Bridging the Support Gap with Generative AI Enabled Learner Profiles for Adolescents with Autism

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Abstracts

Current autism profiling frameworks are grounded in the medical model, persistently failing to translate diagnosis into effective classroom support. While the neurodiversity movement advocates for learner-led, integrated profiling, existing approaches remain clinician-driven and adult-authored. This paper reports Phase 1 findings from a two-phase study currently underway in Southern California. Across 111 responses in five stakeholder datasets, adolescents with autism and their caregivers are not merely open to generative AI-assisted profiling but actively requesting it, most emphatically among communities currently most poorly served. Phase 2 pilots a chatbot-based profiling system comparing large and small language model performance in generating learner-led, multi-domain profiles.

1. Introduction

Educational planning for learners with autism is traditionally based in clinics, linear, and led by professionals and educators (Adako et al., 2024; Papadopoulos, 2024; Pierres et al., 2024). Following initial screening, clinical profiling is used to observe a child's behaviour and communication in the classroom and consult the child's caregivers on strengths and needs (Chen et al., 2023). Findings are used to create an official educational document listing the child's strengths, needs, and goals for remediation, called an IEP (individualised educational program/plan) in the US and an EHCP (educational, health, and care plan) in the UK (Koßmann, 2022; Wright et al., 2021). This is a medical-model aligned framework, where autism is a disability to be compensated for by trying to reduce students' supposed "autistic traits" (Hannant, 2024). The traditional model has struggled to translate accurate diagnoses to effective teaching practices, described by researchers as a "support gap" (Ducarre, 2024; Hannant, 2024; Van Den Plas et al., 2024; Anderson-Chavarria, 2022). Critics of the current model desire radical change because neurodivergent students receive less or worse support than their neurotypical peers (Sidjaja, 2024; Jonkman et al., 2023; Kelly et al., 2019).

The neurodiversity movement alternatively posits that autism is one facet of a far larger spectrum of cognitive functioning (Hunt & Procyshyn, 2024; Megari et al., 2024), advocating for holistic, learner-led, self-determined, and inclusive support (Ducarre, 2024; Van Den Plas et al., 2024; Anderson-Chavarria, 2022). Their highlighting of the support gap has led to increased interest in learner profiles (Jones et al., 2023; Astle et al., 2022; Fletcher-Watson, 2022), unofficial education-

al documents containing key background information about the child that inform IEPs and EHCPs, enable classroom support, and provide learning targets and interventions (Tlili et al., 2022; Zajic et al., 2019; Vizard, 2009). These documents operate alongside, and aren't alternatives to, formal diagnoses/plans, offering educators organised, learner-specific analysis, understanding, and context (Herrero-Martin et al., 2024; Petersson-Bloom & Holmqvist, 2022).

Despite this promise, even "neurodiversity-aligned" learner profiles retain key aspects of the medical model, generally being driven by clinicians/institutions and authored by adults, with insufficient emphasis on self-determination (McLennan et al., 2025; Cook, 2024; Ducarre, 2024; Hasson et al., 2024; Herrero-Martin et al., 2024; Van Den Plas et al., 2024; Anderson-Chavarria, 2022; Dwyer, 2022; Green et al., 2022). Both models' approach remains outside-in, not learner-led.

A corresponding research gap reflects a lack of certainty on how the shift toward implementing integrated learner profiling will happen in practice (Cook, 2024; Schuck et al., 2021). One promising direction is generative AI (GAI), which several researchers have identified as a possible tool for streamlining profiling work (Adako et al., 2024; Pierres et al., 2024; Bahroun et al., 2023; Holmes & Porayska-Pomsta, 2023; Niemi et al., 2023).

