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Supporting English non-dominant language authors' efforts to publish: perspectives from the editors-in-chief of highly recognised journals in Mathematics Education

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Abstract
In this article, we document the support provided by highly recognised journals in Mathematics Education in response to the challenges faced by English non-dominant language (EnDL) authors when they attempt to publish in English. To address this issue, we first conducted a synthesis of research literature related to those influences that direct EnDL authors' publication efforts towards English language journals and the associated challenges that result. Second, we gathered survey and interview data from participant editors-in-chief of leading journals in Mathematics Education about the support, enacted and planned, provided by their journal for EnDL authors and associated challenges. Finally, we discuss the findings of the study from the perspective of heteroglossia. Findings indicate that while a range of initiatives have been employed to support EnDL authors, current journal policies lag somewhat behind the plans of editors-in-chief, which have been limited, to date, by available resources.

Keywords English non-dominant language · Publication challenges · Author support · Language diversity · Journal rankings

1 Introduction

Globalisation, or the ongoing process of international interaction and integration, is not only an economic phenomenon as it exerts influence on nearly all aspects of life, including social and geopolitical developments (Crossley & Watson, 2003, for a comprehensive discussion of this concept within Mathematics Education see Atweh, 2007). Stewart (1996) has further noted that globalisation has led to constraints that can restrict independent national action, including education where governments are paying increasing attention to large-scale, comparative studies of educational achievement such as the Program for International Student Assessment (PISA) (see OECD, 2018; also https://www.oecd.org/pisa/aboutpisa/),

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the Programme for the International Assessment of Adult Competencies (PIAAC) (see Tout et al., 2021) and the Trends in International Mathematics and Science Study (TIMSS) (see https://timssandpirls.bc.edu/timss-landing.html). This focus impacts educational policy and research agendas (Crossley & Watson, 2003; Geiger et al., 2015).

The challenges of globalisation for educational research and practice are also evident in the discipline of Didactics of Mathematics (research in Mathematics Education), with its growing internationalisation apparent in the increasing numbers of different countries participating in Mathematics Education conferences. For example, the second International Congress on Mathematics Education in Exeter (ICME-2, 1972) included 1400 participants from 73 countries (https://www.icmihistory.unito.it/icme2.php), while, more recently, ICME-13 in Hamburg (2016) was attended by approximately 3500 participants from 107 countries (https://www.mathunion.org/icmi/conferences/icme/icme-13-2016). Despite the increase in levels of international participation, however, scholarly gatherings, such as conferences, are typically conducted in a single language — English (for example, see https://www.mathunion.org/fileadmin/ICMI/Conferences/ICME/ICME%2013/www.icme13.org/www.icme13.org/general_information.html). The convergence towards a single language can even be seen in international meetings where more than one language for presentation was initially accepted[1]. These developments represent a contradiction in that while Mathematics Education is becoming more global in its reach, with the potential to share new and diverse ideas, the opportunity to disseminate novel approaches to addressing problems in Mathematics Education is constrained because communication is limited to only one language. Curiously, this is at a time when the teaching and learning of mathematics are less monolingual than ever before due to the increasing migration (be it for economic or political reasons) and economic globalisation that promotes interaction and integration across nations. Evidence of growing interest among researchers in this area can be seen in initiatives such as a forum on *Researching Mathematics Education and Language Diversity* (for PME-43 in 2019) and a Thematic Working Group on *Mathematics and Language* within the European Conference on Mathematics Education since 2005.

Despite providing the opportunity for the communication of ideas across national and cultural boundaries, the development of English as the *lingua franca* for dissemination of research has raised equity concerns because of the expectation that academics publish in highly prestigious English language journals (e.g., Ernest, 2009; Stolerman & Stenius, 2008), an expectation that requires a translation, for non-dominant language (EnDL) authors, from their dominant[2] language into English. Barwell (2003) further argues that the inequity experienced by English non-dominant language (EnDL) authors in Mathematics Education is reinforced by structural factors within the field. These factors include institutional directives to publish in only the "best" outlets for research dissemination. Such structural factors institutionalise a form of discrimination as they limit opportunities of EnDL researchers to participate in relevant forums and restrict access of the international

[1] This was the case for the International Group for the Psychology of Mathematics Education (PME), for instance, where research reports could be presented in French if a translation was provided in English. This has changed over time to the point where the official language for PME conferences is now only English (see http://www.igpme.org/annual-conference/).

[2] We deliberately use the word "dominant", because it best covers the situation we want to analyse. The Merriam-Webster Dictionary offers two major explanations for "dominant": "more important, powerful, or successful than most or all others" or "most common". As can be seen for some colleagues, the dominant language is not necessarily the native language with which a person has grown up. In addition, "dominant" also captures the power relation inherent in the dominance of a language.

community to the research findings of EnDL authors, which are often related to location-specific issues (e.g., Aldrete, 2010). Privileging of English language publication outlets also impoverishes the English-speaking research community because they are deprived of access to different ways of thinking and knowing as well as potentially rich alternative solutions to educational problems. This represents a significant problem within the field of Mathematics Education because it limits the dissemination of knowledge and distorts what is accepted as quality research.

The different influences of globalisation on Mathematics Education — convergence towards a single research language, multilingualism in mathematics classrooms, limits on dissemination due to translation constraints and resulting inequities — and the interrelationships between them, have been connected in previous research (e.g., Barwell, 2014; Geiger & Straesser, 2015) to Bakhtin's (1981) notion of *heteroglossia*. This characterises how language diversity is promoted or diminished in response to centripetal and centrifugal forces. Centripetal forces act to constrain language. Centrifugal forces serve to increase diversity — as is seen in the development of multilingual classrooms. We have previously argued that the challenges faced by EnDL authors, when attempting to publish within Mathematics Education, represent centripetal forces within the notion of heteroglossia that act against the sharing of original and novel ideas (e.g., Geiger & Straesser, 2015). In this article, we aim to ascertain the awareness of editors-in-chief (EiCs) of leading journals in Mathematics Education of the challenges faced by EnDL authors and identify the practices they employ to mitigate related issues. These practices can be seen as exerting centripetal forces that support the dissemination of new and novel ideas that originate in different language/cultural groups. To document and gain insight into these practices, we invited the EiCs of seven highly recognised journals in the field[3] (via Williams & Leatham, 2017), to complete a survey and/or participate in an interview related to the support their journal offered EnDL authors. Analysis of these data was focused on addressing the following research questions:

- What support is offered to EnDL authors by leading journals in Mathematics Education during the processes of manuscript submission, review and publication?
- What possibilities exist for providing greater support for EnDL authors during the processes of manuscript submission, review and publication?
- And more generally, can the conflicting forces — centripetal due to globalisation and centrifugal from growing diversity in education and language use — be accommodated within the *lingua franca* of multi-faceted English for international communication of research in Mathematics Education?

We will respond to these questions by first providing a synthesis of research related to the influences that channel EnDL authors' publication efforts towards English language journals and the associated challenges they face. Second, we will outline the conceptual framework used to underpin the study. Third, the research design and methods will be described. Fourth, an analysis of survey and interview data will be presented. Finally, we will discuss the findings of the study from the perspective of heteroglossia and reflect on

[3] We only invited seven EiCs, because Williams and Leatham (2017) clearly saw "empirical support for what is likely the conventional wisdom in our field regarding the best journals" by distinguishing seven "high quality journals" from medium–high quality and medium quality journals (loc.cit., p. 389 in the conclusion).

both the measures already undertaken by journals in responding to the challenges faced by EnDL authors and what additional support may be possible.

