MECHANISMS OF CHANGE IN APPLIED EDUCATIONAL PSYCHOLOGY



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Abstract

Professional educational psychology has oriented itself to indirect service delivery for many decades, however the practice of this has been fragmented. Three strands of work presented here address a common overarching theme, namely, how educational psychology practitioners can optimise their work in support of learning environments: mechanisms of change. The first strand considers the relationship of the profession with an evidential basis for practice, with a focus on identification of mechanisms. Next, investigations of how tiered provision for social, emotional and mental health (SEMH) needs in schools can be optimised are offered. Finally, papers address the knowledge that educational psychologists can bring to optimising learning environments for children in schools. The work is informed by two guiding and parallel positions. The one, that of the scientist practitioner model, involving critical inquiry through diverse methods, to interrogate the evidential bases for professional practice, fuses with the other: an orientation that educational psychologists (EPs) must strive further to support the adults who work with children and young people, in indirect service delivery models.

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Part II Mechanisms of change: supporting the Social, Emotional and Mental Health needs of learners.

Gulliford, A. (1999). Life as an educational psychologist. *Educational Psychology in Practice, 14(4), 237-239.*

Gulliford A. and Miller, A. (In press - a) Managing Classroom Behaviour: Perspectives from Psychology. In (Eds.) Cline, T., Gulliford, A., and Birch, S. Educational psychology. (3rd Edition). Topics in Applied Psychology. London: Routledge.

Turner, J. & Gulliford A. (2020) Examining the Circles of Adults process for Children Looked After: the role of self-efficacy and empathy in staff behaviour change. *Educational Psychology in Practice,* 36:1, 32-51.

Gulliford, A. (In preparation). A Theory of Change For Meeting Social, Emotional and Mental Health Needs in Schools: The Routes to Inclusion Programme Evaluation.

Part III Mechanisms of change: optimising universal and targeted learning environments

Gulliford, A., and Miller, A. (In press - b). Raising educational achievement: what can instructional psychology contribute? In Cline, T., Gulliford, A. and Birch, S., (Eds) Educational Psychology. (3rd Edition). Topics in Applied Psychology. London: Routledge.

Gulliford, A., Walton, J., Allison, K., & Pitchford, N.J.P. (2021) A qualitative investigation of implementation of app-based maths instruction for young learners. *Educational and Child Psychology*, 38, 3, 90-108.

Pitchford, N. J., Gulliford, A., Outhwaite, L.A. Davitt, L. J., Katabua E., & Essien, A.A. (2021) Using interactive apps to support learning of elementary maths in multilingual contexts: Implications for practice and policy development in a digital age. PP 135-153. In Anthony Essien and Audrey Msimanga (Eds). Policy and Practice in STEM Multilingual Contexts: Multilingual Education Yearbook 2021. Springer. doi.org/10.1007/978-3-030-72009-4

Copyright note

All papers have been redacted following examination, with copyright held by the publishers.

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Synthesis: Overview of thesis

Introduction

This thesis presents work reviewing and investigating topics from professional educational psychology practice. The body of work is informed by two guiding and parallel positions. The first, that the scientist-practitioner approach involves critical inquiry into the diverse methods that can interrogate professional practice, fuses with the second: the orientation to professional educational psychology practice that the primary object of the educational psychologists' (EPs) work are the adults who work with children and young people. These positions, their conceptual underpinnings and implications are considered further below. Part I examines methodological issues for becoming an evidence-informed profession, within the scientist practitioner model (Miller & Frederickson, 2006). Part II considers issues of evidence and provision in relation to the social, emotional, and mental health (SEMH) needs of children in schools, and positions the work of the educational psychologist as a 'skilled helper' (Egan, 2013) to education staff, therefore providing indirect service delivery to aid universal and targeted SEMH provision in schools. Part III reviews how the EP may conceptualise their approaches when supporting achievement. The particular place of instructional psychology in supporting attainment in schools, the need to understand population level data, and the fluent processing of evidence from developmental psychology in support of practice are suggested as components of optimising in universal and targeted provision for learning.

The work presented consists of theoretical reviews, empirical investigations, studies hewn from collaborations, opportunities, professional responsibilities, and indirectly from the author's supervision of post-graduates in doctoral training. Without dedicated time for research activities within the remit of the author's professional roles, the work then also serves to illustrate how the scientist-practitioner orientation can inform multiple levels of activity.

This synthesis commences with a reflexive account of the author's professional and academic influences. The broad conceptual basis for the thesis is then introduced. The

three component sections of the thesis are then considered in turn, with the significance of each paper considered. A final conclusion to the synthesis draws together implications, and directions for further investigation of the work here.

The author: influences and aims.

The work presented in this thesis is informed by the professional history of the author: a former teacher and manager in primary schools, a practitioner educational psychologist, including managerial roles, and a trainer of educational psychologists. In the latter role the author has been, for two decades, a Programme Director to EP doctoral training programmes, developing and leading doctoral programmes. This work, together with responsibility for the research training environment, and behaviour change strands within the training curriculum, enabled the author to engage in extensive critical reflection into the key challenges and dilemmas for applied educational psychology. These experiences have informed the work developed here. The synthesis seeks to capture an orientation that reflects the dynamic interchange between critical reflection on methods, and environmental orientations to educational psychology: leading to an enhanced understanding of the role of the educational psychologist as one of facilitator of change, thus seeking to extend the work begun in 1978, the 'Reconstructing' era (Gilham et al., 1978).

The author's early career in education was informed by Froebelian philosophy (Manning, 2005), and the 'child-centred' methods often associated with 'discovery learning' (Pyle & Danniels, 2016). The legacy of this was practice informed by Vygotskian psychology (see Paper 2: Gulliford, 1999), and the focus in Froebelian thinking on observation as a pivotal tool. In educational psychology training the author encountered the 'new paradigms' of action research models, that advocated a constructivist stance to knowledge (e.g., Reason, 1988). This turn in thinking extended the paradigm shifts encountered previously when moving from a degree in the humanities to one in science. Through this, psychology's traditional association with experimental methods was loosened, for the author, by the validation of situated knowledge, forms of knowing that are widely espoused in the social sciences (Walton et al., 2022). A research master's level investigation using Soft Systems Methodology (Checkland 1981) illustrated the power of such collaborative perspectives in

supporting organisational development (Gulliford, 1995). Further, it embedded the notion of Checkland's Human Activity Systems in the author's thinking, and thus a systems and systemic orientation to understanding daily problems (Dallos & Draper, 2016). Through these ideas there seemed to be a potential resolution for the applied psychologist of some of the conceptual tensions presented by the competing positivist and relativist paradigms when understanding effects and mechanisms in the applied world, before critical realism (Bhaskar & Hartwig, 2016) became fully prevalent. The early work of Aubrey (e.g., Aubrey, 1987) consolidated this author's focus upon the processes within the EP role delivery, leading to engagement with the consultation literature from the USA (e.g., Bergan & Tombari, 1976; Gutkin, 1999) before the topic entered mainstream EP theorising. These influences have shaped the author's contribution to investigations and reflections offered here.

In due course, that mindset was brought by the researcher to the work of training educational psychologists in the skills for consultative practice, and in group and organisational psychology. It could not go unnoticed that despite the high value placed on this consultative orientation by newly qualified educational psychologists (EPs), the profession as a whole appears to continue to include a preponderance of service delivery activities informed by direct service delivery models.

The focus for this thesis is on the domains of knowledge and the processes that EPs can bring to bear in the course of their professional work, when seeking to support change in indirect service delivery models in support of learners: the mechanisms of change.

The conceptual basis for educational psychology.

Psychology joined education in a professional sense in the early twentieth century, and through this early work, the DNA of professional practice seemed set: a focus upon assessment, on the determination of child capabilities, and on questions of optimal provision. This paradigm of practice has, however, become subject to review and revision, and considerable review of the role, functions and distinct contribution of EPs has proliferated, particularly over the past 50 years (Stobie, 2002). The arguments presented here draw not upon the debates upon role and delivery, but begin

with the paradigmatic assumptions that underpin, albeit sometimes obscured, professional purposes.

Key developments have contributed to the arguable repositioning of the conceptual foundations to educational psychology in the twentieth century. The notion of the 'scientist practitioner' was developed by the clinical psychology profession in the 1950s the to capture the relationship that a professional group might hold with empirical sources of knowledge (Miller & Frederickson, 2006) and the responsibility of a group to consume and interrogate evidence for its methods and decisions. Further, the pivotal call, in 1978 from Gilham and colleagues to reconstruct educational psychology practice delineated the flaws of within-child conceptualisations in educational psychology, and offered a vision of a systems-orientated approach, where the needs of children were to be understood as a function of their interaction with their environment (Gilham et al, 1978). There was a parallel influence of those learning theorists who saw the child's potential to learn as being at the intersection between task and environment, specifically, the social environment and the cognitive enhancements potentially provided through mediation (Lauchlan, 2012)

These various influences guiding the practitioner towards environmental and social orientations contributed to the impetus away from the primary focus being upon the child's needs as the object of professional attention, but through a broader lens, including consideration of environmental influences on learning, including the social and pedagogic aspects of their learning environment, and their intersection of task (curriculum) with child factors, upon their learning. Ecological systems orientations (Bronfenbrenner, 1976) attend to the wider systemic influences upon development, too, and bring the broadest orientation possible to the conceptualisation of influences on development. The work presented here is shaped by these conceptualisations of the EP role. The following sections of this synthesis therefore draw upon this orientation, and seek to present a critical, interlocking narrative from the subsequent papers.

Beginning with methods in educational psychology, Part I examines the critical

tensions for the EP profession in its location between differing and often competing paradigms (Burnham, 2013) and how these tensions may be resolved in models of evidence-informed practice. Part I therefore serves as a critical methodological underpinning to the full thesis. Part II addresses the professional task for the EP in respect of supporting social, emotional and mental health (SEMH) needs in schools: examining the theoretical orientations to the work, and investigating how notions of 'change' can be incorporated into the conceptualisations of that work. Finally, Part III reviews how mechanisms of change for learning involve a focus upon learning environments. Here, papers highlight that the EP practitioner requires theoretical insights, and the skills to examine intersection between learner and supporting adults, in order to intervene successfully.

Synthesis Part I. Methods in educational psychology: becoming an evidence-informed profession

Overview for Paper 1. Evidence Based-Practice in Educational Psychology.

Gulliford, A. (2015) Evidence Based-Practice in Educational Psychology: The Nature of the Evidence. In (Eds.) Cline, T., Gulliford, A., and Birch, S. Educational psychology. (2nd Edition). Topics in Applied Psychology. (pp. 31-56). London. Routledge.

> "*The grey areas in our work, it has appeared to me, rest in the variable connection between theory and practice, again in part perhaps owing to statutory requirements limiting the opportunity to practise creatively as applied psychologists*." Gulliford, 1999, p237"

Paper 1, an introductory chapter in a textbook for educational psychology (Cline at al., 2015), seeks to describe, some 15 years following this assertion, how that relationship between theory and practice can be drawn – bidirectionally – and specifically, how the study of methods can support the EP profession in generating evidence informed

practice. The chapter is oriented to those in final year of undergraduate study, or in doctoral training in applied educational psychology, and offers a journey through the challenges for the profession of becoming evidence- informed practitioners.

Whilst many EPs have espoused the phrase 'scientist-practitioner', there has not always been consensus about the nature of the 'science' that the profession should draw upon, nor indeed whether that term is applicable to the complex tasks and contexts for the role (Burnham, 2013). The parent discipline of psychology has evolved in its orientation to evidence, in recent years, bringing a more comfortable backdrop to the EP profession's predominant espousal of qualitative methods. Miller & Frederickson (2006) were able to suggest that the profession drew strongly on quantitative approaches, yet the professional journal *Educational Psychology in Practice* belies this, where currently qualitative, exploratory studies predominate. The paper explores the implications of this issue, and in doing so presents insights into the methodological orientation for later papers.

The papers presented that draw on qualitative methods (Papers 4, 5,7 and 8) do so in varying degrees, and all capture the voices of educators, supporting an evaluative research question. They illuminate, in various ways, how the voice of the practitioner can inform insights into intervention *mechanisms,* enabling a theoretical interpretation of response, which, when fused with theory, enables the researcher to move from exploration towards explanation. This is most evident in Paper 6, arguably, a large-scale evaluation of an intervention, involving many schools, to support staff in optimising provision for SEMH. Thomas's (2016) encouragement to replace the primacy of the randomised controlled trial with fit-for-purpose methods in education is addressed through the adoption here of 'soft', or process orientation to evaluation (Moore et al., 2015), employing the pragmatic and contextual model of Stufflebeam (2005). The methods within Paper 5 allowed a focus on implementation and mechanism (Molloy et al., 2013), not merely effects, and therefore meet the call to diversify the original scientist-practitioner model, addressing the complexities of whether or how 'mechanism' can be captured and measured.

Synthesis Part II. Mechanisms of change: supporting the Social, Emotional and Mental Health needs of learners.

Synthesis Part II Introduction

From the work of Gilham et al (1978) it was evident that the profession of educational psychology needed to attend to the ecology of learning. Yet, by 1999, Leyden, in a commemorative edition of the Educational Psychology in Practice journal noted that to a great extent the aspirations of EPs to work with systems had not been realised (Leyden, 1999). The critical tension between child-focused and systems-oriented service delivery continues (see Fallon, Woods and Rooney, 2010; Lee and Woods, 2017; Stobie, 2002; Woods and Farrell, 2006) but the aspiration towards ecologically-informed models continues. Part II, then, presents evidence on the potential within the EP role for systems work, promoting change in ecologies: potentially through a repositioning of the skills and purposes for the practitioner supporting SEMH needs in schools.

Overview for Paper 2. Life as an educational psychologist.

Gulliford, A. (1999). Life as an educational psychologist. *Educational Psychology in Practice, 14*(4), 237-239.

This short paper from 1999 serves as a baseline for the professional journey of the present author. A commissioned piece, for the same journal edition noted above, marking the 21st anniversary of 'Reconstructing Educational Psychology' (Gilham, 1999), the author was invited to offer early career reflections on educational psychology. In this paper, early caution is shown, and some lack of optimism regarding the capacity of the profession to move towards the systems orientation advocated by the original authors, seeking "…*an emphatic injunction to see the child as primary client, helping us to shift the balance towards achieving more by the way of supporting change in educational contexts, and thereby in the child's experience of the world*". (p237).

Other points serve as reminders, too, of a different era. Therapeutic interventions were "not *unknown*" (Gulliford, 1999; p238), in contrast to the widespread discourse around therapeutic skills and invention on the part of EPs, particularly since the inception of doctoral training in 2006, (MacKay, 2008), and in evidence currently (Simpson & Atkinson, 2019; Zafeiriou & Gulliford, 2020).

Whilst some of the work subject to comment in Paper 1 was in relation to assessment systems, it was at that point delivered within a wider context in which equity was at the core. A graduated response to special educational needs and disability (SEND) held equity - between schools, or between families seeking support for additional needs of their children – as a fundamental goal (Sullivan et al., 2015). In contrast Paper 5, later in Part II, presents a different rationale for a graduated response, focusing instead on prevention and early intervention (Burns, 2011; Sugai and Horner, 2020).

This is key to Part II: how the adult can be supported to mediate the environment of the child. Here, the focus is on the adult: "*interventions are formulated with those who have the capacity to effect more significant change for a child"* and "*The balance of listening is considerable, avoiding 'expertism', and moulding solutions instead through dialogue*" (Gulliford, 1999, p238). The subsequent papers examine this issue, through providing a theoretical account (Paper 3), an evaluation that leads to a highlight on the role of self-efficacy promotion for staff, in respect of SEMH work, and consideration of the complex organisational development processes involved in developing skills and capacity in school to deliver a SEMH-supportive graduated response (Paper 5).

Overview for Paper 3. Managing Classroom Behaviour: Perspectives from Psychology.

Gulliford A. and Miller, A. (in press) Managing Classroom Behaviour: Perspectives from Psychology. In (Eds.) Cline, T., Gulliford, A., and Birch, S. Educational psychology. (3rd Edition). Topics in Applied Psychology. London: Routledge.

In this paper a contemporary view is offered of how psychological theory can inform

behaviour management in schools, and what theoretical framings the EP can adopt in their work to support staff and young people. The use of the term 'behaviour' is addressed early on, as referencing the wider set of needs represented by the alternative and more current term, SEMH. The term SEMH itself signals a broader set of needs, on the part of young people, and has been accompanied by something of a paradigm shift, within the profession, from attending to the overt behaviours to focusing on the internal life of the individual.

The chapter, from a broad starting point traces the historical prevalence of concerns around 'behaviour' in schools. It then moves to consider the application of ideas from behaviourism, which have, historically dominated the field. The paper does not address the reflection that behaviourism is not currently to the fore in the EP professional discourse around SEMH, as it has been in the past. This is, however, a critical point.

The Child Guidance clinics of the 1970s sought to develop holistic views of young people presenting with difficulties, in their homes or schools (Maliphant et al., 2013). The movement towards behaviourism of the same period was, in a sense a competing paradigm, that sought to develop intrinsic regulation of behaviours on the part of the individual through extrinsic contingencies (Payne, 2015), and despite the very robust evidence of the positive effects of behaviourism well-applied, has to some degree faded. There is much to be argued or written about this issue: the classic studies, such as that of (Madsen et al., 1968) have spawned a great legacy in the USA (Corcoran et al., 2021) and guide the adult to adaptations of their behaviour. Yet populist interpretations and applications of behavioural theory continue, with simplistic, water-down, or even corrupted versions of behaviourism that may at best promote engagement on the part of the already engaged, but repeatedly - in the life of a jobbing EP – are cited as 'having no effect'. Through behaviourism, adults have erroneously seen the chance to direct the behaviour of the child: obscuring the need for environmental adjustments, including in their own behaviours, in order to support engagement and regulation on the part of the child.

Revisions to this updated version of Gulliford & Miller (in press - a) include a greater

focus upon those groups who are potentially vulnerable within the education system, particularly to the systemic issue of exclusion from school, on a fixed or permanent basis. Since the Timpson Review of School Exclusions (DfE, 2019; Graham et al., 2019) a closer lens has been brough to bear upon the issue, but permanent exclusion remains a powerful manifestation of inequality within the system, with vulnerable groups at greater risk (see Papers 3, 4 and 5). The longitudinal outcomes from exclusion involve significant costs (Parker et al., 2016), both for those excluded, and wider society. Despite this, the practice, and its unequal trends, continue. Exclusion from school, and a potential role for the EP in prevention, is therefore the subject of Paper 4.

Overview for Paper 4. Examining the Circles of Adults process for Children Looked After: the role of self-efficacy and empathy in staff behaviour change

Turner, J. & Gulliford A. (2020) Examining the Circles of Adults process for Children Looked After: the role of self-efficacy and empathy in staff behaviour change. *Educational Psychology in Practice*, 36:1, 32-51.

This study, original research undertaken by Jennifer Turner during postgraduate doctoral training, supervised by this author, reached publication after remoulding by the current author. In the final published paper, the focus moved from issues of behaviour and exclusion per se, as in the original study, towards the nature of the processes involved in supporting staff, in relation to exclusion prevention work: the mechanisms involved in such support.

The Circle of Adults (CoA) approach was adopted, as both a problem-solving approach and one that has great potential for staff peer support: an aspect of EP intervention that has been emphasised since the work of Hanko (1999) who spoke so clearly about the need to remediate teacher isolation and stress when working with young people with SEMH. Ultimately, a controlled evaluation could not trace effects of the CoA intervention upon staff attribution, but this itself did not imply a failure of the intervention. It is critical for professional educational psychology to seek evidence through controlled evaluations where an intervention proliferates (see Paper 1). In the case of the CoA intervention, whilst popular, its effects on pupil experience are not

clear: there may be unknown negative or iatrogenic effects (Obsuth et al., 2017). A controlled investigation was attempted, therefore, with a mixed methods design including qualitative data that illuminated staff experiences of the COA, revealing their nuanced perceptions of process and outcome. This strand of data facilitated a theoretical exploration around the taxonomy originally provided by Caplan (1999), expanded through the work of (Miller, 2003), of the knowledge, confidence, objectivity and skills needed to manage challenge and complexity. A detailed review of qualitative evidence in the discussion within this paper links the perceived success of this approach to the enhancement of empathy, and to collective self-efficacy (Strahan née Brown et al., 2019) that is potentially achieved through collaboration, in turn informing fundamental strands within Paper 5.

Overview for Paper 5. The Routes to Inclusion Theory of Change.

Gulliford, A. (In preparation). A Theory of Change For Meeting Social, Emotional And Mental Health Needs in Schools: The Routes to Inclusion Programme Evaluation.

If group collaboration supports collective self-efficacy at school level, as hypothesised above, Paper 5 presents an evaluation of a Local Authority wide project seeking to enhance the skills of groups of school staff in managing SEMH.

This study examines the implementation of a programme, Routes to Inclusion (R2i), developed by colleagues from Educational Psychology Services (EPSs) and Behaviour Support Teams (BSTs). The project commenced in response to the dual issues of exclusion prevention, and of supporting staff with supporting SEMH needs. In doing so it addresses the call from Ainscow *et al.*, (1999) for a strategic role in inclusion on the part of LAs. Much has changed in the LA and EPS landscape since that time, but this study nevertheless illuminates the work of those who wish schools to operate within a coherent plan for Children's Services provision for the most vulnerable. A core goal of the R2i initiative was to promote the graduated response to SEMH, reducing the likelihood of reactive responses (Sugai & Horner, 2020). Process approaches to implementation evaluation were adopted, with Stufflebeam's (2005)

model selected for its consideration of ‘product’ (outcomes) in relation to context, input and processes, valuable in communicating and planning with commissioners. The model also allowed flexibility in terms of data gathering and analytic methods: and retaining a strong linkage with the organisational development and change literature. As the data analysis progressed, it appeared that there was, within the emerging model, a ‘Theory of Change’ for supporting SEMH needs in schools at LA level.

