

COST-EFFECTIVENESS OF STEPPING STONES TRIPLE P FOR CHALLENGING BEHAVIOUR IN PRE-SCHOOLERS WITH MODERATE TO SEVERE INTELLECTUAL DISABILITY (EPICC-ID TRIAL)



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INTRODUCTION

- National UK based surveys: up to 40% of children with intellectual disability (ID) have a mental health problem (vs 13% in children without ID) [1]
- About 18% likely to have comorbid autism spectrum disorder (ASD) and 39% have attention deficit hyperactivity disorder (ADHD) [1]
- Longitudinal follow-up: behaviour that challenges persists over time, but only 10% of participants receive any intervention [2]
- High quality evidence is scarce for young children with moderate to profound ID and in the UK these children and their families rarely receive any intervention as part of usual care
- Early intervention can be helpful and cost effective in supporting families with children who display antisocial or challenging behaviours

INTERVENTION

- **STEPPING STONES TRIPLE P (SSTP)**
- Intervention intended to reduce challenging behaviour when added to the usual practice (local offer)
- EPICC-ID trial: 261 pre-school children with moderate to severe ID randomly assigned to SSTP and TAU intervention or TAU only [3]
- SSTP intervention: Combined six 2½ hours group sessions with three 30 minutes individual parent telephone or face-to-face contacts [3]

METHODS

- **Cost of implementing the SSTP intervention:** included the cost of training the therapists and the cost of delivering the intervention
- **Resource use:** using a specifically designed questionnaire based on the Child and Adolescent Service Use Schedule (CA-SUS) [4], administered at baseline, 4 months and 12 months. Costs estimated at 2019/2020 UK pounds (£) from NHS/personal social services (PSS) and parent/cargiver perspectives
- **Quality adjusted life years (QALYs):** obtained using the Pediatric Quality of Life (PedsQL) General Core Scales (GCS) [5], mapped into EQ-5D-Y quality of life instrument for children [6]
- **Statistical analyses:** seemingly unrelated regression (SUR) [7] used to account for correlation between costs and outcomes, with adjustment for baseline costs, utilities, Child Behaviour Checklist (CBCL) score, site and level of ID
- **Missing data:** multivariate imputation by chained equation generating 35 imputed data sets. For each of the 35 imputed data sets we run 1,000 bootstrap replications using non-parametric bootstrapping, resampling observations with replacements
- **Incremental cost-effectiveness ratio (ICER):** mean incremental cost per QALY gained of SSTP intervention was calculated by dividing the group randomisation covariate obtained in the cost bootstrap analysis by the randomisation covariate obtained in the QALY bootstrap analysis
- **Cost-effectiveness acceptability curve (CEAC):** report probability that SSTP intervention is cost-effective compared with TAU for a range of values of willingness-to-pay (WTP) for a QALY gained (£20,000-£30,000)

RESULTS

Breakdown of the cost of implementing the SSTP intervention

Activity	Average	Cost of Band 6
	Hours	NHS staff
1. Group session	2.5	£135
2. Individual telephone sessions between the therapist and each parent	0.5	£27
3. Session preparation for each therapist		
I. 90 minutes prior to session	1.5	£81
II. 30 minutes after session	0.5	£27
Total hours spent on case	5	£270

