Conditionals as interpersonal devices in Late Modern English women's scientific writing



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ABSTRACT

Attaining the best possible reception of one's writing is among the main factors that contribute to the rhetorical profile of scientific prose: authors have to both negotiate meaning and persuade their peers (Allen et al., 1994; Atkinson, 1996, 1999; Bazerman, 1988; Hyland, 1998, 2000), particularly when their position within the scientific community is disadvantageous, as in the case of female scientists during the Late Modern English period (Crespo, 2012; Schiebinger, 1989, 2003). This article analyses the use of conditionals as interpersonal, negotiating devices in the work of female scientists in the eighteenth and nineteenth centuries. To this end, texts included in the Coruña Corpus (Moskowich, 2011) written by women will be searched for conditional markers, and the results will be analysed from a functional point of view, highlighting the particular ways in which female scientists used these devices across disciplines and through the period.

Keywords: conditionals; scientific discourse; interpersonal devices; mitigation; negotiation of meaning.

I. INTRODUCTION

The rhetorical profile of scientific writing is perhaps best understood as arising from two distinct needs on the part of scientists: to vindicate their claims, and at the same time to achieve the best reception possible by their community of peers. This has led to the practice of an effective, deliberate mode of writing, in which the author has to persuade and negotiate meaning (Allen et al., 1994; Atkinson, 1996, 1999; Álvarez-Gil & Bondi, 2021; Álvarez-Gil & Quintana Toledo, 2022; Bazerman, 1988; Hyland, 1996, 1998, 2000; Carrió, 2012; Moskowich & Crespo, 2019).

Such a dual need is perhaps even more marked when authors occupy a powerless, outsider position in the scientific community, as was the case with women scientists during the Late Modern English period (Crespo, 2012; Schiebinger, 1989, 2003). With very few exceptions, female authors at the time faced prejudice and were widely discriminated against, commonly working in the shadows of male figures, who were often their husbands, fathers or brothers (Mourón, 2011; Solsona, 1997).

Women used a variety of rhetorical and linguistic strategies to overcome this disadvantageous position (Alonso-Almeida & Álvarez-Gil, 2021; Crespo, 2021). Among these, conditionals were particularly common (Crespo & Moskowich, 2015). Their usefulness here stems from the fact that their formal and functional versatility allows for a significant variety of effects, thus helping authors to achieve a better reception of their claims. As Warchal notes, "by involving the reader in the on-going argumentation in a variety of ways, conditional clauses act as devices moulding interpersonal relations in that they help extend this consensus to embrace new claims" (2010, p. 149).

The present study analyses the use of conditional structures as interpersonal rhetorical devices used by women to overcome some of the resistance they faced in the community of scientists during the Late Modern English period. In what follows, Section II discusses scientific communities during the period and the situation of women therein. Section III addresses the role of conditionals as negotiating, interpersonal devices, which can be used by women to try and overcome their weaker

position in the scientific communities. Section IV sets out the methodology and corpus used. Section V presents the findings as well as a discussion of these, before some tentative conclusions are presented in Section VI.

II. SCIENTIFIC COMMUNITIES DURING THE LATE MODERN ENGLISH PERIOD

From the second half of the seventeenth century onwards, the dominant scientific paradigm up to that point, Scholasticism, began to give way to a new scientific culture, that of Empiricism (Alfaya, 2019; Gotti, 2011; Taavitsainen, 2000, 2011; Taavitsainen & Pahta, 1998), in which knowledge was based on what was observed in the real world rather than on the reinterpretation and reapplication of texts from older, authoritative sources. During this period, the narration of observations and experiments became the main source of knowledge, and scientists (even if, at least at the beginning, these were mainly amateur enthusiasts from the genteel echelons of society) would meet and present their discoveries in the new institutions which had been founded, such as the Royal Society of London (1660), where their work would be commented on and critiqued by their peers. The role of meetings, visits and discussions was considered to be very important, and science was seen as a social endeavour, a "socially-construed science" (Bazerman, 1988; Crespo, 2011; Crespo & Moskowich, 2015; Dossena, 2017; Hyland, 1996, 1998, 2000; Moskowich, 2017; Myers, 1989; Swales, 1990) with its practising members constituting a close-knit scientific community, one which at this stage was both social and epistemological in nature.

