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Functional Impairment in Youth Three Years after Detention

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Abstract

Purpose—This article examines functional impairment across global and specific dimensions among youth 3 years after their detention.

Methods—Functional impairment was assessed using the Child and Adolescent Functional Assessment Scale (CAFAS) in a large, stratified, random sample of formerly detained youth (N = 1653).

Results—More than one-fifth of the sample were scored as having marked impairment that required, at minimum, “multiple sources of care” (CAFAS Total Score of 100 or higher); 7.0% required “intensive intervention” (CAFAS Total Score ≥ 140). Most of the sample had impairment; only 7.5% of the sample had “no noteworthy impairment” (CAFAS Total Score ≤ 10). Significantly more males were impaired than females. Among males living in the community at follow-up, African Americans and Hispanics were more likely to be impaired than non-Hispanic whites. In comparison to males living in the community, males who were incarcerated at follow-up were significantly more likely to have impaired thinking and impaired functioning at their place of residence but less likely to have substance use problems.

Conclusions—Three years after detention, most youth struggle in one or more life domains; more than one in five have marked impairment in functioning. These findings underscore the ongoing costs, to both youth and society, of our failure to provide effective rehabilitation to youth after detention.

Most youth in the juvenile justice system have psychiatric, social, and academic difficulties [1,2]. Longitudinal studies suggest that these youth continue to have substantial impairment in their day-to-day functioning—or functional impairment—as they age. As many as two-thirds of youth are re-arrested within 4½ years of release from detention [3–6]. One study found that fewer than half had been working or had been in school 6 months after release from detention [4]. Between 12% and 50% of juveniles reported frequently using illicit drugs within 4½ years of release from detention [6–8], and 34% to 60% reported often drinking or abusing alcohol [6,7].

In their classic longitudinal study of 500 incarcerated males sampled in the 1940s, Glueck and Glueck [9] found that, during young adulthood, most were chronically unemployed, poorly

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educated, transient, had marital problems, abused substances, and continued to commit offenses. Lewis and colleagues followed 97 incarcerated boys [10] and 21 girls [11] for up to 12 years. At follow-up, most had criminal records, poor relationships, poor parenting skills, unstable jobs, meager education, drug addictions, and high rates of suicidality and mortality [10,11]. More recently, Giordano et al [12,13] followed 254 serious juvenile offenders for 13 to 14 years. As young adults, most still engaged in criminal activities, had not graduated from high school, and were earning annual incomes below the poverty level [12,13]. Furthermore, roughly half of females and three-quarters of males had lost—or never had—custody of their biological child [12].

Although studies have found substantial impairment in functioning among juvenile offenders as they age, the literature has two significant limitations. First, most studies examined only one or two areas of functioning, most often criminal recidivism [3–6], employment and school enrollment [4], or level of substance use [6–8]. Second, the few studies that examined multiple areas of functioning either had small samples [10,11] or used samples that do not reflect the sociodemographic characteristics of youth currently involved in the juvenile justice system [9,12,13]. Specifically, the study by Glueck and Glueck [9] did not include racial/ethnic minorities or females; Giordano et al [12,13] excluded Hispanics and focused exclusively on serious offenders. Racial/ethnic minorities now comprise nearly two-thirds of youth in the juvenile justice system, and the proportion of incarcerated females continues to rise [14].

To our knowledge, this is the first large-scale prospective study to examine global and specific domains of functioning using a diverse and representative sample of juvenile detainees.

METHODS

Participants

Participants were part of the Northwestern Juvenile Project, a longitudinal study of 1829 youth (aged 10–18 years) arrested and detained between 1995 and 1998 at the Cook County Juvenile Temporary Detention Center (CCJTDC) in Chicago, Illinois. The randomly selected sample was stratified by gender, race/ethnicity (African American, non-Hispanic white, Hispanic), age (10–13 years or ≥ 14 years), and legal status (processed as a juvenile or as an adult) to obtain enough participants to examine key subgroups (e.g., females, Hispanics, and younger children).

The CCJTDC is used for pretrial detention and for offenders sentenced less than 30 days. CCJTDC houses detainees younger than 17 years and detainees up to age 21 years if they are still being prosecuted for an arrest that occurred when they were younger than 17 years. Illinois' criteria for detaining juveniles are similar to those of other states, and the age and offense distributions of CCJTDC detainees are similar to those of detained juveniles nationwide [14].

