

## Teaching Adolescents and Adults about Adjudicative Proceedings: A Comparison of Pre- and Post-Teaching Scores on the MacCAT-CA

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**Abstract** The current study investigated whether teaching was associated with improved legal understanding among adolescents and adults. Participants included 927 youth and 466 young adults, who completed the MacArthur Competence Assessment Tool—Criminal Adjudication, the Massachusetts Youth Screening Instrument-Second Version, and the Wechsler Abbreviated Scale of Intelligence. Adolescents aged 13 and younger were less likely than older individuals to improve with teaching. IQ score was positively associated with improvements following teaching, and individuals from ethnic minority groups showed greater improvements following teaching than non-Hispanic Caucasians. The implications of these findings are discussed.

**Keywords** Competence to stand trial · Adjudicative competence · Adolescence · Juvenile delinquency

Since the 1700s, the criminal justice system has required that adults accused of crimes must be competent to proceed to adjudication or competent to stand trial (Bonnie, 1992). Specifically, according to legal standards, criminal defendants must be able to understand basic legal concepts

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such as pleas, appreciate the significance of these concepts, communicate with and assist their attorney, and reason about legal decisions (*Dusky v. United States*, 1960; *Drope v. Missouri*, 1975; *Godinez v. Moran*, 1993).

Historically, adolescents were not required to possess these legal capacities. Because the early juvenile justice system was designed to be rehabilitative rather than punitive, these legal capacities were considered unnecessary. However, as the legal system has evolved to become more punitive towards adolescents, the issue of adjudicative competence has been increasingly applied to adolescents (Grisso, 1997, 2005; Redding & Frost, 2001).

In extending competency requirements to adolescents, courts have presumed that adolescent defendants, like adult defendants, are competent to proceed to adjudication. However, recent research provides convincing evidence that adolescents may often lack the legal capacities necessary to proceed to adjudication as a result of developmental immaturity. Grisso and colleagues (2003) investigated the legal capacities of 927 youth and 466 adults recruited from detention facilities, jails, and the surrounding communities. The results of that study, which is herein referred to as the MacArthur Juvenile Competence Study, indicated that adolescents aged 15 and under scored significantly lower than adults on the Understanding and Reasoning scales of the MacArthur Competence Assessment Tool for Criminal Adjudication (MacCAT-CA; Poythress et al., 1999). Also, adolescents aged 13 and under scored significantly lower than adults on the Appreciation scale of the MacCAT-CA.

The MacCAT-CA, which was employed in the MacArthur Juvenile Competence Study and is widely used in research and practice, differs from most other competency assessment instruments in that it includes a teaching component.<sup>1</sup> Specifically, for six of the eight items on the Understanding scale, defendants who receive imperfect scores are provided with brief instruction. Defendants are then retested to examine whether teaching improved their performance on these items. Their final score on each item is whichever is highest of their pre-teaching and post-teaching scores.

The inclusion of a teaching component on the MacCAT-CA is significant because the legal standard for adjudicative competence requires that defendants must have the *capacity* to understand and appreciate adjudicative proceedings against them, and to communicate with their lawyer (*Dusky v. United States*, 1960). If a defendant has current legal deficits that could easily be remediated, then he or she would be considered competent to proceed by the courts (Grisso, 2003; Melton, Pettila, Poythress, & Slobogin, 1997).

Despite the promise of the MacCAT-CA's teaching component, to date no published studies have investigated how this component operates (Grisso, 2003). While the MacArthur Juvenile Competence Study examined final scores on the Understanding scale, that study did not provide any information about adolescents' and adults' performance on the six teaching items on that scale prior to and following teaching, and how much individuals benefited from teaching. One factor that likely deters investigation of these important issues is that the MacCAT-CA does not provide a standardized way of computing pre-teaching, post-teaching, and improvement scores on the teaching items.

The present study used data from the MacArthur Juvenile Competence Study to examine the effectiveness of the teaching component on the MacCAT-CA. In order to evaluate whether the teaching component of the MacCAT-CA increased understanding, we applied advanced analysis of change methods to summarize individuals' pre- and post teaching performance, and the amount that individuals improved with teaching.

<sup>1</sup> The recently developed *Evaluation of Competency to Stand Trial-Revised* (ECST-R; Rogers, Tillbrook, & Sewell, 2004) also includes a teaching component.