2 The landscape of opportunity for EnDL authors and publication

In this section, we present a synthesis of research related to the emergence of language diversity as a field of research enquiry, the role of English as a *lingua franca* within scientific communities including Mathematics Education, the consequential challenges faced by EnDL authors and the support that is currently available to EnDL authors when they attempt to publish in English language journals.

2.1 Mathematics Education and language diversity

The study of language within Mathematics Education has been a focus of research for some decades (e.g., Austin & Howson, 1979; Pimm, 1987). The evolution of this research coincided with the developing sophistication of methodological approaches (especially with audio, then videorecording and transcript analysis) that afforded greater insight into the challenges associated with language issues in Mathematics Education. From this research emerged a focus on language diversity, which was initially identified as both a methodological question related to the quality of transcriptions and an object of research. Radford and Barwell (2016) note that this focus is also a product of the history of globalisation which has exerted centrifugal forces upon language through activities that impact on culture, such as immigration, trade, political interaction and intellectual exchange. Language diversity is manifested in a variety of ways, such as the existence of different forms of the common language aligned with the growing social diversity of learners and the need to support bilingual or multilingual individuals in classrooms that include different languages with which the teacher may be unfamiliar (see, for example, Barwell et al., 2016, 2017).

Thus, language diversity is a consequence of major socio-political developments that impact on the everyday classroom and consequently the practice of Mathematics Education research. In attempting to theorise this emergent area within Mathematics Education, Planas and Setati-Phakeng (2014) proposed three perspectives on language: language-as-right (the student is entitled to use her/his own language in the classroom); language-as-resource (the use of different languages in the classroom is seen as an advantage for learning); and language-as-problem (the use of different languages in the classroom implies difficulties for the overall learning process). In doing so, they argue that language-as-resource is an ideal to work towards as "...greater emphasis on the flexible use of the students' languages would result in a greater number of mathematics learning opportunities" (Planas & Setati-Phakeng, 2014, p. 885). In this article, we wish to explore how this aspiration may be carried forward to EnDL authors' participation in research publication within Mathematics Education journals.

2.2 Status of English language vs non-English language journals in academia

There has been commentary and critique, across disciplines, related to the way EnDL authors are disadvantaged in terms of professional recognition and career progression because of the dominance of English language journals internationally. For example, Aldrete (2010) argues that the contribution of the Spanish language scientific community is

overlooked because the expectation to publish in English hinders the dissemination of their research, deprives them of the opportunity to participate in relevant forums and ignores research related to local issues (e.g., region specific issues). This problem is further exacerbated by competitive, university-based practices where recognition and career progression are associated with the perceived quality of journals in which researchers publish — determined by simplistic measures such as impact factor.

The focus on impact factor (or similar measures) channels the attention of researchers within the scientific community to English language journals which, because of their dominance across fields, have greater potential for citation (González-Alcaide et al., 2012). This dominance has created the impression that valuable research contributions may be "lost" to the discipline (e.g., Stolerman & Stenius, 2008) if they are not published in English — a perspective that privileges established English language journals over those in other languages. Evidence that this perspective leads to disadvantage is provided by Vasconcelos et al. (2008), who found that communication skills have an impact on the visibility of Brazilian science in English language journals. They argue that similar disadvantage also exists for South Korean, Japanese and European authors and that the extent of this problem is greatly underestimated by native English speakers (Gannon, 2008). Other studies have indicated there is a perception that metrics scores are associated with the quality of research, a perspective that can lead to the exclusion of studies representative of and relevant to important local needs. A study by Andrade-Molina et al. (2020), for example, found that Ibero-American authors within Mathematics Education are highly influenced by journal metrics, under the direction of their employing institutions. EnDL authors are thus "coerced" into submitting manuscripts to journals with "superior" metrics "in order to prove his/her value and competence as scholar" (Andrade-Molina et al., 2020, p. 372). Because of the association of these metrics with quality, they are considered markers of productivity for researchers, which inform employers' decisions about hiring, retaining, promoting and resource allocation for academics (Williams & Leatham, 2017). A further finding of the Andrade-Molina et al. study (2020) was that even highly cited journals within Ibero-American countries are generally excluded from databases that generate recognised journal metrics, for example, Scopus and Web of Science. This situation is consistent with studies on the disproportionate publication rates for academics from developing countries (e.g., Abdelrahim, 2004; Salager-Meyer, 2008). For example, Abdelrahim's (2004) exploration of publication statistics revealed that 90% of indexed scientific publications appear in 10% of journals, while only 2% come from developing countries who represent 80% of the world's population. Andrade-Molina et al. (2020) argue this exclusion constitutes a form of segregation based on publishing language that impacts in a negative way on the perceived value of non-English literature. In the worst–case scenario, articles from non-English literature sources may be assumed to be of lower quality because they do not meet the standards of an English language journal (Stolerman & Stenius, 2008). This situation has been labelled *editorial racism* (Horton, 2003) as it limits the professional recognition and career opportunities of authors by discriminating on the basis of their dominant language.

According to Meaney (2013), the discriminatory structures and practices referred to by Barwell (2003), such as a need for a *lingua franca* for conference attendance or writing journal articles, are contributing to Mathematics Education's transition to monoculturalism. She observes that, within Mathematics Education, the corporatisation of universities and resulting competition for government funding and market position has resulted in a working environment where staff "rewards", such as promotion and access to resources, are aligned with measures of university success — including publications in high-ranking

journals (see also Sriraman, 2012). Thus, the dissemination of research in Mathematics Education is driven towards high-ranking outlets which are dominated by English language journals (see Geiger & Straesser, 2015). From the perspective of *heteroglossia*, this functional constraint on language diversity can be seen as an outcome of centrifugal forces that can be seen as associated with the globalisation of the research endeavour.

2.3 Specific challenges for EnDL authors in Mathematics Education

The expectation to publish in English language journals results in specific challenges for EnDL authors in Mathematics Education. Caron (2017), for example, provides comment on the difficulties she experienced when attempting to improve her command of English to the perceived level required for publication while at the same time retaining the fidelity of the thoughts she wished to express. This posed, for her, the dilemma of writing in French, with the potential loss of visibility and accessibility to readers, or writing in English, with the consequence of potential loss of her intended meaning. Gannon (2008) has acknowledged this issue as an English-dominant researcher, commenting that even if he were able to write a whole paper in another language, it is unlikely it would convey the subtleties he wished to share.

Caron's (2017) dilemma is consistent with an observation by Edmonds-Wathen (2019) that mathematical expression varies across languages as linguistic resources are different. Forms of reasoning, including arguing, questioning and ways of making sense of the world, are not necessarily the same or even similar (Barwell, 2003). As such, both mathematics and Mathematics Education research are influenced by the language in which they are conducted. This means that when corralled into using English, EnDL authors are subject to the ideological and epistemological pre-suppositions and values of the dominant research culture (Ernest, 2009). As a consequence, when EnDL authors translate their findings into another language, there is potential for their authentic voices to be diminished, muted or even removed and subtle yet important aspects of their work lost. This introduces the risk that readers of translated work form a distorted interpretation of an author's intended message based on the translated words (Edmonds-Wathen, 2019). We have previously identified this issue when emphasising the importance of maintaining the original voice of an author within a translated text (Geiger & Straesser, 2015).

An additional obstacle for EnDL authors is that it can be difficult to frame and communicate their research in a fashion that is relevant and accessible to international audiences, a particular challenge if an authors' work is situated within unique or unusual circumstances. This demand requires the inflexion of what the author wishes to communicate in a manner that makes it relevant to the majority (Goos, 2019). Further, EnDL authors face the challenge of making their research accessible to a reader in terms of cultural context, for example, what is the schooling like in their country? What is the curriculum like — characteristics that native English language researchers may not see the need to explain?

