Pinpointing prescriptive impact

Using change point analysis for the study of prescriptivism at the idiolectal level

Abstract

This paper presents a single-author case study which demonstrates that the statistical modelling technique change point analysis (CPA) can provide compelling evidence of prescriptive impact at an idiolectal level. It has been hypothesized that Late Modern English review periodicals consistently pushed a prescriptive agenda, and that this impacted language use (McIntosh, 1998; Percy, 2009). A lack of empirical research has, however, left these claims unsubstantiated, partly because evaluating prescriptivist endeavours has proven challenging.

Using a purpose-built 3-million-token idiolectal corpus spanning 7 decades, this paper reports that it is possible to discern a striking change in usage. Use of CPA enables this change to be located precisely, and correlated to the author's exposure to a prescriptive review of her work. In demonstrating how effectively CPA can provide a sophisticated correlation indicative of causality, this paper showcases the suitability of this technique to the study of prescriptivism.

Keywords

Prescriptivism, Late Modern English, modelling, Change Point Analysis, Idiolect

1 Introduction

It has long been hypothesized that the popular literary review periodicals of the eighteenth and nineteenth centuries were a consistent source of prescriptivism, and that this

prescriptivism had a significant impact on the language of reviewed authors (McIntosh, 1998; Percy, 2009). However, a lack of research in this area has left this hypothesis unsubstantiated by empirical data until now. As will be outlined in §2, it is notoriously difficult to evaluate quantitatively the success of prescriptivist agendas, and previous attempts to do so have been faced challenges. Attempting to do so in relation to the genre of the review periodical therefore poses significant difficulties. However, whereas previous attempts to tackle the issue of prescriptive impact have been at what we might call the 'macro' level of language, in general corpora, the present paper will focus on its impact at the 'micro' level, in a purpose-built idiolectal corpus.

Whilst at the level of general usage, it may be impossible to determine which factors lead to specific patterns of language change, it is much more straightforward to do so for idiolectal usage. The present paper therefore reports the findings of a single-author case study designed as a test case, to showcase how the application of a novel statistical method can provide substantial evidence of a relationship between prescriptive comment and usage reform in this context.

The single author used in this case study is Fanny Burney (1752-1840), from whose extant prose a purpose-built corpus (available on request only, due to copyright restrictions) has been compiled. Burney's long life and prolific writing habit mean that this corpus is large by the normal standards of single-author historical corpora. As will be detailed in §3, it is comprised not only of published prose writing, but also diaries and correspondence. Crucially, Burney was also subject to specific, overtly-targeted grammatical prescriptivism; in a *Monthly Review* article of 1796. Her exposure, and indignant response, to this article is documented in correspondence. Until now, however, no empirical evidence has existed to demonstrate that it prompted Burney to alter her usage in a systematic, sustained way which persisted until the end of her life, almost half a century later.

These findings are possible due to statistical modelling technique change point analysis (CPA), which has rarely been applied to linguistic data previously. Using this method, it is possible to demonstrate an idiolectal change which corresponds strikingly with the publication of the prescriptive review in 1796. These findings demonstrate the significant impact which prescriptivism in periodical reviews could have on the Late Modern author.

The implications of this finding for Burney and our understanding of the mechanisms by which normativity can prompt language change have been explored elsewhere (anonymised:

forthcoming). The primary focus of this paper is methodological. It demonstrates that CPA can provide a correlation so sophisticated that it is indicative of a causal link. As will be outlined in §4, these results could not be replicated with any of the hypothesis tests conventionally employed in linguistic research. This paper therefore showcases the promise of this statistical method for the study of prescriptive impact, where evidence of causation has previously proven elusive. In what follows in §2, contextual information is provided, before the data used and methodology employed in this paper are described in §3, and findings reported in §4.

2 Context

2.1 Measuring prescriptive impact

The Late Modern (LMod) period, defined in this paper as the period of English language history between 1700 and 1900, is associated in the modern linguistic consciousness with two pervasive stereotypes. The first is perhaps predominant; the belief that because practices of codification proliferated at an unprecedented rate during the eighteenth century, the LMod period (or discrete sub-periods within it) can be labelled the 'Age of Prescriptivism' in English (cf. Leonard, 1929; Milroy & Milroy, 1992; Baugh & Cable, 1993; McIntosh, 1998; Anderwald, 2014). The second, related, stereotype, sees LMod English mistakenly characterised as a period of linguistic stasis, as natural language change was impeded by prescriptive interference. Hence, as Anderwald has pointed out, we find that the mainstream view in linguistics today is that "prescriptivism does not, and cannot, have any effect on language" (2019: 89) but also, somewhat paradoxically, that it is "taken for granted that...prescriptivism was all-pervasive" in the LMod period (Anderwald 2019: 89). The result of this odd disjuncture has been that, until recently, the exclusive focus of prescriptivism studies was the language attitudes displayed by prescriptivists, with no attempt to gauge the impact of prescriptivism on the language itself.

In the late 1980s, Jones questioned what he perceived to be the neglect of Late Modern English, branding it the "Cinderella" of English linguistics, and arguing that it was defined neither by prescriptivism nor by stasis (1989: 279). Since then, many others have challenged the labelling of the LMod period as the 'Age of Prescriptivism' in English. In her extensive corpus-based research, Ingrid Tieken-Boon van Ostade has, for instance, argued that the eighteenth century should "more properly be designated the Age of *Codification*, as it is the

codification of the language that characterises the period, not the effects of prescriptivism, or even prescription" (2019: 8; emphasis original).

The term 'prescription' is usually used, as by Milroy & Milroy (2012), to refer to the final stage of standardization in English; that which follows codification. During this stage, according to Milroy & Milroy, language users have "access to dictionaries and grammars, which they regard as authorities" (2012: 22). Tieken-Boon van Ostade has argued, however, that prescriptivism "represents yet a further stage in the process, during which there is an excessive focus on the question of what is correct usage" (2019: 8), and on this basis, she concludes that "the Age of Prescriptivism is now" (2019: 9).