The importance of these narrations, and the fact that it was scientists themselves who reported their own observations, implied that the question of the reliability of the accounts was itself central to the process. During a first stage, with science still seen mainly as a gentlemanly activity, the veracity of such accounts (besides the finegrained details conveyed) was based on the *gentlemen's word*, that is, the truth of what was being described was assured by virtue of the condition of these practitioners as gentlemen. However, as scientific communities developed and increased in size, with scientists no longer enjoying close social relationships or indeed even knowing each other personally, the discourse evolved, with methodology and evidence becoming far more important.

It is in these circumstances that the rhetorical profile of present-day scientific discourse first emerged. Science was now considered not as a simple collection of objective, impersonal information, but rather could best be seen as a space for the discussion and exchange of information between members of the scientific community (Alonso-Almeida, 2021; Alonso-Almeida & Álvarez-Gil, 2021; Bazerman, 1988; Dossena, 2017; Hyland, 1996, 1998, 2000; Myers, 1989; Swales, 1990). In such a context, scientists had to earn the recognition of their peers, both in terms of the relevance of their work and for themselves as worthy members of the scientific community, through conveying shared values and knowledge.

Scientific discourse, then, came to involve a process of convincing the scientific community of the veracity, validity and relevance of one's accounts (Allen et al., 1994; Atkinson, 1996, 1999; Alonso-Almeida, 2017; Puente-Castelo, 2017b), and also of presenting one's work in a persuasive manner, this in order to predispose the audience to receive such information positively. It was, then, an interpersonal exercise in which meaning was constantly negotiated, and claims were simultaneously asserted and mitigated.

At the linguistic level, this correlates with the use of a series of devices which are said to have a mediating role between authors and audience (Hyland, 1994, 1998, 1998b; Warchal, 2010). Initially this involved the use of elements which helped authors to convey persuasion, humility, or politeness directly (Hyland, 1996, 1998, 2000), such as possibility modals (such as *may*), probability adjectives and adverbs (such as *perhaps*), or "distancing verbs", such as *suggest* or *seem* (Biber & Finegan, 1988); emerging thereafter was the use of expressions that served to reduce assertiveness, thus avoiding the commitment of the author towards the veracity or accuracy of a particular proposition, recognising the works of peers, or introducing several differing points of view through the use of, among other devices, citation sequences and conditional structures.

II.1. Women in scientific communities

Women faced significant hurdles in their access to the epistemic communities of science during this period. Although some women finally began to acquire a certain level of education in the eighteenth and nineteenth centuries, this was generally focused on the knowledge and practice of those qualities necessary to be a good wife and mother. Any knowledge or activity beyond this limited role was seen as suspicious, and could lead to doubts as to the moral virtues of the woman in question; for example, female astronomers were sometimes censured for being out at night to look at the sky, contrary as this was to Victorian notions of feminine modesty and conduct dominant at the time (Herrero, 2007, p. 82).

Access to scientific training was extremely difficult for women. The example of a small number of educated women notwithstanding, it was the case that women were not able to attend lectures at universities, and they were not admitted to the Royal Society, either. Some women did acquire scientific knowledge by sharing the education and training of their brothers, and it was not uncommon for these women to continue working with family members or with their husbands (Schiebinger, 1989, 2003). However, even if they obtained some recognition within these close circles, these women still faced a degree of distrust from the larger community. Works in which women had collaborated were frequently left unsigned and published anonymously or under a pseudonym, or simply signed by the male co-authors (Herrero, 2007, p. 75).

Some women, though, did publish scientific works under their own names. The heightened scrutiny and reservations they faced led to the use of specific pragmatic strategies to achieve a better reception of their work, making women's scientific writing particularly interesting in terms of the study of the interpersonal and persuasive nature of scientific discourse. Among many others, these characteristics include increased care in the use of terminology, the recognition of the work of others, a higher use of politeness and courtesy forms, the active avoidance of unmitigated

claims, and a greater use of persuasive strategies, including a preference for the most evident ones here, such as suasive verbs and conditional subordination (Crespo & Moskowich, 2015, p. 99). The next section deals with conditionals in more detail.

III. CONDITIONALS AND THEIR FUNCTIONS IN SCIENTIFIC DISCOURSE

According to Dancygier, conditionals are "an area of language use where the interaction of form, meaning, and context is exceptionally complex and fascinating" (1998, p. 2). As such, the factor that perhaps best characterises conditionals as a construction is their very versatility.