However, the current literature remains limited to partial solutions and clinician-driven diagnostic automation (Adako et al., 2024a; Herrero-Martin et al., 2024; Li et al., 2024). Most relevant research takes a clinician-driven, not learner-led approach (Herrero-Martin et al., 2024; Horgan et al., 2022; Stack et al., 2021; Dole et al., 2016), few studies have surveyed key stakeholder groups to study GAI chatbot usage or used current technology (Atturu et al., 2025; Giannakos et al., 2024; Herrero-Martin et al., 2024; Li et al., 2024; Erden et al., 2020), and when learner inputs have been democratised, authority might have only transitioned from clinician to caregiver, not necessarily the learner (Herrero-Martin et al., 2024; Papadopoulos, 2024; Schuck et al., 2021). The two-phase methodology below directly addresses this gap, testing whether GAI can support genuinely learner-led, integrated profiling for adolescents with autism at scale. It does this by having AI become the medium of engagement for stakeholders, rather than another analyst of learner behaviour.

2. Methodology

My methodology has two phases. Phase 1 collected survey data examining stakeholder attitudes toward the current system of autism support, AI tools, and key cultural context dynamics. Phase 2 develops and pilot-tests a proof-of-concept natural language chatbot that conducts profiling interviews with learners and caregivers through a messaging platform of their choice, following a structured script like a practitioner without clinical gatekeeping. Phase 1 comprised a six-month online survey study with 111 responses in five stakeholder groups (English-speaking professionals and both English and Spanish-speaking caregivers and adolescents). Learners had either a formally documented/self-reported autism diagnosis without intellectual disability (IQ > 70), completing an online survey independently/with minimal assistance. Educators/professionals had at least three years of experience working with learners with autism and were familiar with educational profiles. Separate surveys for each group were developed and deployed, with primarily Likert scale questions (examining views on current autism support methods, learner autonomy, GAI technology, technological comfort, openness to AI-generated educational profiles, and contextual acceptability) and two open-ended questions per survey. A summary table of key

results from Phase 1, derived from a full integrated analysis of survey responses, is provided (see Table 1 below). 80–90% of adolescents from Black/African/Caribbean backgrounds were dissatisfied with their support compared to their White peers, but this does not mean that they think AI could be less helpful. In terms of professional contact, the autism diagnosis & care systems are not sensitive enough to cultural and linguistic variation. Having surveyed adolescents and caregivers, they say that firstly, there needs to be a human-in-the-loop (professional review), and secondly, that stakeholders need to have dynamic consent.

Key Findings:
Black/African/Caribbean adolescents had a 1.07 point current satisfaction gap compared to White peers (M = 3.29 v. M = 4.36), but near identical motivation for AI adoption (gaps of 0.05–0.18 across all items).
Cultural and linguistic responsiveness was the only below-neutral item in the whole professional dataset (M = 2.93).
Near-ceiling privacy and governance findings (professional review before sharing (M = 4.43) and learner consent/data privacy (M = 4.22–4.50 across stakeholder groups) constitute Phase 2's design specifications.

Table 1: Summary of Key Phase 1 Results.

Phase 2 will also happen over six months, with 5–10 new learner-caregiver pairs and the same inclusion criteria. Phase 2 will be designed in response to the governance requirements and cultural responsiveness gap seen in Phase 1, while the recruitment strategy responds to cultural and linguistic barriers (clinical monolingualism advice & *familismo/confianza* gatekeeping) identified in Phase 1. Phase 2's first month focused on developing an initial 100-question chatbot script and selecting/configuring an SLM and LLM for parallel testing across different third-party platforms. Following ethical review and secure, HIPAA and GDPR-compliant deployment, the chatbots undergo pilot usability testing with learner-caregiver pairs over three months. Half the pairs will use the SLM chatbot and half the LLM, each completing one to three sessions of 30–60 minutes in which learners independently answer the script's questions on their device, observed by their caregiver. Data points are analysed iteratively post-session to refine the script/adjust the UI, with a final usability evaluation determining platform and model selection based on mean usability scores, bandwidth feasibility, and qualitative learner autonomy feedback. These two phases collectively assess the feasibility, technical viability, and stakeholder acceptability of GAI-driven, learner-led profiling, generating contextually-relevant preliminary comparative evidence on LLM vs. SLM performance.

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