It is striking that the label "Age of Prescriptivism" has been used to refer to the eighteenth (see, for example, Auer 2009), nineteenth (Anderwald 2016), and now even the twentieth and twenty-first centuries (Tieken-Boon van Ostade 2019). That is has been used to refer to different discrete periods in this way highlights the data gap facing researchers in this field. Without empirical data demonstrating which, if any, period is most associated with prescriptive impact, it is difficult to pin down the 'Age of Prescriptivism', or to ascertain whether it is ongoing. This uncertainty about where codification, prescription, and prescriptivism began results from the challenges which measuring the extent and impact of normative discourses present. Attempts to measure this impact have become more frequent in the last two decades (cf. Anderwald, 2012, 2014, 2016, 2019; Auer & González-Díaz, 2005; Yáñez-Bouza, 2008) but quantification of prescriptive impact remains a significant challenge.

Corpus-based studies have often correlated the dissemination of prescriptive precepts a decrease in the frequency of proscribed linguistic variants. However, such decreases often occur after a significant amount of time has elapsed since the original publication of a text or texts proscribing the variant in question. Even leaving aside confounding factors such as multiple editions of grammar books and the common practice of one grammar book contradicting the dicta of another, these time lags make it difficult to establish a causal link between normativity and language change. Indeed, they raise questions as to whether the producers of prescriptive materials were shaping contemporary usage, or merely 'jumping on the bandwagons' of changes already in progress.

Rissanen (2000) shows convincingly, for example, that the decline in multiple negation in English, commonly ascribed anecdotally to Lowth's prescriptions, was already underway during the Early Modern period. It is possible, therefore, that rapid changes in proscribed

linguistic variants observed during the Late Modern period may not reflect the impact of prescriptivism, but rather the accelerating rate of change characteristic of the diffusion of linguistic innovations (Labov, 1994: 65-66). Exploring this possibility is beyond the scope of this paper, however. The salient point for this study is that attempts to measure prescriptive impact at what we might consider the macro level of general usage have faced significant challenges.

A pioneering example of studies of this kind was Auer & González-Díaz's study of the inflectional subjunctive in Modern English (2005). They suggest that prescriptions on the subjunctive "caused a transitory increase in [its] usage" (Auer & González-Díaz, 2005: 335), which they consider "a blip in its development" (323). Auer & González-Díaz note, however, that "the grammars containing comments on the decline of the subjunctive were all published in the second part of the eighteenth century", but that "only at the beginning of the nineteenth century does the frequency of the form increase more noticeably" (323). Such time lags prevent researchers from identifying clear links between empirically-observed linguistic patterns of usage and the production of the prescriptive texts hypothesized to have triggered them. As these correlations are often the sole indicator of a relationship between prescription and language change, such time lags pose a significant methodological challenge.

Elsewhere in the literature, other such time lags may also be found. Anderwald, for example, likewise finds prescriptive influence in her corpus "came in a rather unexpected place and at an unexpected time" (2014: 14). This statement raises an important question: how, in such instances and with so many potentially confounding factors, can we know that prescriptive influence has occurred? Elsewhere, Anderwald notes "temporal correlation[s]" between the publication of proscriptive comments and decreases in the frequency with which the variants in question appear, suggesting that "[t]his kind of temporal correlation" allows the "investigation [of] whether prescriptive comments may have had an effect on demonstrable language change" (2019: 94).

In research on the progressive passive, however, there is a time lag. Here, Anderwald notes that the "potential effect [of prescriptivism] on the corpus data becomes visible some 10 to 15 years later" (2019: 95) and concludes that the peak in proscriptions in the 1830s may have effected the overall slowdown in the average figures of *get* from the 1830s to the 1840s" (2019: 98). Anderwald therefore concludes that "overall a measurable influence is quite rare", and that "successful prescription seems indeed to be the exception, rather than the norm, if we

take as a measure of 'success' a visible influence on documented written language" (Anderwald 2019: 103).

In light of the methodological challenges outlined thus far and the complexity of the datasets in question, however, it is important that we remain conscious that the absence of robust evidence for an effect is not tantamount to the absence of the effect. Elsewhere, temporal correlations between prescriptive treatment of a grammatical construction and its pattern of usage have been detected. Yáñez-Bouza has, for example, demonstrated correlation between a dramatic decrease in frequency of preposition stranding in the course of the eighteenth century, and the proliferation of prescriptive norms (2008).

The first two decades of corpus-based research seeking evidence for prescriptive impact has thus demonstrated how challenging this can be at the macro level. In the absence of empirical evidence to show that normativity changed the course of language development in English, we can conclude either that prescriptivism is an ineffective means of promoting language change, or that we do not yet have an optimal methodology for detecting prescriptive influence. As this is such a new field of study, we lack sufficient data to reach the first conclusion, and this paper instead trials a different approach to evaluating prescriptive impact using corpus methods.

What the studies outlined so far in this section have in common is an exclusive focus on grammaticography. However, grammar books and usage guides are not the only source of prescriptivism. Elsewhere, I (anonymised, 2021) have demonstrated that a discourse analytic approach to identifying prescriptive commentary shows Late Modern review periodicals to be a consistent source of prescriptive dogma during the late eighteenth and early nineteenth centuries. There are several advantages to considering the impact of this form of prescriptivism in a methodological test case. Firstly, the multitude of grammar books published from the mideighteenth century onwards (Tieken-Boon van Ostade, 2011: 105), often in several editions over a number of decades, makes identifying individual grammars as influential almost impossible. The high degree of inconsistency between grammar books is also a significant challenge. Likewise, it is impossible to ascertain which writers will have had access to which grammars. Large-scale studies of prescriptive impact are always, therefore, going to be extremely challenging.

As outlined above, however, it has been suggested that LMod authors altered their use of grammatical variants identified as nonstandard by reviewers during the Late Modern period

of English (Basker, 1988; McIntosh, 1998; Percy, 2009). This context is therefore ideal for testing the suitability of CPA to the study of prescriptive impact under carefully controlled conditions. If scalable, this methodology, outlined in greater detail in §3, has exciting potential for the study of prescriptive impact.

2.2 "[T]he cant of Clermont": Burney and the *Monthly Review*

In outlines the procedures by which CPA can pinpoint abrupt changes in language, with a view to extending the application of this methodology beyond the idiolectal level, the focus of this paper is methodological. As such, it will provide only as much contextual information as is necessary to understand the mechanisms by which sudden changes to Burney's idiolect were brought about. Some such contextual information, relating to Burney's social status, career, and expectation of critical acclaim, will now be provided.