We do not intend to argue that a publication can ever be a "pure" expression of an author's intended message, as advice from others must almost always be incorporated through the editorial process, for example, EiCs, editors, reviewers and those who may provide specific English language revision. All of these sources of support act with goodwill and with the best intention to "improve" a manuscript, which from a technical point of view is usually the case. We are suggesting, however, that translation as a requirement for English language journals, coupled with the editorial process, introduces the possibility that an author's key messages and their individual perspective on an issue (their voice),

which is connected to their research culture, may be enhanced or compromised. Support that is attuned to the subtleties of the research culture and nuances of language within which a study is situated, for example, the understanding of the word "milieu" is more technical and broader in French didactics than in English (see Geiger et al., 2018), can act to sharpen a message, making clear an author's original contribution to new knowledge. This type of support can promote the diversification of thinking needed to address long standing or new problems in education and thus represents centripetal forces that may be associated with the publication process. When there is no awareness of such subtleties and nuances, there is risk that the process conflates the challenges inherent in the act of translation. This might lead to the muting of the originality of a message via advice focused on ensuring a manuscript conforms to international "standards" of publication. Such changes may serve to inadvertently constrain or wash out the originality of the published new ideas, limiting the potential for an author's theoretical contributions and impact on educational challenges and thus exerting centrifugal forces on the diversity of ideas being disseminated in mathematics education. Adding further to these challenges is the non-homogeneous nature of EnDL authors, with their circumstances differing widely. For example, there are countries that do not have access to high-quality Internet or to libraries with contracts in place with a wide range of global publishing houses (Jurdak, 2011). Both of these circumstances can limit an author's access to current work in a field. Some authors may have difficulty accessing quality and affordable translation service if their native tongue is not widely spoken internationally. Challenges such as these contribute further to the structures and practices within the field that reinforce inequitable opportunities for EnDL authors to publish in Mathematics Education journals at an international level.

2.4 Support for EnDL author

There is limited advice in the literature on how to best support EnDL authors publication efforts within prestigious journals in Mathematics Education. Sträßer (2019), however, has drawn on what is available to identify a number of potential measures. This includes a suggestion from Planas et al. (2019) that additional space within publications be available for multilingual translations of excerpts of text that allow the presentation of subtleties and nuances that are particularly important within the authors' dominant/native language.

Taking a different approach, Jones (2018) has identified *Strategies for Globalizing Research in the Educational Sciences* which includes the sourcing of international funding for projects and academic exchanges aimed at creating opportunities for publishing in prestigious research outlets. At the same time, however, he argues that such support should assist in checking "... whether the ideas in the manuscript are clearly communicated in English" (Jones, 2018, p. 9). While this is a positive suggestion, it is also an indication that English is so well established as the *lingua franca* of research literature that suggested alternatives to current practices within international publication remain strongly aligned with the status quo.

3 Conceptual framework

The preceding discussion outlines some of the influences that have constrained language within research, what we will call *R-language* (spoken by researchers). In the case of Mathematics Education, English is the preferred R-language for the publication of research. This

means an EnDL authors' *R-language* must be translated into an English *R-language* for publication — constraining language diversity. An additional complexity is that there are different languages used when research is conducted in practice, that is, spoken in the field, which we term *P-language* (for an elaboration of these terms, see Chellougui et al., 2016, p. 264). We argue that the P-language within practice is becoming more differentiated because of the influence of globalisation; for example, multiple different languages can be used by the teachers and the students in schools or classrooms. The situation is further complicated as a single R-language, English, is ill-defined, because there are variations in the use of English itself.

This situation is aligned with the concept of *heteroglossia*, coined by translators of Bakhtin (1981, especially Todorov, 1984). This refers to the diversity of meaning and understanding embedded within language (Barwell, 2014). Within the notion of *heteroglossia*, the "diversity of speech types" (Bakhtin, 1981, p. 263) is distinguished by the multiplicity of voices, linguistic variation and the diversity of languages (for further detail, see Busch, 2014). Bakhtin also theorised constructs which describe how the diversity of language is promoted or diminished — *centripetal* or *centrifugal* forces (Barwell, 2014). Centripetal forces promote the use of a standardised linguistic code, what might appear as an "official" language that is required to participate in a social system, such as a professional community. In the case of EnDL authors within Mathematics Education, this "official" language, or dominant R-language, is a form of English. Centrifugal forces work to promote a more diverse expression of language, supported by the range of P-languages, and are the consequence of differences between people, due to geographic location, cultural identity or membership of specific social groups.

Thus, *centripetal* forces within Mathematics Education appear to have promoted English as the R-language within the discipline, while the P-languages, observed during field work, are diverging under *centrifugal* forces. This means that research about developments in Mathematics Education, conducted as multiple P-languages, is disseminated using one R-language, namely, English. These developments can both be attributed to the influence of globalisation — through the growth of Mathematics Education as a field into an increasing variety of countries and cultures and to adoption of a *lingua franca* to meet the desire to disseminate findings and new ideas outside of local circumstances. The concept of heteroglossia, including the constructs of centripetal and centrifugal forces, provides insight into the challenges associated with publication in internationally recognised English language journals. This insight also raises the question of what standards are applied by journal editors in the context of localised or indigenised varieties of English or *World Englishes* (Seidlhofer, 2009).

The influence of *centripetal* forces has resulted in additional challenge for EnDL authors and the editors of research publications — the way different languages can describe the same situation. Linguists define this issue through the concept of semantic field. Semantic fields vary from culture to culture but can also overlap, resulting in problems with translation (see Boran, 2018). These problems include, for example, attempts to transpose a word or a sentence and with it a description of certain aspects of a perceived reality, into a different language, such as English. Such transpositions can be problematic because a specific word in the original language (different from English) is situated in a semantic field, which may invoke a different semantic field when translated literally. For instance, the word "reasoning" is defined as *argument* and *argumentation* as the first two single-word translations within an English-German dictionary (e.g., dict.leo.org). A translation of *argumentation* from German into English, however, produces "rationale" as the first single-word translation. This demonstrates that the semantic field

of "reasoning" is wider than that of *argumentation*, which covers a more restricted field that prioritises logical arguments in English. This is a situation that is problematic for the editors of English language publications as they must decide how to manage, if not control, the differences between semantic fields in multiple languages.

The existence of semantic fields introduces an additional challenge for EnDL authors when translating their research from differing P-languages into the single R-language used for international communication and publication within Mathematics Education. This may not be achievable through the literal translation of an original *source text*, formulated in a native language, to a *target text* to be communicated or published in English because of the different semantic fields that may be associated with words and ideas.

4 Research design and methodology

In order to document the support offered to EnDL authors by leading journals in Mathematics Education, we conducted a survey of editors-in-chief (EiCs) of leading journals in Mathematics Education. The survey was complemented by follow-up semi-structured interviews with available EiCs. In the following sections, we describe the mixed-method approach adopted for this study (Cresswell & Cresswell, 2017). Quantitative data (via dichotomous survey items) were collected to landscape the different approaches adopted by selected journals to support authors. Qualitative data (open-ended survey items; semi-structured interviews) were gathered to complement quantitative data by providing light and shade to the dichotomous responses (yes/no) elicited via relevant items on the survey instrument. The analysis of data focused on the identification of "in common" approaches used by journals as well as novel means of support.

