

Does the Risk of Recidivism for Supervised Offenders Improve Over Time? Examining Changes in The Dynamic Risk Characteristics for Offenders under Federal Supervision

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OVER THE PAST TEN years, the United States federal probation system has undergone numerous conceptual and structural changes in moving toward an outcome-based approach that emphasizes crime reduction (Alexander & VanBenschoten, 2008; IBM Strategic Assessment, 2004). In 1925 the Federal Probation Act gave the U.S. Courts authority to appoint federal probation officers with responsibility for supervising offenders sentenced to a term of straight probation or paroled from federal prisons or military authorities (U.S. Courts, 2014). After the abolishment of federal parole in 1984, probation officers became responsible for supervising offenders for a period of time (usually two to three years) following the expiration of their incarceration term (Judicial Policy Guide, 2012; Latessa & Smith, 2011).

In the early 2000s, the federal probation system underwent a comprehensive strategic assessment. The report emerging from that assessment recommended that the system be guided by outcome-based measures (IBM Strategic Assessment, 2004). Following this strategic assessment, a working group within the U.S. Courts developed policies that laid the groundwork for transforming the post-conviction supervision system. Through the guidance of this working group, one of the primary outcomes of federal supervision was defined as the protection of the community

through the reduction of risk and recurrence of crime (that is, recidivism), both during and after an offender's supervision period (Hughes, 2008). To meet the key goal of recidivism reduction, three major principles had to become guiding tenets of federal probation: Officers should work most intensively with high-risk offenders (the risk principle), focus on the criminogenic needs of higher-risk offenders (need principle), and match treatment modalities with the ability and learning styles of offenders (responsivity principle) (Lowenkamp, Johnson, VanBenschoten, Robinson, & Holsinger, 2013; AOUSC, 2011; Andrews & Bonta, 2010; Van Voorhis & Brown, 1996; Andrews, Bonta, & Hoge, 1990).

The U.S. federal probation system has attempted to embrace the use of the risk, needs, and responsivity model (hereinafter referred to as the RNR model) for supervising offenders with the aim of reducing recidivism and protecting the general community. Crucial to adopting the RNR model was implementing a risk assessment instrument that contained both static (e.g., characteristics that do not change over time such as criminal history) and dynamic (e.g., characteristics amenable to change, such as substance abuse problems) risk factors to accurately identify offenders most likely to commit new crimes and ascertain criminogenic characteristics that, if changed, could reduce the

likelihood of recidivism (Lowenkamp et al., 2013; Andrews & Bonta, 1998). This instrument would also have the capacity to assess whether the effective application of treatment might be hindered by responsivity issues such as offender intelligence, levels of anxiety, mental health disorders, transportation difficulties, or child care issues (AOUSC, 2011). The implementation of the federal Post Conviction Risk Assessment (PCRA) instrument represents one of the primary efforts to integrate elements of the RNR model into the U.S. probation system.

The PCRA is an actuarial risk assessment tool developed for the federal probation system that identifies offenders most at risk of recidivism, ascertains which dynamic criminogenic needs should be addressed, and provides information on those obstacles that would prevent the successful implementation of a supervision and/or treatment regime (AOUSC, 2011). Because probation officers required training before they could utilize this actuarial risk tool, the PCRA was implemented in stages starting in 2010. Presently, the PCRA has near-universal implementation throughout the federal system, with more than 95 percent of offenders released to supervision over the past 12 months having a PCRA assessment (Decision Support Systems, #1009).

Data from the PCRA allows us to explore, for the first time, the nexus between actuarial

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risk assessment and the supervision of offenders in the federal system. Specifically, we can examine what proportion of federally supervised offenders are classified along the spectrum from high to low risk of reoffending and how the static and dynamic risk characteristics differ for high-, medium-, and low-risk offenders. Most crucially, since the PCRA is a dynamic risk tool, in this article we will analyze whether the risk levels of offenders under federal supervision are increasing or decreasing over time. In other words, to what extent are the dynamic criminogenic risk characteristics of offenders changing and how are they changing for offenders in this study? Another significant issue examined in this article is whether changes in risk are related to success under supervision. Basically, are offenders with decreasing risk levels seeing the successful completion of their supervision terms more frequently compared to their counterparts with stable or increased risk levels?

In this article, we will first briefly summarize the development of actuarially based offender risk assessment instruments and then describe the development and implementation of the PCRA in the federal system. Afterwards, we will explicate the research questions the article attempts to address and the data/methods utilized in the current research. We will discuss major findings and their implications and conclude by suggesting directions for future research.

History of Risk Assessment Tools

The assessment of offender risk has evolved over time from decisions based on clinical judgment to ones grounded on actuarial risk tools. For much of the twentieth century, probation officers would apply their best judgment to gauge offender risk (Lowenkamp et al., 2013; Andrews & Bonta, 2010; Connolly, 2003; Bonta, 1996). This method of assessing risk began to change in the 1970s with the emergence of second-generation risk assessment techniques using actuarial approaches.¹ These second-generation instruments relied almost exclusively on unchangeable or static risk factors (e.g., criminal history) and hence were unable to assess whether offenders were improving or worsening during their supervision periods (Lowenkamp et al., 2013). Addressing this limitation led to the development of third-generation actuarial devices

capable of both measuring an offender's static criminogenic factors and tracking an offender's dynamic criminogenic characteristics (e.g., substance abuse issues, unemployment problems, prosocial connections, etc.) that, when changed, have the potential to reduce the likelihood of recidivism. During the past several years, fourth-generation risk assessment instruments that allow officers to tailor interventions towards an offender's learning styles and abilities (i.e., responsivity factors) have become increasingly common (Lowenkamp et al., 2013; Johnson et al., 2011; Bonta & Andrews, 2007; Bonta & Wormith, 2007). These instruments also seamlessly integrate an offender's criminogenic needs and responsivity factors into a probation office's case management system, allowing for the more efficient implementation of a treatment or intervention regime (Andrews et al., 1990).

Development of the Post Conviction Risk Assessment (PCRA) Instrument

Adopted by the federal probation system during the last several years, the PCRA contains elements inherent in third- and fourth-generation risk assessment tools by incorporating several aspects of the risk, needs, and responsivity model (Lowenkamp et al., 2013; Johnson et al., 2011). The PCRA replaced the Risk Prediction Index (RPI), which had been used by federal probation officers to assess offender risk since the late 1990s (Federal Judicial Center, 1997). The RPI was a second-generation risk tool that, while able to adequately predict risk of reoffending, relied on static predictors to determine offender risk and hence could neither identify the dynamic criminogenic needs that were amenable to change nor assess barriers to addressing those needs (Lowenkamp et al., 2013; AOUSC, 2011; Johnson et al., 2011). While the PCRA represents an improvement over the RPI, it does not fall entirely under the fourth-generation risk assessment rubric, because information generated by this tool is not currently integrated into the federal probation case management system. Efforts at complete integration are currently being explored and should occur sometime in the near future.

Several data sources, including federal presentence reports, criminal history record checks, and information from the Probation/Pretrial Services Automated Case Tracking System (PACTS), were used to construct and validate the PCRA (Lowenkamp et al., 2013;

Johnson et al., 2011). Derived from a review of the empirical literature on predicting criminal behavior, several data elements associated with criminal history, substance abuse, family associations, and attitudes towards supervision were analyzed at the bivariate and multivariate levels to see which statistically predicted whether an offender would be arrested for a new crime after the start of his or her supervision period (Lowenkamp et al., 2013; Johnson et al., 2011; Andrews & Bonta, 2010; Gendreau, Little, & Goggin, 1996; Simourd & Andrews, 1994).² Ultimately, five general domains related to criminal history, education/employment, substance abuse, social networks, and cognitions (i.e., attitudes towards supervision) were incorporated into the PCRA. Each of these general domains contains specific scored items that were both theoretically and statistically shown to be correlated with offender recidivism.

A total of 6 static predictors related to criminal history and 9 dynamic predictors related to education/employment (3 predictors), substance abuse (2 predictors), social networks (3 predictors), and cognitions (1 predictor) were incorporated into the PCRA. Each scored predictor was assigned a value of one, if present, with the exception of prior arrest (3 potential points) and age at intake (2 potential points).³ Officers score each of the 15 PCRA risk categories through interviews, document reviews, and presentence reports at the beginning of the supervision period.⁴ In theory, offenders can receive a combined PCRA score ranging from 0 to 18. These continuous scores translate into the following four risk categories: low, low/moderate, moderate, or high. These risk categories inform officers about an offender's likelihood of recidivism and provide guidance about the level of supervision that should be imposed on a particular offender (Lowenkamp et al., 2013; AOUSC, 2011; Johnson et al., 2011).

² See Lowenkamp et al., 2013, and Johnson et al., 2011, for a technical discussion of the construction, validation, and implementation of the PCRA in the federal system.

