Improving Case Plans and Interventions for Adolescents on Probation:
The Implementation of the SAVRY and a Structured Case Planning Form

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Abstract

Even when probation officers use risk assessment tools, many of their clients' needs remain unaddressed. As such, we examined whether the implementation of the Structured Assessment of Violence Risk in Youth (SAVRY) and a structured case planning form resulted in better case plans as compared to prior practices (i.e., a non-validated local tool and an unstructured plan). Our sample comprised 216 adolescents on probation who were matched via propensity scores. Adolescents in the SAVRY/Structured Plan condition had significantly better case plans than those in the pre-implementation condition. Specifically, following implementation, adolescents' high need domains were more likely to be targeted in plans. Plans also scored higher on other quality indicators (e.g., level of detail). These improvements appeared to be due primarily to the structured plan rather than the SAVRY. Overall, our findings highlight that, just as structure can improve risk assessments, so too might structure improve case plans.

Keywords: need principle, risk principle, SAVRY, risk assessment, risk management, case management

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Risk assessment tools for violence and reoffending are widely used in youth probation settings (Wachter, 2015). One of the goals of these tools is to guide case planning and intervention delivery. However, research suggests that, even though tools may be a starting point, they do not guarantee that adolescents will receive the interventions that they need (Viljoen, Cochrane, & Jonnson, 2018). As such, there is a need for strategies that help to strengthen bridges between risk assessment and risk management efforts.

In this study, we tested if the adoption of: (1) a well-validated adolescent risk assessment tool, and (2) a case plan form, improved the quality of youth probation officer's (YPOs) case plans. Our community partner was a large youth justice authority. In 2012, they adopted the Structured Assessment for Violence Risk in Youth (SAVRY; Borum, Bartel, & Forth, 2006), one of the most widely used risk assessment tools for adolescents (Viljoen, McLachlan, & Vincent, 2010). The SAVRY has strong research support, with a couple of meta-analyses showing that it can significantly predict violent and general reoffending among adolescents (Olver, Stockdale, & Wormith, 2009; Singh, Grann, & Fazel, 2011). At the same time that they adopted the SAVRY, our partner also adopted a structured case planning form, which prompted YPOs to include interventions to target youths' dynamic risk and protective factors.

Prior to the adoption of the SAVRY, our partners used a local tool called the Youth Community Risk Needs Assessment (YCRNA; Glackman, 1999). Although this tool included modifiable factors (e.g., peer relationships, substance abuse, parental supervision), it had not been validated. Indeed, when our partners adopted this tool in the 1990s, few validated tools for adolescent risk assessment existed. During the time period that they used the YCRNA, our partners used an unstructured approach to case planning, wherein YPOs recorded their plans in case logs using an open-ended format.

To set the stage for this research, we start by describing common limitations with case plans. Then, following this, we review research on whether changing tools or structuring case plans might improve the quality of case plans.

Problems with Case Plans

What are the characteristics of a good case plan? Ideally, case plans should show match to the risk, need, and responsivity principles of the risk-need-responsivity (RNR) model (Andrews & Bonta, 2010; Bonta & Andrews, 2017), as these principles have considerable empirical support (e.g., Koehler, Lösel, Akoensi, & Humphreys, 2013; Lowenkamp, Latessa, & Holsinger, 2006). According to the risk principle, adolescents who have committed crimes should be provided with interventions that are commensurate with their risk level. According to the need principle, adolescents should receive interventions that target modifiable risk factors or criminogenic needs that contribute to their offending, such as substance use treatment for an adolescent whose offending is driven by substance use. Finally, according to the responsivity principle, adolescents should receive cognitive-behavioral interventions that are tailored to

individual characteristics (e.g., strengths). Despite the importance of these principles, case plans do not always adhere to them.

Modest match to the need principle. Following the use of risk assessment tools, match to the risk principle is often acceptable (Viljoen et al., 2018), meaning that YPOs tend to plan out higher supervision levels and more services for adolescents who are high risk than those who are low risk (Luong & Wormith, 2011; Vincent, Guy, Perrault, & Gershenson, 2016; Nelson & Vincent, 2018). However, match to the need principle is often quite modest even when tools are used (Viljoen et al., 2018). On average, only 33% to 63% of the modifiable needs identified via risk assessments are addressed in case plans (Dyck, 2016; Holloway, Cruise, Morin, Kaufman, & Steele, 2018; Luong & Wormith, 2011; Singh et al., 2014, Vieira, Skilling, & Peterson-Badali, 2009). In many studies, overall needs match is less than 50% (Auditor General of Ontario, 2012; Bosker, Witteman, & Hermanns, 2013; Dyck, 2016; Vieira et al., 2009). This is concerning because it suggests that YPOs may miss opportunities to help adolescents desist. For instance, in one study, adolescents who had low needs match were 18 times more likely to reoffend than those with high needs match (i.e., > 75% of needs addressed; Vieira et al., 2009).

Adherence to other best practices may be limited. Besides limited match to the need principle, YPOs' case plans may fall short of their potential in other respects. For instance, even though practice guidelines recommend client involvement in case planning, client goals are not necessarily taken into account (Bosker et al., 2013). Responsivity factors such as trauma, culture, and strengths are rarely addressed (Holloway et al., 2018; Luong & Wormith, 2011; Singh et al., 2014). In one study, for instance, YPOs mentioned responsivity factors in only 20% of adolescents' case plans (Luong & Wormith, 2011). In addition, although theory and research on goal-setting suggest that it is important to develop goals that are detailed, specific, and attainable (Locke & Latham, 1990), researchers have not yet examined the extent to which YPOs' plans adhere to these criteria.

Plans are not carried out. Besides limitations with plans themselves, research indicates that, even if case plans are adequate, they are not necessarily carried out (Viljoen et al., 2018). For instance, Peterson-Badali, Skilling, and Haqanee (2015) found that although adolescents' risk-needs scores informed treatment plans, 40% of adolescents did not have any of their needs addressed in subsequent probation services. Research has also reported that, in their sessions with clients, probation officers spent little time working on criminogenic needs (Bonta, Scott, Bourgon, & Yessine, 2008). These results indicate a "lack of follow through" (Bonta et al., 2008, p. 266), or in other words, "slippage" between assessments and interventions (Peterson-Badali et al., 2015, p. 304).