In conducting this study, we were particularly interested in investigating possible developmental differences in responsiveness to teaching on the MacCAT-CA. Given that adolescents are more likely than adults to demonstrate deficits in legal understanding, it may often be necessary to attempt to teach adolescents about legal proceedings. However, this could be difficult to do because adolescents may not yet have acquired the abstract reasoning abilities necessary to fully comprehend certain legal concepts, such as the concept of rights waived with a guilty plea. Also, as the MacCAT-CA was developed for adults rather than adolescents, the wording and/or format of the teaching component may be difficult for adolescents to understand.

## Method

### Sample

The sample used in this study was obtained from the MacArthur Juvenile Adjudicative Competence Study, which examined the capacities of adolescents and adults for participation in trials (see Grisso et al., 2003). Participants included 466 young adults aged 18 to 24, and 927 youth aged 11 to 17. The youth sample included 190 youth aged 11 to 13, 345 youth age 14 to 15, and 392 youth aged 16 to 17. To increase the sample representativeness, data were collected at juvenile detention facilities, jails, and the surrounding communities in four geographical locations, namely northern Florida ( $n = 223$ ), Los Angeles ( $n = 404$ ), Philadelphia ( $n = 390$ ), and western Virginia ( $n = 376$ ). Individuals were only included in the study if they indicated that English was the language that they usually spoke outside their home.

Approximately half of the study participants were detained in a juvenile detention facility or a jail (detained youth = 453, detained adults = 233), while the other half resided in the communities from which many of the detained youths or jailed adults had come (community youth = 474, community adults = 233) (see Table 1). Individuals were only included in the

**Table 1** Sample characteristics

	Detained					Community				
	Youth age groups			Youth	Adults	Youth age groups			Youth	Adults
	11–13	14–15	16–17	11–17	18–24	11–13	14–15	16–17	11–17	18–24
Participants (n)	74	186	193	453	233	116	159	199	474	233
Male (% of age group)	74	62	62	64	71	52	60	57	57	57
Ethnicity (% of age group)										
African American	56	32	38	39	43	41	52	33	41	37
Hispanic	21	28	25	26	25	20	20	21	20	24
Non-Hispanic white	21	35	35	32	32	36	28	44	37	37
Asian and other	2	5	2	3	0	3	0	2	2	2
Socioeconomic status										
I–II	8	7	11	9	7	15	13	15	14	9
III	12	16	18	16	16	23	26	24	24	18
IV–V	80	77	71	75	77	62	61	61	62	73

*Note.* From “Juveniles’ competence to stand trial: A comparison of adolescents’ and adults’ capacities as trial defendants” by T. Grisso, L. Steinberg, J. Woolard, E. Cauffman, E. Scott, S. Graham, F. Lexcen, N. D. Reppucci, and R. Schwartz, 2003, *Law and Human Behavior*, p. 337. Copyright 2003 by the American Psychology-Law Society. Reprinted with kind permission from Springer Science and Business Media.

community sample if they did not have any current charges and said they had never spent a night in a juvenile detention facility or jail.

Participants were recruited so as to obtain comparable age, gender, and race/ethnic distributions in the detained and community samples. Because relatively low numbers of females and very young adolescents are detained, females and young adolescents were oversampled from detention facilities in order to ensure samples of sufficient size for analyses.

A little over half of the overall sample was male (see Table 1). With respect to racial/ethnic composition, 40% of the sample was African American, 35% was non-Hispanic Caucasian, 23% was Hispanic, 1% was Asian, and 1% was from other racial/ethnic minority groups. The majority of participants belonged to the lowest two socioeconomic classes described by Hollingshead's classification system (1975). Approximately half of detained youth were charged with offenses against person and the other half were charged with offenses against property. Among detained adults, charges were approximately evenly distributed between offenses against person, offenses against property, and drug-related offenses. Further information about the sample is available at [www.mac-adoldev-juvjustice.org](http://www.mac-adoldev-juvjustice.org).

## Procedure

All study procedures were approved by the review boards of the universities associated with the coordinating site and each of the data collection sites, and were consistent with current ethical procedures. Confidentiality was assured except in cases of risk of imminent harm to self or others, and danger of harm by others. Participation in the study was voluntary.