Participants were re-interviewed 3 years after their baseline interview. Of the original 1829 participants, 1751 (95.7%) were interviewed at follow-up; 34 (1.9%) died before the follow-up; 10 (0.5%) withdrew from the study; and 34 (1.9%) could not be located for follow-up.

Ninety-eight of the 1751 participants were excluded from our analyses: 4 (0.2%) did not receive the functional impairment assessment at follow-up (due to interviewer error) and 94 (5.4%) received their follow-up interview more than 4.5 years after their baseline interview. Because this sample is high-risk and highly mobile, a cutoff earlier than 4.5 years would restrict the generalizability of the sample. To ensure that our cutoff did not bias the findings, we compared the gender, race/ethnicity, and age of participants who were interviewed between 3.5 and 4.5 years ($n = 214$) after baseline with those interviewed within 3.5 years after baseline; there were no significant differences. In addition, we examined whether our findings were affected by

including these participants. We repeated all analyses using only participants interviewed within 3.5 years; the findings were substantially similar.

The final sample was 1653 participants: 1051 males (63.6%), 602 females (36.4%), 922 African Americans (55.8%), 267 non-Hispanic whites (16.2%), 460 Hispanics (27.8%), and 4 “other” race/ethnicity (0.2%). At baseline, participants ranged in age from 10 to 18 years (mean [SD] age, 14.9 [1.4]; median age, 15). At follow-up, participants ranged in age from 13 to 22 years (mean [SD] age, 18.1 [1.5]; median age, 18). Time to follow-up was between 2.8 and 4.5 years (mean [SD] time to follow-up, 3.2 [0.3] years; median time to follow-up, 3.1 years).

Procedures

At follow-up, participants were interviewed in the community (64.4%), at correctional facilities (28.9%), at residential placement facilities (2.3%), or by telephone if they lived in a community more than two hours away (4.4%). Participants received \$50 for the 3- to 4-hour interview.

Interviewers completed functional impairment rating scales after the interview. Most interviewers had advanced degrees in psychology or an associated field and had experience interviewing at-risk youth. Female participants were interviewed only by female interviewers. All interviewers were trained for at least 1 month. More information on our procedures can be found in prior publications [2,15].

Measures

We chose the Child and Adolescent Functional Assessment Scale (CAFAS) [16] because it assesses global and specific dimensions of functioning and has established reliability and validity [17]. The CAFAS was designed to be scored by mental health clinicians or trained laypersons following a comprehensive interview. To reduce rater bias, scores are based on behavioral descriptors rather than clinical judgment. Assessments were based on participants’ behavior in the past 3 months, which is short enough to maximize reliability and long enough to be representative of the participant’s functioning during the follow-up period.

The CAFAS consists of 8 domain scales. (1) The *School/Work* domain assesses the ability to function satisfactorily in a group educational (or work) environment. (2) The *Home* domain assesses the extent to which youth observes reasonable rules and performs age-appropriate tasks at home (or, if incarcerated, in the correctional facility). (3) The *Community* domain assesses the extent to which youth respect the rights of others and their property and conform to laws. (4) The *Behavior Toward Others* domain assesses the appropriateness of a youth’s interpersonal behavior. (5) The *Moods/Emotions* domain assesses the modulation of youth’s emotional life, especially depression, anxiety, and trauma-related reactions. (6) The *Self-harmful Behavior* domain assesses the extent to which youth can cope without resorting to self-harmful behavior or verbalizations. (7) The *Substance Use* domain assesses severity of substance use problems. (8) The *Thinking* domain assesses youth’s ability to use rational thought processes [18]. Each domain is scored 0 (minimal impairment), 10 (mild impairment), 20 (moderate impairment), or 30 (severe impairment).

To score the CAFAS, the rater determines the behavioral descriptions that describe the youth. The behavioral descriptions (i.e., items) are grouped into the 4 levels of impairment noted above. Once the item is identified, the score is determined by the level containing the item [18].

Earlier versions of the CAFAS collapsed some domains (e.g., mood and self-harmful behavior) resulting in 5 domains with a global score ranging from 0 to 150. More recent versions present all 8 domains and sum them to obtain a Total Score ranging from 0 to 240 [18]. We adopted the more recent scoring convention for this study.