Theories of change, and logic models, have acquired popularity in the human and social sciences, particularly as the need to demonstrate impact and generalization from field studies has grown (Yin, 2013). A distinction between the two is the degree of causality inferred and in their focus. Theories of change have mechanism as their focus, and this therefore spoke to the focus of the evaluation in this instance, as well as to the larger topic of focus in this body of work.

Paper 5 returns to the notion of the graduated response in schools as an organising principle that supports an environmental focus in the work of psychologists in schools. The evidence in this paper presents a case for a more systematic involvement on the part of EPs in prevention science (Klingbeil & Collier-Meek, 2020); in the promotion of prevention and early intervention through ecological orientations.

The emerging theory of change highlighted the role of clear systems and collective reflection in change promotion in schools: and both empathy and individual and collective self-efficacy were again implicated in the mechanisms of change. The analysis highlighted the sense staff held of participating in something that was bigger than their classroom, or even school, that offered guidance and identity to staff, but which ultimately enhance their intrinsic motivation to support young people with additional needs.

Synthesis Part III. Mechanisms of change: optimising universal and targeted learning environments

Introduction

On June 29th, 2020, Yeomans wrote "…*after the COVID-19 lockdown, I am both surprised and disappointed that that relatively little appears to have been said or contributed about the tuition initiative…. it puzzles me as to why we are not making just as big a noise about matters such as effective instruction*". (Yeomans, 2020).

Part III of this thesis addresses the learning environments and instructional processes for children and young people, and argues for the core knowledge and mechanisms that EPs should utilise when considering universal or targeted provision to support learning. The rationale for the inclusion of this work is the need for EPs to continue to work to promote learning outcomes for children and young people, despite the evident, and important, leaning towards a focus on SEMH needs within current professional discourse.

The papers in this section propose that a close understanding of learning processes is fundamental to the 'change' that the EP can bring, through critical review of their service delivery to schools and provision for children and young people (Stobie, 2002). Three theoretical issues are reflected here. Firstly, the orientation that supporting learners is best achieved by close observation and analysis of how the learner interacts with their environment, to enable evidence-informed environmental adjustments to support engagement and learning. This focus upon contingencies leads to a consideration of the influence of behavioural psychology in learning, below (Section 5.2), and Paper 6: Gulliford and Miller (in press - b). Secondly, a position that a close understanding of and commitment to educational provision and achievement at a *universal* level should indeed be the remit of the educational psychology profession, a requirement underpinned by the equality duties that the profession must bear. This position leads to consideration of influences upon achievement for young learners that the profession could routinely consider. These, and how the learning environment may address them, are investigated, and illuminated

considered in specific examples in Papers 7 and 8: studies of maths learning in young children, supported by tablet-based applications.

Overview for Paper 6. Raising educational achievement: what can instructional psychology contribute?

Gulliford, A., & Miller, A. (in press - b). Raising educational achievement: what can instructional psychology contribute? In Educational Psychology (Eds) Cline, T., Gulliford, A., and Birch, S. Educational Psychology. (3rd Edition). Topics in Applied Psychology. London. Routledge.

Paper 6 considers a manifestation of behavioural psychology, instructional psychology, and its contribution to raising achievement. The paper presents an overview and analysis of instructional psychology and its methods, aiming to offer an account that can be consumed by those with an undergraduate knowledge of behavioural psychology, and by those in applied educational psychology training programmes, among others. It captures how behavioural psychology was adopted into educational psychology through the overarching term 'instructional psychology' and identifies some of the challenges that behaviourally based approaches have met in education.

Instructional psychology adopts behavioural principles in order to inform the micro system of the child's learning environment, with a high-resolution focus upon the micro-environment for learning. Similar to Dynamic Assessment (Lauchlan, 2012) close consideration of the contingences the child experiences, but the mechanism for learning, under the instructional psychology conceptualization is fundamentally informed by the child's behavioural responses.

These principles lead to two core methods considered in the chapter. One, Precision Teaching (PT) is essentially an evaluative method, and the other, Direct instruction (DI) an instructional method that can be twinned with behavioural skills analysis. Both are concerned to reduce optimistic and random presentations of leaning materials, through drawing the educator's attention to the learning achievements of an individual, and driving adjustments to the curriculum accordingly (Lindsley, 1992).

These adjustments are made on the basis of behavioural observations, that in turn inform presentations of material to the learner that ensure success.

Overview for Paper 7. A Qualitative Investigation of Implementation of App- Based Maths Instruction for Young Learners.

Gulliford, A., Walton, J., Allison, K., & Pitchford, N. (2021). A Qualitative Investigation of Implementation of App-Based Maths Instruction for Young Learners. *Educational & Child Psychology*, *38*(3), 90-108.

Paper 7 again attends to the learning environment. In a paper that offers an empirical investigation of the role of the adult in scaffolding the learner's experience, this study develops an account of how implementation evaluation must attend to the role of the educator, in this case scaffolding young learners using tablet-based maths application. Offering a counterpoint other the more overt behavioural perspectives of Paper 6, here a broader and more environmental view of the contingencies that support learning is adopted, including some that are more distal to the learner, and the model that emerges is therefore multi-level.

The paper draws upon two primary studies undertaken by post-graduate students in educational psychology doctoral training, linked to the laboratory of Professor Nicola Pitchford. Pitchford has developed a considerable strand of research investigating the capacity of digital technology to support young learners the efficacy of the *onebillion* maths application has been studied in a number of countries and contexts (e.g. Outhwaite et al., 2017, 2019, 2020; Pitchford et al., 2018). One study investigated the effects of the *onebillion* app in Foundation Stage One, with three- and four-year-old learners, finding some capacity to raise learning among those with sufficient prior learning (Walton, 2018). Another employed a single-subject design (Tate, 2016), exploring whether the *onebillion* app might support young learners with Down's syndrome (Allison, 2019), again finding some potential for this, and in particular highlighting the missed opportunity that technology-based interventions offer this population of learners.

Echoing issues considered in Paper 1, Paper 7 returns to the themes of how researchers and educators understand implementation. Through the data *mechanisms* can be better understood: the input and output are mediated by an interaction of aspects, or factors, identified through the analysis: child factors, facilitator factors, learning environment factors, and app factors. Through this model a common misconception regarding technology-supported learning is highlighted, namely that technology itself supplies the intervention. Here, it is evident that technological interventions must be careful implemented in classrooms, with due attention given to the role of instructional and technological facilitation, to the pragmatic context features of the learning environment, such as class grouping and location, before even the child factors – that are typically given prominence – are considered. Among the latter, developmental language levels in the language of instruction were identified as key for staff to understand, and ensure that there was a critical skill level sufficient to support engagement with app content. Thus, again, the contingency between learner and environments needed close observation.

Within these studies, staff commentary specifically noted the experiences of multilingual leaners, and this strand of data resonated with other work co-supervised by this author exploring how a tablet-based application could support early learning in maths in multilingual learners. The following study, Paper 8, critically reflects upon a summary of some of this research.

Overview for Paper 8. Using Interactive Apps to Support Learning of Elementary Maths in Multilingual Contexts: Implications for Practice and Policy Development in a Digital Age.

Pitchford, N. J., Gulliford, A., Outhwaite, L. A., Davitt, L. J., Katabua, E., & Essien, A. A. (2021). Using Interactive Apps to Support Learning of Elementary Maths in Multilingual Contexts: Implications for Practice and Policy Development in a Digital Age. In *Multilingual Education Yearbook 2021* (pp. 135-153). Springer, Cham.

Paper 8 draws together studies from South Africa, Brazil, and low socio-economic status (SES) multilingual contexts in the UK. The latter two studies were co-

supervised by the current author, whose contribution through supervision, and co-authorship of this paper, has been to present and review the elements of contemporary bilingual and multilingual theorising that supports this work.

It has long been established that bilingual and multilingual language status on the part of a learner should not per se correlate with lowered attainment (Hessel & Strand, 2021). There is, however, evidence that suggests for some populations in the UK, language status, or other factors linked with community languages and identity, may be playing a role in lowered achievement (Strand & Hessel, 2019). This picture highlights the importance for EPs to be able to respond with evidence-informed insight to the multilingual schools they find themselves working in and to understand the interplay of language as a marker for developmental language level as well as for sociocultural immersion and identity (Johnson et al., 2021) within the instructional environments. These studies jointly highlight the critical place that proficiency in the language of instruction plays in learning (Hessel & Strand, 2021).

Synthesis conclusion.

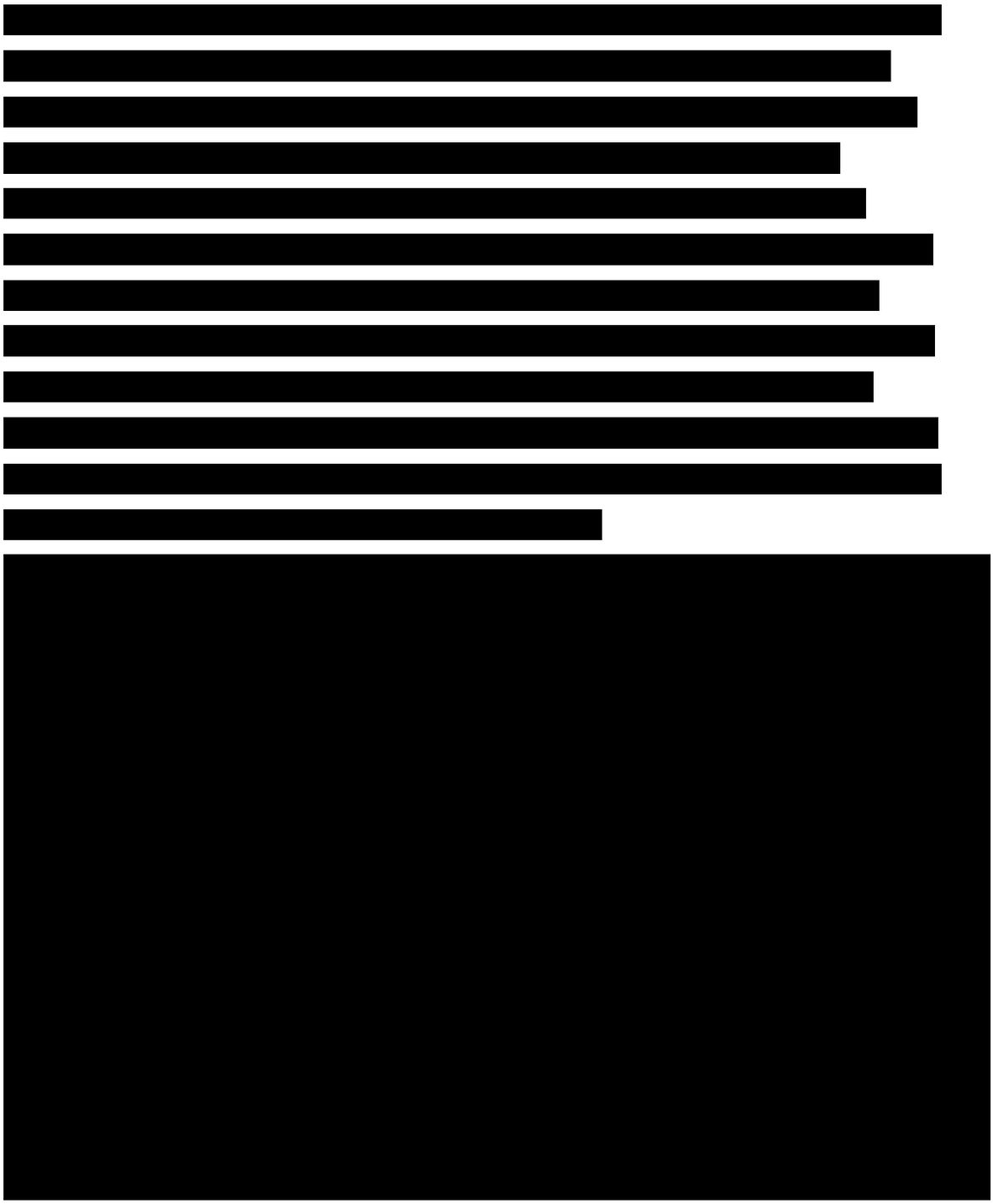
Multiple authors have considered the role and function of EPs, over decades (Stobie, 2002) but the challenges in practice to deliver systems-oriented practice, that includes a universal focus, remains a challenge. The studies here hold a common theme, in exploring the methods and knowledge-bases through which EPs can address this concern, and promote change. Mechanisms here are seen as both the knowledge bases that relates to learner development, and to the fine-tuning of processes to support adult professional practices. Whether learning or SEMH-focused, the work of the EP should involve greater attention to the role of adults in schools, where they play a critical role in optimising provision, extending Miller's temporary overlapping boundary (Miller, 2003), through a more skilled and accountable focus on those mechanisms of change relevant to each encounter and task.

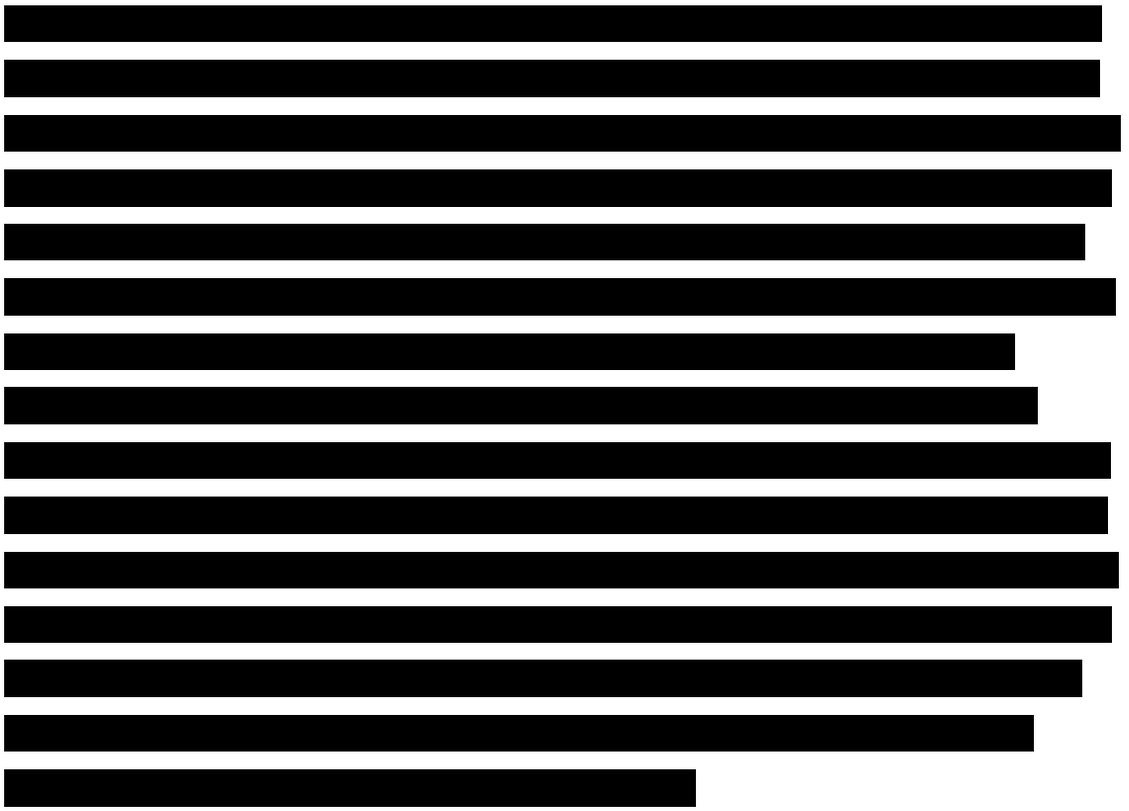
Thesis Part I. Methods in professional educational psychology: becoming an evidence-informed profession

Paper 1. Evidence-based practice in educational psychology: the nature of the evidence

Gulliford, A. (2014) Evidence-Informed Practice in Educational Psychology: the Nature of the Evidence. In (Eds.) Cline, T., Gulliford, A., and Birch, S. (2014) (Eds.) Educational Psychology. London. Routledge.

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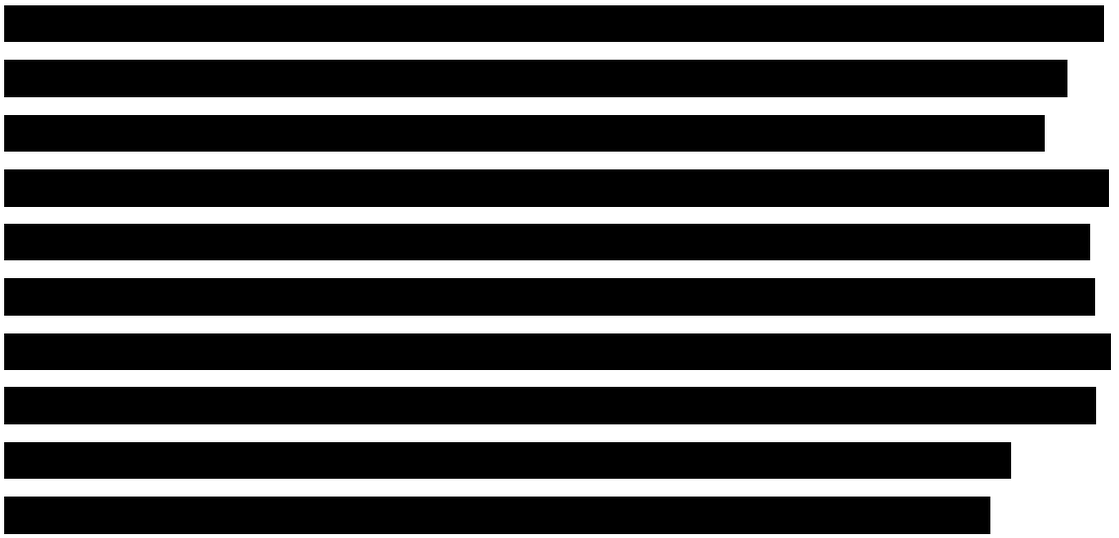
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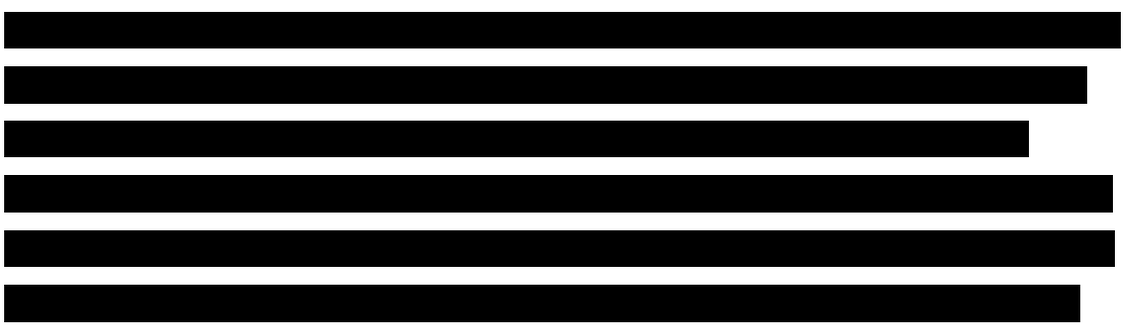
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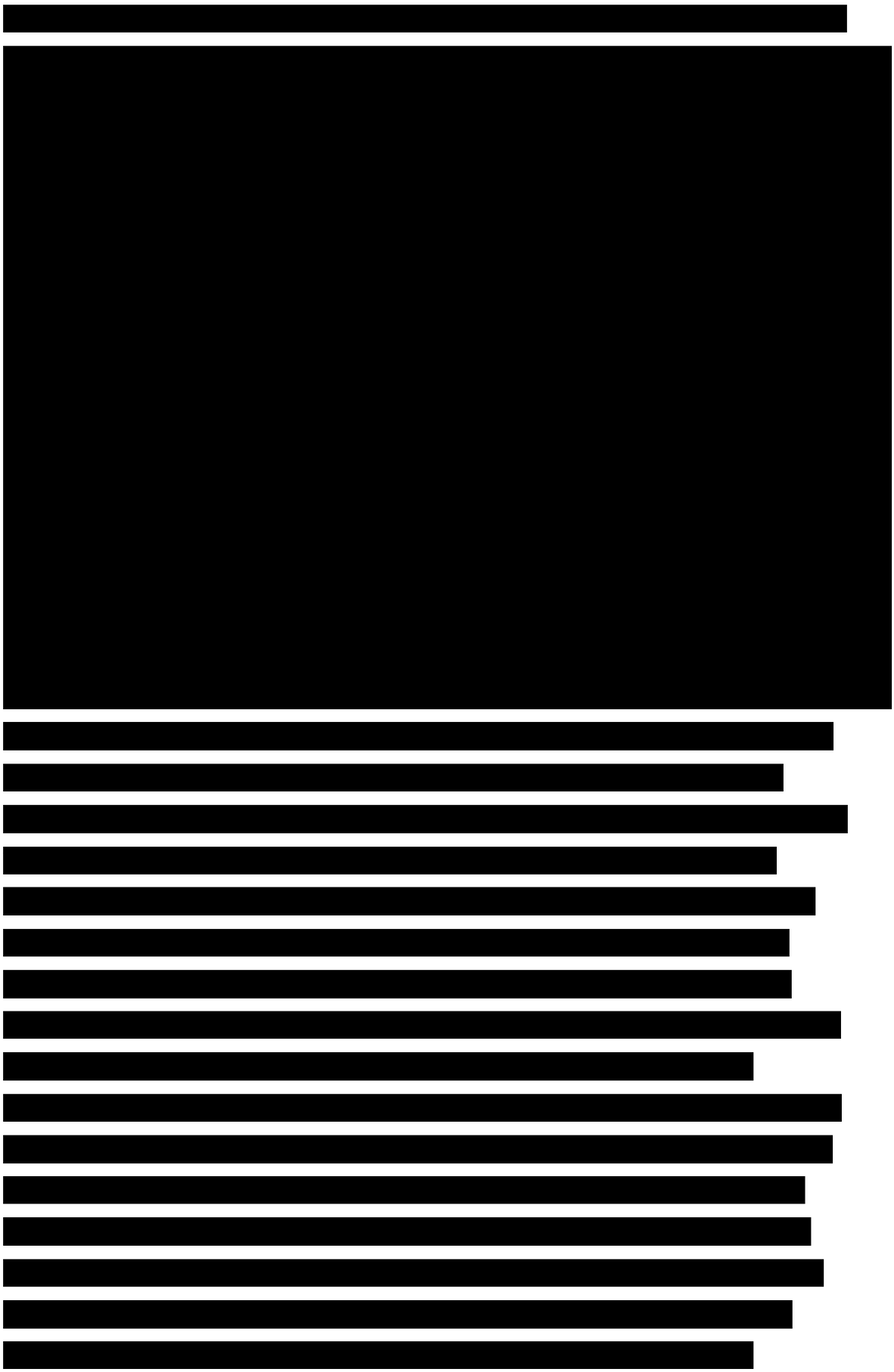