Prior to the initiation of data collection, all research assistants completed several days of training at one central location. They were then supervised on the completion of practice protocol at their respective study sites. In order to meet Federal requirements regarding the protection of detained youth, participant advocates monitored the recruitment of detained juvenile samples in order to ensure that youths' participation was voluntary and would not cause undue stress. Some juvenile detention facilities also required that letters be sent to parents in order to notify them of the study and give them the opportunity to refuse consent. Youth whose parents indicated that they objected to their child's participation were excluded from the study. Detained individuals who were not screened out were approached by research assistants, provided with information about the study, and invited to participate. Few potential participants declined to participate, although exact figures are not available.

Community samples were recruited from the neighborhood served by each detention facility or jail. In particular, community youth were recruited from schools, youth programs, and Boys' and Girls' Clubs, and community adults were recruited from community colleges, shelters, and community clubs by using posters, leaflets, and/or direct contact by the research assistants. Individuals who were interested in participating in the study were instructed to contact the research office. Parental consent was obtained for all community youth.

Individuals who consented/assented to participate were administered a battery of tests by research assistants. The test battery took approximately 90 to 180 minutes to complete and included demographic questions followed by the MacCAT-CA, Massachusetts Youth Screening Instrument-Second Version (Grisso & Barnum, 2006; Grisso, Barnum, Fletcher, Cauffman, & Peuschold, 2001), and Wechsler Abbreviated Scale of Intelligence (Psychological Corporation, 1999). Following study completion, detained youth and adults were paid \$10 for their participation or given snacks in the facilities that did not allow monetary compensation, and community youth and adults were paid \$25.

## Measures

### *Demographic variables*

Information on participants' age, gender, race/ethnicity, and socioeconomic level was obtained based on participants' self-report. Socioeconomic status (SES) was coded using Hollingshead's system (1975), which is a widely-used classification that determines SES from education and occupation level.

### *Wechsler Abbreviated Scale of Intelligence (WASI)*

The WASI (Psychological Corporation, 1999) is a brief intellectual test, which takes 15 min to administer and is appropriate for individuals aged 6 to 89. It is derived from the Wechsler Intelligence Scale for Children-III and the Wechsler Adult Intelligence Scale-III. For this study, the two-subtest version of the WASI, which includes Vocabulary and Matrix Reasoning, was used. According to reviews, the WASI is well standardized, and has adequate reliability and validity (Keith, 2001; Lindskog & Smith, 2001). The two-subtest version of the WASI correlates .81 with the Full Scale IQ score on the Wechsler Intelligence Scale for Children-III, and .87 with the Full Scale IQ score on the Wechsler Adult Intelligence Scale-III (Psychological Corporation, 1999).

### *Massachusetts Youth Screening Instrument-Second Version (MAYSI-2)*

The MAYSI-2 (Grisso & Barnum, 2006; Grisso et al., 2001) is a 52-item self-report mental health screening inventory. Items are answered yes/no, and there are 6 clinical scales, including Alcohol/Drug Use, Angry-Irritable, Depressed-Anxious, Somatic Complaints, Suicide Ideation, and Thought Disturbance. To adapt the MAYSI-2 for use with adults, the word "school" was changed to the word "work" for two items. Research has indicated that the MAYSI-2 has good interrater reliability, test-retest reliability, construct validity, and concurrent validity (Archer, Stredny, Mason, & Arnau, 2004; Grisso et al., 2001). For the present study, coefficient alphas were examined separately for detained and community youth and adults (male and female). The average coefficient alpha across these subsamples was .81 for Alcohol/Drug, .74 for Anger-Irritable, .67 for Depressed-Anxious, .67 for Somatic Complaints, and .69 for Suicide Ideation. The average coefficient alpha for Thought Disturbance (.41) was low however.

### *MacArthur Competence Assessment Tool-Criminal Adjudication (MacCAT-CA)*

The MacCAT-CA is comprised of 22 items, which are divided into three scales, specifically Understanding, Reasoning, and Appreciation. The present study focused on the six items on the Understanding scale on which examinees may receive teaching. These items are scored on a 3-point scale, with a score of "2" indicating an adequate response, "1" indicating a questionable response, and "0" indicating an inadequate response.

If an examinee initially receives a score of "1" (questionable response) or "0" (inadequate response) on one of these items, a brief structured teaching component is read to him or her. Following that, the examinee is retested immediately on the item. Importantly, the examinee must be able to rephrase what he or she learned in his or her own words, rather than simply reiterating what the evaluator said. The examinee's final score on that item is whichever is higher out of their pre-teaching and post-teaching score.