³ Assigning scores ranging from zero to three may seem counterintuitive to current trends that involve the development of weighted risk assessments; however, there is significant evidence to support the argument that this method still outperforms clinical approaches and is more robust across time and sample variations (McEwan, Mullen, & Mackenzie, 2009; Gottfredson & Snyder, 2005).

⁴ Before officers are allowed to utilize the PCRA, they must attend an in-person training course and pass an online certification test. Once certified, officers are required to re-certify annually (AOUSC, 2011).

¹ It should be noted that some of the earliest actuarial risk assessment tools were utilized in the 1920s for paroled offenders (see Andrews & Bonta, 2010; Burgess, 1928).

In addition, the PCRA contains 41 items that are rated but not currently scored by the officer. These unscored items are not yet part of the risk calculation and include information about the major PCRA domains. Moreover, factors related to an offender's learning styles, abilities, and barriers to treatment (i.e., responsivity factors) are included among the non-scored items. Some of these non-scored factors may eventually be incorporated into the PCRA risk score, depending upon what future research shows concerning their efficacy to predict recidivism and assist in an offender's supervision plan (Lowenkamp et al., 2013). Other non-scored factors, especially those related to responsivity, will probably not be integrated into the risk score; rather, they are there to help officers devise an effective case management plan.

A final item that is not included in an offender's PCRA risk prediction but is used to inform officers about an offender's criminogenic thinking styles involves information generated from the Offender Section of the PCRA. This section measures criminal thinking through a self-administered questionnaire that is based heavily upon the Psychological Inventory of Criminal Thinking Styles (PICTS). Developed using data from a population of offenders serving in the Federal Bureau of Prisons, the PICTS is used to assess an offender's criminal thinking styles (Walters, 2013; 2012; Walters, Hagman, & Cohn, 2011).

Since the PICTS was developed and normed from a population of federal prisoners, this instrument measures criminal thinking styles relative to other criminals and not the general population. It is an 80-item offender-administered questionnaire that attempts to gauge whether an offender possesses eight thinking styles associated with the support and maintenance of criminal activity: mollification, cutoff, entitlement, power orientation, sentimentality, super-optimism, cognitive indolence, and discontinuity (Walters, 2013; 2011).⁵ Most important, the PICTS sums these eight criminal thinking styles into a "general criminal thinking" score, which is used to identify offenders with elevated criminal thinking at the highest and most general level. Several studies have shown that the general criminal thinking score is the most "reliable, stable, and valid measure on the PICTS and is often the

PICTS indicator used to predict institutional adjustment and recidivism" (Walters, 2013: 42). The PICTS was slightly modified for use in federal probation and renamed the Offender Section of the PCRA. This section is used to identify whether an offender has attitudes or cognitions associated with criminal thinking, and hence can be used to inform officers that an offender's "criminal thinking" should be targeted for intervention; it is currently not part of the scored PCRA items.

Research Methods

Research questions

With the development and implementation of the PCRA, we can for the first time analyze a variety of rich research issues that had previously not been answerable for offenders under federal supervision. Specifically, we can explore the risk levels and static and dynamic characteristics of offenders under federal supervision, the presence of criminal thinking among various types of offenders, and the malleability of an offender's dynamic crime-supporting needs. Moreover, we can examine which dynamic criminogenic factors most contribute to the increase or decrease of an offender's risk level over time and whether changes in risk are related to success under supervision (i.e., the offender's supervision term ends without being revoked). With these issues in mind, the following research questions will anchor this study.

- How many federally supervised offenders fall into the high, moderate, low/moderate, or low risk classifications according to the PCRA?
- What are the static and dynamic risk characteristics of offenders under federal supervision? How much do these characteristics vary by an offender's risk classification?
- To what extent does an offender's overall risk level decrease or increase during their supervision period? Specifically, how many offenders move from a high to a lower risk classification between their first and second assessments? Conversely, do the risk levels of lower-risk offenders remain stable or worsen during their supervision period?
- What dynamic criminogenic factors most influence the movement of offenders across risk categories? Among the dynamic PCRA risk factors of education/employment, substance abuse, social networks, and cognitions, which are the most important for change in offender risk?

- What does the Offender Section of the PCRA tell us about the presence of elevated criminal thinking among federally supervised offenders? What role does criminal thinking have in whether an offender's overall risk level increases or decreases during supervision?

- Are changes in risk related to supervision outcomes? Are offenders with improving risk classifications witnessing fewer revocations of their probation terms compared to offenders whose risk classifications remain the same or worsen?

By addressing these research questions, we will be able to explore the crucial issue of how much an offender's dynamic criminogenic characteristics and risk levels are changing over time. Interestingly, there have been relatively few empirical investigations of this topic published in the correctional literature. Some of the studies that have used risk assessment instruments for the purpose of tracking dynamic criminogenic factors over time include Howard and Dixon's (2012) multi-wave study of released violent offenders in Great Britain; Brown, Amand, and Zamble's (2009) assessment of male Canadian prisoners over a three-month period, and Schlager and Pacheco's (2011) examination of changes in total and subcomponent LSI-R scores for offenders under community supervision in New Jersey.⁶ While the few existing studies have demonstrated some promising findings, their limitations include relatively small study populations (fewer than 200 offenders) and the fact that changes in an offender's dynamic criminogenic needs were not examined across the different risk categories. In other words, these studies did not examine whether the dynamic criminogenic needs of high-risk offenders changed to a greater extent than those of low-risk offenders. The extant study will attempt to further our knowledge by tracking a larger population of offenders placed on federal supervision and examine changes according to an offender's initial risk classification. Details about the study population follow.

Study population

The current study is drawn from a national population of 21,152 offenders placed on federal supervision between May 2010

⁵ For more information about the exact definitions of these specific criminal thinking styles see Walters (2013) and AOUSC (2011). For information about the validity and reliability of the PICTS as a means of measuring criminal thinking, see Walters (2013; 2011).

⁶ See also Wooditch, Tang, and Taxman (2014); Jones, Brown, and Zamble (2010); Quinsey, Jones, Book, and Barr (2006); and Olver, Wong, Nicolaichuk, and Gordon (2007) for other examples of studies examining the movement of an offender's dynamic risk factors over time.

and December 2011. About 80 percent of these offenders were placed on supervised release, meaning that they had finished an incarceration term under the Federal Bureau of Prisons, while the remainder had been sentenced to a term of straight probation. To examine which offenders had multiple PCRA assessments and track changes in the dynamic factors over time, these 21,152 offenders were tracked from May 1, 2010, through October 31, 2013. During this time, all offenders had at least one PCRA assessment, 73 percent had at least two PCRA assessments, and 37 percent had at least three PCRA assessments (Figure 1). An average of 9 months separated the first from the second PCRA and 17 months separated the first and third PCRA. For the most part, the time periods between PCRA assessments align with judicial policy, which advises that second assessments occur within approximately 6 months of the supervision start date and that third assessments take place within 18 months after an offender's supervision term commences (Judicial Policy Guide, 2012).

The fact that about one-fourth of offenders in the study population never received a second PCRA assessment and three-fifths did not receive a third PCRA assessment illustrates the attrition problem inherent in examining changes in offender risk over time. Offenders may not receive another PCRA assessment for numerous reasons. For example, nearly three-fifths of offenders without second PCRA assessments had their supervision term revoked (18 percent) or received a successful termination (39 percent) prior to their subsequent assessment (not shown in figure). This attrition problem is intrinsic

to many studies tracking the performance of offenders regarding their risk levels and will be further detailed in the discussion section. At present, it's important to note that the findings focus on changes in risk for only those offenders who remained under supervision long enough to receive a second and/or third PCRA assessment. They are not applicable to those offenders removed from the study before they were re-assessed.

Results

Examining the risk distribution, criminal thinking styles, and presence of static and dynamic risk factors for supervised offenders

Figure 2 depicts the risk distribution for federally supervised offenders and the presence of criminal thinking for these offenders. According to the PCRA, 78 percent were classified as either low (41 percent) or low/moderate (37 percent) risk, while the remaining 23 percent fell into the moderate (18 percent) or high risk (5 percent) classification categories.⁷ The low-risk distribution skew of federally supervised offenders aligns closely with the risk distribution patterns that have been generated by the RPI since the late 1990s. Basically, both the RPI and PCRA show most federally supervised offenders falling into the lower end of the risk continuum in terms of

⁷ The judicial policy allows officers to assign supervision levels different from the PCRA risk categories (Judicial Policy Guide, 2012). Data on actual supervision levels were not made electronically available until the beginning of 2013 and hence could not be used for the current study cohort.

their likelihood of reoffending (Johnson et al., 2011).

According to the Offender Section of the PCRA, approximately 20 percent of the study population had some form of elevated criminal thinking. This section revealed that 16 percent of supervised offenders had moderately elevated levels and 5 percent had highly elevated levels of criminal thinking. The majority of federally supervised offenders are not shown to have elevated criminal thinking, because the instrument used to measure criminal thinking was normed against a study group of inmates within the Federal Bureau of Prisons and not against the general public. Hence, elevated criminal thinking means that the individual's criminal thinking is significantly greater than the thinking of an average criminal serving time in federal prison.