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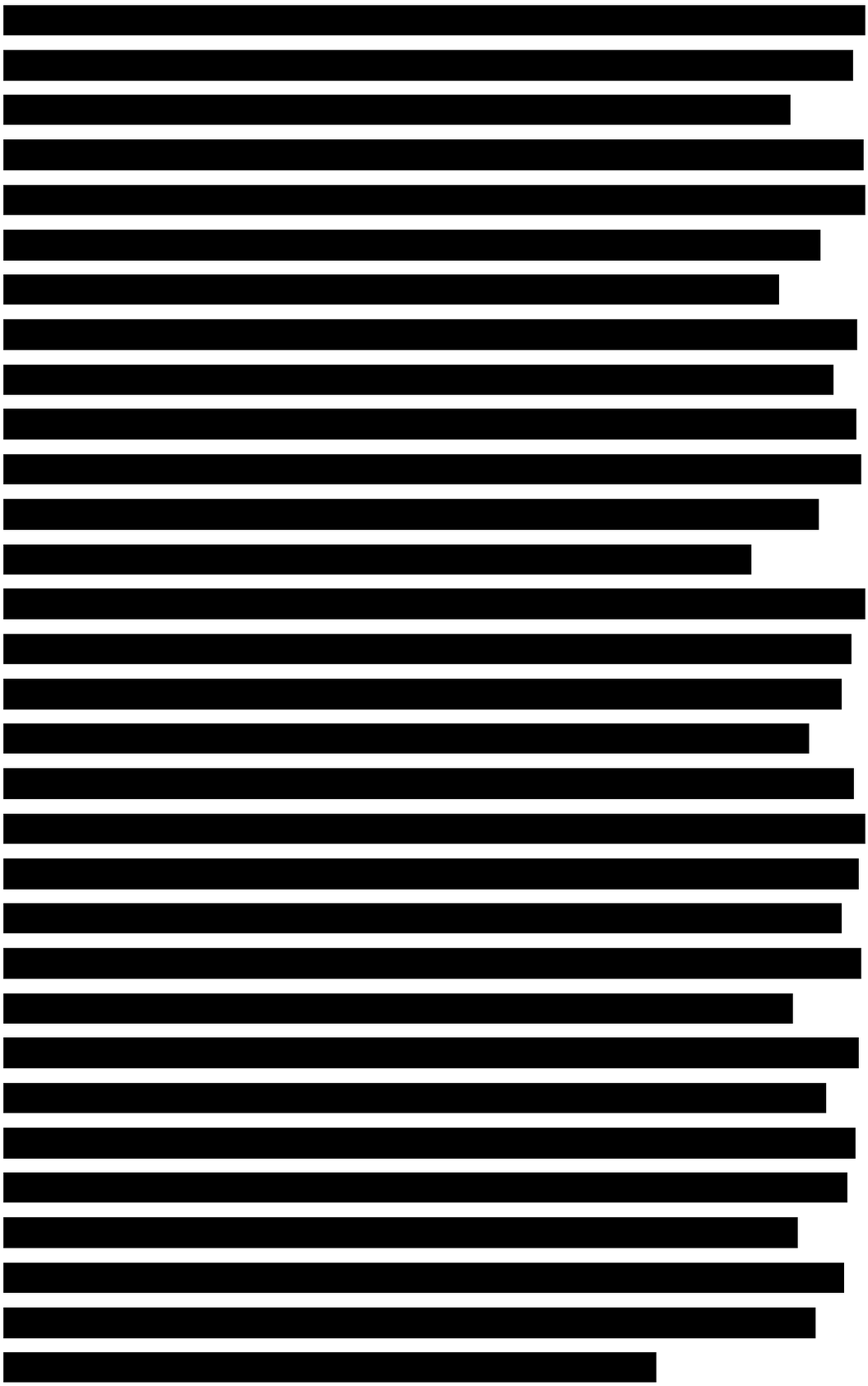
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[1] Synonyms include *single subject* and *single participant* experiments. In the USA *Brief Experimental Analysis* approaches have also been adopted which are less formal than the methods described here, but have a similar aim.

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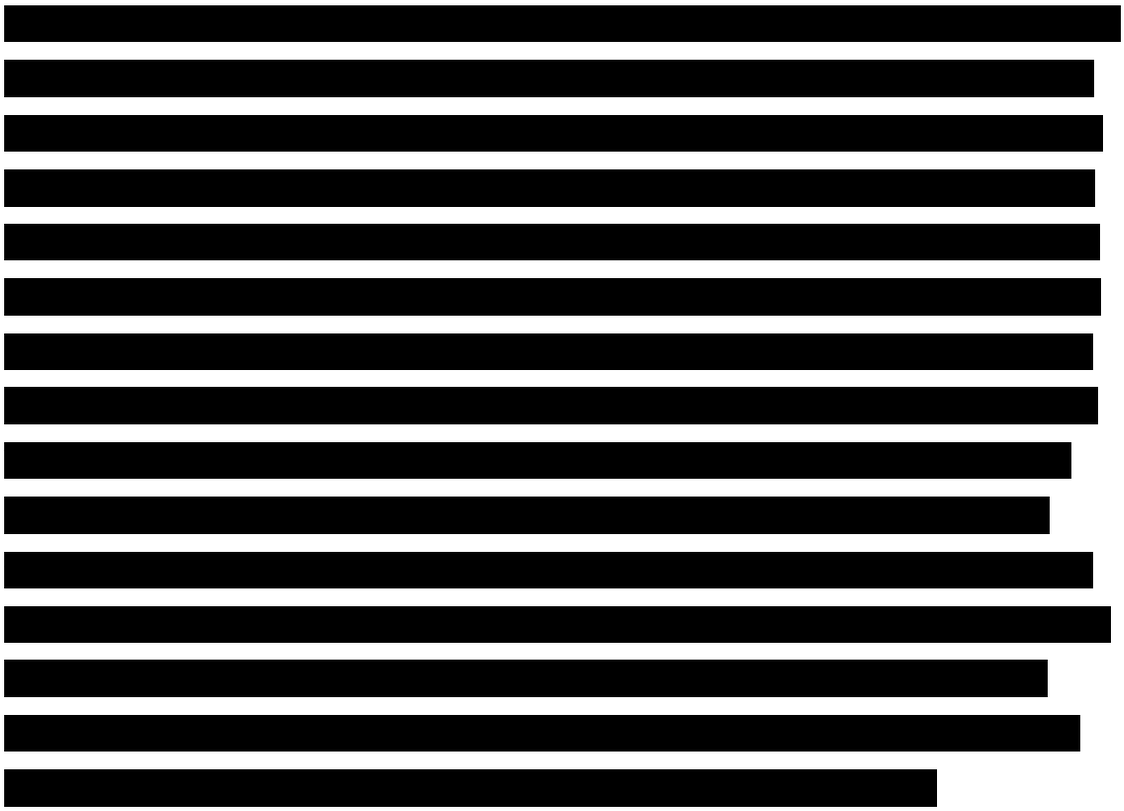


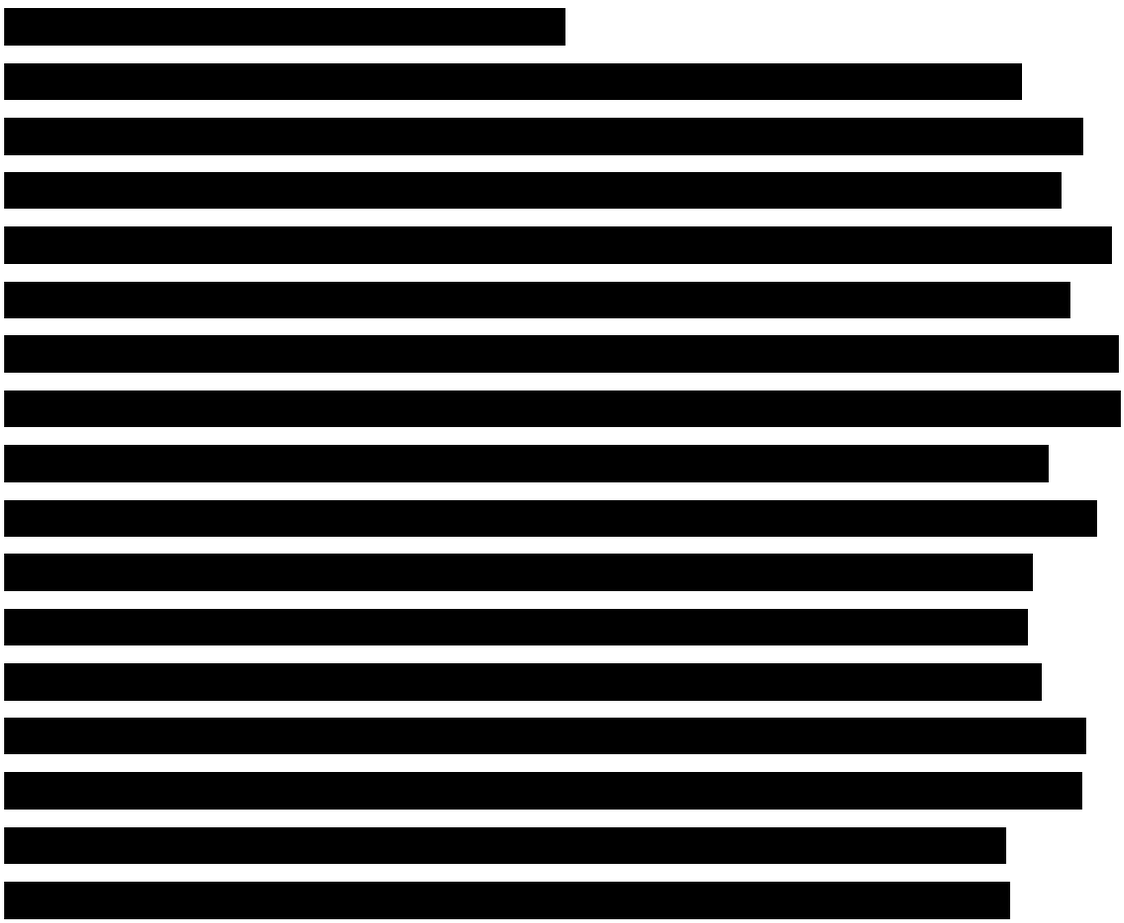


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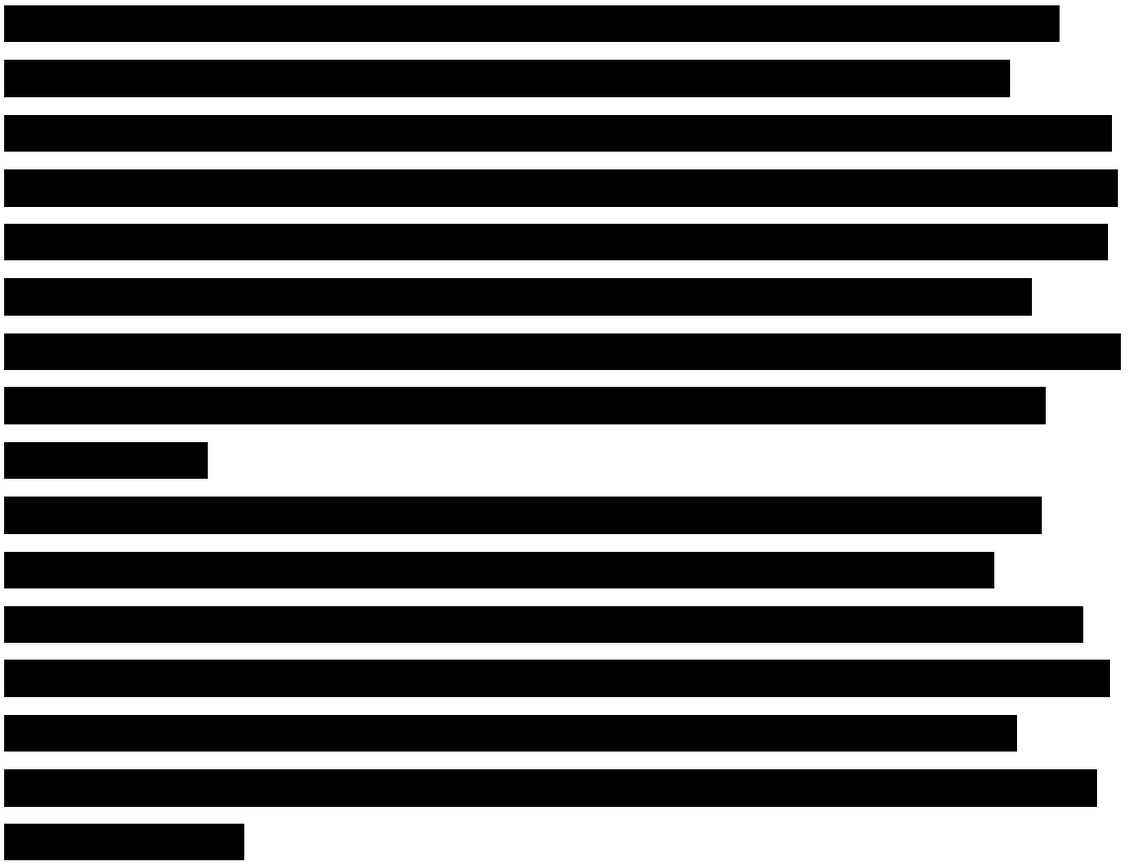
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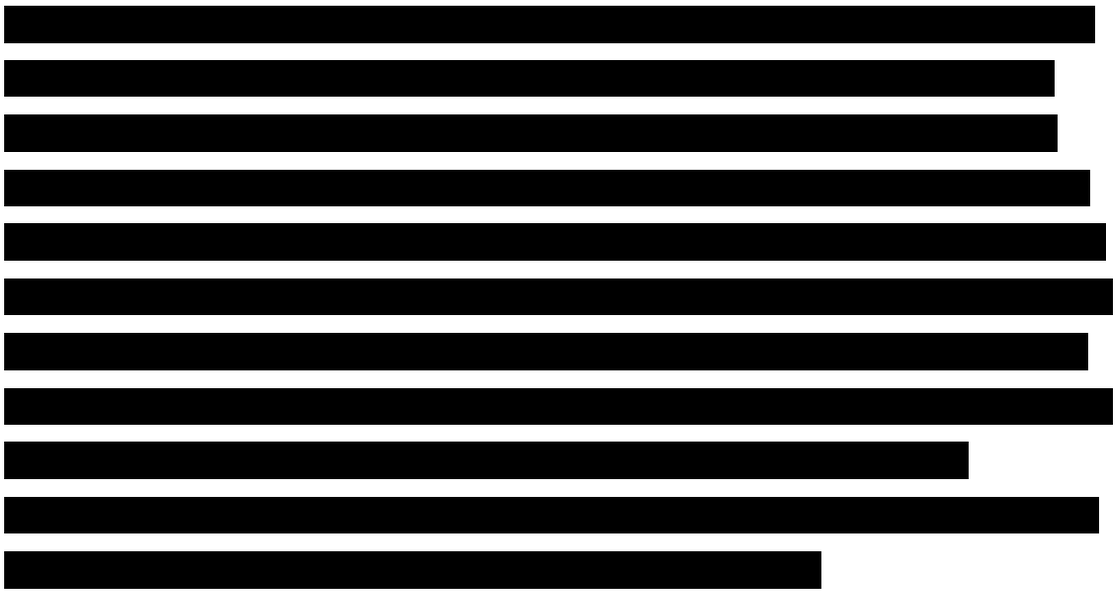
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Thesis Part II Supporting SEMH needs in schools.

Paper 2. Life as an educational psychologist.

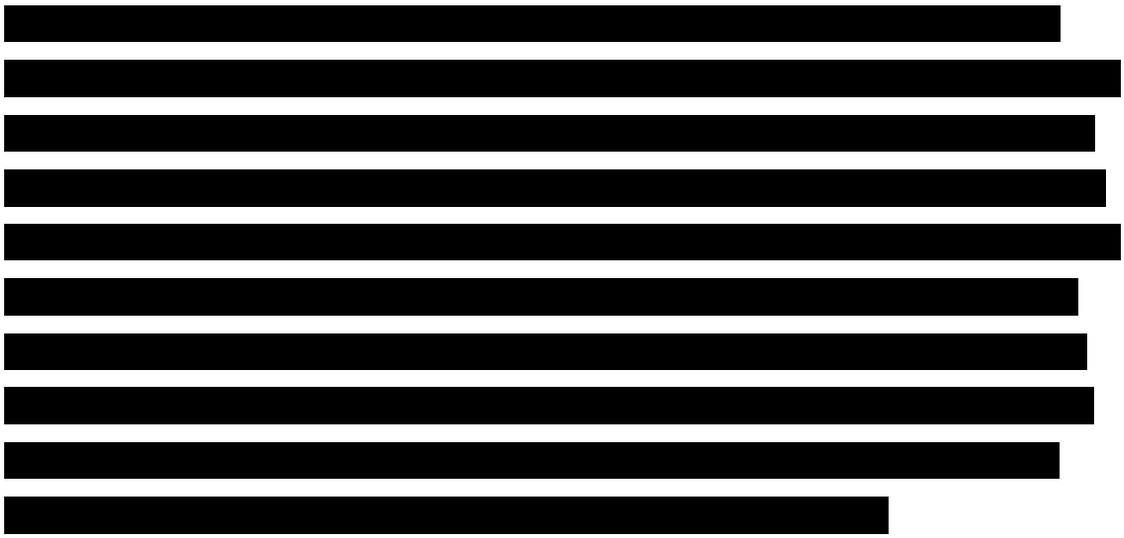
Gulliford, A. (1999). Life as an educational psychologist. Educational Psychology in Practice, 14(4), 237-239.

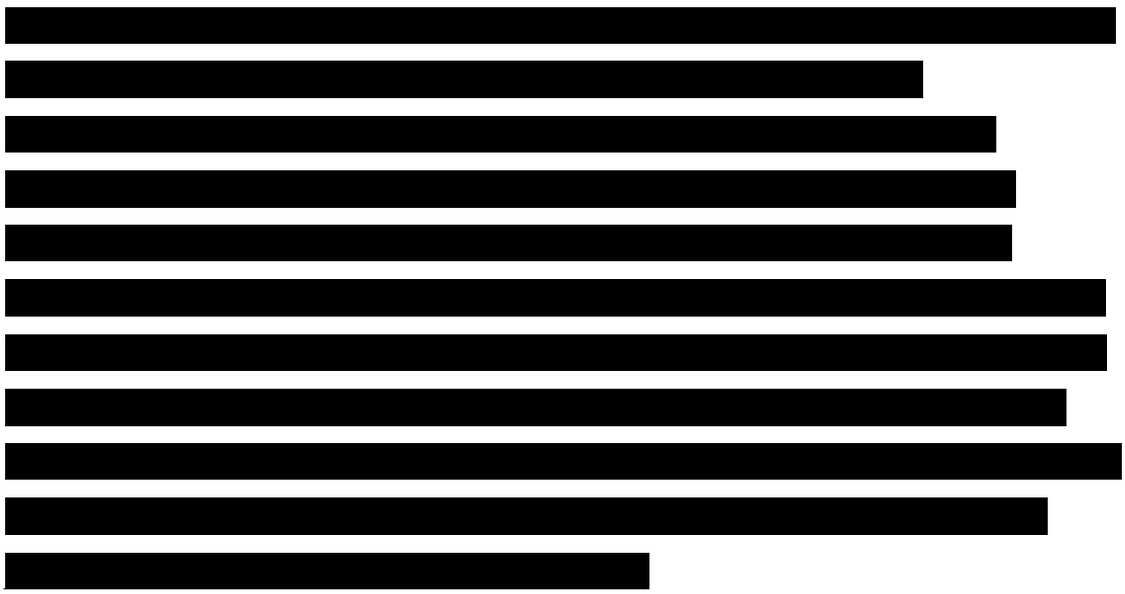


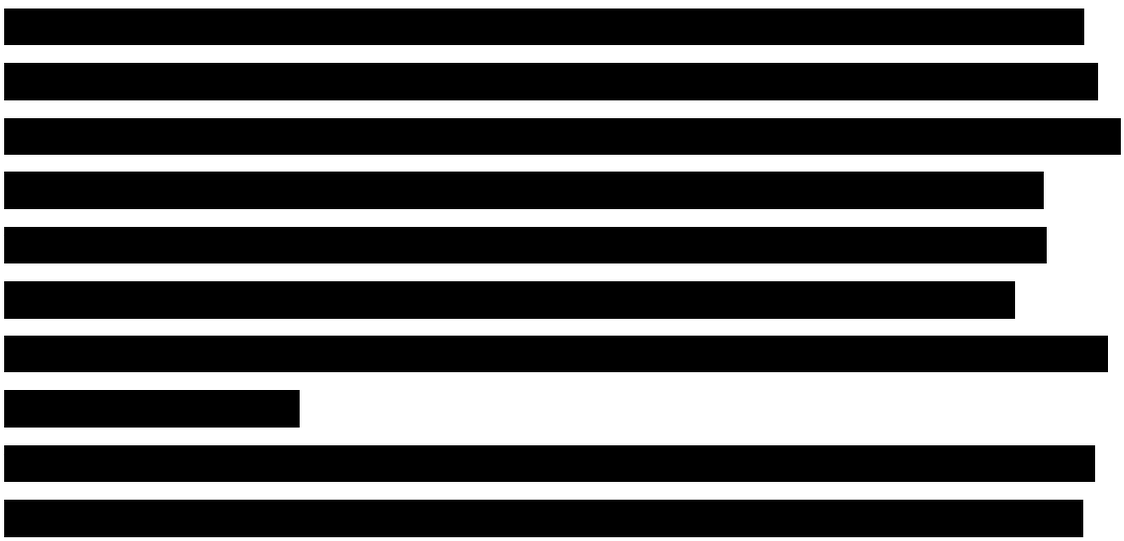




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Paper 3. Managing classroom behaviour: how can psychology help?

