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**Abstract** | This paper investigates the effects on court-adjudicated offending to age 17 of comprehensive, community-based support offered through the Pathways to Prevention Project to families of preschool and primary age children. The sample is 543 children from a disadvantaged region in Brisbane, 192 of whom, at age four in 2002 or 2003, participated in the standard preschool curriculum plus a program designed to strengthen oral language and communication skills, and who transitioned to a local primary school where family support remained available.

Family support (involving 41% of families) was associated overall with a heightened risk of offending, reflecting the high level of need in these families, particularly in the later primary years. However, family support combined with the communication program corresponded to a very low offending rate. This suggests that family support should be combined with both high-quality, early-in-life preventive initiatives and with evidence-based child and parent programs in late primary school.

## Family support, enriched preschool and serious youth offending

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This paper reports some effects of the Pathways to Prevention Project on children's involvement in court-adjudicated youth crime. This evaluation is based on a sample of 543 children living in a socially disadvantaged region in Brisbane. In 2002 and 2003, as four-year-olds, they participated in an enriched preschool program that aimed to strengthen oral language and communication skills. The children's families also had the opportunity, from the beginning of preschool until the end of primary school, to engage in a wide range of activities offered by a community-based family support service, which more than four in 10 families (41%) did. Our primary focus in this paper is the effect on the onset of serious youth crime of these family supports. The interplay between family support and the communication program is a secondary focus (Allen et al. 2024; Homel et al. 2006).

The Pathways to Prevention Project aimed to instantiate the principles of community-based developmental crime prevention set out in a seminal national report (Developmental Crime Prevention Consortium 1999). The project operated between 2002 and 2011 as a research–practice partnership involving families, seven local primary schools, the Queensland Department of Education, a Griffith University research team and national community agency Mission Australia.



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The Pathways area had a youth crime rate in the late 1990s more than eight times higher than the Brisbane average (Homel et al. 2006). The project's aims were to support the positive development of preschool and primary age children attending one of the seven local state schools (each with a preschool onsite), thus reducing the risks of involvement in antisocial behaviour and crime. A central research question was whether, in disadvantaged and culturally and linguistically diverse communities, family support services and enriched preschool programs can help prevent youth crime when they are designed and implemented not by outside researchers but by community workers and preschool teachers working in the community or in schools. Because the road to scale and sustainability runs through public systems (McCarthy & Kerman 2010), sustained, system-wide improvements in child wellbeing can only be achieved when effective early prevention strategies are incorporated into the routine work of government departments, non-government services and communities (Homel et al. 2017). The role of the university research team was not to design or implement evidence-based interventions but to help build the capabilities of teams engaged in community-based family support and preschool teaching.

## The Pathways to Prevention Project

### The Family Independence Program

Mission Australia's family support team adopted a comprehensive, flexible, strengths-based approach that emphasised responding to the changing needs of parents and children through family participation (Homel et al. 2006). The main services for families included: facilitated playgroups; parent peer support groups; education groups for child behaviour management; parent life skills training; supporting children's learning; individual support and counselling; and advocacy, referral and school liaison. Referrals to Pathways were largely from partner preschools and primary schools. The program thus incorporated a wide range of activities that represented a broad cross-section of services typically found in socially disadvantaged communities in Australia (Fernandez 2007). In any year, about three-quarters of participating families were culturally and linguistically diverse, including about 15 percent Aboriginal and Torres Strait Islander families.

The flexible approach to family support by the Pathways to Prevention Project stands in a long interdisciplinary tradition that social work scholars have sought to conceptualise in recent decades, recognising the need for 'description, clarification and definition' (Dolan, Pinkerton & Canavan 2006: 11). Evaluation methods in this developing literature vary with theoretical assumptions, program components and implementation practices, but results point generally to a range of mostly short- to medium-term benefits for children and families (Brady, Holt & Whelan 2018; Fernandez 2007; Layzer et al. 2001; McConnell, Breitzkreuz & Savage 2012). Allen and colleagues (2023) have shown that family support in the Pathways Project substantially increased parental efficacy and empowerment (effect size 0.5) but not children's teacher-rated classroom behaviour (except in specific circumstances; Homel et al. 2015).