By 1796, Fanny Burney was inarguably a literary celebrity (Crump 2002: 17). Her first two novels, *Evelina* and *Cecilia*, had been well-received by both the reading public and the review industry and her third was eagerly-awaited (Roper 1978: 166). The fact that a number of the intervening years had been spent within the Court of ('mad' King) George III only served to increase the frenzied anticipation surrounding *Camilla* (Crump 2002: 375). As such, the novel was reviewed by all the major British review periodicals of the day (Roper 1978: 166).

The critical reception was, however, more muted and polite than enthusiastic. Roper suggests that reviewers were "respectful" but "evidently disappointed" (1978: 166). This is certainly the tone reflected in the first review of *Camilla* to be published, in the *Analytical Review* in July 1796. Published anonymously but written by Mary Wollstonecraft, this review acknowledges the eagerness with which the novel was anticipated, but reports that *Camilla* is "inferior to the first-fruits of [Burney's] talents" (Wollstonecraft 1796: 142). It is, however, William Enfield's anonymous review in the *Monthly Review* in October 1796 which this paper will focus on, as a possible catalyst for grammatical reform in Burney's idiolect. This was the only review to provide a rundown of the perceived grammatical errors the novel contained. In the following short passage, the anonymous Enfield uses italics and explicit metalinguistic commentary to demonstrate his disapproval:

Yet we cannot but regret that *a work of such uncommon merit*, and so elaborate in its object and extent, was suffered to make its appearance, before it passed *under the correction* of some friend, who might have saved us *the pain of noticing the following verbal* and grammatical inaccuracies: — *Scarce* for *scarcely*, in almost every page. — '*Nor have I no great disposition*,' &c. — 'A man and horse was sent off'. — 'An admirable good joke.'—' Has strove.' — ' Was it me that fled?' — ' Not equally adroit as Henry.'— ' *Almost* nothing,' for *scarcely any thing*; a Scotticism. — 'The owner of the horses *laid* dead.' — ' One of the horses *laid* dead.' — ' She *laid* down in her cloaths ' — 'Where *laid* the blame?' — ' Desirous to know *if*' — for *whether*-an inelegant expression which every where occurs. (Enfield, 1796: 21)

Importantly, Burney was clearly stung by the detailed criticism to which this review publicly subjected *Camilla*. In a letter to her father, himself a sometime *Monthly* reviewer, she wrote:

What of *verbal* criticisms are fair, I shall certainly & gladly attend to in the second edition: but most of them are of another class, & mark a *desire* to find them that astonishes me; for I have no consciousness of any enemy, & yet only to enmity can attribute the possibility of supposing 'A man & Horse *was* sent off—' could be other than an error of the press. A Chambermaid, *now adays*, would have written *were*. 'An *admirable* good joke', also, is the cant of Clermont, not of the author; who might as well be accountable for the slip slops of Dubster. '*Nor* have I *no* great disposition'— must be an *invention*, I should think. Certainly I never wrote it, whether it be in the Book or not. I had not time for an errata— which might, methinks, have been observed, in some candid supposition that, otherwise, a few of the verbal errours might have been corrected. (quoted in Crump, 2002: 289)

Here, Burney accuses the reviewer of "a *desire* to find" errors, and of harbouring "enmity" towards her. She attempts to distance herself from many of the grammatical criticisms made; attributing a concord discrepancy to "the press", adverbial *admirable* to the "cant" of one character, and denying that the instance of multiple negation cited can exist. Burney also emphasises that she did not have time to complete an erratum, in which she might have corrected any mistakes found in the text. Her use of the word "errata" is interesting (notwithstanding her use of the plural form with a singular article) because the word 'erratum' usually relates to a list of production errors rather than errors of the author, which is more often denoted by the word 'corrigendum'. This may, therefore, be a further deliberate attempt to distance herself from the perceived errors highlighted by Enfield.

Despite its first line, then, this passage seems to be an exercise in denial and detachment, as Burney distances herself as much as possible from at least some of the perceived grammatical errors which Enfield points out. Her protestation that she "shall certainly & gladly attend to" those criticisms she considers "fair" in the second edition raises the question, however, as to which criticisms are fair and which, unfair. It is interesting to note, in this regard, that whilst Enfield highlights her use of two so-called 'flat' adverbs, Burney only attributes one to the "cant" of one of her characters.

In her defence of her use of adverbial *admirable*, said to be "the cant of Clermont", Burney explicitly reveals a tendency to use for characterization forms which she considers sociolinguistically marked in some way. In this instance, her use of the label "cant", which was often used in eighteenth-century English to refer to fashionable jargon (Sorensen: 2020), highlights that adverbial *admirable* is not a feature of her own idiolect. That she attributes this form to the character called Clermont is doubly telling, moreover, since she is wrong about which character's direct speech *admirable* can be found. It is actually a character named Mrs Arlbery. Clearly having not checked, Burney's ability to identify it as a cant form, which she would only use in direct speech, reveals her attitude to this variant and her perception of its status as a stigmatised variant.

Adverbial *scarce*, by contrast, seems for Burney to be a flat adverb of a different order. Enfield's claim to have found "*scarce* for *scarcely*, in almost every page" indicates that it is used in narration, rather than direct speech. This implicit distinction between *admirable* and *scarce*, whereby Burney distances herself from one flat adverb targeted for criticism but overlooks another entirely, is telling. It indicates that Burney may consider some flat adverbs to be sociolinguistically marked, and others unmarked. This raises questions as to whether the *Monthly*'s review of *Camilla* in 1796 effected a change in status in either paradigm, or in those of other dual-form adverbs.

2.3 Flat adverbs

In §2.2, it was hypothesized that Burney's response to the *Monthly*'s review of *Camilla* reveals a hierarchical conception of the status of so-called 'flat' adverbs. Whereas suffixless

adverbial *admirable* is regarded as sociolinguistically marked even prior to Enfield's 1796 review, *scarce* as an adverb seems to have been a feature of Burney's idiolect. Previous small-scale studies suggest that Burney responded decisively to this review, to bring her usage into line with a perceived norm of correctness (Bloom, 2009). Burney's use of dual-form adverbs therefore provides an appropriate test case for considering the suitability of CPA as a means for evaluating prescriptive impact. As previously stated, the focus of this paper is methodological, and reflection on the ramifications of the findings outlined in relation to Burney's life and idiolect will be minimal. The purpose of this paper is to consider the suitability of CPA for locating moments of abrupt linguistic change, with a view to exploring this application beyond the idiolectal level in future.