Gulliford A. and Miller, A. (in press - a) Managing Classroom Behaviour: How can Psychology help? In (In press.) Cline, T., Gulliford, A., and Birch, S. Educational psychology. (3rd Edition). Topics in Applied Psychology. London: Routledge.

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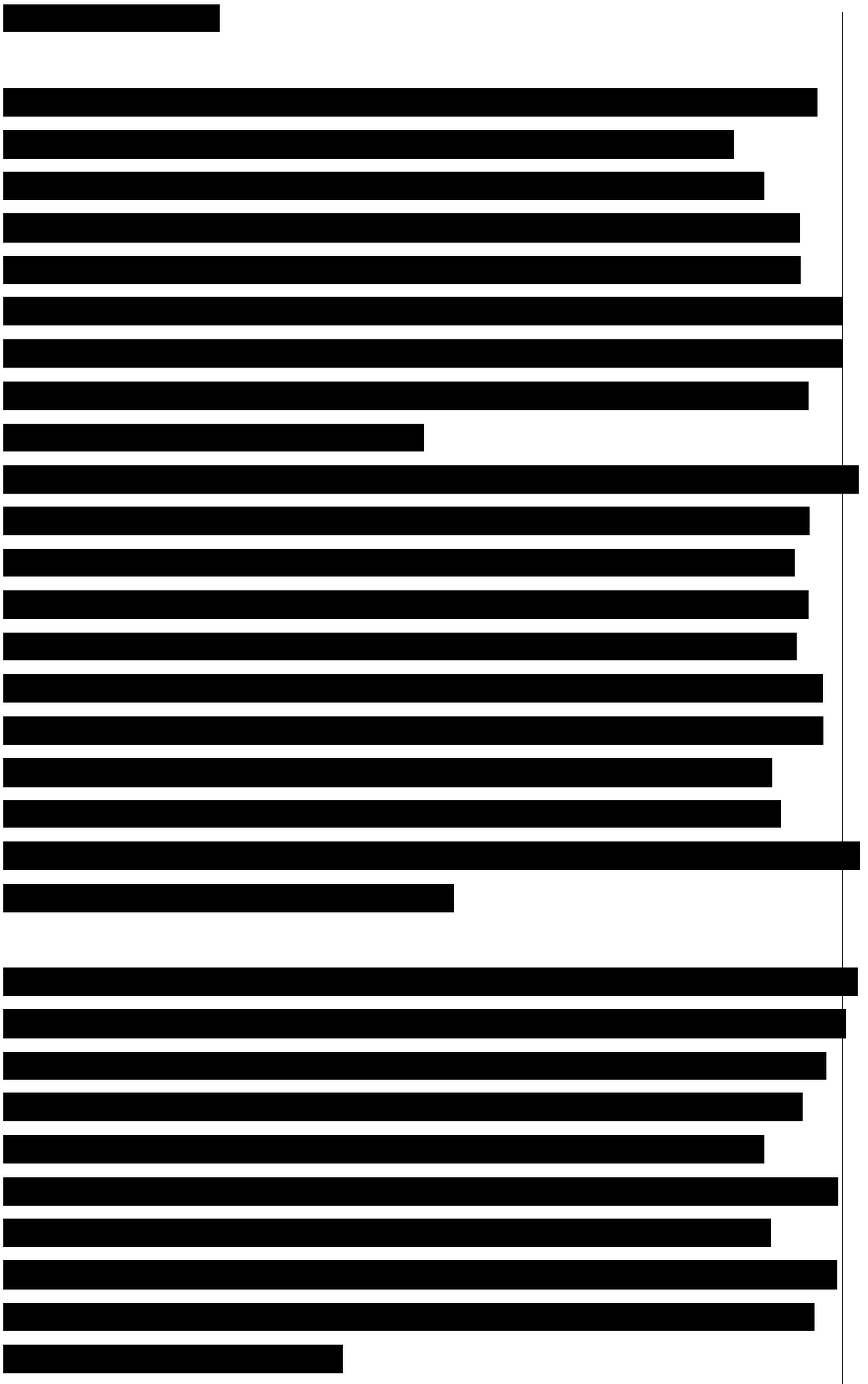
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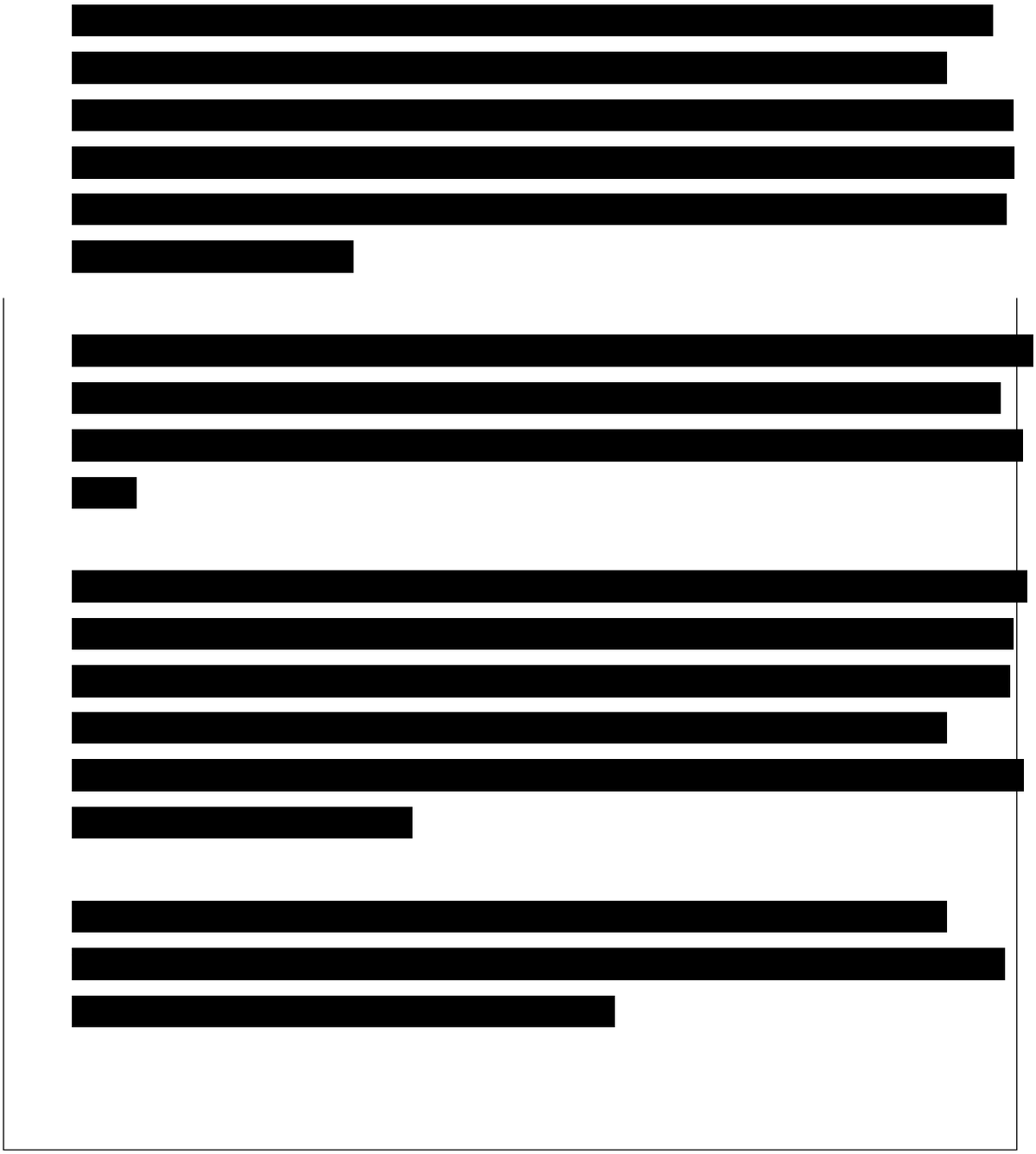
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Case Study 10.1 A young person attending a Pupil Referral Unit

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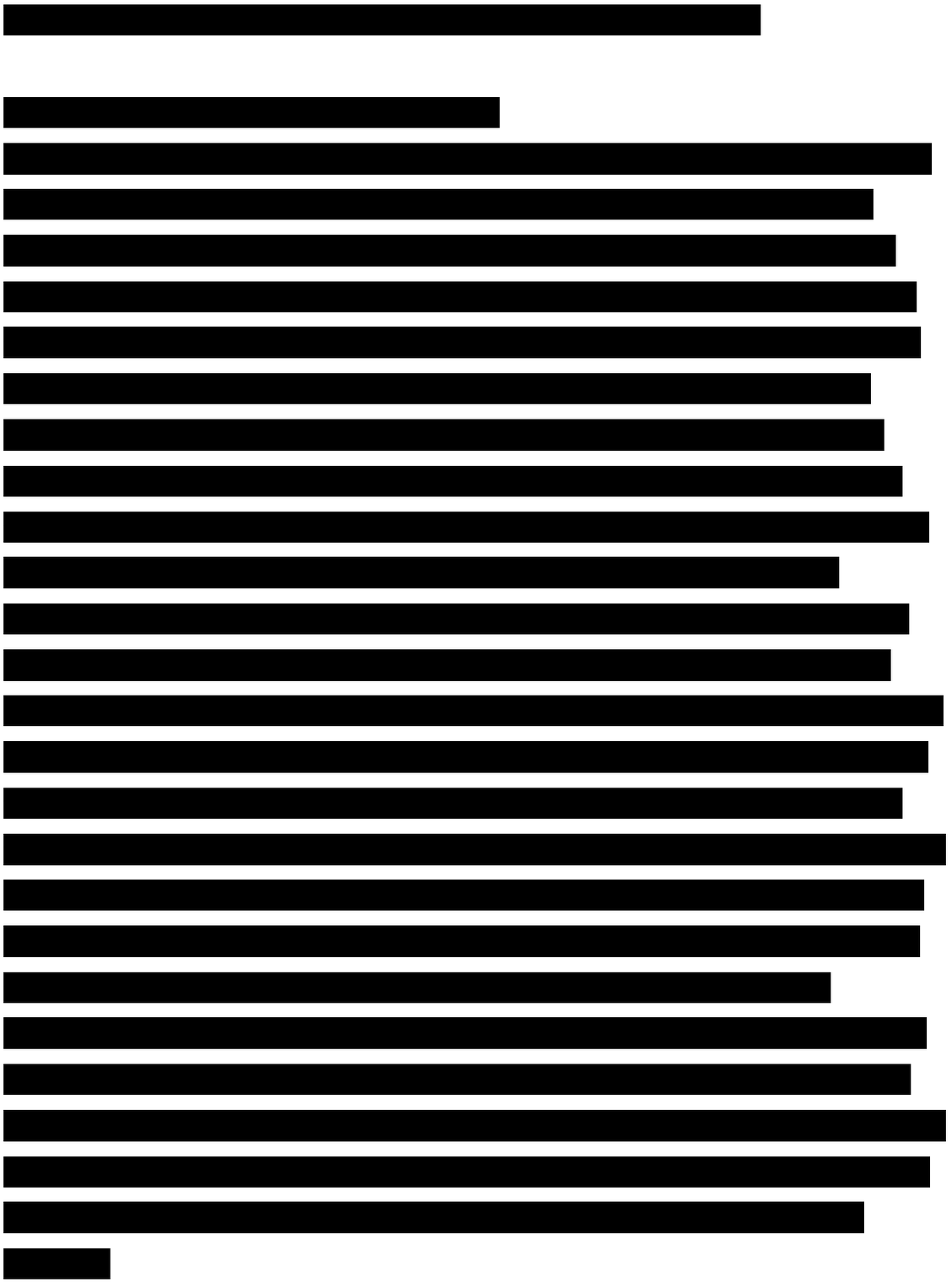
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excitement, power, and peer recognition misbehavior can bring in the classroom"

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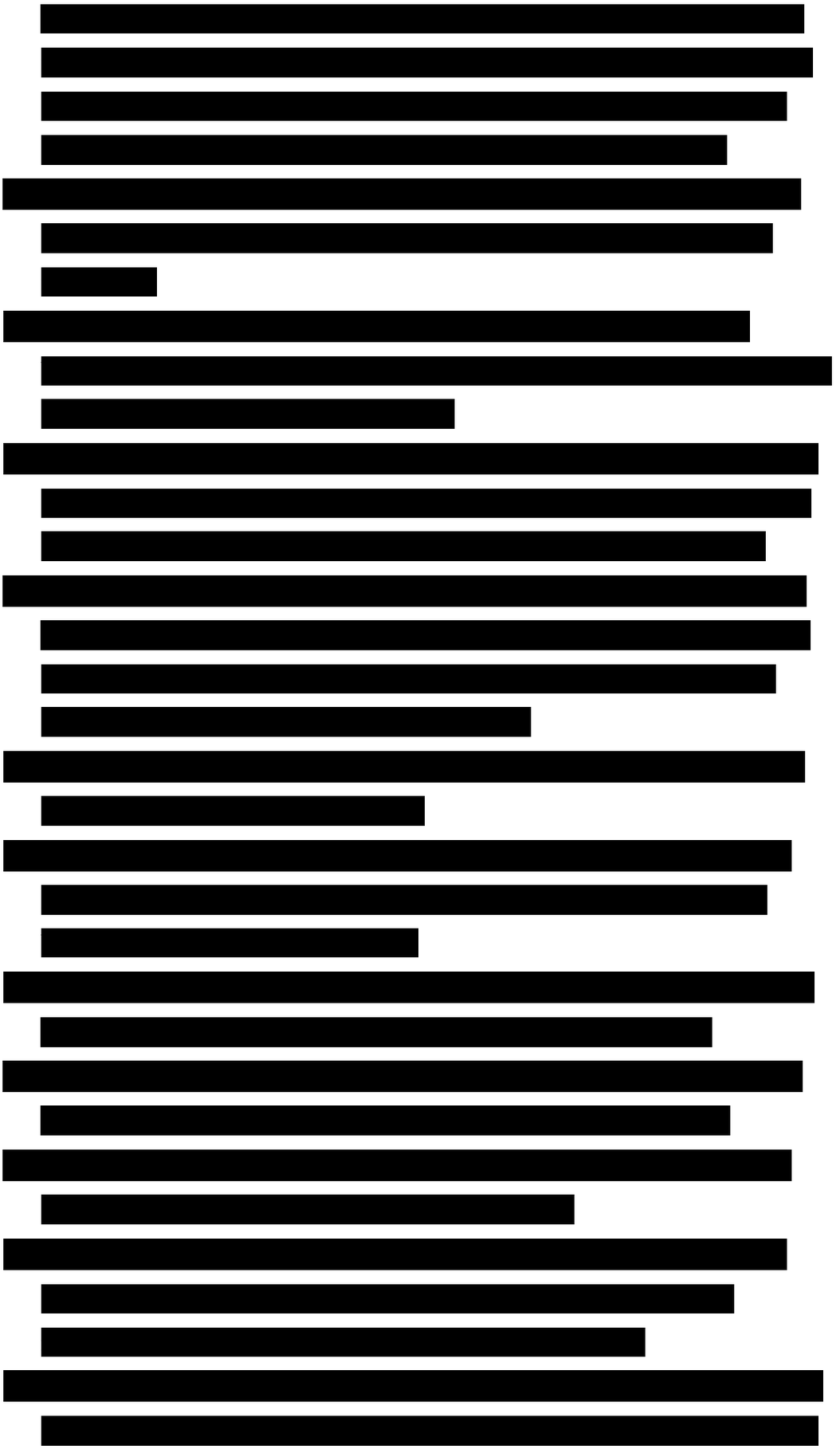
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Paper 4. Examining the Circles of Adults process for Children Looked After: the role of self-efficacy and empathy in staff behaviour change.

Turner, J. & **Gulliford A**. (2019) Examining the Circles of Adults process for Children Looked After: the role of self-efficacy and empathy in staff behaviour change. Educational Psychology in Practice doi.org/10.1080/02667363.2019.1667752

Examining the Circles of Adults process for Children Looked After: the role of self- efficacy and empathy in staff behaviour change

Jennifer Turner[a] and Anthea Gulliford[b]

[a]Derbyshire Educational Psychology Service, Derbyshire County Council, Chesterfield, UK;

[b]School of Psychology, University of Nottingham, Nottingham, UK

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Figure 1

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Figure 2

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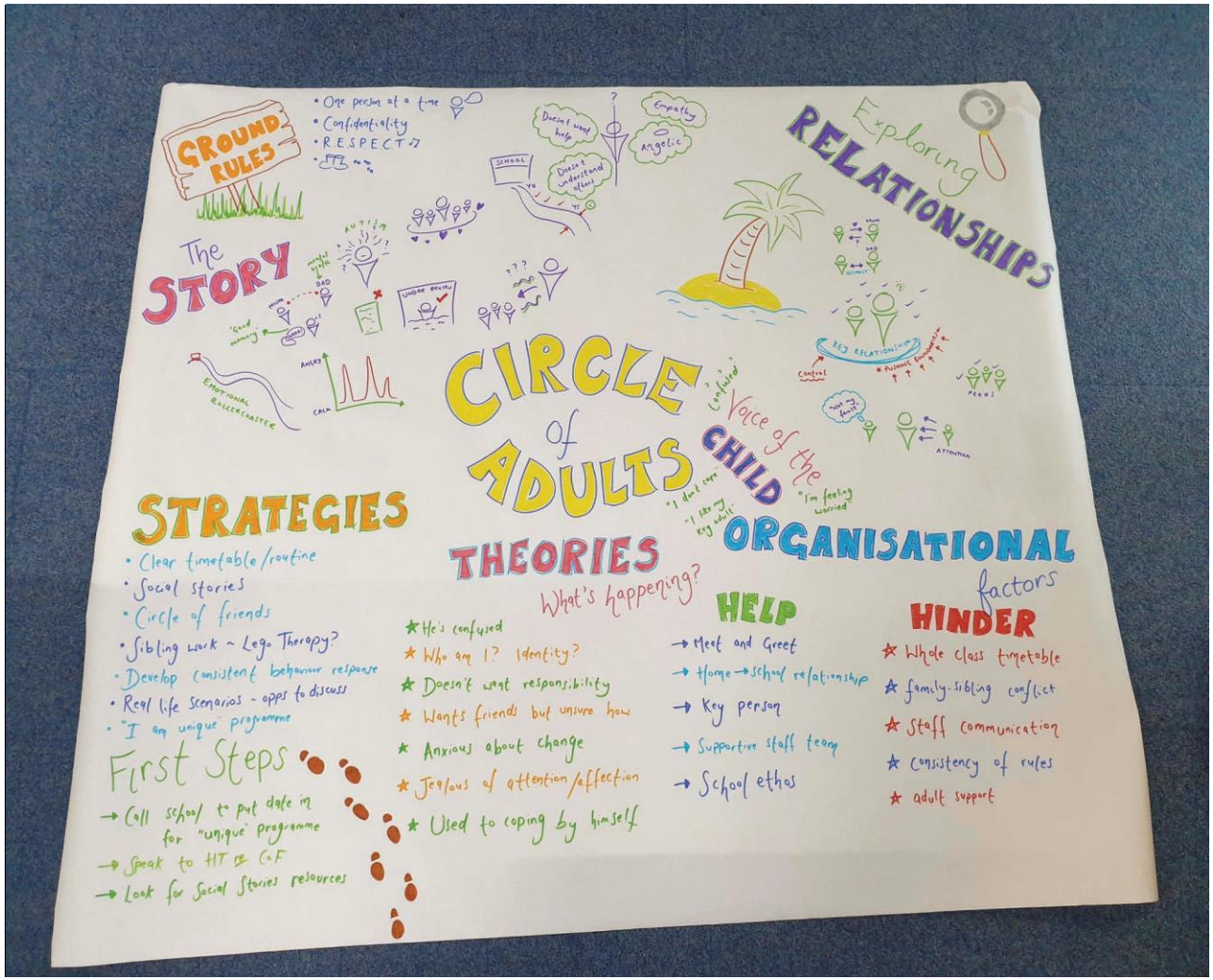
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Figure 1. [redacted]


GROUND RULES
• One person at a time
• Confidentiality
• RESPECT
The STORY
Exploring RELATIONSHIPS
CIRCLE of ADULTS
Voice of the CHILD
"I'm confused"
"I don't care"
"I'm feeling worried"
"I like my key adult"
STRATEGIES
• Clear timetable/routine
• Social stories
• Circle of friends
• Sibling work ~ Lego Therapy?
• Develop consistent behaviour response
• Real life scenarios - apps to discuss
• "I am unique" programme
First Steps
→ Call school to put date in for "unique" programme
→ Speak to HT & C+F
→ Look for Social Stories resources
THEORIES
What's happening?
★ He's confused
★ Who am I? Identity?
★ Doesn't want responsibility
★ Wants friends but unsure how
★ Anxious about change
★ Jealous of attention/affection
★ Used to coping by himself
ORGANISATIONAL factors
HELP
→ Meet and Greet
→ Home → school relationship
→ Key person
→ Supportive staff team
→ School ethos
HINDER
★ Whole class timetable
★ family-sibling conflict
★ Staff communication
★ consistency of rules
★ adult support

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Figure 3

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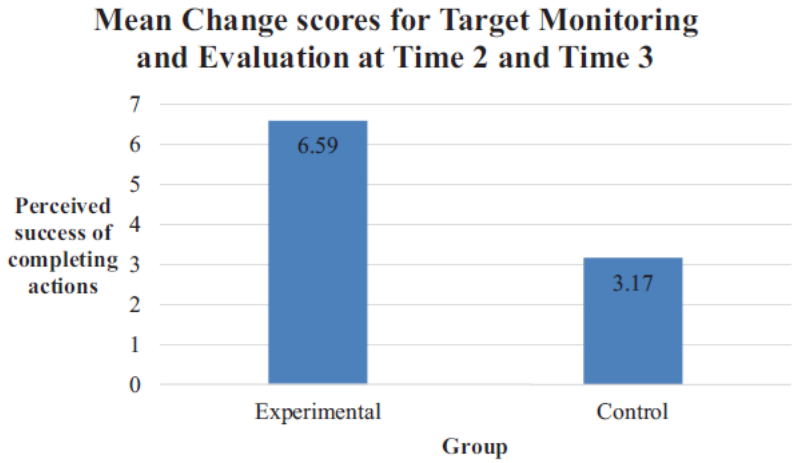


Figure 3. Graph showing the mean change score for the TME measure at T2 and T3.

