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Not all grammatical features are robustly transmitted during the emergence of creoles

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This paper addresses the long-standing debate on the nature and complexity of creole languages. Contrary to what has been claimed in the literature, it is argued that grammars are neither robustly transmitted during the emergence of creoles nor that creole languages represent the simplest grammars in the world. On the contrary, after laying down a theoretical framework that spells out the existence of at least three distinct second-language acquisition (SLA) processes shaping creoles, it is shown how different aspects of the ancestor grammars (and their potential complexities) may or may not be transmitted to the emerging creoles and why.

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Introduction

For the past 30 years the field of contact linguistics has been characterized by a heated debate, recently labeled the Creole Debate (McWhorter, 2018a), which focuses on the structural and typological status of creole languages. On the one hand, some scholars have claimed that creoles may be classified according to their structural properties (Bickerton, 1981) or as a typological class (Bakker et al., 2011; McWhorter, 1998, 2001; Seuren and Wekker, 1986). In particular, McWhorter (1998) proposes a Creole Prototype, according to which a creole would be generally characterized by (1) minimal inflectional affixation; (2) minimal use of tones; and (3) semantically transparent derivation. McWhorter (2001, p. 5) even claims that creoles should be seen as "the world's simplest grammars", since, having developed out of pidgins just a few hundred years ago, they would not have had the time to enrich their systems with the structural complexities—often resulting from long processes of grammaticalization—which appear to characterize older languages.

On the other hand, other scholars have rejected these analyses and prefer to depict creoles as byproducts of their shared sociocultural history, often related to black slavery and plantation societies (DeGraff, 2003; Mufwene, 1997), thus claiming that creoles do not show anything exceptional from a strictly linguistic point of view (DeGraff, 2005), and that describing them as "simpler" is just a controversial statement, which may be unconsciously derived from the racist bias that the European colonizers had about the Africans' cognitive skills to learn European languages (Aboh and DeGraff, 2016, p. 5).

A recent contribution to the Creole Debate is the proposal offered by Aboh (2015), who conceives of these languages as mixed grammars. In his view, a creole, like any other contact variety, would be the result of a combination of features proceeding from the pool of languages that were in contact, according to a competitive mechanism driven by environmental and/or ecological factors (Mufwene, 2001). Aboh (2015, p. 8), therefore, argues that creoles are not at all "exceptional", rather, they "represent a normal instance of language change resulting from the contact between typologically different and genetically unrelated languages (e.g. Romance/German vs. Kwa/Bantu [Niger-Congo])". This would be the only reason why the structural changes observed in creoles tend to be more contrastive than in other contact varieties.

The most-recent study on this on-going debate has been published by Blasi et al. (2017), who, after running several R simulations on a database of 48 creole languages and 111 non-creole languages, concluded that "while a creole profile can be detected statistically, this stems from an over-representation of Western European and West African languages in their context of emergence", so that "grammars are robustly transmitted even during the emergence of creole languages", which calls into "question the existence of a pidgin stage in creole development and of creole-specific innovations" (Blasi et al., 2017, p. 723). These authors, therefore, echo Aboh's (2015) proposal in that they suggest that creoles are essentially a mix of Western European and West African features, while they also appear to provide quantitative support for the claims against both the simplicity of creole grammars and the loss of grammatical features during creolization.

In this paper, I take issue with both sides of the debate. I claim that, on the one hand, *grammars are not robustly transmitted during the emergence of creole languages*, since certain core aspects of language (e.g., bound morphology and tones) tend to be reduced during creolization (Siegel, 2003, 2006; Good, 2012, 2015; Parkvall, 2008; Jansson et al., 2015; Saldana et al., 2018); at the same time, I also argue that *creoles are not the simplest languages in the world*, since in other aspects of their grammars (e.g., syntax, phonology and semantics), they may inherit a fair number of overt distinctions, which make them quite complex, from an overall comparative perspective.

This paper consists of five sections. In section "Theoretical background", I highlight the presence of three distinct cognitive processes that I consider to be fundamental to explaining creole formation, and which have not been explicitly addressed by previous studies on the Creole Debate. In section "Theoretical issues with Blasi et al. (2017)", I take a close look at Blasi et al.'s (2017) paper. In so doing, I reflect on what I see as some fundamental theoretical issues, which, from my point of view, invalidate the point the authors are trying to make to account for the nature and origin of creole languages. Section "Complex aspects of creole grammars" shows that, even though creoles tend to present little bound morphology and tonal structure, they should not be considered "the world's simplest grammars" (against McWhorter, 2001, p. 5), since they have inherited overt distinctions in other aspects of their grammars (especially in syntax, semantics, and phonology), which—in some cases—make them actually quite complex. The final section summarizes the study and provides the final conclusions to the paper.

Theoretical background

First, I wish to stress that this paper is not meant to be polemic; rather, I hope that it may help relieve some of the tensions that have been building up during the past three decades. The goal is to cast light on this issue by spelling out some basic theoretical assumptions that all of these studies appear to be either missing or not directly addressing, namely: the cognitive processes at work in creole formation and the different types of feature transfer (or lack thereof) that they entail.

