plenty of examples of other cases of semantically-contentful *by* (e.g. locative-*by* and temporal-*by*), there are no examples of agent-*by* in either child-produced or child-directed speech.

According to Fox and Grodzinsky, in interpreting the *by*-phrase of actional passives, children's syntactic representation must involve *by* itself assigning an agent theta-role to its complement, since theta-transmission is assumed to be impossible. If the child's syntax allows agent-*by* in passives, what is to constrain it from appearing elsewhere? We might expect children to use agent-*by* with other constructions, for example, with unaccusatives to mark the causer (e.g. *The ice melted by the man*; cf. *The man made the ice melt*) or likewise with adjectives (e.g. *The house is green by the man*; cf. *The man made the house green*). No such examples, however, appear in child-produced speech, such that all child uses of *by* conform to grammatical uses in the adult grammar. Thus, there is no evidence from corpus research to suggest children know *by* may assign an agent theta-role independent of theta-transmission.

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<sup>6</sup> At the time of the analyses (2/2004) this constituted every English-speaking child in the CHILDES corpus.

#### 4. Study 2: By-About

Given the lack of any corpus evidence for children knowing of agent-*by*, we designed a direct test for such knowledge. One obvious place to look for evidence of agent-*by* is in nominals, since nominal *by*-phrases must have an agentive reading in the adult grammar. While no such nominal *by*-phrases appeared in either child-directed or child-produced speech, this does not mean children do not possess such knowledge. Corpus counts alone are limiting, as paucity of input or productions does not necessitate poverty of comprehension.

In addition to testing comprehension of nominal *by*-phrases, we also tested children's comprehension of nominal *about*-phrases (e.g. *The book about Stendhal*). While nominal *by*-phrases do not appear in the corpus, nominal *about*-phrases are abundant. We designed scenarios that pitted knowledge of *by*-phrases against that of *about*-phrases. Each scenario involved two characters who each told a story about the other character. For example, in one scenario Minnie tells a story about Donald climbing some mountains, while Donald tells a story about Minnie going to the beach (see Figure 1). Thus, in each scenario there is a different story by Minnie and Donald, and a different story about Minnie and Donald. A third character, here Kermit, watches the other two characters tell their story, and is then asked to comment on one of the stories. The child then reports whether Kermit was right or wrong. This truth-value judgment task tests two constructions. In half of Kermit's responses, he comments on the story *by* one character (*by*-trials) using the form *The story by X had Y in it*, the other half involve comments on the story *about* one character (*about*-trials) using the form *The story about X had Y in it*. Half of his responses are true, the other half false. The character that appears as the complement of the preposition is counter-balanced across constructions and truth-conditions. Twelve items were constructed for each condition, half each true and false (24 items total). Items were pseudo-randomized, such that no two subconditions (e.g. *about*-false or *by*-true) appeared consecutively

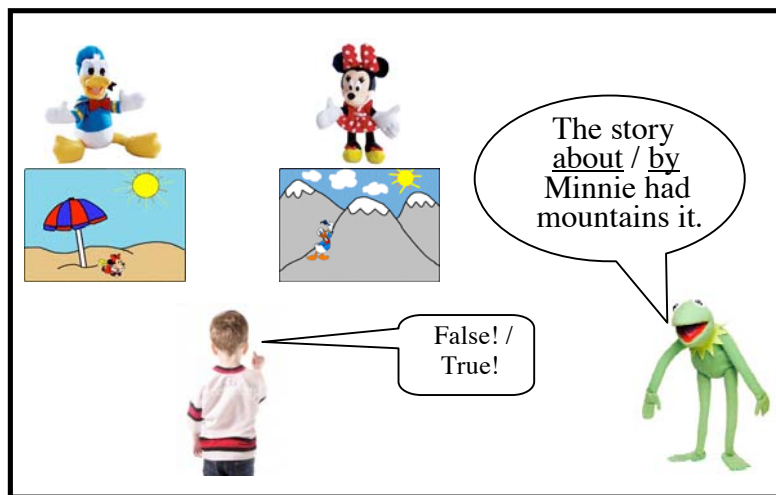


Figure 1

Data is presented for thirty children in total, with ten children in every one-year interval from three to five years. Details concerning participants appear below in Table 1.