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Figure 4

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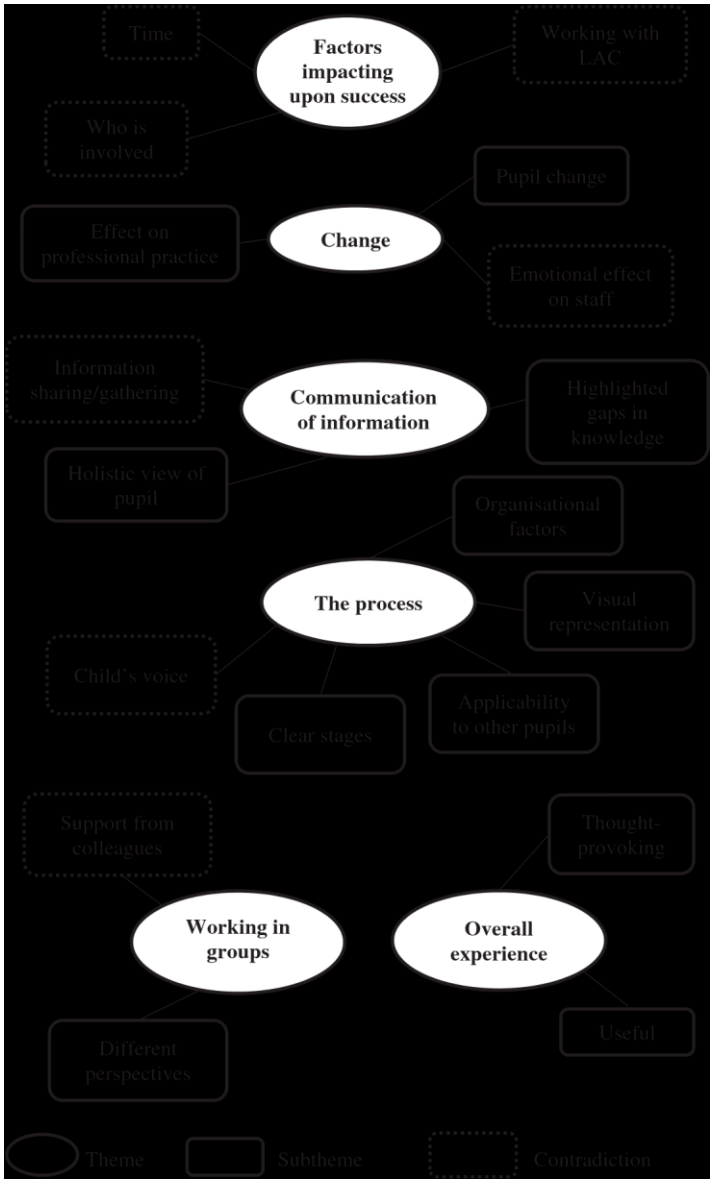


Figure 4.

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Paper 5. A Theory of Change for Meeting Social Emotional and Mental Health Needs in Schools: The Routes to Inclusion Programme Evaluation.

A theory of change for meeting Social Emotional and Mental health needs in schools: the Routes to Inclusion programme evaluation. (In press).

Anthea Gulliford

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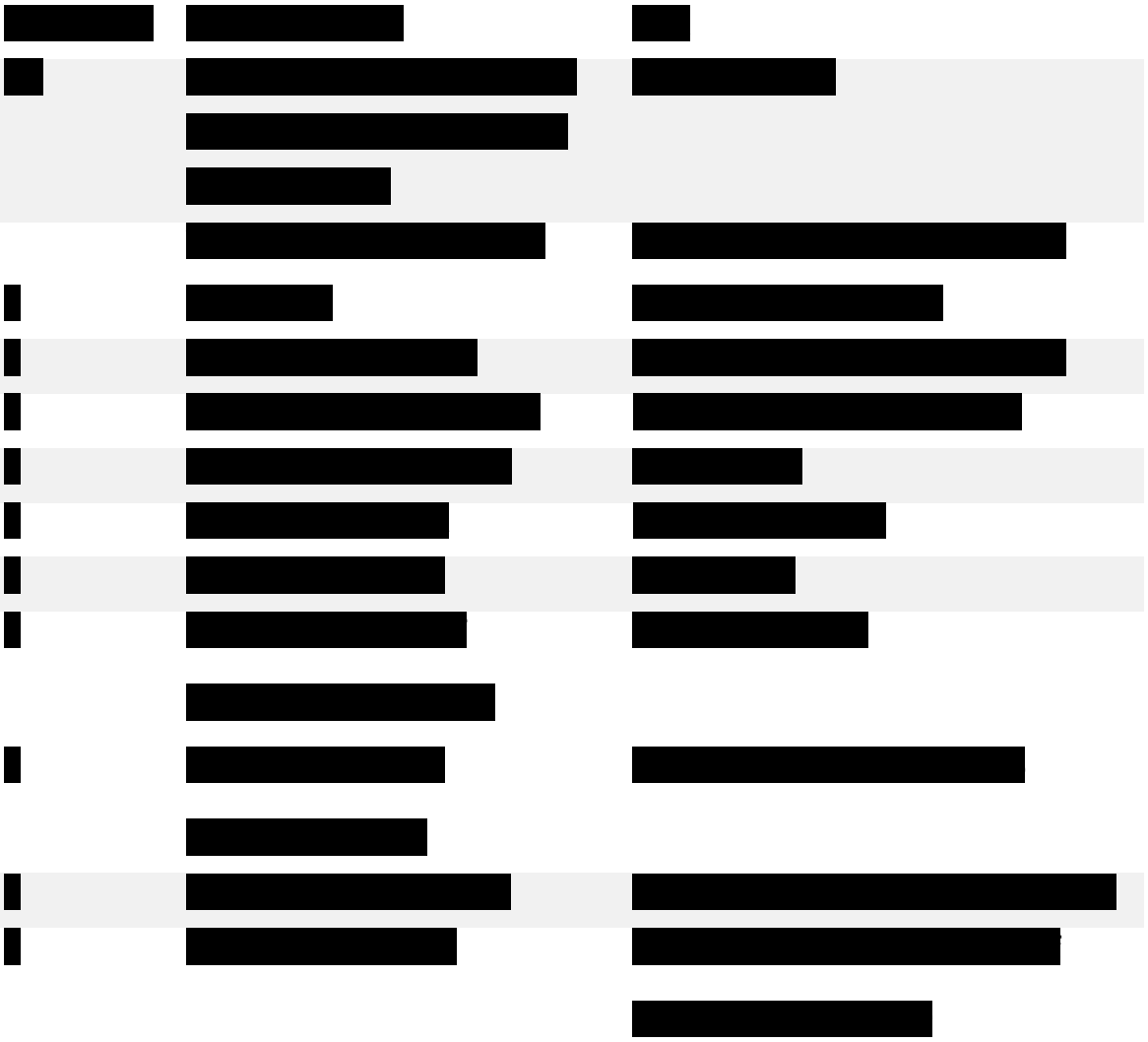
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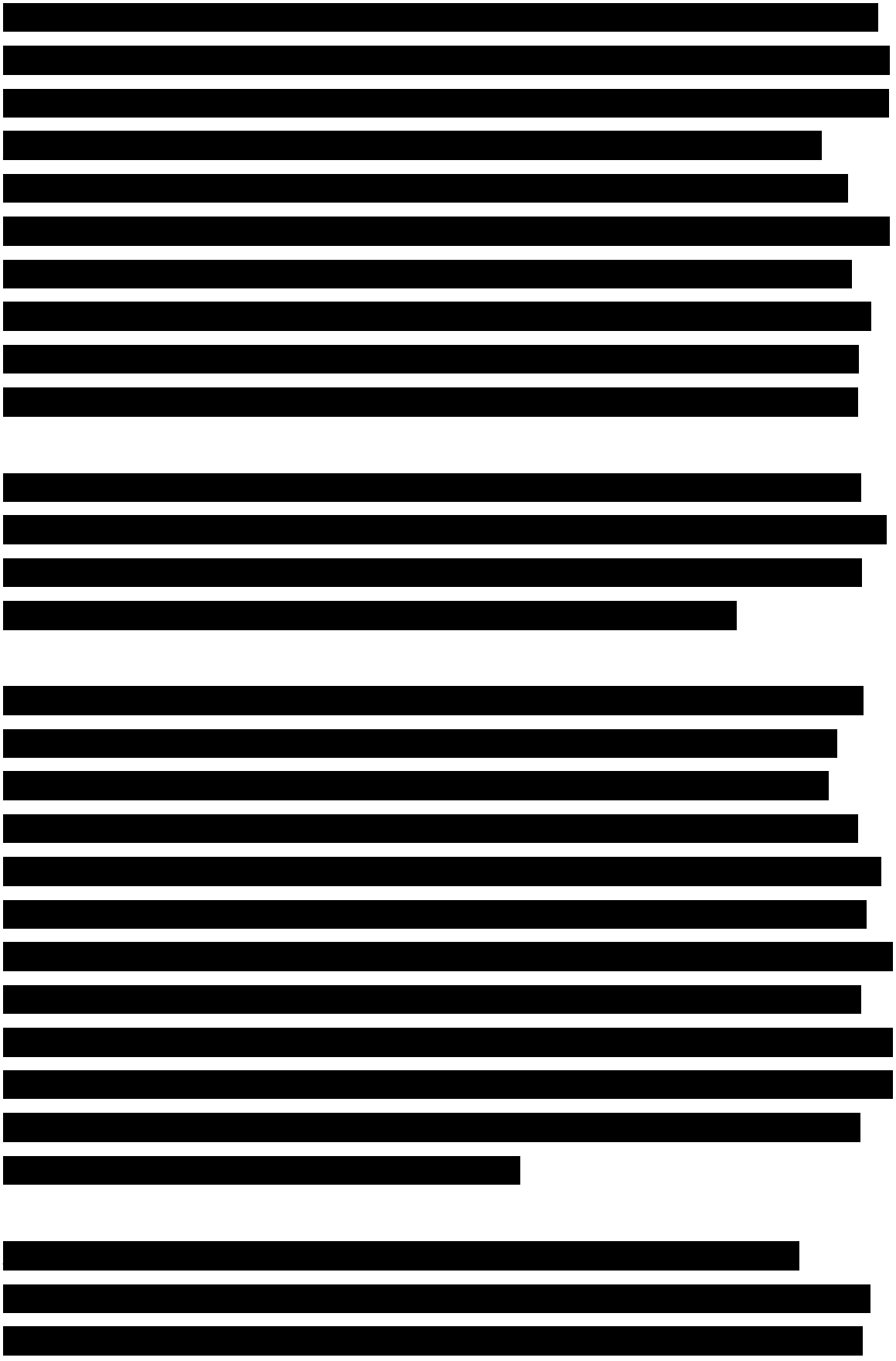
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1,2,3?	R2I pupils 20-21?	e using materials?	d CYP SEMH compared pre R2I?	for SEMH needs better matched to CYP need ?	CYP views increased ?	understan ding family needs?	embedde d overall in school?	d within existing systems?	teacher engaged in implemen tation?	engaged in implemen tation?	time for SENCo?	to the wider staff?	s of wider staff?	positively viewed by wider staff?	profession als (e.g. BST, EP) support embeddin g?	helpful are outside profession als?	embed score
Wave 2	More than 10	4	4	4	4	3	4	4	4	4	3	4	4	3	4	4	57
Wave 3	More than 10	3	4	3	4	3	4	4	4	4	4	4	4	4	4	4	57
Wave 1	1-5	4	4	4	3	4	3	4	4	3	4	4	3	4	4	4	56
Wave 2	More than 10	4	4	3	3	3	4	4	4	3	3	3	4	3	4	4	53
Don't know	6-10	4	4	3	3	4	3	4	4	3	3	3	4	3	3	4	52
Don't know	6-10	3	4	3	4	3	3	3	4	4	4	3	4	3	3	4	52
Don't know	1-5	3	3	4	3	3	3	3	4	4	4	3	3	4	4	4	52
Wave 1	1-5	4	2	3	3	2	3	3	4	4	4	3	4	3	4	4	50
Wave 2	More than 10	3	4	4	4	3	3	3	3	3	3	3	3	3	4	4	50
Wave 1	More than 10	4	3	3	3	3	3	3	4	4	3	3	3	3	3	4	49
Wave 2	1-5	3	3	3	4	3	3	3	4	3	3	3	3	3	3	4	48
Wave 2	6-10	3	3	2	4	2	3	3	4	4	3	3	4	3	3	3	47
Don't know	1-5	3	2	3	3	3	3	3	4	4	3	3	3	3	3	4	47
Wave 1	1-5	3	3	3	4	2	3	3	2	2	4	3	4	3	4	4	47
Wave 2	1-5	4	3	3	3	3	3	3	4	3	3	1	3	3	3	4	46
Don't know	1-5	3	3	3	3	2	3	3	4	4	3	3	2	3	3	4	46
Wave 2	1-5	3	2	3	3	3	3	3	4	4	3	3	3	0	3	4	44
Wave 2	6-10	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	44
Don't know	6-10	3	4	4	4	3	3	3	4	3	3	0	3	0	3	4	44
Wave 1	1-5	3	4	3	3	3	3	3	3	3	3	3	3	3	0	3	43
Wave 2	6-10	3	3	3	3	2	3	3	3	2	4	3	3	0	3	4	42
Wave 1	1-5	3	2	3	2	2	3	3	3	3	1	3	3	3	3	4	41
Wave 2	1-5	3	3	3	4	3	1	2	3	3	2	3	3	0	3	4	40
Wave 2	1-5	2	2	0	3	3	2	3	2	3	4	2	3	3	4	4	40
Don't know	0	3	3	3	2	3	2	3	3	4	2	3	3	3	2	0	39
Wave 2	1-5	3	3	0	3	2	3	2	3	3	0	4	3	3	3	3	38
Don't know	6-10	2	3	3	2	2	3	3	2	3	3	3	3	3	3	0	38
Don't know	0	3	3	0	3	3	3	3	3	3	3	1	3	0	3	3	37
Don't know	More than 10	3	3	3	3	3	3	3	0	2	2	3	2	3	2	0	35
Wave 2	1-5	3	1	2	3	1	3	2	4	3	3	1	2	0	3	4	35

Figure 1. Example heat map

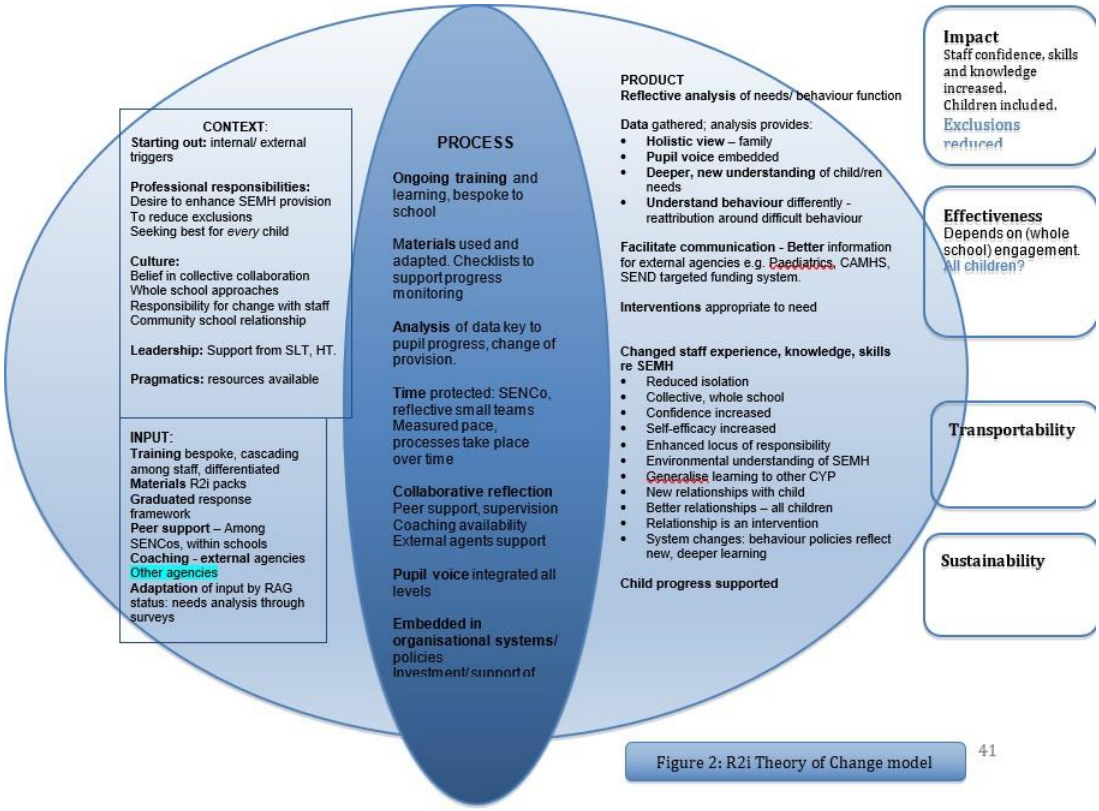


Figure 2: R2i Theory of Change model

Thesis Part III. Mechanisms of change: optimising universal and targeted learning environments

Paper 6 Raising educational achievement: What can Instructional Psychology contribute?

Gulliford, A. and Miller, A. (In press.) Raising educational achievement: What can Instructional Psychology Contribute? In (Eds.) Cline, T., Gulliford, A., and Birch, S. Educational Psychology. London. Routledge.