In order to understand why the languages we call creoles today look the way they look, it is of fundamental importance to figure out what cognitive processes were at work in the minds of their creators. Without a serious reflection on such mental processes (and the nature of the grammatical restructuring they imply), counting the number of features that creoles may have inherited from one language or another does not help much. It would be a purely *descriptive exercise*, not an *explanatory analysis*. Even the most-recent publication on this topic, Blasi et al. (2017), is quite limited in this sense. In fact, it tries to provide statistical support in favor of this supposedly "robust" grammatical transmission without offering any possible explanation for why that may be the case. The authors acknowledge this shortcoming. Thus, they conclude by admitting that they do not know the reasons behind their findings:

> Why such a complex human behavior can be successfully transmitted even in the typical (intricate and multilingual) contact situations of creoles is still unclear […]. Either way, our results reflect the astonishing resilience of language transmission (2017, p. 727).

In order to cast light on this apparently mysterious issue, it is crucial to acknowledge that creole formation involves—to a good extent—adult second-language acquisition (SLA) processes in a context of intense language contact. Such an acknowledgment is nothing new in the field of creolistics; it was first pointed out by the philologists Adolfo Coelho () and Hugo Schchardt (1883), who are often considered the founders of creole studies (Baptista, 2016, 2017). These early observations on the nature of creole languages were further elaborated by other authors, such as Schumann (1978) and Andersen (1980, 1983), who highlighted how pidginization resembled in a number of structural aspects the early stages of untutored SLA. The study of how SLA

processes may have shaped the formation of pidgins and creoles has received significant attention during the past few decades, a research effort that resulted in a fruitful cross-fertilization between the fields of language acquisition and creolistics (Kouwenberg and Patrick, 2003; Lefebvre et al., 2006; Siegel, 2003, 2006; Plag, 2008a, 2008b, 2009a, 2009b; Sessarego, 2013).

Without entering into the details of all of these SLA approaches to creole studies and the correlated dynamics of feature transmission in contexts of creole formation, I think it is fundamental at this point to distinguish between *two different types of grammatical transfers*, which characterize the speech of *any* adult trying to acquire a foreign tongue. To do so, I rely on Winford's (2003) classification, who adopts van Coetsem's (1988) notion of language agentivity. Thus, I distinguish between: *borrowing*, which primarily affects lexical items and occurs under recipient language (RL) agentivity; and *imposition*, which concerns structure (syntax, phonology, and semantics) and is driven by source language (SL) agentivity. In line with this distinction, it appears more rational and realistic—from a cognitive perspective—to assume that a given speaker, dominant in a given language (language X), would impose X syntax, phonology, and semantics on the language he is trying to speak (language Y), in which he is not necessarily proficient. Speakers in this situation would hardly be able to identify and borrow Y structure that they are not familiar with into their dominant language, while, on the other hand, they could much more easily do so with lexical items. With these notions in mind, it appears reasonable to expect creole varieties, which were predominantly created by adult speakers of African languages, to present a significant number of syntactic, phonological, and semantic features proceeding from those substrate African languages, while displaying lexical features from the European languages (the "lexifiers").

In addition to these two different transfer types, there is at least one more fundamental process that applies during SLA, *grammatical reduction*. This tends to significantly affect bound morphology and tones (i.e., morphological and tonal features), which are often conceived of in the SLA literature as the "bottleneck of acquisition" (Slabakova, 2008, 2009). Unlike *borrowing* and *imposition*, which *result in the transfer* of syntactic, semantic, phonological and lexical features, *grammatical reduction* implies a *strong tendency not to transfer* morphological and tonal features. This framework, thus, is in line with the idea that not all features are perfectly transmitted during creolization, and that—for certain aspects of the grammar—creolization may be associated with a "bottleneck" (Good, 2012, 2015).

Along these lines of reasoning, it is relevant to bring up the distinction drawn by Good (2012, p. 4) between paradigmatic and syntagmatic complexities. In Good's words, the paradigmatic complexity would consist of the existence—within a given grammatical category—of more than one form to be acquired, such as the two forms in the English category 'number' for morphological singular and plural, or the many forms making up the elaborate noun class system found in Kikongo. These features are particularly difficult to be transmitted, since they imply the mastering of the complete set of forms forming the paradigms. Conversely, the transmission of syntagmatic complexity would be less costly, and therefore more likely to occur, since it only requires that one syntagm is learned. Thus, given the inherent paradigmatic complexities of bound morphology and tonal structures, they do not tend to be transferred during the process of creole formation. In a similar but yet different vein, Sessarego (2012, in press), Sessarego and Ferreira (2016) and Rao and Sessarego (2016) have shown—by relying on a feature-geometry account of grammatical complexity (Harley and Ritter, 2002) and on an interface-driven framework of SLA (Sorace, 2011)—how morphological and tonal systems tend to be simplified in cases of language contact, so that their paradigms are commonly reduced and default values tend to be generalized and used in all contexts. Moreover, studies on the nature of regularization across linguistic levels have suggested that adult learners are more likely to regularize complex systems (Saldana et al., 2018), thus adding additional support to the idea that rich morphological and tonal paradigms are unlikely to be passed on from the substrate and superstrate languages to the forming creoles.