4.1 Participants

Participants included EiCs of leading journals in Mathematics Education. EiCs were recruited because they are principally responsible for the implementation of editorial policy. Invitations to participate in the study was aligned with the ranked journal lists developed by Williams and Leatham (2017). These lists were based on two sub-studies — one citation-based and the other in-field opinion-based, that produced ranked lists of 20 English language journals that publish Mathematics Education research. A finding of the study was that two journals could be considered very high quality and a further five were identified as high quality (see Williams & Leatham, 2017, p. 389). Consistent with these findings we invited the relevant journal EiCs to participate in the study. These journals included *The Journal of Mathematics Teacher Education* (JMTE), *For the Learning of Mathematics* (FLM), *ZDM Mathematics Education* (ZDM), *The Journal of Mathematical Behavior* (JMB), *Educational Studies in Mathematics* (ESM), *The Journal for Research in Mathematics Education* (JRME) and *Mathematical Thinking and Learning* (MTL). The participants included two males and five females, all aged between 30 and 70 years. These EiCs reside in a range of countries including Australia, the Netherlands, the USA, Norway, Greece and Germany.

4.2 Data collection

The proposed study was reviewed and approved by the Human Research Ethics Committee at Australian Catholic University (2020-153E). Data were collected via an online survey and complementary semi-structured interviews. Initial contact with each EiC was made via a bulk recruitment email. This email included a description of the project, an invitation to participate via an anonymous survey link and a request for participation in a follow-up semi-structured interview. English was used as the language for the online survey and the interviews because of two practical considerations. First, ethical approval for the project was granted by a university where English is required for submissions to the relevant committee. Thus, all documents related to the survey and interview protocols were approved in English. Second, the native languages of members of the research team were English and German. With one exception, German was not the native language of the EiCs. EiC familiarity with English was advanced given their roles of managing English language journals. Therefore, English was the only sensible common language for the conduct of the study. To mitigate, as much as possible, any issues with translation during interviews, EiCs were encouraged, on multiple occasions, to ask for clarification about any questions raised during the interview which was carried out in the format of a discussion. There was no time pressure on EiCs when completing online surveys or when responding to interview questions. Six EiCs responded to the survey, and four participated in interviews. One EiC participated in the interview even though they did not complete the survey.

4.2.1 Online survey

Survey data were collected via the online tool *Qualtrics.* The survey consisted of eight dichotomous items (yes/no) and three open-response items and was designed to be completed in 20–30 min. All items were related to journal editorial policy and the support that was available to EnDL authors throughout the process of submission, review, revision and publication.

The first six dichotomous items on the survey were developed to map the pre-publication process used by different journals and, in particular, to document support for EnDL authors. For each of these items, EiCs were given the opportunity to qualify their responses with additional comments. Item 7 was aimed at whether a specific form of English (e.g., Oxford English) was obligatory for their journal. This item was designed to document the variety of possible R-languages that were acceptable in a journal and to check if the journal's publication policy was influenced by centripetal or centrifugal forces[4]. Items 8 and 9 were related to how different but overlapping semantic fields in the source and target language were accommodated by the editors. This item was concerned with how an "excellent or innovative" manuscript from an EnDL author (i.e., a colleague normally using a source text different from English) with a tentative command of the target language, the R-language (English), was treated. Item 9 targeted the measures used "to encourage national/cultural diversity" and was aimed again at how editorial policy was influenced by centripetal or centrifugal forces.

[4] We did not ask for variations and an adequate (re)presentation of the P-languages involved in the research being published. This is an aspect which we discovered later in an additional literature search.

An EiC of a journal from Williams' and Leatham's (2017) list, but outside the top seven, was invited to complete the survey as a pilot. This EiC provided comments on how the survey could be made more relevant to the context of EnDL authors and international publication. These suggestions were incorporated into the survey before distribution to EiCs identified for the main study.

At the end of the survey, participants were asked if they were prepared to take part in a follow-up semi-structured interview. As indicated above, one participated volunteered to participate in the survey without completing the survey.

4.2.2 Semi-structured interviews

Four participants consented to semi-structured interviews. Interviews were conducted as soon as could be arranged after the survey, via online conferencing apps at times convenient for participants. Individual interview protocols were developed for each participant based on their responses to the survey. These were tailored to develop greater insight into the views and perspectives expressed by participants in the open-response items on the survey. Interviews were recorded and transcribed within a week of online meetings. Transcriptions were sent to each relevant EiC for their endorsement. This provided opportunity for EiCs to reflect further on their responses and to ask for revisions (additions/corrections) as required. This placed EiCs in control of how their journal was represented in relation to support of EnDL authors.

4.3 Data analysis

Responses to dichotomous items were aggregated across participants. The outcome of this aggregation, with relevant commentary, is reported in the Findings section. The aim of the semi-structured interviews was to gain greater insight into participants' perspectives on the support available to EnDL authors.

After transcription, answers to open-response items and semi-structured interviews were subjected to thematic analysis (see, for example, Vollstedt & Rezat, 2019). A first pass of one data set was subject to open coding with initial themes identified and substantiated by links to relevant participant comments. These themes were then used as the initial codes for a deductive approach to the analysis of the remaining data during a second pass. This process led to the identification of additional themes where the original codes did not link to specific aspects of the data. The second pass also led to the fine-graining of themes into sub-categories. A third pass of the complete set of qualitative data was then conducted using the full list of themes and sub-themes in order to ensure the stability of their definitions. This process resulted in categories related to current practices, where improvements could be made, and the identification of challenges to which EiCs had no current solution.

These analyses were then coordinated to develop a holistic account of the challenges facing EnDL authors and EiCs and to identify potential approaches to mitigating impediments to publication.

5 Findings

In this section, we present the findings of the study. First, the results of the survey's eight dichotomous items will be presented, followed by a synthesis of participants' responses to the survey's open-response items and discussion during the semi-structured interviews.

5.1 Dichotomous items

The results of the dichotomous items, as aggregated totals, are presented against each question on the survey below. Against each question, we have identified how questions/responses are connected to potential centripetal or centrifugal forces as these relate to publication for EnDL authors in Mathematics Education research. Not every question/response provided a clear connection to centripetal or centrifugal influences. In these cases, we have indicated there was potential for the dominance of either force:

> Q1a Are there any formal institutionalised provisions or procedures for manuscripts submitted to your journal by EnDL authors?

The first question on the survey was designed to determine if editorial policy included formal provision for managing manuscripts by EnDL authors. Five out of six (83%) EiCs indicated there were no formal procedures for managing manuscripts by EnDL authors (centripetal influence):

> Q1b Since there is no formal institutionalised provisions or procedures for manuscripts submitted by EnDL authors, do you, as editor-in-chief, handle such a submission differently from manuscripts submitted by English-speaking authors? [Asked only of participants who answered "no" to Q1]

Only two out of five (40%) EiCs, who indicated there were no formal procedures for managing manuscripts by EnDL authors, suggested that they would handle submissions from EnDL in a different way to English-speaking authors. Thus, only two out of the six (33%) EiCs made provision for EnDL authors during the process of publication. This is a situation that risks maintaining the status quo, potentially leaving EnDL authors prone to the centripetal forces that currently constrain diversity in publication.

The next question was included to determine if the EiCs themselves provided specific advice to managing editors about the manuscripts of EnDL authors:

> Q2 Do you, as editor-in-chief, give specific advice on supporting manuscripts of English as non-dominant language authors to your managing editor (if existing)?

Only one out of six (17%) EiCs indicated they provided specific advice in relation to supporting EnDL authors (centripetal influence):

Questions 3, 4 and 5 were focused on the review processes employed by each journal:

> Q3 Are there general guidelines for reviewers about dealing with manuscripts by English as non-dominant language authors?