Formally, conditionals can be introduced with a variety of particles, such as *if*, *unless*, *providing*, *so long as*... as well as by means of the inversion of operators, in clauses such as "Should you require...". They also allow for a variety of constituent orderings, with the protasis appearing before, after, or in the middle of the apodosis, as well as with a very high number of different possible verb form combinations.

This formal variability goes hand in hand with a wide range of functions in discourse: conditionals can be used to express causal relationships, such as in mathematical operations, and also to express dependencies between situations or statements (Ferguson, 2001, p. 61), both in an argument and at the text-level, thus contributing to the establishing of facticity (Latour, 1987) and advancing the argument; hence they are useful in indicating "the relationship between different segments of text and to make the readers recognise this relation" (Warchal, 2010, p. 146). Conditionals can also be used to establish instructions, rules and requisites, this commonly done in the methods section of scientific works, as well as to define the scope of claims and definitions (Carter-Thomas & Rowley-Jolivet, 2008, p. 191).

At the same time, conditionals are used to mitigate categorical statements, in that they "limit the assertiveness of a claim by making its validity conditional on some other factors" (Warchal, 2010, p. 142), to formulate hypothesis and theories, to consider alternative options and courses of action (and to evaluate the consequences of these),

and to express tentative claims or conclusions. Different combinations of tenses can be used here to express a gradation of tentativeness, "a cline from conditionals that are sufficient and necessary to those that are merely probable, thus determining the degree of certainty of the conclusions reached" (Horsella & Sindermann, 1992, p. 138).

Finally, conditionals can be used interpersonally as a device to help "scientists try to reach a consensus with their readers" (Warchal, 2010, p. 141) and to achieve a better reception for their claims. Thus, they are *space-builders* (Fauconnier, 1994; Dancygier, 1998), devices to help authors negotiate meaning by creating argumentative spaces to construct their arguments, something of particular use to scientists in the creation of a *niche* (Swales, 1990) for their research. Conditionals can also be used to recognise alternatives and the point of view of others, thus avoiding confrontation, as well as to express politeness, humility, uncertainty or doubt directly, thus contributing to a better reception for one's claims.

The notable variability of conditionals has led to their study from a wide variety of approaches, and, consequently, a considerable number of different typologies of conditionals exist. Traditional typologies (Comrie, 1986; Eastwood, 1984; Graver, 1971; Leech & Svartvik, 1975) base their classifications on the combinations of verb forms. These have been criticised by the so-called "second generation typologies" (Athanasiadou & Dirven, 1997; Dancygier & Mioduszewska, 1984; Huddleston & Pullum, 2002; Quirk et al., 1985; Sweetser, 1990), which base their classifications on new criteria, such as the different domains of discourse or "possible worlds". A further group of typologies use several criteria at once, either by classifying conditionals in terms of the interaction of criteria in a matrix (Gabrielatos, 2010), or by using several typologies, one per criterion, at the same time (Declerck & Reed, 2001). Finally, a number of specific corpus-based typologies are also available to analyse conditionals for particular objectives, addressing either general (Ford, 1997; Ford & Thompson, 1986) or scientific discourse (Carter-Thomas & Rowley-Jolivet, 2008; Puente-Castelo, 2017; Warchal, 2010).

For this study we will use Puente-Castelo's (2017) typology. This is a corpus-based typology designed to classify conditionals according to their functions in Late Modern English scientific writing. It includes eleven categories, shown in Table 1 that follows (Puente-Castelo, 2017, p. 107).

Of these eleven categories, eight (all except *known fact, method*, and most *hypothesizing* conditionals) show some kind of interpersonal action; to define concepts and their scope, emphasising common knowledge (scope-restricting conditionals); to anticipate potential impediments and thus to avoid potential criticism, emphasising common knowledge (concessive conditionals); to direct audiences to do something in a mitigated way, presenting an instruction as if it were optional (directive conditionals) or even to present a strong assertion by means of using irony, as in rhetorical conditionals.

Among these, the ones that show the clearest interpersonal nature are the four speech-act conditionals. Here the validity of the utterance of the conditional is dependent on the reader assuming the content of the protasis. And these protases may refer to the relevance of the content (relevance conditionals), to the linguistic precision of the wording of the utterance (metalinguistic conditionals), to the degree of certainty about the correctness of the content (non-committal conditionals), or to the granting of permission, real or rhetorical, of the reader (politeness conditionals).