The next part of this study examines the static and dynamic PCRA risk factors and the extent to which these characteristics vary by the low, low/moderate, moderate, or high risk classification categories. Table 1 shows the scored static and dynamic risk predictors for offenders by their initial risk classifications. Among the static criminal history risk predictors, the PCRA indicates that 76 percent of all supervised offenders have a misdemeanor and/or felony arrest history and 63 percent have a pattern of committing varied offenses. Fewer offenders had a history of committing violent offenses (41 percent) or violating their supervision conditions (36 percent).

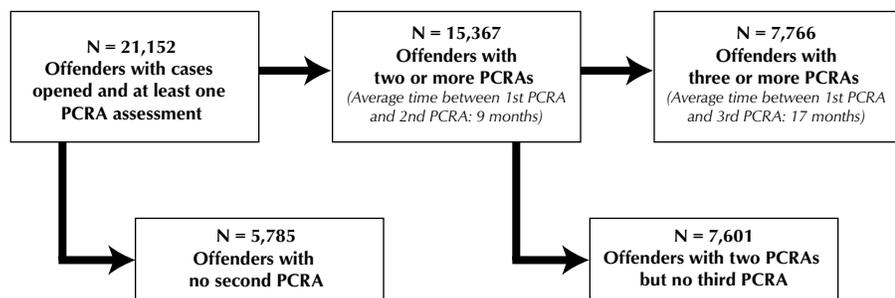
Concerning the dynamic scored factors (i.e., those factors that could potentially change), the PCRA shows that nearly three-fourths of all offenders were either single, divorced, or separated at the start of their supervision period, while approximately two-fifths had less than a high school degree⁸ or were unemployed when supervision commenced. Interestingly, less than a fifth of all supervised offenders had current drug (17 percent) or alcohol (9 percent) problems. Finally, poor motivation towards supervision, which the literature shows is strongly correlated with recidivism (see Andrews & Bonta, 2010), was present for 8 percent of offenders.

Not surprisingly, offenders classified in the higher risk categories have more substantial criminal histories than their lower-risk

⁸ Offenders with only a GED and no other degrees are also counted as higher risk, as the research shows that GED degrees by themselves are correlated with higher rates of recidivism (Gendreau, Little, & Goggin, 1996).

FIGURE 1.

Flow of offenders placed on federal supervision with multiple Post Conviction Risk Assessments (PCRAs)



Note: Figure includes 21,152 offenders placed into federal supervision between May 2010 and December 2011. Offenders included in study if their first Post Conviction Risk Assessment (PCRA) assessment occurred within three months of their supervision start date or within six months of their pre-supervision start date.

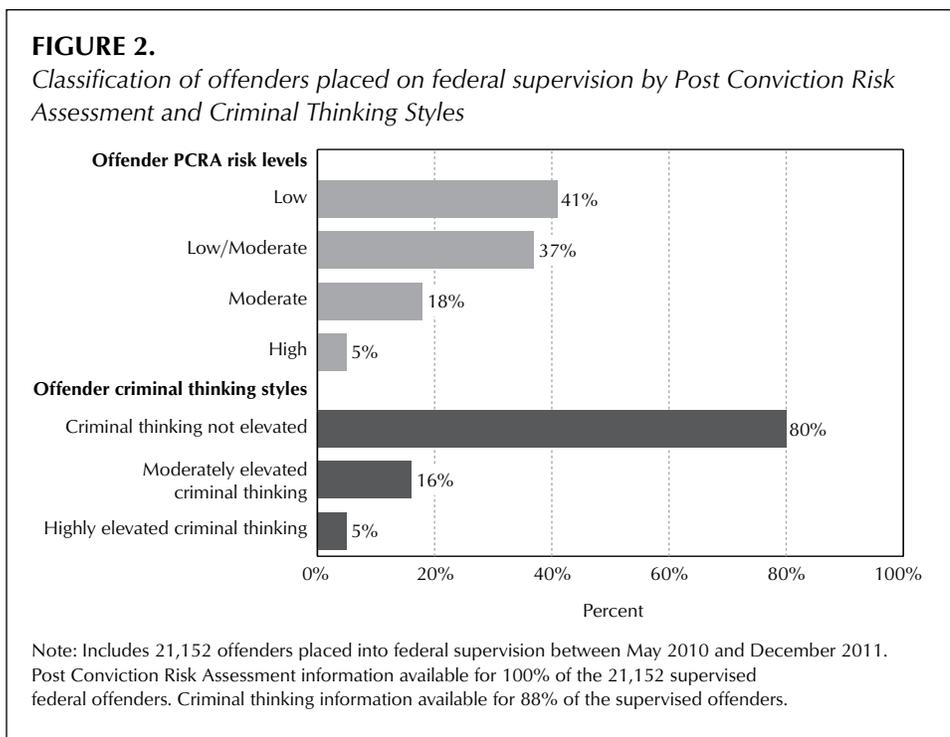


TABLE 1.
Scored Post Conviction Risk Assessment (PCRA) characteristics for offenders placed on federal supervision, by PCRA classifications

Scored PCRA characteristics	Any offender	Percent of offenders, by initial risk classification			
		Low	Low/Moderate	Moderate	High
Criminal history^a					
Prior misdemeanor and/or felony arrest	76%	44%	96%	100%	100%
Prior violent offense	41	8	51	80	91
Prior varied offending pattern	63	25	86	98	99
Prior violations while on supervision	36	4	44	78	91
Prior institutional adjustment	21	5	21	47	71
Education & employment					
Less than high school or has only GED	42%	18%	48%	73%	87%
Currently unemployed	40	27	39	63	81
Recent unstable work history	34	15	33	65	87
Drugs & alcohol					
Current alcohol problem	9%	3%	8%	18%	42%
Current drug problem	17	4	16	37	67
Social networks					
Single, divorced, separated	74%	57%	82%	92%	96%
Unstable family situation	18	9	17	31	58
No positive prosocial support	15	5	13	31	68
Cognitions					
Lacks motivation to change	8%	3%	6%	16%	47%
Number of offenders	21,152	8,665	7,822	3,713	952

Note: Includes 21,152 offenders placed into federal supervision between May 2010 and December 2011. Information on scored PCRA items available for 99.5% to 100% of supervised offenders. Un-scored Post Conviction Risk Assessment items not shown.
^aOffender age at intake PCRA scoring factor not shown.

counterparts. The percentage of offenders with a history of violent offending increases by risk category: 8 percent for low, 51 percent for low/moderate, 80 percent for moderate, and 91 percent for high risk offenders. Higher-risk offenders also had a greater number of prior arrests than their lower-risk counterparts. The percentage of offenders with 8 or more prior arrests starts at 1% for low-risk offenders and then rises incrementally to 35 percent for low/moderate-risk offenders, 69 percent for moderate-risk offenders, and 82 percent of high-risk offenders (not shown in table).

As with criminal history, moderate and especially high-risk offenders scored higher in the dynamic PCRA risk domains associated with education/employment, substance abuse, social networks, and cognitions in comparison to their lower-risk counterparts. Regarding employment, for example, 81 percent of high-risk and 63 percent of moderate-risk offenders were unemployed at their first PCRA assessment, compared to 39 percent of low/moderate- and 27 percent of low-risk offenders. Not surprisingly, offenders were also more likely to manifest current drug abuse problems if they were classified in the high- (67 percent) or moderate- (37 percent) risk categories than their low/moderate- (16 percent) or low-risk (4 percent) equivalents. Finally, nearly half (47 percent) of high-risk offenders had poor motivation towards supervision compared to offenders in the moderate- (16 percent), low/moderate- (6 percent), or low- (3 percent) risk categories.

Table 2 focuses on the items in the PCRA that are rated but not scored.⁹ To reiterate, these are items completed by the officers but not actually utilized in the risk assessment calculation. Some of these are test questions that might be added later to the risk score. The majority of non-scored PCRA items focus on substance abuse issues, social networks, and the presence of several other risk factors. High-risk offenders have significantly more issues related to job stability, using substances in ways that are related to disruption in the work, school, or home environments, or using substances despite continued social problems compared to their lower-risk counterparts. Moreover, high- and moderate-risk offenders were more likely to lack a permanent residence, have criminal risks present at home, deal with

⁹ In addition to the non-scored PCRA items shown in Table 2, the PCRA identifies several responsibility-related factors, including offender intelligence, physical handicaps, reading and writing limitations, mental health issues, etc. These responsibility factors were not available for the current analysis.

financial stressors, or associate with negative peers than offenders in the low/moderate- or low-risk categories.