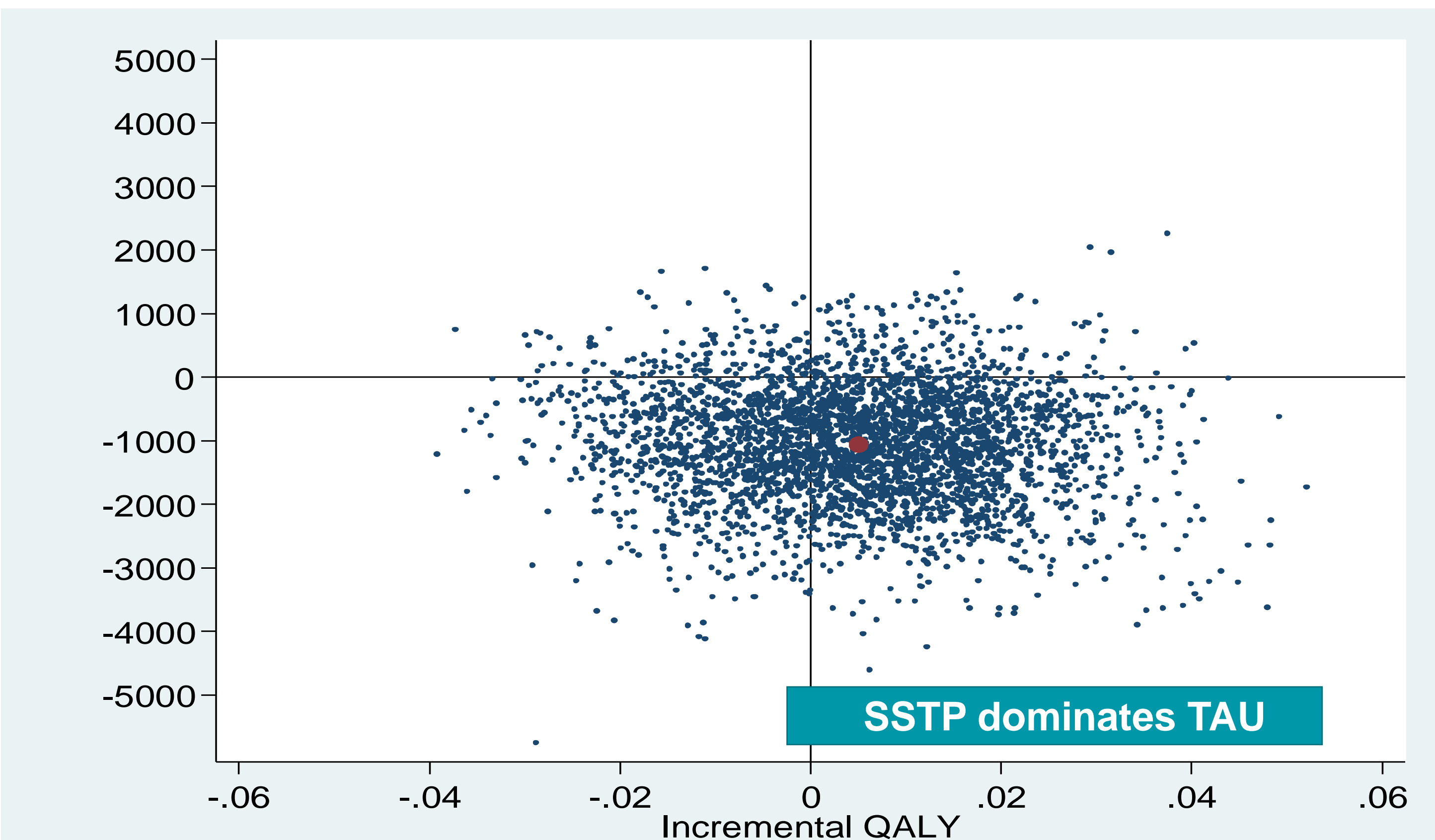
Utilities and quality adjusted life years

		SSTP			TAU			Adjusted* mean difference	p- value	95% CI (Lower limit)	95% CI (Upper limit)
		N	Mean	SD	N	Mean	SD				
Child	Baseline	140	0.637	0.145	98	0.615	0.157				
	4 months	119	0.643	0.174	80	0.626	0.154				
	12 months	109	0.641	0.155	70	0.613	0.152				
	QALYs	89	0.653	0.138	59	0.609	0.140	-0.002	0.93	-0.038	0.035
Parent/Caregiver	Baseline	152	0.799	0.189	106	0.799	0.211				
	4 months	130	0.810	0.216	86	0.811	0.180				
	12 months	116	0.827	0.203	75	0.826	0.194				
	QALYs	108	0.820	0.171	67	0.823	0.148	0.007	0.718	-0.032	0.046