The majority of EiCs (5/6, 83%) stated that there were no reviewer guidelines dealing with manuscripts from EnDL authors:

> Q4 Is the managing editor of a manuscript submitted by an EnDL author expected to provide specific advice to the reviewers they select for the paper?

Five out of six (83%) EiCs (Q4) indicated that the managing editor (also known as associate editor) is not expected to provide specific advice to reviewers about manuscripts from EnDL authors (centripetal influence):

Q5 Is the managing editor of a manuscript submitted by an EnDL author expected to make reviewer selections that take into account this aspect of the paper?

Only one out of six EiCs (17%) indicated that their managing editor took the challenges faced by EnDL authors into consideration when assigning reviewers (centripetal influence).

The remaining three questions focused on the language support provided by each journal to EnDL authors:

Q6 Does your journal provide any specific language support for English as non-dominant language authors?

The great majority of EiCs (5/6, 83%) indicated that their journals provided language support (Q6), although further analysis (see thematic analysis in Section 4.2) revealed that there is considerable variation in the type of assistance (potentially either centripetal or centrifugal influence):

Q7 Does your journal ask for a specific form of English language (e.g., Oxford English, US-American English)?

All EiCs stated there was no specific form of English (e.g., Oxford English, US-American English) requested in their journal's advice to authors or elsewhere (centrifugal influence):

Q8 If a manuscript is submitted where the ideas and results are excellent or innovative while the language is not of the quality necessary for publication in your journal, do you offer collaborative work on the manuscript?

Two out of five (40%) EiCs provided advice to EnDL authors if the key ideas in a manuscript were excellent or innovative, but the quality of language usage was not up to the expected standard (potentially either centripetal or centrifugal influence).

5.2 Post-survey interviews

Four EiCs volunteered to be interviewed. Individual interview protocols were developed based on the responses of individual EiCs to the survey. Analysis of responses to interview questions resulted in the identification of ten themes. These themes are outlined in the following text along with illustrative quotes from participants. In the same fashion as the previous section, we have identified how EiCs' responses are connected to potential centripetal or centrifugal forces and thus the relevant influence of how journals may treat the work of EnDL authors.

All EiCs commented that there was *more than one English* and that it was important to hear voices that come from places with other dominant languages (centrifugal influence). They emphasised that it was important to understand this notion, as most manuscripts submitted to journals were from EnDL authors — most of whom were

under pressure to publish in English language journals (centripetal influences). While they still thought a *lingua franca* was important for the communication of ideas across international research communities, EiCs also indicated there should be greater tolerance among reviewers in relation to the expression of English in manuscripts (centrifugal influence). There was no direction from EiCs to managing editors or reviewers that formal "Oxford" English was required (centrifugal influence). There was expectation, however, that the form of English expression was applied consistently and that manuscripts were coherent from the perspective of an international readership. EiCs also commented that they provided advice about the careful use of idiom or slang —– for both native English speakers and EnDL authors' writing in English:

> I think it is crucial that more reviewers become aware that English is not one language but has many variations across the globe.

Each EiC linked the need to address the challenges faced by EnDL authors to the *promotion of diversity and equity practices within their journals* (centrifugal influence). They commented on the role of journal policy and EiC/managing editors' direct efforts to actively promote diversity and equity. These efforts were enacted through different practices including both inviting submissions from authors and appointing Editorial Board members, from diverse backgrounds (centripetal influence). One EiC consulted with authors during the editing process to ensure that their attempts to make a manuscript more coherent also preserved the meaning of the original text (centrifugal influence). Another EiC mentioned that they made a point of sharing relevant references from other EnDL authors when the research literature underpinning a manuscript required broader international reach. Other practices included pre-review advice about improvements required before a manuscript was sent to reviewers and editing of reviewers' comments, as needed, to enhance the quality of a re-submission or to remove discouraging statements (centrifugal influence):

> We seek contributions from areas, cultures and language groups that are not well represented in academic publishing in our field.

Four EiCs indicated they invested time and energy in *working with their editorial teams* to establish and maintain journal standards, including the promotion of diversity and equity (centrifugal influence). Practices they employed within their editorial teams consisted of conducting regular meetings; exchanging information about the quality of reviews; and identifying highly competent reviewers. One EiC stated that they used initial contributions from reviewers to form judgements about their sensitivity to diversity and equity issues (centrifugal influence). This could inform decisions about further invitations to review:

> Over time I've developed good relationships with particular reviewers and board members, and I try to treat that very delicately […]. I think compared to five years ago, we are working more as a team. We discuss things every three months.

Two EiCs described how *editorial teams were attempting to accommodate diversity and equity through the selection of reviewers* by asking managing editors to take into account international sensitivity (e.g., location, gender, methodological and theoretical stance) and different capabilities/expertise (e.g., methodological expertise, representativeness of an international audience, specific context of the research) (centrifugal influence):

> In principle we try to be diverse in the sense for different regions, gender. We try to work with reviewers who we know are sensitive to all these issues, who have this international sensitivity. Also, methodologically and theoretically.

Three EiCs reported that they had raised the question of *how to support sensitivity to diversity and equity issues with their editorial teams* (centrifugal influence). Key questions currently under discussion included how can reviewers be educated about relevant issues? Can effective reviewer guidelines be developed (e.g., advice on cultural norms; ideas worthy of publication; quality of writing)? Would a list of phrases related to how ideas are expressed in different languages, including how these might be misinterpreted, be of assistance to reviewers? What is the potential of an *EnDL sensitivity assessment*? The issue of being sensitive to cultural norms was considered particularly challenging as it requires reviewers to understand that authors may be writing from not just different epistemological and ontological orientations but from perspectives that are completely foreign to the English-speaking world (centrifugal influence):

> [The editorial team] are in the process of developing some guidelines for reviewers, and we have some drafts on this. […] Language is an issue of course. Avoiding some negative comments that are sometimes made to the authors. And making more accessible the journal to different countries, that do not have the infrastructure and the funding to have access to the journal and to participate more actively.

Another key challenge identified by EiCs was the need *to develop mindsets among the editorial team members and reviewers that was aligned with a positive disposition towards publication rather than rejection*. Such a disposition represents a shift away from the notion that reviewers are simply gatekeepers of standards, towards one that positions reviewers as enablers of the dissemination of original ideas (centrifugal influence):

> We're not after rejection. I get so upset if people ask rejection rates. I always tell them, 'Please don't use these statistics'. Our business is not about rejection rates. We hope to publish good research.

At the same time, EiCs indicated they needed to maintain a careful *balance between developing supportive guidelines and how these could be operationalised transparently*. One EiC commented that writing prescriptive guidelines related to reviewing EnDL manuscripts might be counterproductive as it could limit the support required for individual cases. They believed the best approach was to provide broad policy guidelines that allowed the EiC and editorial team to operationalise intended outcomes through individualised advice as required — including attending to the specific challenges faced by EnDL authors in their specific circumstances:

> We are willing to go the extra mile for people who have been under-privileged in this sense or for who language is another hurdle. And, you know, this is one of those examples where we prefer to do work that we believe in. But we're not going to make this an official policy.