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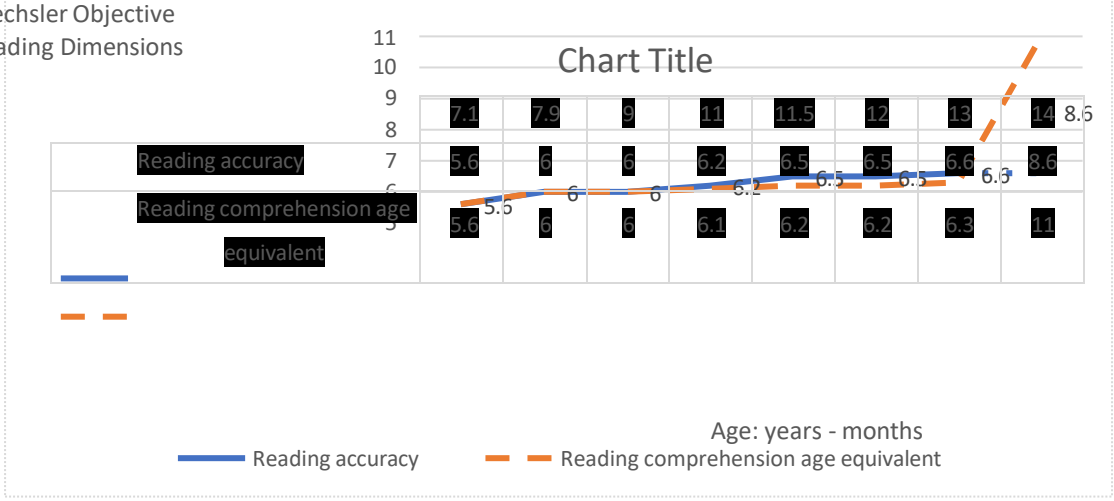
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Reading accuracy and comprehension age equivalent years:
Wechsler Objective Reading Dimensions



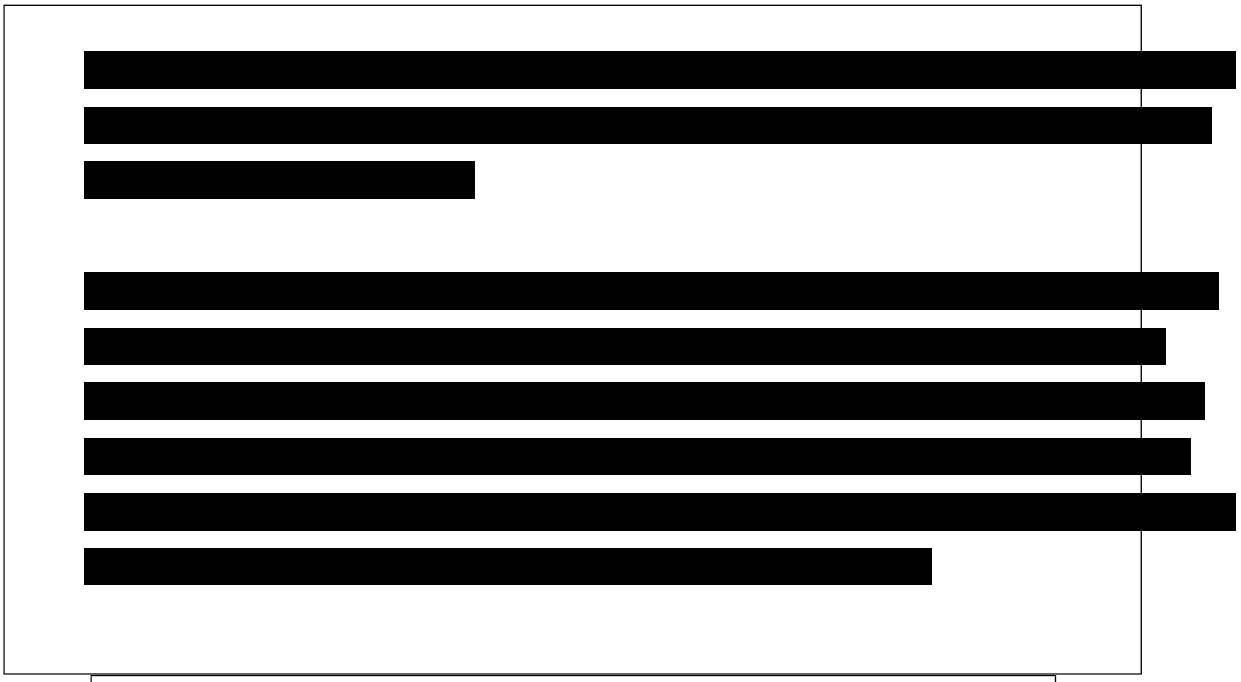
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Behavioural objectives continued, ending with ‘Task 10: Recite the 5 vowels’. The tasks were sequenced to include writing tasks as well as reciting

Michael’s teachers were encouraged to use teaching methods they found helpful in enabling Michael to achieve the objective. It was also explained to Michael that, although some of the early objectives would feel very elementary, they were part of a



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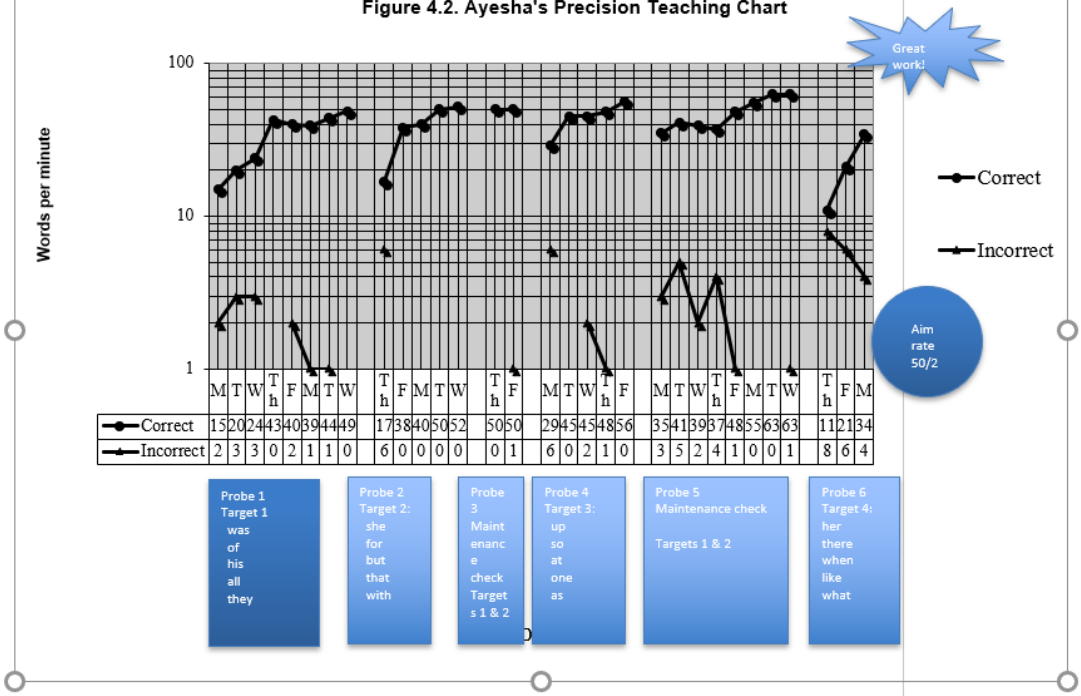
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Figure 4.2. Ayesha's Precision Teaching Chart



	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F	M
Correct	15	20	24	43	40	39	44	49	17	38	40	50	52	50	50	29	45	45	48	56	35	41	39	37	48	55	63	63	11	21	34
Incorrect	2	3	3	0	2	1	1	0	6	0	0	0	0	0	1	6	0	2	1	0	3	5	2	4	1	0	0	1	8	6	4

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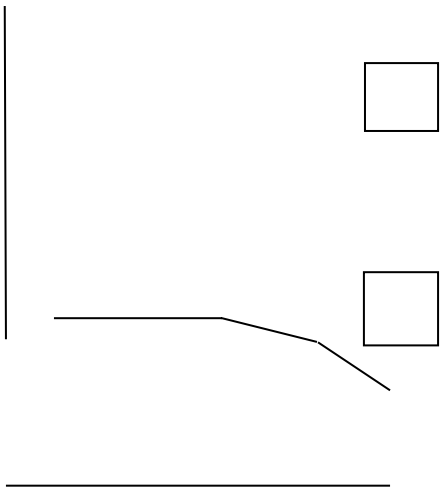
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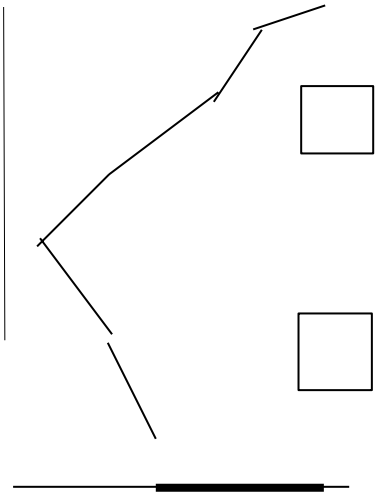
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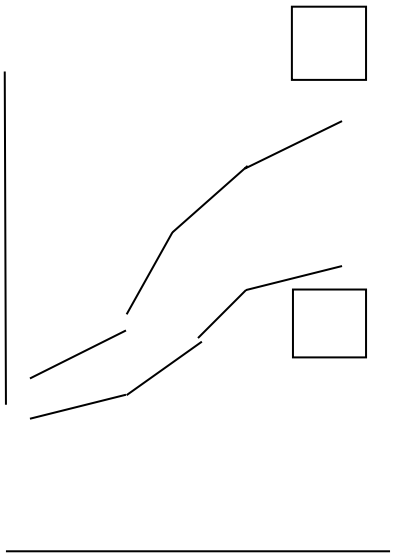
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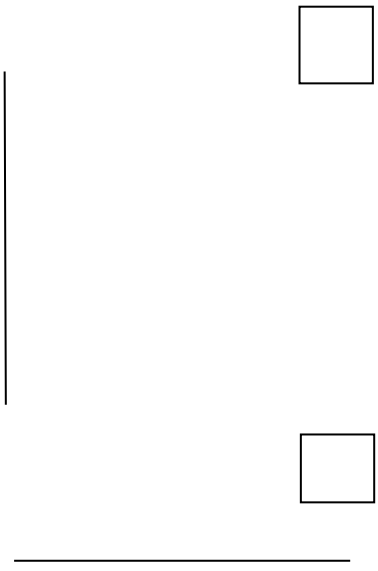
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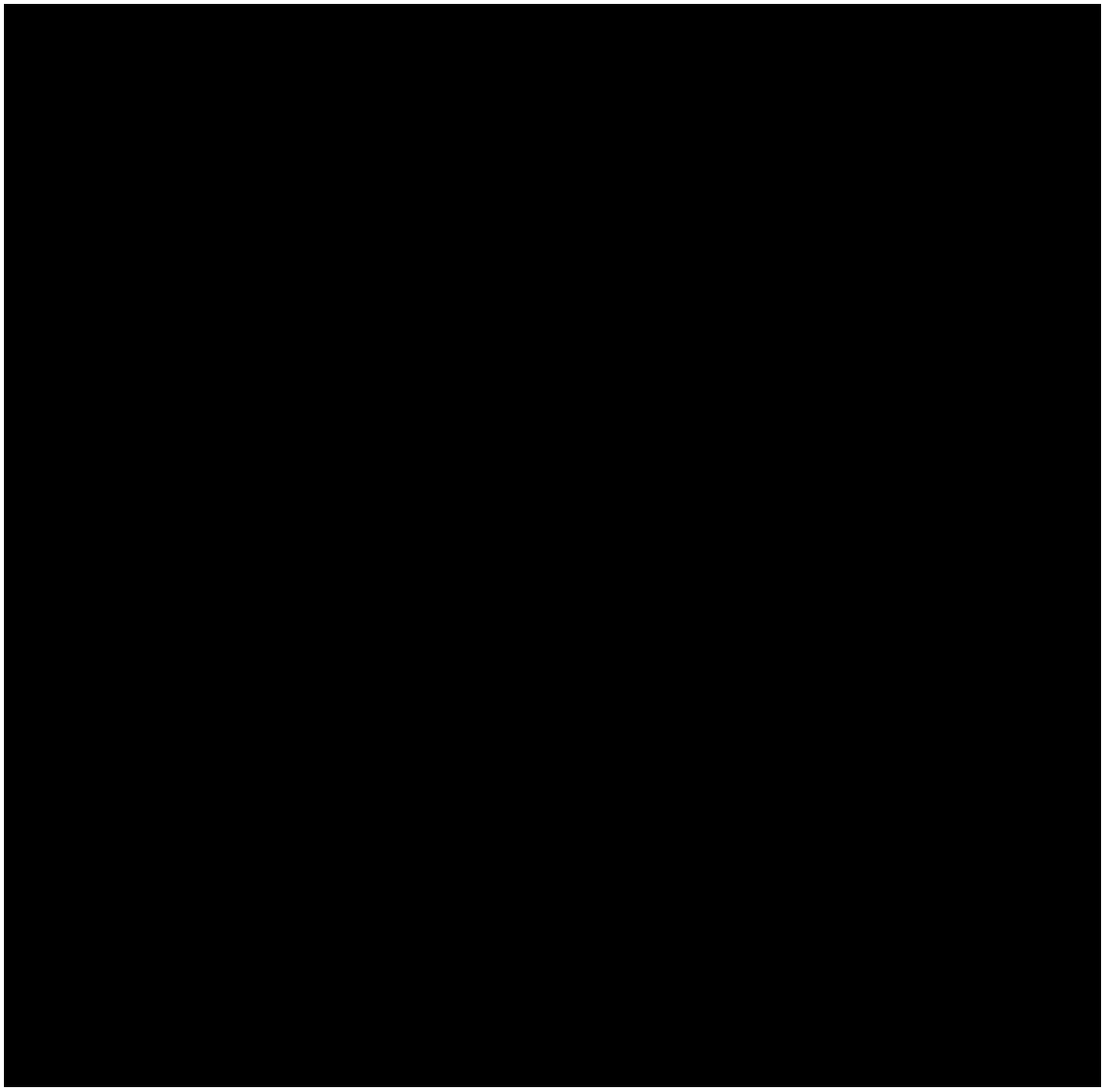
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Paper 7 A qualitative investigation of implementation of app-based maths instruction for young learners.

Gulliford, A., Walton, J., Allison, K., & Pitchford, N. (2021). A Qualitative Investigation of Implementation of App-Based Maths Instruction for Young Learners. *Educational & Child Psychology*, *38*(3), 90-108.

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Table 1191

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Table 1192

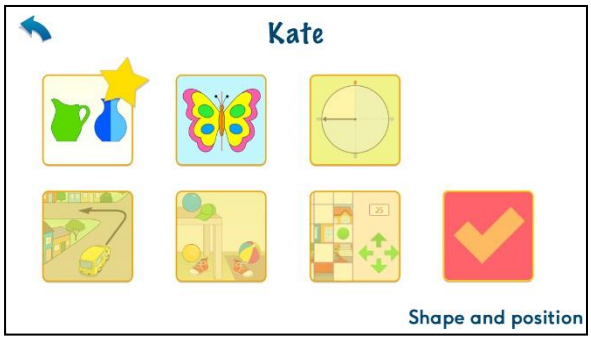
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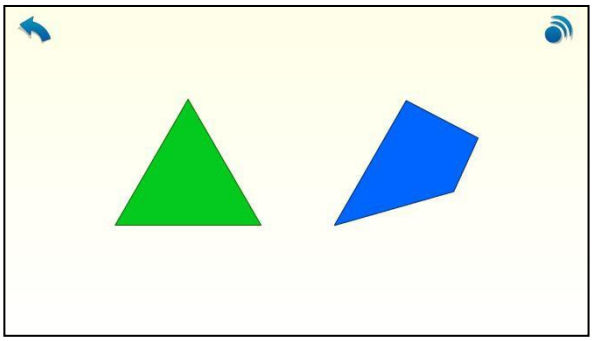
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Table 1193





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Table 1194

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Table 1195

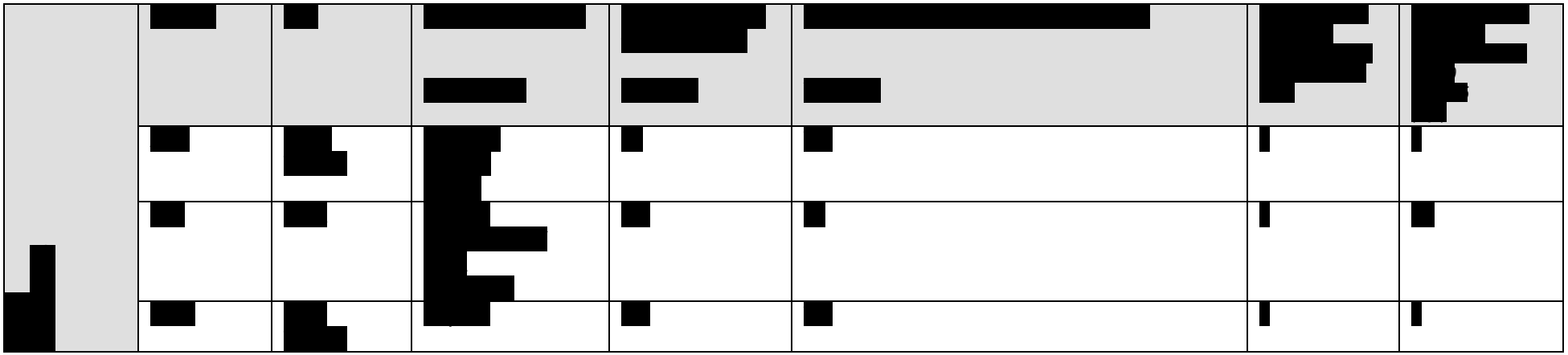


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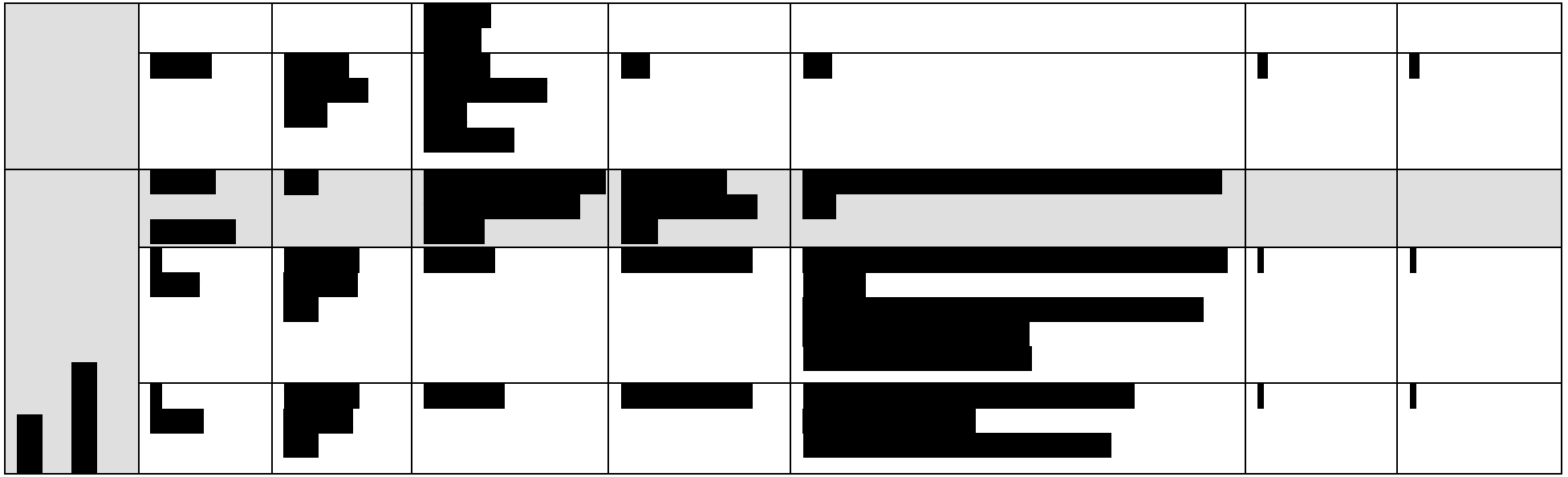


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Table 1198

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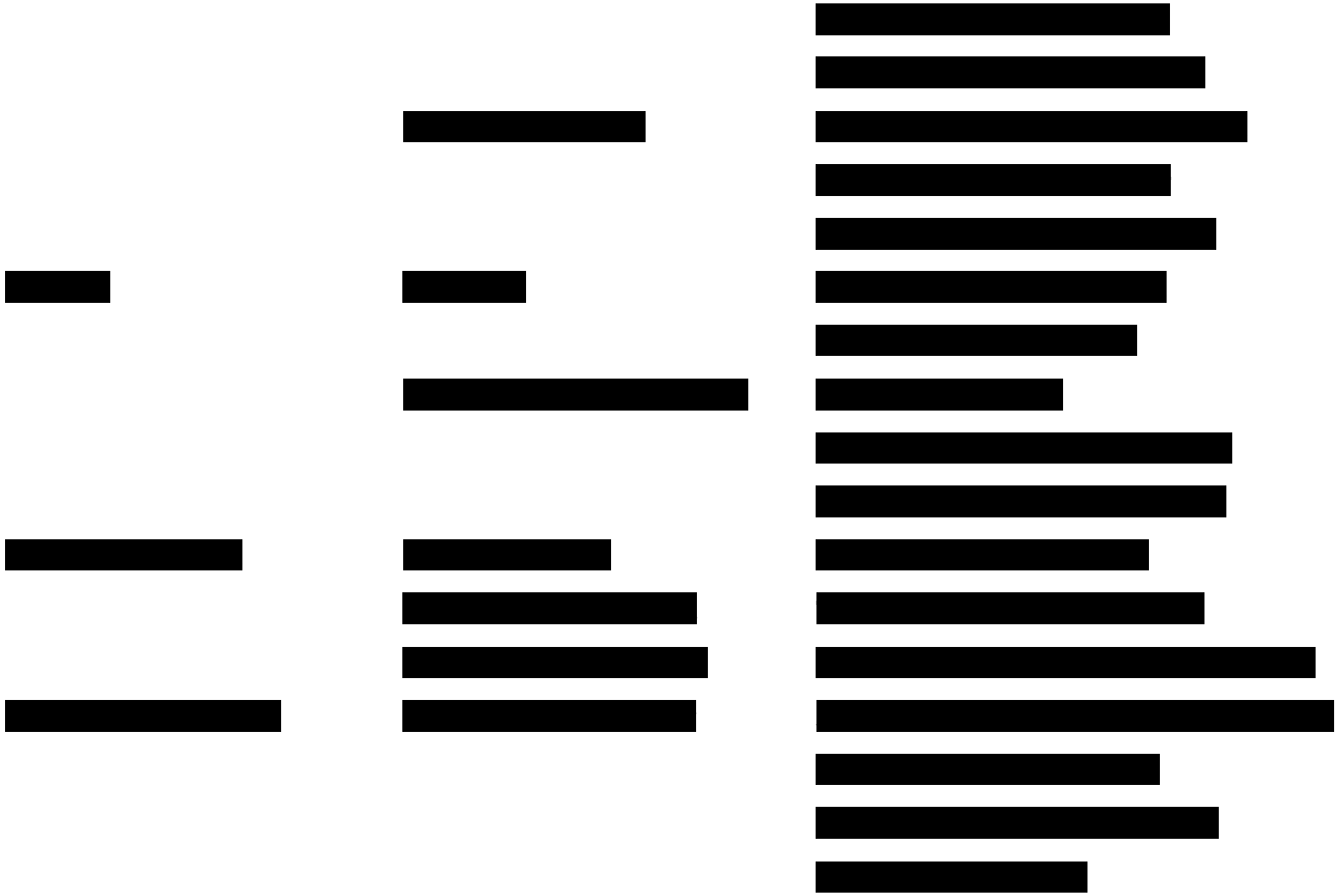
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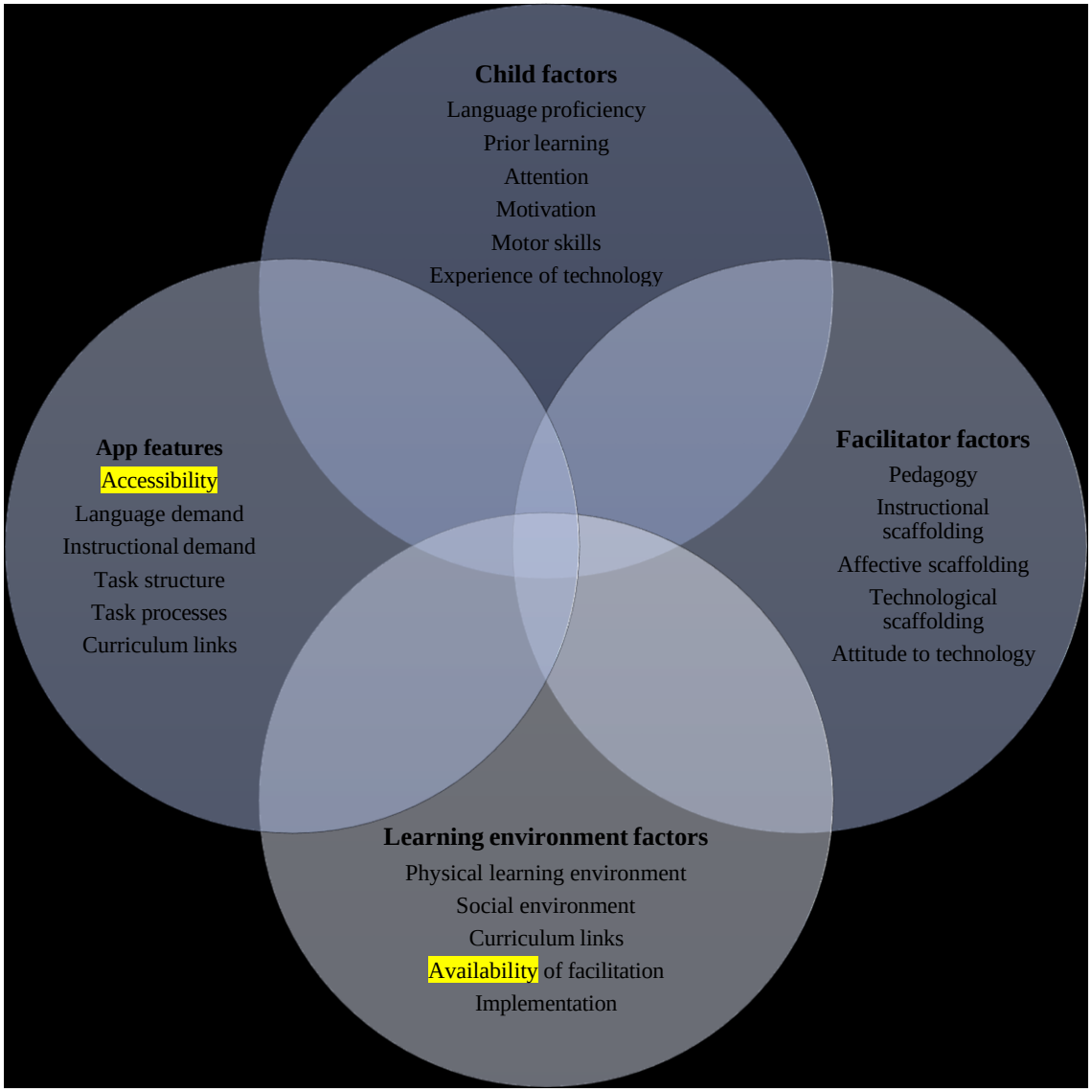
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Child factors
Language proficiency
Prior learning
Attention
Motivation
Motor skills
Experience of technology
App features
Accessibility
Language demand
Instructional demand
Task structure
Task processes
Curriculum links
Facilitator factors
Pedagogy
Instructional scaffolding
Affective scaffolding
Technological scaffolding
Attitude to technology
Learning environment factors
Physical learning environment
Social environment
Curriculum links
Availability of facilitation
Implementation