Any study claiming that "grammars are robustly transmitted even during the emergence of creoles" (Blasi et al., 2017, p. 723) should show how *all* of the aforementioned components of grammar get transmitted. Blasi et al. do not do so, since, as it can be observed in their appendix (see their Supplementary Table 3), and as I will elucidate further along, they do not account for the morphological and tonal features of the lexifier and substrate languages. For a paper that is aimed at casting light on the Creole Debate, this looks quite puzzling, since most of the tensions in the literature have actually gravitated around those features (McWhorter, 1998, 2001; DeGraff, 2003, 2005; Bakker et al., 2011; Aboh, 2016).

Quite surprisingly, at the beginning of Blasi et al.'s (2017, p. 723) study, the authors indirectly admit that morphology is significantly reduced during SLA, since they state that "languages with larger populations tend to have simpler morphology, presumably due to the larger number of non-native speakers." For this reason, one would expect that at least morphology would be coded into their computational model. However, toward the conclusion of their study, it becomes obvious that this was not the case. Indeed, on the last page of their paper they state that, according to their feature database, creoles do not present any significant innovation with respect to their substrates and lexifiers, but that this may not necessarily be the case for all aspects of grammar, since some areas, "such as morphology" were "not well covered by [the] data" (Blasi et al., 2017, p. 727).

Given this particular feature selection, which was in part constrained by the availability of data in the atlases, the results obtained by Blasi et al. should be expected. They essentially offer a complex computational model to provide quantitative evidence for something that would appear quite intuitive to most people working in linguistics: the lexical features of creoles mainly come from their Western European lexifiers (as the word "lexifier" already suggests); some of the structural features of creoles are transferred from their West African substrate languages.

This account, therefore, *describes* (some of) the data, but *does not explain* them. It presents two main problems: (1) it does not distinguish between the two types of feature transfer (*borrowing* vs. *imposition*), and consequently it does not explain why the lexicon tends to come from one group of languages, while structure is derived from the other group; (2) it does not account for the *grammatical reduction* of morphology and tones, and therefore does not clearly acknowledge that some aspects of grammar are *not* robustly transmitted during creolization.

Not acknowledging the presence of these three distinct processes during creolization, and therefore treating all features in the same way, is misleading, since it reduces creole formation to a random mix of features, which would be grouped together without any systematicity. That is not how creoles developed. The problem with Blasi et al.'s (2017) study is that it seems to forget altogether that the kind of grammatical restructuring that shaped creoles was necessarily mediated by SLA processes. The vast majority of creole creators, in fact, were not proficient bilinguals of African and European languages. For this reason, equating creoles to mixed languages, *à la* Aboh (2015), cannot possibly be sustained from a cognitive perspective, since the processes at work in the formation of these two types of contact varieties are necessarily different.

Mixed languages, such as Media Lengua (Muysken, 1997, p. 365), are the result of proficient bilinguals who voluntarily decide to combine two of the languages that they speak, usually for identity and/or ludic reasons. In (1), it can be observed how Media Lengua consists of Spanish lexical items systematically embedded into Quichua morphosyntax. This is only possible because the creators of Media Lengua are proficient speakers of both Spanish and Quichua, and thus they can freely "mix and match" their lexicons and structures. Thus, as it is clear from (1), the morphological richness of Quichua is well-preserved in Media Lengua. Conversely, the same cannot be stated for the creole Palenquero (2) (McWhorter, 2018b, pp. 9–10), in which the morphological richness of Kikongo and Spanish has been lost.

(1)

(a)	Shuk	fabur-da	mana-nga-bu	shamu-xu-ni.		Quichua
	one	favor-ACC	ask-NOM-BEN	come-PROG-1		
	"I come to ask a favor."					
(b)	Vengo	para	pedir	un	favor.	Spanish
	come-1	to	ask-INF	a	favor	
	"I come to ask a favor."					
(c)	Unu	fabur-ta	pidi-nga-bu	bini-xu-ni.		Media Lengua
	one	favor-ACC	ask-NOM-BEN	come-PROG-1		
	"I come to ask a favor."					

(2)

(a)	O	ma-tadi	ma-ma	ma-mpembe	ma-mpwena	Kikongo
	AUG	C8P-stone	C8P-DEM	C8P-white	C8P-big	
	i	ma-u	ma-ma	tw-a-mw-ene.		
	COP	C8P-that	C8P-DEM	we-them-see-PERF		
	"These great white stones are those which we have seen." (Bentley, 1887, p. 526) (C8P = noun class 8 plural)					
(b)	Est-a-s	piedra-s	grande-s	y	blanc-a-s	Spanish
	DEM-FEM-PL	stone-FEM-PL	big-FEM-PL	and	white-FEM-PL	
	son	las	que	hemos	visto.	
	COP-3P	DEF-FEM-PL	REL	have-1PL	see-PP	
	"These great white stones are those which we have seen."					

(c)	Ese	ma	piegra	blanko	é	ese	ke	suto	a	miná.	Palenquero
	this	PL	stone	white	is	this	REL	1PL	PAST	see	
	"These great white stones are those which we have seen."										

This is because the creators of creole languages were not bilinguals in African and European languages who decided to mix those grammars for ludic and/or identity reasons; rather, they were, for the most part, adult speakers of African languages, who acquired some aspects of the European languages (primarily the lexicon) to create a new means of interethnic communication, on which they inevitably *imposed* some aspects of their L1s (primarily the syntax, phonology, and semantics).