Туре	Function	Example
Known fact	To state widely accepted facts and mathematical truths.	Given that $x=y$, then $n(x+a)=n(y+a)$ must also be true.
Hypothesizing	To state the likelihood of an apodosis given a protasis.	If a patient has an early failure from a low anterior resection, they may
		be able to be retrieved by resection.
Scope- Restricting	To describe the scenario or build the argumentative space	As such, it can be said to belong to modality if the category is defined
	in which the claims made hold, either by defining a concept	as the expression of the speaker's attitude or stance.
	or specifying the universe to which the claim affects.	
Method	To narrate completed methodological procedures or to	If 10% or more of the malignant nuclei were stained, the slide was
	introduce instructions.	scored as negative.
Rhetorical	Strong assertions which take the form of conditional	If they are Irish, I'm the Pope.
	structures.	He's ninety if he's a day.
Concessive	To introduce an impediment for the fulfilment of the	Our point still goes through if the minimal phrase containing both
	apodosis, under which, nevertheless, it holds.	parts of this idiom is always headed by a verb.
		the use of change predicates is possible precisely because they apply
		to the virtual entities, if not to the actual entities that ultimately
		ground them.
Directive	To present an obligatory desirable course of event as if it	Now if we go to patients who experienced mucositis toxicity
	were optional and not compulsory.	
Politeness (Speech act)	To introduce a conventional expression of politeness.	If I may be quite frank with you, I don't approve of any concessions to
		ignorance.

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Relevance (Speech act)	To explain the circumstances under which the statement of	Finally (if this is important), the S1 meaning can be converted into an S
	the apodosis is relevant.	meaning to recover a more intuitive object to represent the meaning
		of the original sentence.
Meta-linguistic (Speech	To make a comment on the wording of the discourse.	His style is florid, if that's the right word.
act)		
Non-committal (Speech	By authors, to distance themselves from others' claims.	Chomsky's views cannot be reconciled with Piaget's, if I understand
act)		both correctly.

The application of this typology is described in the next section.

IV. CORPUS AND METHODOLOGY

This study uses four of the subcorpora of the *Coruña Corpus of English Scientific writing* (henceforth Coruña Corpus or CC): the subcorpora on Astronomy, CETA (Moskowich et al., 2012), Philosophy, CEPhiT (Moskowich et al., 2016), History, CHET (Moskowich et al., 2019), and Life Sciences, CELiST (Lareo et al., 2020). All subcorpora in the Coruña Corpus share a common design and principles of compilation, and contain two samples of c.10,000-word texts per decade and discipline, leading to a total of approximately 400,000 words per subcorpus. The total number of texts from the four subcorpora used in this study is 162, totalling 1,619,661 words.

Of these 162 texts, 20 were written by women (12.3%). This percentage is considered by the compilers to be representative of the context of science writing during the period in question. The different discipline-specific subcorpora also show different numbers of women (see Figure 1 below), again broadly in keeping with the realities of these disciplines during the period, with history and life sciences being more accessible to women than philosophy and astronomy.



Figure 1. Words per sex of author and discipline in the subcorpora of the Coruña Corpus.

For data collection, selected conditional particles were searched for using the Coruña Corpus Tool, CCT (Parapar & Moskowich, 2007; Barsaglini-Castro & Valcarce, 2020), a bespoke tool developed to work with files from the Coruña Corpus. These searches went beyond the central conditional subordinators *if* and *unless*, and also included some more peripheral conditional subordinators such as *so long as*, *given that*, or *provided*, as well as the different operators which can introduce conditionals by inversion. These conditional particles (and consequently the elements searched for in the CCT) are given in Table 2 below.

Table 2. Elements introducing clauses with conditional interpretations during the period 1700-1900(taken from Puente-Castelo, 2017, p. 53).

Type (Central conditional subordinators)	Particles (If, unless)	
Peripheral conditional subordinators	As long as, so long as, assuming (that), given (that), in	
	case, in the event that, just so (that), lest, on condition	
	(that), on the understanding that, provided (that),	
	providing (that), supposing (that), so (that).	
Operators allowing inversion with	Had, were, should, might, could, may, would, is, be, did	
conditional interpretation.		