The limited literature on comprehensive family support should be distinguished from the much larger literature on evidence-based early prevention programs. For early prevention programs such as high-quality preschool, family skills development, centre-based developmental day care and parent education, there is strong evidence for both short- and long-term effects on parent and child outcomes. Child outcomes include improved academic achievement, school engagement, social skills, language development and social-emotional wellbeing, and reduced maltreatment by parents, antisocial behaviour, substance abuse and crime (Deković et al. 2011; Doyle et al. 2023; Fagan 2013; Farrington, Ttofi M & Lösel 2016; Kumpfer & Alvarado 2003; Manning, Homel & Smith 2010; Piquero et al. 2016a). The evidence is particularly strong for multiple benefits from evidence-based parenting support programs such as Triple-P and the Incredible Years (eg Leijten et al. 2017; Sanders 2023, 2012).

Overall, the effects of Pathways-style family support on child outcomes, including participation in youth offending, are not well understood. Nevertheless, there are encouraging signs that comprehensive family support services could be effective for youth crime prevention, especially if evidence-based child and parenting support programs are included in the suite of family support services typically available in disadvantaged communities (Doyle et al. 2023; Clark, Cahill & Ansell 2022; Piquero et al. 2016b; Whittaker et al. 2014).

### The communication program

The enriched preschool program took the form of an oral language and communication intervention, the need for which was highlighted by preschool teachers and parents in a community-designed survey (Homel et al. 2006). Children with higher level oral language skills are typically better able to handle social situations, making them more likely to engage in positive interpersonal relationships and less likely to engage in disruptive behaviour in the classroom (Beitchman et al. 2001).

The theoretical foundations of this 30-week program are described by Allen and colleagues (2024). Crucially, the specialist teachers who designed and implemented the communication program, in close partnership with the classroom teachers and parents, were graduates of a one-year postgraduate course in children's communication development, designed especially for experienced classroom teachers with an interest in children's language problems. The late Dr Gordon Elias, Senior Lecturer in the School of Education at Griffith University, developed and taught the course in partnership with his colleague, Dr Ian Hay. Both played a formative role in the project by supporting and encouraging the communication specialists and by undertaking further research on ways of enhancing parent-child book reading and related activities that straddled home and school.

The program was implemented in two of the seven preschools and was designed to benefit all children in the participating preschools (that is, it was *universal* in focus). Training and support for both parents and the regular preschool teachers reinforced program activities and laid the foundations for sustained effects.

## The present study

Our primary aim was to consider how family support, at any time from preschool until the end of primary school, was related to serious youth offending. There are several ‘service dosage’ dimensions to consider: how much support was provided to families? Over what period? How often did families receive support? All these dimensions may be related to youth offending, but how should meaningful treatment groups be identified?

Our solution was latent class analysis (Feldman, Masyn & Conger 2009). This approach has the potential to provide new insights into distinct patterns of complex family support usage and how these patterns relate to children’s outcomes, but it appears not to have been previously used in this field, despite its use for other types of services (eg Crable et al. 2022).

The second aim of the study was to consider the interactive effects of enriched preschool and family support on youth offending, together with risk factors for offending—including gender and early behavioural risk. In previous analyses, we have shown that the combination of family support and child involvement in enriched preschool programs improved behaviour by the end of preschool, as rated by the preschool teachers (Homel et al. 2006). This is consistent with a large literature about developmental prevention initiatives that operate at several levels of the social ecology (Clark et al. 2022). However, family support on its own, without the preschool component, also had significant short-term benefits, as did participation in the preschool program on its own.

It is also important to consider the effectiveness of Pathways for children who were at higher risk of offending. Research in developmental prevention often tests for heterogeneity of program effectiveness across gender and level of risk; males and children with more early risk factors are usually at higher risk of negative outcomes (Howe 2019). Focusing just on ‘average’ treatment effects across the whole sample may miss important beneficial effects for subgroups who are at higher risk and may benefit more from the intervention (Fagan 2013). The present study therefore examined whether any interactive effects of Pathways family support and enriched preschool were associated with offending for males and for children with disruptive behaviour assessments in the clinical range at the beginning of preschool.

## Method

### *Participants*

Participants were those 543 children from the total Pathways preschool cohort of 616 who made the transition from preschool to one of the seven project primary schools. Their characteristics are described in Table 1 in *Results*.