Finally, this table provides information on the presence of criminal thinking, as measured by the Offender Section of the PCRA, for offenders at the different risk levels. To reiterate, the criminal thinking scores are not incorporated directly into the risk assessment;

however, they are used to inform officers that an offender's "criminal thinking" should be targeted for intervention. The presence of criminal thinking increases incrementally with risk classification. Approximately a tenth of low-risk, a third of moderate-risk, and two-fifths of high-risk offenders had criminal thinking. Hence, a third or more of moderate- or high-risk offenders are identified as being

above the norm, relative to other federal offenders in their criminal thinking patterns.

Figure 3 examines the most prominent dynamic criminogenic characteristics for offenders in the study cohort. When probation officers assess offenders for the purpose of supervision planning, they are encouraged to tailor those plans according to the most prominent criminogenic needs identified by PCRA. The PCRA uses hierarchical rules driven by both theory and research to rank those needs by order of importance. Research shows that the most effective treatment strategies focus first on changing criminal thinking, followed by addressing social networks, treating substance abuse problems, and assisting in job placement or educational attainment (Andrews & Bonta, 2010; Andrews, Bonta, & Hoge, 1990; Gendreau, Little, & Goggin, 1996). Hence, if the assessment indicates that an offender has criminal thinking, social network, and substance abuse issues, it encourages officers to address criminal thinking and social networks before substance abuse by displaying them in the appropriate order.

The most commonly occurring dynamic criminogenic factors are a combination of criminal thinking and social network issues. Social networks were the primary dynamic factor for 57 percent of offenders and elevated criminal thinking was the primary dynamic factor for another 24 percent of offenders. Interestingly, elevated levels of criminal thinking were rarely a problem by themselves, but were typically associated with social networks or substance abuse problems. For those offenders for whom poor social networks were the primary criminogenic factor, these problems were frequently accompanied by education/employment or substance abuse issues. The remaining offenders had either education/employment issues alone (9 percent) or no dynamic needs (8 percent) that required addressing. According to the PCRA, relatively few offenders (2 percent) have only substance abuse as their primary or only criminogenic need. In fact, substance abuse problems typically were conjoined with other criminogenic factors involving negative supervision attitudes, elevated levels of criminal thinking, and poor social networks.

TABLE 2.

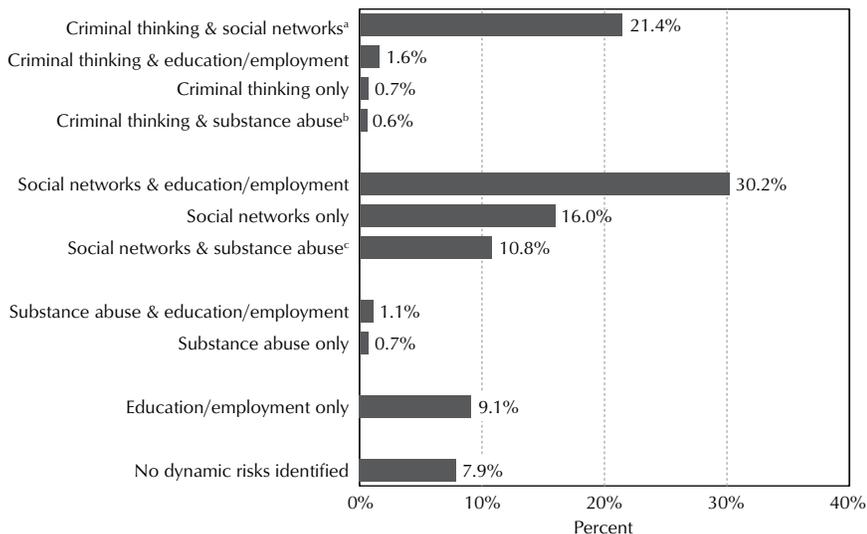
Non-Scored Post Conviction Risk Assessment (PCRA) characteristics for offenders placed on federal supervision, by PCRA classifications

Non-scored PCRA characteristics & criminal thinking styles	Any offender	Percent of offenders, by initial risk classification			
		Low	Low/Moderate	Moderate	High
Criminal history					
Juvenile arrest	29%	8%	34%	56%	70%
Education & employment					
Multiple jobs past year	51%	38%	53%	70%	80%
Employed less than 50% over past two years	53	33	57	80	90
Drugs & alcohol					
Drug use related to disruption at work, school, or home	28%	12%	32%	47%	61%
Drug use in physically hazardous conditions	22	12	26	34	44
Drug use led to legal problems	43	22	51	67	80
Drug use continued despite social problems	32	12	38	54	68
Social networks					
Does not live with spouse or children	65	53	68	76	79
Lacks family support	9	5	8	13	31
Associates with negative peers or no friends	17	7	16	31	55
Cognitions					
Has antisocial values	14%	5%	13%	28%	57%
Other factors					
Lacks permanent residence	34%	24%	37%	44%	60%
Criminal risks present in home	11	6	11	18	34
Financial stressors present	37	21	37	62	81
Does not engage in prosocial activities	29	17	29	46	69
Offender criminal thinking styles					
Elevated criminal thinking	20%	9%	22%	34%	40%
Moderately elevated criminal thinking	16	8	17	25	27
Highly elevated criminal thinking	5	2	5	8	13
Number of offenders	21,152	8,665	7,822	3,713	952

Note: Includes 21,152 offenders placed into federal supervision between May 2010 and December 2011. Information on non-scored PCRA items available for 95% to 100% of supervised offenders. Criminal thinking information available for 88% of supervised offenders. Scored PCRA items not shown.

FIGURE 3.

Top two dynamic Post Conviction Risk Assessment (PCRA) characteristics for offenders placed on federal supervision



Note: Includes 21,152 offenders placed into federal supervision between May, 2010 and December, 2011. Information on dynamic PCRA factors available for 100% of offenders.
 Criminal thinking identified through both the cognition and criminal thinking sections of the PCRA.
^a 83% of offenders with criminal thinking and social network problems also had education/employment issues, and 34% of offenders with criminal thinking and social network problems also had substance abuse issues.
^b 76% of offenders with criminal thinking and substance abuse problems also had education/employment issues.
^c 76% of offenders with social networks and substance abuse problems also had education/employment issues

Exploring changes in risk levels and examining which dynamic risk characteristics change the most during an offender's supervision term

For the remainder of this article, we will examine the extent to which the risk levels of supervised offenders are changing over time. Specifically, the next several figures and tables examine which dynamic criminogenic factors most contribute to the increase or decrease of an offender's risk levels and whether changes in risk are related to the successful completion of supervision terms.

Figure 4 explores changes in the risk classification (i.e., the percentage of offenders moving from a higher to lower risk category or vice versa) for supervised offenders between their first and second PCRA assessments. Overall this figure indicates that many high-risk offenders improve by moving to a lower risk level in a subsequent assessment. Among offenders initially classified as high risk, 47 percent had moved to a lower risk level in their second assessment; moreover, 32 percent of moderate-risk offenders were reclassified into a lower risk group at their second assessment. For offenders initially placed into the low/moderate- or low-risk categories, relatively few manifested increasing PCRA risk classifications. Only 7–8 percent of low- or

low/moderate-risk offenders saw a worsening of their risk classification. The reclassification of many high-risk offenders into lower-risk categories, combined with the relative stability of offenders initially marked as low-risk, represents an encouraging finding.

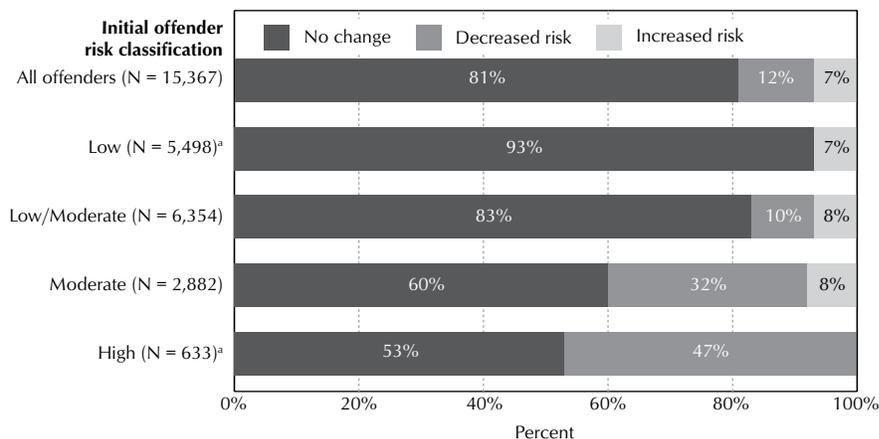
Figure 5 shows similar, though more pronounced, movements in the risk classifications among offenders with at least three PCRA assessments. Approximately two-thirds (65 percent) of high-risk and about half (47 percent) of moderate-risk offenders were moved to a lower risk category in their third assessment. For offenders in the low/moderate- or low-risk categories at initial assessment, nearly 90 percent saw no changes or improvements in their PCRA risk classifications between assessments. Finally, the percentage of offenders with increased risk classifications ranged from 8 percent of moderate to 12 percent of low- or low/moderate-risk offenders.