While both Media Lengua and Palenquero can be *described* as displaying features from Spanish, Quichua, or Kikongo, the *explanation* for why they look so different from one another cannot certainly be the same. The reason for this is that *grammars are not robustly transmitted during creolization*, since morphology and tones are particularly hard to master during untutored SLA. On the other hand, in the context of mixed languages, which is characterized by a more-balanced level of bilingualism, those components of grammar are more easily preserved and passed on to the newly created contact variety.

Theoretical issues with Blasi et al. (2017)

My objection to Blasi et al.'s (2017) study has to do with their feature selection, which is based on the failure to recognize the importance of the three aforementioned cognitive processes in creole formation. In order to create their feature dataset, Blasi et al. (2017) relied on 48 creole languages extracted from the *Atlas of Pidgin and Creole Language Structures* (APiCS). They stated that they tried to "reflect variables of wide typological interest to avoid or reduce the bias of features being pre-selected due to their perceived similarity across creoles" (Blasi et al., 2017, p. 325). The goal was to potentially identify a set of creole-specific features, regardless of their ancestry (i.e., a specific lexifier or substrate language). They performed an independence test and an anti-independence test on this initial corpus of 48 languages to figure out which features reflected dependencies between creoles and their ancestors and which did not; thus, they created a feature pool consisting of ~50% of the features from the first group (and thus showing dependencies) and ~50% from the second one, which allowed them to not apply any further selection on the pool of features.

Once the aforementioned features were selected, Blasi et al. added to the dataset a balanced sample of 111 non-creole languages extracted from the *World Atlas of Language Structures* (WALS), which would serve as a comparison group. This was done to detect, through the implementation of a machine-learning algorithm, the potential existence of a "creole profile", *à la* Bakker et al. (2011), which, if found, would suggest that there exists a set of features that can be classified as "creole-specific".

The authors, indeed, showed that, at first look, creoles and non-creoles form two clearly different groups (see Fig. 1), thus supporting the existence of a creole profile. Nevertheless, upon closer examination, they heuristically found out that most of these supposedly creole-like features were actually the byproduct of grammar transmission from their ancestor languages, so that "even the features [they] deemed independent were carrying an ancestry signal as well" (Blasi et al., 2017, p. 727). Consequently, the authors concluded that even in extreme contact scenarios, like the ones that originated these varieties, grammars are robustly transmitted. For this reason, creoles would not seem to have gone through a pidgin phase, since they do not present any significant grammatical reduction or feature innovation from their ancestor

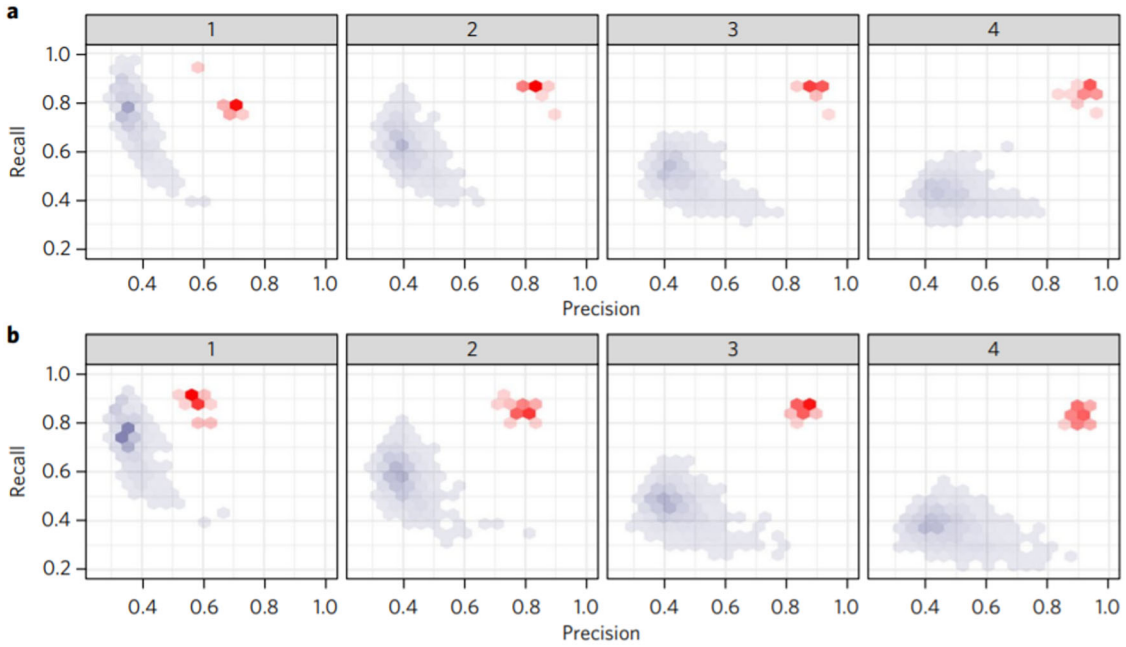

Fig. 1 Blasi et al.'s (2017, p. 726) classification under the rule-based creole profile for the full and reduced datasets, with rules chosen by best F1 score (**a**, full. **b**, reduced). Distributions of the empirical (red) and randomized (blue) precision and recall for rule lengths involving between one and four variables. For rules of a length larger than 1, the majority of the rules obtained in the empirical data had better precision and recall values than the randomized controls, which supports the notion that creoles can be distinguished from non-creole languages.

languages. In other words, transatlantic creoles would just be a mix of Western European and West African features, or just a matter of feature competition and selection.