**Table 1**

Group	Number	Age Group	Mean Age
3-year-olds	10	3;0-3;11	3.61
4-year-olds	10	4;0-4;11	4.38
5-year-olds	10	5;0-5;10	5.47
Total	30	3;0-5;10	4.49

Before administering the *by-about* task to these children, a pretest was administered to ensure that they understood that a character could both be the storyteller as well as the subject of a story, independent of the use of the prepositions *by* and *about*. The pretest consisted of four items, two *by*-controls and two *about*-controls, where each of the two control conditions required one *right* and one *wrong* response. The *by*-controls involved an object relative clause and took the form *The story that X told had Y in it*. The *about*-controls simply substituted the preposition *with* for *about*, and took the form *The story with X had Y in it*. Other than the change in sentence form, the trials were identical to those in the actual experiment, as detailed previously. Only children scoring four out of four correct on the pre-test were allowed to continue to the actual experiment. All children were able to successfully complete the pre-test and thus continued on to the actual experiment.

The experimental results are summarized below in Table 2. Overall, children performed quite well on the *about*-trials, showing no comprehension difficulties at any age. Collapsing across age groups and truth, children comprehended the *about*-nominals 91.4% of the time. Children comprehended the true and false *about*-trials equally well ( $t(357) = 0.954$ ,  $p = .341$ ). Collapsing across truth, there was no significant effect by age group ( $F(2,356) = 0.588$ ,  $p = .556$ ), with all groups scoring at least 89% correct.

Children, however, had much greater difficulty with the *by*-trials. No group scored better than 34% correct, with an average accuracy of 29.4% across the three age groups. There was no statistical difference between the low scores for the three groups on the *by*-trials ( $F(2,357) = 0.473$ ,  $p = .623$ ). While children scored slightly better on the true conditions ( $t(353,corrected) = 2.55$ ,  $p = .011$ ), overall the groups were below chance in answering the *by*-trials ( $t(29) = -4.08$ ,  $p = .0003$ ). This below-chance performance indicates that children were treating the *by*-trials as *about*-trials (as opposed to merely guessing randomly, which would predict chance performance). This is the case since children consistently interpreted the phrase *The story by X* to mean the same thing as *The story about X*, such that the children nearly always take *by X* to indicate the character about whom the story was told, as opposed to indicating the storyteller.

**Table 2**

Condition	3 year-olds	4 year-olds	5 year-olds	Total
About-T	94.4%	90.0%	95.5%	92.8%
About-F	92.6%	88.1%	90.0%	89.9%
About	93.5%	89.1%	92.5%	91.4%
By-T	34.4%	35.0%	35.0%	34.8%
By-F	18.3%	31.7%	21.7%	23.9%
By	26.6%	33.3%	28.3%	29.4%

These results indicate that until at least five years of age, children do not understand that *by*-phrases in nominals reflect agents/creators, rather, they take such *by*-phrases to designate the subject matter of the noun to which they are adjoined. These results are not altogether unexpected given that children must learn the semantic properties of the preposition *by* from the input and given the total absence of nominal *by*-phrases in the input. Since nominal *about*-phrases were present in the input, it follows that children correctly understood these phrases. Why children interpret *by* as *about* in the context of nominals, however, is left unexplained. Perhaps children conflate the two prepositions given semantic evidence only for *about* in the relevant syntactic frame.

Such findings cast serious doubt on the *by*-phrase theory posited in Fox & Grodzinsky (1998). These data clearly show that children cannot be using knowledge gained from nominal *by*-phrases to determine the semantic properties of semantically-contentful *by*. While there might be sources of evidence for agentive-*by* other than nominals, if these children did know that English licenses an agentive-*by*, as required for the *by*-phrase theory, then we are left wondering why children do not apply this knowledge to nominals.<sup>7</sup> At least for nominals, we have demonstrated that children interpret semantically-contentful *by* as theme-*by* and not agent-*by*. Given no independent evidence that children have knowledge of agent-*by*, we are left to conclude that the only semantically-contentful *by* (other than locative-*by* and temporal-*by*) children know is that of theme-*by*. If such knowledge is coupled with Fox and Grodzinsky's claim that children lack the syntactic operation of thematic-transmission, then for any full passive, children would come to assign a theme thematic-role to the complement of the *by*-phrase. For both actional and psychological passives, this would lead to representations involving two themes (or very similar theme and stimulus thematic-roles for psychological passives), and we