To allow consideration of dual-form paradigms beyond those explicitly mentioned by Enfield, scarce(ly), admirable(/ly), other dual-form adverbs have been included in this study. These are exceeding(ly), excessive(ly), extraordinary(ily), extreme(ly), full(y), marvellous(ly), mighty(ily), prodigious(ly), terrible(ly), near(ly), tolerable(ly), intolerable(ly), bright(ly) and clear(ly). These paradigms were chosen for various reasons. Both scarce(ly) and admirable(/ly) were selected as the adverbs which, in flat form, were singled out by Enfield in his 1796 review of Camilla. The other adverbs included in the study have all been cited as receiving criticism in suffixless form from eighteenth-century grammarians (Sundby et al., 1991: 200). Of these, the majority are intensifiers, because previous research suggests that this is the class of adverb which occurs most frequently in suffixless form (Nevalainen, 2008: 297). All the intensifiers cited by Nevalainen, exceeding(ly), excessive(ly), extraordinary(ily), extreme(ly), full(y), marvellous(ly), mighty(ily), prodigious(ly), terrible(ly), function as amplifiers; scaling the meaning of the modified element upwards from an assumed norm (Quirk et al., 1985: 445).

3 Data and Method

For the purpose of trialling CPA for gauging the impact of prescriptivism, a purpose-built corpus of Burney's idiolectal language data was constructed. In §3.1, details of the corpus built for this purpose will be provided, and in §3.2, the methodology employed will be outlined.

3.1 Data

The idiolectal research reported in this paper required the construction of a purpose-built corpus of Burney's prose writing. This corpus, which is available on request only due to copyright restrictions, will henceforth be referred to as the 'Burney corpus'.

The Burney corpus comprises two sub-corpora of roughly 1.5 million tokens each. One of these sub-corpora consists of prose published during Burney's lifetime. Table 1, below, provides a breakdown for the word count of this corpus; henceforth referred to as the 'published sub-corpus'.

Published text	Token count
Evelina (1778)	154,266
Cecilia (1782)	331,319
Brief Reflections (1793)	3,851
Camilla (1796)	358,499
The Wanderer (1814)	323,776
Memoirs of Doctor Burney (1832)	255,914
Total	1.427.624

Table 1. Published Burney sub-corpus word counts.

As Table 1 shows, Burney published four novels during her lifetime: *Evelina* in 1778, *Cecilia* in 1782, *Camilla* in 1796, and *The Wanderer* in 1814. *Evelina* is an epistolary novel, written from the perspective of the protagonist in the first person, and as such must be treated with particular caution in the context of corpus analysis of grammatical variance. Burney's other published prose works are written in the third person and do not pose similar challenges.

Also listed in Table 1 are the two works of prose non-fiction published by Burney during her lifetime. *Brief Reflections Relative to the French Emigrant Clergy* (1793) is a pamphlet, and *Memoirs of Doctor Burney* (1832) is a biography of her father, music expert Dr Charles Burney. The first editions of all of these texts have been included in the published subcorpus in their entirety, apart from certain sections of the *Memoirs*, which in its original form contains letters written by as well as to Dr Burney, and do not therefore reflect the linguistic choices of Burney herself.

The removal of some linguistic data was also necessary in the preparation of the other sub-corpus in the Burney corpus, henceforth known as the 'private sub-corpus'. This is comprised of Burney's surviving letters and diariess, which have been published in modern editions, alongside letters from her correspondents, for the purpose of creating a cohesive narrative. In a study using similar epistolary data, Baker has distinguished between letters written by the subject of the study, known as 'out-letters', and those the subject received from others, known as 'in-letters' (1980: 123). The private sub-corpus used in this study was compiled by removing all 'in-letters' from the published editions of Burney's private writings, leaving only what Burney herself wrote.

The sources for the text files in this sub-corpus are the editions of Burney's private writing produced by McGill University's Burney Centre (Hemlow, et al. 1972a; Hemlow & Douglas, 1972; Hemlow at al. 1972b; Hemlow, 1973; Hemlow, 1975; Troide & Cook, 1994). These are available in a digitized, machine-readable format.

Burney's surviving letters and journals account for 1.6 million tokens of the Burney corpus. Table 2 provides a breakdown of the decades from which these writings survive. No text from before 1768 is extant because Burney burned many of her juvenile writings on her 15th birthday (Thaddeus, 2000: 10). This habit of self-editing continued into adulthood, and is also responsible for later gaps in the Burney corpus. Overall, however, Burney's journals and letters provide a prolific amount of data for the study of a changing idiolect across a long adult life.

Year of writing	Token count
1760-1769	27,999
1770-1779	296,188
1780-1789	0
1790-1799	359328
1800-1809	179,965
1810-1819	400,767
1820-1829	167,144
1830-1840	53,441
Total	1,617,758

Table 2. Private Burney sub-corpora token counts, with data aggregated by decade.

At 1.6 million tokens, this is relatively large for an unpublished single-author corpus. Tieken-Boon van Ostade has compiled comparable corpora of Jane Austen's (2014) and Robert Lowth's (2011) letters, which consist of 145,000 and 90,000 tokens respectively, whilst Sairo (2009) uses an epistolary corpus of just 30,000 tokens. These corpora are single-genre as well as single-author, and the survival of Burney's diary entries expands the corpus considerably. Its size and multi-genre construction makes the Burney corpus more comparable to the idiolectal sub-corpora of the *Early Modern Multiloquent Authors* (*EMMA*) corpus (Petré et al. 2018) of seventeenth century English than to other Late Modern idiolectal corpora.