Strategies to Improve the Quality of Plans

Structured case planning protocols. One potential means by which to improve case plans is through structured case planning forms or protocols. Indeed, a core feature of "fourth generation risk assessment tools," such as the Level of Service/Case Management Inventory (LSI/CMI; Andrews, Bonta, & Wormith 2004) and the Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge & Andrews, 2011), is that they include a case management form. Although researchers hypothesized that such forms will increase the utility

of risk assessment tools (Bonta & Andrews, 2017), only two studies have tested this hypothesis according to a systematic review (Viljoen et al., 2018).

The first of these studies used a vignette design, wherein probation officers developed case plans using either a risk assessment tool alone (i.e., Recidivism Risk Assessment Scale) or a version of this tool that also included a case planning form with questions and suggested interventions (i.e., a structured decision support protocol; Bosker, Witteman, Hermanns, & Heiji, 2015). Plans that were developed with a case planning form showed better agreement about the intensity of supervision and criminogenic needs to target than those developed with the risk assessment tool alone. In a subsequent field study, Bosker and Witteman (2016) found that the case planning form was associated with improved match to the risk principle in real-world case management plans. In addition, it led to improvements on other quality indicators, such as the extent to which plans addressed probationers' own goals. However, it did not significantly improve overall match to the needs principle.

Although these findings suggest that structured case planning approaches hold promise, knowledge is scarce. Furthermore, whereas the structured form used by Bosker and colleagues was comprehensive and included suggestions about interventions to use (Bosker & Witteman, 2016), it is unclear whether simpler forms, similar to those used in the LSI tools, could also improve case plans. For instance, do forms that simply instruct evaluators to consider needs, without suggesting specific interventions, produce positive effects? In the current study, we tested this possibility.

Validated tools with dynamic factors. The characteristics of tools themselves might also impact the quality of case plans, as some tools may be better-suited to case planning than others. More specifically, researchers widely agree that, to guide case planning, tools should be well-validated and include dynamic or modifiable factors (e.g., Douglas & Skeem, 2005). In the single study that has examined how different tools impacts case plans, Guy, Vincent, Grisso, and Perrault (2015) compared the SAVRY to the Juvenile Assessment Generic (JAG). Although both tools included dynamic factors, the JAG had not yet been tested. Contrary to expectations, the association between risk level and service referrals was higher for the JAG than the SAVRY. As such, switching to validated, well-known tools does not necessarily improve plans. In the current study, we further tested this by comparing plans developed with the SAVRY with a non-validated tool, the YCRNA, both of which included dynamic factors.

Training. Other strategies, such as training professionals in the RNR principles, might also improve plans. Although research is limited, in one study, researchers trained police officers and other service providers in the RNR principles (Storey, Gibas, Reeves, & Hart, 2011). Following training, match between needs and planned management strategies increased, but match to the risk principle did not.

Policies. Policies related to the RNR principles likely impact the quality of case plans as well. Vincent, Guy, Gershenson, and McCabe (2012) reported that, after the standard SAVRY training, YPOs did not show adherence to the risk principle in their decisions about service referrals and supervision level. Instead, adherence to this principle was only obtained after the agency had implemented relevant policies and a case management form, and trained YPOs in

how to use the SAVRY in their decision-making.

In the current study, YPOs did not receive RNR training, nor did our partners adopt policy changes. As they were already using a risk assessment tool (i.e., the YCRNA), relevant policies were already in place, such as policies regarding number of monthly contacts for adolescents who were low, moderate, and high risk. Instead, our focus was on the impact of adopting a structured case planning form and switching to a validated tool.

Present Study

As this review indicates, even when YPOs use risk assessment tools, their case plans do not necessarily show adequate adherence to the RNR principles. This is not surprising; often, the manuals and training for tools do not provide much guidance with respect to case planning. Despite the need for viable strategies by which to improve plans, research is limited. As such, in the present study, we tested whether the adoption of a simple case plan form and well-validated adolescent risk assessment tool, the SAVRY, resulted in better case plans as compared to an unstructured approach to case planning and non-validated tool (i.e., YCRNA). Our research questions were as follows:

1. Does the adoption of the SAVRY/Structured Plan increase adherence to the risk and need principles?
2. Does it improve the general quality of case plans, such as the extent to which plans are detailed, feasible, and developed through collaboration with adolescents?
3. Besides improving case plans, does the SAVRY/Structured Plan improve the actual delivery of interventions in the six months following the case plan?
   To test these questions, we conducted a pre- post-study with propensity score matching.

We hypothesized that the implementation of the SAVRY/Structured Plan would be associated with improved match to the needs principle, and higher overall quality of plans. However, we did not anticipate that the SAVRY/Structured Plan would lead to better match to the risk principle, as the case planning form did not introduce changes related to the risk principle. In addition, we did not anticipate that better plans would necessarily translate into improved interventions. Even when professionals develop good case plans, it can be challenging to carry out plans due to factors such as lack of available interventions (Haqanee, Peterson-Badali, & Skilling, 2015).

Method

Participants

Our final sample of propensity-score matched participants included 216 adolescents who were on community probation in a Canadian province. Of these, 108 adolescents were in the YCRNA/Unstructured Plan condition, and 108 adolescents were in the SAVRY/Structured Plan condition. Although most participants were male (75.9%, $n = 164$), one-quarter were female (24.1%, $n = 52$). The mean age was 17.28 ($SD = 1.32$). Approximately 54.6% ($n = 118$) of adolescents were Caucasian, 32.4% ($n = 70$) were Indigenous, 2.3% ($n = 5$) were South Asian (i.e., East Indian), 2.3% ($n = 5$) were Asian, 1.9% ($n = 4$) were Hispanic, and 1.4% ($n = 3$) were

African or Black. Approximately two-thirds of participants had prior charges (64.8%, *n* = 140), and nearly one-half had been previously incarcerated (49.5%, *n* = 107). With respect to index offenses, 39.8% (*n* = 41) were charged with a violent offense, 40.8% (*n* = 42) with a property offense, and 11.7% (*n* = 12) with a violation. On average, probation orders for the index offense were 11.66 months (*SD* = 4.83 months, Range = 1.63 to 27.30 months).

Study Conditions

This study had two conditions: (1) the YCRNA/Unstructured Plan condition, and (2) the SAVRY/Structured Plan condition. In both of these conditions, YPOs conducted risk assessments with adolescents *after* they have been adjudicated and sentenced. The main differences between these conditions was that the structured plan included the completion of a standardized case planning form, whereas the unstructured plan did not have a prespecified case planning format. In addition, whereas the SAVRY had considerable research support, the YCRNA had not yet been empirically tested.