The results were then disambiguated manually to discard cases in which these particles did not show a conditional nature, such as with interrogative uses of *if*, comparative uses of *as long as* and *so long as*, and especially all uses of operators which do not feature in conditional inversions, which constituted a very significant majority of the cases returned in the searches. Following disambiguation, the total number of cases found in the corpus was 4,293.

These data were then analysed and classified. The Coruña Corpus allows analyses based on several parameters, both linguistic (conditional type, conditional function, order of the constituents and verb form combination), and extra-linguistic (discipline, genre, and year of publication of the text, and sex and geographical origin of the author). For this study, we used four of these parameters: conditional type, conditional function (these according to the typology presented above), discipline, and sex of the author. The analysis according to these parameters is presented below.

V. ANALYSIS AND DISCUSSION OF RESULTS

The analysis will be organised in two stages. First, the general use of conditionals in the four subcorpora will be addressed, taking into account the use of conditionals and their different types in relation to the different disciplines and the sex of the authors. The focus will then turn to the uses of the different conditional functions, with a more detailed analysis for two of the subcorpora: CEPhiT (philosophy) and CELiST (life sciences).

V.1 General use of conditionals

Contrary to the findings reported in Crespo & Moskowich (2015), the results here show that women use notably fewer conditionals than men, with 2,757.52 cases per million words in texts written by men, compared to 1,917.51 in texts by women.

As shown in Table 3 below, this is the case for all types of conditionals except inversion conditionals, which are used slightly more in female-authored texts. Such differences are particularly notable in the uses of *if* (2,293.57 uses per million in texts by male authors vs. 1,542.77 in texts by female authors) and *unless* (118.82 vs. 53.53).

Table 3. Uses of conditionals per type of conditionals and sex of the author. Normalised figures (N=1,000,000).

Туре	Male	Female
lf	2,293.57	1,542.77
Unless	118.82	53.53
Inversion conditionals	195.90	209.27
Peripheral conditionals	149.23	111.94
Total	2,757.52	1,917.51

The analysis of the results according to the discipline of the text shows more significant differences. Men use conditionals more frequently than women in all disciplines except philosophy, in which women make far greater use of them (5,497.78 uses per million, compared to 3,631.36 in philosophy texts written by men). However, there is some divergence between disciplines as to differences per sex here, as shown in Table 4 below. In life sciences, and particularly in astronomy texts, the proportion of use of conditionals by male authors is strikingly higher, being almost three times that of female authors in the same discipline. In history texts, however, the differences between men and women are less notable.

Discipline	Male	Female
Astronomy	3,641.59	1,346.61
Philosophy	3,631.36	5,497.78
Life Sciences	2,060.58	1,301.53
History	1,402.79	1,288.39

Table 4. Uses of conditionals per sex of the author and discipline. Normalised figures (N=1,000,000).

An analysis combining the two parameters, illustrated in Figure 2 below, shows a similar distribution. In both astronomy and life sciences, men use more conditionals than women for all four main types of conditionals. This is also the case in history texts, with the exception of peripheral conditionals, which women use more (171.79 per million) than men (108.38).

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Figure 2. Use of conditionals per type, discipline and sex of the author

On the other hand, in the samples on philosophy, women show a higher proportion of use for all the different types of conditionals except *unless*, which is marginally more common in texts written by men (199.50 vs. 198.71 uses per million).

V.2 Functions of conditionals

The analysis of the results according to the function that conditionals play in discourse shows that for both men and women hypothesizing conditionals are the most common, in both cases more than ten times more common than the next most frequently used conditional function. However, there are some interesting differences between men and women authors.

As shown in Table 5 below, women avoid the use of known-fact conditionals, that is, the ones conveying least mitigation (only 9.69 uses per million words, compared to 66.96 for men), and they also use less scope-restricting, concessive, and non-committal conditionals. On the other hand, women use many more directive and politeness conditionals, as well as, perhaps surprisingly, a very much higher use of rhetorical ones.

Function	Male	Female
Known Fact	66.96	9.69
Hypothesizing	2,242.46	2,025.49
Scope-Restricting	153.87	77.53
Method	0.00	0.00
Rhetorical	7.12	58.15
Concessive	183.78	125.99
Directive	12.82	48.46
Politeness	29.92	48.46
Relevance	108.28	106.60
Metalinguistic	19.95	19.38
Non-committal	65.54	9.69

Table 5. Functions of conditionals in discourse per sex of the author. Normalised figures (N=1,000,000).