In providing more than seventy years' linguistic data that can be used to inform our understanding of the individual experience of standardization during the eighteenth and nineteenth centuries, Burney's surviving written output affords a unique opportunity to examine the impact of prescriptivism. However, her use of language also poses significant challenges to traditional corpus methodologies, since she exploits linguistic variation in her characterization of fictional people, and occasionally of non-fictional people also. In doing so, Burney distinguishes variants which she perceives to be nonstandard, used in direct speech, from the more acceptable alternatives which she appears to use unselfconsciously. This is, indeed, a habit she makes explicit reference to, in the letter she writes to her father about the 1796 review of *Camilla* (see §4.1). Any corpus analysis of Burney's language must therefore take account of this habit, and carefully distinguish direct from indirect speech, as well as prose written as herself from prose written as a character, as in *Evelina*'s first-person narrative.

3.2 Method

As has already been outlined, the purpose of this paper is to demonstrate the suitability of change point analysis (CPA), a statistical modelling technique, for evaluating prescriptive impact on language use. In §2.1, the challenges involved in attempting to evaluate such prescriptive impact were laid out. It was noted there that it is rare to find compelling temporal correlations between the dissemination of normative material, and changes in language. While retaining an interest in the methodological challenge of evaluating the impact of prescriptivism,

this paper pivots away from the methodologies trialled previously. Instead of focusing on the impact of grammaticography on general usage, this paper uses a single-author case study to showcase, under controlled conditions, the suitability of using change point analysis (CPA) to pinpoint moments of sudden linguistic change, like those occurring in responsive to normativity.

CPA is a statistical method for identifying changes in sequential data. In this study, it is used to determine whether Burney responded to the 1796 review of her third novel, *Camilla*, by radically altering her use of proscribed grammatical variants. In statistical terms, a change point can be said to exist when observations follow one distribution up to that point and another thereafter. For example, a change point would be identified if a variant occurred once every two years before a certain point, and every two months after that. The purpose of CPA is therefore twofold; firstly, to determine whether a change has occurred, and secondly, to locate any change point.

The earliest change point studies date from the 1950s (Chen & Gupta 2013: vii), and the method has been applied to a wide variety of disciplines and has the potential for enormous impact. Chen & Gupta (2013) note that change point analysis has been used in "economics, finance, medicine, psychology, geology [and] literature" (vii), whilst Brodsky & Darkhovsky write that "[w]hether it is an EEG analysis which is involved, a seismogram, or data from an orbiting satellite, whether a historical text or a manuscript is the subject of our investigation...we are dealing with the results of observations that form a random sequence" (1993: vii). Regardless of the data in question, then, as long as observations can be considered statistically random, in the sense that there exists no deterministic model from which their distribution can be predicted, the application of change point analysis remains essentially the same.

Though it makes no difference to the means by which the modelling is done, the classic model of change point study is hypothesis-driven. It sets out to test the researcher's pre-existing hypothesis as to where a change point is expected to occur. This model was inaugurated by Maguire et al. (1952), in a study updated by Jarrett (1979) and Rafferty & Akman (1986) which evaluated the efficacy of new mine safety legislation. Correlation between a change point in the number of mining disasters (defined as incidents involving 10 or more fatalities) and a significant change in regulations governing the coal industry was considered indicative of a causal link. This study will follow a similar model and similar statistical procedures; setting

out to test whether the year during which the *Monthly*'s review of Burney's *Camilla* was published, 1796, constitutes a statistical change point for use of one type of grammatical variant proscribed within the review; the flat or suffixless adverb (e.g. adverbial *full* rather than *fully*). This would strongly indicate that the review had a prescriptive impact on Burney's usage.

In order to test the hypothesized change point of 1796, a purpose-built change point model, implemented in Python, has been used to analyse the frequency with which paradigmatic suffixed and suffixless adverbs appear in the Burney corpus (code available on request). That these variants are grammatically paradigmatic means that they are mutually exclusive. In each instance, Burney has a choice about which of the two variants she selects. This allows the calculation of the probability that where any instance of a given dual-form adverb occurs, one variant will be selected over the other. Any change point inferred by the model represents the moment at which this probability is estimated to change. In the case of the private Burney sub-corpus, such a change point would be expressed as a single calendar year during Burney's lifetime. In the case of the published sub-corpus, which represents a non-continuous time series, such a change point can only be represented as the interval between the publication of two texts.

The change point model then approximates a probability distribution for any change detected; providing a percentage likelihood that the change has occurred in any given year of the study period, or between two publications. The model could report, for instance, that the probability of a change occurring in 1778 was 60%, or that the probability of the change occurring between *Evelina* (1778) and *Cecilia* (1782) was 70%. The aim of this study is to ascertain whether the *Monthly*'s October 1796 review of *Camilla* caused a change in the frequency with which suffixless, or flat, adverbs were used. Any degree of correspondence between the 1796 publication of this review and a detected change point will therefore be a significant finding. Such correspondence is unlikely to occur by chance, and provides strong evidence of a causal link.

4 Assessing idiolectal prescriptive impact using Change Point Analysis

This Section will report the findings of the analysis of dual-form adverb use in the Burney corpus. This will showcase three major benefits of using CPA in this kind of study. Firstly, in

§4.1, it will showcase CPA's suitability for demonstrating overall trends. Secondly, in §4.2 it will showcase CPA's capacity to accommodate more in-depth analysis. Finally, in §4.3, it will showcase CPA's capacity to reveal unanticipated change points and thus generate *a posteriori* hypotheses for the analyst.

4.1 Aggregated dual-form adverb data

The adverbs in question can be considered as two distinct groups; one group of suffixless, or flat, forms, and one group of suffixed forms. Considering them thus, the change point model detects a single change point in Burney's use of the adverbs over the course of her adult lifetime, in both sub-corpora.

Firstly, we will consider the change point in the published sub-corpus. As a result of the non-continuous time series in the published sub-corpus, the change point model can only locate this change as occurring between the publication date of *Camilla* (1796) and that of Burney's next publication, *The Wanderer* (1814). The probability that the change occurs between these two dates is approximated by the change point model to be 100%. This is consistent with the hypothesized change in Burney's usage resulting from exposure to overtly targeted prescriptive comment in Enfield's review. This is such a decisive change as to be discernible by eye, as Figure 1 demonstrates.

Figure 1. Normalized frequency of flat adverb occurrence in the published Burney sub-corpus.