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<sup>7</sup> While these data clearly show that children have not learned from nominals that *by* itself can assign an agent theta-role, there are other constructions which might nonetheless lead children to this conclusion. For example, though full passives are rare in the input to children, when children do hear full passives, they are inevitably actional passives. Thus from full passives alone children might come to believe that *by* in passives directly assigns its complement an agent theta-role. While this is certainly possible, it does not account for why children treat nominal *by*-phrases as involving theme-*by*.



might therefore expect all full passives to be comprehended at chance level, due to conflicting theta-roles.

### **5. Children Do Not Comprehend Truncated Psychological Passives**

As no evidence for Fox and Grodzinsky's *by*-phrase theory was obtained from either the CHILDES data or the *by-about* experiment, we were drawn to reconsider the validity of these authors' claim that children comprehend truncated psychological passives. As it turns out, there are many reasons to question this claim. First, since the time that their paper was published, we know of no confirming replication. Given the importance of such data for theories of passive acquisition, replication seems desirable. Second, only eight children were shown to manifest this pattern of good performance on truncated psychological passives and poor performance on full psychological passives. In their study, a second group of three children performed exactly as predicted by ACDH and variant maturational accounts, at chance for both full and truncated psychological passives. Regardless of the proportion of children in each of these two groups, the group showing good performance for truncated psychological passives is quite small (only eight children). Third, Fox and Grodzinsky used very few items per condition (only four). The small number of subjects and items raises the possibility of statistical artifact playing a role in their result. Fourth, the methodology employed in their study leads to a clear possibility of artifact. The experiment was run over four separate sessions, with no control over what the children learned or were taught between each session, nor for any inherent biological maturation between sessions. Furthermore, items within each session were all of the same condition. This lack of randomization, coupled with the fact that the condition always tested last was that of the truncated psychological passives raises the possibility of the children's grammar having changed during the course of the study, such that we are not left with a static picture of this grammar. Finally, it turns out that every other study that has examined the comprehension of truncated psychological passives has found chance performance for this sentence type.

The first experiment that examined children's comprehension of truncated psychological passives actually appeared before Fox & Grodzinsky (1998). Gordon & Chafetz (1990) test the same conditions as Fox and Grodzinsky, but used more subjects (30) and more items per condition (6). They find chance performance for truncated psychological passives (43% accuracy). Using a different methodology from that of either Fox and Grodzinsky or Gordon and Chafetz, Hirsch & Wexler (2004a) also find, for their 60 children (3-5 years), that truncated psychological passives are comprehended at chance level, that truncated psychological passives are not comprehended differently than full psychological passives, and that truncated psychological passives are comprehended differently than truncated actional passives, thus exactly replicating the findings reported by Gordon and Chafetz. Hirsch & Wexler (2006) examine the comprehension of these same conditions in 140 children from three to nine years of age. They too find only chance performance for truncated psychological passives. Of the 140 subjects tested, only two children have scores matching the Fox and Grodzinsky pattern of

good performance on truncated psychological passives and poor performance on full psychological passives. All but eight children perform similarly on full and truncated psychological passives, demonstrating that the presence or absence of the *by*-phrase does not contribute to children's comprehension.

Given the now overwhelming evidence that children do not comprehend truncated psychological passives, we have no reason to believe that children's poor performance on full psychological passives is at all related to the presence of the *by*-phrase. Thus, as a class, theories attempting to account for children's delay in passive comprehension that make reference to the *by*-phrase cannot be correct.<sup>8</sup> Further evidence against *by*-phrase theories comes from the fact that at the age when children have problems even with full actional passives (3-4 years), truncated actional passives also prove problematic (Maratsos & Abramovitch, 1975; Gordon & Chafetz, 1990; Hirsch & Wexler, 2004a; Hirsch & Wexler, 2006). That is, even for actional passives, there is no comprehension advantage for the truncated form over the full form. Truncated passives, whether actional or psychological, are not comprehended any better than their full counterparts.