A Total Score of 0 to 10 indicates “no noteworthy impairment”; 20 to 40, the “need for treatment on an outpatient basis”; 50 to 90, the “need for additional services beyond traditional outpatient care”; 100 to 130, the “need for more intensive care than outpatient and/or multiple sources of supportive care”; and 140 or above, the “need for more intensive treatment” [16]. For this study, we chose a conservative cutoff of 100 or higher on the CAFAS Total Score to indicate “marked impairment.” For specific domains of functioning, we were also conservative, using ratings of *severe impairment* (i.e., score of 30) to identify impairment.

Missing Data

To assess the effect of attrition, we compared the gender, race/ethnicity, and age of participants with follow-up data to those not interviewed. There were no significant differences except: (1) males were more likely than females to have died (Fisher’s exact test, $p < .05$); and (2) non-Hispanic whites and Hispanics were more likely than African Americans to have been lost to follow-up (Fisher’s exact test, $p < .05$). Potential bias from demographic differences in attrition was adjusted by weighting the statistical analyses by sampling strata.

Statistical Analysis

Because we oversampled selected strata, we used sample weights, based on CCJTDC’s demographic characteristics, to estimate descriptive statistics and model parameters. We used Taylor series linearization to estimate standard errors [19,20]. Logistic regression was used to assess demographic differences in the prevalence rates of functional impairment. We included race/ethnicity in all logistic regression models.

RESULTS

Global Functional Impairment

Over one-fifth of youth (21.6%) had marked global impairment (Total Score ≥ 100) (see Table 1); 7.0% had severe global impairment, requiring “intensive intervention” (Total Score ≥ 140). Only 7.5% of the sample demonstrated “no noteworthy impairment” (Total Score ≤ 10). Among youth with marked global impairment, 94.2% (SE = 1.8%, 95% CI = 90.7%, 97.8%) had severe impairment (score of 30 on 2 or more of the 8 domains); 65.2% (SE = 5.0%, 95% CI = 55.5%, 74.9%) had severe impairment on 3 or more of the 8 domains; and 21.8% (SE = 4.5%, 95% CI = 13.0%, 30.5%) had severe impairment on 4 or more of the 8 domains.

Significantly more males had marked global impairment than females ($F_{1,1633} = 11.1$, $p < .001$). There were no significant racial/ethnic differences in marked global impairment for males or females.

Specific Domains of Severe Impairment

As shown in Table 1, slightly more than half of the youth were impaired in the community domain, over one-third were impaired in the school/work domain, and over one-quarter were impaired in the substance use domain. Significantly more males than females were impaired in the community ($F_{1,1632} = 170.6$, $p < .001$) and behavior toward others domains ($F_{1,1628} = 10.1$, $p < .01$). Significantly more females than males were impaired in mood/emotions ($F_{1,1631} = 4.0$, $p < .05$) and self-harmful behavior ($F_{1,1632} = 6.2$, $p < .05$).

Among males, more African Americans and Hispanics than non-Hispanic whites were impaired in the school/work ($F_{2,1019} = 5.9$, $p < .01$) and community domains ($F_{2,1034} = 9.0$, $p < .001$). Significantly more Hispanic males than African American males were impaired in self-harmful behavior ($F_{2,1034} = 5.0$, $p < .01$). Finally, more non-Hispanic whites were impaired in substance use than African Americans or Hispanics ($F_{2,1032} = 4.1$, $p < .05$). No racial/ethnic differences were found among females.

Because both race/ethnicity and gender were significantly associated with impairment in the community and self-harm domains, we tested for an interaction between race/ethnicity and gender. There was no significant interaction between race/ethnicity and gender for impairment in the community domain. The interaction was significant in self-harmful behavior ($F_{2,1631} = 3.3$; $p < .05$); more African American females were impaired in self-harmful behavior than African American males.