As described, the MacCAT-CA does not include a method for estimating the amount of improvement that was associated with teaching. Therefore, the present study devised an approach for doing so (described in the Data Analysis section).

Research on the MacCAT-CA has indicated that it has adequate interrater reliability and internal consistency (Otto et al., 1998). As evidence of its validity, it has been shown to reliably discriminate between adults who were and were not found incompetent to stand trial. Also, it is inversely correlated with psychotic symptoms and positively correlated with cognitive abilities and age (Grisso et al., 2003; Otto et al., 1998).

For the present study, interrater reliability was assessed at two time points, once early in the study (immediately after research assistants completed training) and again at a later point in data collection (approximately 6 weeks prior to the completion of data collection). At both time points, 25 protocols (one protocol completed by each of the 25 research assistants) were recoded by another rater in order to assess reliability. Early on in the study, the intraclass correlation coefficient for the Understanding scale was .64 for youth and adult protocols. However, later on, it had increased to .91 for youth protocols and .88 for adult protocols (see Grisso et al., 2003).

#### Data analysis

Time 1 scores (pre-teaching scores), Time 2 scores (post-teaching scores), and improvement scores on the MacCAT-CA teaching items were calculated in two ways. Method 1 derived participants' Time 1 score by summing the scores obtained on the six teaching items prior to teaching, and their Time 2 score by summing the scores obtained on the six teaching items following teaching. The raw improvement score was then derived by subtracting the Time 1 score from the Time 2 score. As described, individuals do not receive teaching and retesting on an item if they initially obtain a perfect score on it. With Method 1, we assumed that if an individual did not receive teaching on a particular item (because they initially obtained a perfect score on it), he or she would have obtained a perfect score at Time 2.

Although this assumption seems logical, it is possible that individuals who received a perfect score initially would not receive a perfect score at Time 2 due to fluctuations in understanding or guessing. Therefore, Method 2 used structural equation modelling (SEM) as a means of correcting for bias due to guessing by treating items that were not administered at Time 2 as missing, and using complete information from other items to estimate the improvement in understanding. SEM allowed us to more precisely estimate Time 2 scores by only examining the reliable portion of the variance shared between the six understanding items. Models were fitted in Mplus Version 4.0 (Muthén & Muthén, 1998–2006) using the categorical data modeling options and full information maximum likelihood.

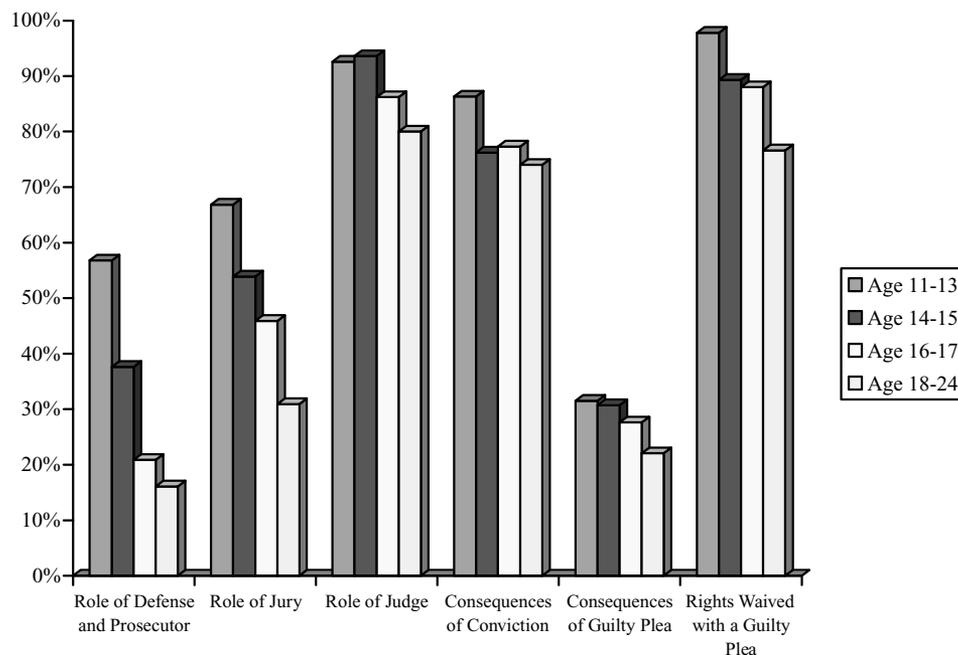
The pattern of findings was similar across Method 1 (Raw Scores) and Method 2 (Structural Equation Modelling); therefore, we have presented the results using Method 1 only in order to simplify the presentations of results and present the findings in a metric that is most accessible to those working with the MacCAT-CA in research and clinical settings.<sup>2</sup>

## Results

### What is adolescents' and adults' legal understanding prior to teaching?

Almost all defendants (98.1%,  $n = 1366$ ) initially received an imperfect score (0 or 1) on at least one of the six teaching items, and therefore required teaching. As shown in Fig. 1, understanding

<sup>2</sup> Results based on Method 2 (SEM) are available from authors upon request.