One factor that influences whether an offender's PCRA risk classification increases or decreases over time is the presence of elevated levels of criminal thinking. The relationship between criminal thinking and changing PCRA risk levels is explored in Table 3. This table shows that offenders with elevated levels of criminal thinking were more likely to receive increased risk classifications between their first and second assessments compared to offenders without criminal thinking. For example, low-risk offenders with elevated criminal thinking were nearly twice as likely to be placed in a higher PCRA risk category by their second assessment (12 percent) compared to low-risk offenders without elevated criminal thinking (7 percent).¹⁰ Conversely, a larger

¹⁰ $\chi^2(1) = 15.76, p < .001$.

FIGURE 4.

Changes in risk classification for offenders placed on federal supervision with at least two Post Conviction Risk Assessment (PCRA) evaluations



Note: Includes 15,367 offenders placed into federal supervision between May 2010 and December 2011 with at least two PCRA assessments. The 5,785 offenders with only one PCRA assessment during the study period were excluded from the figure.
^a Offenders with the lowest PCRA risk classification cannot receive a decrease in their PCRA risk level and offenders in the highest risk classification cannot receive an increase in their PCRA risk level.

percentage of moderate-risk offenders without elevated criminal thinking (34 percent) were reclassified into a lower PCRA risk category by their second assessment than moderate-risk offenders with elevated criminal thinking (28 percent).¹¹ High-risk offenders without

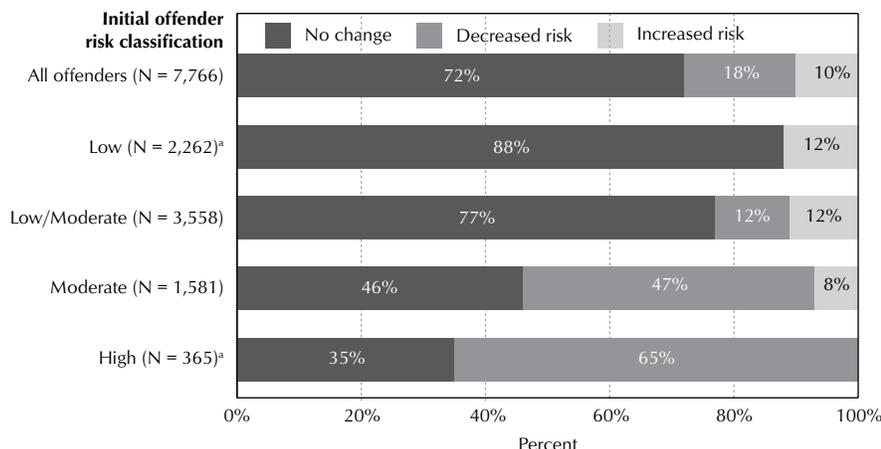
elevated criminal thinking were also more likely to be placed into a lower risk category by their second assessment (51 percent) compared to their high-risk counterparts with elevated criminal thinking (43 percent).¹²

¹¹ $\chi^2(2) = 18.08, p < .001$.

¹² These differences tested at the .10 but not at the .05 level. $\chi^2(1) = 3.34, p = .068$.

FIGURE 5.

Changes in risk classification for offenders placed on federal supervision with at least three Post Conviction Risk Assessment (PCRA) evaluations



Note: Includes 7,766 offenders placed into federal supervision between May 2010 and December 2011 with at least three PCRA assessments. The 13,386 offenders with fewer than three PCRA assessments during the study period were excluded from the figure.

^aOffenders with the lowest PCRA risk classification cannot receive a decrease in their PCRA risk level and offenders in the highest risk classification cannot receive an increase in their PCRA risk level.

TABLE 3.

Changes in Post Conviction Risk Assessment (PCRA) classification for offenders placed on federal supervision, by offender criminal thinking styles

Initial offender PCRA risk levels & offender criminal thinking styles	Number of offenders	Percent of offenders with changes in PCRA risk classification		
		No change	Decreased risk	Increased risk
Low				
Criminal thinking not elevated	4,045	93%	–%	7%
Elevated criminal thinking	452	88	–	12
Low/moderate				
Criminal thinking not elevated	4,544	83%	10%	7%
Elevated criminal thinking	1,329	83	7	11
Moderate				
Criminal thinking not elevated	1,821	60%	34%	7%
Elevated criminal thinking	905	61	28	11
High				
Criminal thinking not elevated	377	49%	51%	–%
Elevated criminal thinking	220	57	43	–

Note: Includes offenders placed into federal supervision between May, 2010 and December, 2011 with at least two PCRA assessments. Information on criminal thinking styles available for about 90% of offenders with multiple PCRA assessments.

– Not applicable as offenders with the lowest PCRA risk classification cannot receive a decrease in their PCRA risk level and offenders with the highest risk classification cannot receive an increase in their PCRA risk level.

The next several tables examine which of the dynamic PCRA factors most affect the movement of offenders across risk categories. Basically, these tables measure how changes to the dynamic criminogenic factors of education/employment, substance abuse, social networks, or cognitions influence changes in risk levels over time.

Offenders initially classified as high risk experienced the greatest changes in their dynamic risk predictors by their second assessment, with those factors related to employment or substance abuse improving more than the social networks or cognitions domains (see Table 4). For example, according to the PCRA, approximately 80 percent or more of high-risk offenders were either currently unemployed (79 percent) or lacked a recent stable work history (87 percent) at their initial assessment. By their second assessment, the percentage of currently unemployed high-risk offenders had declined to 49 percent,¹³ and the percentage of these offenders with a recent unstable work history had decreased to 66 percent.¹⁴ Regarding drug abuse, 67 percent of high-risk offenders had current drug abuse problems at their first assessments, a figure reduced to 45 percent when the next assessment occurred.¹⁵ A similar pattern for high-risk offenders occurred with the alcohol abuse characteristic, which declined from 44 percent to 29 percent between PCRA assessments.¹⁶

High-risk offenders also saw improvements in their social network and cognition domains; although significant, these changes were not as extensive as the improvements in the domains of employment and substance abuse. Concerning cognitions, the proportion of high-risk offenders with poor motivation towards supervision declined from 42 percent to 34 percent during the period between assessments.¹⁷ The social network factors of instability in the family and social support also

¹³ $t(632) = 13.91, p < .001$. Since the PCRA characteristics of the same group of offenders are being measured at two different points, we performed repeated measures of t-tests involving paired samples to assess whether these differences were statistically significant. Although t-tests typically measure differences in means across two different time points or groups, these tables show percentages rather than mean scores. Since all the dynamic PCRA factors listed in these tables have scores of 0 or 1, the percentages can be readily converted into mean scores for the purposes of a t-test.

¹⁴ $t(632) = 11.49, p < .001$.

¹⁵ $t(632) = 10.94, p < .001$.

¹⁶ $t(631) = 8.81, p < .001$.

¹⁷ $t(631) = 3.99, p < .001$.

TABLE 4.

Individual Post Conviction Risk Assessment (PCRA) characteristics for offenders placed on federal supervision between their first and second assessments, by initial risk classification

Scored dynamic PCRA characteristics	PCRA characteristics of offenders at their 1st and 2nd assessments, by initial risk classification							
	Low		Low/Moderate		Moderate		High	
	1st PCRA	2nd PCRA	1st PCRA	2nd PCRA	1st PCRA	2nd PCRA	1st PCRA	2nd PCRA
Education & employment								
Less than high school or has only GED	18%	18%	47%	47%	73%	71%	86%	83%
Currently unemployed	26	21	38	26	63	39	79	49
Recent unstable work history	15	15	33	26	65	50	87	66
Drugs & alcohol								
Current alcohol problem	3%	3%	8%	7%	18%	13%	44%	29%
Current drug problem	4	5	16	14	37	30	67	45
Social networks								
Single, divorced, separated	59%	60%	82%	81%	92%	90%	96%	93%
Unstable family situation	9	10	16	17	30	29	57	50
No positive prosocial support	5	5	13	11	30	26	64	54
Cognitions								
Lacks motivation to change	3%	5%	6%	9%	15%	18%	42%	34%
Number of offenders with at least 2 PCRA's	5,498	5,498	6,354	6,354	2,882	2,882	633	633

Note: Includes offenders placed on federal supervision between May 2010 and December 2011 who received at least two PCRA assessments. Criminal history PCRA characteristics not shown as these factors are relatively static.

Information on changes in individual PCRA scores available for 99% to 100% of 15,367 offenders with at least two PCRA assessments.

Percentages may differ from Table 1 as population examined narrowed to include offenders with at least two assessments.

Non-scored PCRA items not shown.

improved for high-risk offenders; with the percentage of these offenders without positive prosocial support networks declining from 64 percent to 54 percent¹⁸ and the percentage in unstable family situations decreasing from 57 percent to 50 percent.¹⁹ The factors that changed the least were education and marital status. Relatively few high-risk offenders acquired additional education or changed their marital status by their second assessment.

