INCREASING RESILIENCE TO PREVENT ASSOCIATION WITH GANGS: ASSESSING THE IMPACT OF GRYD PREVENTION SERVICES

Participation in GRYD Prevention services increased participants' internal resilience by 28%, external resilience by 19%, and family norms by 9%, while decreasing their participation in gang social activities by 61% and peer gang activities by 17%.

P. Jeffrey Brantingham, *Ph.D., Department of Anthropology, University of California Los Angeles*
Denise C. Herz, *Ph.D., GRYD Research Director, GRYD Research & Evaluation Team & School of Criminal Justice and Criminalistics, California State University Los Angeles*
Molly Kraus, *MPL, Director, GRYD Research & Evaluation Team, California State University Los Angeles*

GRYD RESEARCH & EVALUATION BRIEF NO. 12 SEPTEMBER 2022 | LAGRYD.ORG

MESSAGE FROM THE DIRECTOR

The GRYD Research Brief Series highlights the accomplishments of the GRYD Office and its community partners as they implement the GRYD Comprehensive Strategy.[1] A core goal of the GRYD Comprehensive Strategy is to prevent violence by promoting resilience and prosocial decision-making among young people vulnerable to joining gangs. The GRYD Prevention Program plays an essential role in accomplishing this goal and providing alternatives to gang involvement. In GRYD Research Brief No. 11, we described how many young people were served by GRYD Prevention services and what types of services they received. The current research brief builds on this information by exploring the impact of services on young people participating in GRYD Prevention programming. Increasing resilience and reducing connections to gangs for young people and their families in 23 GRYD Zones across the city translates into a significant investment into the future of young people and the overall well-being of the communities served by GRYD.

REGINALD ZACHERY
GRYD DIRECTOR

GRYD is committed to building resilience and fostering well-being for young people, their families, and their communities by providing community-based gang prevention and gang intervention services to interrupt violence.[1-3] GRYD Prevention programming focuses on reducing gang involvement before it begins or escalates among 10 to 15-year-olds with high exposure to risk factors related to gang membership. GRYD Prevention providers engage and serve young people by addressing their basic needs; strengthening positive relationships with family and other positive adults; and supporting the development of social emotional learning skills.[4-6]

The young people enrolled in GRYD Prevention services regularly participate in individual meetings, family meetings, and intentional youth development activities driven by Social Emotional Learning (SEL). GRYD Research Brief No. 11 summarizes the number of GRYD Prevention participants and their program experiences between January 1, 2016, and December 31, 2020.[7] During this timeframe, GRYD Prevention providers served 5,684 young people and their families and engaged participants in 110,093 individual and family meetings and 59,116 youth development activities. The purpose of the current research brief is to build on this brief by examining the impact of GRYD Prevention programming on increasing resilience and reducing participants' association with gangs.

GANG PREVENTION: THE IMPORTANCE OF TIMING

The timing of any prevention programming is simultaneously critical and challenging because of age-related changes in risk. Research has established that involvement in crime follows a regular trajectory as people age.[8-11] Often described as the "age-crime curve," the number of criminal offenses attributed to an age group generally increases over the early teenage years, peaks at around age 20 (depending upon crime type), and then declines progressively as people move into their 20s, 30s, and older.

The persistent relationship between age and risk illustrated in the age-crime curve aligns with normal adolescent development processes.[12] Around the age of 10, children begin to experience an explosion of physical, social, and emotional changes brought on by phases of adolescent brain development. These changes are

biologically programmed to transition children into adulthood, building their capacity for executive functions which include sound judgment and thoughtful decision-making. Achieving these functions as part of a fully developed brain, however, requires an on-going, interactive process between risk, decision-making, and positive adult support. Ideally, exposure to risk is dominated by healthy risks in which adolescents are safe and supported by positive adults. Unfortunately, exposure to unhealthy risks such as drug use, delinquency, and gang involvement is greater for some youth because of historical and social contexts combined with limited support.

The age-crime curve does not only describe the trajectories of crime involvement. The same pattern is found for substance use and gang involvement. For example, Figure 1 illustrates the relationship between age and first use of marijuana. Like the age-crime curve, age at first use slowly begins around 10 years old and then gradually increases during the early teens. Marijuana use increases to its peak between 13 and 16 years old and then decreases in the 20s.

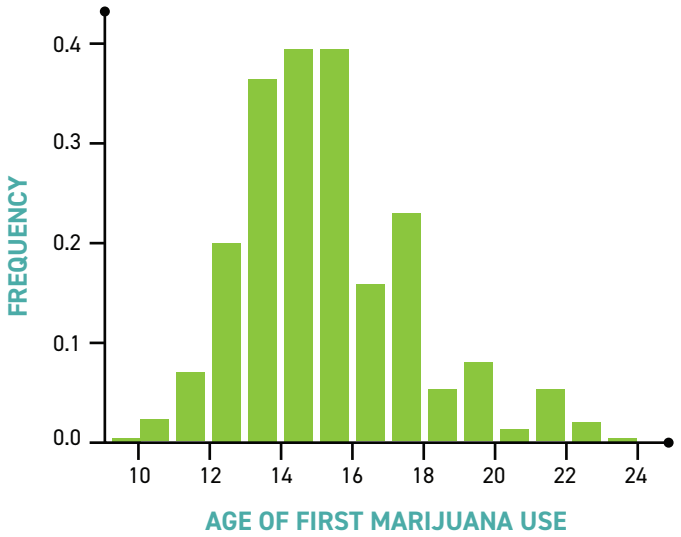

Figure 1. Age and First Use of Marijuana

Redrawn Following: Telesca, D., Erosheva, E. A., Kreager, D. A., & Matsueda, R. L. (2012). Modeling Criminal Careers as Departures From a Unimodal Population Age-Crime Curve: The Case of Marijuana Use. *Journal of the American Statistical Association*, 107(500), 1427-1440. doi:10.1080/01621459.2012.716328

Evidence suggests that the proportion of young people who become involved with gangs closely mimics the age-crime curve, although the pattern shifts downward in age by a few years.[13] Using data collected from young people involved in GRYD Intervention Family Case Management (FCM) programming, Figure 2 shows that first involvement with gangs began around eight or nine years old, peaked around 13, and then decreased.[14, 15] This decline in gang involvement is referred to as "desistance" by criminologists and is largely explained by critical life events such as work, marriage, and children supplanting opportunities to be involved with gangs and crime.[16]

This finding underscores the importance of prevention as a potential disrupter of the age-crime and age-gang curves. The outcomes for youth involved with gangs are substantially worse than similar youth who avoid gang involvement,[17, 18] and those who join a gang later and/or remain active longer than two years may also be uniquely prone to involvement in violence.[19] Thus, strengthening positive family/adult relationships, introducing positive alternatives, building Social-Emotional Learning competencies, and providing support as early as possible in young people's lives is vital to disrupting trajectories that eventually lead to these behaviors.