**Fig. 1** Proportion of participants in each age group who required teaching on items due to imperfect initial scores.

the role of the judge in jury trials, the rights waived with a guilty plea, and the consequences of conviction appeared to be particularly difficult items, as most participants in the overall sample initially received imperfect scores on these items (86.8%, 85.9%, and 77.2% respectively). In contrast, comparatively few individuals initially received imperfect scores on consequences of a guilty plea (27.1%).

Multiple regression was used to examine whether the following demographic, cognitive, and psychopathology variables independently predicted pre-teaching performance on the six teaching items: age group ( $\leq 17$  or  $> 17$ ), gender (female or male), race/ethnicity (non-Hispanic Caucasian or other), detention status (community or detained), SES (the five-level classification system described by Hollingshead, 1975), IQ score on the WASI, and serious psychological symptoms (whether scored above the warning cut-off on two or more MAYSI-2 subscales).

Results indicated that adolescents aged 17 and younger scored lower than adults on the six teaching items prior to teaching ( $\beta = -.20, p < .001$ ). IQ scores were positively associated with pre-teaching scores, with individuals with high IQ scores receiving higher pre-teaching scores than individuals with low IQ scores ( $\beta = .37, p < .001$ ). Non-Hispanic Caucasians had higher pre-teaching scores than individuals from racial/ethnic minority groups ( $\beta = -.13, p < .001$ ), and detained individuals had higher pre-teaching scores than individuals who were not currently or previously detained ( $\beta = .07, p < .01$ ). The presence of serious psychological symptoms, when defined as elevations on two or more MAYSI-2 subscales, did not predict pre-teaching scores, nor did gender or SES.

Given that research has indicated that it is important to examine younger adolescents (age 11 to 13), middle adolescents (age 14 to 15), and older adolescents (age 16 to 17) separately, we conducted the same multiple regression analyses with age groups redefined to enable comparisons of separate age groups (11 to 13, 14 to 15, 16 to 17, and 18 and older). Younger adolescents

had significantly lower pre-teaching scores than middle adolescents ( $\beta = -.22, p < .001$ ), older adolescents ( $\beta = -.32, p < .001$ ), and adults ( $\beta = -.43, p < .001$ ). Middle adolescents had significantly lower pre-teaching scores than older adolescents ( $\beta = -.09, p = .001$ ), and adults ( $\beta = -.19, p < .001$ ). Also, older adolescents had significantly lower pre-teaching scores than adults ( $\beta = -.10, p = .001$ ).

#### Is teaching associated with improved understanding?

Results indicated that teaching was associated with improved understanding of adjudicative proceedings. When individuals' Time 1 scores ( $M = 6.66, SD = 2.29$ ) and Time 2 scores ( $M = 9.40, SD = 2.20$ ) on all six teaching items examined were summed, individuals' Time 2 score (post-teaching score) was significantly higher than their Time 1 score (pre-teaching score),  $t(1391) = 55.30, p < .001$ .<sup>3</sup> The effect size was large, Cohen  $d = 1.20$  (Cohen, 1988).

As described earlier, participants in this study varied in terms of how much they could improve with teaching depending on their initial performance on the examined items. For instance, a person who received 0 points prior to teaching (out of the possible 12 points) could gain 12 points with teaching, whereas a person who received 10 points prior to teaching could gain only 2 points with teaching. On average, participants who received teaching on one or more items gained nearly half (47.3%) of the possible points that they were capable of gaining through teaching. However, 17.9% ( $n = 246$ ) of participants who received teaching did not show any improvement with teaching.