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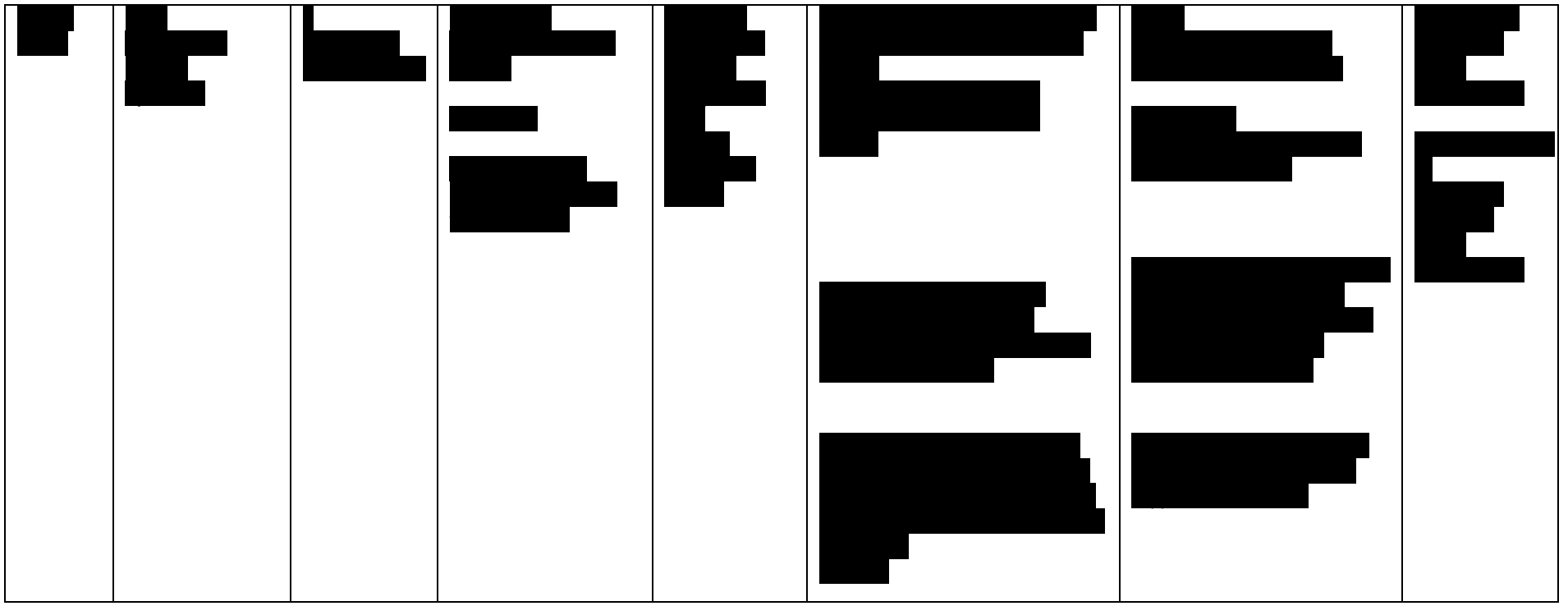
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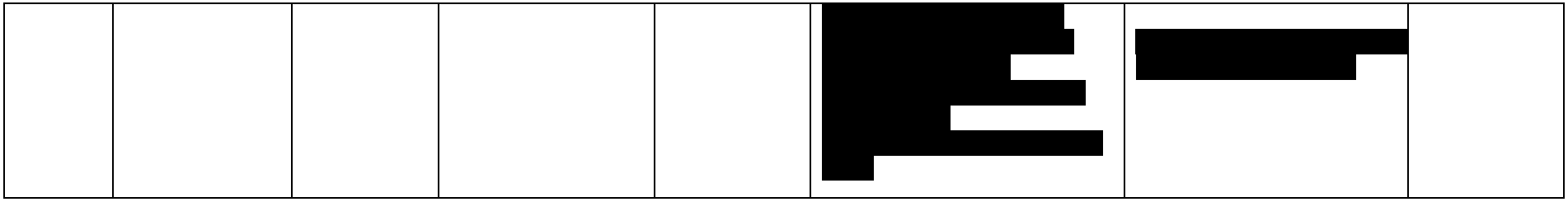
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Paper 8 Using interactive apps to support learning of elementary maths in multilingual contexts: Implications for practice and policy development in a digital age

Using interactive apps to support learning of elementary maths in multilingual contexts: Implications for practice and policy development in a digital age

Nicola J Pitchford[1], Anthea Gulliford[1], Laura A Outhwaite[1,2], Lanaya J Davitt[1], Evalisa Katabua[3] & Anthony A. Essien[3]

[1] School of Psychology, University of Nottingham, United Kingdom

[2] Institute of Education, University College London, United Kingdom

[3] School of Education, University of the Witwatersrand, South Africa

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1 Introduction

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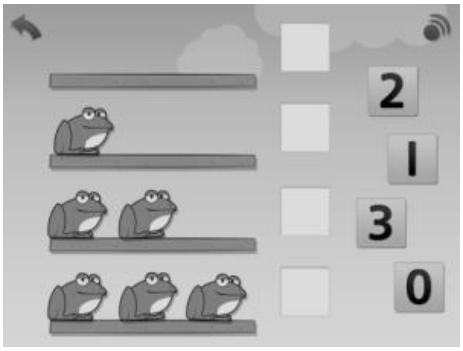
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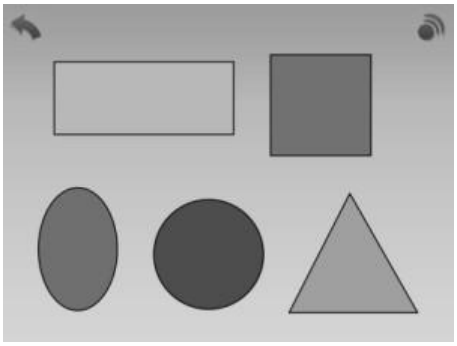
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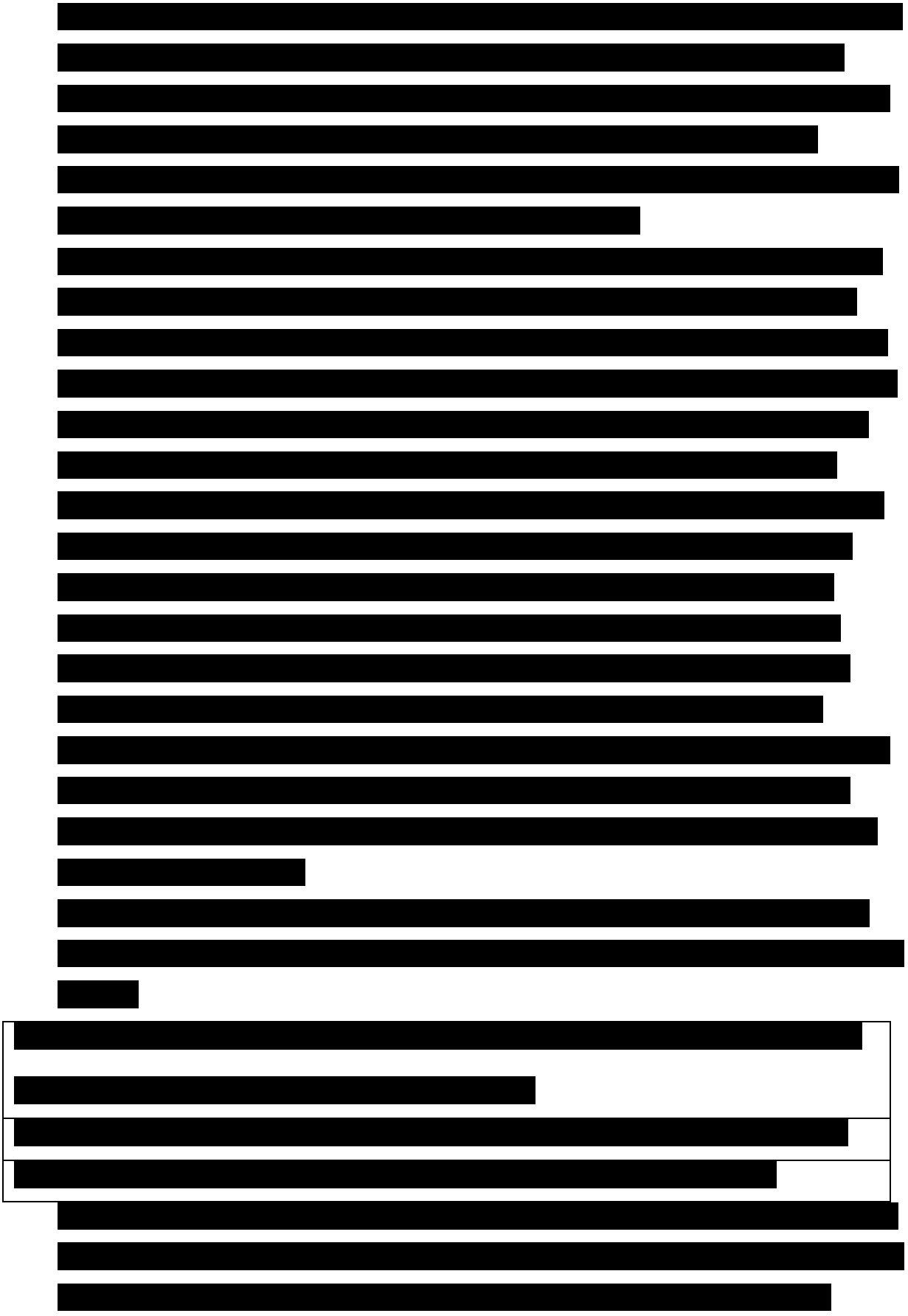
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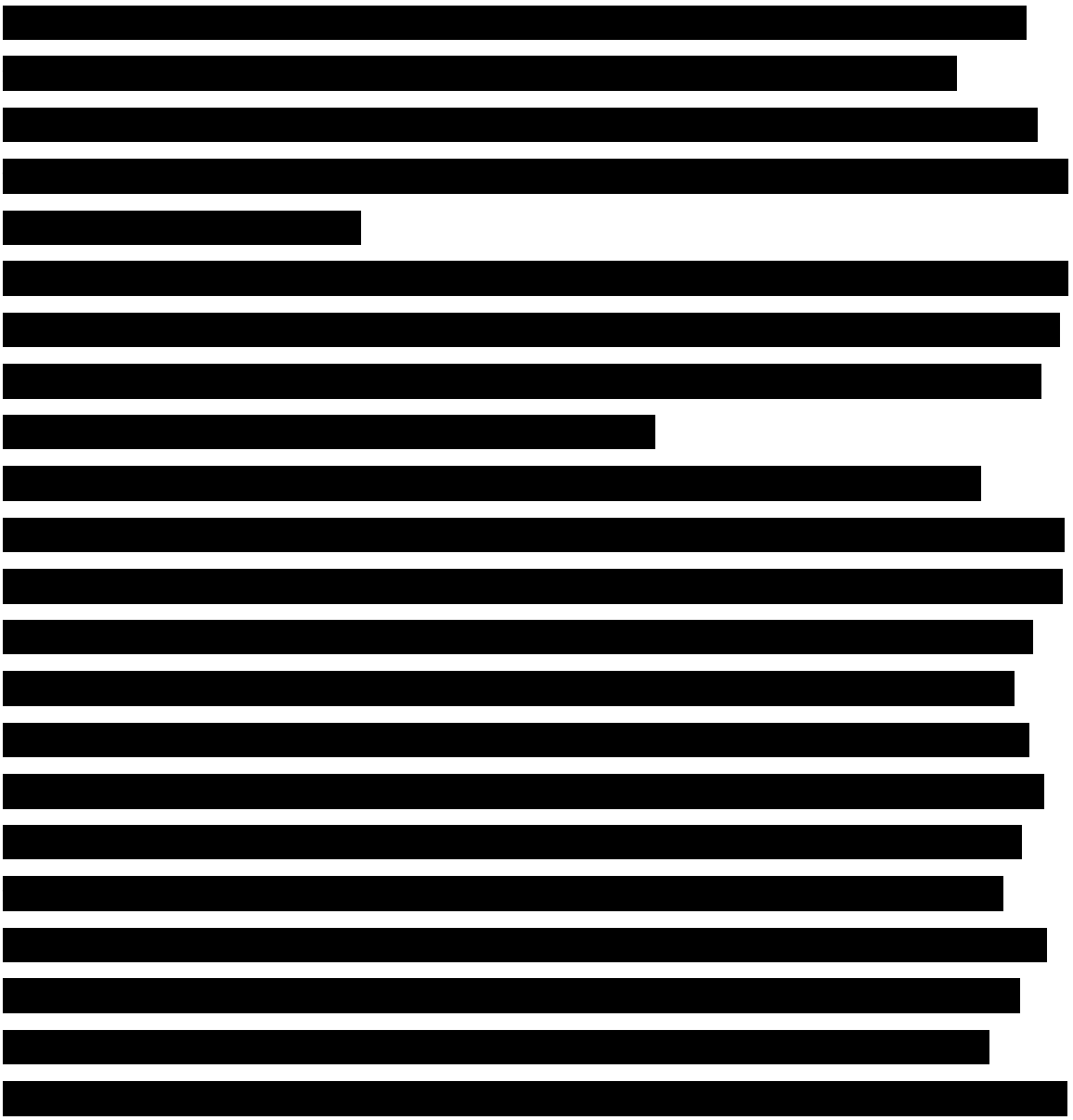