Youth Community Risk Needs Assessment (YCRNA)/Unstructured Plan. The YCRNA (Glackman, 1999) was designed to assess risk of general offending in adolescents. It includes three sections. The first section, Contemporary Risk Needs Assessment, includes nine modifiable needs (i.e., Family Relationships, Parental Supervision, Living Arrangements, Educational/Employment/Day Program Activities, Peer Relations, Substance Abuse, Leisure/ Recreation, Personality/Behavioural, Attitudes). Each item is rated on a four-point scale (A = the factor is an asset, B = no immediate need for improvement, C = some need for improvement, D = considerable need for improvement). The second section, Historical Risk Assessment, includes 13 risk items (e.g., number of prior court dispositions), which are also rated as A, B, C, or D. The final section includes a checklist of 43 additional considerations (e.g., low intelligence/ developmental delay). After rating items, raters make an overall case needs rating and an overall historical risk rating (low, moderate, or high).

To our knowledge, no prior research has examined the interrater reliability or validity of the YCRNA. Furthermore, it was not feasible to obtain interrater reliability data in the present sample, as the YCRNA data was collected retrospectively. During the time that the YCRNA was used, YPOs wrote plans in their case logs through a narrative and a point form list.

Structured Assessment of Violence Risk in Youth (SAVRY)/Structured Plan. The SAVRY (Borum et al., 2006) was designed to assess violence risk in adolescents. It includes 10 Historical Risk Factors (e.g., History of Violence), and 14 dynamic risk factors, which fall in the Social/Contextual domain (e.g., Poor Parental Management) and Individual/Clinical domain (e.g., Negative Attitudes). Each risk factor is rated low, moderate, or high. The SAVRY also includes six Protective Factors (e.g., Prosocial Involvement), which are rated as present or absent. After rating items, evaluators make a summary risk rating of low, moderate, or high risk for violence. Studies have found the SAVRY to have moderate predictive validity for predicting violence and general reoffending (Lawing, Childs, Frick, & Vincent, 2017; Olver et al., 2009; Singh et al., 2011), and adequate interrater reliability when used by YPOs (Vincent, Guy, Fusco, & Gershenson, 2012).

Similar to many field studies (e.g., Luong & Wormith, 2011), it was not possible to check interrater reliability for the SAVRY assessments included in the present sample. However, in the month prior to the SAVRY implementation, we examined YPOs' interrater reliability in coding a case vignette involving an adolescent offender (participation rate was 98.4%). In most cases (i.e., 87.7%, $n = 107$), YPOs' SAVRY Risk Total score fell within 4 points of the consensus rating that had been developed by the research team and SAVRY co-author, Dr. Patrick Bartel; this criterion was chosen as it represents a less than 10% difference in scores. This suggests that YPOs achieved some consistency in their ratings.

Given that the SAVRY does not include a case planning form, the youth justice authority developed a computerized form to accompany it through consultation with YPOs and the research team. On this form, YPOs used a drop-down menu to select dynamic SAVRY risk and protective factors to include in the plan. They were instructed to select risk factors that were high or critical (i.e., directly linked to offending), and at least one protective factor. Then, for each selected factor, YPOs wrote in a goal, planned intervention (e.g., service), and target date to achieve this goal. The form also included sections to write in youths' own goals, court orders, and victim-safety plans (if relevant).

Implementation Process. To implement the SAVRY/Structured Plan, we used a stepwise approach similar to that recommended by Vincent, Guy, and Grisso (2012). First, to help the youth justice agency decide which tool to implement, we wrote a report describing various risk assessment tools. Based on staff feedback, the agency opted to implement the SAVRY. One of the features that staff reported liking about the SAVRY is its inclusion of protective factors. Second, to prepare for the implementation of the SAVRY, we consulted with stakeholders (e.g., YPOs, managers, Indigenous advisors), and provided overviews of the SAVRY via online presentations. Third, in consultation with the research team, the agency developed a case planning form. Fourth, the SAVRY and training materials were pilot tested with approximately 15 YPOs who attended a pilot training. Fifth, following this pilot work, a SAVRY co-author, Dr. Patrick Bartel, provided six SAVRY training sessions, each with 30-40 participants, which 98.4% of YPOs in the province attended ($n = 123$). This training focused on how to rate SAVRY items rather than on case planning or the RNR model. Youth justice managers also briefly introduced the case planning form at that time. Sixth, the SAVRY and structured plan were adopted throughout the province.

Procedures

Ethics approval for this study was provided by the university and study site. All data collection adhered to ethical guidelines (American Psychological Association, 2013, 2017; Canadian Psychological Association, 2017).

To sample adolescents in the YCRNA/Unstructured Plan condition, the youth justice authority generated a list of all adolescents in the province who were on a supervision order in the six months *prior* to the implementation of the SAVRY/Structured Plan (March 1 – August 31, 2012). Similarly, to sample participants in the SAVRY/Structured Plan condition, they generated a list of all adolescents in the province who were on a supervision order in the six months *following* the implementation (November 1, 2012 – April 7, 2013). No cases were

sampled for September 1 – October 31, 2012 because SAVRY trainings were held during this period, and thus the SAVRY was not yet fully implemented. To ensure that we retained as large a sample as possible after propensity score matching, we oversampled SAVRY/Structured Plan cases (i.e., 150 YCRNA/Unstructured Plan cases, 233 SAVRY/Structured Plan cases).

In some cases ($n = 26$), the adolescents' youth justice records were sealed because the adolescent had turned 18-years old. In these instances, we coded a replacement case. In addition, if an adolescent was already included in the YCRNA/Unstructured Plan sample, we did not include them in the SAVRY/Structured Plan sample ($n = 11$). Finally, given that this study focused on the quality of case plans, we excluded cases in which there was no plan on file (i.e., $n = 27$ cases in the YCRNA/ Unstructured Plan sample; $n = 57$ cases in the SAVRY/Structured Plan sample).

After sampling cases, six research assistants or RAs (five undergraduate students, one graduate student) extracted the YPO's YCRNA or SAVRY risk assessment from an electronic provincial justice database, and coded reoffense records. A separate team of RAs (three graduate students, one student with a B.A. in Honours Psychology) rated YPOs' case plans and interventions. RAs had access to YPO's risk assessments, service plans, contact logs, communications with service providers, presentence reports, service referral logs, integrated case management notes, service update reports, interim summaries, team updates, reports to Crown counsel (i.e., prosecution), court records, and breach reports. Prior to coding, RAs completed: (1) a half day training on the justice database delivered by a certified trainer; (2) approximately seven hours of didactic training on the study measures, and (3) at least five practice cases.