There was some variability in the rates of improvement found for individual items. Over half of the participants who were taught about the consequences of conviction (73.5%) and the rights waived with a guilty plea (69.0%) showed improved scores following teaching. Also, approximately half of participants who were taught about the role of the defense counsel/prosecutor (49.4%), the role of the jury (55.7%), and the role of the judge in jury trials (51.2%) showed improved scores following teaching. In contrast, comparatively few individuals who were taught about the consequences of a guilty plea showed improved scores following teaching (26.8%).

#### What factors are related to improvement after teaching?

Hierarchical multiple regression was used to test whether key demographic, cognitive, and psychopathology variables were related to how much individuals improved following teaching. Given that individuals who initially received low scores had the most potential to show improved understanding, Time 1 scores (pre-teaching scores) were entered into the first step of the regression. In the second step, the following possible predictors of change were entered: age group ( $\leq 17$  or  $> 17$ ), gender (female or male), race/ethnicity (non-Hispanic Caucasian or other), detention status (community or detained), SES (the five-level classification system described by Hollingshead, 1975), IQ score on the WASI, and serious psychological symptoms (whether scored above the warning cut-off on two or more MAYSI-2 subscales).

The overall model was significant,  $F(8, 1376) = 30.48, p < .001$ . As shown in Table 2, results indicated that after pre-teaching scores were controlled, IQ score was positively related to improvement. Also, participants from racial/ethnic minority groups showed more improvement than their non-Hispanic Caucasian counterparts, increasing, on average, 0.02 points more. Age

<sup>3</sup> In calculating post-teaching scores, we summed the scores individuals received on the post-teaching items. If they did not receive teaching on a particular item, their pre-teaching score was used for that item, because it was assumed that they would have gotten the item correct if they had received teaching.

**Table 2** Hierarchical regression on predictors of teaching effectiveness

	Model summary			Coefficients		
	$R^2$	Adj. $R^2$	$F$	B	SE	$\beta$
Step 1:	.11	.11	174.22***			
Time 1 scores				-.31	.02	-.34***
Step 2:	.15	.15	30.48***			
Time 1 scores				-.38	.03	-.41***
Age group ( $\leq 17$ or $> 17$ )				.02	.12	.01
Gender				.10	.11	.02
Race/ethnicity				.25	.12	.06*
Detention status				.09	.12	.02
SES				.07	.05	.03
IQ				.03	.004	.21***
Psychological symptoms				-.16	.15	-.03

Note. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

group, detention status, SES, and serious psychological symptoms did not predict how much an individual improved.

When the same hierarchical multiple regression analyses were conducted but with age groups redefined to enable comparisons of separate age groups (11 to 13, 14 to 15, 16 to 17, and 18 and older), there were no statistically significant differences between younger (age 11 to 13) and middle adolescents (age 14 and 15) ( $\beta = .06, p = .12$ ). However, younger adolescents demonstrated significantly less improvement than older adolescents (age 16 to 17) ( $\beta = -.12, p = .002$ ). Middle adolescents also demonstrated a trend toward less improvement when compared to older adolescents ( $\beta = -.06, p = .07$ ). Importantly, even after teaching, adolescents aged 15 and younger scored significantly lower than adults on the six teaching items (see Table 3).

In light of our finding that individuals from racial/ethnic minority groups improved more than non-Hispanic Caucasian individuals, we examined Hispanic and African-American individuals separately. After controlling for demographic, cognitive and psychopathology factors, we found a trend for Hispanic individuals to show greater improvement with teaching than non-Hispanic Caucasian individuals ( $\beta = .07, p = .07$ ). However, there were no significant differences in the amount of improvement shown between African American and non-Hispanic Caucasian individuals.

**Table 3** Mean (SD) age differences in understanding prior to and following teaching

	$F(3, 1388)$	Adolescent age groups			Adults
		11–13	14–15	16–17	
Time 1 Scores on teaching items (Pre-Teaching)	53.86	5.18 (2.11) <sup>a</sup>	6.23 (2.11) <sup>b</sup>	6.88 (2.05) <sup>c</sup>	7.41 (2.32) <sup>d</sup>
Time 2 scores on teaching items (Post-Teaching)	26.40	7.85 (2.89) <sup>a</sup>	8.68 (2.55) <sup>b</sup>	9.42 (2.27) <sup>c</sup>	9.55 (2.40) <sup>c</sup>

Note. Differences between the adolescent age groups were tested Fisher’s Least Significant Difference (LSD) post hoc tests; age groups with different superscripts differed significantly at  $p < .01$ .