### *Pathways family support*

The families of 224 of the 543 children (41%) sought support at least once between preschool and Year 7. Most other families probably did not feel the need to access Pathways services. The present study considers family support received from the beginning of preschool until the year the child turned 13. This was nine years for each child, including one preschool year, seven primary school years and one additional year in which the child turned 13. Family support contacts were recorded as the number of times in each school term that a family had a contact with a member of the Pathways team. The number of contacts in each term was recoded to be 0 if no contacts were recorded and 1 if any contacts were recorded. Therefore, each participant had 36 observations (9 years × 4 school terms) in which Pathways family support was recorded or not.

### *The communication program*

In 2002 or 2003, 192 children attending two of the seven Pathways community preschools (selected by negotiation, not at random) received the communication program. Researchers trained in psychology assessed children's language skills in the first term of preschool, using the Preschool Language Assessment Instrument (Blank, Rose & Berlin 2003). They were then placed in small groups with other children and received scaffolded activities from specialist communication teachers. The program was conducted over three school terms (30 weeks). Specialist teachers also facilitated a range of activities for classroom teachers—and for parents and carers, to engage families more actively in their children's learning (Allen et al. 2024).

### *Measures*

#### **Dependent variable**

The youth justice data in the Pathways database includes cases where a young person had an offence finalised in court, so the dependent variable was serious youth offending between the ages of 10 and 16 (for details of data matching, see Allen et al. 2024). Participants were scored 1 if they had a case finalised in court and 0 otherwise. Thirty-one participants (6%) had at least one finalised offence.

#### **Covariates**

Covariates used in analysis included participation in the communication program, male gender, the number of known children in a child's family and the child's early behavioural risk. The child's early behavioural risk at the beginning of preschool was assessed as being in the clinical range (or not), using the 12-item teacher version of the Rowe Behavioural Rating Inventory (RBRI; Rowe & Rowe 1997), a validated checklist (Cronbach alpha 0.96) used to assess the level of children's difficult and disruptive behaviour.

The number of known children in the child's family was a proxy for family size. Larger family size can be an indicator of adversity and disadvantage (Crosnoe, Mistry & Elder 2002) and a reduced capacity by carers to supervise their children (Farrington 2007). Therefore, it may be associated with a higher need for Pathways family support, as well as poorer child outcomes.

We limited a child's status as Indigenous or non-Indigenous in statistical models to the role of covariate in regression analysis. We deliberately avoided using Indigenous status as a moderating variable, partly to protect the privacy of the community (especially where such analyses would involve reporting on small, potentially identifiable subgroups of children) and partly to avoid publishing comparisons of Indigenous and non-Indigenous children that could be interpreted as implying that Indigeneity causes offending rather than offending being a product of Australia's history of systemic racism and the consequent grossly disadvantaged circumstances of many Indigenous people (Allen et al. 2024; Thurber et al. 2020).

### *Data analysis*

Following descriptive analyses, we used longitudinal latent class analysis (Feldman, Masyn & Conger 2009) to identify distinct subgroups of individuals who showed similar patterns of family support usage from preschool until the year the child turned 13. We then examined the association between membership in these latent classes and youth offending, using logistic regression. Finally, we used a classification tree analysis to examine interactions between the classes of family support and the preschool communication program and how these variables interacted with gender and early behavioural risk.

#### **Longitudinal latent class analysis of family support**

The latent class analysis of family support used data from the 224 participants who ever received family support. The binary family support variables for each school term from the start of preschool until the year the child turned 13 were used to estimate latent classes. The parameters were estimated using a full-information maximum likelihood estimator with robust standard errors. Based on the best fitting model, each participant was assigned to a class using posterior probabilities. The latent class models were estimated using MPlus v8.7 (Muthén & Muthén 2017). The number of classes that best fit the data was selected based on the Bayesian information criterion, the adjusted Lo–Mendell–Rubin test, entropy (classification accuracy) and class size and interpretability (Feldman, Masyn & Conger 2009; Nylund, Asparouhov & Muthén 2007).

#### **Logistic regression**

The latent classes of family support were used as a predictor in models examining serious youth offending. Children who received no family support served as the reference group in all models. We first estimated unadjusted models for all covariates using Stata 17 (StataCorp 2021), followed by a model adjusted for covariates.