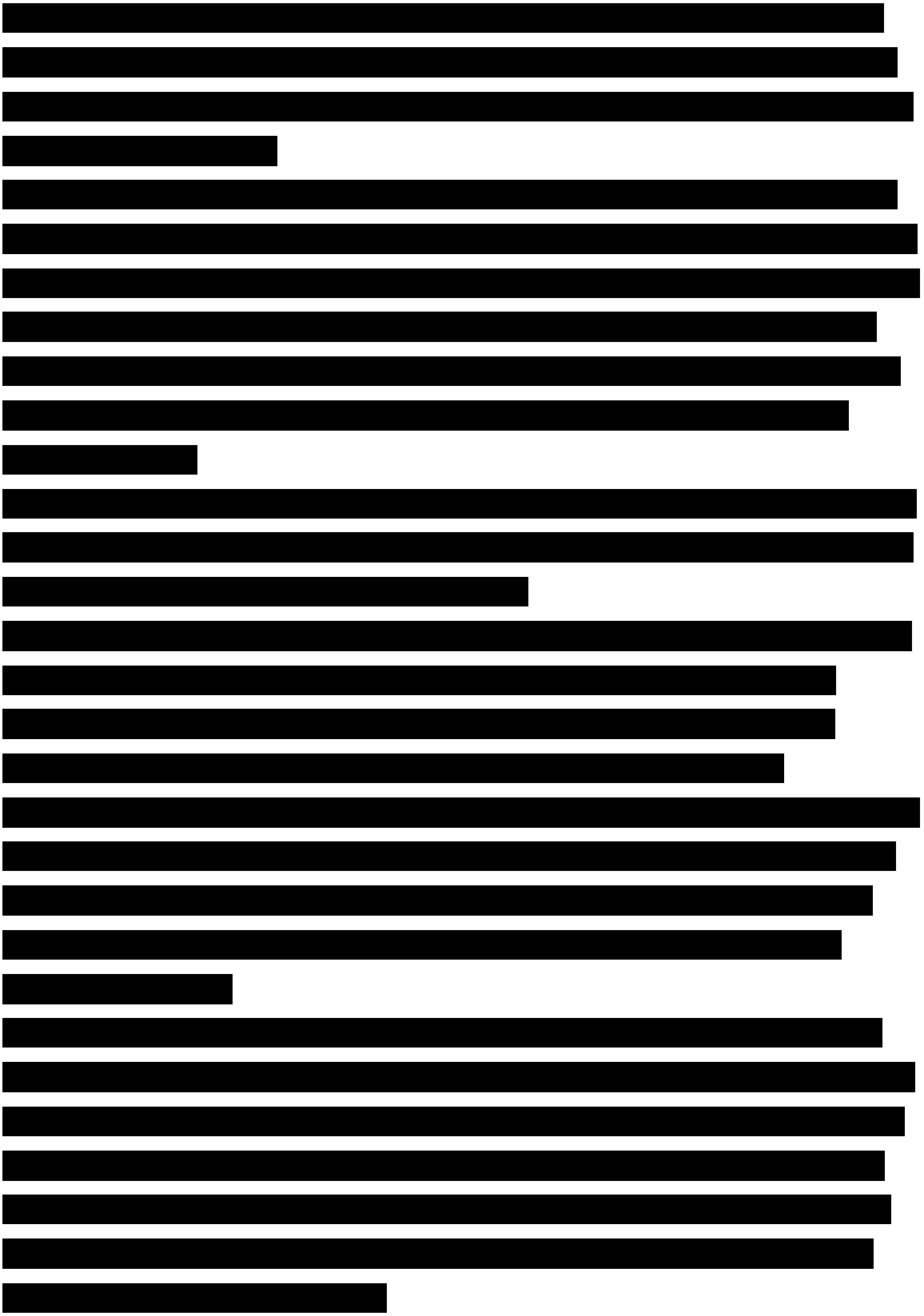
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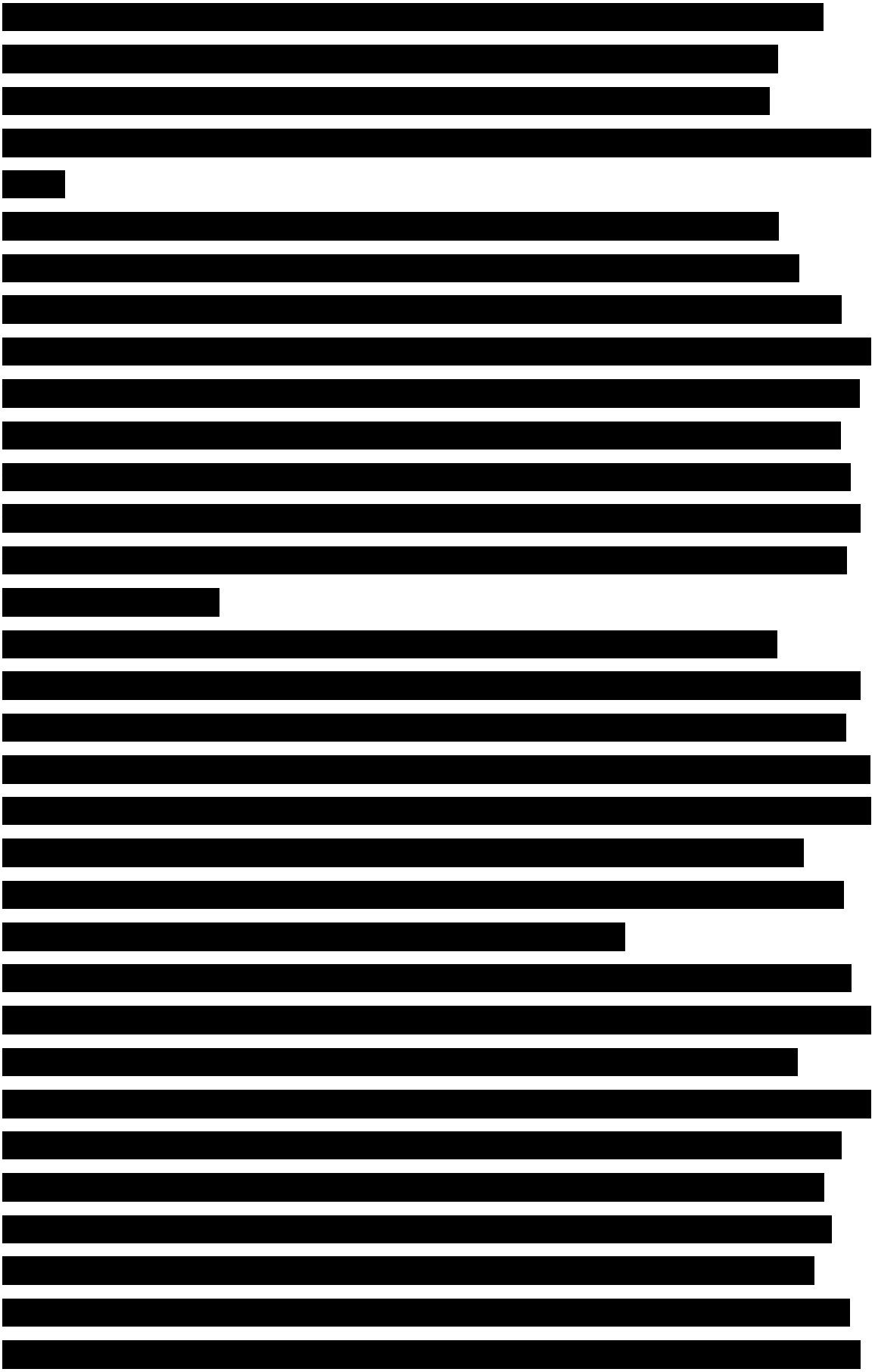
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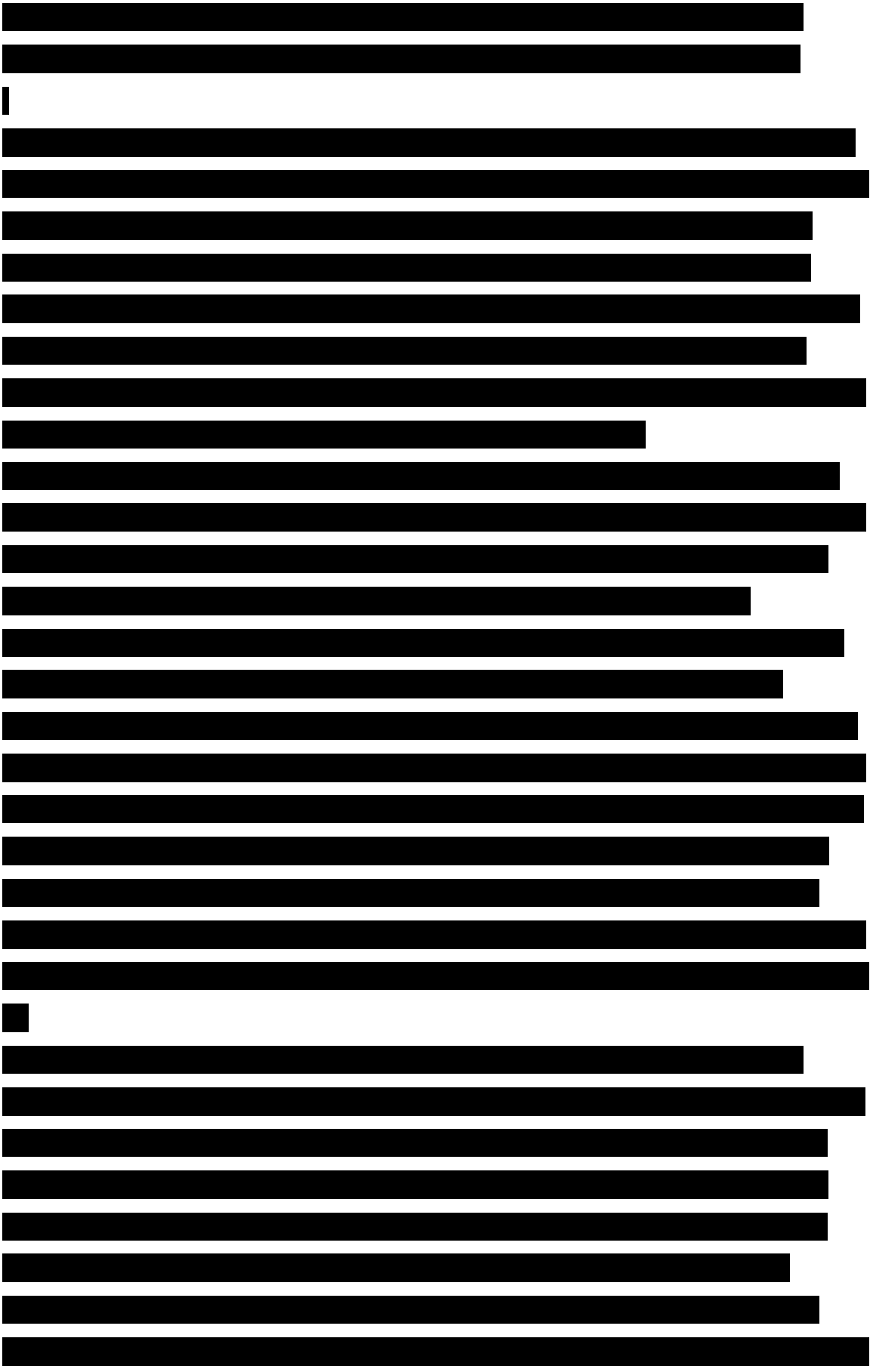
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5.3 Brazilian study

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6 Implications for future research

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6 Implications for app-developers

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7 Implications for practitioners

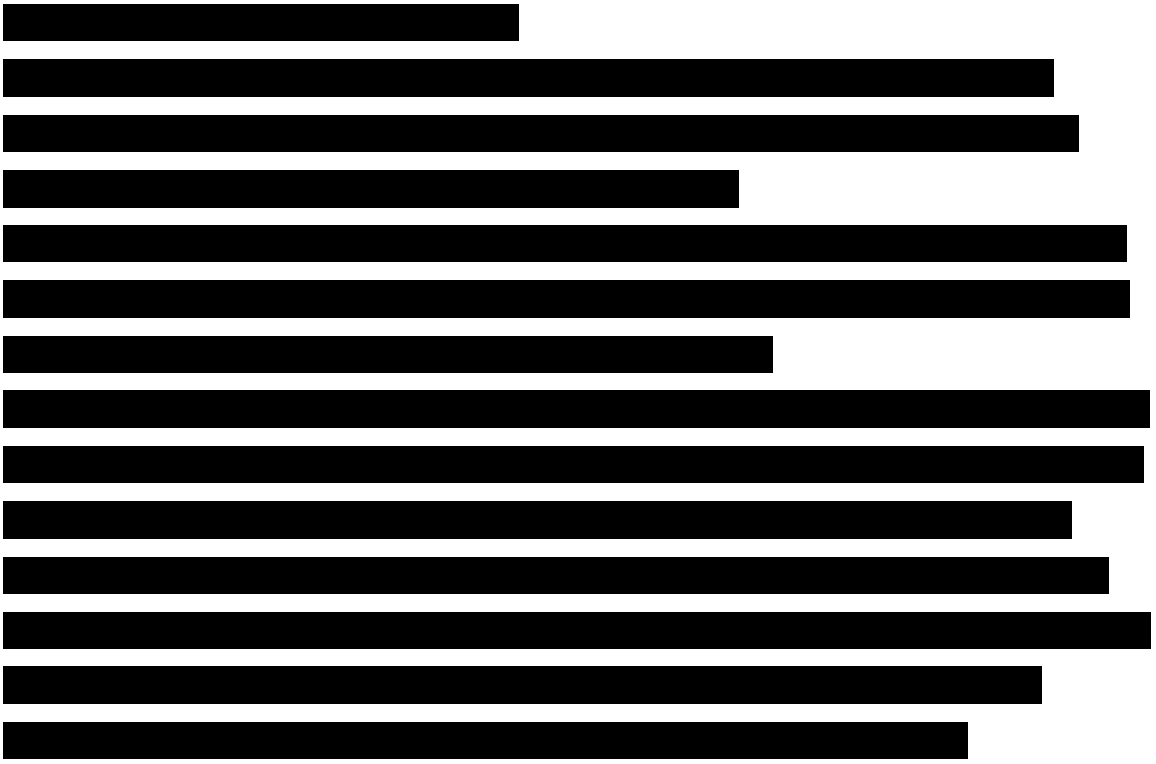
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8 Implications for education policy

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Statement about Joint Authorship

Paper 1 Gulliford, A. (2015) Evidence Based-Practice in Educational Psychology: The Nature of the Evidence. In (Eds.) Cline, T., Gulliford, A., and Birch, S. Educational psychology. (2nd Edition). Topics in Applied Psychology. (pp. 31-56). London. Routledge.

Sole author

Paper 2. Gulliford, A. (1999). Life as an educational psychologist. *Educational Psychology in Practice, 14(4), 237-239.*

Sole author

Paper 3 Gulliford A. and Miller, A. (In press - a) Managing Classroom Behaviour: Perspectives from Psychology. In (Eds.) Cline, T., Gulliford, A., and Birch, S. Educational psychology. (3rd Edition). Topics in Applied Psychology. London: Routledge.

Lead author. Agreement from co-author that this work principally developed, led, and fully managed by lead author.

Paper 4 Turner, J. & Gulliford A. (2020) Examining the Circles of Adults process for Children Looked After: the role of self-efficacy and empathy in staff behaviour change. *Educational Psychology in Practice,* 36:1, 32-51.

Second author: supervised the research, fully drafted the paper for publication.

Paper 5 Gulliford, A. (in preparation). A Theory of Change For Meeting Social,

Emotional and Mental Health Needs in Schools: The Routes to Inclusion Programme Evaluation.

Sole author

Paper 6 Gulliford, A., and Miller, A. (In press - b). Raising educational achievement: what can instructional psychology contribute? In Cline, T., Gulliford, A. and Birch, S., (Eds) Educational Psychology. (3rd Edition). Topics in Applied Psychology. London: Routledge.

Lead author. Agreement from co-author that this was work led, and fully managed by lead author.

Paper 7 Gulliford, A., Walton, J., Allison, K., & Pitchford, N.J.P. (2021) A qualitative investigation of implementation of app-based maths instruction for young learners. *Educational and Child Psychology*, 38, 3, 90-108.

Lead author. Supervisor to both arms of the primary studies generating this secondary data analysis. Agreement from co-authors to publish.

Paper 8 Pitchford, N. J., Gulliford, A., Outhwaite, L.A. Davitt, L. J., Katabua E., & Essien,
A.A. (2021) Using interactive apps to support learning of elementary maths in multilingual contexts: Implications for practice and policy development in a digital age. PP 135-153. In Anthony Essien and Audrey Msimanga (Eds). Policy and Practice in STEM Multilingual Contexts: Multilingual Education Yearbook 2021. Springer. doi.org/10.1007/978-3-030- 72009-4

Second author. Co-supervised two of the three studies reported. Authored the bilingual and multilingual education explanatory framework at the start and close of the paper, positioning the theoretical significance. Agreement from co-authors.

8.1 Appendix 1. Co-Author statements

Professor Nicola Pitchford

From: Nicola Pitchford <Nicola.Pitchf[redacted]il 2022 10:08
To: Anthea Gulliford (Disability, Inclusion and Special Needs)
<a.gulliford@bham.ac.uk> Subject: RE: Consent

Hello Anthea

[redacted]

I think it would be great if you could get your PhD by publication submission. The three papers of ours you list below seem appropriate. The first two you either lead or c[redacted]

[redacted]

[redacted]

I don't know the University regulations for this type of submission but as far as I am concerned I think the three papers listed below that you have selected from our work are

[redacted]

appropriate for your submission

Best of luck with all of this Anthea. It would be fantastic if this comes through. N

Sent from Samsung Mobile on O2

-------- Original message --------

From: Anthea Gulliford <a.gulliford@bham.ac.uk> Date: 25/04/2022 09:02 (GMT+00:00)

To: "Nicola Pitchford (staff)" <lpznjp@exmail.nottingham.ac.uk> Subject: Consent

Good morning Nikki,

As mentioned, I'm writing to see if you would be willing to consent for me to include the following three co-authored papers within my submission for PhD by publication:

1. Gulliford, A., Walton, J., Allison, K., & Pitchford, N.J.P. (2021) A qualitative investigation of implementation of app-based maths instruction for young learners. *Educational and Child Psychology*, 38, 3, 90-108.

Pitchford, N. J., Gulliford, A., Outhwaite, L.A. Davitt, L. J., Katabua E., & Essien, A.A. (2021) Using interactive apps to support learning of elementary maths in multilingual contexts: Implications for practice and policy development in a digital age. PP 135-153. In Anthony Essien and Audrey Msimanga (Eds). Policy and Practice in STEM Multilingual Contexts: Multilingual Education Yearbook 2021. Springer. doi.org/10.1007/978-3-030-72009-4

[redacted]

The thesis contains ten papers overall, and runs to around 95k words. I think you will recall the following about each of these three papers:

I authored this qualitative paper, following secondary data analysis of the work by Jodie and Kate, that you and I co-supervised.

I contributed the bilingual/multilingual education theorizing sections to this chapter – the introduction and discussion – looking at the significance of the data in this light. I was second supervisor to two to the studies reported.

[redacted]

I state in the thesis that the tablet-based learning studies have emanated from your lab, and that I have not directly collected the empirical data, but co-supervised some of the

studies. Do let me know your thoughts on this.

Best wishes

Anthea

Anthea Gulliford
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Dr Laura Ann Outhwaite

From: Outhwaite, Laura <l.outhw[redacted] > Sent: 29 April 2022 09:17
To: Anthea Gulliford (Disability, Inclusion and Special Needs)
<a.gulliford@bham.ac.uk> Subject: RE: Question for you

Hi Anthea

I'm all good thanks- hope you are too, as well as enjoying the new adventure in Birmingham.

Very happy for you to include the listed pa[redacted]

Good luck with the submission!

Best Laura

From: Anthea Gulliford <a.gulliford@bham.ac.uk> Sent: 28 April 2022 18:03

To: Outhwaite, Laura <l.outhwaite@[redacted]> Subject: Question for you

⚠ Caution: External sender

Hi Laura

I hope you're well and thrivi[redacted] still – it would be good to catch up one of these days. I am not sure if you'll have my new email address, so do make a note of this!

I have a question for you – or three in fact. I am planning to submit for PhD by publication and would like to ask if you would be willing to consent for me to include the following co- authored papers:

The bilingual chapter that we co-authored, pointing specifically to the bilingual and multilingual theory we reviewed.

The fine motor skills paper

The CEPEO briefing

A reminder of them here -

Pitchford, N. J., Gulliford, A., Outhwaite, L.A. Davitt, L. J., Katabua E., & Essien, A.A. (2021) Using interactive apps to support learning of elementary maths in multilingual contexts: Implications for practice and policy development in a digital age. PP 135-153. In Anthony Essien and Audrey Msimanga (Eds). Policy and Practice in STEM Multilingual Contexts: Multilingual Education Yearbook 2021. Springer. doi.org/10.1007/978-3-030- 72009-4

[redacted]

[redacted] https://www.ucl.ac.uk/ioe/departments-and-centres/centres/centre-education-policy-and-equalising-opportunities [redacted]

Do let me know if this has your consent. I have discussed with Nikki and am approaching all authors, of course, and specifying my contribution.

Best wishes

Anthea

Anthea Gulliford
Programme Director

To: Anthea Gulliford (Disability, Inclusion and Special Needs) <a.gulliford@bham.ac.uk> Subject: Re: Query

Applied Educational and Child Psychology Doctorate
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Dr Jennifer Turner

From: j[redacted] @[redacted]
Sent: 28 April 2022 19:32

To: Anthea Gulliford (Disability, Inclusion and Special Needs)
<a.gulliford@bham.ac.uk> Subject: Re: Query

Hi Anthea,

It would be my absolute pleasure - more than happy for you to include our paper. Funnily enough I was chatting to someone yesterday who's partner is in the process of submitting their PhD by publication too. Good luck with it, it'll be very well deserved!
Best wishes, Jen

From: Anthea Gulliford <a.gulliford@bham.ac.uk> Sent: 28 April 2022 18:20
To: jennie@k < > Subject: Query

Hi Jennie,
Thanks for your reply earlier this week. I have fingers crossed for you! My query is this – although it may not be as exciting as you imagined!:
I am planning to submit for PhD by publication and would like to ask if you would be willing to consent for me to include our co-authored paper, Turner & Gulliford 2020.

I recognise that this may need some clarification. I am not claiming the empirical study as mine, and of course this has already been examined as your doctoral work. However, since we fully re-wrote the interpretation of the data, and the framing of the paper (I think it was rejected before I joined you on this) I would love to be able to reference the discussions in the paper on mechanisms of change among staff.

Do have a think and let me know.

Best wishes

Anthea

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B15 2TT
E: a.gulliford@bham.ac.uk

To: Anthea Gulliford (Disability, Inclusion and Special Needs)
<a.gulliford@bham.ac.uk> Subject: Re: Query

T: 0121 414 4880

Evalisa Katabua

From: evalisakata[redacted]

Sent: 28 April 2022 20:46

To: Anthea Gulliford (Disability, Inclusion and Special Needs)

<a.gulliford@bham.ac.uk> Subject: Re: Query

Dear Anthea,

So wonderful to hear from you. I am well, and hope the same on your side too. You have my consent, no worries. All the best with Phd.

Kind regards Evalisa Katabua

Sent from my iPhone

On 28 Apr 2022, at 18:52, Anthea Gulliford <a.gulliford@bham.ac.uk> wrote:

Dear Evalisa,

I hope this finds you well – it is some while since we worked together on the paper! I have a query I would like to ask you.

I am planning to submit for PhD by publication and would like to ask if you would be willing to consent for me to include the chapter that we co-authored, pointing specifically to the bilingual and multilingual theory we reviewed in this:

Pitchford, N. J., Gulliford, A., Outhwaite, L.A. Davitt, L. J., Katabua E., & Essien, A.A. (2021) Using interactive apps to support learning of elementary maths in multilingual contexts: Implications for practice and policy development in a digital age. PP 135-153. In Anthony Essien and Audrey Msimanga (Eds). Policy and Practice in STEM Multilingual Contexts: Multilingual Education Yearbook 2021. Springer. doi.org/10.1007/978-3-030-72009-4

I have now moved to the University of Birmingham and so my email address has now changed.

Best wishes

Anthea

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Dr Anthony Essien

From: Anthony.Essien@wits.ac.za <Anthony.E[redacted]8 April 2022 20:41

To: Anthea Gulliford (Disability, Inclusion and Special Needs)

<a.gulliford@bham.ac.uk> Subject: Re: Query

Dear Anthea

So nice to hear from you. Hope 2022 is treating you well I am well, thanks.

Given that you are a coauthor of the paper, my take is that it is within your right to submit it Thanks

Tony

Anthony A. Essien, Ph.D

Deputy Head of School: Research

Wits School of Education

"Etre libre, c'est faire de soi-même l'esclave du bien"

2021 Publications

1. Essien, A. (2021). Understanding the choice and use of examples in mathematics teacher education multilingual classrooms. *ZDM Mathematics Education. 53(2).* https://doi.org/10.1007/s11858-021-01241-6
2. Multilingual Education Yearbook 2021: Policy and Practice in STEM multilingual contexts. https://www.springer.com/gp/book/9783030720087

From: Anthea Gulliford <a.gulliford@bham.ac.uk> Sent: 28 April 2022 18:49

To: Anthony Essien <Anthony.Essien@wits.ac.za> Subject: Query

Dear Tony,

I hope this finds you well. I have a query I would like to ask you.

I am planning to submit for PhD by publication and would like to ask if you would be willing to consent for me to include the chapter that we co-authored, pointing specifically to the bilingual and multilingual theory we reviewed in this:

Pitchford, N. J., Gulliford, A., Outhwaite, L.A. Davitt, L. J., Katabua E., & Essien, A.A. (2021) Using interactive apps to support learning of elementary maths in multilingual contexts: Implications for practice and policy development in a digital age. PP 135-153. In

Anthony Essien and Audrey Msimanga (Eds). Policy and Practice in STEM Multilingual Contexts: Multilingual Education Yearbook 2021. Springer. doi.org/10.1007/978-3-030-72009-4

I have now moved to the University of Birmingham and so my email address has now changed.

Best wishes

Anthea

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