I agree on the fact that, by looking at their creole profile (see Blasi et al.'s Supplementary Table 6), it really seems that most creole features are also either found in their lexifiers (e.g., SVO order) or in their substrate languages (e.g., absence of gender distinction in independent pronouns) or in both (e.g., noun-relative clause order). When it is put this way, it really looks like creole formation consists of European and African features randomly mixed together. However, a closer look at Blasi et al.'s feature pool immediately shows a highly unbalanced feature selection.

Of the 92 features reported in Blasi et al.'s dataset (see their Supplementary Table 3), 30 belong to the domain of syntax (e.g., order of adjective and noun), 27 to semantics (e.g., indefinite articles), 12 to phonology (e.g., schwa), 7 to the lexicon (e.g., *pequenino*), 15 to morphology (e.g., gender in independent personal pronouns) and one to tones (e.g., presence of tone). The sample is clearly highly skewed toward syntactic and semantic features, which together make up more than 62% of the dataset. On the other hand, morphology and tones, which are at the core of the Creole Debate, make up only some 17% of the data. Going back to our theoretical assumptions, this means that 83% of the features here analyzed belong to the processes I identified as *borrowing* and *imposition*, which, as indicated, consist of *two different types of transfer*.

Blasi et al.'s feature selection inevitably affects their learning algorithm, which, unfortunately, leads to misleading and counterintuitive outcomes. Indeed, given that morphology and tones were basically excluded from the feature pool, the machine-learning algorithm that they developed to discriminate between creoles and non-creoles ended up classifying as creoles languages that in the reality of facts are extremely rich in tones or inflectional morphology (e.g., Mapudungun, Quechua, Yoruba, Malagassy, Arabic, Greek, to mention just a few, see Blasi et al.'s Supplementary Table 5). They even state that "some of the languages that were incorrectly identified as creoles were either among the set of ancestral languages or were *similar* to them" (Blasi et al., 2017, p. 727).

Claiming that a language like Mapudungun (among the most agglutinative languages in the world) is *similar* to creoles, or shares the creole profile, because it happens to present syntactic features such as SVO order and have-possessives (Blasi et al., 2017, p. 726, see their Table 2 and Supplementary Table 6) is seriously problematic, and further highlights the danger of counting randomly selected features without a precise consideration of the cognitive processes at work in language-contact scenarios of this type.

R simulations of this kind can provide a graphic and numeric representation of how a set of languages group together, according to the features that are coded into the model. These simulations, therefore, can only *describe* a given grouping configuration; however, in order to *explain* it, it is key to get a clear understanding of the linguistic principles behind a certain feature selection. As I have observed in the previous section, the feature selection adopted by Blasi et al. is not based on any specific linguistic reasoning, but rather on what they call a "wide typological interest to avoid or reduce […] bias" (2017, p. 725). According to this logic, therefore, in order to create a well-balanced dataset, the feature selection should be random.

Assuming for a moment that randomness is really the best way to proceed in this case, taking a look at their feature selection it seems that they fell short of the target expectations, since they randomly removed tonal and morphological features, which are at the core of the Creole Debate (Seuren and Wekker, 1986; McWhorter, 1998, 2001, 2018a; Bakker et al., 2011; DeGraff, 2003, 2005). Given that these computer simulations *per se* do not explain the processes at work in creolization, there are infinite ways in which the feature database could be built to back one theory or the other. Blasi et al., in good faith, have created a feature pool that supports a theory of creolization in which pretty much any ancestor feature is perfectly transferred to the creole

language. They achieved that by randomly excluding tones and morphology from the dataset. It is fairly reasonable to assume that, if such features were added to the code in significant proportions, the R simulation would tell us a completely different story.

Failing to identifying the cognitive processes behind the formation of different linguistic phenomena, and thus treating all features in the same way, does not help to cast light on the nature and origin of creoles, and indeed, it misses out on explaining why some aspects of the lexifier and substrate grammars are likely to be transmitted to creoles, while others tend not to. This being said, I would like to point out that this does not necessarily imply that all (or most) creoles went through a pidgin state, as some authors may suggest (McWhorter, 2000, 2001). That particular scenario may well be true for certain varieties, but surely not for all, since some creoles appear to have become more "radical" over time (Chaudenson, 2001). For this reason, it is worth highlighting that the presence (or lack) of a given set of features in creole grammars may not always be the best indicator for understanding the evolutionary trajectory of these languages.

To cast light on the evolution of creole languages, it would be ideal to have access to diachronic linguistic data. In the absence of such a piece of linguistic information, an effort should be made to integrate the contemporary linguistic data we have with the historical, demographic, and economic information available for each variety in order to cast light on their sociocultural ecology and possibly reconstruct their developmental path (Sessarego, 2019a). Unfortunately, in some cases, even this kind of sociocultural data is poorly documented or completely lacking. Given these limitations, at the very least, we must try to make sense of the features we have by keeping in mind the aforementioned cognitive processes, which, given the universal architecture of the language faculty, tend to apply—to different extents—to all cases of language contact (Sessarego, 2019b, in press). We cannot dismiss all of this and just rely on "unbiased" randomness, if we really want to *explain* creole evolution.