#### **Classification tree**

We used a classification tree (Breiman et al. 1984) to examine the interaction between classes of family support, gender, early behavioural risk and communication program participation. Although interactions between explanatory variables are usually examined with regression models, in the present study, the combination of latent class of family support and communication program participation produced some empty cells for the dependent variable, meaning that there were no participants with an offending outcome. Classification trees provide an alternative method for examining complex interactions in the prediction of rare outcomes. The present analysis used R (v4.1.2; R Core Team 2022) and the package rpart v4.1.19 (Therneau & Atkinson 2022).

Classification trees split the data into different profiles based on the explanatory variables to predict the dependent variable (youth offending or not). The explanatory variables included the family support latent class variable, a binary variable representing participation in the communication program, child gender and early behavioural risk.

With a binary dependent variable, some participants may be classified by the model as not having offended when they have in fact offended, and vice versa. Because participants who offended were of most interest, we weighted the classification tree such that participants who offended were not misclassified. Cross-validation was used to prevent over-fitting and determine the optimal tree size and structure. This involves dividing the sample randomly into 10 equal-sized groups. Ten trees are then estimated, each using nine out of the 10 samples. The best fitting tree is the one that has the best average classification accuracy and is least complex (Therneau & Atkinson 2022).

## Results

### Descriptive statistics

Table 1 shows descriptive statistics for the sample, as well as the percentage of participants in each covariate category with at least one finalised offence.

Table 1: Description of sample		
	Full sample (n=543) n (%)	At least one finalised offence n (%)
<b>Communication program</b>		
No	351 (64.6)	24 (6.8)
Yes	192 (35.4)	7 (3.7)
<b>Gender</b>		
Female	270 (49.7)	6 (2.2)
Male	273 (50.3)	25 (9.2)
<b>Indigenous Australian</b>		
No	510 (93.9)	24 (4.7)
Yes	33 (7.3)	7 (21.2)
<b>Number of children in family</b>	1.5 (1.0) <sup>a</sup>	1.8 (1.3) <sup>a</sup>
<b>RBRI risk beginning of preschool</b>		
Not at risk	398 (73.3)	18 (4.5)
At risk	96 (17.7)	10 (10.4)
Missing	49 (9.0)	3 (6.1)

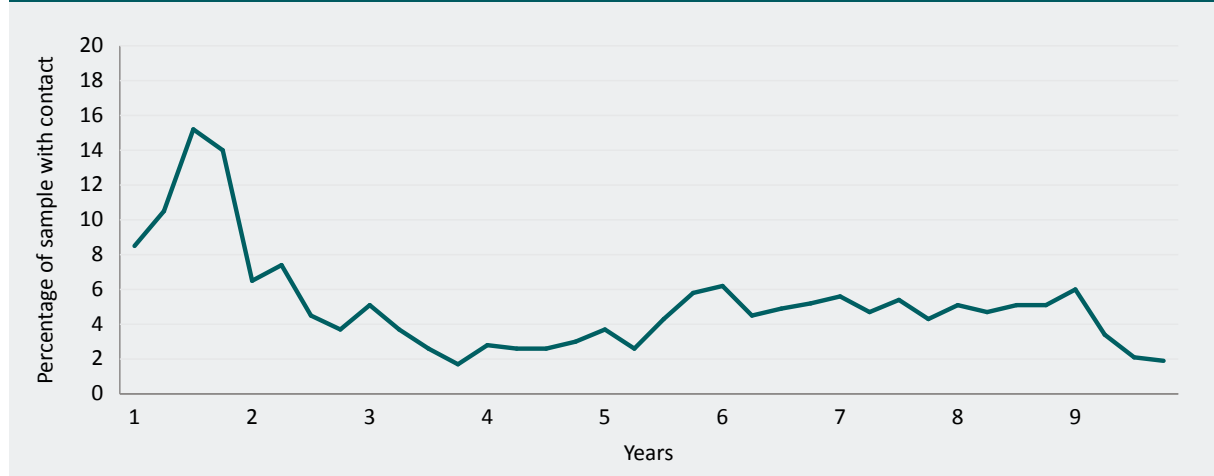
a: Mean and standard deviation for participants



## Description of family support over time

The highest percentage receiving family support was in the third term of the preschool year (15%), with participation around two percent to five percent of the sample thereafter (Figure 1).