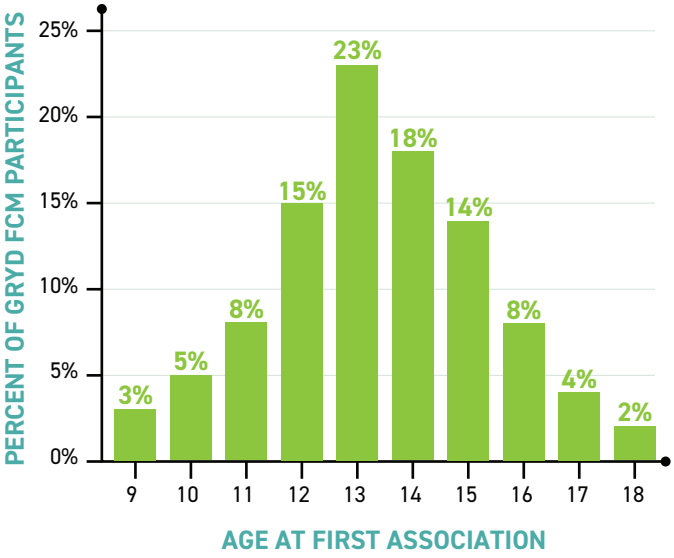

Figure 2. Age of First Gang Association for GRYD FCM Participants

Self-reported age of first involvement with gangs increases beginning around age 10, peaks at age 13 and then declines towards age 18. Social Embeddedness Tool Question G2: How old were you when you first associated with [GROUP]?

Gang prevention efforts that seek to divert youth before they become seriously involved with gangs may have significant long-term benefits, but prevention needs to be undertaken early to have the greatest chance of success.[20] Additionally, programming must be intentional and effective because, all things equal, the intersection of risk and developmental processes represented in the age-gang curve suggests that gang prevention faces an uphill battle. The stakes are high for young people vulnerable to gang involvement, highlighting the need for effective prevention services. Young people engaged in effective prevention services are diverted away from gang violence and steered onto paths that lead to increased resilience, improved well-being, and ultimately, thriving.

AN OVERVIEW OF GRYD PREVENTION PROGRAMMING

GRYD Prevention programming seeks to strengthen the family and build resilience by developing problem-solving strategies and critical youth development skills and competencies. GRYD Prevention services are delivered to young people and their families on a six-month cycle, and participants may continue services up to two cycles. Services include case management team meetings, one-on-one meetings with the young person, meetings involving the young person with their family, the delivery of intentional youth development activities, and referrals to other services when appropriate (e.g., mental health services; see Brief No. 11 for a more detailed overview of GRYD Prevention programming).

Eligibility for GRYD Prevention services is determined by several criteria:

- Youth must be between 10 and 15 years old
- Youth must have a significant presence in a GRYD Zone
- Youth must score above an "eligibility" threshold on the Youth Services Eligibility Tool (YSET).

The YSET is designed to measure risk factors empirically related to gang joining.[21, 22] The risk factors used to determine eligibility for GRYD Prevention services include antisocial tendencies, weak parental supervision, critical life events, impulsive risk taking, guilt neutralization, negative peer influences, peer delinquency, family gang influence, and self-reported delinquency.[6] The use of an eligibility threshold is intended to (1) identify young people who are vulnerable to elevated levels of risk and (2) to ensure those served in programming are similar in their exposure to risk. This latter issue is particularly important because mixing young people with different levels of risk can have detrimental effects for those experiencing lower levels of risk.[23]

Young people who score above the eligibility threshold on several risk factors are offered GRYD Prevention services, and young people who exhibit risk in two or more relevant domains but do not meet the threshold are offered a lower level of services through GRYD Primary Prevention. To clearly distinguish these two levels of service, GRYD Prevention services will be referred to as GRYD Secondary Prevention services for the remainder of this study.

Table 1 compares the programming received by GRYD Primary Prevention participants and GRYD Secondary Prevention participants.

The YSET is re-administered after approximately six months (retest) to all young people participating in both GRYD Primary and Secondary Prevention services. GRYD Secondary Prevention participants successfully complete programming at the end of six months if their risk levels drop and their program goals are achieved. Participants who need additional services may repeat one additional cycle of GRYD Secondary Prevention programming. GRYD Primary Prevention participants successfully complete programming at the end of six months if their risk levels continue to stay low or decrease. Participants who exhibit an increase in risk factors and meet the eligibility threshold may transfer to GRYD Secondary Prevention services.

Table 1: A comparison of the two types of GRYD Prevention programming

	GRYD PRIMARY PREVENTION	GRYD SECONDARY PREVENTION
Eligibility	• Age 10-15 years and 3 months • Has significant presence in GRYD Zone • Exhibits 2-3 elevated risk factors according to YSET*	• Age 10-15 years and 3 months • Has significant presence in GRYD Zone • Exhibits 4 or more elevated risk factors according to YSET
Description of Services	Services include case management and linkage to other youth/family supportive services.	Services include case management and linkage to other youth/family supportive services, multigenerational coaching using strength-based genograms, and problem-solving techniques to address participant and family needs.
Structure of Services (Minimum meeting/ activity dosage completed)	Minimum dosage each month: • 1 Individual Meeting with the young person • 1 Contact with parent(s)/ caregiver(s) • Intentional Youth Development Activities as needed	Minimum dosage each phase: • 1 Individual Meeting with the young person • 2 Family Meetings with the young person and their family • 1-2 Intentional Youth Development Activities
Program Progression	Based on the completion of required meetings for each month of services.	Based on the completion of required activities/ meetings (or dosage) for each phase of services.
Service Length	Up to 6 months.	Up to 2 consecutive cycles (12 months) with a 3rd allowed via a petition process.