To check interrater reliability, a random sample of 35 cases were independently coded by a second RA with access to the same file information. We calculated intraclass correlation coefficients (ICCs) using a two-way random effect model for single raters, absolute agreement (McGraw & Wong, 1996). Drawing from Cicchetti's (1994) guidelines, we interpreted ICCs of $< .40$ as poor, $.40 – .59$ as fair, $.60 – .74$ as good, and $\geq .75$ as excellent.

Measures

Match to risk principle. Similar to other research (e.g., Vincent et al., 2016), we examined the number of planned services that were listed in case plans (ICC = .70, good range), and the planned level of supervision (i.e., YPOs' ratings of whether low, moderate, or high levels of supervision were required; ICC = .96, excellent range). In addition, using case logs, we calculated the number of times that the adolescents met with YPOs (ICC = .77, excellent range), and therapists during the six months following their case plan (ICC = .70, good range).

Needs Match Rating Tool. To measure match to the needs principle, we developed a needs match tool by conducting a review of prior research (e.g., Dyck, 2016; Holloway, 2015; Peterson-Badali et al., 2015; Singh et al., 2014), feedback from an expert, and pilot testing. As our goal was to capture a full range of interventions, this tool included not only services delivered by service providers (e.g., substance use treatment) but also less formal interventions directly delivered by YPOs (e.g., arranging leisure activities, problem-solving).

The needs match tool was completed in a stepwise process. First, RAs took stock of which interventions that YPOs mentioned in their case plans or case logs by completing a 44-item intervention inventory. Second, RAs rated whether these interventions targeted modifiable needs areas in the Central Eight model (Bonta & Andrews, 2017). These domains include Family and Caregivers, Peers, Substance Use, School, Leisure, Personality Features, and Procriminal Attitudes. For each domain, RAs rated needs match on three-point scale (0 = no intervention, 1 = some/possible interventions [i.e., less formal strategies such as YPOs planning activities for adolescents or problem-solving with adolescents], and 2 = substantial interventions [i.e., formal strategies such as therapy]), using the operational definitions and examples provided (a copy is available upon request).

Third, RAs calculated the overall percent of high needs addressed. To do so, they examined the areas in which an adolescent had high ("substantial") needs, as measured with the C8 Risk Rating Tool, described below. Then, they added up the number of these high needs areas for which the adolescent had some/possible or substantial interventions and divided that by the adolescent's total number of high needs. For instance, if an adolescent had high needs in school and substance use but only received services related to school, match would be 50%.

RAs rated needs match for both case plans (i.e., whether plans included interventions to address needs), and delivered interventions (i.e., whether adolescents received relevant interventions in six months following the plan). ICCs fell in the good range for the percent of high needs addressed in plans (ICC = .65), and in the fair range for the percent of high needs addressed in delivered interventions (ICC = .59).

Adherence Checklist for the Evaluation and Reduction of Risk (ACERR). To measure the general quality of case plans and interventions, we used the Plan and the Delivered Interventions sections of the ACERR. We developed the ACERR through a review of recommended practices for risk management, feedback from two experts, and pilot testing. It includes the risk, need, and responsivity principles (Bonta & Andrews, 2017), as well as other quality indicators (e.g., level of detail). In particular, the Plan section examines the extent to which the plan was the right intensity (Item 1), addressed key risk factors (2), included evidence-based strategies (3), included protective factors (4), was tailored to culture (5), was tailored to other individual characteristics such as trauma (6), included an array of strategies (7), was manageable and focused (8), and had adequate detail (9). It also examines whether, in developing the plan, the professional communicated and collaborated with the adolescent and their family (10), and service providers (11). The Delivered Interventions section includes a similar set of 10 items. However, these items are rated based on interventions that adolescents received in the six months following the case plan. Each item is rated on a four-point Likert scale (0 = substantial limitations, 1 = some limitations, 2 = meets expectations, 3 = exceeds expectations), and is then summed. In prior research, the ACERR has shown excellent interrater reliability (i.e., ICC for Plans Total Score = 0.85; Holloway, 2015). In the present study, ICCs fell in the fair range for total scores on Plans and Delivered Interventions (ICC = .58 and .55, respectively).

Central Eight (C8) Risk Rating Tool. To provide a common metric for measuring adolescents' risk and needs across the study conditions, we developed the C8 Risk Rating Tool.

We could not use YCRNA and SAVRY because different tools were used across conditions. The C8 includes the following items from the Central Eight model (Bonta & Andrews, 2017): (1) Offense History, (2) Family and Caregivers, (3) Peers, (4) Substance Use, (5) School, (6) Leisure, (7) Personality Features, and (8) Procriminal Attitudes. After reviewing all available file information (e.g., presentence reports, service logs), RAs rated each item as 0 (no difficulties), 1 (some or possible difficulties), or 2 (significant difficulties), using item definitions. Then, they summed item scores to create a total score. Interrater reliability was excellent for the risk total score (ICC = .86). In addition, the C8 Risk Total Score significantly predicted reoffending over a mean follow-up of 2.32 years (SD = 0.42 years, Range = 0.44 to 3.76 years). Area under the curve scores (AUCs) were .71 for any charges (SE = .03 [CI = .65 – .77], p < .001), and .68 for violent charges (SE = .03 [CI = .61 – .75], p < .001). C8 Risk Total scores also had high Pearson correlations with the YCRNA Total score (r = .64, p < .001), and the SAVRY Risk Total score (r = .79, p < .001), suggesting adequate concurrent validity.

Data Analysis Plan

Propensity score matching. Prior to conducting our analyses, we compared the sample characteristics of the YCRNA/Unstructured Plan and SAVRY/Structured Plan samples. As shown in Table 1, adolescents in the original YCRNA/ Unstructured Plan sample were significantly older, $t(277)$ = 2.46, p = .015, and scored significantly higher on the C8 Risk Total score, $t(276.43)$ = 3.91, p <.001. As such, to generate more equivalent samples, we conducted propensity score matching in SAS version 9.2 (SAS Institute, 2011). Propensity score matching is an analytic technique that is used to reduce potential bias resulting from differences in measured characteristics between treatment and control groups when participants cannot be randomly assigned (Rosenbaum & Rubin, 1983). For each youth, we conducted logistic regression analysis to generate a propensity score that represented a youth's conditional probability of being in the YCRNA/Unstructured Plan sample (versus SAVRY/Structured Plan sample) based on six covariates: age, male sex, ethnicity (i.e., Indigenous or non-Indigenous), prior conviction, probation length, and C8 Risk Total score. If the participant was missing data on any covariate, they were not included in the match (n = 8).