Although competition and selection are mechanisms that certainly belong to the formation of any contact variety, such terms do not really mean much unless we understand why certain features are not likely to get acquired and possibly selected (e.g., agglutinative morphology), while others are more easily mastered (e.g., lexical items), or imposed on the targeted linguistic materials (e.g., phonological structure), and thus eventually passed on to the newly created variety.

Complex aspects of creole grammars

Up to this point, I have suggested that, due to the process of *grammatical reduction*, creole languages tend to present less morphological and tonal complexity than their lexifiers and substrate languages (in contrast with what has been claimed by Blasi et al., 2017). Nevertheless, I think it would be a mistake to say that they are actually "the world's simplest grammars" (McWhorter, 2001, p. 5). This is because processes of borrowing and imposition can introduce overt distinctions in these languages that make them relatively complex. This is particularly evident for the aspects of the grammar that tend to be more significantly affected by imposition phenomena (e.g., semantics, syntax, and phonology). I will exemplify these complexities by analyzing Sranan Tongo, an English-based creole from Suriname with a strong Gbe component among its substrate languages. This language has been defined as a "radical creole" on multiple occasions (Bickerton, 1981; Winford, 2000), and thus we should expect it to be extremely simple according to McWhorter's proposal.

It is not uncommon to detect in creole languages certain semantic distinctions that exist in substrate languages but are absent in their lexifiers. This means that, in such aspects of their grammars, creoles may actually be conceived of as more complex than their ancestor European languages. For example, Gbe presents a rich copula system, which distinguishes between predicative noun phrases, adjectives, and locative phrases. As it can be observed in (3), Sranan copula system preserves such distinctions, which do not exist in English.

(3)

(a)	Den	tu	man	**na**	skowtu.	
	DET.PL	two	man	COP	police	
	'The two men are policemen' (Wilner, 2007, p. 47).					
(b)	A	pikin	**Ø**	siki.		
	DET	child		sick		
	'The child is ill.' (Winford, 1997, p. 238).					
(c)	A	owru	**de**	baka	a	doro.
	DET	machete	COP	back	DET	door
	'The machete is behind the door.' (Wilner, 2007, p. 18).					

This example, therefore, shows how African-language speakers, while creating Sranan, imposed their semantic L1 categories on the means of interethnic communication they were targeting (Baker, 1990). This resulted in a copula system that presents more overt distinctions than the English one, and that, consequently, may be classified as more complex.

As for syntax, certain structures found in creoles appear to have been transferred via imposition from their substrate languages, even though they may be considered typologically marked. One clear example is serial verb constructions, which, again, can be encountered in Sranan and Gbe and that are not present in English. Thus, besides the English-like verb constructions, Sranan also displays Gbe-like serial verbs. This richness in verb configurations may be conceived as an additional layer of complexity belonging to Sranan that English does not show.

(4)

(a)	Kofi	**hari**	a	pikin	**komoto**	**na**	ini	a	olo.
	Kofi	pull	DET	child	come-out	LOC	in	DET	hole
	'Kofi pulled the child out of the hole' (Winford, 2008, p. 33).								
(b)	Kofi	**teki**	a	nefi	**koti**	a	brede.		
	Kofi	take	DET	knife	cut	DET	bread		
	'Kofi cut the bread with a knife' (Winford and Migge, 2008, p. 710).								

When pronouncing words in a second language, it is inevitable to impose on such lexical items some of the phonological patterns of one's L1. Such a process may result in the simplification of certain aspects of the target language phonological inventory, as well as in the complexification of others, especially if the creole creators are multilingual in a number of African languages and the lexical items to be acquired come from a variety of grammatical systems. An instance of this in Sranan may be exemplified by the existence of four nasal phonemes /m, n, ɲ, ŋ/, while English only presents three, /m, n, ŋ/, as shown by the minimal pairs presented in (5) and (6).

(5) Sranan
(a) /**m**a/ 'but' vs. /**n**a/ 'to be'
(b) /**ɲ**an/ 'to eat' vs. /**m**an/ 'man'
(c) /to**ŋ**o/ 'tongue' vs. /to**k**o/ 'trouble'

(6) English
(a) /tʌ**ŋ**/ 'tongue' vs. /tʌ**n**/ 'ton'
(b) /æ**m**/ 'ma'am' vs. /æ**n**/ 'man'

Conclusion

The past three decades have been characterized by a heated debate on the status and typological characterization of creole languages. While some authors have proposed the existence of a creole profile (Bakker et al., 2011) or prototype (McWhorter, 1998), and some even claimed that creoles would be the simplest languages of the world (McWhorter, 2001), others have indicated that there is nothing linguistically exceptional about creoles (Mufwene, 1997, 2014; DeGraff, 2003) and that they are just the result of a particular recombination of Western European and West African features (Aboh, 2015). Blasi et al. (2017) further support this later view by providing quantitative R simulations and claiming that grammars are robustly transmitted even during the emergence of creole languages, thus backing the idea that creoles did not go through any pidgin stage.