Offenders initially classified as moderate risk also witnessed improvements in most of their dynamic PCRA domains. Similar to their high-risk counterparts, moderate-risk offenders saw the most substantial changes in the dynamic characteristics of current employment, recent job stability, and existing drug problems. For instance, over three-fifths of moderate-risk offenders (63 percent) were unemployed at their first assessment, while approximately two-fifths (39 percent) of these offenders were still unemployed at the second assessment.²⁰ Moderate-risk offenders

experienced less progress in the social networks, cognitions, and education domains.

The fewest changes occurred amongst those offenders classified in the low or low/moderate risk categories. This is not surprising, as the overall risk classifications for most low- and low/moderate-risk offenders remained unchanged during their supervision periods. Despite this relative stability, the largest improvements occurred in unemployment, which decreased for both sets of offenders.

An examination of changes in the dynamic PCRA domains between the first and third assessments produces similar but more pronounced results. Specifically, high- and moderate-risk offenders saw substantial improvements in the employment and substance abuse domains, while changes in the education, marital status, family stability, and cognitions domains were less considerable. Both moderate- and high-risk offenders, however, did experience sizeable improvements in the social support domain. The percentage of high-risk offenders without prosocial support networks declined from 63 percent to 42 percent from the first to the third PCRA.²¹ There

were fewer notable changes in the dynamic PCRA domains for offenders in the low- or low/moderate-risk categories (see Table 5).

Decomposing the influence of individual PCRA predictors on the movement of offenders across risk categories

The next component of this analysis uses decomposition methods to examine the influence of individual PCRA predictors on the movement of offenders across risk categories. The decomposition approach works by calculating the percentage contribution of each scored PCRA factor to the reclassification of offenders into different risk categories. We compute changes in the aggregate scores for each PCRA factor from one assessment to the next and then calculate how much changes in these individual factors contribute to the total changes in an offender's risk classification. By decomposing changes in the aggregate PCRA scores, we can examine the contribution of each PCRA factor to the reclassification of offenders. The actual decomposition equations are provided in the article's appendix.

¹⁸ $t(632) = 5.99, p < .001$.

¹⁹ $t(632) = 4.41, p < .001$.

²⁰ $t(2881) = 24.10, p < .001$.

²¹ $t(364) = 7.50, p < .001$.

TABLE 5.

Individual Post Conviction Risk Assessment (PCRA) characteristics for offenders placed on federal supervision between their first and third assessments, by initial risk classification

Scored dynamic PCRA characteristics	PCRA characteristics of offenders at their 1st and 3rd assessments, by initial risk classification							
	Low		Low/Moderate		Moderate		High	
	1st PCRA	3rd PCRA	1st PCRA	3rd PCRA	1st PCRA	3rd PCRA	1st PCRA	3rd PCRA
Education & employment								
Less than high school or has only GED	20%	20%	48%	47%	74%	70%	86%	80%
Currently unemployed	26	17	37	21	63	30	80	38
Recent unstable work history	15	15	32	23	63	37	87	52
Drugs & alcohol								
Current alcohol problem	2%	4%	7%	6%	18%	10%	47%	20%
Current drug problem	5	6	16	13	36	21	67	27
Social networks								
Single, divorced, separated	62%	62%	82%	80%	91%	87%	96%	90%
Unstable family situation	9	11	16	18	29	27	55	41
No positive prosocial support	5	5	12	11	29	20	63	42
Cognitions								
Lacks motivation to change	3%	7%	6%	10%	14%	17%	40%	31%
Number of offenders with at least 3 PCRA's	2,262	2,262	3,558	3,558	1,581	1,581	365	365

Note: Includes offenders placed on federal supervision between May 2010 and December 2011 who received at least two PCRA assessments. Criminal history PCRA characteristics not shown as these factors are relatively static.

Information on changes in individual PCRA scores available for 99% to 100% of 15,367 offenders with at least two PCRA assessments.

Percentages may differ from Table 1 as population examined narrowed to include offenders with at least two assessments.

Non-scored PCRA items not shown.

For those offenders with a lower risk classification by their second assessment, the decomposition analysis shows that changes in the domains of education/employment and substance abuse contributed more than changes in social networks and cognitions to the movement of offenders across risk categories (see Table 6).²² Among high-risk offenders reclassified into the moderate or low/moderate risk levels, the education/employment factors contributed to 40 percent of this downward change, while the substance abuse factors accounted for 28 percent of this change. Changes in the combined domains of changes in education/employment and substance abuse accounted for 68 percent of the decreased risk for high-risk offenders.

Decomposition methods show that changes in education/employment and substance abuse have similar effects for moderate or low/moderate offenders. Among low/moderate- or moderate-risk offenders, changes in the education/employment factors accounted

for slightly over half (52 percent) of their decreased risk classification. Changes in the substance abuse factors contributed to 22–25 percent of their reclassification toward lower risk. Taken together, approximately three-fourths of the downward reclassification in risk for moderate- or low/moderate-risk offenders can be explained by changes in the education/employment and substance abuse domains.

In comparison to education/employment and substance abuse, the PCRA factors associated with social networks and cognitions contributed less to improved risk levels between assessments. About a third of the decrease among high-risk offenders reclassified at lower risk levels can be explained by changes in offender social networks or cognitions. For moderate- or low/moderate-risk offenders, 24–27 percent of reduced risk classifications are accounted for by changes in social networks or cognitions. Moreover, within the education/employment domain, changes in employment contributed most to the reduction in offender risk. Education, by itself, accounted for only 1–2

percent of the movement of offenders to lower risk categories.

When examining offenders with increased risk classifications, the influence of the PCRA factors varies by the initial risk classification. For example, the PCRA domain of criminal history had an influential role in the elevation of low-risk offenders to higher risk levels. Increased criminal history factors contributed to nearly 40 percent of the movement of low-risk offenders to a higher risk category. Among all the criminal history predictors, prior violations while under supervision and prior arrest were the most influential; these two factors combined accounted for 22 percent of the reclassification of low-risk offenders to an elevated risk category. Basically, this finding implies that some low-risk offenders are picking up new arrest charges and these charges are being recorded at the next assessment. Criminal history, however, was not as important for moderate-risk offenders receiving higher risk classifications. For moderate-risk offenders with increased risk classifications, changes in an offender's attitudes towards supervision (i.e., cognitions) (23 percent) and current

²² The PCRA factors associated with criminal history had no impact on the movement of offenders to lower risk levels, as criminal history scores cannot improve between assessments.

drug problems (15 percent) alone accounted for almost 40 percent of the movement into a higher risk category.²³

Examining whether changes in risk were associated with improved supervision outcomes

Table 7 examines whether offenders with improved risk classifications were revoked from supervision less frequently than their counterparts whose risk classifications remained the same or increased. Analyzing this issue allows us to begin exploring if improving risk classifications actually result in better supervision outcomes. We examined

²³ It should be noted that decompositions examining the contribution of the individual PCRA factors to the reclassification of offenders into different risk categories were also conducted for offenders with three PCRA assessments. These decompositions produced results that generally mirror the decompositions for offenders with two PCRA assessments.

revocations rather than re-arrest outcomes because at the time this analysis was conducted re-arrest data were not available. Unlike arrests, revocations are an imperfect measure of offender misconduct because they depend on the supervising officer who has responsibility for recommending revocation (Baber, 2010). This imperfect measure of offender behavior, however, still represents a useful approach for evaluating the real-world impacts of changes in PCRA risk categories between assessments.

The findings in Table 7 show that the lowering of risk does correlate with better supervision outcomes, at least for revocations. High-risk offenders who remained in the same risk category, for example, were two times more likely to be revoked (35 percent) compared to high-risk offenders with decreased risk classifications (15 percent). Among moderate-risk offenders, 38 percent were revoked if their risk classification

increased and 19 percent had a revocation if their risk classification remained unchanged; however, for those moderate-risk offenders with a decrease in their risk levels, 9 percent were revoked. The same pattern of reduced risk levels being associated with decreased revocation rates also held for low/moderate-risk offenders. The percentage of offenders in the low/moderate-risk category revoked was eight times higher if their risk classification increased (25 percent) compared to low/moderate-risk offenders with a decrease in their risk classification levels (3 percent). Even low-risk offenders were five times more likely to be revoked if they were reclassified into a higher risk level (9 percent) compared to their counterparts with no changes between assessments (2 percent).²⁴

²⁴ Chi-Square tests showed statistically significant differences in revocation rates by changes in risk levels at the .001 level for all reported percentages shown.

TABLE 6.