## Discussion

### Primary findings

Almost all study participants (98.1%) initially received imperfect scores on one or more items on the Understanding scale of the MacCAT-CA, and therefore required instruction. In general, participants showed the greatest difficulty on understanding the role of the judge in jury trials, and the rights waived with a guilty plea. Within the overall sample, 86.8% of participants and 85.9% initially achieved imperfect scores on these items respectively. It may be that these are difficult concepts for individuals.

Alternatively, the MacCAT-CA may use particularly strict scoring criteria for those items. For instance, in order to achieve a perfect score on the item that assesses understanding of the role of the judge in jury trials, an individual must mention two of the following criteria: “(a) That the judge instructs the jury about the law. (b) That the judge rules on the admissibility of evidence. (c) That the judge sees that the rules are followed in order to ensure fairness in the proceedings. (d) That the judge might be responsible for imposing a sentence” (Poythress et al., 1999, p. 38).

For a large proportion of study participants, understanding improved with teaching. For most items, at least half of those individuals who received teaching showed improved adjudicative understanding. However, relatively few individuals who were taught the consequences of a guilty plea showed improved understanding following teaching. This item appeared to be an easy item, on which many participants did not require teaching. As such, the individuals who required teaching on this item may have been more impaired and difficult to teach.

As predicted, adolescents and individuals with low IQ scores were more likely to initially demonstrate imperfect understanding of legal concepts, and were therefore more likely to require instruction. However, adolescents aged 13 and younger and individuals with low IQ scores were less likely to benefit from instruction after controlling for their initial level of understanding. This finding suggests that youths 13 and younger with initially poor understanding tend to have limited *capacities* for legal understanding rather than simply deficits in current legal knowledge. As such, it will likely be challenging to improve the legal understanding of that group of youths when using an approach similar to that of the MacCAT-CA.

In this study, individuals from racial/ethnic minority groups showed a more limited understanding prior to teaching once other factors, such as IQ and age, were controlled. Interestingly, however, individuals from racial/ethnic minority groups showed greater improvement with teaching than non-Hispanic Caucasian individuals did. This effect was especially apparent among Hispanic participants.

It may be that individuals from ethnic minority groups are less familiar with legal proceedings and concepts, but are able to learn about them if given the opportunity. An alternative explanation may be that individuals from ethnic minority groups are simply less familiar with the questioning procedures used in the MacCAT-CA. They may be less likely to understand what types of responses examiners are seeking, but are able to learn how to perform well on this task with practice.

While previous research has found that serious psychological symptoms, particularly thought-disordered symptoms, are associated with legal deficits (Hoge et al., 1997; Viljoen, Roesch, & Zapf, 2002; Warren, Aaron, Ryan, Chauhan, & DuVal, 2003), the MacArthur Juvenile Competence study that provided the present sample did not find that mental health symptoms were related to legal deficits. Moreover, in the present study we did not find a relationship between serious psychological symptoms and pre-teaching scores, or a relationship between serious psychological symptoms and degree of improvement following teaching. While some youth and adults in detention have serious symptoms (e.g., Teplin, Abram, & McClelland, 1996; Teplin,

Abram, McClellan, Dulcan, & Mericle, 2002), the fact that they are in detention rather than hospitals suggests that their symptoms may not be as disabling as those found among hospitalized individuals. In this sense, psychopathology might need to be more serious than in the present sample to be related to legal deficits.

Alternatively, the failure to find a relationship between psychological symptoms, pre-teaching scores, and degree of improvement with teaching may relate to how serious psychological symptoms were measured in the current study. As noted, the alpha coefficient for the Thought Disturbance scale on the MAYSI-2 was low. As such, the MAYSI-2 may have been unable to adequately assess certain types of symptoms, such as cognitive disorganization, that might have been most relevant to pre-teaching scores and degree of improvement. It may be important for future research to examine the relationship between psychological symptoms and teaching effectiveness using other psychological inventories.

#### Limitations and future research

While our results indicated that study participants obtained higher scores on legal understanding following teaching, changes in pre- and post-teaching scores may be attributable to sources other than true learning, such as evaluators' biases, ceiling effects, or fluctuations in understanding across time, such as changes due to guessing (Embretson, 1987; Frisby & Braden, 1992). The possibility of evaluators' biases was reduced by the use of an instrument, the MacCAT-CA, known to have adequate interrater reliability (Grisso et al., 2003; Otto et al., 1998). Also, in order to control for the fact that individuals who obtained lower initial scores had a great potential for improvement, analyses controlled for individuals' pre-teaching performance. As described, SEM was used to help address the possibility that changes in Time 1 and Time 2 scores may be due to fluctuations in understanding across time.