Because Burney produced private journal entries or correspondence in most of the years included in the study, the change point model for the private sub-corpus deals with a time series that is almost continuous. This allows for the more precise location of detected change point, to within a period of a few years. As was the case with the published sub-corpus, a single change in Burney's usage of the selected adverbs is detected. The change point model approximates, with a probability level of 99.7%, that this change occurs in 1796, 1797, or 1799. Of these years, 1797 is calculated to be the mode, meaning that this is the year in which the change detected is most likely to have occurred. The probability that this is the case is

approximated to be 57.58%. This is a less decisive change than was witnessed in the published sub-corpus, and is unlikely to be discernible by eye from Figure 2.

Figure 2. Normalized frequency of flat adverb occurrence in the private Burney sub-corpus, with year of highest probability level for a change point marked.

These findings are indicative of an overall reduction in flat adverb usage, with CPA allowing much more precise location of this change than would otherwise be possible. As Enfield's review of *Camilla* was published in October 1796, the change point model's approximation that 1797 is the year in which the change most likely occurred is consistent with the change resulting from the criticism it contained. This suggests that Enfield's criticism had a decisive overall effect on Burney's conception of the sociolinguistic markedness of flat adverbs.

Given that the starting point for this research was the hypothesis that Burney's flat adverb usage would reduce dramatically in the late 1790s, following her exposure to the *Monthly*'s review of *Camilla*, this finding is interesting. However, it does little to demonstrate the value of change point analysis, over and above the hypothesis testing procedures commonly used in linguistic research (Brezina: 2018). Such procedures could likewise have been used to test the *a priori* assumption that an idiolectal change would result from the review, in 1796 or 1797. In this scenario, however, a hypothesized period for the change would have to be identified in advance. A particular benefit of change point analysis is that the modelling procedure does not require any *a priori* assumption of a change, let alone a change occurring at a particular time. In what follows, we will examine more closely the pattern of usage outlined so far, focusing particularly on the paradigms singled out in the review and the methodological ramifications of these findings.

4.2 Disaggregated dual-form adverb data

To refine our understanding of how useful CPA can be in tracking the impact of linguistic change resulting from prescriptive intervention, it is necessary to probe the findings

reported in §4.1 further. The data presented here suggest that Burney did not confine changes in her usage to the dual-form adverb paradigms targeted by Enfield for criticism. However, CPA also allows for the modelling of individual dual-form adverb paradigms, where sufficient data exist. This is another benefit of CPA by contrast with hypothesis testing, where the 'multiplicity problem' means there is a risk of inflating the error rate through multiple testing (Moodie & Johnson: 2022). In this Section, the findings for the adverb paradigms singled out in the *Monthly*'s review will be outlined. This will highlight the value of CPA in, 1) enabling complex patterns to be probed in depth and, 2) generating *a posteriori* hypotheses, such as the one outlined in §4.3.

Of the dual-form adverbs included in this study, only suffixless admirable and scarce are criticized as "grammatical inaccuracies" in the Monthly Review in October 1796 (162). Burney's protestations to her father about admirable being a "cant" word, used for characterization, appear to be vindicated by her pattern of usage over the course of her adult lifetime. Adverbial admirable appears in the Burney corpus only three times, and two of these are in the context of direct speech; the first, in her private journal in 1792, and the second in Camilla in 1796. The other occurrence, which appears in Burney's own private prose, also occurs in 1792.

Given that only three instances can be found and that two of them are distanced from Burney's own usage through direct speech, we can surmise that this is probably a sociolinguistic marker for Burney prior to her exposure to Enfield's review. This is, of course, corroborated by her established capacity to identify it as a "cant" form without checking the text of *Camilla*, as is evidenced by her misattribution of the quotation (see §2.2). However, based on such scant data, CPA can tell us nothing.

Data for dual-form *scarce(ly)* tell us much more about Burney's response to the review, and hence about the suitability of CPA for detecting prescriptive impact and other abrupt changes in linguistic behaviour. The implications of this as a test case for CPA are less related to the discernment of a pattern of change, which as Figure 3 shows, can clearly be seen by eye, and more related to the importance of being able to disaggregate data to unpick complex patterns of usage and change. What Figure 3 shows is that adverbial *scarce* disappears entirely from Burney's usage after 1797, and as a result the change point model for the private subcorpus approximates a 100% probability that the change point for this change lies in 1797.

Figure 3. Normalized proportional frequency of *scarce* and *scarcely* occurrences in the private Burney sub-corpus.

Prior to 1797, *scarce* is clearly the dominant variant in this paradigm, but a dramatic change in the distribution of the two forms is discernible after that year, with *scarcely* then being used 100% of the time. This diachronic pattern of usage is reflected in the published subcorpus, where Burney likewise radically alters her distribution of the two forms. Again, as demonstrated by Figure 4, this change can be discerned by eye.

Figure 4. Normalized proportional frequency of *scarce* and *scarcely* occurrences in the published subcorpus.

As with the change point for the selected flat adverbs in combination in §4.1, the lack of continuous time series in the published sub-corpus means that this change point can be located less precisely. As is clear from Figure 4, however, adverbial *scarce* disappears entirely from the Burney corpus after 1797 and is supplanted completely by *scarcely*.

These findings suggest that Burney did not consider adverbial *scarce* to be marked prior to her exposure to the *Monthly*'s review. Rather, she seems to have regarded this suffixless variant as acceptable in any syntactic environment. That she abandons the flat form completely following the review's publication therefore indicates that where one of two directly competing variants is targeted for criticism, it is possible for that variant, even if previously dominant, to become marked for Burney very quickly. The effect of this acquired perception of markedness is stark, as Burney abandons the suffixless variant entirely after 1797.

The four uses of adverbial *scarce* which occur in 1797, after Burney's known exposure to the review, are interesting, however, and have methodological implications for this method of using change point analysis to track normative impact. These suggest a time lag between her consumption of the review and the complete eradication of the stigmatized variant from her idiolect. These occurrences may therefore be considered vestigial, since the likelihood of such

a dramatic change as that observed occurring coincidentally, just a year after Burney's exposure to a review criticizing the variant, is low.