* GRYD Primary Prevention was introduced July 1, 2013. At launch, all young people with fewer than four elevated risk-factors on the YSET were eligible for GRYD Primary Prevention. Starting July 1, 2018, GRYD Primary Prevention eligibility requirements were amended to include only young people with 2-3 elevated risk-factors on the YSET.

EFFECTIVENESS OF GRYD PREVENTION PROGRAMMING

Previous evaluations reported positive results for GRYD Secondary Prevention participants, but the analysis was largely limited to pre/post comparisons of eligibility scores and individual risk scales over time.[6] Evaluation of GRYD Secondary Prevention programming has always been a challenge because sufficient funding to serve all young people deemed eligible for services rendered randomized control trials untenable on ethical grounds. Comparison groups were also difficult because young people ineligible for services were not tracked.[†] In 2013, GRYD instituted a policy allowing providers to offer GRYD Primary Prevention programming to ineligible youth. This change gave young people and their families access to more limited services while also ensuring that similar data were collected for participants in both types of programming.

The purpose of this study is to examine whether GRYD Secondary Prevention services increased resilience and reduced associations with gangs using GRYD Primary Prevention participants as a comparison group. Specifically, the following research questions were explored:

- Does GRYD Secondary Prevention programming increase internal and external sources of resilience among participants?
- Does GRYD Secondary Prevention programming increase the strength of family norms among participants?
- Does GRYD Secondary Prevention programming reduce early signs of gang associations?

DATA AND METHODS

The current study used Youth Services Eligibility Tool (YSET) data collected from 7,017 participants prior to enrolling in GRYD Prevention services and after six months of receiving services between 2009 and 2020, which yielded a total of 14,034 YSET surveys for analyses.[‡] Of these 7,017 participants, 2,665 were GRYD Primary Prevention participants and 4,352 were GRYD Secondary Prevention participants. Table 2 displays the demographics for participants in both groups. Over half of the young people in GRYD Primary (55%) and Secondary Prevention programming were male (61%). Approximately three-quarters of the participants were Latino/a (77%) and approximately one-fifth were Black (21%). The average age of participants was 12.1 years of age at the initial YSET and 12.7 at retest.

Table 2: Counts of GRYD Primary and Secondary Prevention participants by race-ethnicity and gender.

	GRYD PRIMARY PREVENTION (N=2,665)		GRYD SECONDARY PREVENTION (N=4,352)	
	Male (N=1,455)	Female (N=1,210)	Male (N=2,669)	Female (N=1,683)
Black	310 (21%)	280 (23%)	568 (21%)	362 (22%)
Latino/a	1,138 (78%)	918 (76%)	2086 (78%)	1,311 (78%)
Other	7 (0.5%)	12 (1%)	15 (0.6%)	10 (0.6%)

MEASURES

Measures were drawn from YSET questions. Although the YSET measures risk factors for gang joining, GRYD Prevention programming builds upon participant assets to strengthen family support, resilience, and problem-solving. To assess the impact of programming, relevant YSET questions were recoded to orient measures toward resilience rather than risk. Responses for individual items were then combined to create scales for internal resilience, external resilience, strength of family norms, and associations with gang involvement. Table 3 provides definitions for each of these measures (see Appendix A for a list of YSET items used to measure each variable).

[†] With only one exception, prior analyses of GRYD Prevention data have not used a comparison group. In the 2017 GRYD Gang Prevention Evaluation report, however, secondary data collected from youth on probation supervision in Los Angeles County were used to compare outcomes on YSET scales over time. Results showed better outcomes for GRYD Prevention.

[‡] Youth with paired intake-retest YSETs that had inconsistent gender and/or race-ethnicity recorded and youth who were under the age of 10 or over the age of 15 were dropped from the analysis. The total number of youth excluded from regression analysis was 22.

Table 3: Descriptions and Items Used for Study Measures

MEASURE	GRYD SECONDARY PREVENTION
Internal Resilience Measures	A combined measure of prosocial tendencies, self-control, and willingness to take responsibility for antisocial or delinquent acts, all of which are treated as within-individual strengths (i.e., internal) [Note: Most of Scales A, DE & F]
External Resilience Measures	A combined measure of strong parental supervision, positive peer influences and peer avoidance of delinquency, all of which are treated as sources of risk arising from the social environment (i.e., external) [Note: Most of Scales B, G and H]
Strength of Family Norms	A combined measure of the importance placed on family rules, history and pride. [Note: Most of Scale FS]
Gang Social Activity	A combined measure of self-reported "hanging out" and participation in "activities" with gangs (short of gang joining) [Note: GM57_6mos, GM58_6mos]
Peer Gang Involvement	Self-reported perception of peer involvement in gangs [Note: H37_combo]

ASSESSING THE FEASIBILITY OF GRYD PRIMARY PREVENTION PARTICIPANTS AS THE COMPARISON GROUP

The availability of YSET data for both GRYD Primary and Secondary Prevention participants presented the opportunity to compare changes in measures over time between these groups of participants. GRYD Primary Prevention participants are a strong comparison group when pre-intervention trends for participants are similar across groups (i.e., parallel trends assumption).[24, 25] In general, establishing that comparison groups follow parallel trends requires multiple periods of pre-treatment observation,[26] and unfortunately, GRYD data only provide one period of pre- treatment observation using the intake YSET. Since the parallel trends benchmark assumption cannot be met, this study utilized an alternative "aging into risk" approach based on observations drawn from the age-crime curve.

Based on the observations that young people "age into risk," statistical comparisons between the two groups are justified if the pattern of risk measured cross-sectionally by age is similar between them at intake (i.e., before either group has received any treatment). In other words, the cross-sectional patterns between individuals are used in lieu of longitudinal trends within individuals to assess if GRYD Secondary and Primary Prevention participants follow similar trajectories as they "age into risk." If the cross-sectional similarities hold, then statistical comparisons between GRYD Secondary and Primary Prevention groups approximate the average treatment effect on the treated.