**Figure 1: Percentage of the sample ( $n=543$ ) that received family support in each term from the beginning of preschool to the year the child turned 13**



## Latent class analysis of family support patterns

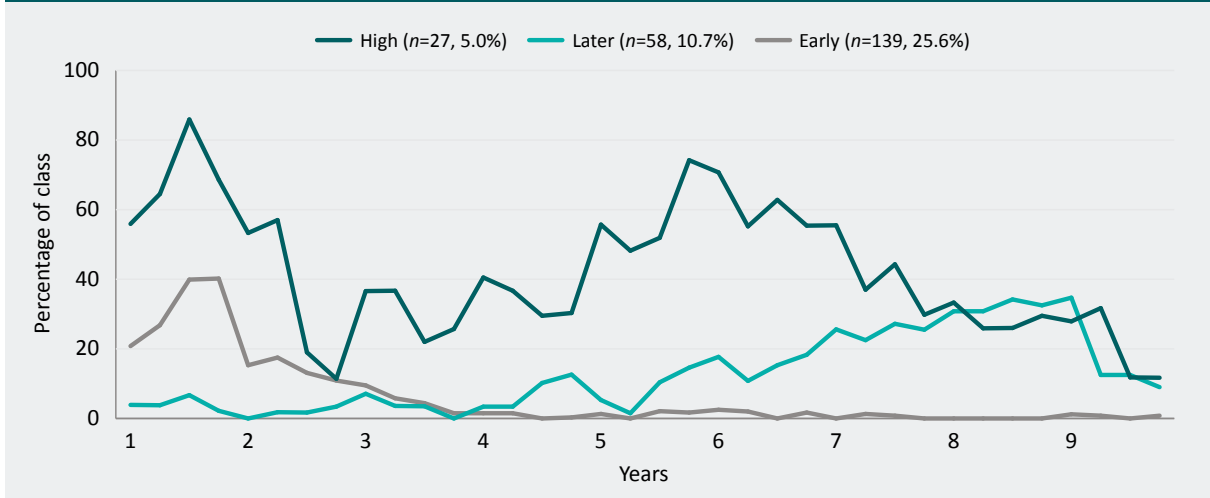
Using the sample of 224 participants who ever received family support, a series of latent class models was estimated to determine the optimal number of classes. The three-class model was selected as the best fitting (see Allen et al. 2024 for details). The Bayesian information criterion increased in the four and five-class models (indicating poorer fit), and the Lo–Mendell–Rubin test was not statistically significant for the four- and five-class models (indicating that additional classes did not improve fit). Entropy was high in all models (0.946 for the three-class model), indicating clear delineation between classes.

Figure 2 shows the predicted percentage of participants in each latent class who received family support in each term from the start of preschool to age 13. The first latent class ( $n=139$ , 26%), termed ‘Early’, had the highest predicted probability of receiving support when the child was at preschool and in the first year of primary school, after which it dropped to near zero. The second class ( $n=58$ , 11%), termed ‘Later’, had a relatively low predicted probability of receiving support when children were in preschool and the early years of primary school, but the probability increased from late primary school. The third latent class ( $n=27$ , 5%), termed ‘High’, had very high predicted probabilities of receiving support at most times, except for a dip following preschool and a decrease towards the end of primary school.

The Early class had the lowest level of service usage overall, with an average of 0.26 contacts per term, an average of nine contacts for the entire period and, on average, two terms with contact. Average frequency and duration of contact for the Later class tended to be about twice as high as the Early class. The High class had very high frequency and duration of contact: an average of 3.5 contacts per term, an average of 136 contacts over the entire period and an average of 14.7 terms with any contact with family support.



**Figure 2: Latent classes of family support from preschool to age 13**



Note: The average number of children per family was lowest in the no contact group (1.4) and was highest in the High group (4.3). Differences on gender, early behavioural risk and the communication program were not statistically significant, but children in the High class were less likely to have attended a communication program preschool (19% compared with 32% for Later and 30% for Early)

### Logistic regressions

The results of the models examining serious youth offending are summarised in Table 2. In the unadjusted and adjusted models, members of the Early class were not significantly more likely to offend than children who never received family support. However, in both models, membership of either the Later or High classes significantly increased the likelihood of serious youth offending.