This seems, therefore, to be a genuine example of documented periodical prescriptivism in action. A reviewer has proscribed a given variant, and as a result, the reviewed author has carried out a wholesale reform of her usage. Change point analysis has allowed this pattern to be explored, both within one of the paradigms explicitly targeted by the reviewer and in flat adverb usage in general. It also allows us to probe the data further, and to ask whether the strength of the change in the paradigm of *scarce(ly)* gives a misleading impression. At the surface level, as outlined in §4.1, the data indicate that Burney changes her usage across the dual-form adverb paradigms examined. This indicates a change by analogy with *scarce(ly)*, whereby Burney's conception of markedness in relation to flat adverbs changed beyond the *scarce(ly)* paradigm. CPA, however, allows us to establish that this overall trend is influenced by the strength of the change within the *scarce(ly)* paradigm.

When considering the dual-form adverb paradigms individually, only one other paradigm exhibits a change point in the late 1790s. This is the change point for *near(ly)*, where a change point is detected in 1798. The change point model approximates the probability that the change is located in this year to be 64%, however, which is relatively low. 1798 is only two years after Enfield's review of *Camilla*, and we might reasonably expect an idiolectal change by analogy to occur more slowly than a directly-motivated change. However, the lack of a change point in the 1790s in other adverb paradigms strongly suggests that the strength of the change within the *scarce(ly)* paradigm is influencing the overall trend, resulting in the misleading impression that Burney changed her usage of other flat adverbs by analogy with those criticized. As will be outlined in §4.3, however, if data for *scarce(ly)* are removed and those for the remaining 15 adverbs studied using CPA, an entirely different change point is detected. This highlights the value of CPA in revealing change points which were not expected, and thereby generating new hypotheses and new research directions.

4.3 Generating *a posteriori* hypotheses

In §4.1, we saw that using CPA on the adverb paradigms on aggregate suggests a change by analogy with the paradigms criticised in the *Monthly*'s 1796 review, whilst in §4.2 we explored how it is possible to 'drill down' into such findings and disaggregate data, to uncover more complex patterns of usage, in a way that would be impossible using hypothesis

testing techniques conventionally employed in linguistic research. Lastly, we will consider an additional benefit of using CPA in studies such as this one. This is that CPA can highlight completely unexpected changepoints, facilitating the generation of new hypotheses about moments of change.

One such new hypothesis arises when data for *scarce(ly)* are removed and those for the remaining 15 adverbs are studied using CPA. An entirely different change point is then detected. This change point lies in 1779, and the change point model approximates the probability of the change occurring in this year to be 94%.

The location of this change is, for the purposes of this study, less important than the fact that it is not in the late 1790s and cannot, therefore, be the result of Enfield's review. The implications of this finding for Burney scholars are explored elsewhere (anonymised: forthcoming). However, this finding highlights the immense importance, and ancillary benefits, of probing and disaggregating change point data to ensure that the mechanisms by which change occurs are fully understood. As demonstrated in §4.2 with *scarce(ly)*, CPA can prove extremely useful in identifying moments of sudden change in linguistic datasets. In addition to answering such original research questions, it can also reveal new avenues for exploration.

5 Conclusions

The purpose of this paper was to highlight the promise of applying change point analysis (CPA) to the study of prescriptive impact using corpus methods. The findings reported in §4.3 demonstrate CPA can indeed be a useful tool for locating abrupt changes in linguistic data series. As was outlined in §2, relatively little is known about the actual impact of prescriptive agendas on language variation and change. As was also reported in §2, moreover, attempts to ascertain whether prescriptive agendas have had an impact on language have proven challenging. It is rare that such a study will find a clear correlation indicative of causality, and this is an issue which CPA may be able to help address. This paper has therefore reported a test case, in which CPA was used to approach the problem at an idiolectal, micro, level, where the possibility of confounding factors could be excluded to a much greater degree than at a macro level.

The results of this test case, reported in §4, demonstrate clearly that CPA shows promise as a means to identify sudden changes in behaviour within linguistic data series. These findings represent the first empirical evidence that Burney's use of language underwent a sustained process of reform, following her exposure to Enfield's 1796 review of *Camilla*. More pertinently for this paper, they are also the first empirical evidence to show that a methodology using corpus data and CPA can provide a clear indication of causative relationship between prescriptive agenda and language variation and change.

This is a preliminary case study, using a corpus of idiolectal data. The findings reported here and therefore not generalisable, but it is appropriate that a methodology of this kind should be tested thoroughly in such a context, where the possibility for confounding factors is manageable. As the methodology shows promise at this level, the next step in investigating how CPA can be used to track prescriptive impact is to move beyond idiolectal data, as in anonymised (2022). It is hoped that this study is only the beginning, and that the exploration of this methodology in other contexts where prescriptive agendas are at work will prove equally as informative.

References

- Anderwald, L. (2012). Clumsy, awkward or having a peculiar propriety? Prescriptive judgements and language change in the 19th century. *Language Sciences*, *34*, 28-53.
- Anderwald, L. (2014). Measuring the success of prescriptivism: quantitative grammaticography, corpus linguistics and the progressive passive. *English Language and Linguistics*, 18(1), 1-21.
- Anderwald, L. (2016). Language between Description and Prescription: Verbs and Verb Categories in the Nineteenth-Century Grammars of English. Cambridge University Press.
- Anderwald, L. (2019). Empirically charting the success of prescriptivism. In C. Suhr, T. Nevalainen, & I. Taavitsainen (Eds.), From Data to Evidence in English Language Research. Brill.
- Auer, A. (2009). The Subjunctive in the Age of Prescriptivism: English and German Developments during the Eighteenth Century. Palgrave Macmillan.
- Baker, F. (1980). The Works of John Wesley. Vol. 25, Letters I, 1721-1729. Clarendon Press.
- Basker, J. (1988). Tobias Smollett. Critic and Journalist. Associated University Presses.