Figure 3 shows the ways that GRYD Secondary and Primary Prevention participants "age into risk" using YSET data collected from participants at intake. The levels of resilience are lower for GRYD Secondary Prevention participants compared to GRYD Primary Prevention participants, but both groups show similar declines in measures of resilience as they age (i.e., the trend lines are similar). The strength of family norms is a little more complex, rising initially and then falling in the mid-teenage years for both groups. Nonetheless, these differences are stable across groups, generating the same pattern as participants "age into risk."

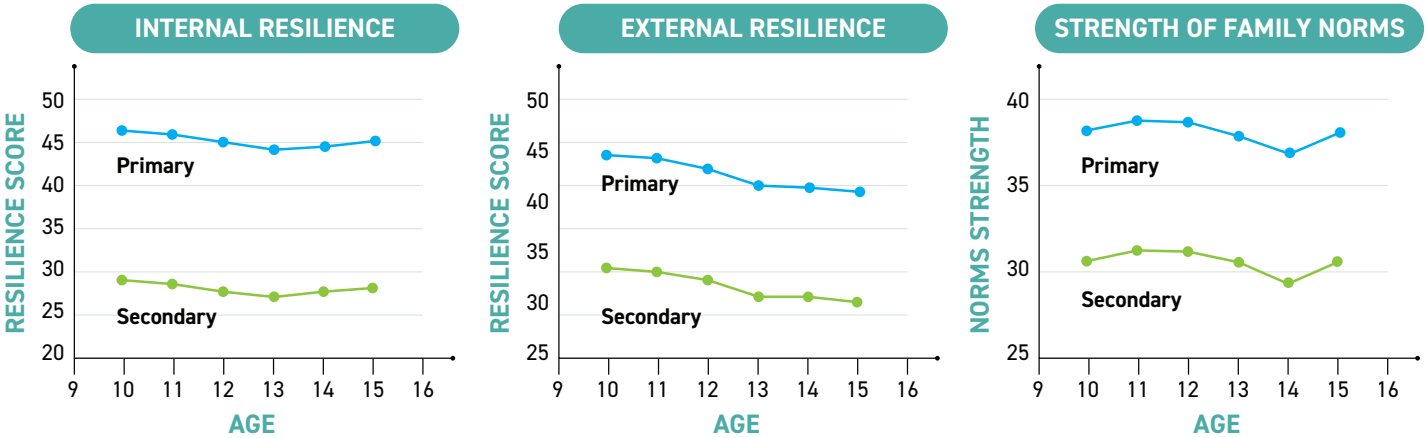

Figure 3. Cross-sectional trends by age for resilience and family norms assessed by the YSET at intake.

Measures for early signs of gang associations are displayed in Figure 4, and the results are inversely related to resilience. Whereas GRYD Secondary Prevention participants had lower levels of resilience across age groups, they had higher levels of gang associations. The opposite was true for GRYD Primary Prevention participants. Yet, once again, the pattern of findings across age (i.e., the trend lines) for both groups mirrored one another.

The parallel patterns for all measures shown in Figures 3 and 4 produce a baseline for comparing changes over time between the two groups. For example, if resilience increases for GRYD Secondary Prevention participants across time and this increase is not reflected in the findings for GRYD Primary Prevention participants, then these effects can be attributed to participation in GRYD Secondary Prevention programming with more confidence.

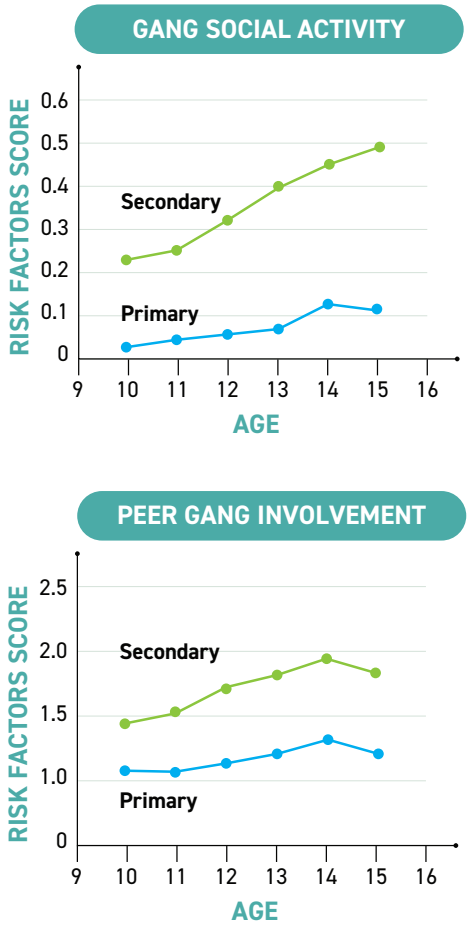

Figure 4. Cross-sectional trends by age for early signs of gang associations assessed by the YSET at intake.

ANALYSIS

Using GRYD Primary Prevention participants as a comparison group, difference-in-differences models (DiDs) were used to assess the change in resilience, family norms, and early signs of gang involvement (see Appendix B). This statistical technique compares changes on study measures for GRYD Secondary Prevention participants against changes for GRYD Primary Prevention participants. We compare these groups controlling for age-related effects. The comparison provides a rigorous assessment of whether GRYD Secondary Prevention programming played a significant role in increasing resilience and family norms while decreasing gang associations over time.

RESULTS

PRIOR TO RECEIVING GRYD PREVENTION SERVICES

At intake, GRYD Secondary Prevention participants scored 58% lower on internal resilience, 39% lower on external resilience, and 20% lower on strong family norms than GRYD Primary Prevention participants. These findings were inversely related to their exposure to risk. For example, GRYD Secondary Prevention participants were 75% more likely to engage in gang social activities and 29% more likely to perceive their friends as being part of a gang than GRYD Primary Prevention participants. These differences are consistent with expectations drawn from the "aging into risk" graphs in Figures 3 and 4.