Every EiC raised the issue of *managing available resources* in bringing a manuscript to publication, including relevant challenges and opportunities. The responsibility of their role includes making decisions about what is possible given the resources available (centrifugal influence). These resources include reviewers' time and energy. EiCs must, for example, consider how many review runs are possible before exhausting a reviewer. There is an additional strain on resources when special issues/monographs were part of

an EiCs responsibility as these publications were in addition to "regular" work (centrifugal influence). One EiC indicated that there was an extra workload when journal editorial policy included publication in languages other than English, requiring the exercise of editorial responsibility in a non-native language (centrifugal influence). Another EiC raised concern about the potential impact of open access publication, which in some countries was a requirement associated with grant awards. This initiative might place greater demands on the resources of authors, that is, they may not be in a position to pay for open access publication (centripetal influence). A different EiC commented that access to the Internet resources in some countries was unreliable — leading them to suggest the acceptance of manuscripts submitted via post as well as online submissions (centrifugal influence). EiCs also discussed the opportunities related to open access and, in particular, that articles from some journals are now freely available after 3 years (supporting centrifugal influence). At the same time, one EiC noted the increased activity of predatory journals and the vulnerability of EnDL authors to offers of what might appear to be "easy" avenues for publication in English:

> I have wondered, because now our submission process is by email, whether we are leaving out people who don't have access to email, or whether they don't exist anymore. Whether we should include the postal address as a possible way of submitting things, like we used to.
> I think they're disadvantaged already because of their lack of resources. You know, like lack of library materials and so on. They are disadvantaged. I don't know how we can overcome that.

EiCs identified several *tensions related to progressing manuscripts to publication* — for both Editors and authors. These tensions were based on questions such as should an author pay for language editing before submission or after reviews? How does an editor balance equity and resources? How does an editor balance equity (a fairer world) with the expectation of high human standards (quality publication in a *lingua franca*)? How does an editor balance resources (including editor and reviewer workload) against the limited support that they know will be provided by a production process conducted by a third-party? Each of these questions relate to complex issues within the process of publication. Take, for example, the tension that exists for EnDL authors who are approaching the submission of a manuscript. Should they pay for language editing before submission to raise the potential of receiving positive reviews or should they wait for positive reviews and only commit their funds to polishing a manuscript once publication appears likely? There is little need for a native English speaker to consider such a conundrum. These types of tensions also place EiCs in almost untenable positions as a focal point for both centrifugal and centripetal forces where they may be attempting to promote diversity and equity within a process that favours uniformity and may see equity as sameness. Tensions, such as these, led one EiC to question if the models currently employed by publication houses are sustainable in the long term:

> It could be that we ask someone to improve their English before we allow it to go into the review system. … At what stage should that happen? [..] As a reviewer, you want everything to be sort of perfect at the beginning. And some authors considered their money better spent at the end.

A summary of these themes and their elaborations appears in Table 1.

Table 1 Emergent themes from editor-in-chief post-survey interviews

Themes	Elaborations
The notion of Englishes	There is more than one form of English. It is important to hear voices that come from places where the native language is not English. The use of English based idiom/grammar/slang can be problematic for an international readership, which is an even greater challenge for EnDL authors writing into English.
The role of journal policy and EiC/managing editors' efforts to actively promote diversity/equity	Strategies used to promote diversity/equity in attracting and publishing manuscripts include inviting submissions from authors with diverse backgrounds; appointing editorial board members with diverse backgrounds; consulting authors during the editing process; sharing references from EnDL authors; providing pre-review advice; editing reviewers' comments to encourage resubmission as needed.
Editors working as a team	EiCs worked with their Editorial Teams in a number of ways to coordinated standards including those associated with diversity and equity. Topics for discussion at regular meetings included: sharing information about the quality of reviews; identifying competent reviewers; and using initial contributions from reviewers to form judgements about their sensitivity diversity/equity issues.
Accommodating diversity/equity through reviewer selection	Guidance should be provided to managing editors in relation to selection of reviewers with international sensitivity (e.g., location, gender, methodological and theoretical stance); different capabilities/expertise (e.g., methodological expertise, representativeness of an international audience, specific context of the research).
Reviewer role/awareness of issues	A key challenge was supporting reviewers' sensitivity to the issues of diversity and equity raising questions such as how can reviewers be educated about relevant issues? How can effective reviewer guidelines be developed (e.g., advice on cultural norms, ideas worthy of publication, quality of writing)? What might be the potential of an *EnDL sensitivity assessment*?
EiC, editors'/reviewers' mindsets	There was need to develop mindsets among the editorial team members and reviewers directed at "Wanting to publish and not reject". This requires the appropriation of a disposition to support publication efforts and not to act as a gatekeeper alone.
Guidelines/transparency	There are challenges associated with the development of guidelines and their operationalisation, including the detail of what should be published guidelines verses ways of working within broad editorial policy.
Model of publication/production	The models of publication currently in place across most journals can be problematic. This included issues related to production — including different levels of acceptance.

Table 1 (continued)

Themes	Elaborations
Resources (challenges and opportunities)	The issue of resources was a source of both challenges and opportunities. EiCs are required to make decisions about what is possible given resources available (e.g., how many review runs are possible without exhausting reviewers?). Resources include the time and patience of reviewers. There is a further strain on resources when special issues/monographs are part of an EiCs responsibility. Reading/editing in other languages is also a demand on resources. EiCs also commented on the potential impact of open access on the resources of authors. Opportunities related to resources include the availability of open access (e.g., all articles freely available after 3 years)
Tensions	There are tensions related to the use of resources for both editors and authors. For example, should an author pay for language editing before submission or after reviews? How does an editor balance equity and resources? How does an editor balance equity (a fairer world) with the expectation of high human standards (in a *lingua franca*)? How does an editor balance resources (including editor and reviewer workload) against the requirements of third-party production processes?

6 Discussion and conclusion

A significant impact of globalisation on research is the development of a *lingua franca* in the form of English. In this article we, have taken the perspective that there are multiple forms of English practiced across the globe. Given this research landscape, we adopted the theoretical construct of heteroglossia (from the socio-linguistic community following Vygotsky), consistent with that of Barwell (2014), for our investigation about the support offered by highly recognised journals in Mathematics Education to EnDL authors. For EnDL authors, developing a publication for an international audience within "highly-ranking" journals requires translation from a source language (P-language) to the target language English (R-language) (e.g., Edmonds-Wathen, 2019; Meaney, 2013). We have sought to gain insight into this challenge by using heteroglossia as a theoretical lens, noting that this perspective does not privilege any particular form of English. This use of heteroglossia is an extension of Baktin's writings on the organisation of society, for example, the language of different social groups such as scientists, to analysing EiCs (a very specific social group) talking about language policy within their journals.

For EnDL authors, the requirement to write in English can constrain the way they express their ideas, including the theoretical constructs they can introduce into a manuscript as these may be culture-based and not easily explained (e.g., Caron, 2017; Edmonds-Wathen, 2019; Geiger et al. 2018). Such constraints represent centripetal forces that act to limit the diversity of ideas, often connected to language via semiotic fields, made available in research publications. This represents a challenge that is

greater than issues related to simple pragmatic concerns, such as the time it takes to find an equivalent way to express one's thoughts. The challenge also includes limitations such as those associated with semantic differences (i.e., the way a language (re)presents the world). For example, publishing research in English most often requires adherence to specific methodological approaches, such as how to treat the relationship between theory and empirical data. This can take the form of an orthodoxy within highly recognised journals that frames expectation around the form of a research article, such as a preference for empirical research, scepticism of theoretical publications or a reluctance to accept manuscripts that do not follow particular paradigms (e.g., Geiger, Margolinas & Straesser, 2018). These issues also represent centripetal forces within the notion of heteroglossia that not only limit EnDL authors' opportunities to publish but also restrict the dissemination of ideas to those that conform to the orthodoxy, both technical and epistemological, required for publication by some journals.