In the adjusted model, youth offending was less likely for children who attended communication program preschools (odds ratio (OR)=0.55) but did not reach statistical significance in this sample ( $p=0.195$ ). Males ( $p=0.001$ ) and Indigenous Australian children ( $p=0.011$ ) were at higher risk of offending.

**Table 2: Logistic regression examining the relationship between serious youth offending and Pathways group (n=543)**

	Unadjusted models			Adjusted model		
	OR (SE)	p	95% CI	OR (SE)	p	95% CI
<b>Class (ref=none)</b>						
Early	2.39 (1.15)	0.072	0.93, 6.14	2.13 (1.06)	0.128	0.80, 5.67
Later	5.51 (2.81)	0.001	2.03, 14.95	4.36 (2.46)	0.009	1.45, 13.15
High	7.83 (4.70)	0.001	2.42, 25.37	4.26 (2.99)	0.037	1.09, 16.82
Comm. program	0.52 (0.23)	0.132	0.22, 1.22	0.55 (0.26)	0.195	0.22, 1.36
Male gender	4.44 (2.05)	0.001	1.79, 11.00	5.24 (2.57)	0.001	2.01, 13.71
Indigenous Australian	5.45 (2.59)	<0.001	2.15, 13.81	4.29 (2.44)	0.011	1.40, 13.09
Number of children	1.33 (0.16)	0.020	1.05, 1.68	1.11 (0.18)	0.517	0.81, 1.53
<b>RBRI risk beginning of preschool (ref=not at risk)</b>						
At risk	2.46 (1.01)	0.029	1.09, 5.51	1.94 (0.89)	0.146	0.79, 4.76
Missing	1.38 (0.89)	0.619	0.39, 4.85	1.01 (0.70)	0.988	0.26, 3.90

Note: Adjusted model: Likelihood-ratio  $\chi^2(9)=41.37$ ,  $p<0.001$ , pseudo  $R^2=0.17$ . Comm. program=communication program