In this paper, I have taken issue with both sides of the debate. First, I have laid down a theoretical framework in which I have highlighted three crucial SLA processes that play a major role in creolization, and which affect distinct aspects of grammar differently: *borrowing, imposition*, and *grammatical reduction*. Second, I have shown how Blasi et al.'s results were actually the byproduct of a highly skewed feature selection, which almost completely ignored those aspects of language that are related to the process of *grammatical reduction* (e.g., morphology and intonation). I have also indicated that detecting the traces of grammatical reduction in contemporary creoles does not necessarily inform us about their evolutionary trajectory, since those creoles could either have started off as pidgins or as closer approximations to the lexifiers that diverged from the European varieties over time. The only way to cast light on this issue is to analyze historical information and (ideally) diachronic linguistic data for each creole under inspection. It would be a mistake to overgeneralize and treat all creoles in the same way on the sole basis of synchronic linguistic features.

In addition, I have argued that, even though creoles present little bound morphology and tones, they should not be classified as "the simplest grammars", since certain aspects of these languages may present a series of overt distinctions that make them relatively complex. In particular, due to *processes of imposition*, creole syntax, semantics, and phonology can display distinctions inherited from their substrate languages that make them, in that respect, more complex than their lexifiers.

To conclude, this paper was meant to provide a new perspective on the so-called Creole Debate and its most recent developments. As I have indicated, my position is on neither side of this controversy. Rather, I think the best way to cast light on the nature of creoles (and of any other contact variety, for that matter) would be to focus on the cognitive processes that shaped them. On the contrary, counting the number of features that creoles may have inherited from one language or another—selecting them randomly, without discriminating among them, and without understanding the processes behind their formation—does not appear to provide an explanation of how creoles came about. This is in no way intended to say that descriptive data are useless; quite conversely, I think that language atlases, such as WALS and APiCS are important tools for comparing language varieties around the world. This being said, however, such descriptive information, if not analyzed through the lenses of cognitive processes, is of little help to understanding why creoles look the way they look.

Data availability

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References

Aboh E, DeGraff M (2016) A null theory of Creole formation based on universal grammar. In: Roberts I (ed.) The Oxford handbook of universal grammar. pp. 401–458. Oxford University Press, Oxford
Aboh E (2015) The emergence of hybrid grammars. Cambridge University Press, Cambridge
Aboh E (2016) Creole distinctiveness: a dead end. J Pidgin Creole Lang 31 (2):400–418
Andersen R (ed.) (1983) Pidginization and creolization as language acquisition. Newbury House, Rowley
Andersen R (1980) Creolization as the acquisition of a second language as a first language. In: Valdmann A, Highfield A (eds.) Theoretical orientations in creole studies. Academic Press, San Diego, pp. 273–295
Baker P (1990) Off target? J Pidgin Creole Lang 5:107–119
Bakker P, Daval-Markussen A, Parkvall M, Plag I (2011) Creoles are typologically distinct from non-creoles. J Pidgin Creole Lang 26(1):5–42
Baptista M (2016) Stepping back to move forward: An introspection on the history of some key questions driving our field. J Pidgin Creole Lang 31 (1):184–199
Baptista M (2017) Pidgins and Creoles: Syntax. Oxford Handbooks Online. Oxford University Press, Oxford, https://doi.org/10.1093/oxfordhb/9780199935345.013.13
Bentley W (1887) Dictionary and grammar of the Kongo language, as spoken at San Salvador, the ancient capital of the old Kongo empire, West Africa. Baptist Missionary Society, London
Bickerton D (1981) Roots of language. Karoma, Ann Arbor
Blasi D, Michaelis S, Haspelmath M (2017) Grammars are robustly transmitted even during the emergence of creole languages. Nat Hum Behav 1:723–729
Chaudenson R (2001) Creolization of language and culture. Routledge, London
Coelho A (1880) Os dialectos românicos ou neolatinos na África, Ásia, e América. Bolletim da Sociedade de Geografia de Lisboa
DeGraff M (2003) Against creole exceptionalism. Language 79(2):391–410
DeGraff M (2005) Linguists' most dangerous myth: the fallacy of Creolist Exceptionalism. Lang Soc 34:533–591
Good J (2012) Typologizing grammatical complexities: or why creoles may be paradigmatically simple but syntagmatically average. J Pidgin Creole Lang 27(1):1–47
Good J (2015) Paradigmatic complexity in pidgins and creoles. Word Struct 8 (2):184–227
Harley H, Ritter E (2002) Person and number in pronouns: a feature-geometric analysis. Language 78:482–526
Jansson F, Parkvall M, Strimling P (2015) Modeling the evolution of creoles. Lang Dyn Change 5(1):1–51
Kouwenberg S, Patrick P (guest eds) (2003) Reconsidering the role of SLA in pidginization and creolization [Studies in second language acquisition]. Cambridge University Press, Cambridge
Lefebvre C, White L, Jourdan C (eds.) (2006) L2 acquisition and creole genesis. John Benjamins, Amsterdam
McWhorter J (1998) Identifying the creole prototype: vindicating a typological class. Language 74:788–818
McWhorter J (2000) The missing Spanish creoles. Recovering the birth of plantation contact languages. University of California Press, Berkley
McWhorter J (2001) The world's simplest grammars are creole grammars. Lang Typol 5:125–166
McWhorter J (2018a) The creole debate. Cambridge University Press, Cambridge
McWhorter J (2018b) Why neither demographics nor feature pools can explain the missing Spanish plantation creoles. Lingua 201:4–12
Mufwene S (1997) Jargons, pidgins creoles and koines: what are they? In: Spears A, Winford D (eds.) The structure and status of pidgins and creoles. John Benjamins, Amsterdam
Mufwene S (2001) The ecology of language evolution. Cambridge University Press, Cambridge
Mufwene S (2014) The case was never closed: McWhorter misinterprets the ecological approach to the emergence of creoles. J Pidgin Creole Lang 29(1):157–171
Muysken P (1997) Media Lengua. In: Thomason S (ed) Contact languages: a wider perspective. pp. 365–426. John Benjamins, Amsterdam
Parkvall M (2008) The simplicity of creoles in a cross-linguistic perspective. In: Mietsamo M, Sinnemäki K, Karlsson F (eds.) Language complexity: typology, contact and change. pp. 265–285. John Benjamins, Amsterdam
Plag I (2008a) Creoles as interlanguages: inflectional morphology. J Pidgin Creole Lang 23(1):109–130
Plag I (2008b) Creoles as interlanguages: syntactic structures. J Pidgin Creole Lang 23(2):307–328
Plag I (2009a) Creoles as interlanguages: phonology. J Pidgin Creole Lang 24 (1):119–138