The sum of all interpersonal uses (that is, all categories except known fact, hypothesizing, and method conditionals) is slightly higher among male authors: 581.27 uses of conditionals with an interpersonal meaning per million words vs. 494.26 for female authors.

If we analyse these results in light of the discipline of the texts, the preponderance of hypothesizing conditionals is common to both philosophy and life sciences, as indeed it is in all disciplines and sexes, but philosophy and life sciences texts differ in their use of interpersonal conditionals. Philosophy texts show a higher use of interpersonal conditionals, and women use them more frequently than men (1,092.93 cases per million vs. 725.19 for men). Life sciences texts use these conditionals far less often, but with men using them more often than women (419.97 vs. 246.61 cases per million, respectively).

The analysis of the specific interpersonal conditionals used shows further striking differences. As shown in Figure 3 below, in the philosophy subcorpus, most of the conditionals with an interpersonal meaning appear more frequently in texts written by women, except for relevance, non-committal and politeness conditionals, which appear more frequently in male-authored texts. In life sciences, on the other hand,



only politeness and relevance conditionals are more common in texts written by women, with all the others appearing more frequently in texts written by men.

Figure 3. Interpersonal functions of conditionals per discipline and sex of the author.

VI. CONCLUSIONS

The notable differences in the results across disciplines presented above, both in terms of the general use of conditionals and the distribution of the different types and functions between men and women, suggests that this distribution of uses is discipline-specific. This may be explained by the fact that the period under study is characterised by an ever-increasing specialization, in which new disciplines arise and develop, gradually becoming distinct from one another. In this sense, the variability in the data suggests that perhaps, rather than speaking of a single scientific community, we should talk about a number of different disciplinary cultures or epistemic communities with different social and interactive networks, different rhetorical uses, different characteristic linguistic uses, and also different attitudes regarding the position for women within them.

Turning to the use of interpersonal conditionals, the fact that men use slightly more of these than women is interesting, in that it seems counter-intuitive and as such merits further study. The preference for particular conditional functions according to the sex of the author is perhaps even more remarkable. Male authors use scope-restricting and concessive conditionals more frequently than women. These are two types of conditionals which perhaps have a subtler interpersonal nature, in that they are used to negotiate meaning and emphasise common knowledge, either by defining concepts and the scope of these (scope-restricting conditionals) or by anticipating (and defusing) potential criticism (concessive conditionals). This contrasts with the preference women have for clearer interpersonal conditionals, such as directive and politeness ones.

The two most puzzling results arising from the analysis are the high use of rhetorical conditionals and the low use of non-committal conditionals by women authors. Non-committal conditionals are directly used to express uncertainty or doubt as to the correctness or accuracy of a claim or assertion, and, in this sense, they are useful as a means of showing humility, which seems at first sight a particularly appropriate objective for female authors. However, our data suggest that these forms appear to be actively avoided by female authors (only 9.69 uses per million words, compared to 65.54 for men). A possible explanation for this could be that the use of non-committal conditionals might be too risky for a person in a position of weakness in a scientific community, since they are a tacit admission of lack of knowledge. Thus, a person in such a position might well prefer to avoid them, thus avoiding giving grounds for possible attacks, and prioritising the vindication of their position as genuine members of the community.

The higher use of rhetorical conditionals among women (58.15 uses per million vs. 7.12 for men) is particularly surprising, as these are strong assertions introduced by means of the use of blatant irony, and at first sight seem to be the kind of conditionals that women in this context might better avoid altogether. However, it may be the case that the use of irony here helps women to introduce more categorical statements in a more covert way, thus avoiding potential backlash. In any case, it must be taken into account that these results are influenced by the very high presence of this use of the conditional in eighteenth century philosophy texts, which may perhaps not be representative of the broader scientific register of the period.

In conclusion, the results point to a scenario in which women do use conditionals as an interpersonal device, but with very marked differences between disciplines, perhaps reflecting a higher-than-expected element of disciplinary specificity. Further study is needed to confirm this, as well as to explore possible correlations between the use of conditionals and the position of women in these disciplines and the preferences for particular conditional functions.

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