Next, a matching algorithm was used to pair a youth in the YCRNA/Unstructured Plan sample with a similar youth in the SAVRY/Structured Plan sample. We first tested 1-to-1 nearest-neighbor matching without replacement (Coca-Perraillon, 2006). In this approach, an adolescent from the SAVRY/Structured Plan group that has the closest propensity score to an adolescent in the YCRNA/Unstructured Plan group is selected as the match. However, even after matching, the YCRNA/Unstructured Plan sample was significantly older than the SAVRY/Structured Plan sample, $t(226)$ = 2.39, p = .018, and they scored significantly higher on the C8 Risk Total Scores, $t(212.81)$ = 2.50, p =.013.

As such, we next tested 1-to-1 nearest-neighbor *caliper* matching without replacement. In this approach, participants are matched only if the absolute difference in their propensity scores is within a prespecified distance (i.e., caliper). Based on the recommendations of Austin (2011), we set the caliper width equal to 0.2 of the standard deviation of the logit of the propensity score. This approach was successful in achieving comparable samples (see Table 1), and thus, we used this approach to generate our sample.

Predictive validity. To test the predictive validity of the YCRNA and the SAVRY, we calculated the area under the curve (AUC) of the receiver operating characteristic (ROC; Hanley & McNiel, 1983) for violent charges (e.g., assaults), and any charges (e.g., violent offenses, property offenses, breaches). We included charges in either the youth and adult justice systems. Although the mean follow-up period was 2.27 years (SD = 0.42 years, Range = 0.44 to 3.76 years), the YCRNA/Unstructured Plan sample had a significantly longer follow-up period, $t(212.62)$ = 7.89, $p < .001$, than the SAVRY/Structure Plan sample. As such, we conducted partial Pearson r point-biserial correlations to test associations after controlling for the follow-up length, and Cox Proportional Hazards survival analyses to test predictive validity of speed to first violent or any reoffense. In these analyses, time-at-risk was calculated as the number of days between the date of the YCRNA or SAVRY and the date of first offense or the end of the longest follow-up interval (i.e., 1,371 days for the YCRNA and 1,168 days for the SAVRY). In all models the proportional hazards assumption was violated. As such, we conducted adjusted Cox regression models in which an interaction term between each predictor and log time was entered as a covariate in the model (Hess, 1995).

Risk principle. To test whether match to the risk principle increased after the SAVRY/Structured Plan was implemented, we conducted moderation analyses, whereby we entered mean-centered C8 Risk Total scores, study condition, and their product, representing their interaction, to regression models (Baron & Kenney, 1986). Consistent with recommended practices (Cohen, Cohen, West, & Aiken, 2003), we used ordinary least squares regression for normally-distributed continuous outcomes (i.e., number of services in plans), Poisson or negative binomial regression for non-normal count outcomes (i.e., number of YPO meetings, number of therapy sessions), and ordinal regression for ordinal outcomes (i.e., planned supervision level). Prior to analyses, we checked assumptions (e.g., tests of overdispersion and parallel lines).

Need principle and general quality. To test whether match to the needs principle and the general quality of plans increased after the SAVRY/Structured Plan was implemented, we conducted analyses of variance (ANOVAs) of continuous variables (i.e., overall percent of high needs addressed, ACERR Total Scores), and chi-square analyses of dichotomous ratings (i.e., whether match was achieved in specific needs domains, such as Peers).

Results

Predictive Validity

The YCRNA and SAVRY Risk Total scores significantly predicted new charges for violence and any reoffending, even after controlling for differences in follow-up analyses (see Table 2). AUC scores fell in the moderate range (Rice & Harris, 2005). Based on the Hanley and McNeil (1983) test, AUCs did not vary significantly between the YCRNA and SAVRY Risk Total scores (z = .41, p = .68, and z = .92, p = .36 for violent and any offending, respectively).

Case Plans

Risk principle. In case plans, match to the risk principle was similar regardless of whether YPOs used the YCRNA/Unstructured Plan or SAVRY/Structured Plan. The association

between risk level (i.e., C8 Risk Total Scores) and supervision level was not significantly moderated by condition, interaction Exp (B) = 1.07, p = .478, nor was the association between risk level and number of services included in the plan, interaction β = 0.05, p = .831.

Though match did not significantly vary by condition, match to the risk principle appeared quite strong overall (see Table 3). In both the YCRNA/Unstructured Plan and SAVRY/Structure d Plan conditions, YPOs recommended higher levels of supervision for higher risk adolescents. For instance, when adolescents had high C8 Risk Total scores (i.e., upper quarter, or scores $\geq$ 12), YPOs typically recommended high levels of supervision (i.e., 6 contacts per month; 78.8%, n = 41). In contrast, when adolescents had low C8 Risk Total scores (i.e., lower quarter, or scores $\leq$ 7), YPOs typically recommended either low supervision (i.e., 1 contact per month; 34.0%, n = 18) or moderate supervision (i.e., 4 contacts per month; 47.2%, n = 25). Similarly, in both the YCRNA and SAVRY/Structured Plan conditions, YPOs recommended more services for higher risk adolescents. When adolescents had high C8 Risk Total scores, case plans included a mean of 2.46 services (SD = 1.49), whereas when adolescents had low C8 Risk Total scores, case plans included a mean of 1.60 services (SD = 1.28).

Need principle. Whereas adherence to the risk principle did not vary by condition, the overall percent of high needs addressed was significantly higher in the SAVRY/Structured Plan condition than in the YCRNA/Unstructured Plan condition, $F(1, 176)$ = 32.51, $p < .001$, η^2 = .16. The effect size was large ($\eta^2 > .14$; Cohen, 1988). In the YCRNA/Unstructured Plan condition, adolescents had an average of 21.4% (SD = 29.3%) of their high needs addressed in plans. In contrast, in the SAVRY/Structured Plan condition, adolescents had an average of 49.9% (SD = 36.4%) of their high needs addressed. Conversely, the proportion of adolescents who had none of their high needs addressed in plans fell from 57.8% (n = 48) in the YCRNA/Unstructured Plan condition to 23.2% (n = 22) in the SAVRY/Structured Plan condition.