Decomposing individual contribution of Post Conviction Risk Assessment (PCRA) characteristics to changes in risk classification for offenders placed on federal supervision, at second assessment

Scored PCRA characteristics	Offenders with decreased risk classification, by initial risk level ^a			Offenders with increased risk classification, by initial risk level ^b		
	Low/moderate	Moderate	High	Low	Low/moderate	Moderate
Total	100%	100%	100%	100%	100%	100%
Criminal history	0%	0%	0%	39%	16%	7%
Prior misdemeanor and/or felony arrest	0	0	0	11	5	2
Prior violent offense	0	0	0	6	2	1
Prior varied offending pattern	0	0	0	8	2	0
Prior violations while on supervision	0	0	0	11	6	2
Prior institutional adjustment	0	0	0	2	1	2
Age at intake	0	0	0	1	0	0
Education & Employment	52%	52%	40%	21%	23%	18%
Less than high school or has only GED	1	2	2	1	2	1
Currently unemployed	32	29	21	11	12	8
Recent unstable work history	18	21	17	9	10	9
Drugs & alcohol	22%	25%	28%	14%	24%	23%
Current alcohol problems	9	9	10	6	8	8
Current drug problems	13	16	18	9	15	15
Social networks	21%	19%	21%	16%	21%	29%
Single, divorced, separated	5	3	2	4	3	1
Unstable family situation	8	6	9	8	10	14
No positive prosocial support	8	9	10	4	8	14
Cognitions	6%	5%	11%	10%	15%	23%

Note: Decomposition techniques used to assess the contribution of each scored PCRA risk characteristic to the movement of offenders into a higher or lower risk classification category. Percentages may not sum to totals because of rounding error.

See text for more details about decomposition calculations.

^aLow risk offenders not shown as they cannot receive decreases in their risk classifications.

^bHigh risk offenders not shown as they cannot receive increases in their risk classifications.

TABLE 7.

Revocation among offenders placed on federal supervision with increased, decreased, or unchanged PCRA risk classifications

Initial PCRA classification	Change in PCRA risk classification	Number of offenders	Open Status	Case terminated	
				Early or successful	Revocation or unsuccessful
Low	No change	5,133	67%	32%	2%
	Increased risk	365	67	24	9
Low/Moderate	No change	5,247	76%	18%	6%
	Decreased risk	610	73	24	3
	Increased risk	497	67	8	25
Moderate	No change	1,723	72%	10%	19%
	Decreased risk	919	77	14	9
	Increased risk	240	54	8	38
High	No change	337	59%	6%	35%
	Decreased risk	296	76	10	15

Note: Includes offenders placed into federal supervision between May 2010 and December 2011 with at least two PCRA assessments. Information on offender revocation status available for 100% of offenders.

Discussion

This study sought to assess how offenders' risk classifications changed during their time under federal supervision. Several issues were explored, including the risk levels and presence of criminal thinking and the different static and dynamic factors prevalent in the four PCRA risk categories. We also examined whether the overall risk levels increased or decreased for supervised offenders. Moreover, the influence of the individual PCRA domains was explored to determine which of these dynamic factors most contributed to increases or decreases in an offender's risk level. Finally, we studied the relationship between changes in offender risk levels and the supervision outcome of revocation.

We found that the majority of offenders under federal supervision (78 percent) were classified as either low or low/moderate risk at the start of their supervision period. The fact that a minority of offenders fall on the higher end of the risk distribution implies that intensive supervision need not be dispersed widely across the entire population. Rather, explicit in the RNR model is the idea that the majority of resources and personnel should be directed at the smaller percentage of offenders classified at the higher risk levels. The PCRA identifies a variety of criminogenic factors for which these offenders require interventions, including job training and placement, substance abuse treatment, and counseling in the areas of family stability and prosocial support networks. While elevated criminal

thinking was present in a minority (20 percent) of all offenders, over a third of moderate- and high-risk offenders had elevated levels of criminal thinking. Since criminal thinking has been shown to be highly correlated with criminal behavior, the PCRA reinforces using various cognitive behavior techniques to target the thinking patterns and styles of offenders in these highest risk categories.

This study also found that many offenders initially placed in the highest risk categories are reclassified into lower risk levels by their next assessment. This was especially true for high-risk offenders; about half of these offenders received a reduction in risk by their second assessment and nearly-two thirds were moved into a lower risk category by their third assessment. These results show that, according to the PCRA, many high-risk offenders decrease their risk to recidivate during their supervision term. In comparison with their higher-risk counterparts, the offenders in the low or low/moderate risk categories experience relative stability in their classifications while under supervision.

For those offenders moving from a higher to lower risk level, most of these changes were driven by improvements in the dynamic factors associated with employment and substance abuse. The PCRA factors related to cognitions and prosocial support networks did not contribute to the lowering in risk classification at levels similar to employment and substance abuse because they did not change as dramatically between assessments.

Several explanations might account for why the PCRA domains associated with social networks and cognitions change less dramatically compared to employment and substance abuse. First, it is much more difficult for probation officers to alter an offender's attitude towards supervision, bring stability to an offender's family, or encourage an offender to become more deeply involved in prosocial networks than it is to provide job placement assistance or substance abuse treatment. Moreover, many federal probation offices traditionally allocate resources to and focus on assisting their clients in obtaining employment and/or seeking substance abuse treatment. Fewer resources have been apportioned to the provision of interventions that could assist in improving an offender's social networks or criminal thinking attitudes. Finally, the role of conditions imposed at sentencing could affect the types of services provided to offenders. At the time of sentencing, judges can and often do impose conditions related to obtaining employment, abstaining from illegal substances, paying fines and restitution fees, and engaging in community service. In fact, employment requirements are standard supervision conditions, and substance abuse treatment is a commonly imposed probation condition. By statute and policy, probation officers are required to focus on these various imposed probation conditions before addressing other criminogenic needs and issues that may actually be driving risk of recidivism.

For offenders with increasing risk levels, the factors associated with criminal history were important drivers for low-risk offenders, while for moderate-risk offenders, increased risks related to supervision attitudes and current drug problems were more crucial. Technical violations or new arrests led to enhanced risk classifications for offenders in the lower risk categories. Conversely, deterioration in supervision attitudes or substance abuse problems created the context to move moderate offenders into the highest risk category. Criminal history had less impact for moderate-risk offenders, as these predictors were already at relatively high levels and hence had limited potential to reclassify moderate offenders into higher risk levels.

Another major finding involves the role of elevated criminal thinking, as measured by the Offender Section of the PCRA, in determining whether offenders are reclassified into higher or lower risk levels. Basically, offenders with elevated criminal thinking received decreases in their risk classifications less frequently and

witnessed increases in their risk levels to a greater extent compared to their counterparts without criminal thinking. These findings suggest that federal probation officers should use the criminal thinking scores to inform their understanding of how offenders might behave during their supervision term.

Finally, changes in offender risk were associated with improved supervision outcomes. Specifically, offenders with decreased risk classifications were less likely to have their supervision term revoked compared to their counterparts whose risk level either remained unchanged or increased. Conversely, increases in offender risk were associated with higher rates of revocations. Hence, changes in an offender's risk classification have implications beyond the simple adjustment in risk groupings. A lowering of the risk level indicates that the likelihood of an offender recidivating has been reduced. Hence, probation officers might want to readjust downwards the amount of time and resources being devoted to offenders with decreasing risk levels. Alternatively, probation officers should pay special attention and allocate additional time and resources to those offenders reclassified into higher risk levels.

In summary, these results show that many high-risk offenders move to a lower risk category by their next assessment and that most of these changes were driven by improvements in offenders' employment and substance abuse-related characteristics. Most important, decreases in risk classifications translated into actual decreases in revocations. Those offenders experiencing decreases in their risk levels were less likely to have their terms revoked compared to offenders with stable or increased risk classifications.

While the results detailed above are encouraging, they need to be tempered by the problem of selection bias. Specifically, this study can observe only those offenders who remained under supervision for enough time to receive a second and/or third PCRA assessment. Offenders under federal supervision might not receive another PCRA assessment for several reasons. Between the first and second PCRA assessments, the offender's supervision term could have been revoked or the offender could have received an early or successful case termination. Instances where an offender's supervision term has been revoked are especially problematic, because that may result in the highest-risk offenders being removed from observation prior to

their next assessment. Conversely, moderate- and high-risk offenders receiving a second assessment might possess attributes making success more probable.

Of course, there is no way of knowing how revoked offenders would have performed, because they have been terminated from federal supervision. It is possible, however, to examine whether offenders with only one assessment are substantially worse in terms of their PCRA risk factors compared to offenders with multiple PCRA. The results of this comparison are provided in Appendix Table 1, and in general provide mixed evidence for selection effects. High- and moderate-risk offenders with multiple PCRA assessments have similar criminal history, education/employment, and substance abuse characteristics compared to their counterparts with only one assessment. The major differences between offenders with one versus multiple assessments are in the areas of cognitions and criminal thinking. Where these two factors are present, the likelihood of subsequent PCRA decreases.

These findings imply that selection effects influence this research to a certain extent. While it's important to acknowledge these selection effects, the evidence for selection bias is not overwhelming. High- and moderate-risk offenders with multiple PCRA still have elevated scores in criminal thinking and motivation to change compared to their lower-risk counterparts; they just are not elevated to the same extent as those of offenders with only one PCRA assessment. Moreover, while it is not possible to state how much these results would change if we had multiple PCRA completed for the entire population, it is reasonable to expect that a sizable percentage of offenders in the higher risk categories would still see reductions in their risk classifications between assessments. It is important, however, to qualify our findings by noting that they apply only to offenders who remain under federal supervision and received multiple PCRA during the study period.