AFTER RECEIVING SIX MONTHS OF GRYD PREVENTION SERVICES

Table 5 summarizes the Youth Services Eligibility Tool (YSET) intake/retest changes for both GRYD Secondary and GRYD Primary Prevention participants. The results show dramatic changes for GRYD Secondary Prevention participants and little to no change for GRYD Primary Prevention participants. All the changes for GRYD Secondary Prevention participants were in the desired direction, indicating their resilience had notably increased by 32% and 20% while their exposure to gang associations decreased by 50% and 12%. These findings provide initial evidence of success for GRYD Secondary Prevention programming. Raw percentage changes provide an indication of the impact of GRYD Secondary Prevention, but do not control for common trends due to aging nor differences between individuals. Next, the changes across groups were examined using difference-in-differences models (DiDs) and controlling for possible age effects.

Table 4: Proportional differences between GRYD Primary and Secondary Prevention participants at intake.

	GRYD PRIMARY PREVENTION PARTICIPANTS	GRYD SECONDARY PREVENTION PARTICIPANTS	PROPORTIONAL DIFFERENCE BETWEEN GROUPS
	Intake Mean	Intake Mean	
Internal Resilience*	43.6	27.6	-58%
External Resilience*	44.2	31.9	-39%
Family Norms*	38.8	32.3	-20%
Gang Social Activity†	0.1	0.4	+75%
Peer Gang Activity‡	1.2	1.7	+29%

* The sum of multiple five-point Likert-scale questions; † Sum of two yes-no questions; ‡ The sum of one question asking "How many of your friends have belonged to a gang?" with possible answers All, Most, Half, A Few, and None.

*Table 5: Summary of changes in average YSET responses for GRYD Primary and Secondary Prevention participants.***

	PRIMARY PREVENTION			SECONDARY PREVENTION		
	Intake Mean	Retest Mean	Percent Change	Intake Mean	Retest Mean	Percent Change
Internal Resilience*	43.6	42.5	-3% ↓	27.6	36.4	32% ↑
External Resilience*	44.2	43.6	-1% ↓	31.9	38.3	20% ↑
Family Norms*	38.8	39.3	1% ↑	32.3	36.2	12% ↑
Gang Social Activity†	0.1	0.1	-	0.4	0.2	-50% ↓
Peer Gang Activity‡	1.2	1.2	-	1.7	1.5	-12% ↓

* The sum of multiple five-point Likert-scale questions; † Sum of two yes-no questions; ‡ The sum of one question asking "How many of your friends have belonged to a gang?" with possible answers All, Most, Half, A Few, and None. ** Age effects are not controlled in these comparisons.

A deeper assessment of program impact using DiD models reinforce initial findings from Table 5: GRYD Secondary Prevention participants experienced double-digit percentage increases in resilience and double-digit percentage decreases in association with gangs while GRYD Primary Prevention participants remained relatively unchanged or experienced minor decreases in resilience (see Appendix C for detailed model results). Internal resilience for GRYD Secondary Prevention participants increased by 28%, external resilience increased by 19%, and the strength of family norms increased by 9% compared to GRYD Primary Prevention participants. The increases experienced for GRYD Secondary Prevention participants were complimented with large decreases for association with gangs (-61% and -18%) relative to GRYD Primary Prevention participants (Figure 5).

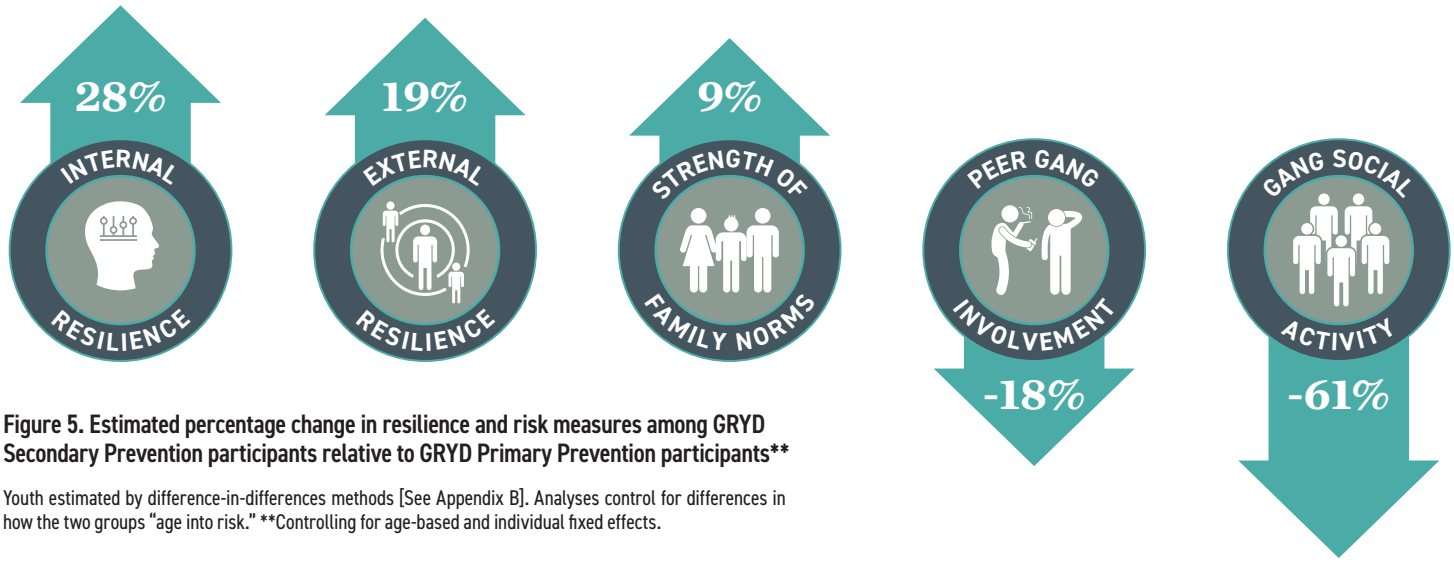

Figure 5. Estimated percentage change in resilience and risk measures among GRYD Secondary Prevention participants relative to GRYD Primary Prevention participants**

Youth estimated by difference-in-differences methods [See Appendix B]. Analyses control for differences in how the two groups "age into risk." **Controlling for age-based and individual fixed effects.