Some domain-specific improvements also emerged (see Table 4). In particular, high needs in Peer, Family, School, and Substance Use domains were more likely to be addressed in the SAVRY/Structured Plan condition. The remaining domains (i.e., Leisure, Antisocial Personality, Procriminal Attitudes) did not significantly vary across conditions. However, given that a relatively small proportion of adolescents had high needs in those domains (n = 27 to 51), our power to detect significant differences was limited.

General quality. Plans in the SAVRY/Structured Plan condition were rated as higher on general quality indicators than those in the YCRNA/Unstructured Plan condition, as measured by the ACERR Plan Total score, $F(214)$ = 44.97, $p < .001$, η^2 = .17. The effect size was large (Cohen, 1988). Significant differences occurred on most items as well. Specifically, plans in the SAVRY/Structured Plan condition were more likely to address key risk factors, $F(214)$ = 25.34, $p < .001$, η^2 = .11, include protective factors, $F(214)$ = 157.01, $p < .001$, η^2 = .42, and include an array of strategies other than monitoring, $F(214)$ = 38.52, $p < .001$, η^2 = .15. They were also more likely to include individual considerations (i.e., responsivity factors), $F(173)$ = 5.18, p = .024, η^2 = .03, incorporate evidence-based strategies, $F(214)$ = 9.32, p = 003, η^2 = .04, provide adequate detail, $F(214)$ = 5.98, p = .015, η^2 = .03, and include consultation with youth and caregivers, $F(214)$ = 41.08, p = $< .001$, η^2 = .16.[1]

Interventions Delivered in Six-Month Follow-Up

Next, we examined interventions that were delivered in the six months following the case plan. For these analyses, we focused on cases in which adolescents had been on probation for at least six months (90.9%, $n = 173$). This was to help ensure that our timeframe was consistent across cases, and sufficiently long that interventions could be feasibly delivered.

Risk principle. Match to the risk principle was similar regardless of whether YPOs used the YCRNA/Unstructured Plan or SAVRY/Structured Plan. Specifically, the association between risk level and YPO meetings was not significantly moderated by condition, interaction Exp (B) = 1.02, $p = .631$, nor was the association between risk level and number of therapy sessions, interaction Exp (B) = 1.14, $p = .107$.

Moreover, across conditions, match to the risk principle was quite weak (see Table 3). For instance, risk level did not predict number of therapy sessions for adolescents in the SAVRY/Structured Plan condition. In addition, risk level did not significantly predict the number of meetings that adolescents had with their YPOs in either condition. Instead, adolescents met with YPOs a similar number of times regardless of whether they had high C8 Risk Total scores ($M = 9.64$ times, $SD = 6.59$) or low C8 Risk Total scores ($M = 9.08$, $SD = 6.40$). Although we tested whether this could be because high risk adolescents miss more appointments than low risk adolescents, missed appointments did not significantly vary between adolescents who were and were not high risk, $t(208) = -1.30$, $p = .20$.

Need principle. In delivered interventions, the overall percent of high needs addressed was significantly higher in the SAVRY/Structured Plan condition than in the YCRNA/ Unstructured Plan condition, $F(1, 158) = 4.03$, $p = .047$, $\eta^2 = .03$. However, this effect was small ($\eta^2 < .06$; Cohen, 1988). In the YCRNA/Unstructured Plan condition, adolescents had an average of 46.0% ($SD = 39.7\%$) of their high needs addressed via interventions. In comparison, in the SAVRY/Structured Plan condition, adolescents had an average of 58.2% ($SD = 37.0\%$) of their high needs addressed. None of the chi-square tests for specific domains (e.g., Family and Caregivers) reached statistical significance at $p < .05$.

General quality. The general quality of interventions, as measured by the ACERR Delivered Intervention Total score, did not differ significantly between the conditions, $F(194) = 1.06$, $p = .304$, $\eta^2 = .005$.

Controlling for Gender and Ethnicity

In our final analyses, we tested whether the same pattern of results was obtained after controlling for gender. To do so, we added gender and ethnicity to our ANOVAs and regression analyses. For each analysis, we obtained the same pattern of results. For instance, similar to our findings for the overall population, the SAVRY/Structured Plan was associated with an increase in percent of needs addressed in case plans for Indigenous adolescents, $F(59) = 9.55$, $p = .003$, $\eta^2 = .14$, and for girls, $F(42) = 23.45$, $p < .001$, $\eta^2 = .36$.

Discussion

Although risk assessment tools can significantly predict reoffending, many of adolescents' treatment needs remain unaddressed even when tools are used (Peterson-Badali et al., 2015). As such, in the current study, we examined whether the implementation of a validated tool, the SAVRY, and a structured case planning form, was associated with improved case plans and better interventions as compared to a locally-developed tool and an unstructured case plan. As hypothesized, we found some improvements in match to the needs principle and quality of case plans. However, as expected, match to the risk principle did not significantly change.

Primary Findings

Rates of needs addressed in plans increased. In the YCRNA/Unstructured Plan condition, only 21.4% of adolescents' high needs were addressed in plans. In contrast, after the SAVRY/Structured Plan condition was implemented, the proportion of high needs targeted in plans increased to 49.9%. Although it is difficult to determine if this is due to the SAVRY and/or the structured plan, we compared the predictive validity and item content of the SAVRY and YCRNA. Based on this, it is unlikely that our results are due to the SAVRY alone.

In particular, as the YCRNA and SAVRY include overlapping items that are dynamic and relevant to the Central Eight model, there is no clear reason to expect that the SAVRY would lead to better needs matching based on item content. Also, given the YCRNA and SAVRY achieved similar levels of predictive validity (AUC = .69 and .66, respectively, for violent reoffending), it does not appear to be the case that the SAVRY is simply a better overall tool. In addition, YPOs did not simply show greater buy-in for the SAVRY; in a post-implementation survey (response rate = 86.2%), only half of YPOs (51.9%) reported a clear preference for the SAVRY over the YCRNA. Finally, because YPOs did not receive training on the RNR model, and the agency did not adopt additional policy changes related to the needs principle, it is unlikely that training or policy can explain this result.

Instead, we believe that increased needs match may be due, in large part, to the structured plan. A couple of studies indicate that structuring case plans yields better agreement about the criminogenic needs to target in plans (Bosker et al., 2015; Bosker & Witteman, 2016). Furthermore, in this study, the structured form directly instructed YPOs to consider youths' needs, thus providing a plausible mechanism between structured plans and the needs principle, and sending a clear and consistent reminder to YPOs on the importance of targeting needs.