## 6. Maturation Theories Reconsidered

If *by*-phrase theories fail to explain children's better performance on actional passives as compared to psychological passives, what accounts for this asymmetry? We believe that the original maturation/grammatical theories offer the best empirical coverage. Evidence supports both the claim that acquisition of psychological passives is genetically determined and that prior to this maturational event, actional passives are comprehended using an adjectival strategy. Recent evidence serves to further support both contentions. Terzi & Wexler (2002) provide data for a language (Greek) in which adjectival passives and verbal passives are *not* homophonous. The authors show that even at the age of five, Greek children are at chance level for actional passives. In a recent study, Hirsch & Hartman (2006) consider children's comprehension of passives with classes of verbs in addition to the hitherto studied actional and psychological verbs. These authors find that the class of passives acquired first are not those with paradigmatic actional verbs (e.g. *hit*), but those with object-experiencer verbs (e.g. *fear*). This is understandable in the context of an adjectival strategy, where object-experiencer verbs make even better adjectives than many actional verbs.

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<sup>8</sup> Babyonyshev et. al (2001) accommodate the purported result on lack of problems with truncated psychological passives by assuming, contra Borer and Wexler (1987), that children take all verbs to make good adjectival passives. They also assume, with Fox and Grodzinsky, that children who use the adjectival strategy use an agent/affecter reading of *by* to interpret full actional passives. In the truncated example *The man is seen*, the child will take *seen* to be an adjectival passive and perform well. In *The man is seen by the woman*, *by* assigns an affecter role, which is incorrect for the verb *see* and the child will not comprehend the sentence. Since children actually do perform poorly on truncated psychological passives, the experimental evidence also argues against this *by*-phrase theory.

Evidence that (psychological) passive acquisition is subject to maturational growth comes from three recent sources. First, the re-emergence of evidence for the universality of passive delay, as discussed in Section 2 is most consistent with a genetic change that occurs regardless of the language the child speaks. Second, evidence comes from behavioral genetics research. Ganger, Dunn, & Gordon (2004) conducted a twin study in which pairs of identical and fraternal twins were tested on both actional and psychological passives. A maturation theory predicts that shared environment should play little role in the acquisition of psychological passives, while heritability should be very important. This is exactly what the researchers find, with identical twins scoring more similarly than fraternal twins for psychological passives, with no such effect for actional passives. This brings us to the third new line of evidence for maturation theories, namely the sudden and uniform onset in comprehension of psychological passives across children that occurs around 6.5 years. Hirsch & Wexler (2006) find that in accord with maturation accounts, and contra the predictions of frequency theories, children acquire psychological passives within a very short time span. While no more than three children out of twenty score above chance on psychological passives in the age ranges 3-5 years, 14 of 20 seven-year-olds score above chance.

## 7. Conclusion

Two studies directly address theories of passive acquisition attributing children's difficulties to the presence of the *by*-phrase. Both studies argue against such accounts. Furthermore, experimental evidence is reviewed demonstrating that children have trouble with truncated passives, suggesting a more general impairment with passives. These data along with new findings suggest that the cognitive operation licensing passivization is innate and develops late under genetic guidance.

## References

- Allen, S., and M. Crago. 1996. Early passive acquisition in Inuktitut. *Journal of Child Language* 23, 129-155.
- Babyonyshev, M., and D. Brun. 2003. The role of aspect in the acquisition of passive constructions in Russian. Paper presented at GALA 2003.
- Babyonyshev, M., Ganger, J., Pesetsky, D., and K. Wexler. 2001. The Maturation of Grammatical Principles: Evidence from Russian Unaccusatives. *Linguistic Inquiry* 32, 1-44.
- Bartke, S. 2004. Passives in German children with WS. In Bartke & Siegmüller (eds.) *Williams syndrome across languages*. Amsterdam/Philadelphia.
- Borer, H., and K. Wexler. 1987. The maturation of syntax. In T. Roeper and E. Williams (eds) *Parameter setting*. Dordrecht: Reidel.
- Chang, H. 1986. Young children's comprehension of the Chinese passives. In H. Kao and R. Hoosain (eds.), *Linguistics, Psychology and the Chinese Language*. Hong Kong: Center of Asian Studies, University of Hong Kong.
- Crawford, J. 2005. The acquisition of the Sesotho passive: Reanalyzing a counterexample to Maturation. ms. BU
- Demuth, K. 1989. Maturation and the acquisition of the Sesotho passive. *Language* 65, 56-80.