Age Differences

After adjusting for racial/ethnic differences, there were no significant age differences in global impairment for males, and few differences across domains for males and females. Among females, significantly more youth aged 10 to 13 years than youth aged 14 to 15 years old or 16 years or older at baseline had marked impairment (26.7% vs 12.6% and 12.4%, $F_{2,597} = 3.5$, $p < .05$) and impairment in the home domain (15.6% vs 6.4% and 3.7%, $F_{2,576} = 4.2$, $p < .05$). Among males, more youth aged 14 to 15 years or 16 years or older than youth aged 10 to 13 years at baseline were severely impaired in school/work (37.5% and 35.2% vs 14.1%, $F_{2,1019} = 15.3$, $p < .001$) and substance use domains (25.7% and 28.2% vs 13.9%, $F_{2,1032} = 5.8$, $p < .01$). Significantly more males aged 10 to 13 years than males 14 to 15 years old or 16 years or older at baseline were severely impaired in the home domain (14.0% vs 5.4% and 7.2%, $F_{2,1007} = 4.2$, $p < .05$).

Effect of Incarceration on CAFAS Scores

Any participant incarcerated in the past three months received an automatic scale score of 30 (severe impairment) in the community domain. Because incarceration was common among males, we examined differences in impairment by incarceration status, *excluding the community domain*. Too few females were incarcerated ($n = 48$) for further analyses. Because incarceration is associated with race/ethnicity, we present impairment for racial and ethnic groups by incarceration status in Table 2.

Among males living in the community, significantly more African Americans and Hispanics were impaired than non-Hispanic whites in the school/work domain ($F_{2,1019} = 7.5$, $p < .001$). After adjusting for racial/ethnic differences, significantly more incarcerated males were impaired in the home (if incarcerated, home is defined as the correctional facility; $F_{1,1004} = 5.4$, $p < .05$) and had severely impaired thinking than males living in the community ($F_{1,1031} = 5.8$, $p < .05$). In contrast, significantly more males living in the community were severely impaired in substance use than incarcerated males ($F_{1,1029} = 24.0$, $p < .001$).

CONCLUSIONS

Three years after detention, approximately 1 of every 5 youth had markedly impaired functioning, indicating a “need for interventions that are more intensive than standard outpatient care would provide” [16]. These youth struggle to occupy age-appropriate social, occupational, and/or interpersonal roles. Among youth with marked global impairment, nearly two-thirds were severely impaired in 3 or more areas of functioning. For example, these youth may have been expelled from school, engaged in serious violations of the law, and had drug addictions. These findings underscore the ongoing costs to youth and society of the failure to provide effective rehabilitation services during detention and after release.

Impairment at follow-up varied by sociodemographic characteristics. Consistent with patterns of *mental health needs* among detained [1,2,21] and general population youth [22], non-Hispanic whites and females were more likely to be impaired in moods/emotion, self-harm, and substance use. Hispanic males were significantly more likely to be impaired in self-harm than African American males. Yet, three years after detention, African American and Hispanic

males living in the community were more likely to have marked global impairment in functioning than non-Hispanic whites and females.

Why do African Americans, Hispanics, and males function more poorly at follow-up than non-Hispanic whites and females? Compared with non-Hispanic whites, minority males may experience a continuity of disadvantage [23]: disproportionate rates of poverty, incarceration, reduced access to education and healthcare, and limited community resources [24,25]. Mental health services may improve emotional problems and associated functioning over time [26, 27]; yet, minority males may be least likely to receive these services during or after detention. For example, among those with major mental disorders, non-Hispanic whites are 1.9 times more likely than racial/ethnic minorities to be identified as needing services in detention; females are 1.3 times more likely to be identified than males [15].

Studies of other high-risk youth have also found that, as they age, females fare better than males in education and employment and have less criminal involvement [4,28,29]. That females are more likely to receive services than males may explain some of these differences [15,30,31]. Active parenting also may mitigate against some problems [32]; however, it remains unclear what role parenting may play in long-term functioning for female detainees.

These findings highlight the extensive unmet need of young minority males. The arrest rate for racial/ethnic minority youth is 50% greater and the detention rate is 30% greater than for non-Hispanic whites [33]. Our findings demonstrate that a substantial portion of these youth are vulnerable to poor long-term functioning. Extrapolating from our data, we estimate that among the approximately 40,000 African American and Hispanic youth in custody (i.e., detained, committed, or diversion placements) on any given day, approximately 8,000 will experience marked impairment in their long-term functioning [14].

Age differences may be interpreted within developmental and role strain frameworks. At home, the youngest participants may be functioning more poorly than older participants because they are more likely to be living with caretakers who try to manage their behavior. At school or work, the youngest males may function better than older males because they have yet to face a workforce in which they are ill-prepared to compete. Finally, older males may be more likely to have substance abuse problems than younger males because they have greater freedom to abuse substances [32].