General quality of plans improved. Not only did plans in the SAVRY/Structured Plan condition show improved match to the needs principle, they were also rated as higher on other quality indicators. For instance, they were more detailed and more likely to include protective factors and an array of strategies rather than solely monitoring court conditions. Again, these results may be largely due to the structured plan, rather than the SAVRY alone. For instance, given that the plan required YPOs to write in strategies to address high or critical needs, it encouraged greater detail in plans. In addition, as the structured plan was framed as a "service plan," it encouraged YPOs to identify service options, rather than simply monitoring of court conditions. Furthermore, in completing the structured plan, YPOs were instructed to include at least one protective factor, which may have led to the observed increase in the inclusion of protective factors in case plans. This finding might also be due to the fact that, although items on

the YCRNA can be rated as assets, it does not have separate section on protective factors, unlike the SAVRY.

Match to risk principle was similar across conditions. Although the implementation of the SAVRY/Structured Plan was associated with improved match to the needs principle and quality of plans, match to the risk principle did not significantly increase in plans. This is likely because the SAVRY/Structured Plan did not introduce any new procedures with respect to the risk principle. In YCRNA/Unstructured Plan condition, YPOs were instructed, by policy, to select the high supervision option for adolescents rated as high risk, moderate supervision for adolescents rated as moderate risk, and low supervision for adolescents who were low risk; this same policy continued with the SAVRY/Structured Plan. Furthermore, in both conditions, match to the risk principle appeared adequate overall. Consistent with other research (Vincent et al., 2016), YPOs planned higher levels of supervision and more planned services for adolescents who were rated as high vs. low risk. This may have made it difficult to attain improvements beyond this existing level of match.

Delivered interventions showed improvements. Although this study focused on testing whether the SAVRY/Structured Plan improved case plans, we also tested its impact on interventions that adolescents received in the six months following the case plan. Even though we did not anticipate a significant effect, our results indicated that, when YPOs used the SAVRY/Structured Plan, adolescents received interventions that targeted a greater proportion of their high needs than if they received the YCRNA/Unstructured Plan. This suggests that shifts in case plan forms might have potential to improve interventions for adolescents. Notably, the effect size was small however, indicating that even if structured plans do improve delivered interventions, plans alone are insufficient to bring about large-scale changes.

Some slippage occurred between planned and delivered interventions. Although the SAVRY/Structured Plan yielded modest improvements in delivered interventions, we observed some gaps between case plans and delivered interventions (see also Guy et al., 2015; Peterson-Badali et al., 2015). For instance, even though YPOs planned to provide higher levels of supervision to high risk vs. low risk adolescents, in the six months following the case plan, YPOs met with high and low risk adolescents a similar number of times. Thus, with respect to the risk principle, YPOs did not always follow through on their plans. On the other hand, with respect to the need principle, adolescents often received more interventions than documented in their plans. For instance, even though 66.0% adolescents with high needs in the School domain received school-related interventions, only 44.2% of adolescents with high school-related needs had case plans which explicitly targeted these needs. This could indicate that YPOs do not document everything they intend to do in their case plans. Alternatively, YPOs may be responding to new issues that arise in the six months following the plan.

Limitations

In interpreting our results, several limitations are important to note. Although one of the strengths of this study is that we used propensity score matching to generate samples that were comparable in risk level, offense history, and demographic characteristics, propensity score matching cannot control for confounds that are unknown. Also, because the format of plans

differed across conditions, it was not possible to keep raters blind to the study condition. To reduce the possibility that this might influence ratings, we used measures with clear operational definitions (e.g., number of probation appointments) and tested interrater reliability.

In general, interrater reliability was excellent for match to the risk principle and ratings of adolescents' risk level. However, interrater reliability for needs match and overall quality of plans and interventions was more modest, falling in the fair to good range. File information about delivered interventions was limited in some cases, which may have made it difficult to reliably rate interventions. Furthermore, despite coding guidelines, raters may have had differing expectations about what constitutes adequate needs match.

Researchers also appear to have differing definitions of what constitutes adequate match. In this study, for instance, we focused on whether adolescents with "significant" or high needs received planned or delivered interventions, including formal services (e.g., programs) or broader interventions (e.g., arranging leisure activities, problem-solving). We did not include adolescents with "some or possible" needs because it was not clear whether such needs required interventions. Although our approach is similar to that of some researchers (Dyck, 2016, Holloway, 2015; Singh et al., 2014), other researchers have looked, more broadly, whether adolescents with high and/or *moderate* needs receive interventions (Luong & Wormith, 2011), or focused only on formal services (Nelson & Vincent, 2018). To examine whether our conceptualization of needs match might impact results, in post hoc analyses, we tested a different scoring procedure for needs match (i.e., coding match only if an adolescent received formal services). Our results remained the same; adoption of the SAVRY/Structured Plan was still associated with improved overall needs match in plans.[2]

Implications for Practice and Research

Rather than relying on unstructured approaches to developing case plans, our results indicate that agencies should consider adopting structured forms. Like other studies, we found that risk assessment tools alone are insufficient for ensuring sound risk management. Even when a tool was used (i.e., YCRNA), over one-half of adolescents did not have any of their high needs addressed in their plans. However, structured plans appeared to enhance the degree to which professionals attended to adolescents' needs, thus supporting the logic behind fourth generation risk assessment tools (Bonta & Andrews, 2017). These findings are striking because the form used in this study was quite simple. Though it oriented professionals to write in interventions to target adolescents' needs, it did not provide suggested interventions.

Although our results are promising, further research is needed. A couple of adolescent risk assessment tools, such as the YLS/CMI (Hoge & Andrews, 2011) and Short-Term Assessment of Risk and Treatability: Adolescent Version (START:AV; Viljoen et al., 2014), and adult risk assessment tools, such as the LSI/CMI (Andrews et al., 2004), Historical Clinical Risk-20 Version 3 (HCR-20 V3; Douglas, Hart, Webster, & Belfrage, 2013), and Risk for Sexual Violence Protocol (RSVP; Hart et al., 2003), include built-in forms for case planning. However, researchers have yet to compare the quality of plans developed with and without these forms. Besides comparing structured versus unstructured plans, researchers should compare different types of structured plans, including basic forms that simply orient professionals to criminogenic

needs versus more detailed protocols that provide suggested interventions, and test results in a variety of populations, such as incarcerated adolescents. There is also a need for research which tests underlying assumptions of risk and need matching. For instance, is addressing more needs better, or is it preferable to instead target one or two of the most pressing needs?