*Adjusted for baseline utilities, site, and level of ID

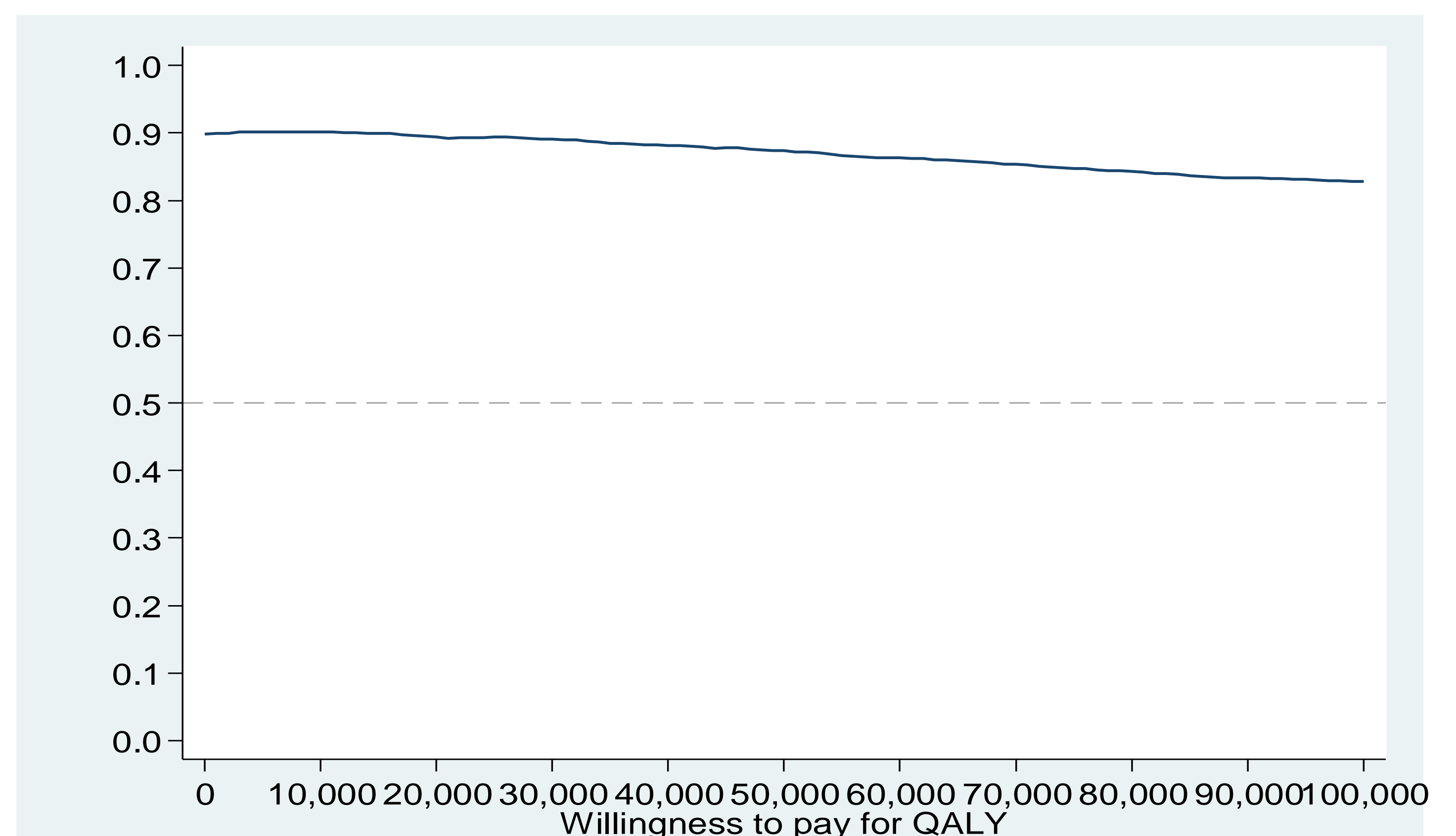
Assessing cost-effectiveness

Cost-effectiveness plane and cost-effectiveness acceptability curves of SSTP compared to TAU from NHS/PSS cost perspective at 12 months, covering 10 months of costs



NHS/PSS perspective	Incremental cost		QALYs gained	
	Mean	(95% CI)	Mean	(95% CI)
	-£1,058	(-£3,218.6 to -£46.67)	0.005	(-0.023 to 0.051)

Parent/caregiver perspective	Incremental cost		QALYs gained	
	Mean	(95% CI)	Mean	(95% CI)
	-£511	(-£2,378 to £1,175)	0.006	(-0.023 to 0.050)



89% probability that SSTP is cost-effective compared to TAU at a threshold of £20,000 and £30,000 per QALY gained

70% probability that SSTP is cost-effective compared to TAU at a threshold of £20,000 per QALY gained and 71% probability that SSTP is cost-effective compared to TAU at a threshold of £30,000 per QALY gained

CONCLUSIONS

- The addition of the SSTP intervention to TAU for children aged between 3 years and 5 years with ID did generate statistically significant cost savings alongside a positive mean point estimate in health-related quality-of-life compared to TAU; however, these improvements were not statistically significant.

- **Limitations:**
- PedsQL GCS and the mapped EQ-5D-Y utility scores algorithm were used to calculate QALYs
- Statistically significant difference in costs when analyses were conducted from NHS/PSS perspective - confidence intervals wide due to substantial variation in several community services
- Societal perspective only included private service use and out-of-pocket expenses
- Even with the existing limitations, we consider that SSTP could be provided as a preventive intervention

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