The consequence of the centripetal forces that constrain the expression of ideas through language orthodoxy in publication is that readers of English language journals may not have access to innovative solutions to problems in education (and other disciplines). In contrast, the diversity that may be a consequence of the centrifugal forces generated by publishing English non-dominant research offers the possibility of presenting different worldviews and habits of mind — promoting of equity with education and research. These opposing influences represent one form of ongoing tension between centripetal and centrifugal forces which ebb and flow in response to action taken on specific issues. The outcome of such tensions is rarely the domination of either centripetal and centrifugal forces (in this case unity and diversity) but typically a way of accommodating both influences. In this case, these are the ways in which high-ranking journals look to support EnDL authors while still requiring publication in English.

In this study, we have surveyed and interviewed EiCs from a selection of highly recognised journals in Mathematics Education, to canvas their observations about the challenges facing EnDL authors, the support that is currently available through their journal and the approaches they are pursuing to address this issue. Our analysis of the survey data indicates that current policy and practices, within most journals, represent centripetal influences on attempts to address equity and diversity in relation to the publication of EnDL authors' work. In contrast, interviews with EiCs indicate that they are aware of the challenges faced by EnDL authors and are attempting to revise policies and implement new practices that will exert centrifugal influences on processes related to the publication of the findings of EnDL authors' research. Their attempts to implement change, however, are being constrained by the resources they have at their disposal. We interpret these apparently conflicting situations to mean:

1. EiCs are aware of the challenges faced by EnDL authors and of the missed opportunities associated with having in place policies and practices that do not acknowledge the value of language as a resource (Planas & Setati-Phakeng, 2014) and its role in promoting equity and diversity.
2. The majority of EiCs have put in place processes of support or intend to do so in the future. This includes a range of measures such as the sensitive operationalisation of editorial policy, prudent selection of reviewers and education of editorial teams and reviewers in relation to the challenges faced by EnDL authors.

The major obstacle to the implementation of EnDL author-sensitive processes is the resources that are available to EiCs and editorial teams. This includes limited funds for supporting EnDL authors through the processes of submission, review, revision and production and the availability of reviewers and the need to keep them "on-side". Each of these issues and initiatives is the outcome of the ongoing tension between centripetal and centrifugal forces. These cannot be genuinely resolved because it is unlikely, in the foreseeable future, that there will be any change to English as the *lingua franca*. This is despite EiCs attempts to address the centripetal forces that constrain EnDL authors' attempts to publish in English language journals, looking to find ways of promoting greater diversity and equity (centrifugal force). For example, the tension between the promotion of diversity (centrifugal) and the production of works at high levels of human achievement (centripetal).

These tensions represent an ongoing struggle to resolve the centripetal and centrifugal forces within heteroglossia associated with international publication in Mathematics Education. Accommodating these tensions in a way that addresses equity and diversity issues in publication, however, is not the responsibility of EiCs, editors and reviewers alone as there are vested interests at play in maintaining the status quo — limiting what can be done to support EnDL authors. For example, publishers benefit from the status quo. As one of the EiCs indicated, the current international publication business model advantages publishing houses, who are unlikely to change what they see as successful arrangements. Employers and academic societies also need to take responsibility for the way in which they acknowledge achievement — currently biased towards publication in high-ranking English language journals (e.g., Abdelrahim, 2004; Andrade-Molina et al., 2020; Salager-Meyer, 2008; Stolerman & Stenius, 2008). At this point, it is far from clear how this tension might be resolved; however, the findings of this study indicate that there is an awareness of the issue and intention to act among participant EiCs.

Our intention when developing this study was to identify the challenges faced by EnDL authors within the Mathematics Education community and to share the initiatives being undertaken by a small sample of highly recognised journals aimed at addressing relevant issues. This includes the EiCs who participated, that is, they received something in return for their valuable time. We hope this article represents a small step towards supporting greater diversity and equity within publication in Mathematics Education, acknowledging the value of language as a resource (Planas & Setati-Phakeng, 2014) in bringing new ideas into Mathematics Education. At the same time, there remain clear directions for future research, including investigations into how managing/associate editors can best support the publication efforts of EnDL authors and how reviewers can be inducted into a publication culture that is supportive of EnDL authors. These are key areas EiCs have indicated they are addressing in their efforts to promote diversity and equity within publication — representing centrifugal forces they are attempting to exert on the process of publication in the field.

There are also technological developments within the field that are likely to shift the landscape of publication for EnDL authors and which will require ongoing research. For example, Nicolas Balacheff from Grenoble University, is creating a glossary of theoretical concepts, expressions and terms, *Dictionnaire de didactique des mathématiques*, in a number of languages (https://dico-ddm.blogspot.com/p/blog-page_20.html). This online tool provides a more accurate mapping of technical ideas across languages than general translation apps. Such approaches have the potential to support EnDL authors in generating manuscripts that use technical terms and expressions that align more accurately with a target language. The integration of artificial intelligence into such a resource may be a

game-changer for EnDL authors. There is a danger, however, that while the manuscripts of EnDL authors will be accurately translated, they may take on a linguistic uniformity that is not evocative of a sense of culture or place (a centripetal influence). In some sense, this is promoting diversity while obscuring it from the reader — a future tension. The outcomes of research in these directions all have potential to inform or promote new inclusive practices in research publication across nearly all disciplines, not only Mathematics Education. That said, no progress will be possible without greater levels of cooperation between native English speakers and EnDL authors.

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References

Abdelrahim, E. (2004). *The language of scientific research.* http://www.islamonline.net/English/Science/2004/11/article06.shtml

Aldrete, J. A. (2010). Will the controversy about publishing in Spanish or in English be solved on the basis of academic merits? *Revista Colombiana de Anestesiología, 38*(3), 363–375.

Andrade-Molina, M., Montecino, A., & Aguilar, M. S. (2020). Beyond quality metrics: Defying journal rankings as the philosopher's stone of mathematics education research. *Educational Studies in Mathematics, 103*(3), 359–374. https://doi.org/10.1007/s10649-020-09932-9

Atweh, B. (Eds.). (2007). *Internationalisation and Globalisation in Mathematics and Science Education*. Springer. https://doi.org/10.1007/978-1-4020-5908-7

Austin, J. L., & Howson, A. G. (1979). Language and mathematical education. *Educational Studies in Mathematics, 10*(2), 161–197. https://doi.org/10.1007/BF00230986

Bakhtin, M. (1981). Discourse in the novel. In M. Holquist (Ed.), *The dialogic imagination. Four essays by M. Bakhtin* (C. Emerson & M. Holquist, trans.). University of Texas Press.

Barwell, R. (2014). Centripetal and centrifugal language forces in one elementary school second language mathematics classroom. *ZDM - Mathematics Education, 46*(6), 911–922. https://doi.org/10.1007/s11858-014-0611-1

Barwell, R., Chapsam, L., Nkambule, T., & Phakeng, M. S. (2016). Tensions in teaching mathematics in contexts of language diversity. In R. Barwell, P. Clarkson, A. Halai, M. Kazima, J. Moschkovich, N. Planas, M. Phakeng, P. Valero, & M. V. Ubillús (Eds.), *Mathematics education and language diversity* (pp. 175–192). Springer.

Barwell, R., Moschkovich, J., & Setati-Phakeng, M. (2017). Language diversity and mathematics: Second language, bilingual and multilingual learners. In J. Cai (Ed.), *Compendium for research in mathematics education* (pp. 583–606). National Council of Teachers of Mathematics.