Conclusion

This study has produced several important findings regarding the behavior of federally supervised offenders. We have shown that many offenders initially classified at the highest risk levels moved to a lower risk category over time and that these changes were mostly driven by improvements in offenders' employment and substance abuse-related dynamic factors. We have also

demonstrated that improvements in offender risk produced tangible results in terms of lower offender revocation rates during their supervision period.

While these results are promising, they also suggest future avenues of research that should be explored. In particular, it is crucial to examine whether offenders with reductions in their risk levels were arrested less frequently compared to their counterparts who witnessed either no changes or increases in their risk classifications. It's also worthwhile exploring whether changes in certain dynamic PCRA risk factors reduced the probability of new arrests to a greater extent than changes in other PCRA factors. For example, we may find that improvements in an offender's attitude towards supervision had a greater impact than obtaining employment or receiving substance abuse treatment on the likelihood of being arrested for a new crime. Finally, this study touched briefly on the relationship between criminal thinking and offender risk levels and criminal conduct. Subsequent research should explore how various patterns of criminal thinking are correlated with changes in offender risk and criminal misconduct over time.

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Appendix

Decomposing contribution of individual PCRA risk factors to changing risk levels

Decomposition methods were used to examine the contribution of the individual PCRA risk factors to changes in offender risk. The contribution of the individual PCRA domains for offenders classified into different risk categories between their first and second assessments can be expressed through the following equation. It should be noted that the item numbers shown in the equation below correspond to those displayed in the PCRA risk tool.

$$\Delta PCRA = \text{Item 1.22} - \text{Item 1.21} + \text{Item 1.32} - \text{Item 1.31} + \text{Item 1.42} - \text{Item 1.41} + \text{Item 1.52} - \text{Item 1.51} + \text{Item 1.62} - \text{Item 1.61} + \text{Item 1.72} - \text{Item 1.71} + \text{Item 2.12} - \text{Item 2.11} + \text{Item 2.22} - \text{Item 2.21} + \text{Item 2.52} - \text{Item 2.51} + \text{Item 3.52} - \text{Item 3.51} + \text{Item 3.62} - \text{Item 3.61} + \text{Item 4.12} - \text{Item 4.11} + \text{Item 4.42} - \text{Item 4.41} + \text{Item 4.62} - \text{Item 4.61} + \text{Item 5.22} - \text{Item 5.21}$$

Where:

$\Delta PCRA$ = Change in the aggregate PCRA scores between the first and second PCRA assessments for offenders with an improved or worsened risk classification.

Item1.22 = Aggregate score prior felony and/or misdemeanor arrest PCRA domain, time 2.

Item1.21 = Aggregate score prior felony and/or misdemeanor arrest PCRA domain, time 1.

Item1.32 = Aggregate score prior violent offense PCRA domain, time 2.

Item1.31 = Aggregate score prior violent offense PCRA domain, time 1.

Item1.42 = Aggregate score prior varied offense pattern PCRA domain, time 2.

Item1.41 = Aggregate score prior varied offense pattern PCRA domain, time 1.

Item1.52 = Aggregate score prior violations while on supervision PCRA domain, time 2.

Item1.51 = Aggregate score prior violations while on supervision PCRA domain, time 1.

Item1.62 = Aggregate score prior institutional adjustment PCRA domain, time 2.

Item1.61 = Aggregate score prior institutional adjustment PCRA domain, time 1.

Item1.72 = Aggregate score age at intake PCRA domain, time 2.

Item1.71 = Aggregate score age at intake PCRA domain, time 1.

Item2.12 = Aggregate score education PCRA domain, time 2.

Item2.11 = Aggregate score education PCRA domain, time 1.

Item2.22 = Aggregate score employment PCRA domain, time 2.

Item2.21 = Aggregate score employment PCRA domain, time 1.

Item2.52 = Aggregate score work history PCRA domain, time 2.

Item2.51 = Aggregate score work history PCRA domain, time 1.

Item3.52 = Aggregate score alcohol use PCRA domain, time 2.

Item3.51 = Aggregate score alcohol use PCRA domain, time 1.

Item3.62 = Aggregate score drug use PCRA domain, time 2.

Item3.61 = Aggregate score drug use PCRA domain, time 1.

Item4.12 = Aggregate score marital status PCRA domain, time 2.

Item4.11 = Aggregate score marital status PCRA domain, time 1.

Item4.42 = Aggregate score family situation PCRA domain, time 2.

Item4.41 = Aggregate score family situation PCRA domain, time 1.

Item4.62 = Aggregate score positive prosocial support PCRA domain, time 2.

Item4.61 = Aggregate score positive prosocial support PCRA domain, time 1.

Item5.22 = Aggregate score attitudes towards supervision PCRA domain, time 2.

Item5.21 = Aggregate score attitudes towards supervision PCRA domain, time 1.

The equation can also be re-written into the following:

$$\Delta PCRA = \text{Criminal History Total Score}_2 - \text{Criminal History Total Score}_1 + \text{Education \& Employment Total Score}_2 - \text{Education \& Employment Total Score}_1 + \text{Substance Abuse Total Score}_2 - \text{Substance Abuse Total Score}_1 + \text{Social Networks Total Score}_2 - \text{Social Networks Total Score}_1 + \text{Cognitions Total Score}_2 - \text{Cognitions Total Score}_1$$

This equation can be interpreted as follows. The substance abuse component of this equation written *Item3.52-Item3.51+Item3.62-Item3.61* measures the contribution of changes in the PCRA substance abuse component to the overall change in the aggregate PCRA score between the first and second assessment. Specifically, *Item3.52-Item3.51* calculates the contribution of the change in the PCRA alcohol use domain between two time points to the total change in the PCRA score for offenders with a reclassified risk level. The term *Item3.62-Item3.61* calculates the

contribution of the change in the PCRA drug use domain between two time points to the total change in the PCRA score for offenders with a reclassified risk level, and so on.

There are several technical aspects about these decomposition methods that should be noted. First, decomposition equations were calculated separately for offenders by their initial risk levels. In other words, the decomposition equations examining offenders reclassified into a lower risk level were calculated separately for low/moderate-, moderate-, and high-risk offenders. Conversely, decomposition equations examining offenders reclassified into a higher risk level were calculated separately for low-, low/moderate-, and moderate-risk offenders. That way, the contribution of each PCRA domain to the movement of offenders from a higher to a lower risk category or vice versa can be examined separately by the individual risk groups. In addition, it should be noted that the PCRA factors associated with criminal history had no effect on the movement of offenders to a lower risk category, because criminal history cannot improve across time periods. Criminal history, however, can worsen between risk classifications as a result of a technical violation or new arrest. Hence, the decompositions show criminal history contributing to increased risk classifications, especially for lower-risk offenders.

APPENDIX TABLE 1.

Comparing scored PCRA characteristics for offenders placed on federal supervision with one vs. multiple PCRA

Scored PCRA characteristics	Percent of offenders with multiple PCRA, by initial risk classification							
	High		Moderate		Low/moderate		Low	
	One PCRA	Multiple PCRA	One PCRA	Multiple PCRA	One PCRA	Multiple PCRA	One PCRA	Multiple PCRA
Criminal history								
Prior misdemeanor and/or felony arrest	100%	100%	99%	100%	94%	96%*	40%	47%*
Prior violent offense	90	92	79	80	48	52*	6	10*
Prior varied offending pattern	99	99	97	98	81	87*	22	26*
Prior violations while on supervision	89	92	76	79	40	45*	3	4*
Prior institutional adjustment	69	72	44	48	20	21	4	5
Education & employment								
Less than high school or has only GED	88%	86%	72%	73%	49%	47%	18%	18%
Currently unemployed	86	79*	63	63	43	38*	29	26*
Recent unstable work history	89	87	66	65	35	33	15	15
Drugs & alcohol								
Current alcohol problem	38%	44%	17%	18%	8%	8%	3%	3%
Current drug problem	67	67	35	37	16	16	4	4
Social networks								
Single, divorced, separated	96%	96%	93%	92%	82%	82%	53%	59%*
Unstable family situation	60	57	35	30*	17	16	8	9
No positive prosocial support	75	64*	37	30*	16	13*	5	5
Cognitions								
Lacks motivation to change	56%	42%*	20%	15%*	8%	6%*	2%	3%
Psychological Inventory of Criminal Thinking Styles								
Elevated criminal thinking	45%	37%*	35%	33%	20%	23%*	8%	10%*
Moderately elevated criminal thinking	29	26	24	25	15	18	6	9
Highly elevated criminal thinking	16	11	10	8	5	5	2	2
Number of offenders	319	633	831	2,882	1,468	6,354	3,167	5,498

Note: *Chi-square test denotes significance difference at the .05 level.