Incarceration status was associated with functional impairment among males. Compared with males living in the community, incarcerated males were significantly more likely to have impaired thinking and impaired functioning at home (prison). The characteristics of prison life, such as being separated from loved ones [34], crowding [35], and solitary confinement [35] may increase the risk for this form of impairment. Alternatively, these findings may reflect the characteristics of who goes to prison.

Incarcerated males were substantially *less* likely to have substance use problems than males living in the community. Although non-Hispanic white males were more likely to have substance use problems than African American and Hispanic males, this is likely due in part to their greater likelihood of living in the community. Substance use problems are likely less common in prison due to decreased access to substances and random testing for substance use [36]. Although our findings suggest that youth are at less risk for substance abuse while incarcerated, drug use is likely to escalate for these youth after release [37].

Limitations

The CAFAS ratings were based on the interviewers' assessments following one structured interview. Although the interview was extensive and allowed the interviewer to establish good

rapport with the participant, the reliability of data is subject to the limitations of self-reporting. We did not administer the CAFAS at baseline; hence, we were not able to compare ratings at follow-up with ratings at detention. Our findings may be generalizable only to detained youth in urban detention centers with a similar demographic composition. Finally, our analyses were correlational; we cannot infer causality. Despite these limitations, our findings have implications for public policy and future research.

Implications for Public Policy

We suggest the following public policy initiatives:

1. **Improve linkage to community services after detention.** On average, detainees are held in custody for approximately 2 weeks [38]. It is critical to link these youth to effective mental health, substance abuse, and educational or vocational support services in the community. Intervening during adolescence can improve developmental trajectories of health and functioning [39,40]. Severe impairments that go untreated contribute to an accumulation of disadvantage over the life course [23]. For example, school failure in one year makes success in subsequent years even more difficult. Recurrent experience of school failure may increase risk for dropping out, substance abuse, criminal behavior, and emotional problems. Paraprofessional liaisons between the criminal justice and mental health systems could facilitate linkage to services after release with a minimum of expense.
2. **Target services to those with the greatest need.** Males and minorities are at greatest risk for impaired school and work performance and for persistent delinquency. Our study demonstrates that they also have worse outcomes than females and non-Hispanic whites. Detention provides an opportunity to identify and engage these high-risk youth in services that will improve prosocial functioning.
3. **Provide sustained interventions.** Most juvenile detainees have enduring impairment in multiple areas of functioning. Such problems are unlikely to respond to short-term or narrowly focused interventions. These youth likely require comprehensive services delivered over an extended period of time. Unfortunately, available mental health services are rarely designed or funded to meet these needs.

Implications for Future Research

The following studies are needed:

1. **Identify impairment as youth age.** Future studies should examine *changes* in functioning in juvenile detainees as they age into emerging and young adulthood. Which areas of functioning remain stable, which improve, and which decline? This knowledge will guide the development of long-term prevention and intervention programs.
2. **Investigate characteristics associated with positive outcomes.** Studies are needed to identify which factors—especially malleable factors—predict positive outcomes. Knowing what helps is the first step to improving care.

Three years after detention, most youth struggle in one or more life domains; one in five are severely impaired. We need to invest in sustained proactive strategies to give these youth a chance for productive and healthy lives.

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Table 1
Prevalence of Functional Impairment at Follow-up by Sex and Race/Ethnicity