- Baugh, A., & Cable, T. (1993). A History of the English Language (4th ed.). Oxford: Routledge.
- Brezina, V. (2018). *Statistics in Corpus Linguistics: A Practical Guide*. Cambridge University Press.
- Brodsky, B., & Darkhovsky, B. S. (1993). *Nonparametric Methods in Change Point Problems*. Dordrecht: Springer Science & Business Media.
- Burney, F. (1778). Evelina, or the History of a Young Lady's Entrance into the World. In a Series of Letters. Vol. 1-3. (1st ed.). T. Lowndes. www.galenet.galegroup.com/servlet/ECCO
- Burney, F. (1782). *Cecilia, or Memoirs of an Heiress. Vol. 1-5.* (1st ed.). T. Payne and Son; Cadell. www.galenet.galegroup.com/servlet/ECCO
- Burney, F. (1793). *Brief Reflections Relative to the Emigrant French Clergy: Earnestly Submitted to the Humane Consideration of the Ladies of Great Britain.* (1st ed). Cadell. www.galenet.galegroup.com/servlet/ECCO
- Burney, F. (1796). *Camilla: or, a Picture of Youth. Vol.1-5.* (1st ed.). Payne, Cadell and Davies. www.galenet.galegroup.com/servlet/ECCO
- Burney, F. (1802). *Camilla: or, a Picture of Youth. Vol.1-5.* (2nd ed.). Payne, Cadell and Davies. www.galenet.galegroup.com/servlet/ECCO
- Burney, F. (1814). *The Wanderer; or, Female Difficulties. Vol.1-5.* (1st ed.). London: Longman, Hurst, Rees, Orme and Brown. <u>www.galenet.galegroup.com/servlet/ECCO</u>
- Burney, F. (1832). *Memoirs of Doctor Burney, arranged from his own manuscripts, from family papers, and personal recollections, by his daughter, Madame D'Arblay. Vol.1-3.* (1st ed.). Moxon, 1832. www.galenet.galegroup.com/servlet/ECCO
- Chen, J. and Gupta, A.K. (2013). Parametric Statistical Change Point Analysis. Springer.
- Crump, J. (Ed.). (2002). A Known Scribbler: Frances Burney on Literary Life. Broadview.
- Enfield, W. (1796). 'Mrs D'Arblay's Camilla'. The Monthly Review, XXI, 156-163.
- Hemlow, J. (Ed.). (1973). *The Journals and Letters of Fanny Burney*, vol. IV. Oxford: Clarendon Press. https://www.nlx.com/collections
- Hemlow, J. (Ed.). (1975). *The Journals and Letters of Fanny Burney*, vol. V. Oxford: Oxford University Press. https://www.nlx.com/collections
- Hemlow, J., & Douglas, A. (Eds.). (1972). *The Journals and Letters of Fanny Burney*, vol. II. Oxford: Clarendon Press. https://www.nlx.com/collections
- Hemlow, J., Boutilier, P., & Douglas, A. (Eds.). (1972a). *The Journals and Letters of Fanny Burney*, vol. III. Oxford: Clarendon Press. https://www.nlx.com/collections

- Hemlow, J., Cecil, C.D., & Douglas, A. (Eds.). (1972b). *The Journals and Letters of Fanny Burney*, vol. I. Oxford: Clarendon Press. https://www.nlx.com/collections
- Jarrett, R.G. (1979). A note on the intervals between coal-mining disasters. *Biometrika*, 66, 191-193.
- Jones, C. 1989. A History of English Phonology. Longman.
- Leonard, S.A. (1929). *The Doctrine of Correctness in English Usage, 1700-1800.* University of Wisconsin.
- Maguire, B.A., Pearson, E.S. & Wynn, A.H.A. (1952). The time intervals between industrial accidents. *Biometrika*, 38, 168-180.
- McIntosh, C. (1998). *The Evolution of English Prose, 1700-1800, Style, Politeness, and Print Culture.* Cambridge University Press.
- Milroy, J., & Milroy, L. (1992). *Authority in Language: Investigating Standard English*. Routledge.
- Moodie, P. & Johnson, D. (2022). Applied Regression and ANOVA Using SAS. CRC Press.
- Nevalainen, T. (2008). Social variation in intensifier use: constraint on *-ly* adverbialization in the past? *English Language and Linguistics*, *12*, 289-315.
- Percy, C. (2009). Periodical reviews and the rise of prescriptivism: the *Monthly* (1749-1844) and *Critical Review* (1756-1817) in the eighteenth century. In I. Tieken-Boon van Ostade & W. van der Wurff (Eds.), *Current Issues in Late Modern English* (pp.117-150). Peter Lang.
- Petré, P., Anthonissen, L., Budts, S., Manjavacas, E., Standing, W., & O. Strik. (2018). *The EMMA Corpus (release 1.0). Early Modern Multiloquent Authors.*
- Quirk, R., Greenbaum, S., Leech, G. & Svartik, J. (1985). A comprehensive grammar of the English language. New York: Longman.
- Rafferty, A.E. and Akman, V.E. (1986). Bayesian analysis of a Poisson process with a change point. *Biometrika*, 73: 85-89.
- Roper, D. (1978). Reviewing before the Edinburgh: 1788-1802. Methuen.
- Sairo, A. (2009). Language and Letters of the Bluestocking Network: Sociolinguistic Issues in Eighteenth-Century Epistolary English. Société Néophilologique de Helsinki.
- Sorensen, J. (2020). Strange Vernaculars: How Eighteenth-Century Slang, Cant, Provincial Languages, and Nautical Jargon Became English. Princeton University Press.
- Sundby, B., Bjørge, A.K., & Haugland, K.E. (1991). *A Dictionary of English Normative Grammar 1700-1800*. John Benjamins.

- Thaddeus, J. (2000). Frances Burney: A Literary Life. Basingstoke: Macmillan.

 The Oxford Dictionary of National Biography, Online Edition. www.oxforddnb.com
- Tieken-Boon van Ostade, I. (2011). *The Bishop's Grammar. Robert Lowth and the Rise of Prescriptivism*. Oxford University Press.
- Tieken-Boon van Ostade, I. (2014). *In Search of Jane Austen: the Language of the Letters*. Oxford University Press.
- Tieken-Boon van Ostade, I. (2019). Describing Prescriptivism: Usage Guides and Usage Problems in British and American English. Routledge.
- Wollstonecraft, M. (1796). Camilla: or, A Picture of Youth. By the Author of Evelina and Cecilia. *Analytical Review, 24.* 144.
- Yáñez-Bouza, N. (2008). Preposition Stranding in the Eighteenth Century: *Something to Talk About*. In Tieken-Boon van Ostade (Ed.), *Grammars, Grammarians and Grammar: Writing in Eighteenth Century England* (251-77). Mouton de Gruyter.

Address for correspondence

Name

Department or School

Institution

Address

City, post code

Country

Email address

Twitter handle