In sum, even though treating and preventing risk is just as difficult as assessing it, to date, professionals have been provided with remarkably little guidance on how to develop case plans that link adolescents to the interventions that they need. However, the findings of this study suggest that structured forms, may provide a first step. Indeed, just as structure might improve risk predictions, so too might structure improve case plans, thereby helping to bridge risk assessment and treatment.

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Table 1

Sample Characteristics Before and After Propensity Score Matching: Nearest Neighbor Caliper Matching

	Before Match		After Match	
	YCRNA/ Unstructured Plan (*n* = 114)	SAVRY/ Structured Plan (*n* = 166)	YCRNA/ Unstructured Plan (*n* = 108)	SAVRY/ Structured Plan (*n* = 108)
Mean Age	17.48 [1]	16.94 [1]	17.42	17.13
% Male	80.70%	74.70%	79.60%	72.20%
% Indigenous	33.30%	25.90%	33.30%	31.50%
% Prior Conviction	63.20%	68.70%	63.90%	65.70%
Mean Probation Length	350.98	379.73	352.93	346.88
Mean C8 Risk Total Score	9.23 [1]	7.51 [1]	9.03	9.60

Note. [1] Signifies a significant difference between YCRNA/Unstructured Plan and SAVRY/Structured Plan samples.

Table 2

Predictive Validity of the YCRNA and SAVRY

	AUC	95% CI$_{AUC}$	Partial *r*	Cox Proportional Hazards Model				
				B	*SE*	Wald	HR	95% CI$_{HR}$
Violent Charge								
YCRNA								
Total Score	.69**	[.59, .80]	.34**	0.08	0.02	30.43	1.09***	1.06, 1.12
Overall Needs Rating	.56	[.45, .67]	.14	0.64	0.01	22.16	1.07***	1.04, 1.09
Overall Historical Rating	.59	[.49, .70]	.20*	0.08	0.01	33.36	1.08***	1.06, 1.11
SAVRY								
Total Score	.66*	[.55, .77]	.23*	0.10	0.02	41.61	1.10***	1.07, 1.14
Summary Risk Rating	.60	[.47, .72]	.15	1.75	0.23	59.41	5.76***	3.69, 8.98
Any Charge								
YCRNA								
Total Score	.70**	[.58, .82]	.35***	0.09	0.01	39.22	1.09***	1.06, 1.12
Overall Needs Rating	.71**	[.59, .83]	.35***	1.81	0.24	56.88	6.11***	3.82, 9.78
Overall Historical Rating	.61	[.48, .74]	.17	1.33	0.19	50.11	3.79***	2.62, 5.48
SAVRY								
Total Score	.63*	[.52, .73]	.24*	0.12	0.02	34.99	1.13***	1.08, 1.17
Summary Risk Rating	.59	[.48, .70]	.17	1.81	0.26	47.66	6.12***	3.66, 10.23

Note. AUC = area under the curve; CI$_{AUC}$ = confidence interval of AUC; Partial *r* = point-biserial correlation controlling for follow-up length; *B* = regression coefficient; *SE* = standard error of *B*; HR = hazard ratio; CI$_{HR}$ = confidence interval of the HR. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3

Match to Risk Principle: Association between C8 Risk Total Score and Intensity of Supervision and Services

Outcome Variables	YCRNA/Unstructured Plan (*n* = 108)			SAVRY/Structured Plan (*n* = 108)		
	b (SE)	Exp(b)/ B	*p*	*b* (SE)	Exp(b)/ β	*p*
Plans						
Supervision level	0.39 (0.08)	1.47	.000	0.37 (0.07)	1.44	.000
# of different services	0.11 (0.04)	0.26	.006	0.10 (0.04)	0.27	.004
Delivered Interventions						
# of supervision meetings	0.02 (0.04)	1.02	.679	-0.01 (0.03)	0.99	.797
# of therapy sessions	0.21 (0.06)	1.24	.001	0.09 (0.05)	1.09	.087

Note. We conducted ordinal regression for supervision level in plans, linear (i.e., ordinary least squares) regression for # of different services in plans, negative binomial regression for # of supervision meetings, and Poisson regression for # of therapy sessions. Standardized coefficients for linear regression are denoted with β, whereas Exp(b) is used for ordinal, Poisson, and negative binomial regression. Analyses for delivered interventions focused on individuals who have been on probation for at least six months (*n* = 173).

Table 4

Match to Needs Principle: Proportion of High Needs Targeted with Interventions

	YCRNA/Unstructured Plan (n = 108)			SAVRY/Structured Plan (n = 108)						
	% of high needs targeted	n of high needs targeted	n with high needs	% of high needs targeted	n of high needs targeted	n high needs	χ^2	N	p	Phi φ
Plans										
Family/Caregivers	10.3%	4	39	38.9%	21	54	9.45	93	.002	.32
Peers	5.3%	2	38	34.8%	16	46	10.77	84	.001	.36
Substance Use	44.4%	20	45	65.4%	34	52	4.29	97	.038	.21
School	18.8%	6	32	44.2%	23	52	5.69	84	.017	.26
Leisure/Recreation	13.3%	2	15	28.6%	8	28	1.27	43	.260	.17
Personality Features	57.7%	15	26	64.0%	16	25	0.21	51	.645	.07
Procriminal Attitudes	55.6%	5	9	55.6%	10	18	0.00	27	1.000	.00
Delivered Interventions										
Family/Caregivers	36.1%	13	36	54.0%	27	50	2.69	86	.101	.18
Peers	12.9%	4	31	27.3%	12	44	2.24	75	.135	.17
Substance Use	52.6%	20	38	70.2%	33	47	2.78	85	.096	.18
School	55.6%	15	27	66.0%	31	47	0.79	74	.374	.10
Leisure/Recreation	38.5%	5	13	42.3%	11	26	0.05	39	.818	.04
Personality Features	71.4%	15	21	70.8%	17	24	0.00	45	.965	.01
Procriminal Attitudes	100%	8	8	70.6%	12	17	2.94	25	.086	.34

Note. High needs were considered to be targeted when there were some or substantial domain-specific interventions. Analyses for delivered interventions focused on individuals who have been on probation for at least six months (n = 173).

Endnotes

[1] The ICCs for the significant items all fell in the fair to excellent range (i.e., ICCs = .49 – .76), except for the item on communication with youth and caregivers, which had poor interrater reliability (i.e., ICC = .07).

[2] $F(176) = 8.08$, $p = .005$, $\eta^2 = .04$