These findings are consistent with the intended goals of GRYD Prevention services and provide clear answers for the research questions posed in this study:

- GRYD Secondary Prevention programming increases internal and external resilience among participants, counterbalancing developmental processes that normally lead risk to increase with age.
- GRYD Secondary Prevention programming increases the strength of family norms among participants, counterbalancing developmental processes that normally lead risk to increase with age.
- GRYD Secondary Prevention programming decreases the likelihood that participants will "hang out" with and join in "activities" with gangs and reduces participant perceptions of peer involvement with gangs.

Taken together, these findings provide strong evidence that GRYD Secondary Prevention services help youth build resilience against internal and external risk factors that may make youth vulnerable to gang involvement. Simultaneously, GRYD Secondary Prevention services reduce participants' social interactions with gangs in ways that may protect against gang joining.

THE IMPACT OF GRYD PREVENTION SERVICES ON THE RISK OF GANG INVOLVEMENT

Table 6 displays the magnitude of the impact of GRYD Secondary Prevention services at the individual level. Of the 4,346 GRYD Secondary Prevention participants included in this study, only 67 transitioned from self-reporting both "hanging out" and participation in "activities" with gangs to reporting only one of these behaviors, a 40% decrease overall. An additional 423 youth transitioned from self-reporting either "hanging out" or participation in "activities" with gangs, to reporting neither of these behaviors, a 36% decrease overall. In sum, resilience gained through GRYD Secondary Prevention programming dramatically impacted the immediate risk of deepening one's association with gangs for 490 youth, which is 16% of the observed sample.

However, it also appears that prevention gets harder as participants "age into risk." Figure 6 shows the number of 10-year-olds whose self-reported social activity with gangs was reduced by 80% after receiving GRYD Secondary Prevention services. The number of 11-year-olds who self-reported social activity with gangs after programming was reduced by 64%. The trend continues such that the number of fourteen-year-olds self-reporting social activity with gangs decreased by about 10% while the number of fifteen-year-olds self-reporting social activity with gangs increased by 22%. Research suggests that earlier distance from gangs yields increased positive effects.[27] The same may hold true for young people entering the orbit of gangs at an early age. GRYD Secondary Prevention efforts applied early have a larger relative impact and may also have an impact that lasts longer over time.

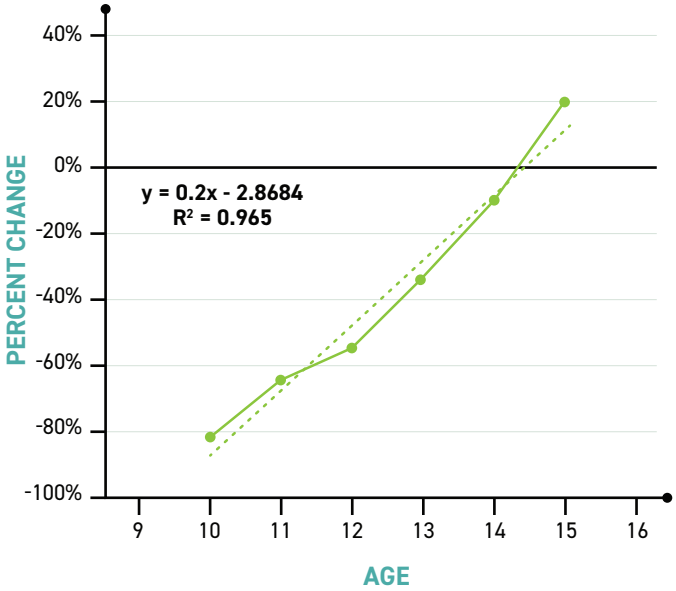

Figure 6. Percentage change in youth reporting gang social activity as a function of age after receiving GRYD Secondary Prevention services.

Table 6: Social activity with gangs self-reported by GRYD Secondary Prevention participants at Intake and Retest.

GANG SOCIAL ACTIVITY	INTAKE N	RETEST N	CHANGE N	PERCENT CHANGE
None	2,990	3,474	484	16% ↑
Hang out OR activities	1,188	765	-423	-36% ↓
Hang out AND activities	168	101	-67	-40% ↓
Total	4,346	4,340	-6	-0.1% ↓

KEY TAKEAWAYS AND THEIR IMPLICATIONS FOR GANG PREVENTION PROGRAMS

Preventing gang membership at the community level is the best approach to addressing gang violence in the long-run because it offers the opportunity to disrupt the progression of risky behaviors as young people age into adolescence.[28] The delivery of GRYD Prevention services is based on the principle of "earlier is better," and attempts to proactively build resilience and well-being for young people between 10 and 15 years old to reduce future gang associations.

The methodology used in this study validates the use of GRYD Primary Prevention participants as a comparison group to assess the impact of GRYD Prevention services on participant behavior six months after they begin GRYD Secondary Prevention services. The GRYD Office prioritized access to services for young people from the beginning; consequently, the use of random assignment into treatment and control groups has not been possible. In 2013, GRYD providers began to offer limited services to young people who did not meet the risk threshold for GRYD Prevention services. This study documents the parity in trends between this group of young people and those who met or exceeded the gang membership risk threshold. Overall, levels of resilience were lower and levels of gang associations were greater for the GRYD Secondary Prevention participants compared to GRYD Primary Prevention participants; however, the patterns between age and problem behaviors across groups mirrored one another, establishing GRYD Primary Prevention participants as a viable comparison group to measure the effectiveness of GRYD Secondary Prevention services.

Study findings illustrate the importance of focusing on resilience to reduce gang involvement. When resilience, family norms, and early signs of gang association were compared across the two groups, the findings were striking. While resilience and gang associations showed little change for the GRYD Primary Prevention participants, internal and external resilience and the strength of family norms increased significantly (28%, 19%, and 9%) while gang social activity and peer gang activity decreased significantly (-61% and -17%) for GRYD Secondary Prevention participants.