Barwell, R. (2003). Linguistic discrimination: An issue for research in mathematics education. *For the Learning of Mathematics, 23*(2), 37-43. https://www.jstor.org/stable/40248419

Boran, G. (2018). Semantic fields and EFL/ESL teaching. *International Online Journal of Education and Teaching (IOJET)*, *5*(2), 391-399. https://files.eric.ed.gov/fulltext/EJ1259000.pdf

Busch, B. (2014). Building on heteroglossia and heterogeneity: The experience of a multilingual classroom. In A. Blackledge & A. Creese (Eds.), *Heteroglossia as practice and pedagogy* (pp. 21–40). Springer.

Caron, F. (2017). Challenges and opportunities for publishing in mathematics education: The personal viewpoint of a francophone researcher. *For the Learning of Mathematics, 37*(1), 13-15. https://www.jstor.org/stable/44382738

Chellougui, F., Thu, H. N. T., & Winsløw, C. (2016). Language diversity in research on language diversity in mathematics education. In R. Barwell, P. Clarkson, A. Halai, M. Kazima, J. Moschkovich, N. Planas, M. Phakeng, P. Valero, & M. V. Ubillús (Eds.), *Mathematics education and language diversity* (pp. 263–278). Springer.

Cresswell, J. W., & Cresswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches.* Sage Publishing.

Crossley, M., & Watson, K. (2003). *Comparative and international research in education: Globalisation, context and difference*. Routledge.

Edmonds-Wathen, C. (2019). Linguistic methodologies for investigating and representing multiple languages in mathematics education research. *Research in Mathematics Education, 21*(2), 119–134. https://doi.org/10.1080/14794802.2019.1615981

Ernest, P. (2009). Mathematics education ideologies and globalization. In P. Clarkson & N. C. Presmeg (Eds.), *Critical issues in mathematics education* (pp. 67–110). Springer.

Gannon, F. (2008). Language barriers. *EMBO Reports, 9*(3), 207. https://doi.org/10.1038/embor.2008.14

Geiger, V., Goos, M., & Forgasz, H. (2015). A rich interpretation of numeracy for the 21st Century: A survey of the state of the field. *ZDM - Mathematics Education, 47*(4), 531–548. https://doi.org/10.1007/s11858-015-0708-1

Geiger, V., Margolinas, C., & Straesser, R. (2018). Le défi de la publication en contexte anglophone de didactiens des mathématiques dont la langue Dominante n'est pas l'anglais. *Recherches en Didactique des Mathématiques, 38*(1), 15–42.

Geiger, V., & Straesser, R. (2015). The challenge of publication for English non-dominant-language authors in mathematics education. *For the Learning of Mathematics, 35*(3), 35–41. https://www.jstor.org/stable/44382687

González-Alcaide, G., Valderrama-Zurián, J. C., & Aleixandre-Benavent, R. (2012). The impact factor in non-English-speaking countries. *Scientometrics, 92*(2), 297–311. https://doi.org/10.1007/s11192-012-0692-y

Goos, M. (2019). Publishing for international impact in mathematics education research journals. In K. Leatham (Ed.), *Designing, conducting, and publishing quality research in mathematics education* (pp. 213–225). Springer. https://doi.org/10.1007/978-3-030-23505-5_15

Horton, R. (2003). Medical journals: Evidence of bias against the diseases of poverty. *The Lancet, 361*(9359), 712–712. https://doi.org/10.1016/S0140-6736(03)12665-7

Jones, K. (2018). Strategies for globalizing research in the educational sciences. In *Proceedings of the Annual Meeting of Japan Society for Science Education 42* (pp. 7-10). Japan Society for Science Education.

Jurdak, M. (2011). Equity in quality mathematics education: A global perspective. In B. Atweh, M. Graven, W. Secada, & P. Valero (Eds.), *Mapping equity and quality in mathematics education* (pp. 131–144). Springer.

Meaney, T. (2013). The privileging of English in mathematics education research, just a necessary evil? In *Proceedings of the seventh international mathematics education and society conference* (pp. 65–84). Mathematics Education and Society.

Organisation for Economic Cooperation and Development (OECD) (2018). *PISA 2021 mathematics framework (Draft)*. https://pisa2021-maths.oecd.org/files/PISA%202021%20Mathematics%20Framework%20Draft.pdf

Pimm, D. (1987). *Speaking mathematically: Communication in mathematics classrooms. Language, education, and society*. Routledge.

Planas, N., Farrugia, M., Ingram, J., & Schütte, M. (2019). Introduction to TWG09: Transforming language-sensitive mathematics education research into papers and posters. *Eleventh Congress of the European Society for Research in Mathematics Education,* 1582-1589. https://hal.archives-ouvertes.fr/hal-02435217/file/TWG09_01.pdf

Planas, N., & Setati-Phakeng, M. (2014). On the process of gaining language as a resource in mathematics education. *ZDM - Mathematics Education, 46*(6), 883–893. https://doi.org/10.1007/s11858-014-0610-2

Radford, L., & Barwell, R. (2016). Language in mathematics education research. In Á. Gutiérrez, G. C. Leder, & P. Boero (Eds.), *The second handbook of research on the psychology of mathematics education* (pp. 275–313). Brill Sense.

Salager-Meyer, F. (2008). Scientific publishing in developing countries: Challenges for the future. *Journal of English for Academic Purposes, 7*(2), 121–132.

Seidlhofer, B. (2009). Common ground and different realities: World Englishes and English as a lingua franca. *World Englishes, 28*(2), 236–245. https://doi.org/10.1111/j.1467-971X.2009.01592.x

Sriraman, B. (2012). Polarities in (Nordic) mathematics education: Scaling the field. In *Proceedings of the Sixth Nordic Conference on Mathematics Education* (pp. 65-80). University of Iceland Press.

Stewart, F. (1996). Globalization and education. *International Journal of Educational Development, 16*(4), 327–333. https://doi.org/10.1016/S0738-0593(97)87232-X

Stolerman, I. P., & Stenius, K. (2008). The language barrier and institutional provincialism in science. *Drug and Alcohol Dependence, 92*(1–3), 1–2. https://doi.org/10.1016/j.drugalcdep.2007.07.010

Sträßer, R. (2019). Publishing as an English non dominant language author. First results from a survey of support offered by mathematics education journals. *Eleventh Congress of the European Society for Research in Mathematics Education,* 1794–1801. https://hal.archives-ouvertes.fr/CERME11/hal-02435399

Todorov, T. (1984). *Mikhail Bakhtin: The dialogical principle* (W. Godzich, Trans.). Manchester University Press.

Tout, D., Dermonty, I., Diez-Palomar, J., Geiger, V., Hoogland, K., & Maguire, T. (2021). PIAAC Cycle 2 assessment framework: Numeracy. In *The assessment frameworks for cycle 2 of the Programme for the International Assessment of Adult Competencies* (pp 64–154). OECD Publishing. https://doi.org/10.1787/c4221062-en.

Vasconcelos, S. M., Sorenson, M. M., Leta, J., & Sant'Ana, M. C., & Batista, P. D. (2008). Researchers' writing competence: A bottleneck in the publication of Latin-American science? *EMBO reports, 9*(8), 700–702. https://doi.org/10.1038/embor.2008.143

Vollstedt, M., & Rezat, S. (2019). An introduction to grounded theory with a special focus on axial coding and the coding paradigm. In G. Kaiser & N. Presmeg (Eds.), *Compendium for early career researchers in mathematics education* (pp. 81–100). Springer International Publishing.

Williams, S., & Leatham, K. (2017). Journal quality in mathematics education. *Journal for Research in Mathematics Education, 48*(4), 369–396. https://doi.org/10.5951/jresematheduc.48.4.0369