Future research on the MacCAT-CA teaching component is needed to determine if the gains exhibited on the MacCAT-CA with teaching reflect true learning and/or simply the elimination of confusion or anxiety regarding test procedures (see Grigorenko & Sternberg, 1998). Given that this study assessed learning immediately after teaching, it is also important for future research to examine if improvements in performance remain apparent when examinees are retested after longer periods of time have passed.

#### Implications

Given that our results indicated that teaching was associated with improved legal understanding, assessment approaches that fail to provide teaching may underestimate defendants' true *capacity*. As individuals from ethnic minority groups were especially likely to show improved performance with teaching, it may be particularly important to incorporate a teaching component when assessing individuals from ethnic minority groups. Otherwise, it is possible that assessments may underestimate true capacities (see also Gutiérrez-Clellan & Peña, 2001; Lidz & Macrine, 2001; Peña, 2000 who argue that assessments of diverse individuals' capacities should include a teaching component).

The MacCAT-CA is one of the few instruments that incorporates a teaching component. However, standardized methods for computing pre-teaching scores and pro-rated post-teaching and improvement scores have not been developed. Perhaps it would be of value for the MacCAT-CA authors to consider modifying the instrument at some future time so that it can provide this added benefit for use by clinicians on a case-by-case basis.

Although research has supported the use of the MacCAT-CA with adults (Otto et al., 1998), limited research has examined whether the MacCAT-CA is appropriate for clinical use with

adolescents, and concerns have been raised regarding the applicability of the MacCAT-CA's Appreciation scale to adolescents (Grisso et al., 2003; Woolard & Harvell, 2005). (This scale was not examined in the present study.) Although there are no standardized competency assessment instruments specifically for adolescents, Grisso (2005) recently developed a guide to assessing competency in adolescents, the Juvenile Adjudicative Competence Interview. Like the MacCAT-CA, this guide includes a teaching component.

Because individuals with low IQ scores were less likely to show improved legal understanding following brief instruction, more comprehensive efforts may be needed to improve the legal understanding of cognitively impaired individuals. However, even with comprehensive interventions, some individuals with serious cognitive impairments may be unable to attain adequate legal capacities (see Anderson & Hewitt, 2002).

Our results also suggest that deficits in legal understanding that are caused by developmental immaturity may be challenging to remediate. While adolescents were more likely to require teaching due to impaired legal understanding, adolescents aged 13 and younger were less likely than older adolescents (age 16 to 17) to benefit from teaching on the MacCAT-CA.<sup>4</sup> Also, even after teaching, youth aged 15 and younger continued to have significantly lower post-teaching scores than older adolescents and adults.

These findings suggest that brief teaching interventions, like those used in the MacCAT-CA, may have limited effectiveness in enhancing the legal capacities of adolescents, particularly young adolescents (see also Cooper, 1997). As such, future research should investigate whether alternative interventions may be more effective. The development of effective, empirically-supported, and developmentally-appropriate interventions is critical as more youth are being found incompetent to proceed by the courts. Given that the MacCAT-CA was originally developed for adults rather than adolescents, approaches that are developed specifically for adolescents might have the potential to be more effective. However, it may be inherently more difficult to teach young adolescents about legal proceedings due to their cognitive immaturity.

Even though this study suggests that it may be possible to improve youths' legal understanding somewhat with instruction, this does not necessarily mean that youths' legal incompetence can easily be remediated. Youths' capacities for reasoning and appreciation also must be sufficient in order for them to competently participate in their adjudication. Competency interventions for youth should therefore target not only youths' basic legal understanding, which was the focus of the current study, but also their capacities for reasoning and appreciation.

There are reasons to believe that developmental deficits in reasoning and appreciation may be more difficult to augment than deficits in basic legal understanding (Grisso, 2005). Further research may provide us with a better view of the potentials and limits for remediating youths' deficits in those areas. To the extent that remediation in those areas may be more difficult, policy makers must consider special legal provisions when youths' incompetence cannot be remediated in a reasonable time (Scott & Grisso, 2005).

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<sup>4</sup> Given that that we focused only on one aspect of competence (understanding), we cannot conclude how many of these youth could potentially be considered incompetent by the courts.

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