Plag I (2009b) Creoles as interlanguages: word-formation. J Pidgin Creole Lang 24 (2):339–362
Rao R, Sessarego S (2016) On the intonation of Afro-Bolivian Spanish declaratives: Implications for a theory of Afro-Hispanic creole genesis. Lingua 174:45–64
Saldana C, Smith K, Kirby S, Culbertson J (2018) Is regularisation uniform across linguistic levels? Comparing learning and production of unconditioned probabilistic variation in morphology and word order. Preprint at https://doi.org/10.31234/osf.io/zk59y
Schuchardt H (1883) Kreolische Studien IV. Über das Malaiospanische der Philippinen. In: Sitzungsberichte der philosophisch-historischen Classe der Kaiserlichen Akademie der Wissenschaften, vol. 105. pp. 111–150, Carl Gerold's Sohn, Wien
Schumann J (1978) The pidginization process: a model for second language acquisition. Newbury House Publishers, Rowley
Sessarego S, Ferreira L (2016) Spanish and Portuguese parallels: impoverished number agreement as a vernacular feature of two rural dialects. In: Sessarego S, Tejedo-Herrero F (eds.) Spanish language and sociolinguistic analysis. John Benjamins, Amsterdam, pp. 283–304
Sessarego S Interfaces and domains of contact-driven restructuring. Cambridge University Press, Cambridge (in press)
Sessarego S (2012) Non-creole features in the verb system of Afro-hispanic languages: new insights from SLA studies. Intl J Linguist 4(1):146–157
Sessarego S (2013) Afro-Hispanic contact varieties as conventionalized advanced second languages. Iberia 5(1):96–122
Sessarego S (2019a) Language contact and the making of an Afro-hispanic vernacular: variation and change in the Colombian Chocó. Cambridge University Press, Cambridge
Sessarego S (2019b) Universal processes in contact-induced syntactic change: evidence from the Afro-hispanic varieties. In: Darquennes J, Salmons J, Vandenbussche W (eds) Language contact. An international handbook. Mouton de Gruyter, Berlin, pp. 24–37
Seuren P, Wekker H (1986) Semantic transparency as a factor in Creole genesis. In: Muysken P, Smith N (eds.) Substrata versus universals in Creole genesis. John Benjamins, Amsterdam, pp. 57–70
Siegel J(2003) Substrate influence in creoles and the role of transfer in second language acquisition Stud Second Language Acquisition 25:185–209
Siegel J (2006) Links between SLA and creole studies: past and present. In: Lefebvre C, White L, Jourdan C (eds.) Language acquisition and creole genesis. John Benjamins, Philadelphia, pp. 15–46
Slabakova R (2008) Meaning in the second language. Mouton de Gruyter, Berlin
Slabakova R (2009) What is easy and what is hard to acquire in a second language? In: Bowles M, Ionin T, Montrul S, Tremblay A (eds) Proceedings of the 10th generative approaches to second language acquisition conference. Cascadilla Press, Somerville, pp. 280–294
Sorace A (2011) Pinning down the concept of 'interface' in bilingualism. Linguist Approaches Biling 1:1–33
Van Coetsem F (1988) Loan phonology and the two transfer types in language contact. De Gruyter Mouton, Berlin
Wilner J (2007) Wortubuku fu Sranan Tongo. SIL International, Paramaribo
Winford D, Migge B (2008) Surinamese creole: morphology and syntax. In: Schneider EdgarW (ed.) Varieties of English, vol. 2: the Americas and the Caribbean. Mouton de Gruyter, Berlin, pp. 693–731
Winford D (1997) Property items and predication in Sranan. J Pidgin Creole Lang 12:237–302
Winford D (2000) "Intermediate" creoles and degrees of change in creole formation: the case of Bajan. In: Neumann-Holzschuh I, Schneider EW (eds) Degrees of restructuring in creole languages. John Benjamins, Amsterdam, Philadelphia, pp. 215–246
Winford D (2003) An introduction to contact linguistics. Blackwell Publishing, Malden
Winford D (2008) Atlantic creole syntax. In: Kouwenberg Silvia, Singler John (eds.) The handbook of pidgin and creole studies. Wiley-Blackwell, Malden, pp. 19–47

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Competing interests

The author declares no competing interests.

Additional information

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