Functional Impairment	Females ^d					Males					Sex Differences ^e		
	Total (N=1653)	Total (n=602)	African American (n=398)	Non- Hispanic White (n=38)	Hispanic (n=120)	Racial/Ethnic Differences ^b	Total (n=1051)	African American (n=524)	Non- Hispanic white (n=184)	Hispanic (n=340)		Racial/Ethnic Differences ^b	Specific Racial/Ethnic Differences
	%	%	%	%	%		%	%	%	%			
MARKED GLOBAL IMPAIRMENT ^d													
	21.6	13.7	13.1	15.4	16.7	ns	22.2	22.0	19.0	25.1	ns		p<.001 M > F
SEVERE IMPAIRMENT IN SPECIFIC DOMAINS ^e													
School/Work	34.1	31.9	32.6	20.2	28.4	ns	34.2	35.5	20.0	33.6	p<.01	AA > W; H > W	ns
Home	7.0	6.2	5.7	9.0	7.2	ns	7.1	7.0	4.6	8.3	ns		ns
Community	51.4	13.4	11.6	13.1	12.0	ns	54.5	56.1	35.6	53.0	p<.001	AA > W; H > W	p<.001 M > F
Behavior Toward Others	9.1	4.2	3.5	7.1	5.7	ns	9.5	9.4	9.4	9.5	ns		p<.01 M > F
Moods/Emotions	2.2	4.4	4.3	3.6	5.9	ns	2.1	1.6	3.3	4.0	ns		p<.05 F > M
Self-harmful Behavior	0.4	1.5	1.5	1.2	1.6	ns	0.4	0.1	0.8	1.7	p<.01	H > AA	p<.05 F > M
Substance Use	25.7	24.2	24.1	28.9	24.5	ns	25.9	25.2	37.1	25.5	p<.05	W > AA; W > H	ns
Thinking	0.4	0.5	0.5	1.2	0.0	f	0.4	0.5	0.6	0.0	f		ns

Abbreviations: AA, African American; W, non-Hispanic white; H, Hispanic; ns, not significant

^aOne female of “Other” race/ethnicity is excluded from analyses of race/ethnicity.

^bFor all tests of significance, the group with the higher prevalence rate is more likely to be impaired than the comparison group. Three males of “Other” race/ethnicity are excluded from analyses of race/ethnicity.

^cSex differences are adjusted for race/ethnicity.

^dMarked global impairment is defined as receiving a Child and Adolescent Functional Assessment Scale (CAFAS) Total Score of 100 or greater.

^eImpairment in specific domains is defined as a domain scale score of 30.

^fBecause no Hispanics were impaired on the Thinking domain scale, we were unable to make racial/ethnic comparisons.

Table 2
Prevalence of Functional Impairment in Specific Domains among Males at Follow-Up by Incarceration Status and Race/Ethnicity

Severe Impairment in Specific Domains ^a	Incarcerated ^b					Community					Incarceration Status Differences ^{c,d}	
	Total (n=375)	African American (n=221)	Non-Hispanic White (n=36)	Hispanic (n=117)	Racial/Ethnic Differences ^e	Total (n=671)	African American (n=302)	Non-Hispanic White (n=146)	Hispanic (n=221)	Racial/Ethnic Differences ^e		Specific Racial/Ethnic Differences
	%	%	%	%		%	%	%	%			
School/Work	28.3	27.2	26.1	34.8	ns	37.5	40.3	18.7	32.6	p < .001	AA > W; H > W	ns
Home	11.5	10.3	9.8	17.6	ns	4.6	5.1	3.4	3.0	ns		p < .05
Behavior Toward Other	11.1	10.5	0.0	16.8	e	8.6	8.7	11.7	5.6	ns		ns
Moods/Emotions	2.0	1.6	0.0	4.7	e	2.0	1.6	4.0	3.0	ns		ns
Self-harmful Behavior	0.3	0.1	0.0	1.3	e	0.4	0.0	1.0	2.0	e		ns
Substance Use	9.0	7.7	12.9	15.4	ns	35.2	35.4	43.0	30.7	ns		p < .001
Thinking	1.1	1.3	0.0	0.0	e	0.0	0.0	0.7	0.0	e		p < .05

Abbreviations: AA, African American; W, non-Hispanic white; H, Hispanic; ns, not significant

^a Severe impairment in specific domains is defined as a domain scale score of 30 in the Child and Adolescent Functional Assessment Scale (CAFAS).

^b Participants who self-reported they had been “mostly in correctional facilities in the past three months” were considered incarcerated. Incarceration status was missing for 5 males.

^c For all tests of significance, the group with the higher prevalence rate is more likely to be severely impaired than the comparison group. One male living in the community and 2 incarcerated males of “Other” race/ethnicity are excluded from analyses of race/ethnicity.

^d Incarceration differences are adjusted for race/ethnicity.

^e Because one or more racial/ethnic group(s) had no persons with severe impairment on the scale, we were unable to make racial/ethnic comparisons.

^f Because no Hispanic males were impaired in thinking, incarceration differences were not adjusted for racial/ethnic differences.