- Djurkovic, M. 2005. Structural vs. frequency effects in L1 acquisition of the passive and impersonal in Serbian. Paper presented at the 27th Conference on Germanic Linguistics, Workshop on Frequency effects in language acquisition.
- Fox, D., and Y. Grodzinsky. 1998. Children's passive: A view from the by-phrase. *Linguistic Inquiry* 29, 311-332.
- Gabriel, R. 2001. A Aquisição das Construções Passivas em Português e Inglês: Um Estudo Translingüístico. PhD dissertation, PUCRS, Porto Alegre (Brazil).
- Ganger, J., Dunn, S., and P. Gordon. 2004. Genes take over when the input fails: A twin study of the passive. Poster presented at BUCLD 2004.
- Gordon, P., and J. Chafetz. 1990. Verb-based versus class-based accounts of actionality effects in children's comprehension of passives. *Cognition* 36, 227-254.
- Grimshaw, J. 1990. *Argument Structure*. Cambridge, MA: MIT Press.
- Hirsch, C., and J. Hartman. 2006. Semantic Constraints on Passive Comprehension: Evidence for a Theory of Sequenced Acquisition. Paper presented at Latsis Colloquium 2006.
- Hirsch, C., and K. Wexler, 2004a. Children's passives and their 'resulting' interpretation. Paper presented at GALANA 2004.
- Hirsch, C., and K. Wexler. 2004b. 'Who' seems to rescue raising. Paper presented at GALANA 2004.
- Hirsch, C., and K. Wexler. 2005. What children seem to think about seem. Paper presented at 2005 LSA Workshop on raising and control.
- Hirsch, C., and K. Wexler. 2006. Acquiring Verbal Passives: Evidence for a Maturational Account. Paper presented at LSA 2006.
- Horgan, D. 1978. The development of the full passive. *Journal of Child Language* 5, 65-80.
- Hyams, N., Ntelitheos, D., and C. Manorohanta. Submitted. The acquisition of the Malagasy voicing system.
- Ito, M., and K. Wexler. 2002. The acquisition of Japanese unaccusatives. ms. MIT.
- Jaeggli, O. 1986. Passive. *Linguistic Inquiry* 17, 587-622.
- Lee, H., and K. Wexler 2001. Nominative case omission and unaccusatives in Korean acquisition. In Joe Ree (ed) *The Proceedings of the International Conference on Korean Linguistics*. Prague, 263-279.
- Maratsos, M., and R. Abramovitch. 1975. How children understand full, truncated, and anomalous passives. *Journal of Verbal Learning and Verbal Behavior* 14, 145-157.
- Maratsos, M., Fox, D., Becker, J., and M. Chalkey. 1985. Semantic restrictions on children's passives. *Cognition* 19, 167-191.
- Miyamoto, E., Wexler, K., Aikawa, T., and S Miyagawa 1999. Case-dropping and unaccusatives in Japanese acquisition. *BUCLD* 23, 443-452.
- Pierce, A. 1992. The acquisition of passives in Spanish and the question of A-chain maturation. *Language Acquisition* 2, 55-81.
- Sudhalter, V., and M. Braine. How Does Comprehension of Passive Develop? A comparison of actional and experiential verbs. *Journal of Child Language* 12, 455-470.
- Sugisaki, K. 1998. Japanese passives in acquisition. *University of Connecticut Working Papers in Linguistics* 10.
- Terzi, A., and K. Wexler. 2002. A-Chains and s-homophones in children's grammar: Evidence from Greek passives. *NELS* 32.
- Verrips, M. 1996. Potatoes Must Peel: The Acquisition of the Dutch Passive. Ph.D. dissertation, University of Amsterdam.
- Wexler, K. 2004. Theory of phasal development: Perfection in child grammar. *MIT Working Papers in Linguistics* 48, 159-209