Taken together, these findings show that GRYD Prevention services are working to increase resilience and prevent gang associations. They also support reframing prevention programming to include (and prioritize) Positive Youth Development principles within historically risk-based programming. Although GRYD incorporates risk into its identification of eligible participants and to inform case planning, it centers its model on building resilience and well-being through the GRYD provider agencies' work with families and their delivery of intentional youth development activities focused on building social-emotional learning skills.[29, 30] These initial findings underscore the importance of reframing services for young people vulnerable to risks for gang membership and other problem behaviors using a Positive Youth Development approach.[31]

SUGGESTED CITATION

Brantingham, P.J., Herz, D.C., & Kraus, M. (2022). *Increasing resilience to prevent association with gangs: Assessing the impact of GRYD Prevention services* (GRYD Research Brief No. 12). Los Angeles, CA: California State University, Los Angeles

REFERENCES

1. Tremblay, A., Herz, D.C., Zachery, R., & Kraus, M. (2020) *The Los Angeles Mayor's Office of Gang Reduction and Youth Development Comprehensive Strategy* (GRYD Research Brief No. 1). Los Angeles, CA: California State University, Los Angeles.
2. Brantingham, P.J., Yuan, B., & Herz, D.C. (2020). *The impact of the GRYD Incident Response Program on gang retaliations* (GRYD Research Brief No. 2). Los Angeles, CA: California State University, Los Angeles.
3. Brantingham, P.J., Herz, D.C., & Kraus, M. (2022). *The impact of GRYD Intervention Family Case Management (FCM) services on increasing decision making independence* (GRYD Research Brief No. 10). Los Angeles, CA: California State University, Los Angeles
4. Leap, J., McBride, T., Gomez, W., & Herz, D.C. (2020). *Exploring the role of case management within GRYD Prevention and Intervention services* (GRYD Research Brief No. 4). Los Angeles, CA: California State University, Los Angeles.
5. Larson, A., Herz, D.C. (2020). *Achieving intentional youth development* (GRYD Research Brief No. 6). Los Angeles, CA: California State University, Los Angeles.
6. Kraus, M., Chan, K., Martin, A., Park, L., Leap, J., Rivas, L..., & Kolnick, K.A. (2017). *GRYD Gang Prevention 2017 Evaluation Report*. Los Angeles, CA: The Los Angeles Mayor's Office of Gang Reduction and Youth Development.
7. Vera, L., & Diep, J. (2022). *GRYD Prevention services: A summary of participants and services* (GRYD Research Brief No. 11). Los Angeles, CA: California State University, Los Angeles.
8. Hirschi, T., & Gottfredson, M. (1983). Age and the Explanation of Crime. *The American Journal of Sociology*, *89*(3), 552-584.
9. Farrington, D. P. (1986). Age and Crime. *Crime and Justice*, *7*, 189-250.
10. Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological review*, *100*(4), 674-701.
11. Loeber, R., & Le Blanc, M. (1990). Toward a developmental criminology. *Crime and Justice*, *12*, 375-473.
12. Dishion, T. J., Véronneau, M.-H., & Myers, M. W. (2010). Cascading peer dynamics underlying the progression from problem behavior to violence in early to late adolescence. *Development and psychopathology*, *22*(3), 603-619.

REFERENCES

13. Pyrooz, D. C. (2014). "From Your First Cigarette to Your Last Dyin' Day": The Patterning of Gang Membership in the Life-Course. *Journal Of Quantitative Criminology*, *30*(2), 349-372.
14. Pyrooz, D. C., & Sweeten, G. (2015). Gang membership between ages 5 and 17 years in the United States. *Journal of Adolescent Health*, *56*(4), 414-419.
15. Craig, W. M., Vitaro, F., Gagnon, L., & Tremblay, R. E. (2002). The Road to Gang Membership: Characteristics of Male Gang and Nongang Members from Ages 10 to 14. *Social Development*, *11*(1), 53-68.
16. Sampson, R. J., & Laub, J. H. (1992). Crime and Deviance in the Life Course. *Annual Review of Sociology*, *18*, 63-84.
17. Augustyn, M. B., McGloin, J. M., & Pyrooz, D. C. (2019). Does gang membership pay? Illegal and legal earnings through emerging adulthood. *Criminology*, *57*(3), 452-480.
18. Gilman, A. B., Hill, K. G., & Hawkins, J. D. (2014). Long-term consequences of adolescent gang membership for adult functioning. *American Journal of Public Health*, *104*(5), 938-945.
19. Krohn, M. D., Ward, J. T., Thornberry, T. P., Lizotte, A. J., & Chu, R. (2011). The cascading effects of adolescent gang involvement across the life course. Criminology, *49*(4), 991-1028.
20. Esbensen, F.-A., & Carson, D. C. (2012). Who are the gangsters? An examination of the age, race/ethnicity, sex, and immigration status of self-reported gang members in a seven-city study of American youth. *Journal of Contemporary Criminal Justice, 28*(4), 465-481.
21. Hennigan, K. M., Kolnick, K. A., Vindel, F., & Maxson, C. L. (2015). Targeting youth at risk for gang involvement: Validation of a gang risk assessment to support individualized secondary prevention. *Children and youth services review, 56*, 86-96.
22. Hennigan, K. M., Maxson, C. L., Sloane, D. C., Kolnick, K. A., & Vindel, F. (2014). Identifying high-risk youth for secondary gang prevention. *Journal of Crime and Justice, 37*(1), 104-128.
23. Dishion, T. J., & Piehler, T. F. (2009). Deviant by design: Peer contagion in development, interventions, and schools. In K. H. Rubin, W. M. Bukowski, & B. Laursen (Eds.), *Handbook of peer interactions, relationships, and groups* (pp. 589–602). New York: The Guilford Press.
24. Wing, C., Simon, K., & Bello-Gomez, R. A. (2018). Designing Difference in Difference Studies: Best Practices for Public Health Policy Research. *Annual review of public health, 39*(1), 453-469.
25. Ridgeway, G., Grogger, J., Moyer, R. A., & MacDonald, J. M. (2019). Effect of Gang Injunctions on Crime: A Study of Los Angeles from 1988–2014. *Journal Of Quantitative Criminology, 35*(3), 517-541.
26. Ryan, A. M., Kontopantelis, E., Linden, A., & Burgess, J. F. (2019). Now trending: Coping with non-parallel trends in difference-in-differences analysis. *Statistical Methods in Medical Research, 28*(12), 3697-3711.
27. Sweeten, G., Pyrooz, D. C., & Piquero, A. R. (2013). Disengaging From Gangs and Desistance From Crime. *Justice Quarterly, 30*(3), 469-500.
28. Sharkey, P., Torrats-Espinosa, G., & Takyar, D. (2017). Community and the Crime Decline: The Causal Effect of Local Nonprofits on Violent Crime. *American Sociological Review, 82*(6), 1214–1240.
29. Leap, J., McBride, T., Gomez, W., & Herz, D.C. (2020). *Exploring the role of case management within GRYD Prevention and Intervention services* (GRYD Research Brief No. 4). Los Angeles, CA: California State University, Los Angeles.
30. Larson, A., Herz, D.C. (2020). *Achieving intentional youth development* (GRYD Research Brief No. 6). Los Angeles, CA: California State University, Los Angeles.
31. Osher, D., Pittman, K., Young, J., Smith, H., Moroney, D., & Irby, M. (2020). *Thriving, robust equity, and transformative learning & development: A more powerful conceptualization of the contributors to youth success*. Washington, DC: American Institutes for Research and Forum for Youth Investment.