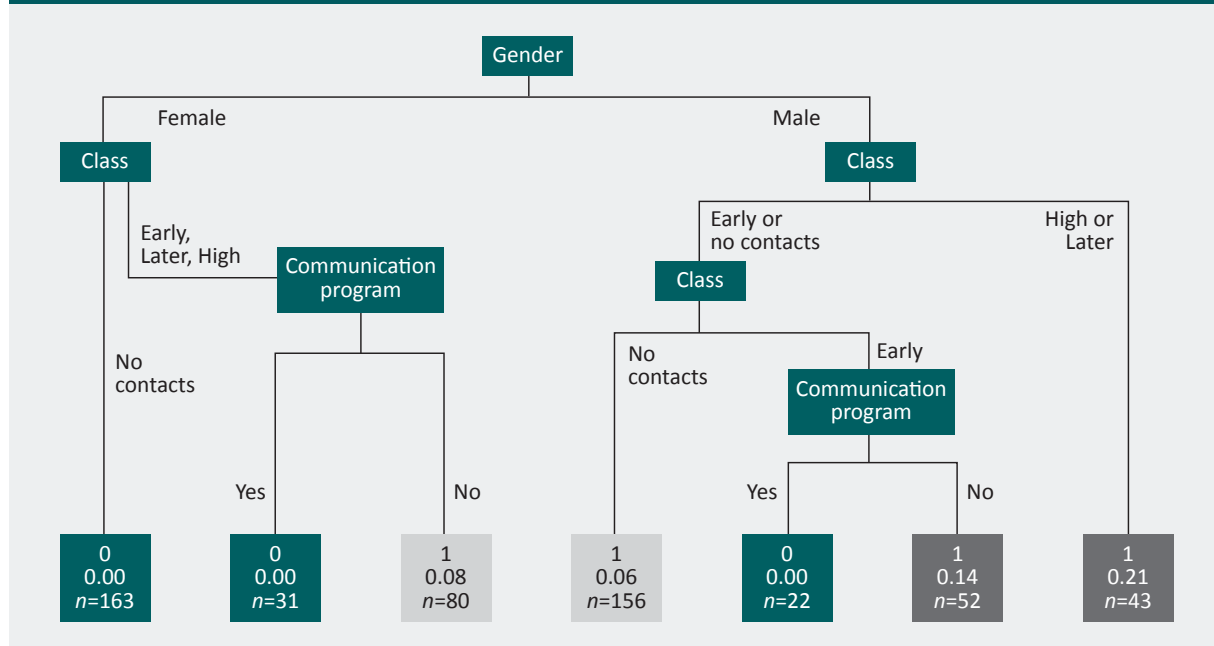
## Classification tree analysis

Gender reduced the most variance in the dependent variable, which is why the tree splits on this variable first (Figure 3). The classification tree shows that boys who were classified in the High or Later family support classes and did not participate in the communication program had the highest risk of offending of all the groups (9 of 43 observations: proportion=0.21). Among boys not in the Later or High classes, none offended among those whose families were in the Early class and who were also in the communication program (zero of 22 observations).

However, among the boys in the Early class who did not participate in the communication program, seven offended (52 observations; proportion=0.14). Finally, boys who did not participate in the communication program and whose families never sought family support offended at an average rate (9 of 156 observations; proportion=0.06).

The other side of the tree shows that, of the girls whose families never called on Pathways for support, none offended (zero of 163 observations). Partially paralleling the pattern for boys, none of the girls whose families did seek support at some stage and who participated in the communication program offended (zero of 31 observations), but six girls whose families sought support offended if they did not participate in the communication program (80 observations; proportion=0.08).

**Figure 3: Classification tree examining serious youth offending (n=543)**



## Discussion

Did participation in family support at any time from the start of preschool to the end of primary school help children avoid entanglement in the youth justice system? This is an important question. Family support and associated child services are among the most common ways that governments and local organisations attempt to reinforce the primary care activities of families under pressure, but there is no clear evidence for their long-term effects on child and youth wellbeing. The array of services offered through the Pathways Family Independence Program mirrored closely the types of services commonly available in disadvantaged communities across Australia, especially for families with children in their early years (Clark, Cahill & Ansell 2022). The results of this study therefore have wide implications.

Perhaps not unexpectedly, the answer to our key research question is complicated, partly because family support itself takes many forms. We used latent class analysis to identify three well-delineated patterns of service usage, based on duration and frequency of contacts, apparently for the first time in the family support literature. As shown in the logistic regression analysis (Table 2), membership in all three support classes was related to an increased risk of youth crime involvement; the High and Later classes were most strongly related, even after controlling for baseline behavioural risk and other covariates.

This does not mean that family support caused crime. Rather, as the data we have presented on the frequency and duration of service use in the High and Later classes show, families in these groups faced many serious challenges for which they sought assistance. However, it seems that this assistance was not sufficient to overcome the effects of the key risk factors for offending we identified for this sample (Allen et al. 2024), including impulsivity and low levels of prosocial attitudes in Grade 7. A clear implication is that, for children approaching the transition to high school, a range of evidence-based programs targeting these and related risk factors should be embedded in the array of family services, including evidence-based parenting support programs (Doyle et al. 2023) and child programs to improve self-control and social skills (Piquero et al. 2016b).

A further complication, highlighted by the classification tree analysis (Figure 3), is that the effects of family support on youth crime involvement differed depending on the gender of the child and on whether they participated in the communication program. The communication program appeared to confer strong protective benefits for girls whose families received any form of support and for boys in the Early class, for whom family support was mostly simultaneous with the preschool program. Among those whose families had complex needs in late primary school, as evidenced by membership in the Later and High classes, and who also missed out on the communication program in preschool, a high proportion (21%) of boys offended. Again, the implication is clear: family support should be combined with both high-quality, early-in-life developmental prevention initiatives and with evidence-based programs targeting key risk factors for offending at the transition to high school.

## Conclusion

This study has shown that comprehensive family support by trusted local services is not a ‘silver bullet’ for youth crime prevention. However, we have also provided evidence that family support can play a critical role in combination with data-guided, evidence-based preschool or (by implication) school programs that are integrated with the standard curriculum, that strengthen the capabilities of classroom teachers and that are delivered by skilled specialists—preferably already working in the education system. These programs, combined with family participation, practical assistance and evidence-based parenting support, can provide a boost for all children living in disadvantaged communities, not just the most vulnerable. Such initiatives will be both scalable and sustainable if they are provided from within the community services and education systems and are supported by respectful partnerships with experts in universities, government and civil society.

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