APPENDIX A

Table 7: Descriptions of and Items Used for Study Measures

TARGETED MEASURE	DESCRIPTION OF MEASURE	#SET ITEMS	ITEMS COMBINED TO OPERATIONALIZE MEASURE
Internal Resilience	Attitudinal or behavioral sources of resilience that originate within the individual	15	• Most of the items from YSET Scales A, DE & F • Reverse coding of antisocial tendencies (6 questions) yields a measure of prosocial tendencies • Reverse coding of impulsive risk taking (3 question) yields a measure of self-control • Reverse coding guilt neutralization (6 questions) yields a measure of accepting responsibility for antisocial and delinquent actions
External Resilience	Sources of resilience originating in the individual's social environment	13	• Most of the items from YSET Scales B, G and H • Weak parental supervision (3 questions) • Peer influence (5 questions) • Peer delinquency (5 questions)
Strength of Family Norms	Role of rules, and pride in family history	13	• Most of the items from YSET Scales FS • The importance and breadth of family rules (7 questions) • The importance of and pride in family history (6 questions)
Gang Social Activity	Social activities centered on gangs	2	• YSET items: GM57_6mos, GM58_6mos • Have you hung out with gang members in your neighborhood in the last six months? [yes,no] • Have you participated in gang activities or actions in the last six months? [yes,no]
Peer Gang Involvement	Self-reported perception of friend or peer involvement with gangs	1	• YSET item: H37_combo • How many of your friends have belonged to a gang? [all, most, half, a few, none]

APPENDIX B

Description of Statistical Models

A difference-in-differences (DiD) approach to evaluating the impact of GRYD Secondary Prevention services on youth resilience and risk for gang joining was followed. DiD models can provide insights in observational studies, which are generally hampered by the inability to observe both what happened to a subject, as a result of treatment, and what would have happened had that same subject not be exposed to treatment (i.e., the counterfactual case). DiD models seek to circumvent this limitation by assuming that a control group provides a reasonable guide to what would have happened with the treatment group had they not received treatment.[24]

$$Y_{ist} = \beta_1 S_i T_t + \gamma A_{it} + \mu_i + \epsilon_{ist}$$

In this model, Y_{ist} is an outcome measured by the YSET (e.g., internal resilience) for individual i, in treatment groups S in treatment period T. Thus, $S_i=0$ if i is in GRYD Primary Prevention and $S_i=1$ if they are in GRYD Secondary Prevention. $T_t=0$ if an observation comes from Intake (i.e., the pretreatment period) and $T_t=1$ if it is a Retest (i.e., post-treatment). A_{it} is a vector of indicator variables identifying the age of each subject i at time t, which is used to control for youth "aging into risk." Finally, μ_i represents fixed effects associated with individual i and ϵ_{ist} is the error term that varies by individual, treatment group and treatment period. The parameter of interest is β_1, which is an estimate of the average treatment effect on the treated (ATT). Fixed effects linear regression with robust standard errors were used to estimate the models. A correction is applied to GRYD Secondary Prevention measures, based on pre-treatment differences in trends.

Numerical ATT estimates for the resilience and risk measures considered here are difficult to translate into attitudes and behavior (see Table 4 on mean resilience and risk scores). As a result, model estimates were used to compute the percentage change in resilience and risk scores among GRYD Secondary Prevention participants relative to the change seen among GRYD Primary Prevention participants. These results are shown in Figure 5 and give a more intuitive sense of the relative magnitude of the effect of GRYD Secondary Prevention services on risk.

APPENDIX C — DiD MODEL RESULTS

Table 8: Results of DiD analyses.

	ATT (β_1)	SE	T	P-VALUE	95% CONFIDENCE INTERVAL		BASELINE (β_0)	% CHANGE
Internal Resilience	9.85	0.29	34.28	<0.001	9.29	10.41	34.95	28.2%
External Resilience	6.89	0.22	30.99	<0.001	6.45	7.32	35.96	19.2%
Strength of Family Norms	3.16	0.29	10.78	<0.001	2.59	3.73	33.76	9.4%
Gang Social Activity	-0.14	0.01	-12.39	<0.001	-0.16	-0.12	0.23	-60.9%
Peer Gang Involvement	-0.26	0.02	-13.39	<0.001	-0.30	-0.22	1.46	-17.8%

The average treatment effect on the treated (ATT) is estimated by fixed effect linear regression (see Appendix). The relative magnitude of the treatment effect is given as a percentage change. ATT for GRYD Secondary Prevention is measured relative to GRYD Primary Prevention participants controlling for age.

This research was conducted as part of the California State University, Los Angeles GRYD Research & Evaluation Team led by Research Director Denise C. Herz, Ph.D and Director Molly Kraus, MPL. Permission to use these data was provided by the City of Los Angeles Mayor's Office of Gang Reduction and Youth Development (GRYD). Any opinions, findings, conclusions, or recommendations expressed in this study, however, are those of the author(s) and do not necessarily reflect the views of the GRYD Office. This research was funded by the City of Los Angeles contract number C-132202 with Cal State L.A. The GRYD Comprehensive Strategy, and all components therein, was created by the City of Los Angeles Mayor's Office of Gang Reduction and Youth Development and is the copyright of the City of Los Angeles. These materials may not be reproduced, modified, displayed, published, or otherwise distributed in any form or by any means without the prior written consent of the City of Los Angeles.